

海洋調査要報

第 15 号

DATA RECORD OF OCEANOGRAPHIC OBSERVATIONS

No.15

APRIL 1998 - MARCH 1999

北海道立水産試験場

平成 19 年 6 月

HOKKAIDO FISHERIES EXPERIMENTAL STATION

昭和60年(1985)以降、第13号まで海洋調査要報として海洋観測結果を印刷公表してきましたが、IT普及によるデータ流通の変化や財政的な背景から従来の印刷公表を見直すこととしました。そこで前号の第14号から、水産試験場以外の外部機関にはインターネットによるダウンロードを利用させていただくこととなりました。

掲載した海洋観測結果を引用する場合には本要報によった旨を明記することをお願いいたします。また、データの品質管理には、(財)日本水路協会海洋情報研究センターの海洋観測データ品質管理ソフト(POD-QC)を利用しました。また、作図には The Generic Mapping Tools を利用しました。

It is requested that due credit be given if data from this "DATA RECORD" are quoted, or if information taken herefrom is incorporated in other papers.

平成 19 年 6 月 June 2007

図表一覽

List of tables and figures

Page

調査期間・海域等一覽	Table 1.	Summary of oceanographic observations -----	3
調査船要目	Table 2.	Principal particulars of research vessels -----	7
海洋観測点図	Fig. 1-12	Location of oceanographic stations -----	8
海洋観測結果	Part I.	Results of serial oceanographic observations -----	22
北海道立中央水産試験場	Table 3.	Hokkaido Central Fisheries Experimental Station -----	23
北海道立函館水産試験場	Table 4.	Hokkaido Hakodate Fisheries Experimental Station -----	71
北海道立釧路水産試験場	Table 5.	Hokkaido Kushiro Fisheries Experimental Station -----	133
北海道立稚内水産試験場	Table 6.	Hokkaido Wakkanai Fisheries Experimental Station -----	182
海洋化学的分析結果	Part II.	Results of chemical analyses -----	224
北海道立中央水産試験場	Table 7.	Results of chemical analyses -----	225
プランクトン採集記録	Part III.	Plankton collection records -----	231
北海道立中央水産試験場	Table 8.	Calibration data of flow-meters used for NORPAC net samplings -----	232
	Table 9.	Data on plankton collected by vertical hauls with a paired or a standard NORPAC net-----	234

Table 1. Summary of oceanographic observations conducted by Hokkaido Fisheries Experimental Station from April 1999 to March 2000.

Period	Area	Station Nos. occupied	Number of obs	Vessel	Research staff on board	Equipments for hydrography	Referencial pages
Hokkaido Central Fisheries Experimental Station							
1999/4/12 - 1999/4/15	West of Hokkaido,Japan Sea	199904CEB01 - 199904CEB03	3	Oyashio-Mar	M. Yamaguchi	SBE 9/11plus 724/1054	Table 3-1
1999/4/20 - 1999/4/25	West of Hokkaido,Japan Sea	199904J41 - 199904J34	30	Oyashio-Mar	A. Miyazono T. Yasunaga	SBE 9/11plus 724/1054	Table 3-1
1999/4/23 - 1999/4/25	West of Hokkaido,Japan Sea	199904J33 199904JH01	15	Oyashio-Mar	T. Watanabe T. Yasunaga	SBE 9/11plus 724/1054	Table 3-4
1999/5/10 - 1999/5/11	Ishikari Bay,Japan Sea	199905CIS118 - 199905CIS123	27	Oyashio-Mar	A.Fujioka	SBE 9/11plus 724/1054	Table 3-5
1999/5/31 - 1999/6/4	West of Hokkaido,Japan Sea	199906J41 - 199906J31	37	Oyashio-Mar	A. Miyazono A.Nakata	SBE 9/11plus 724/1054	Table 3-8
1999/6/7 - 1999/6/10	West of Hokkaido,Japan Sea	199906JC11 199906JS01A	10	Oyashio-Mar	T. Watanabe A. Nakata	SBE 9/11plus 724/1054	Table 3-12
1999/6/22 - 1999/6/29	West of Hokkaido,Japan Sea	199907CSR101 - 199907CSR116	16	Oyashio-Mar	K.Sakaguchi	SBE 9/11plus 724/1054	Table 3-13
1999/7/5 - 1999/7/7	Ishikari Bay,Japan Sea	199907CIS201 - 199907CIS218	41	Oyashio-Mar	Y. Kunihiro A. Nakata	SBE 9/11plus 724/1054	Table 3-14
1999/7/13 - 1999/7/15	Ishikari Bay,Japan Sea	199907CKR101 - 199907CKR111	11	Oyashio-Mar	A.Fujioka Y. Shimizu	SBE 9/11plus 724/1054	Table 3-18
1999/7/26 - 1999/7/29	West of Hokkaido,Japan Sea	199908J31 - 199908JC22	33	Oyashio-Mar	M. Kotori T.Yasunaga	SBE 9/11plus 724/1054	Table 3-20
1999/8/2 - 1999/8/3	West of Hokkaido,Japan Sea	199908JC02 - 199908J21	15	Oyashio-Mar	K. Hirano M. Kotori	SBE 9/11plus 724/1054	Table 3-23
1999/8/24 - 1999/8/31	West of Hokkaido,Japan Sea	199908CSR116 - 199908CSR117	19	Oyashio-Mar	K.Sakaguchi	SBE 9/11plus 724/1054	Table 3-24
1999/9/6 - 1999/9/9	Ishikari Bay,Japan Sea	199909CIS202 - 199909CIS109	40	Oyashio-Mar	H. Yamaguchi	SBE 9/11plus 724/1054	Table 3-26
1999/9/20 - 1999/9/21	Ishikari Bay,Japan Sea	199909CJ31 - 199909CJ331	6	Oyashio-Mar	T. Watanabe T. Yasunaga	SBE 9/11plus 724/1054	Table 3-30
1999/9/29 - 1999/10/1	South of Hokkaido,North Pacific	199909HW001 - 199909HW011	11	Oyashio-Mar	Y.Mihara	SBE 9/11plus 724/1054	Table 3-31
1999/10/4 - 1999/10/7	West of Hokkaido,Japan Sea	199910CK02 - 199910J34	30	Oyashio-Mar	K. Hirano A. Miyazono	SBE 9/11plus 724/1054	Table 3-32
1999/10/12 - 1999/10/14	West of Hokkaido,Japan Sea	199910J31 - 199910JW12	23	Oyashio-Mar	K. Hirano T. Yasunaga	SBE 9/11plus 724/1054	Table 3-35
1999/10/19 - 1999/10/20	West of Hokkaido,Japan Sea	199910CJ46 - 199910CJ47	2	Oyashio-Mar	A. Nakata	SBE 9/11plus 724/1054	Table 3-37
1999/10/25 - 1999/10/27	West of Hokkaido,Japan Sea	199910CHA101 - 199910CHA109	9	Oyashio-Mar	Y. Kunihiro	SBE 9/11plus 724/1054	Table 3-37
1999/11/8 - 1999/11/11	Ishikari Bay,Japan Sea	199911CIS103 - 199911CIS110	29	Oyashio-Mar	Y. Shimizu	SBE 9/11plus 724/1054	Table 3-38
1999/11/24 - 1999/11/24	West of Hokkaido,Japan Sea	199912J31 - 199912J38	8	Oyashio-Mar	M. Kotori A. Miyazono	SBE 9/11plus 724/1054	Table 3-41
1999/12/1 - 1999/12/1	West of Hokkaido,Japan Sea	199912JC11 - 199912JC14	4	Oyashio-Mar	M. Kotori A. Miyazono	SBE 9/11plus 724/1054	Table 3-42
2000/1/28 - 2000/1/30	West of Hokkaido,Japan Sea	200002J63 - 200002J31	27	Oyashio-Mar	M. Kotori T. Yasunaga	SBE 9/11plus 724/1054	Table 3-42
2000/3/16 - 2000/3/17	Ishikari Bay,Japan Sea	200003CIS201 - 200003CIS226	26	Oyashio-Mar	A.Fujioka	SBE 9/11plus 724/1054	Table 3-45
Hokkaido Hakodate Fisheries Experimental Station							
1999/4/15 - 1999/4/16	South of Hokkaido,Funka Bay	199904HFS15 - 199904HFS38	24	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-1
1999/4/19 - 1999/4/21	South of Hokkaido,Funka Bay	199904H01 - 199904P66	32	Kinsei-Mar	H.Shimada	SBE 9/11	Table 4-3
1999/5/11 - 1999/5/18	South of Hokkaido,Funka Bay	199905HFS15 - 199905HFS338	101	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-6
1999/5/24 - 1999/5/27	South of Hokkaido,Funka Bay	199906H01 - 199906P64	34	Kinsei-Mar	H.Shimada	SBE 9/11	Table 4-16
1999/6/1 - 1999/6/8	West of Hokkaido,Japan Sea	199905HSR001 - 199905HSR022	23	Kinsei-Mar		SBE 9/11	Table 4-20
1999/6/14 - 1999/6/16	South of Hokkaido,Funka Bay	199906H001 - 199906H101	32	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-22
1999/6/21 - 1999/6/22	South of Hokkaido,Funka Bay	199906HDK01 - 199906HDK54	22	Kinsei-Mar	H.Shimada	SBE 9/11	Table 4-25

Table 1. Summary of oceanographic observations conducted by Hokkaido Fisheries Experimental Station from April 1999 to March 2000.

Period	Area	Station Nos. occupied	Number of obs	Vessel	Research staff on board	Equipments for hydrography	Referencial pages
1999/6/23 - 1999/6/23	West of Hokkaido, Japan Sea	199906H201 - 199906H201	1	Kinsei-Mar		SBE 9/11	Table 4-27
1999/6/28 - 1999/7/3	South of Hokkaido, North Pacific	199906HTW006 - 199906HTW007	16	Kinsei-Mar		SBE 9/11	Table 4-27
1999/7/5 - 1999/7/7	Tsugaru Strait	199906HTW017 - 199907HDH01	21	Kinsei-Mar	J.Ogasawara	SBE 9/11	Table 4-29
1999/7/12 - 1999/7/13	South of Hokkaido, Funka Bay	199907HFS15 - 199907HFS71	39	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-31
1999/7/26 - 1999/7/28	South of Hokkaido, Funka Bay	199908H01 - 199908P66	32	Kinsei-Mar	H.Shimada	SBE 9/11	Table 4-35
1999/8/3 - 1999/8/3	Tsugaru Strait	199908HSR116 - 199908HSR116	1	Kinsei-Mar		SBE 9/11	Table 4-38
1999/8/23 - 1999/8/31	South of Hokkaido, Funka Bay	199908HSR101 - 199908HSR217	19	Kinsei-Mar		SBE 9/11	Table 4-38
1999/9/6 - 1999/9/8	South of Hokkaido, Funka Bay	199909HFS16 - 199909HDH01	39	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-40
1999/9/16 - 1999/9/17	Tsugaru Strait	199909HTW17 - 199909HST921	20	Kinsei-Mar		SBE 9/11	Table 4-44
1999/9/28 - 1999/9/29	East of Hokkaido, North Pacific	199909HHT103 - 199909HHT102	4	Kinsei-Mar		SBE 9/11	Table 4-46
1999/10/4 - 1999/10/5	South of Hokkaido, Japan Sea	199910P65 - 199910H01	14	Kinsei-Mar		SBE 9/11	Table 4-47
1999/10/14 - 1999/10/14	Tsugaru Strait	199910HDH01 -	1	Kinsei-Mar		SBE 9/11	Table 4-48
1999/10/18 - 1999/10/19	South of Hokkaido, North Pacific	199910HW001 - 199909HW101	13	Kinsei-Mar		SBE 9/11	Table 4-48
1999/10/25 - 1999/10/25	Tsugaru Strait	199910HSR101 -	1	Kinsei-Mar		SBE 9/11	Table 4-49
1999/11/8 - 1999/11/9	South of Hokkaido, Funka Bay	199909HFS16 - 199909HFS71	39	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-49
1999/11/24 - 1999/11/25	Tsugaru Strait	199911HAP07 - 199911HAP47	13	Kinsei-Mar		SBE 9/11	Table 4-53
1999/11/29 - 1999/12/9	South of Hokkaido, Funka Bay	199912P64 - 199912P66	14	Kinsei-Mar	J.Ogasawara	SBE 9/11	Table 4-55
2000/2/14 - 2000/2/15	South of Hokkaido, Funka Bay	200002P66 - 200002H01	14	Kinsei-Mar		SBE 9/11	Table 4-56
2000/2/22 - 2000/2/22	Tsugaru Strait	200002HAP07 - 200002HAP02	6	Kinsei-Mar		SBE 9/11	Table 4-57
2000/2/29 - 2000/3/1	South of Hokkaido, Japan Sea	200002HW002 - 200002HW012	11	Kinsei-Mar		SBE 9/11	Table 4-58
2000/3/12 - 2000/3/13	South of Hokkaido, Funka Bay	200003HFS05 - 200003HFS38	34	Kinsei-Mar	Y.Nishida	SBE 9/11	Table 4-59
Hokkaido Kushiro Fisheries Experimental Station							
1999/4/13 - 1999/4/19	South of Hokkaido & off Sanriku North Pacific	199904P31 - 199904PK11	63	Hokushin-mar	Y.Nakame	SBE 9/11plus 2256/1853	Table 5-1
1999/5/10 - 1999/5/14	South of Hokkaido, coastal area	199905HA01 - 199905HA10	42	Hokushin-mar	O.Shida D.Tsutui	SBE 9/11plus 2256/1853	Table 5-7
1999/5/17 - 1999/5/19	South of Hokkaido, coastal area	199905SU32 - 199905SU53	8	Hokushin-mar	O.Shida	SBE 9/11plus 2256/1853	Table 5-11
1999/5/24 - 1999/5/25	South of Hokkaido, Off Akkeshi	199905SU54 - 199905SU56	3	Hokushin-mar	O.Shida	SBE 9/11plus 2256/1853	Table 5-12
1999/5/31 - 1999/6/6	South of Hokkaido & off Sanriku North Pacific	199906P31 - 199906PK11	63	Hokushin-mar	T.Honma	SBE 9/11plus 2256/1853	Table 5-12
1999/6/10 - 1999/6/16	South of Hokkaido, North Pacific	199906IK01 - 199906IK13	13	Hokushin-mar	T.Sato	SBE 9/11plus 2256/1853	Table 5-18
1999/6/23 - 1999/7/1	South of Hokkaido, North Pacific	199906IW01 - 199906IW17	13	Hokushin-mar	Y.Nakame	SBE 9/11plus 2256/1853	Table 5-20
1999/7/12 - 1999/7/20	East of Hokkaido, North Pacific	199907SM01 - 199907SM17	17	Hokushin-mar	T.Honma	SBE 9/11plus 2256/1853	Table 5-21
1999/8/2 - 1999/8/5	South of Hokkaido, North Pacific	199908P21 - 199908PK21	40	Hokushin-mar	Y.Nakame	SBE 9/11plus 2256/1853	Table 5-23
1999/8/23 - 1999/8/26	South of Hokkaido, North Pacific	199908IK01 - 199908IK07	7	Hokushin-mar	T.Sato	SBE 9/11plus 2256/1853	Table 5-27

Table 1. Summary of oceanographic observations conducted by Hokkaido Fisheries Experimental Station from April 1999 to March 2000.

Period	Area	Station Nos. occupied	Number of obs	Vessel	Research staff on board	Equipments for hydrography	Referencial pages
1999/8/31 - 1999/9/7	South of Hokkaido, North Pacific	199909IW01 - 199909IW15	15	Hokushin-maru	Y.Nakame	SBE 9/11plus 2256/1853	Table 5-27
1999/9/16 - 1999/9/23	South of Hokkaido, North Pacific	199909SM01 - 199909SM15	15	Hokushin-maru	T.Honma	SBE 9/11plus 2256/1853	Table 5-29
1999/10/4 - 1999/10/7	South of Hokkaido, North Pacific	199910P21 - 199910PK21	40	Hokushin-maru	Y.Nakame	SBE 9/11plus 2256/1853	Table 5-30
1999/10/14 - 1999/10/19	South of Shiretoko & Okhotsk Sea	199910IK06 - 199910IK09	16	Hokushin-maru	T.Sato	SBE 9/11plus 2256/1853	Table 5-34
1999/10/25 - 1999/10/27	South of Hokkaido, North Pacific	199910SM07 - 199910SM03	5	Hokushin-maru	T.Honma	SBE 9/11plus 2256/1853	Table 5-36
1999/11/8 - 1999/11/11	South of Hokkaido, coastal area	199911SU18 - 199911SUT7	26	Hokushin-maru	O.Shida	SBE 9/11plus 2256/1853	Table 5-37
1999/11/15 - 1999/11/15	South of Hokkaido, coastal area	199911SUT8 - 199911SU26	6	Hokushin-maru	T.Suzuuchi O.Shida	SBE 9/11plus 2256/1853	Table 5-39
1999/11/22 - 1999/11/25	South of Hokkaido, North Pacific	199912P21 - 199912PK21	38	Hokushin-maru	T.Sato	SBE 9/11plus 2256/1853	Table 5-40
1999/12/5 - 1999/12/6	South of Shiretoko & Okhotsk Sea	199912SUF0 - 199912SU26	16	Hokushin-maru	O.Shida	SBE 9/11plus 2256/1853	Table 5-44
2000/2/21 - 2000/2/25	South of Hokkaido, North Pacific	200002P31 - 200002PK11	38	Hokushin-maru	T.Sato	SBE 9/11plus 2256/1853	Table 5-45
Hokkaido Wakkanai Fisheries Experimental Station							
1999/4/12 - 1999/4/16	North of Hokkaido, Soya straight	199904J101 - 199904JW14	36	Hokuyo-Mar	I.Tanaka A.Nakata	SBE 9/11 1688/1392	Table 6-1
1999/4/19 - 1999/4/21	Southwestern Okhotsk Sea	199904O15 - 199904OA05	24	Hokuyo-Mar	J.Nakata M.Ito*1	SBE 9/11 1688/1392	Table 6-4
1999/4/26 - 1999/4/27	Around Rishiri Island, Japan Sea	199904WTC01 - 199904WTC14	14	Hokuyo-Mar	A.Wada	SBE 9/11 1688/1392	Table 6-7
1999/5/11 - 1999/5/13	Around Rishiri Island, Japan Sea	199905WCA01 - 199905WCA02	2	Hokuyo-Mar	H.Miyake T.Takashima	SBE 9/11 1688/1392	Table 6-8
1999/5/19 - 1999/5/19	North of Hokkaido, Japan Sea	199905WPA01 - 199905WPA01	1	Hokuyo-Mar	T.Takashima A.Wada	SBE 9/11 1688/1392	Table 6-8
1999/5/26 - 1999/5/27	Southwestern Okhotsk Sea	199905WSU01 - 199905WSU06	6	Hokuyo-Mar	J.Nakata	SBE 9/11 1688/1392	Table 6-8
1999/6/1 - 1999/6/3	North of Hokkaido, Soya straight	199906S102 - 199906J101	31	Hokuyo-Mar	I.Tanaka M.Watanobe	SBE 9/11 1688/1392	Table 6-9
1999/6/7 - 1999/6/9	Southwestern Okhotsk Sea	199906S401 - 199906O36	31	Hokuyo-Mar	M.Oota	SBE 9/11 1688/1392	Table 6-12
1999/6/15 - 1999/6/19	Southwestern Okhotsk Sea	199906WSU01 - 199906WSU09	9	Hokuyo-Mar	M.Oota	SBE 9/11 1688/1392	Table 6-15
1999/6/21 - 1999/6/23	Off Abashiri, Okhotsk Sea	199906AKE10 - 199906AKE08	12	Hokuyo-Mar	J.Sasaki(AFES)	SBE 9/11 1688/1392	Table 6-16
1999/7/6 - 1999/7/14	North of Hokkaido, Japan Sea	199907WEB01 - 199907WEB18	16	Hokuyo-Mar	J.Sasaki N.Hoshino etc	SBE 9/11 1688/1392	Table 6-17
1999/7/26 - 1999/7/28	North of Hokkaido, Soya straight	199908J11 - 199908LPS401	32	Hokuyo-Mar	I.Tanaka J.Nakata	SBE 9/11 1688/1392	Table 6-19
1999/8/2 - 1999/8/4	Southwestern Okhotsk Sea	199908COK01 - 199908O35	32	Hokuyo-Mar	N.Tanaka A.Miyazono	SBE 9/11 1688/1392	Table 6-22
1999/8/25 - 1999/9/1	West of Hokkaido, Japan Sea	199908WTC01 - 199908WTC06	6	Hokuyo-Mar	A.Wada	SBE 9/11 1688/1392	Table 6-25
1999/9/6 - 1999/9/8	Southwestern Okhotsk Sea	199909ASM08 - 199909ASM05	15	Hokuyo-Mar	M.Torisawa	SBE 9/11 1688/1392	Table 6-26
1999/9/20 - 1999/9/21	Around Rishiri-Rebun Islands, Japan Sea	199909WTP01 - 199909WTP03	3	Hokuyo-Mar	J.Nakata K.Abe*1	SBE 9/11 1688/1392	Table 6-27
1999/9/27 - 1999/9/30	Southwestern Okhotsk Sea	199910S103 - 199910O34	42	Hokuyo-Mar	M.Torisawa	SBE 9/11 1688/1392	Table 6-28
1999/10/7 - 1999/10/21	West of Hokkaido, Japan Sea	199910WTC01 - 199910WTC08	8	Hokuyo-Mar	H.Miyake T.Takashima &*2	SBE 9/11 1688/1392	Table 6-32
1999/11/9 - 1999/11/11	Southwestern Okhotsk Sea	199911WTPS302 - 199911WTP04	27	Hokuyo-Mar	J.Nakata	SBE 9/11 1688/1392	Table 6-33
1999/11/18 - 1999/11/22	Southwestern Okhotsk Sea	199911WSU01 - 199911WSU11	22	Hokuyo-Mar	J.Nakata	SBE 9/11 1688/1392	Table 6-35
1999/12/1 - 1999/12/2	Okhotsk Sea, Soya straight	199912OHS102 - 199912LPS401	12	Hokuyo-Mar	I.Tanaka T.Takashima	SBE 9/11 1688/1392	Table 6-37

Table 1. Summary of oceanographic observations conducted by Hokkaido Fisheries Experimental Station from April 1999 to March 2000.

Period	Area	Station Nos. occupied		Number of obs Vessel	Research staff on board	Equipments for hydrography	Referencial pages
1999/12/8 - 1999/12/9	Southwestern Okhotsk Sea	199912OA02	199912O21	11 Hokuyo-Maru	M.Oota	SBE 9/11 1688/1392	Table 6-39
2000/2/23 - 2000/2/24	West of Hokkaido, Japan Sea	200002J11	200002JW01	17 Hokuyo-Maru	J.Nakata	SBE 9/11 1688/1392	Table 6-40
2000/2/28 - 2000/2/28	West of Hokkaido, Japan Sea	200002J21	200002J22	2 Hokuyo-Maru	M.Oota	SBE 9/11 1688/1392	Table 6-41
2000/3/6 - 2000/3/6	West of Hokkaido, Japan Sea	200002J23	200002J27	5 Hokuyo-Maru	M.Oota	SBE 9/11 1688/1392	Table 6-42
2000/3/22 - 2000/3/22	West of Hokkaido, Japan Sea	200003WTE01	200003WTE02	2 Hokuyo-Maru	J.Nakata	SBE 9/11	Table 6-42

\*1:Hokkaido Univ

\*2:A.Wada (WFES) etc

Table 2. Principal particulars of research vessels in 1999.

Vessel	Gross tonnage	Main engine	Number of crew	Captain	Affiliated institution
Oyashio Maru	178	440 p.s.	20	M. Furumaki	Central Fisheries Experimental Station
Kinsei Maru	68	290 p.s.	12	K. Kuratome	Hakodate Fisheries Experimental Station
Hokushin Maru	214	440 p.s.	20	K. Sazaki	Kushiro Fisheries Experimental Station
Hokuyo Maru	276	610 p.s.	20	M.Oota	Wakkanai Fisheries Experimental Station



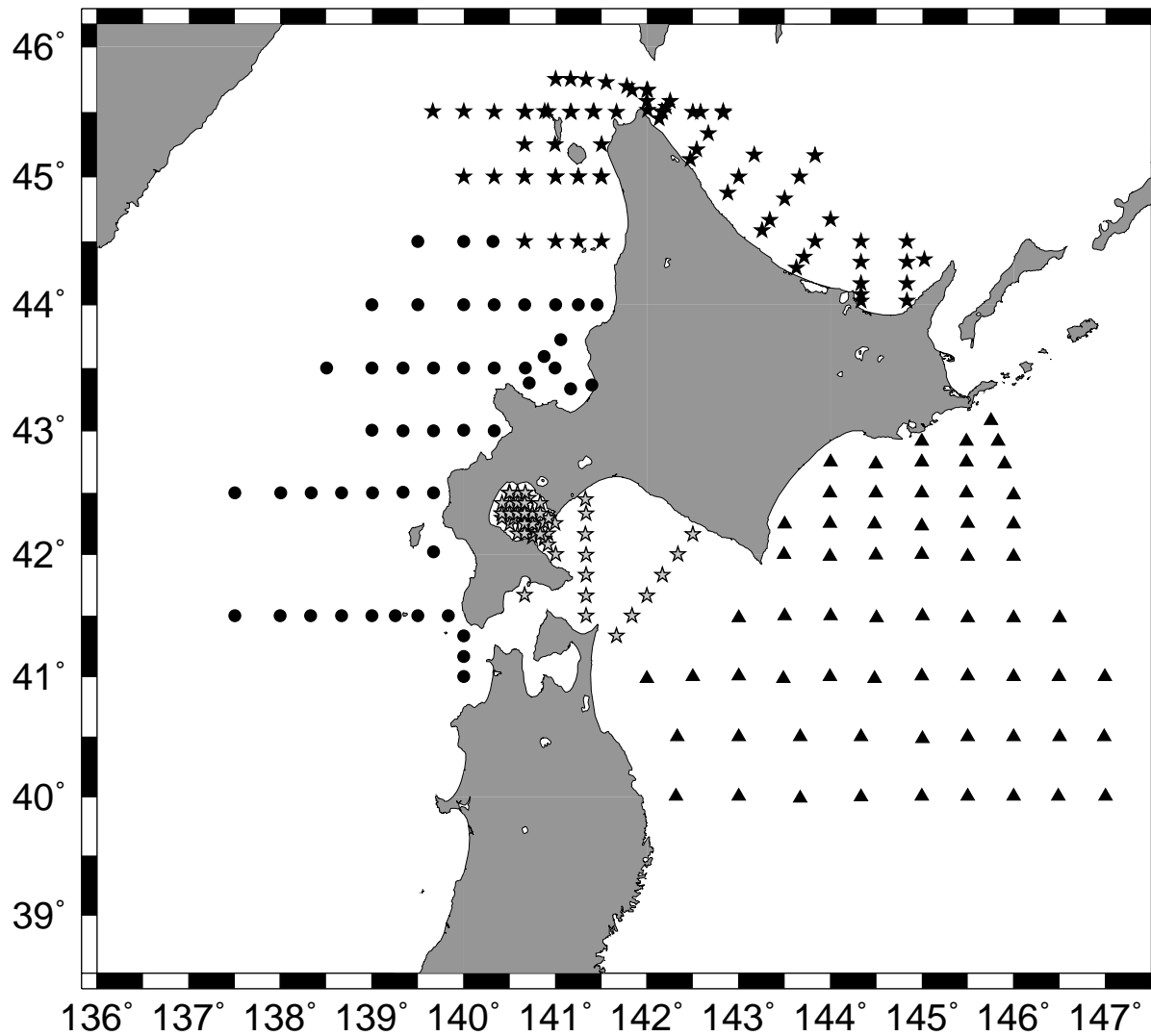


Fig. 1. Location of oceanographic stations covered in April 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

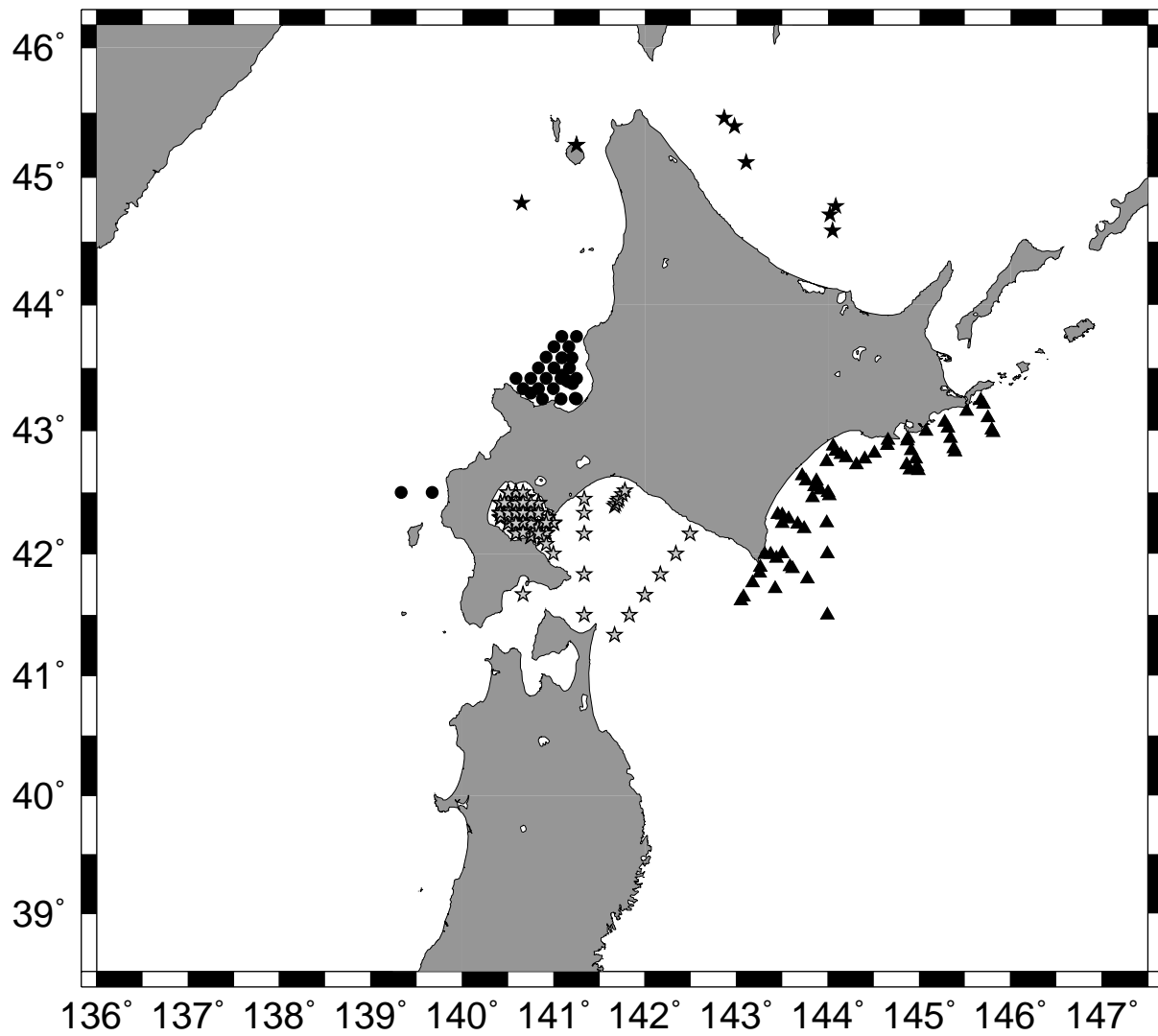


Fig. 2. Location of oceanographic stations covered in May 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

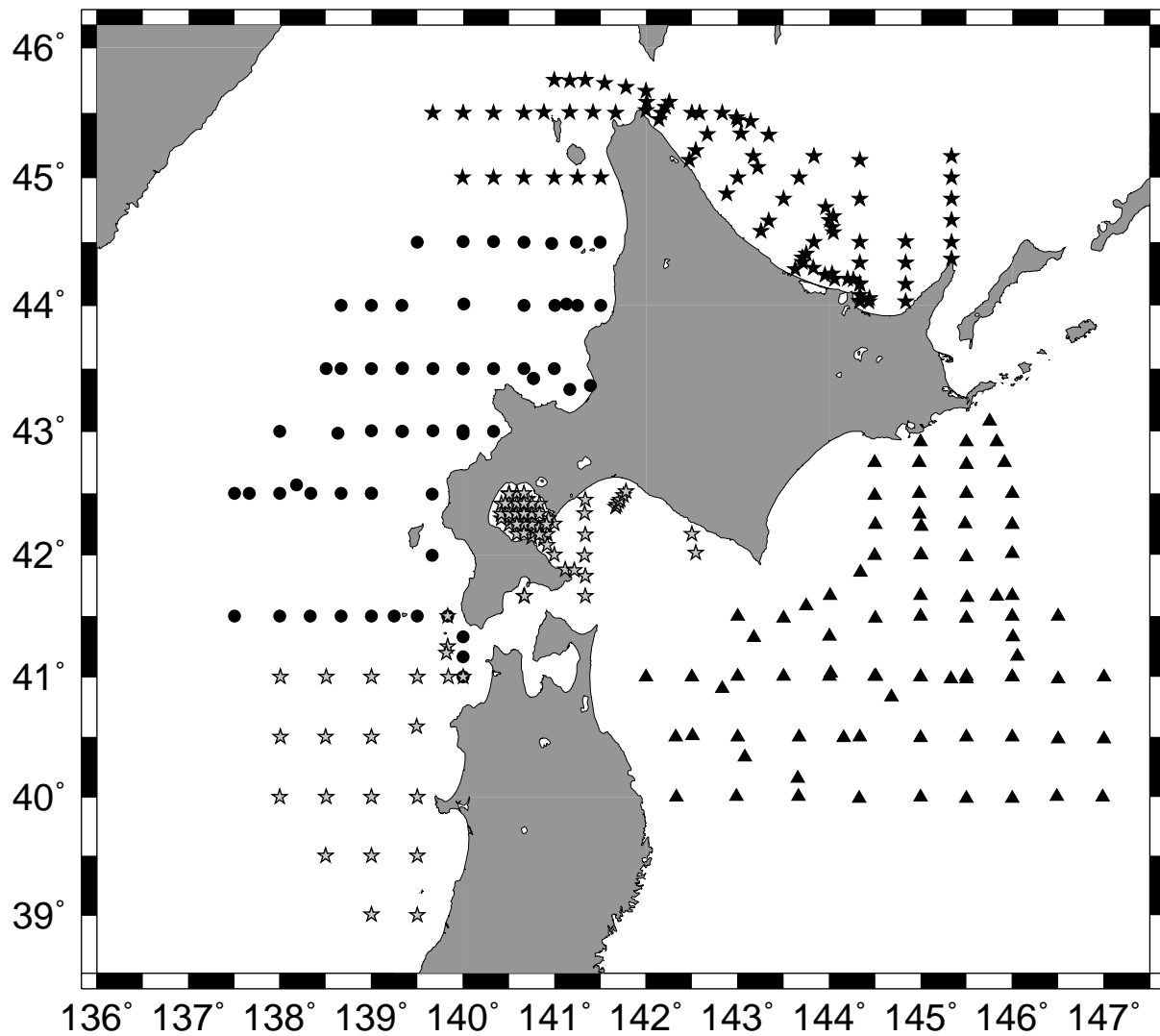


Fig. 3. Location of oceanographic stations covered in June 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

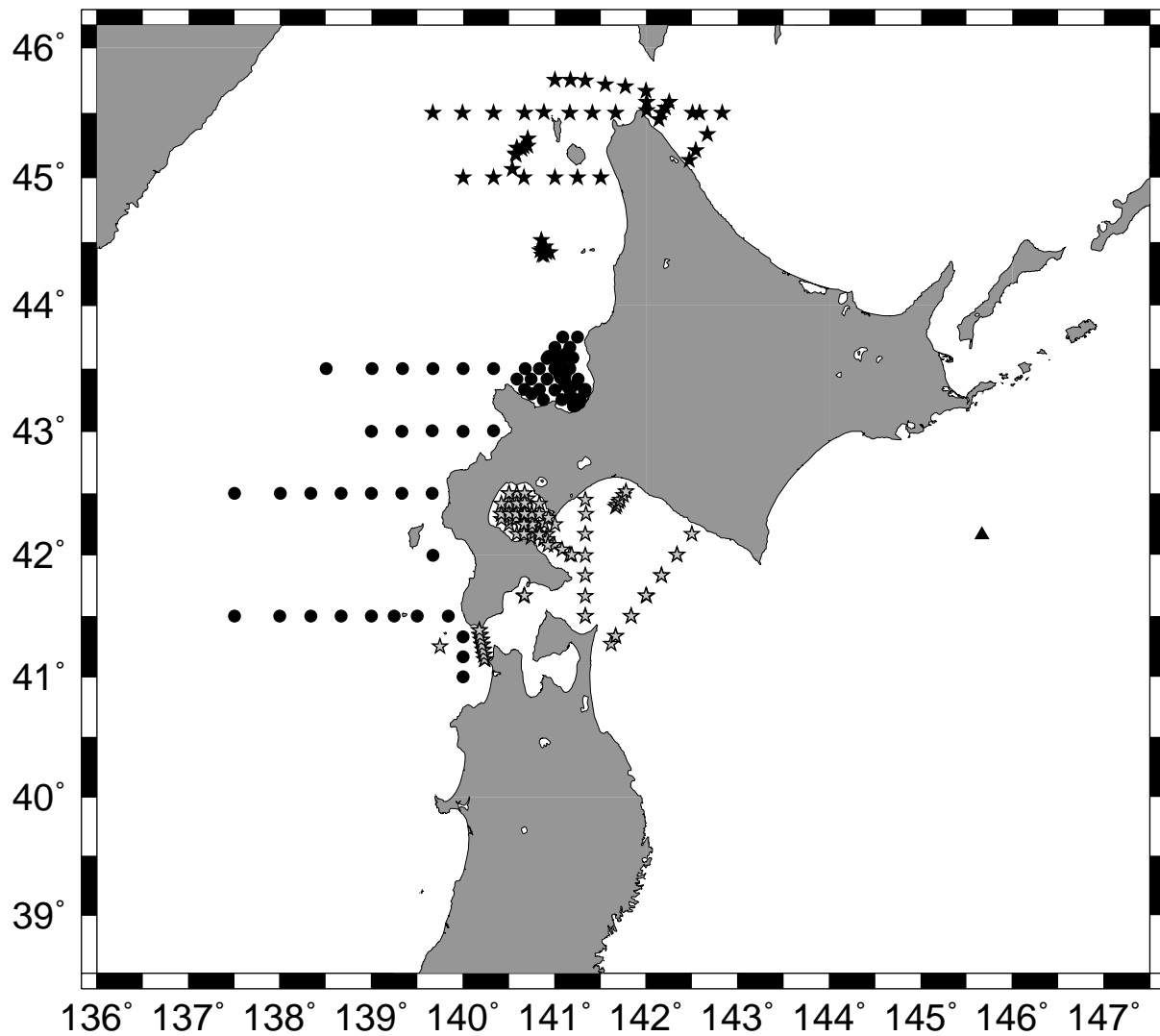


Fig. 4. Location of oceanographic stations covered in July 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

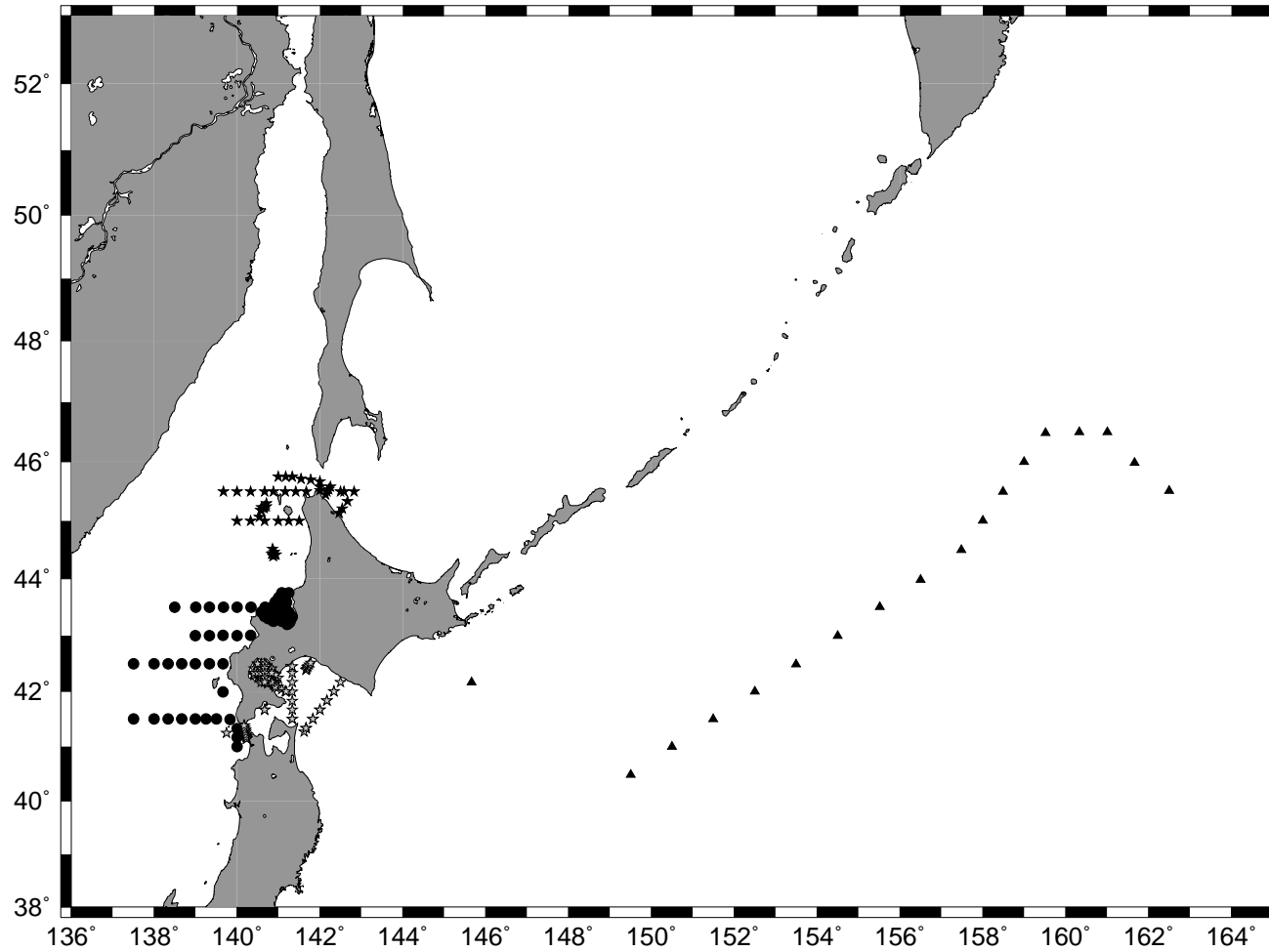


Fig. 4-2. Location of oceanographic stations covered in July 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

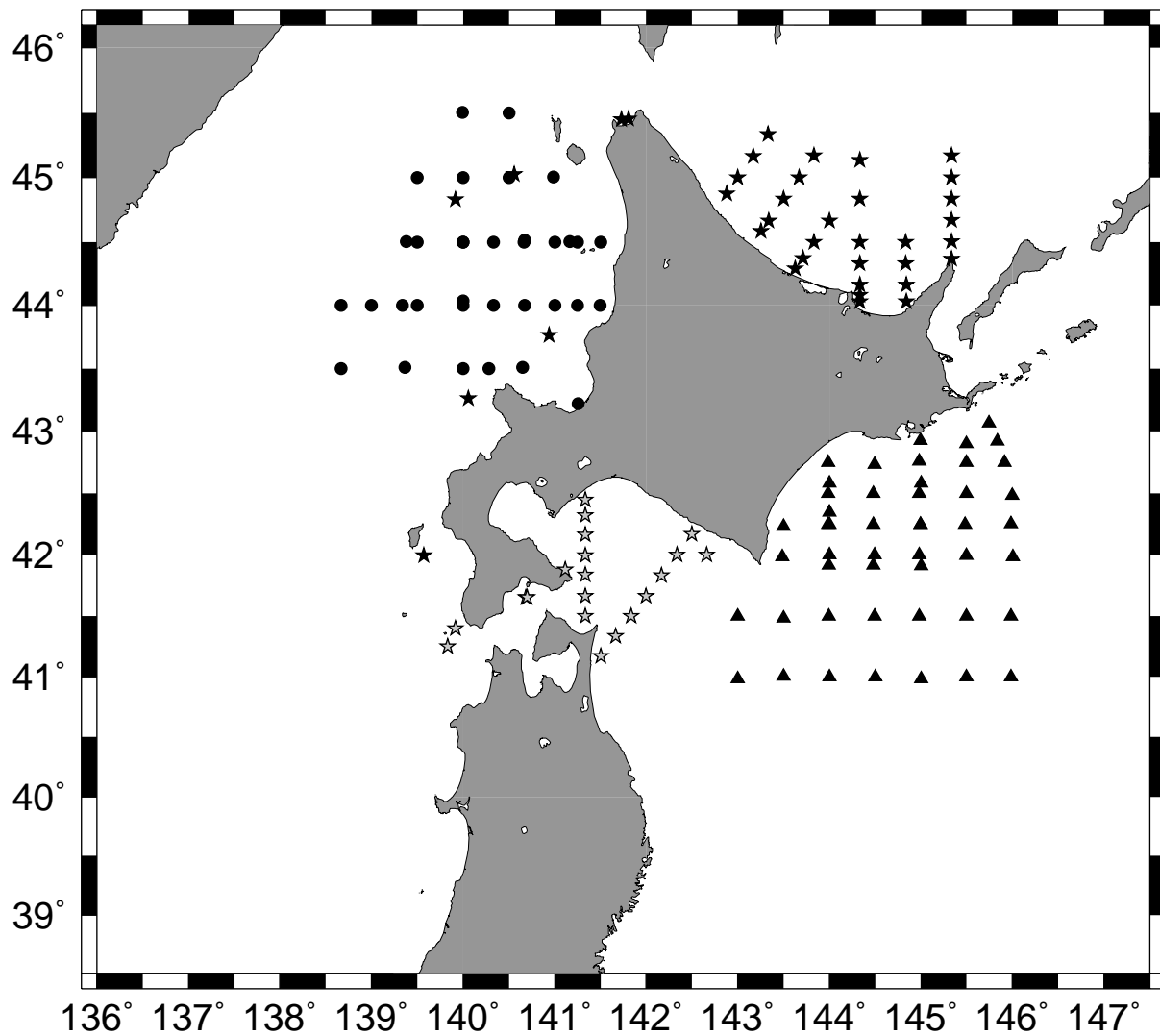


Fig. 5. Location of oceanographic stations covered in August 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

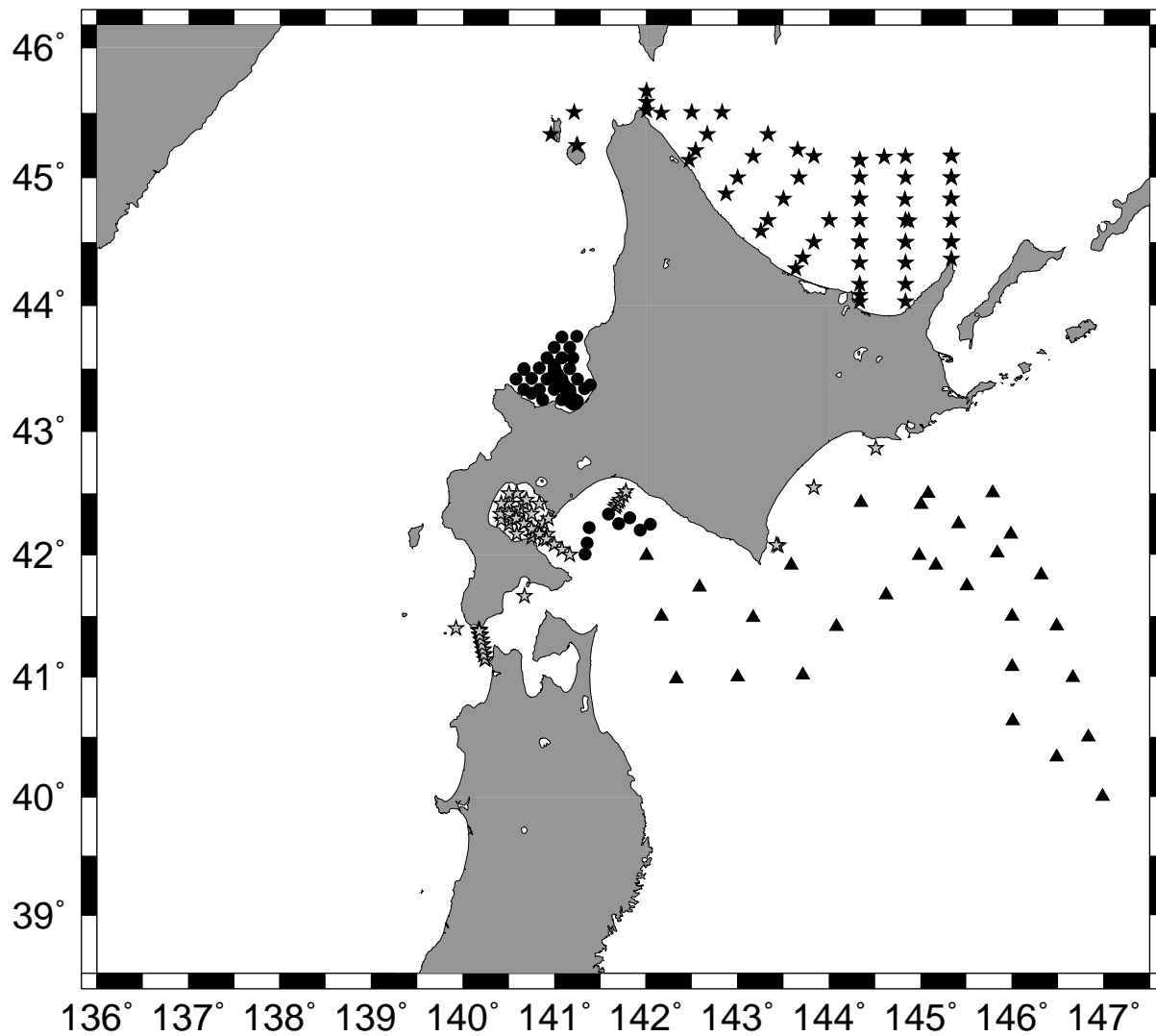


Fig. 6. Location of oceanographic stations covered in September 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

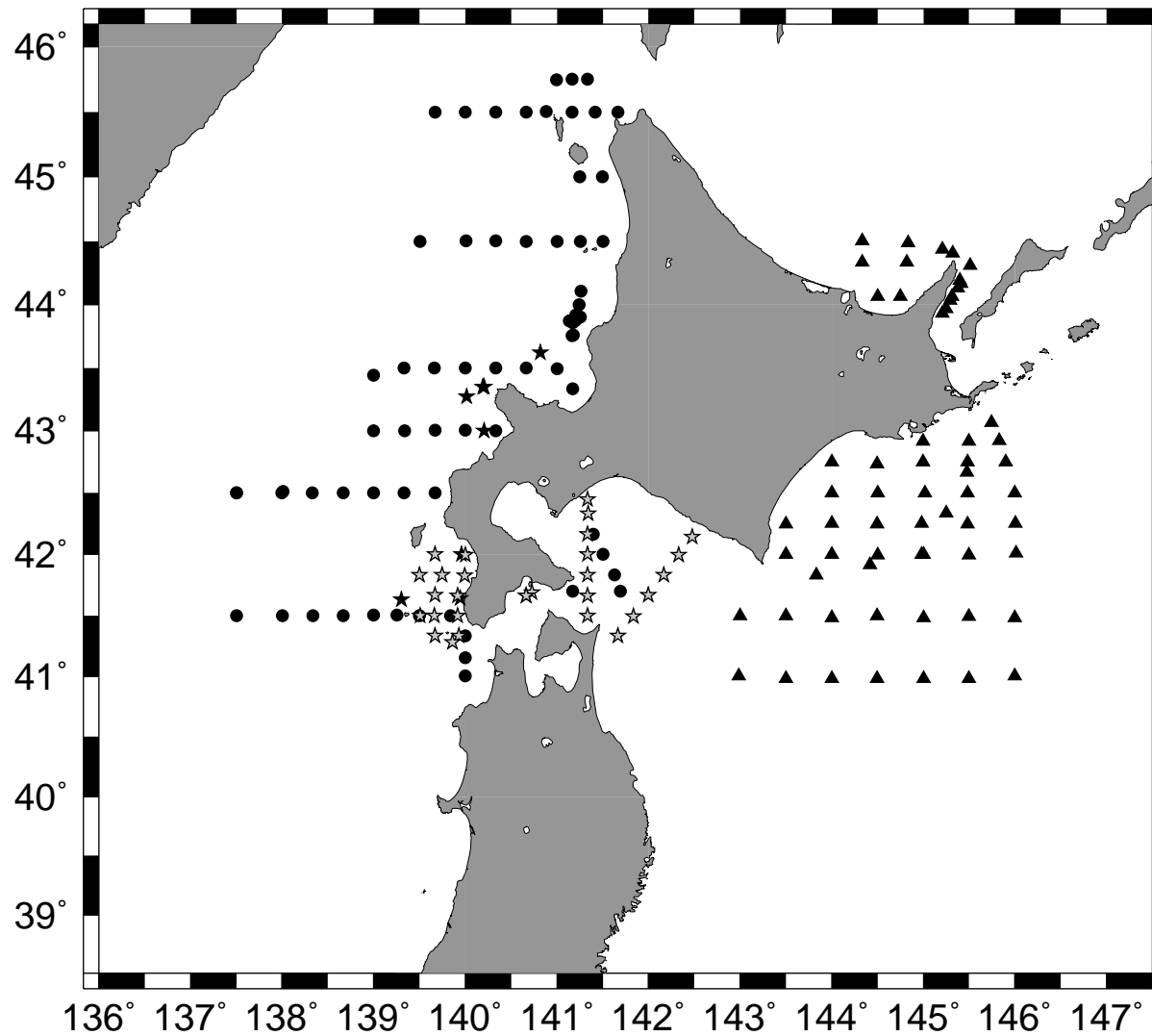


Fig. 7. Location of oceanographic stations covered in October 1999.  
 :Oyasyhio-Marun :Hokuyo-Marun :Hokushin-Marun :Kinsei-Marun



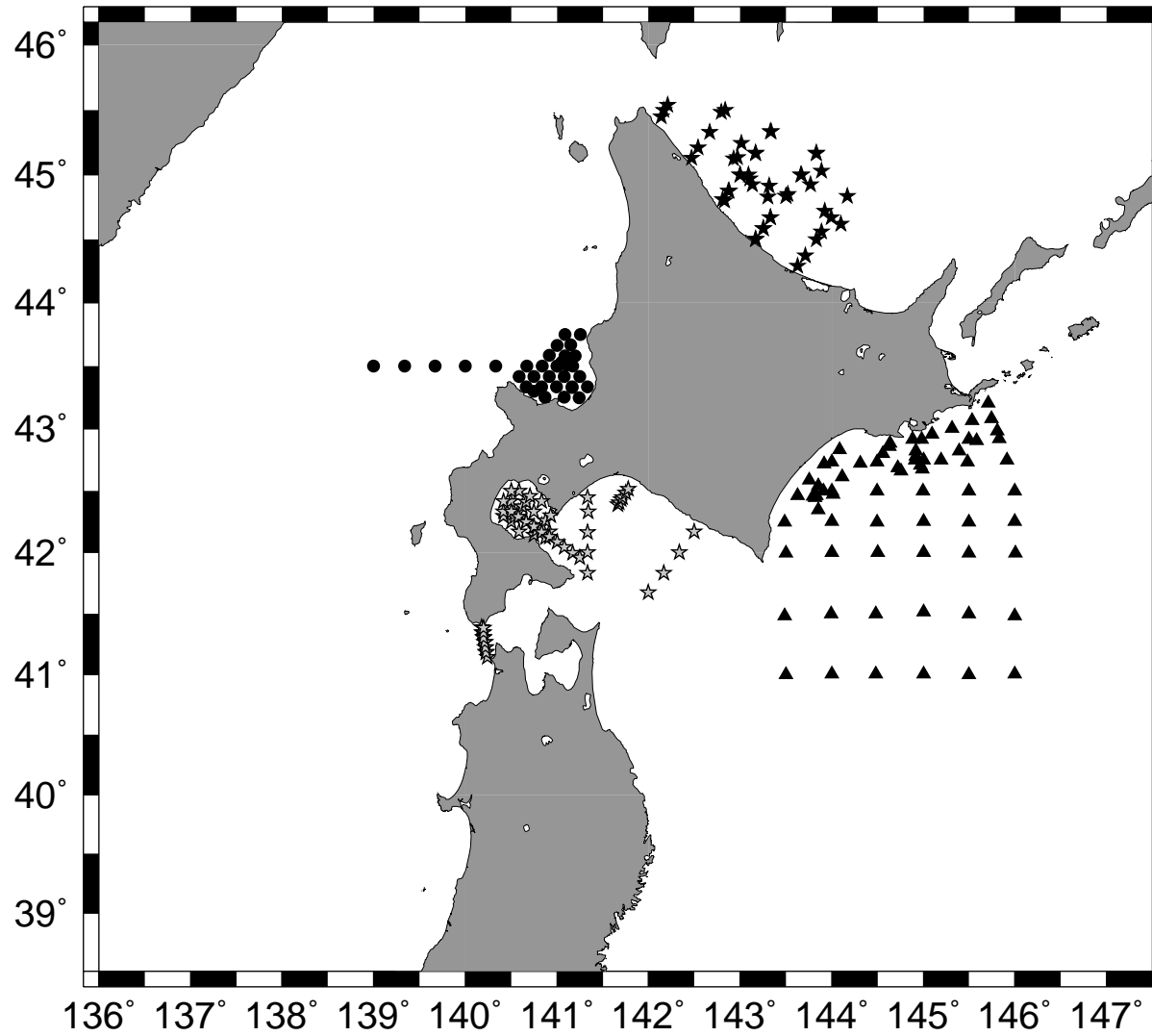


Fig. 8. Location of oceanographic stations covered in November 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

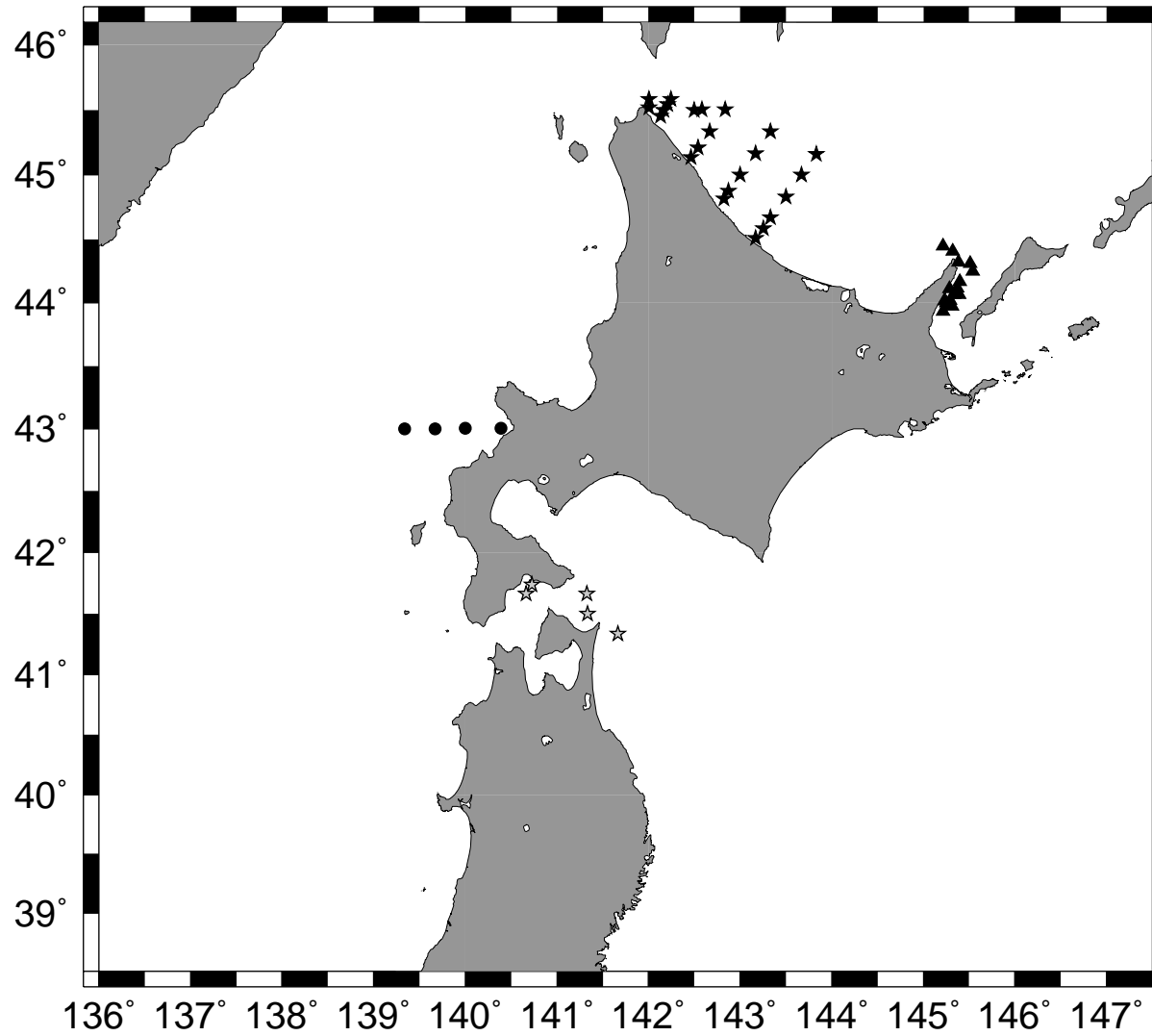


Fig. 9. Location of oceanographic stations covered in December 1999.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

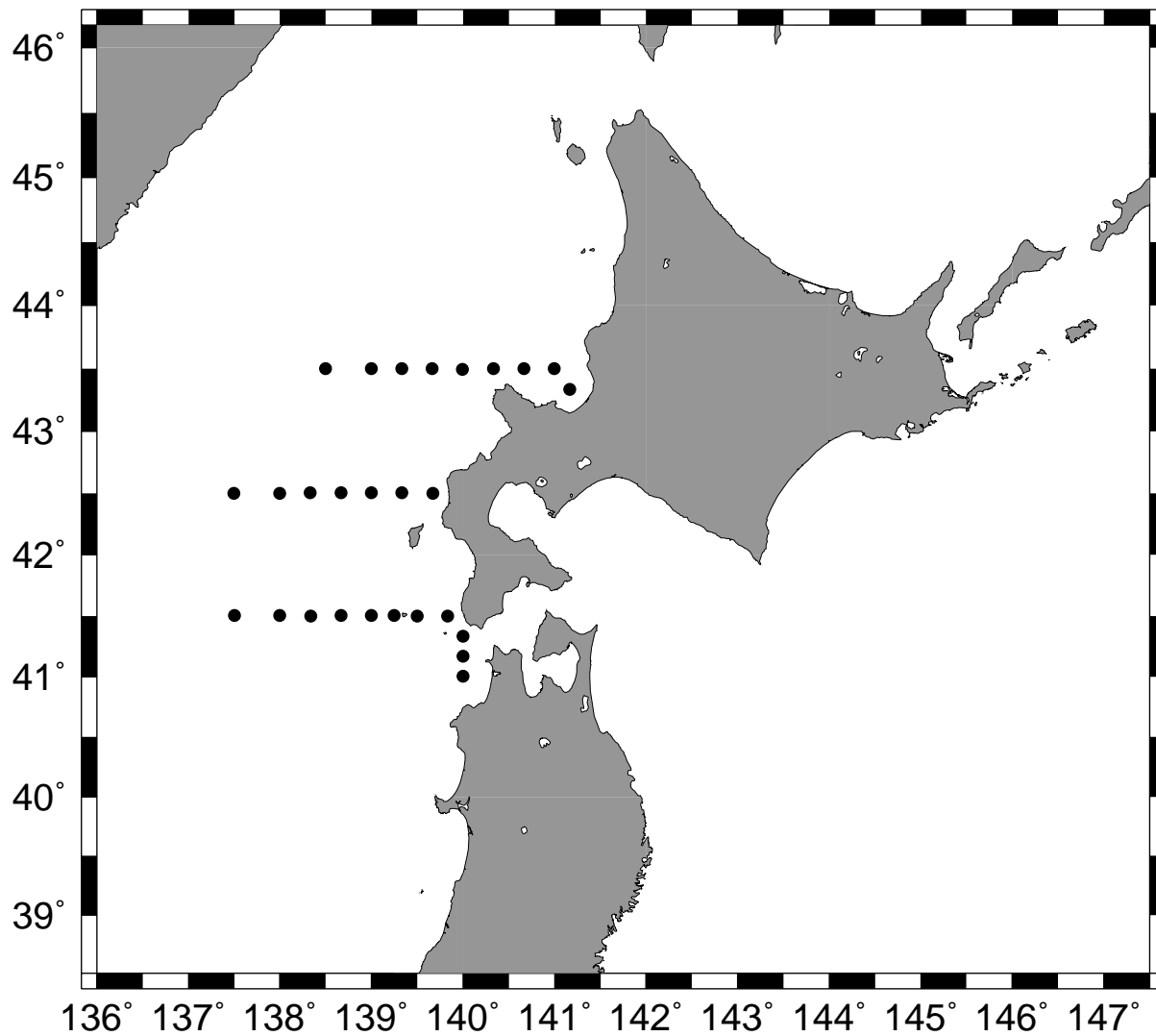


Fig. 10. Location of oceanographic stations covered in January 2000.  
 :Oyasyhio-Maru :Hokuyo-Maru :Hokushin-Maru :Kinsei-Maru

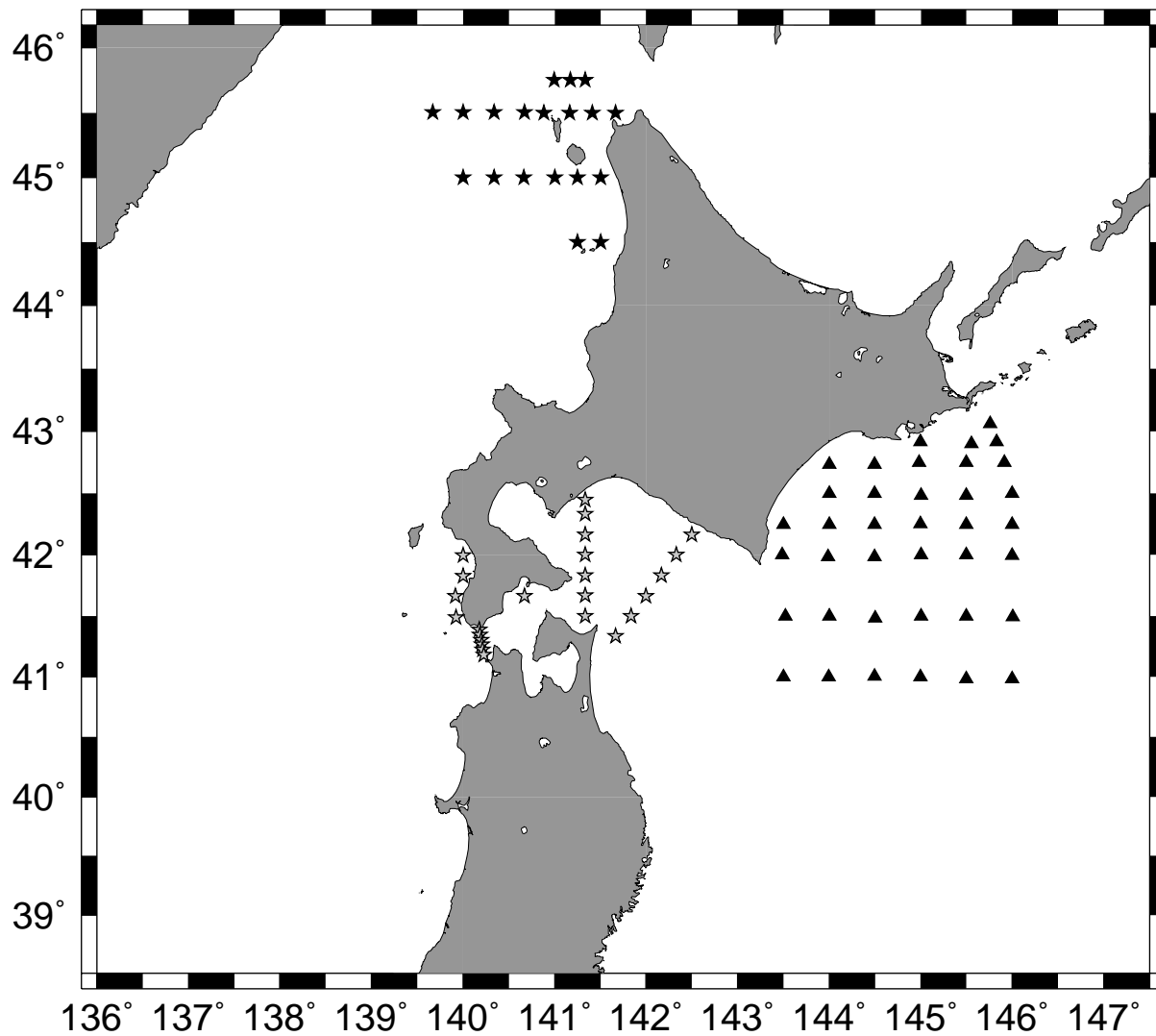


Fig. 11. Location of oceanographic stations covered in February 2000.  
 :Oyasyhio-Maru :Hokuyo-Maruo :Hokushin-Maruo :Kinsei-Maruo

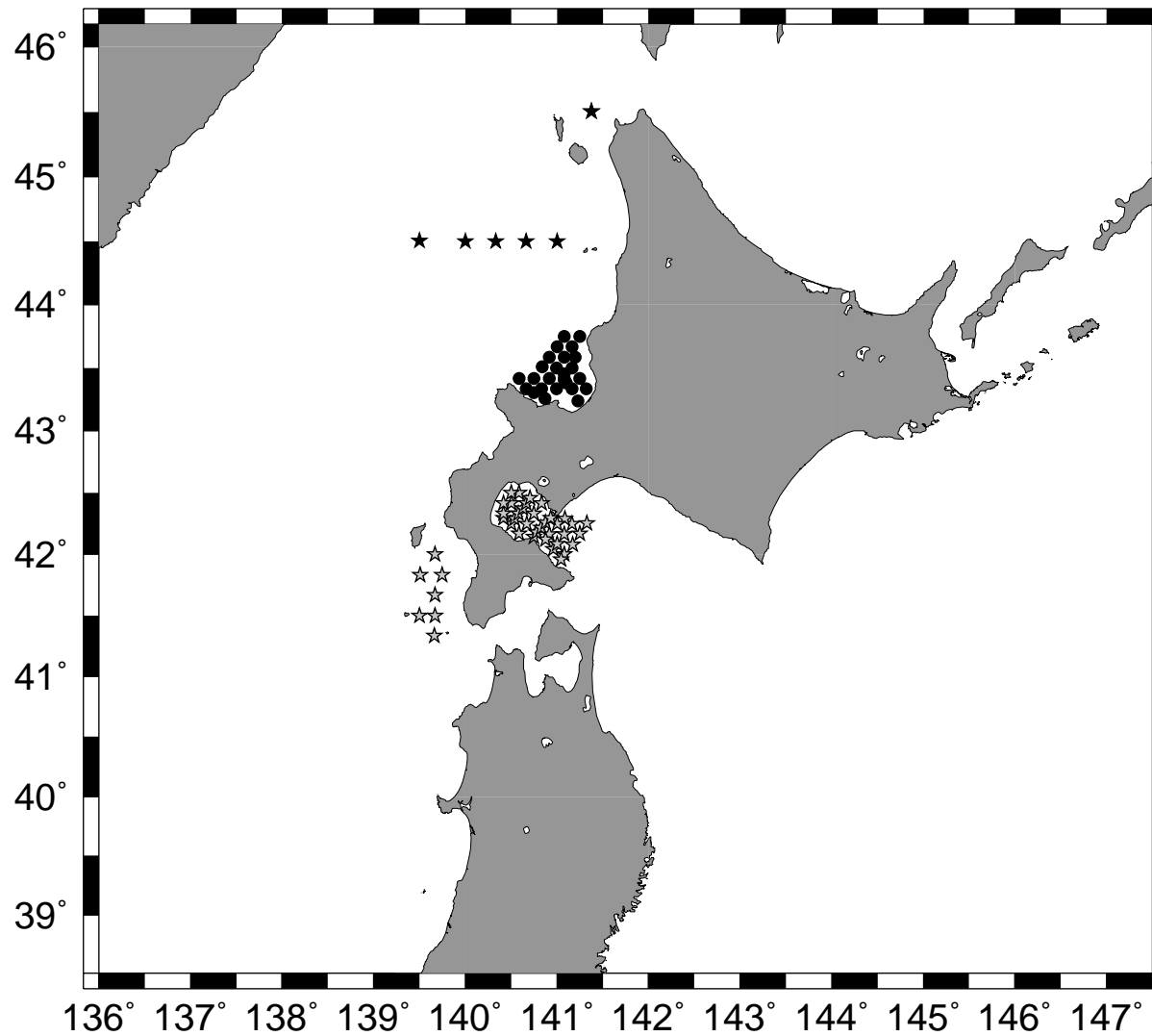


Fig. 12. Location of oceanographic stations covered in March 2000.  
 :Oyasyhio-Marun :Hokuyo-Marun :Hokushin-Marun :Kinsei-Marun

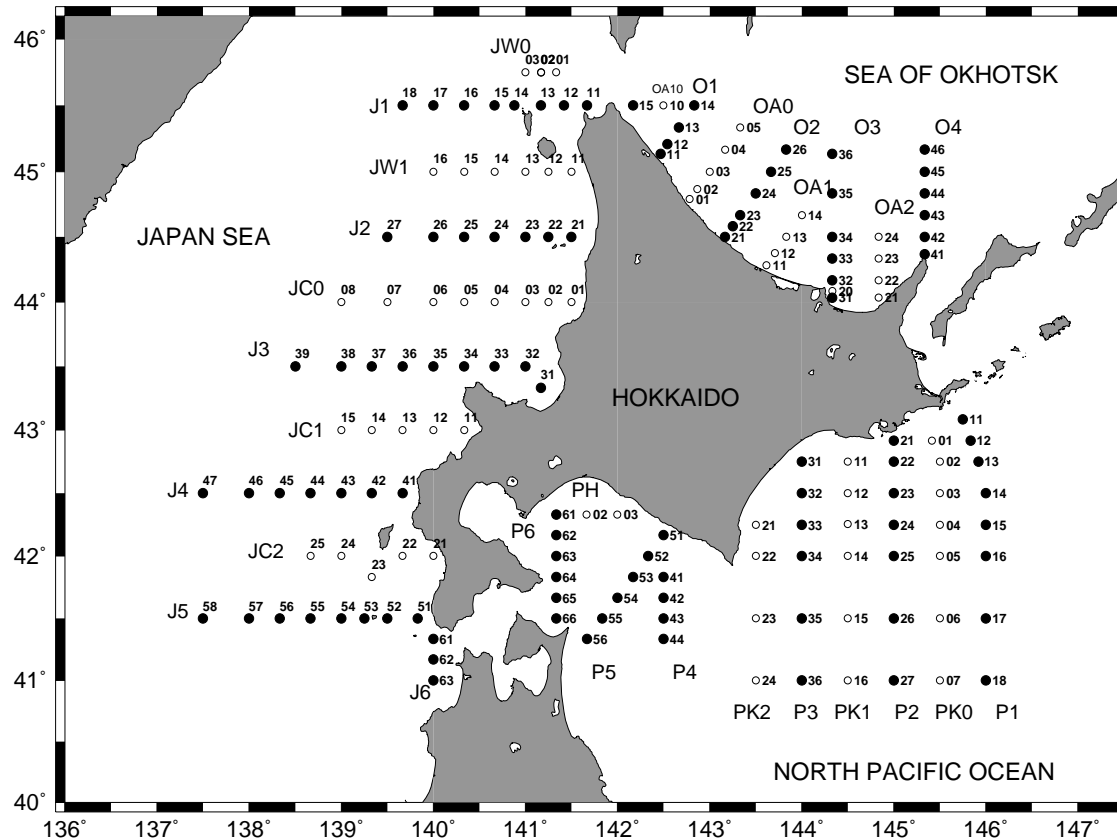


Fig. 13. Periodical observation of environmental research on fishing ground and adjacent waters off Hokkaido.

Observed months: April, June, August, October, December and February except for Sea of Okhotsk (April to December only) and P4-Line (June, August and October only).  
 ●: Routine station    ○: Additional station

## Part I. Summary of Serial Oceanographic Observations

Salinity was determined with Auto-Lab salinometer or CTD systems.

Tables 3 to 6 show results of serial oceanographic observations. Abbreviations used are as follows: LATITUDE, north latitude; LONGITUDE, east longitude; WEATHER, WMO code 4501; AIR TEMP, air temperature in °C; BAR, barometric pressure in hectopascal; WIND DIR, wind direction; WIND FORCE (F), wind force in Beufort scale; WIND SPEED (S), wind speed in m/s; TR, transparency in meters with white Secci disc; COLOR, water color in Forel's scale; DEPTH, water depth in meters measured with an echo-sounder; STND. DEP, standard depth in meters; T, water temperature in °C; S, salinity (PSS-78).

Asterisks ( \* ) at 0m row indicate the value of temperature or salinity with CTD at several meter under the sea surface and N.D. means No Data.

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	CEB01		CEB02		CEB03		J41		J42		J43		J44		J45		J46		J47	
Latitude:N	43-43.6		43-22.9		43-35.6		42-30.0		42-30.2		42-29.9		42-30.1		42-30.0		42-30.1		42-30.0	
Longitude:E	141- 3.6		140-42.6		140-52.4		139-40.0		139-20.2		139- 0.2		138-40.0		138-20.1		138- 0.1		137-30.0	
Date	1999/04/12		1999/04/13		1999/04/15		1999/04/20		1999/04/20		1999/04/21		1999/04/21		1999/04/21		1999/04/21		1999/04/21	
Time(JST)	19:01		20:16		22:33		20:41		23:40		01:46		03:47		05:28		07:12		10:13	
Weather	C		C		B		B		B		B		B		B		B		B	
Air Temp.	9.1		8.2		3.8		7.0		7.3		6.4		6.3		5.2		6.6		11.6	
Bar	1007.5		992.4		1017.4		1020.3		1021.7		1022.4		1022.8		1023.1		1023.6		1024.2	
Wind Dir	SE		SSE		SE		N		N		NW		SW		WSW		SW		CALM	
Wind Spd/F	S 13		S 2		S 7		S 6		S 6		S 3		S 3		S 2		S 2		S 0	
Transparency															19		15			
Depth	295		376		299		1813		3217		3600		3695		3634		3678		3678	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.0*	34.01*	5.3*	33.68*	4.8*	34.02*	8.5	33.432	9.2	34.071	6.5	34.036	6.8	34.051	5.9	34.062	6.2	34.054	5.4	34.064
10m	4.95	34.011	5.26	33.973	4.86	34.019	8.67	33.526	9.36	34.070	6.63	34.033	6.88	34.052	5.37	34.077	6.14	34.055	5.07	34.069
20m	4.95	34.013	5.13	34.031	4.86	34.020	8.72	33.839	9.27	34.069	6.52	34.036	6.15	34.064	4.92	34.069	6.09	34.055	4.31	34.073
30m	4.95	34.016	4.75	34.044	4.86	34.020	8.66	33.886	9.17	34.067	5.35	34.064	5.68	34.062	4.62	34.076	5.28	34.065	3.89	34.079
50m	4.90	34.035	4.58	34.041	4.51	34.042	8.77	33.969	7.70	34.056	4.08	34.085	3.35	34.106	3.15	34.106	4.39	34.085	3.17	34.078
75m	4.52	34.039	4.50	34.042	4.32	34.041	8.14	34.059	7.15	34.062	3.15	34.084	2.40	34.099	2.49	34.094	3.22	34.090	2.46	34.088
100m	4.40	34.048	4.35	34.045	4.00	34.052	7.03	34.068	6.01	34.085	2.28	34.085	2.08	34.093	2.20	34.093	2.82	34.089	2.15	34.088
125m	4.11	34.059	4.25	34.047	3.71	34.067	5.99	34.073	4.27	34.096	2.07	34.088	1.89	34.092	1.88	34.097	2.39	34.083	1.87	34.090
150m	3.05	34.085	4.00	34.041	3.10	34.084	5.15	34.057	2.87	34.085	1.63	34.082	1.70	34.091	1.69	34.093	2.12	34.090	1.69	34.090
200m	2.15	34.091	3.07	34.085	2.62	34.089	2.48	34.079	1.96	34.076	1.30	34.085	1.40	34.091	1.33	34.091	1.69	34.092	1.37	34.091
250m	1.40	34.087	1.98	34.091	2.25	34.085	1.63	34.080	1.53	34.082	1.13	34.084	1.23	34.091	1.19	34.089	1.32	34.089	1.19	34.090
300m			1.32	34.083			1.24	34.082	1.26	34.086	0.98	34.086	1.08	34.090	1.04	34.087	1.15	34.090	1.07	34.090
400m							0.90	34.082	0.88	34.078	0.80	34.085	0.87	34.086	0.78	34.084	0.91	34.087	0.87	34.087
500m							0.66	34.078	0.62	34.075	0.61	34.079	0.64	34.080	0.60	34.078	0.74	34.082	0.65	34.080
600m							0.50	34.075	0.48	34.074	0.48	34.076					0.56	34.078		
700m							0.42	34.074	0.39	34.073	0.41	34.075					0.45	34.076		
800m							0.36	34.073	0.33	34.073	0.35	34.074					0.36	34.075		
900m							0.31	34.073									0.31	34.074		
1000m							0.28	34.072									0.27	34.073		

Table 3-1



Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	J58		J57		J56		J55		J54		J53		J52		J63		J62		J61	
Latitude:N	41-30.0		41-30.0		41-29.9		41-30.0		41-30.0		41-30.1		41-30.0		41- 0.1		41- 9.9		41-20.0	
Longitude:E	137-30.2		138- 0.0		138-19.9		138-40.0		139- 0.0		139-15.0		139-29.9		140- 0.0		140- 0.0		139-59.9	
Date	1999/04/21		1999/04/21		1999/04/21		1999/04/21		1999/04/21		1999/04/22		1999/04/22		1999/04/22		1999/04/22		1999/04/22	
Time(JST)	16:06		18:22		20:03		21:47		23:30		00:52		02:15		05:48		07:06		08:11	
Weather	B		B		BC		BC		BC		BC		BC		B		B		B	
Air Temp.	7.9		2		7.2		8.1		8.0		8.4		8.1		9.1		10.1		12.2	
Bar	1022.8		7.9		1021.9		1021.1		1021.0		1020.2		1020.0		1018.8		1019.5		1020.0	
Wind Dir	WSW		SW		SSW		SSW		SSW		S		CALM		SE		SSE		SSE	
Wind Spd/F	S 4		S 4		S 4		S 3		S 3		S 2		S 0		S 4		S 4		S 2	
Transparency	7		14												12		10		11	
Depth	3665		3682		3686		3073		1338		1135		1660		507		112		224	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	7.6	34.030	6.1	34.065	9.0	34.045	9.6	33.972	9.5	33.855	9.4	33.932	9.2	33.967	10.5	32.977	10.1	33.718	9.2	34.005
10m	6.11	34.074	5.55	34.072	8.90	34.051	9.59	33.975	9.66	33.854	9.55	33.931	9.44	33.967	10.60	33.011	9.73	33.929	9.00	33.994
20m	5.24	34.064	5.16	34.070	7.45	34.006	9.45	33.990	9.30	33.895	9.27	33.962	8.91	33.946	9.86	33.677	9.19	33.938	8.89	34.009
30m	4.72	34.068	4.88	34.067	7.13	34.032	9.30	34.030	9.20	33.899	9.28	33.966	8.82	33.942	9.55	33.812	9.11	33.941	8.85	34.014
50m	3.81	34.076	3.72	34.081	6.33	34.033	9.11	34.038	8.85	33.918	9.23	33.979	8.81	33.943	9.43	33.892	8.71	33.937	8.52	34.030
75m	3.47	34.071	3.31	34.081	4.38	34.086	8.53	33.995	8.69	33.911	8.80	33.946	8.64	33.933	9.62	34.014	8.60	33.965	7.53	34.026
100m	2.59	34.094	2.29	34.081	2.85	34.083	8.14	34.039	8.75	33.985	8.45	33.935	8.62	33.964	9.51	34.017			6.55	34.053
125m	2.17	34.088	1.89	34.081	2.40	34.081	6.73	34.061	8.69	34.019	8.62	34.011	8.28	33.957	9.30	34.032			5.03	34.079
150m	1.99	34.089	1.62	34.082	1.96	34.078	5.77	34.086	8.31	34.003	8.06	33.994	8.28	34.029	9.14	34.046			4.62	34.072
200m	1.66	34.090	1.39	34.089	1.28	34.082	3.04	34.093	6.87	34.077	6.82	34.065	6.66	34.030	8.79	34.064			4.54	34.067
250m	1.50	34.088	1.21	34.090	1.16	34.084	1.92	34.074	4.17	34.100	3.45	34.121	4.48	34.095	2.41	34.094				
300m	1.26	34.087	1.04	34.089	1.09	34.089	1.46	34.077	2.01	34.085	2.03	34.082	2.59	34.087	1.35	34.082				
400m	1.00	34.088	0.81	34.084	0.83	34.086	0.98	34.082	1.18	34.082	1.20	34.083	1.39	34.082	0.83	34.075				
500m	0.81	34.084	0.62	34.079	0.62	34.078	0.73	34.077	0.73	34.078	0.83	34.079	0.88	34.080						
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-2

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	J51		JC22		JC11		JC12		JC13		JC14		JC15		J39		J38		J37	
Latitude:N	41-29.9		42- 1.3		42-59.9		43- 0.1		43- 0.0		43- 0.0		43- 0.1		43-30.0		43-30.0		43-30.1	
Longitude:E	139-50.0		139-40.2		140-20.1		140- 0.0		139-40.0		139-20.1		139- 0.1		138-30.1		139- 0.0		139-20.1	
Date	1999/04/22		1999/04/22		1999/04/22		1999/04/22		1999/04/22		1999/04/23		1999/04/23		1999/04/23		1999/04/23		1999/04/23	
Time(JST)	09:30		12:50		19:16		21:31		23:24		01:17		03:00		06:43		09:01		10:55	
Weather	B		BC		BC		BC		BC		BC		BC		F		F		F	
Air Temp.	14.0		13.3		10.3		9.9		9.3		9.1		9.2		6.7		7.8		9.4	
Bar	1019.1		1017.4		1014.1		1013.7		1013.2		1012.7		1012.1		1012.6		1013.4		1013.6	
Wind Dir	SE		SSE		E		SSW		S		S		S		WSW		SW		W	
Wind Spd/F	S 4		S 4		S 3		S 4		S 9		S 9		S 9		S 4		S 5		S 5	
Transparency	7		10														12		17	
Depth	1352		858		517		1243		3265		2330		3560		3413		3434		3195	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.2	34.002	8.4	33.948	9.5	33.861	8.0	34.006	7.3	34.041	7.9	34.007	7.9	34.002	4.1	34.064	6.2	34.044	6.1	34.036
10m	9.86	34.003	7.39	33.960	8.74	33.976	7.83	34.003	7.25	34.012	7.85	34.005	7.90	34.000	4.00	34.063	6.11	34.044	5.77	34.034
20m	9.88	34.030	5.48	34.037	8.60	33.969	7.38	34.010	6.91	34.021	7.85	34.005	7.90	34.001	3.90	34.067	5.97	34.042	5.68	34.036
30m	9.61	34.039	5.05	34.031	8.35	33.953	6.84	34.023	6.66	34.015	7.85	34.005	7.52	34.016	2.83	34.093	5.75	34.035	4.16	34.073
50m	9.13	34.050	4.46	34.039	8.36	33.991	5.96	34.045	5.25	34.041	7.77	34.005	6.89	34.009	2.38	34.090	4.42	34.051	3.40	34.076
75m	8.60	34.054	3.62	34.065	7.90	33.983	5.12	34.037	5.18	34.036	6.90	34.009	6.58	34.017	2.09	34.090	3.39	34.078	2.61	34.091
100m	8.02	34.017	2.89	34.077	6.77	34.013	4.48	34.062	5.06	34.045	6.47	34.020	5.98	34.030	1.88	34.091	2.74	34.085	2.22	34.093
125m	7.67	34.070	2.16	34.080	5.78	34.039	3.62	34.071	4.38	34.063	5.51	34.049	5.30	34.050	1.70	34.092	2.43	34.085	1.90	34.092
150m	6.33	34.015	1.91	34.078	4.58	34.061	3.01	34.076	3.58	34.075	5.01	34.041	4.99	34.041	1.52	34.091	2.17	34.086	1.69	34.090
200m	5.00	34.075	1.53	34.078	3.17	34.075	2.16	34.078	2.43	34.081	3.28	34.078	3.30	34.081	1.33	34.088	1.72	34.091	1.39	34.093
250m	3.05	34.087	1.28	34.078	2.23	34.082	1.49	34.082	1.62	34.083	2.30	34.081	2.12	34.083	1.10	34.087	1.35	34.087	1.23	34.090
300m	2.25	34.081	1.13	34.078	1.47	34.081	1.22	34.083	1.32	34.083	1.71	34.084	1.51	34.083	0.90	34.085	1.09	34.085	1.05	34.087
400m	1.40	34.079	1.03	34.078	0.97	34.078	0.80	34.079	0.98	34.083	1.17	34.084	1.05	34.082	0.74	34.081	0.87	34.082	0.79	34.082
500m	1.04	34.078	0.71	34.076			0.57	34.074	0.69	34.078	0.90	34.084	0.79	34.081	0.60	34.077	0.61	34.076	0.58	34.077
600m							0.47	34.073	0.51	34.074	0.59	34.076	0.59	34.076						
700m																				
800m																				
900m																				
1000m																				

Table 3-3

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	J36		J35		J34		J33		JC05		JC06		JC07		JC08		J27		J26	
Latitude:N	43-30.1		43-30.0		43-30.1		43-30.0		43-59.9		44- 0.0		44- 0.1		44- 0.0		44-30.0		44-30.0	
Longitude:E	139-40.0		140- 0.1		140-20.1		140-40.1		140-20.1		140- 0.1		139-30.1		139- 0.1		139-30.0		140- 0.0	
Date	1999/04/23		1999/04/23		1999/04/23		1999/04/23		1999/04/24		1999/04/24		1999/04/24		1999/04/24		1999/04/24		1999/04/24	
Time(JST)	12:34		14:11		16:18		22:31		04:28		06:06		08:20		10:35		14:12		16:36	
Weather	C		C		F		F		F		C		F		F		F		B	
Air Temp.	9.7		8.2		8.7		7.0		6.2		5.9		6.5		5.5		8.8		12.0	
Bar	1014.0		1013.5		1013.2		1015.6		1016.0		1016.6		1017.4		1019.0		1017.3		1016.9	
Wind Dir	WNW		NNW		NNW		ENE		NNE		NE		NE		NNE		CALM		CALM	
Wind Spd/F	S 2		S 3		S 4		S 2		S 3		S 6		S 5		S 5		S 0		S 0	
Transparency	11		9		8						13		13		14		14		14	
Depth	2052		1250		647		690		518		467		1367		3356		509		573	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.0	34.048	8.6	33.990	7.9	34.021	8.0	34.002	5.9	34.024	5.6	34.000	5.9	34.018	5.1	34.055	4.7	34.094	6.2	34.048
10m	5.52	34.052	8.40	33.995	7.94	34.019	7.96	33.989	5.84	34.024	5.52	34.001	5.75	34.018	4.67	34.057	4.43	34.059	5.51	34.049
20m	5.41	34.048	8.09	34.009	7.94	34.019	7.41	33.958	5.72	34.026	5.46	34.003	5.73	34.019	4.20	34.069	4.28	34.060	4.63	34.066
30m	5.33	34.050	7.64	34.025	7.93	34.020	6.89	33.943	5.19	34.039	5.36	34.002	5.57	34.019	4.18	34.068	4.20	34.061	4.54	34.057
50m	3.76	34.079	6.06	34.046	6.44	34.067	6.75	33.945	4.89	34.040	5.04	34.003	4.79	34.038	3.12	34.087	3.50	34.082	4.09	34.061
75m	2.70	34.092	5.21	34.044	5.41	34.070	5.79	33.978	4.84	34.035	4.71	34.035	4.53	34.048	2.47	34.095	2.81	34.088	3.30	34.078
100m	2.32	34.093	4.48	34.071	4.59	34.075	5.37	34.036	4.82	34.036	4.47	34.042	3.98	34.062	2.30	34.094	2.54	34.087	2.59	34.090
125m	2.09	34.098	3.44	34.079	3.97	34.071	5.14	34.037	4.77	34.036	4.36	34.046	3.40	34.074	2.24	34.096	2.10	34.090	2.24	34.093
150m	2.03	34.097	2.89	34.081	3.14	34.080	4.63	34.023	4.66	34.036	4.08	34.061	2.76	34.085	2.16	34.095	1.78	34.090	1.98	34.092
200m	1.52	34.087	2.12	34.093	2.29	34.085	4.05	34.051	4.43	34.047	2.75	34.086	1.86	34.085	1.85	34.095	1.39	34.089	1.52	34.085
250m	1.18	34.086	1.54	34.088	1.67	34.081	2.19	34.093	3.56	34.078	1.86	34.088	1.46	34.084	1.57	34.094	1.11	34.083	1.13	34.082
300m	1.04	34.084	1.42	34.092	1.32	34.080	1.29	34.082	2.17	34.093	1.32	34.084	1.10	34.083	1.30	34.086	0.96	34.082	0.90	34.079
400m	0.83	34.083	0.94	34.080	0.95	34.077	0.91	34.079	1.06	34.083	0.89	34.079	0.75	34.078	0.82	34.079	0.69	34.078	0.63	34.075
500m	0.63	34.077	0.65	34.076	0.66	34.075	0.68	34.075	0.44	34.072			0.53	34.074	0.65	34.076			0.44	34.072
600m			0.50	34.073			0.57	34.074												
700m																				
800m																				
900m																				
1000m																				

Table 3-4

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199905		199905			
Station No	J25		JC04		JC03		JC02		JC01		J32		J31		JH01		CIS118		CIS124	
Latitude:N	44-29.9		43-59.9		43-59.9		44- 0.1		44- 0.0		43-29.9		43-20.0		43-21.9		43-15.5		43-22.5	
Longitude:E	140-18.9		140-40.0		141- 0.2		141-15.0		141-27.1		140-59.9		141-10.0		141-24.0		141-14.2		141-12.3	
Date	1999/04/24		1999/04/24		1999/04/24		1999/04/25		1999/04/25		1999/04/25		1999/04/25		1999/04/25		1999/05/10		1999/05/10	
Time(JST)	18:09		21:16		22:59		00:19		01:21		09:33		11:41		12:54		11:51		13:24	
Weather	B		B		B		B		B		BC		BC		BC		BC		BC	
Air Temp.	8.6		7.9		8.3		8.8		8.8		13.0		13.6		15.1		12.1		12.2	
Bar	1017.0		1018.6		1019.2		1019.5		1019.5				1019.5		1019.0		1011.9		1011.8	
Wind Dir	S		SE		CALM		E		ESE		CALM		NNE		NNE		NNW		nnw	
Wind Spd/F	S 3		S 2		S 0		S 2		S 4		S 0		S 2		S 1		S 6		S 6	
Transparency	14										8		7		4					
Depth	287		573		405		169		61				39		22		25		42	
Equipment	CTD		CTD		CTD		CTD		CTD				CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.4	34.033	7.0	34.021	6.5	33.981	7.9	29.836	8.1	30.159	7.5	33.982	9.1	32.378	9.4	20.680	9.6	32.20*	10.2	31.90*
10m	5.65	34.036	6.28	34.023	5.78	34.011	6.29	33.616	7.08	N.D.	7.41	33.993	7.69	33.852	5.68	33.631	8.91	33.257	8.54	33.837
20m	5.53	34.034	6.21	34.020	5.58	34.001	6.16	33.928	6.24	N.D.	6.02	34.006	6.82	33.855			8.61	33.384	7.96	33.866
30m	4.75	34.046	5.25	34.038	5.16	34.009	6.14	33.990	5.90	N.D.	6.20	33.997	6.18	33.827						
50m	4.51	34.045	4.83	34.035	4.86	34.020	4.97	34.012	5.26	N.D.	5.28	34.027								
75m	3.95	34.062	4.83	34.038	4.37	34.043			5.20	34.040										
100m	3.57	34.070	4.77	34.035	3.95	34.060														
125m	3.15	34.080	4.68	34.034	3.36	34.074														
150m	2.52	34.087	4.50	34.047	3.09	34.077														
200m	1.85	34.090	3.51	34.079	2.81	34.085														
250m	1.37	34.084	2.09	34.090	2.02	34.089														
300m			1.37	34.086	1.44	34.086														
400m			0.83	34.078																
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-5

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	CIS125		CIS126		CIS127		CIS107		CIS101		CIS104		CIS102		CIS108		CIS105		CIS103	
Latitude:N	43-23.5		43-24.1		43-26.7		43-25.0		43-25.0		43-30.0		43-35.0		43-34.9		43-40.0		43-45.0	
Longitude:E	141- 9.3		141- 8.0		141- 5.7		141- 5.0		141-15.0		141-10.1		141-12.1		141- 5.1		141-10.0		141-15.1	
Date	1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10	
Time(JST)	14:19		14:57		15:47		16:23		17:13		17:54		18:29		19:08		19:52		20:34	
Weather	BC		BC		BC		C		BC		C		C		C		C		C	
Air Temp.	10.2		9.9		9.8		9.2		10.1		8.0		7.8		7.2		7.2		7.0	
Bar	1011.5		1011.3		1011.0		1011.0		1010.7		1011.1		1011.4		1011.6		1012.0		1012.0	
Wind Dir	nw		NW		NW		NW		NW		NW		NW		NNW		NNW		NNW	
Wind Spd/F	S 5		S 5		S 4		S 3		S 5		S 4		S 4		S 6		S 5		S 7	
Transparency																				
Depth	48		57		69		63		44		62		64		92		86		117	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.6	33.27*	9.9	33.32*	10.0	33.12*	9.7	32.89*	10.1	32.79*	9.4	32.13*	9.6	33.25*	9.6	32.15*	10.0	32.01*	9.5	32.49*
10m	8.73	33.869	8.75	33.868	8.73	33.873	8.85	33.865	8.98	33.270	8.70	33.864	8.60	33.820	8.87	33.924	8.63	33.933	8.79	33.586
20m	8.45	33.921	8.38	33.924	8.34	33.884	8.61	33.877	8.51	33.730	8.31	33.883	8.05	33.864	8.58	33.923	8.49	33.990	8.09	33.771
30m	8.30	33.918	8.20	33.938	8.27	33.893	8.46	33.921	7.43	33.927	8.14	33.892	7.78	33.882	8.57	33.945	8.11	34.016	8.03	33.807
50m			7.40	33.989	7.57	33.986	7.47	34.000			6.96	33.992	6.08	34.007	7.91	34.035	6.92	34.006	7.63	33.895
75m															6.03	34.015	5.53	34.025	6.17	34.004
100m																			5.65	34.015
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-6

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	CIS109		CIS112		CIS115		CIS111		CIS117		CIS114		CIS119		CIS121		CIS120		CIS122	
Latitude:N	43-45.1		43-40.1		43-35.1		43-30.1		43-30.1		43-25.0		43-24.9		43-25.0		43-20.0		43-18.0	
Longitude:E	141- 5.2		141- 0.0		140-55.0		141- 0.1		140-50.1		140-55.0		140-45.1		140-35.0		140-39.9		140-44.9	
Date	1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11	
Time(JST)	21:25		22:15		23:08		23:52		00:43		01:34		02:20		03:10		03:55		04:36	
Weather	C		C		BC		BC		BC		BC		BC		C		C		C	
Air Temp.	6.8		6.6		6.9		6.8		7.1		7.2		7.6		8.3		8.2		8.8	
Bar	1012.0		1012.0		1011.8		1012.0		1011.5		1011.5		1011.5		1011.5		1011.0		1011.1	
Wind Dir	N		NW		NW								SSW		SSW		SSE			
Wind Spd/F	S 3		S 2		S 2								S 2		S 2		S 4			
Transparency																				
Depth	279		314		129		96		467		88		164		191		109		77	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.5	33.72*	9.7	33.90*	9.7	33.86*	9.7	33.58*	9.6	33.71*	9.6	33.57*	9.5	33.68*	9.9	33.63*	9.6	33.89*	9.5	33.87*
10m	9.61	33.896	9.44	33.899	9.07	33.936	9.65	33.702	9.51	33.864	9.53	33.716	9.32	33.781	9.77	33.670	9.70	33.898	9.21	33.893
20m	8.84	33.924	8.56	33.947	8.88	33.935	9.06	33.806	9.18	33.898	8.99	33.829	9.01	33.849	9.41	33.718	8.92	33.895	8.84	33.960
30m	8.25	33.975	8.41	33.979	8.36	33.968	9.02	33.872	8.81	33.942	8.94	33.871	8.87	33.901	8.97	33.904	8.81	33.910	8.72	33.967
50m	6.80	34.044	7.31	34.035	7.69	33.996	8.72	34.001	8.36	34.015	8.74	33.987	8.84	33.938	8.53	34.004	8.78	33.972	8.62	33.993
75m	5.63	34.065	5.97	34.062	5.81	34.055	7.21	34.012	6.95	34.023	7.72	34.004	8.79	34.014	6.97	34.007	8.20	34.011		
100m	5.09	34.038	4.98	34.075	5.25	34.037			5.70	34.030			6.64	34.027	5.48	34.035	4.90	34.058		
125m	4.52	34.054	4.31	34.070					5.15	34.045			5.23	34.035	4.96	34.043				
150m	4.18	34.058	3.84	34.067					3.99	34.072			3.84	34.072	4.39	34.064				
200m	3.00	34.081	3.11	34.074					2.88	34.081										
250m	1.60	34.087	2.37	34.084					2.26	34.083										
300m			1.34	34.083					1.71	34.087										
400m									1.03	34.078										
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-7

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199906		199906		199906		199906		199906	
Station No	CIS116		CIS113		CIS110		CIS106		CIS123		J41		J42		J43		J44		J45	
Latitude:N	43-20.0		43-15.2		43-20.0		43-15.0		43-15.0		42-30.1		42-30.0		42-30.0		42-30.1		42-30.1	
Longitude:E	140-49.8		140-52.6		140-59.9		141- 4.9		141-15.0		139-40.0		139-20.0		139- 0.0		138-40.0		138-20.0	
Date	1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/31		1999/05/31		1999/06/01		1999/06/01		1999/06/01	
Time(JST)	05:10		05:52		06:37		07:23		08:11		19:44		22:52		00:47		02:41		04:18	
Weather	C		C						C		BC		B		BC		BC		BC	
Air Temp.	8.9		8.2						10.3		15.3		15.0		14.0		12.1		11.4	
Bar	1011.0		1011.2						1012.1		1014.3		1014.7		1014.1		1013.7		1013.5	
Wind Dir	S		SW						nnw		S		SSW		S		S		S	
Wind Spd/F	S 3		S 5						S 4		S 8		S 6		S 8		S 7		S 6	
Transparency																				
Depth	83		44						24		1830		3291		3600		3680		3639	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.4	33.86*	9.7	32.90*	9.8	33.49*	10.4	29.06*	9.6	31.27*	13.7	34.072	14.1	34.206	12.9	34.018	10.5	34.026	11.4	34.025
10m	9.27	33.862	9.37	33.640	9.54	33.815	9.27	33.642	8.76	33.314	13.77	34.069	14.15	34.204	12.92	34.019	10.39	34.027	10.89	34.025
20m	8.98	33.891	9.08	33.733	8.95	33.925	8.99	33.666	8.61	33.544	13.66	34.135	13.69	34.194	12.24	34.015	9.88	34.048	7.26	34.094
30m	8.52	33.894	9.01	33.756	8.86	33.962					11.51	34.039	13.37	34.218	10.03	34.157	8.06	34.072	5.29	34.082
50m	8.44	33.971									10.62	34.095	10.48	34.205	8.10	34.132	4.62	34.099	3.63	34.085
75m	7.67	34.014									9.38	34.059	8.97	33.999	5.68	34.102	3.56	34.087	2.52	34.084
100m											8.89	34.061	8.54	34.122	4.24	34.091	2.51	34.089	2.05	34.082
125m											8.09	34.064	6.17	34.101	3.08	34.090	2.14	34.086	1.84	34.088
150m											6.55	34.077	4.34	34.089	2.44	34.087	1.82	34.082	1.70	34.089
200m											3.36	34.087	2.29	34.083	1.97	34.086	1.50	34.087	1.47	34.085
250m											1.99	34.078	1.58	34.076	1.42	34.075	1.24	34.084	1.28	34.087
300m											1.36	34.079	1.12	34.071	1.08	34.072	1.10	34.086	1.11	34.085
400m											0.95	34.077	0.72	34.070	0.75	34.071	0.88	34.083	0.85	34.083
500m											0.74	34.078	0.50	34.070	0.57	34.071	0.67	34.077	0.69	34.078
600m											0.56	34.073	0.40	34.069	0.45	34.072				
700m											0.45	34.071	0.34	34.069	0.38	34.071				
800m											0.37	34.071	0.31	34.069	0.33	34.071				
900m											0.31	34.070								
1000m											0.28	34.070								

Table 3-8

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	J46		J47		J58		J57		J56		J55		J54		J53		J52		J63	
Latitude:N	42-30.0		42-30.0		41-30.0		41-30.0		41-30.1		41-30.0		41-30.0		41-30.0		41-30.0		41- 0.0	
Longitude:E	138- 0.0		137-30.0		137-30.0		138- 0.0		138-19.9		138-39.9		138-59.9		139-14.9		139-30.0		139-59.9	
Date	1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/02		1999/06/02	
Time(JST)	06:13		09:27		15:11		17:27		19:08		20:51		22:33		23:54		01:13		04:50	
Weather	F		BC		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	10.8		13.5		15.5		6		14.3		14.7		15.0		15.7		15.9		5	
Bar	1012.5		1011.8		1010.1		15.3		1009.6		1010.0		1009.6		1009.0		1008.4		15.5	
Wind Dir	S		S		SSE		SSE		SSE		SSE		SSE		SE		SSE		SE	
Wind Spd/F	S 8		S 6		S 5		S 5		S 5		S 4		S 2		S 3		S 1		S 5	
Transparency	8		9		13		10												17	
Depth	3682		3673		3600		3686		3686		3091		1342		1134		1668		572	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.0	34.029	9.7	34.030	12.8	34.053	12.3	34.034	13.0	34.050	13.7	34.011	14.3	34.082	15.6	34.085	14.9	34.053	16.0	33.692
10m	9.50	34.037	9.50	34.030	11.72	34.077	10.67	34.056	12.49	34.076	12.21	34.020	13.57	34.130	14.48	34.143	14.50	34.111	14.87	33.839
20m	7.81	34.060	7.35	34.082	9.57	34.098	9.13	34.056	10.33	34.069	11.80	34.018	13.17	34.129	14.25	34.224	14.34	34.169	14.53	34.130
30m	6.83	34.065	5.49	34.084	8.62	34.076	8.14	34.051	7.97	34.076	10.05	34.082	11.55	34.141	12.75	34.249	12.86	34.218	14.02	34.212
50m	4.12	34.085	2.51	34.099	5.81	34.101	4.59	34.085	4.13	34.091	4.68	34.091	7.84	34.108	10.42	34.193	11.03	34.185	12.33	34.172
75m	1.76	34.093	1.98	34.087	4.66	34.089	3.44	34.082	3.17	34.084	3.33	34.082	6.29	34.094	9.02	34.140	9.54	34.132	10.86	34.126
100m	1.39	34.087	1.70	34.086	3.42	34.087	2.61	34.085	2.50	34.080	2.43	34.075	3.91	34.089	7.71	34.115	8.00	34.104	10.15	34.089
125m	1.28	34.083	1.50	34.085	2.75	34.082	2.03	34.082	1.89	34.080	2.01	34.073	2.63	34.090	6.15	34.100	6.74	34.101	9.57	34.049
150m	1.18	34.083	1.43	34.086	2.24	34.082	1.71	34.078	1.59	34.078	1.66	34.076	2.15	34.082	4.73	34.090	5.31	34.097	9.30	34.086
200m	1.00	34.080	1.19	34.086	1.57	34.078	1.30	34.076	1.33	34.083	1.42	34.077	1.40	34.076	2.51	34.083	3.29	34.081	6.70	34.091
250m	0.90	34.079	1.04	34.084	1.25	34.076	1.11	34.079	1.11	34.082	1.09	34.074	0.97	34.072	1.65	34.077	2.17	34.077	3.04	34.088
300m	0.84	34.081	0.95	34.084	1.08	34.079	0.97	34.078	1.00	34.080	0.90	34.076	0.77	34.070	1.20	34.079	1.45	34.076	1.86	34.078
400m	0.66	34.076	0.76	34.080	0.86	34.081	0.79	34.079	0.83	34.081	0.64	34.074	0.52	34.068	0.85	34.076	0.81	34.073	0.87	34.073
500m	0.53	34.074	0.58	34.075	0.66	34.076	0.60	34.075	0.65	34.076	0.50	34.072	0.41	34.068	0.59	34.072	0.60	34.071		
600m	0.43	34.072																		
700m	0.36	34.072																		
800m	0.32	34.071																		
900m	0.27	34.071																		
1000m	0.25	34.071																		

Table 3-9



Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	J62		J61		J51		JC22		J35		J36		J37		J38		J39		JC08	
Latitude:N	41- 9.9		41-19.9		41-30.0		41-59.9		43-30.0		43-30.0		43-30.0		43-30.1		43-30.0		43-59.9	
Longitude:E	140- 0.1		140- 0.0		139-50.0		139-39.9		140- 0.0		139-40.0		139-20.0		139- 0.1		138-30.1		138-59.9	
Date	1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/03		1999/06/03		1999/06/03	
Time(JST)	06:08		07:12		08:31		11:36		19:48		21:36		23:26		01:14		04:14		07:51	
Weather	BC		C		C		BC		R		R		R		F		F		F	
Air Temp.	7		9		16.5		8		13.6		13.3		11.9		11.4		10.3		10.7	
Bar	15.9		13.6		1007.6		17.5		1004.4		1004.4		1004.4		1004.6		1005.6		1007.0	
Wind Dir	E		ESE		SE		S		S		SSW		SW		SW		W		SW	
Wind Spd/F	S 4		S 6		S 6		S 8		S 7		S 9		S 11		S 7		S 5		S 4	
Transparency	19		14		14		16										7		8	
Depth	107		228		1360		882		1247		2043		3195		3450		3413		3369	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	15.6	34.037	11.7	33.956	15.1	34.170	14.8	34.042	11.1	34.012	12.0	34.059	12.1	34.033	11.5	34.060	10.1	34.024	9.3	34.012
10m	14.91	34.144	11.43	33.961	14.58	34.169	13.98	34.059	10.87	34.030	11.91	34.065	12.23	34.036	11.52	34.061	10.10	34.027	9.17	34.016
20m	13.03	34.242	10.20	34.008	13.94	34.142	13.70	34.117	10.24	34.026	10.35	34.040	12.04	34.029	11.20	34.048	9.95	34.031	8.21	34.039
30m	12.00	34.211	9.63	34.022	13.24	34.166	12.62	34.107	9.26	34.034	9.73	34.024	10.21	33.987	9.69	34.064	7.42	34.055	8.12	34.037
50m	10.98	34.187	9.14	34.032	10.97	34.172	10.12	34.066	7.66	34.056	9.02	34.112	8.22	34.073	8.07	34.039	4.56	34.088	5.42	34.068
75m	9.92	34.128	8.35	34.049	9.92	34.113	9.55	34.054	4.64	34.075	7.08	34.091	6.86	34.035	6.44	34.055	3.00	34.081	3.37	34.084
100m			7.61	34.062	9.26	34.092	8.74	34.052	3.42	34.077	5.35	34.084	5.79	34.047	5.68	34.085	2.51	34.085	2.62	34.098
125m			7.55	34.059	8.23	34.051	7.28	34.068	2.86	34.077	4.39	34.067	5.20	34.045	3.87	34.092	2.04	34.089	2.43	34.095
150m			7.53	34.057	7.58	34.064	4.47	34.093	2.43	34.082	3.59	34.076	4.37	34.073	2.93	34.079	1.79	34.091	2.07	34.090
200m			7.34	34.055	4.88	34.077	2.55	34.080	1.68	34.082	2.15	34.087	2.64	34.082	2.09	34.077	1.51	34.090	1.67	34.090
250m					3.34	34.078	1.94	34.078	1.36	34.084	1.75	34.084	1.85	34.079	1.50	34.078	1.30	34.086	1.38	34.088
300m					2.57	34.079	1.21	34.079	1.15	34.081	1.39	34.082	1.41	34.079	1.24	34.081	1.08	34.085	1.11	34.081
400m					1.14	34.076	0.72	34.073	0.88	34.081	0.95	34.082	0.95	34.078	0.86	34.079	0.83	34.081	0.88	34.080
500m					0.70	34.072	0.58	34.071	0.62	34.073	0.70	34.075	0.70	34.075	0.68	34.076	0.62	34.075	0.64	34.074
600m															0.52	34.073				
700m																				
800m																				
900m																				
1000m																				

Table 3-10

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	J27		J26		J25		J24		J23		J22		J21		J34		J33		J32	
Latitude:N	44-30.0		44-30.1		44-30.1		44-30.0		44-29.3		44-29.9		44-30.0		43-30.1		43-29.9		43-29.9	
Longitude:E	139-30.0		139-59.9		140-20.0		140-39.9		140-58.2		141-14.0		141-29.9		140-20.1		140-39.9		140-59.9	
Date	1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/04		1999/06/04		1999/06/04	
Time(JST)	11:25		13:59		15:34		17:06		18:26		19:45		20:55		04:32		06:29		08:12	
Weather	F		F		C		C		F		C		F		BC		F		BC	
Air Temp.	12.7		11.3		11.9		12.0		11.3		11.6		12.2		13.1		13.1		6	
Bar	1007.0		1007.6		1008.0		1008.0		1008.7		1009.5		1010.4		1009.2		1009.6		14.1	
Wind Dir	WSW		SW		SW		SW		SSW		S		SSE		SW		E		SSE	
Wind Spd/F	S 4		S 4		S 5		S 5		S 4		S 4		S 4		S 4		S 3		S 4	
Transparency	10		8		11		10		13						12		14		18	
Depth	500		567		248		143		256		122		78		646		693		96	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.7	33.942	10.3	33.959	10.7	33.999	10.3	33.983	11.5	33.909	12.1	33.892	11.3	33.687	12.5	34.034	13.2	33.954	13.1	33.920
10m	9.53	33.943	9.96	33.971	10.49	34.001	10.22	33.980	11.63	33.907	12.17	33.906	10.64	33.771	12.57	34.038	13.04	33.952	12.47	33.942
20m	8.85	33.965	9.40	34.011	9.81	34.009	9.12	33.991	10.80	34.011	11.62	33.917	10.40	33.755	12.57	34.040	12.60	33.992	11.42	33.978
30m	8.42	33.972	8.95	34.009	9.63	34.009	8.90	33.978	10.12	34.031	10.85	33.875	10.25	33.763	11.77	34.182	12.55	34.096	10.56	33.946
50m	4.85	34.044	5.94	34.076	8.08	34.072	6.49	34.036	8.94	34.078	10.56	33.981	9.61	33.897	9.95	34.154	11.44	34.047	10.24	33.992
75m	4.72	34.035	4.82	34.078	5.88	34.052	5.23	34.040	7.14	34.079	9.32	33.985			9.19	34.109	10.53	34.004	9.07	34.047
100m	4.44	34.041	4.13	34.064	5.16	34.027	4.40	34.046	5.97	34.064	8.25	33.925			8.13	34.080	10.20	34.006		
125m	4.00	34.059	3.47	34.072	4.64	34.045	3.83	34.064	5.19	34.046					6.62	34.034	9.45	34.099		
150m	3.11	34.081	3.11	34.072	4.08	34.057			4.58	34.057					6.02	34.074	7.89	34.090		
200m	2.08	34.088	2.14	34.082	3.17	34.073			3.51	34.069					3.86	34.087	3.77	34.077		
250m	1.57	34.084	1.62	34.083											2.06	34.087	1.56	34.087		
300m	1.23	34.079	1.20	34.079											1.54	34.083	1.19	34.081		
400m	0.93	34.082	0.84	34.076											0.89	34.076	0.79	34.074		
500m			0.66	34.073											0.56	34.071	0.58	34.070		
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-11

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	JH01		J31		JC11		JC12		JC13		JC14		JC15		JC01		JC02		JC03	
Latitude:N	43-21.9		43-20.0		42-59.9		43- 0.1		43- 0.1		43- 0.0		43- 0.1		44- 0.0		44- 0.1		44- 0.0	
Longitude:E	141-23.4		141- 9.9		140-19.8		140- 0.0		139-40.0		139-20.1		139- 0.1		141-30.0		141-15.1		141- 0.3	
Date	1999/06/04		1999/06/04		1999/06/07		1999/06/07		1999/06/07		1999/06/07		1999/06/07		1999/06/09		1999/06/09		1999/06/09	
Time(JST)	10:05		11:06		15:30		17:38		19:19		21:01		22:46		14:25		15:37		16:55	
Weather	B		BC		R		C		C		C		C		B		B		BC	
Air Temp.	18.6		7		10		13.8		10		13.9		13.0		1		15.1		14.4	
Bar	1012.3		21.6		14.1		1004.9		14.1		1003.9		1004.7		16.4		1009.1		1008.7	
Wind Dir	SSE		E		SSE		SE		ESE		ENE		NNW		SW		SW		WSW	
Wind Spd/F	S 2		S 3		S 6		S 7		S 6		S 5		S 7		S 9		S 8		S 11	
Transparency	7		7		12		15								10		14		14	
Depth	22		39		503		1269		3260		2339		3543		51		162		403	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.8	32.409	14.1	33.250	14.6	34.097	14.1	34.054	14.6	34.063	13.1	34.030	13.0	34.040	15.1	31.697	15.1	34.044	14.4	34.120
10m	10.60	33.221	12.64	33.898	14.68	34.112	14.26	34.054	14.85	34.064	12.54	34.053	13.10	34.040	12.30	33.156	12.27	33.799	14.40	34.116
20m			12.13	33.966	14.55	34.109	14.26	34.056	12.44	34.143	11.22	34.075	11.27	34.042	11.87	33.982	11.94	33.989	12.82	34.144
30m			11.22	33.977	13.76	34.108	13.53	34.076	11.44	34.126	10.95	34.067	9.18	34.070	11.05	33.938	11.50	34.059	11.77	34.084
50m					11.49	34.099	11.15	34.126	9.72	34.155	7.36	34.123	4.11	34.108			9.95	34.154	10.57	34.079
75m					9.48	34.079	9.94	34.109	7.98	34.106	5.08	34.097	2.91	34.091			8.00	34.074	7.78	34.058
100m					8.22	34.075	9.25	34.068	7.04	34.100	3.68	34.089	2.32	34.082			6.46	34.053	5.24	34.068
125m					6.21	34.096	8.40	34.096	4.78	34.093	2.87	34.087	1.93	34.078			5.02	34.065	4.81	34.076
150m					4.82	34.073	6.50	34.092	3.58	34.085	2.14	34.085	1.63	34.079			4.55	34.048	4.01	34.081
200m					2.54	34.084	3.61	34.082	2.28	34.082	1.62	34.083	1.37	34.085					2.59	34.079
250m					1.61	34.080	1.98	34.089	1.59	34.080	1.35	34.087	1.16	34.084					1.74	34.085
300m					1.29	34.079	1.45	34.083	1.22	34.082	1.07	34.082	1.02	34.082					1.31	34.080
400m					0.74	34.075	1.02	34.080	0.88	34.079	0.78	34.077	0.80	34.080						
500m							0.75	34.076	0.66	34.074	0.59	34.074	0.58	34.074						
600m							0.55	34.072	0.51	34.072	0.46	34.071	0.46	34.072						
700m																				
800m																				
900m																				
1000m																				

Table 3-12

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199906		199906		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	JS01		JS01A		CSR101		CSR102		CSR103		CSR104		CSR105		CSR106		CSR107		CSR108	
Latitude:N	43-25.3		43-25.2		42-58.6		42-29.8		42-29.9		42-34.1		42-29.9		42-59.9		42-58.9		43- 0.0	
Longitude:E	140-46.2		140-46.2		140- 0.2		139-39.8		139- 0.1		138-10.7		137-40.0		138- 0.0		138-37.9		139-19.9	
Date	1999/06/10		1999/06/10		1999/06/22		1999/06/23		1999/06/24		1999/06/25		1999/06/26		1999/06/26		1999/06/26		1999/06/27	
Time(JST)	13:43		21:56		18:41		18:08		06:41		18:02		06:30		10:02		17:59		07:14	
Weather	BC		BC		C		BC		R		C		C		C		F		C	
Air Temp.	5		16.0		18.4		22.2		18.0		16.7		16.0		16.1		18.3		16.9	
Bar	19.0		1012.0		1014.2		1007.5		998.1		1014.7		1008.5		1010.4		1010.5		1010.6	
Wind Dir	WSW		SSW		CALM		CALM		E		CALM		ENE		ESE		SSE		S	
Wind Spd/F	S 3		S 6		S 0		S 0		S 6		S 0		S 5		S 4		S 2		S 8	
Transparency	17																			
Depth	138		138		1326		1918		3604		3673		3678		3665		3621		2365	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	15.1	33.906	14.6	33.922	16.8	34.04*	18.4	34.08*	17.6	34.08*	15.3	33.97*	15.0	33.98*	15.1	34.38*	16.7	34.10*	16.3	33.98*
10m	13.13	33.976	14.33	33.920	15.66	34.085	16.17	34.048	16.74	34.106	15.03	33.970	15.05	33.980	15.02	33.977	16.55	34.100	16.38	33.982
20m	12.48	33.972	12.32	33.999	15.06	34.086	15.53	34.063	12.38	34.126	8.20	34.135	9.37	34.111	9.77	34.131	12.67	34.122	16.22	33.993
30m	11.19	33.999	11.06	34.000	14.66	34.071	13.23	34.169	8.86	34.097	6.03	34.108	6.83	34.085	6.81	34.120	8.89	34.131	15.41	34.036
50m	10.03	34.021	9.98	34.045	11.13	34.042	10.24	34.162	5.57	34.089	4.12	34.089	4.33	34.085	4.49	34.095	6.80	34.105	12.01	34.218
75m	9.56	34.074	9.45	34.069	9.05	34.093	8.75	34.146	3.81	34.086	3.12	34.082	2.57	34.085	3.25	34.088	4.55	34.095	9.42	34.103
100m	8.28	34.062	8.55	34.059	7.86	34.073	8.11	34.113	2.52	34.091	2.55	34.078	2.08	34.081	2.38	34.083	3.21	34.085	8.24	34.092
125m	4.28	34.085	4.88	34.096	6.32	34.089	7.39	34.107	2.06	34.080	2.09	34.080	1.81	34.082	1.89	34.079	2.44	34.083	6.34	34.093
150m					4.68	34.089	5.93	34.095	1.68	34.072	1.86	34.082	1.64	34.082	1.61	34.078	2.04	34.082	4.96	34.079
200m					2.51	34.087	3.14	34.082	1.42	34.076	1.49	34.084	1.40	34.083	1.32	34.080	1.49	34.077	2.98	34.077
250m					1.73	34.078	2.33	34.080	1.20	34.076	1.24	34.083	1.25	34.083	1.16	34.083	1.18	34.079	1.98	34.076
300m					1.32	34.076	1.53	34.080	1.06	34.081	1.09	34.082	1.09	34.082	1.00	34.080	1.02	34.080	1.34	34.072
400m					0.94	34.081	0.90	34.076	0.78	34.076	0.87	34.080	0.86	34.080	0.80	34.078	0.79	34.076	0.83	34.073
500m					0.63	34.074	0.63	34.071	0.62	34.075	0.66	34.074	0.63	34.074	0.61	34.073	0.58	34.070	0.59	34.069
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-13

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	CSR109		CSR110		CSR111		CSR112		CSR113		CSR114		CSR115		CSR116		CIS201		CIS202	
Latitude:N	43-29.9		43-30.3		43-30.0		43-59.9		44- 0.1		44- 0.7		43-59.9		44- 0.5		43-12.8		43-16.7	
Longitude:E	140- 0.0		139-20.2		138-40.1		138-39.9		139-20.0		140- 0.5		140-39.9		141- 7.6		141-12.9		141-10.7	
Date	1999/06/27		1999/06/27		1999/06/28		1999/06/28		1999/06/28		1999/06/28		1999/06/29		1999/06/29		1999/07/05		1999/07/05	
Time(JST)	11:22		17:49		07:12		10:07		12:58		17:58		14:56		17:56		11:34		12:22	
Weather	C		BC		F		C		C		BC		B		BC		B		B	
Air Temp.	18.5		19.4		17.6		18.0		20.2		23.5		19.3		19.2		19.9		20.0	
Bar	1010.7		1009.0		1010.7		1011.5		1011.5		1012.3		1014.6		1014.1		1010.6		1010.4	
Wind Dir	SSE		CALM		SSW		ESE		S		CALM		SSE		S		NNW		NW	
Wind Spd/F	S 4		S 0		S 1		S 2		S 3		S 0		S 9		S 7		S 2		S 3	
Transparency																	8		17	
Depth	1247		3252		3447		3282		1642		538		578		342		23		32	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.2	34.06*	16.7	34.01*	16.1	33.97*	14.8	33.93*	17.5	34.02*	16.8	33.96*	16.1	19.31*	16.9	33.98*	17.3	33.234	17.2	34.014
10m	15.43	34.028	15.89	34.023	15.74	33.994	13.63	33.979	15.65	34.043	13.86	33.973	15.65	33.959	16.48	33.996	15.92	33.649	16.45	34.009
20m	15.18	34.063	15.72	34.027	14.91	34.026	12.61	33.996	12.84	34.162	13.35	33.969	15.10	34.000	15.86	33.973	13.75	33.969	15.87	33.969
30m	13.98	34.090	15.16	34.102	9.14	34.155	7.44	34.091	9.35	34.160	8.03	34.085	14.24	34.033	14.29	34.042				
50m	9.15	34.113	11.89	34.302	6.23	34.117	3.81	34.119	7.98	34.106	4.62	34.084	10.03	34.088	10.29	34.066				
75m	7.64	34.106	8.95	34.161	4.00	34.101	2.57	34.109	5.23	34.109	3.57	34.084	8.27	34.076	8.19	34.071				
100m	4.45	34.086	7.15	34.103	2.87	34.089	2.49	34.102	3.81	34.078	2.70	34.080	6.46	34.068	6.14	34.052				
125m	3.10	34.083	6.84	34.092	2.30	34.083	2.48	34.102	2.95	34.085	2.07	34.082	5.29	34.055	4.85	34.058				
150m	2.56	34.084	4.70	34.091	1.90	34.086	2.47	34.103	2.60	34.091	1.98	34.078	4.72	34.054	4.27	34.053				
200m	1.72	34.080	2.55	34.081	1.58	34.087	2.46	34.103	2.13	34.088	1.63	34.081	3.59	34.071	3.36	34.072				
250m	1.32	34.077	1.82	34.083	1.31	34.082	2.30	34.098	1.64	34.077	1.32	34.082	2.26	34.083	2.10	34.084				
300m	1.18	34.079	1.40	34.081	1.09	34.080	1.98	34.096	1.23	34.077	1.12	34.079	1.56	34.082	1.29	34.078				
400m	0.82	34.076	0.98	34.078	0.83	34.078	1.50	34.091	0.90	34.077	0.84	34.075	1.00	34.076						
500m	0.63	34.072	0.69	34.072	0.65	34.074	1.08	34.083	0.67	34.073	0.56	34.070	0.65	34.071						
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-14

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	CIS203		CIS204		CIS205		CIS110		CIS101		CIS107		CIS114		CIS111		CIS104		CIS108	
Latitude:N	43-22.1		43-23.4		43-25.7		43-25.0		43-25.0		43-30.0		43-30.1		43-35.0		43-35.1		43-40.0	
Longitude:E	141- 6.9		141- 6.8		141- 4.0		141- 5.1		141-15.2		141-10.0		141- 0.1		141- 5.1		141-12.0		141-10.0	
Date	1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05	
Time(JST)	13:27		14:06		14:57		15:35		16:24		17:06		17:56		18:38		19:13		19:47	
Weather	B		B		B		B		B		B		B		B		B		B	
Air Temp.	20.3		20.5		19.7		19.7		24.0		20.8		19.2		20.5		19.4		18.9	
Bar	1010.2		1010.4		1010.5				1011.0		1011.0		1011.0		1011.1		1011.2		1011.2	
Wind Dir	NNW		NW		NW		NW		NW		WNW		CALM		SSW		S		S	
Wind Spd/F	S 4		S 3		S 3		S 3		S 2		S 1		S 0		S 1		S 2		S 3	
Transparency	18		22		22		18		20		19		12		15					
Depth	48		56		68		62		42		61		95		92		64		85	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.6	33.999	17.3	33.978	17.9	34.058	17.6	34.061	17.2	33.994	17.6	33.990	17.4	33.970	16.7	33.898	18.0	33.706	18.4	33.384
10m	16.58	34.039	16.54	34.048	16.66	34.102	16.96	34.095	16.08	33.972	16.42	33.999	16.52	33.993	15.77	33.948	15.93	33.983	15.39	33.958
20m	15.58	34.033	15.59	34.069	14.43	34.168	14.88	34.139	15.03	34.025	12.77	34.043	14.72	34.113	12.29	34.049	12.56	34.090	12.43	34.016
30m	11.74	34.061	11.52	34.063	11.52	34.065	11.77	34.089	13.98	33.978	10.98	33.998	11.82	34.093	10.90	34.085	11.47	34.025	11.03	34.000
50m			10.51	34.070	9.92	34.094	10.05	34.091			9.94	34.016	9.49	34.079	9.67	34.103	10.13	34.020	9.69	34.047
75m													7.97	34.070	8.82	34.074			8.82	34.059
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-15

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	CIS105		CIS112		CIS115		CIS118		CIS120		CIS122		CIS124		CIS123		CIS121		CIS207	
Latitude:N	43-45.0		43-45.0		43-40.0		43-35.0		43-30.1		43-25.1		43-25.1		43-20.1		43-18.0		43-27.2	
Longitude:E	141-15.0		141- 5.1		141- 0.1		140-55.1		140-50.0		140-44.3		140-35.2		140-40.1		140-44.9		141- 2.9	
Date	1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/05		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06	
Time(JST)	20:29		21:16		22:11		23:03		23:48		00:43		01:46		02:34		03:06		07:32	
Weather	B		BC		BC		BC		BC		BC		BC		BC		B		C	
Air Temp.	18.4		17.8		16.8		16.6		16.7		16.8		16.5		16.1		15.8		16.7	
Bar	1011.7		1015.0		1011.9		1012.0		1012.0		1012.0		1012.2		1012.5		1012.7		1013.4	
Wind Dir	SW		S		SSE		SE		SE		CALM		SW		SW		WSW		SE	
Wind Spd/F	S 6		S 8		S 7		S 5		S 5		S 0		S 2		S 1		S 2		S 6	
Transparency																			14	
Depth	117		278		311		128		466		452		203		111		77		77	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.4	33.452	18.2	32.895	17.3	33.393	16.9	33.961	17.1	34.048	17.3	34.050	16.9	34.010	17.2	33.973	17.4	34.051	17.4	34.061
10m	16.44	33.661	17.04	34.029	15.49	33.899	16.66	33.965	16.82	34.056	17.06	34.039	16.00	34.071	16.73	34.037	17.20	34.057	17.33	34.059
20m	16.00	33.925	13.90	34.029	11.91	34.043	12.93	34.091	15.86	34.076	16.43	34.040	13.25	34.112	16.01	34.045	16.52	34.059	15.27	34.118
30m	13.54	33.946	11.20	34.070	10.51	34.005	11.20	34.037	13.47	34.151	13.89	34.135	11.77	34.152	15.13	34.071	15.82	34.071	12.02	34.184
50m	9.76	34.078	10.43	34.060	9.71	34.093	9.35	34.079	9.14	34.108	11.62	34.137	10.18	34.123	12.38	34.103	11.99	34.096	10.11	34.117
75m	8.87	34.081	8.95	34.075	8.46	34.074	7.66	34.046	8.27	34.083	9.46	34.097	9.11	34.089	9.64	34.094				
100m	7.23	34.071	7.10	34.061	6.65	34.048	6.36	34.064	7.15	34.079	8.54	34.097	7.99	34.071	7.83	34.077				
125m			5.04	34.066	5.56	34.064			6.39	34.075	7.49	34.085	6.39	34.078						
150m			4.27	34.057	4.61	34.055			5.96	34.072	5.26	34.075	4.93	34.071						
200m			2.76	34.075	3.00	34.073			3.12	34.086	2.91	34.076								
250m			1.63	34.080	2.06	34.079			2.00	34.080	1.94	34.076								
300m					1.51	34.077			1.43	34.079	1.40	34.076								
400m									0.88	34.072	0.93	34.073								
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-16

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	CIS208		CIS209		CIS210		CIS211		CIS212		CIS213		CIS102		CIS103		CIS106		CIS109	
Latitude:N	43-15.0		43-13.7		43-12.3		43-12.0		43-15.0		43-18.9		43-20.1		43-14.9		43-19.9		43-15.0	
Longitude:E	141-13.7		141-16.1		141-13.9		141-12.4		141-16.8		141-19.5		141-20.1		141-15.1		141-10.0		141- 5.0	
Date	1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06	
Time(JST)	09:20		10:07		10:48		11:47		12:58		14:46		15:24		20:09		20:58		21:48	
Weather	BC		BC		BC		C		BC		C		BC		C		C		C	
Air Temp.	17.2		19.5		21.5		20.3		23.2		24.3		20.5		18.6		17.6		17.2	
Bar	1012.7		1012.6		1012.6		1012.4		1012.5		1012.2		1011.9		1013.0		1013.2		1013.1	
Wind Dir	E		ESE		ENE		NE		ENE		NNW		NNW		CALM		SE		E	
Wind Spd/F	S 6		S 4		S 3		S 4		S 2		S 5		S 7		S 0		S 7		S 6	
Transparency	12		6		7		10		7		8		7							
Depth	25		23		22		22		24		24		25		25		39		31	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.1	33.759	17.3	33.090	16.9	33.650	17.6	33.418	17.6	33.168	17.7	32.966	17.5	32.879	17.9	33.069	17.9	34.078	17.7	33.927
10m	15.55	33.977	15.25	33.914	16.21	33.821	15.65	33.881	15.44	33.989	15.36	33.855	15.30	33.875	15.71	34.003	17.23	34.086	16.85	33.997
20m	14.69	33.981	13.81	33.984					14.32	33.985	13.01	33.980	13.74	33.947	14.45	33.981	15.95	34.077	16.37	34.051
30m																	13.07	34.021		
50m																				
75m																				
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-17



Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	CIS113		CIS116		CIS119		CIS117		CIS214		CIS215		CIS216		CIS217		CIS218		CKR101	
Latitude:N	43-19.9		43-15.1		43-20.0		43-25.0		43-26.9		43-28.2		43-31.5		43-35.8		43-36.0		43-35.9	
Longitude:E	141- 0.0		140-52.6		140-50.1		140-55.1		141- 3.7		141- 3.5		141- 3.6		141- 1.0		140-59.1		140-56.1	
Date	1999/07/06		1999/07/06		1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/13	
Time(JST)	22:39		23:33		00:20		01:18		12:03		12:39		13:28		14:36		15:25		11:35	
Weather	C		C		C		C		BC		C		BC		BC		BC		C	
Air Temp.	16.9		17.3		17.2		16.4		20.6		20.5		22.6		22.0		20.5		22.3	
Bar	1013.1		1013.5		1013.3		1013.4		1014.6		1014.6		1014.6		1014.7		1014.9		1010.0	
Wind Dir	ESE		E		ESE		ESE		SE		SE		SE		WNW		W		ENE	
Wind Spd/F	S 7		S 5		S 6		S 7		S 4		S 3		S 1		S 3		S 4		S 2	
Transparency									17		18		18		17		16			
Depth	52		44		83		87		72		81		92		105		113		129	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.4	34.036	17.3	34.038	17.3	34.042	17.3	34.040	17.4	34.056	17.4	34.065	17.5	34.070	17.7	34.076	18.2	34.094	18.3	34.07*
10m	17.20	34.039	17.13	34.041	17.17	34.042	17.36	34.030	17.15	34.059	17.14	34.060	17.17	34.063	16.87	34.050	17.37	34.092	17.35	34.058
20m	15.87	34.064	16.43	34.044	16.56	34.042	16.93	34.031	15.50	34.106	15.20	34.111	16.84	34.043	15.53	34.076	15.36	34.092	16.53	34.102
30m	15.15	34.077	15.91	34.062	16.00	34.055	15.75	34.049	12.08	34.173	12.19	34.175	12.01	34.132	13.49	34.147	13.04	34.139	15.17	34.118
50m					14.37	34.132	11.72	34.173	10.09	34.094	10.01	34.101	9.62	34.110	9.47	34.133	9.70	34.126	10.26	34.186
75m					9.61	34.086	9.27	34.085			8.35	34.071	8.06	34.083	7.42	34.092	7.64	34.099	8.07	34.094
100m															6.11	34.058	6.68	34.073	5.93	34.091
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-18

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	CKR102		CKR103		CKR104		CKR105		CKR106		CKR107		CKR108		CKR109		CKR110		CKR111	
Latitude:N	43-35.4		43-34.4		43-37.0		43-35.3		43-30.1		43-27.2		43-25.3		43-13.8		43-14.2		43-22.7	
Longitude:E	140-58.7		141- 1.2		141- 7.5		141- 4.4		141- 6.3		141- 6.8		141- 6.7		141-14.6		141-12.2		141-14.0	
Date	1999/07/13		1999/07/13		1999/07/14		1999/07/14		1999/07/14		1999/07/14		1999/07/14		1999/07/15		1999/07/15		1999/07/15	
Time(JST)	13:06		14:26		08:09		09:19		11:33		12:23		13:08		08:51		09:47		11:40	
Weather	C		C		C		C		R				BC				C			
Air Temp.	22.3		21.7		20.7		21.1		21.9				23.1				22.8			
Bar	1009.5		1009.0		1004.2				1000.6				1002.5				1002.5			
Wind Dir	N		NE		NNE				NNE				ESE				ESE			
Wind Spd/F	S 5		S 5		S 5				S 5				S 7				S 6			
Transparency																				
Depth	111		101		87		93		76		66		56		24		25		39	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	18.4	34.08*	19.4	34.08*	19.0	32.89*	19.1	32.94*	19.1	32.54*	19.3	32.29*	19.2	33.05*	18.9	33.95*	19.1	33.83*	19.2	33.80*
10m	17.67	34.091	17.58	34.100	17.29	34.077	17.54	34.096	17.22	33.598	16.89	34.005	16.48	33.631	17.57	34.080	18.36	33.982	18.33	33.845
20m	16.48	34.061	16.30	34.076	16.03	34.059	16.32	34.068	17.00	33.913	16.15	33.994	14.09	33.969			15.87	34.062	16.68	34.077
30m	15.38	34.027	15.23	34.018	15.64	34.060	15.54	34.028	14.73	34.099	12.96	34.011	12.54	34.104					13.42	34.124
50m	10.89	34.251	10.91	34.230	11.11	34.160	10.49	34.141	10.48	34.086	10.23	34.046	10.60	34.072						
75m	8.01	34.089	8.30	34.100	8.38	34.075	8.45	34.099												
100m	6.41	34.076																		
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-19

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	J31		J32		J33		J34		J35		J36		J37		J38		J39		JC15	
Latitude:N	43-20.2		43-30.0		43-30.1		43-30.0		43-30.0		43-30.0		43-30.0		43-30.1		43-30.0		43- 0.0	
Longitude:E	141-10.0		141- 0.2		140-40.5		140-20.1		140- 0.1		139-40.1		139-20.1		139- 0.2		138-30.1		139- 0.0	
Date	1999/07/26		1999/07/26		1999/07/26		1999/07/26		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27	
Time(JST)	18:29		19:48		21:44		23:52		01:47		03:46		05:45		07:36		10:43		14:43	
Weather	C		C		C		C		C		C		C		C		C		B	
Air Temp.	25.0		22.8		22.0		21.4		20.8		20.8		21.0		21.7		22.5		22.6	
Bar	1008.5		1009.5		1009.8		1009.6		1009.0		1008.5		1008.0				1008.5		1009.0	
Wind Dir	W		W		WSW		SW		SSW		SSW		SSW		SW		WSW		SSW	
Wind Spd/F	S 7		S 6		S 7		S 8		S 7		S 7		S 6		S 9		S 8		S 7	
Transparency	13												17		21		14		18	
Depth	39		94		690		644		1230		2043		3200		3440		3408		3539	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.1	34.042	20.2	34.062	20.4	34.034	20.4	34.029	19.4	34.017	19.4	34.031	20.5	34.080	20.6	34.079	19.9	33.918	20.3	34.034
10m	20.98	34.037	20.05	34.058	20.42	34.043	20.53	34.038	19.48	34.023	19.49	34.041	20.58	34.089	20.70	34.086	19.81	33.929	19.60	34.077
20m	19.93	34.052	19.91	34.045	20.41	34.045	18.92	34.138	18.06	34.095	18.70	34.125	18.84	34.112	19.77	34.139	16.51	34.057	17.93	34.147
30m	17.06	34.119	19.78	34.049	17.86	34.131	17.03	34.161	16.32	34.131	17.03	34.129	17.74	34.124	14.57	34.221	9.96	34.170	14.91	34.190
50m			11.90	34.230	13.33	34.206	12.44	34.230	14.82	34.183	14.81	34.163	12.27	34.222	9.66	34.166	6.91	34.119	11.06	34.193
75m			8.46	34.120	9.56	34.157	10.17	34.114	10.85	34.194	11.15	34.165	9.58	34.137	6.88	34.126	5.25	34.108	8.05	34.128
100m					7.29	34.105	8.53	34.127	10.04	34.160	9.88	34.145	8.28	34.120	5.39	34.110	3.73	34.098	6.71	34.117
125m					5.91	34.104	7.08	34.082	9.50	34.137	8.92	34.112	6.66	34.114	3.91	34.096	2.76	34.088	5.24	34.098
150m					4.79	34.091	5.40	34.085	8.66	34.125	7.64	34.100	4.42	34.106	2.92	34.093	2.27	34.087	4.34	34.097
200m					2.76	34.095	3.06	34.094	4.85	34.104	4.76	34.098	2.77	34.089	1.89	34.089	1.57	34.086	2.90	34.088
250m					2.00	34.095	2.27	34.094	2.74	34.094	2.57	34.092	1.75	34.078	1.41	34.089	1.28	34.093	1.88	34.088
300m					1.51	34.095	1.50	34.096	1.74	34.094	1.77	34.093	1.51	34.079	1.08	34.086	1.12	34.092	1.36	34.084
400m					0.99	34.090	0.98	34.090	1.13	34.091	1.11	34.092	1.08	34.090	0.76	34.088	0.82	34.088	0.87	34.084
500m					0.78	34.087	0.68	34.085	0.89	34.091	0.81	34.088	0.68	34.081	0.58	34.085	0.61	34.084	0.65	34.082
600m															0.45	34.084			0.48	34.080
700m															0.38	34.082				
800m															0.32	34.082				
900m															0.28	34.081				
1000m															0.26	34.080				

Table 3-20

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	JC14		JC13		JC12		JC11		J41		J42		J43		J44		J45		J46	
Latitude:N	43- 0.0		43- 0.1		43- 0.0		43- 0.1		42-30.0		42-30.1		42-30.0		42-30.1		42-29.9		42-29.9	
Longitude:E	139-19.9		139-39.9		140- 0.0		140-20.0		139-39.9		139-20.0		139- 0.0		138-40.2		138-20.1		138- 0.1	
Date	1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/28		1999/07/28		1999/07/28		1999/07/28		1999/07/28		1999/07/28	
Time(JST)	16:27		18:14		20:01		21:44		02:09		04:53		06:43		08:32		10:25		12:27	
Weather	B		B		B		B		C		C		C		C		C		R	
Air Temp.	23.1		23.0		22.6		23.0		22.9		23.5		23.3		22.6		22.9		22.2	
Bar	1008.1		1008.0		1007.9		1007.6		1008.0		1007.6		1007.6		1007.5		1007.3		1006.3	
Wind Dir	S		SSW		SSW		SE		SE		SSW		S		SSW		SW		SSW	
Wind Spd/F	S 8		S 6		S 6		S 3		S 6		S 7		S 5		S 7		S 11		S 12	
Transparency	17		16								23		22		17		16		11	
Depth	1340		3360		1269		469		1813		3250		3600		3682		3639		3673	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	20.5	34.019	20.0	34.066	20.4	34.100	21.0	34.045	21.9	34.039	21.9	34.066	20.0	33.888	19.9	33.877	19.9	33.888	20.3	33.825
10m	20.28	34.030	19.78	34.075	20.47	34.103	20.37	34.100	21.01	34.107	21.92	34.076	19.73	33.903	18.87	33.924	19.76	33.899	19.40	33.898
20m	18.34	34.099	19.55	34.081	20.12	34.125	19.06	34.071	20.38	34.129	20.44	34.135	19.06	33.915	9.94	34.172	10.50	34.132	10.59	34.166
30m	17.13	34.128	15.71	34.214	20.01	34.120	18.74	34.077	17.47	34.219	16.79	34.217	13.08	34.096	6.34	34.134	6.53	34.117	6.79	34.145
50m	11.50	34.203	10.73	34.184	14.53	34.200	15.71	34.161	12.94	34.402	11.80	34.249	4.78	34.132	4.59	34.097	3.51	34.109	4.13	34.112
75m	8.79	34.116	8.72	34.126	9.96	34.149	10.74	34.184	9.48	34.192	7.73	34.149	2.63	34.100	2.85	34.100	2.28	34.098	3.00	34.099
100m	6.57	34.105	7.22	34.112	8.24	34.122	8.45	34.131	6.99	34.131	5.88	34.112	2.13	34.093	2.13	34.095	1.82	34.093	2.29	34.094
125m	5.44	34.100	6.17	34.094	6.95	34.102	7.29	34.111	5.51	34.115	4.21	34.103	1.69	34.085	1.80	34.096	1.58	34.091	1.92	34.093
150m	4.28	34.098	4.55	34.098	5.90	34.100	6.37	34.099	4.33	34.101	3.33	34.093	1.44	34.082	1.53	34.091	1.43	34.093	1.65	34.090
200m	2.58	34.091	2.81	34.086	3.80	34.095	3.41	34.097	3.45	34.090	2.55	34.088	1.23	34.082	1.33	34.093	1.21	34.093	1.38	34.092
250m	1.76	34.090	1.99	34.092	2.42	34.094	2.38	34.092	2.33	34.087	1.91	34.086	1.08	34.087	1.16	34.090	0.99	34.088	1.17	34.091
300m	1.33	34.092	1.49	34.087	1.76	34.092	1.54	34.092	1.74	34.089	1.27	34.085	0.96	34.090	1.07	34.094	0.86	34.085	1.05	34.092
400m	0.93	34.088	1.01	34.090	1.10	34.089	1.02	34.087	1.11	34.086	0.83	34.086	0.74	34.087	0.81	34.090	0.66	34.082	0.83	34.089
500m	0.66	34.083	0.75	34.086	0.78	34.086			0.69	34.082	0.58	34.083	0.57	34.083	0.64	34.086	0.53	34.082	0.63	34.084
600m	0.50	34.081	0.59	34.084	0.50	34.082			0.56	34.082									0.47	34.081
700m									0.42	34.080									0.39	34.081
800m									0.33	34.079									0.34	34.080
900m									0.29	34.079									0.30	34.080
1000m									0.25	34.079									0.27	34.080

Table 3-21

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	J47		J58		J57		J56		J55		J54		J53		J52		J63		J62	
Latitude:N	42-30.0		41-30.1		41-30.1		41-30.0		41-30.0		41-30.0		41-30.1		41-30.0		41- 0.1		41-10.0	
Longitude:E	137-30.1		137-30.0		138- 0.0		138-20.1		138-40.0		139- 0.0		139-14.9		139-30.0		140- 0.0		140- 0.0	
Date	1999/07/28		1999/07/28		1999/07/29		1999/07/29		1999/07/29		1999/07/29		1999/07/29		1999/07/29		1999/07/29		1999/07/29	
Time(JST)	16:07		22:09		00:42		02:47		04:23		05:58		07:14		08:36		12:17		13:26	
Weather	R		C		C		C		R		C		R		D		R		C	
Air Temp.	22.0		21.7		21.8		21.4		21.7		22.0		21.8		21.9		24.1		24.3	
Bar	1005.6		1008.7		1008.0		1008.0		1008.5		1009.0		1009.5		1009.7		1010.5		1010.2	
Wind Dir	SW		SSW		SW		SW		SSW		SW		SW		SW		W		SW	
Wind Spd/F	S 10		S 7		S 6		S 6		S 6		S 6		S 4		S 3		S 4		S 2	
Transparency	18										21		15		25		13		16	
Depth	3670		3669		3673		3682		3100		1342		1134		1668		500		102	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	20.5	33.839	20.4	33.178	19.7	33.850	19.7	33.850	22.0	33.920	20.8	33.790	20.7	33.744	20.8	33.741	23.8	33.369	23.1	33.974
10m	19.30	33.910	19.48	33.817	19.67	33.863	19.75	33.858	21.03	33.924	20.81	33.797	20.58	33.756	20.69	33.829	23.86	33.388	22.89	34.031
20m	8.89	34.163	8.48	34.193	16.40	33.990	17.08	33.981	15.39	34.002	16.15	33.940	20.39	33.756	20.27	33.907	20.62	34.099	18.95	34.210
30m	6.94	34.140	5.48	34.132	8.94	34.180	4.96	34.244	5.91	34.223	5.79	34.191	12.14	34.095	14.62	34.045	18.58	34.220	17.11	34.209
50m	4.47	34.123	3.40	34.099	4.25	34.123	2.54	34.117	2.55	34.128	3.01	34.132	3.62	34.126	5.84	34.129	16.17	34.376	13.19	34.274
75m	3.19	34.103	2.62	34.093	2.78	34.100	1.97	34.091	1.85	34.091	2.22	34.099	2.63	34.097	2.79	34.093	12.30	34.271	10.80	34.180
100m	2.61	34.097	2.10	34.091	2.21	34.088	1.52	34.079	1.48	34.082	1.78	34.084	2.04	34.086	2.26	34.085	10.87	34.159		
125m	1.99	34.083	1.84	34.098	1.94	34.087	1.34	34.079	1.34	34.078	1.60	34.087	1.72	34.082	1.87	34.081	10.22	34.104		
150m	1.75	34.089	1.65	34.095	1.67	34.083	1.31	34.085	1.28	34.077	1.36	34.085	1.50	34.082	1.60	34.078	9.74	34.089		
200m	1.39	34.087	1.26	34.082	1.41	34.088	1.08	34.081	1.10	34.077	1.07	34.083	1.21	34.085	1.24	34.083	8.06	34.106		
250m	1.22	34.083	1.14	34.079	1.21	34.084	0.97	34.083	0.98	34.081	0.88	34.084	1.01	34.085	1.02	34.084	4.50	34.104		
300m	1.16	34.093	1.05	34.085	1.12	34.093	0.91	34.087	0.89	34.087	0.75	34.081	0.86	34.083	0.88	34.085	2.63	34.088		
400m	0.91	34.091	0.88	34.091	0.86	34.090	0.75	34.087	0.70	34.085	0.58	34.081	0.60	34.079	0.66	34.083	0.91	34.084		
500m	0.70	34.086	0.66	34.085	0.67	34.088	0.56	34.083	0.52	34.082	0.44	34.078	0.45	34.079	0.51	34.080				
600m					0.48	34.082														
700m					0.40	34.082														
800m					0.35	34.081														
900m					0.30	34.081														
1000m					0.27	34.080														

Table 3-22

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	J61		J51		JC22		JC02		JC01		JC03		JC04		JC05		JC06		JC07	
Latitude:N	41-19.9		41-29.9		41-59.9		44- 0.0		44- 0.0		44- 0.1		44- 0.0		44- 0.0		44- 0.1		44- 0.0	
Longitude:E	140- 0.0		139-50.1		139-40.0		141-15.0		141-29.8		141- 0.1		140-40.1		140-20.1		140- 0.0		139-30.1	
Date	1999/07/29		1999/07/29		1999/07/29		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02	
Time(JST)	14:29		16:03		19:21		13:14		14:20		16:28		18:05		19:48		21:29		23:49	
Weather	R		R		C		C		C		C		R		C		C		R	
Air Temp.	24.2		24.2		23.2		22.9		23.5		21.5		21.1		20.5		20.8		20.1	
Bar	1010.0		1010.0		1009.2		1011.0		1011.2		1011.7		1012.0		1012.0		1012.5		1012.4	
Wind Dir			SSW		S		SW		SW		SW		S		S		S		SSE	
Wind Spd/F			S 5		S 7		S 6		S 5		S 3		S 2		S 3		S 5		S 4	
Transparency	16		19				17		8		18		15							
Depth	223		1343		900		164				402		569		516		490		1368	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	23.5	34.020	23.4	33.928	22.3	33.936	20.6	33.951	21.4	31.831	20.1	33.876	19.8	33.841	19.8	33.884	20.5	33.810	18.1	33.739
10m	23.54	34.033	19.96	34.298	22.25	33.943	20.57	33.960	20.95	32.579	20.01	33.922	19.54	33.862	19.77	33.895	20.22	33.825	18.40	33.782
20m	21.78	34.204	16.87	34.505	17.01	34.168	20.56	33.959	20.66	33.034	19.83	33.925	19.53	33.865	19.54	33.893	19.79	33.851	17.94	33.879
30m	18.55	34.350	14.91	34.516	13.45	34.310	20.47	33.975	20.58	33.844	15.30	34.188	15.23	34.135	13.93	34.220	12.26	34.222	11.40	34.160
50m	17.60	34.376	12.51	34.371	9.88	34.211	15.01	34.201			11.61	34.204	8.00	34.131	9.41	34.178	8.95	34.146	6.79	34.128
75m	13.60	34.456	10.52	34.189	7.75	34.145	9.65	34.174			8.52	34.117	5.50	34.104	7.03	34.104	7.52	34.107	5.10	34.098
100m	10.46	34.141	9.55	34.100	6.55	34.109	8.43	34.118			7.13	34.105	4.18	34.094	5.60	34.088	5.56	34.094	4.05	34.091
125m	9.20	34.108	8.00	34.114	5.31	34.095	7.97	34.101			5.25	34.092	3.64	34.087	4.48	34.071	4.47	34.095	3.06	34.093
150m	9.16	34.101	6.24	34.110	3.95	34.097	6.40	34.087			4.36	34.089	2.92	34.090	3.58	34.085	3.46	34.092	2.52	34.090
200m	9.03	34.101	2.76	34.091	2.24	34.086					3.05	34.086	1.99	34.094	2.23	34.093	2.15	34.091	1.71	34.087
250m			1.68	34.084	1.53	34.085					2.43	34.091	1.47	34.092	1.59	34.094	1.61	34.093	1.36	34.090
300m			1.33	34.082	1.09	34.085					1.84	34.093	1.12	34.088	1.21	34.093	1.37	34.092	1.14	34.090
400m			0.90	34.084	0.67	34.081							0.69	34.082	0.76	34.084	0.94	34.088	0.85	34.088
500m			0.63	34.081	0.50	34.078							0.53	34.080	0.49	34.079			0.63	34.084
600m			0.46	34.079																
700m			0.37	34.079																
800m			0.29	34.078																
900m			0.24	34.078																
1000m			0.22	34.078																

Table 3-23

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	JC08		J27		J26		J25		J24		J23		J22		J21		CSR116		CSR118	
Latitude:N	44- 0.0		44-29.9		44-30.0		44-30.0		44-29.9		44-29.9		44-30.0		44-30.0		43-30.6		43-29.9	
Longitude:E	139- 0.1		139-30.1		140- 0.0		140-20.0		140-40.0		141- 0.2		141-14.9		141-30.0		140-38.9		140-16.8	
Date	1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/24		1999/08/25	
Time(JST)	02:15		05:46		08:09		09:50		11:26		12:55		14:12		15:22		18:25		06:43	
Weather	C		R		R		R		C		BC		C		C		C		BC	
Air Temp.	20.0		19.0		19.8		19.3		20.8		23.2		23.7		26.4		23.3		22.7	
Bar	1011.4		1011.0		1012.0		1012.5		1012.0		1011.6		1011.7		1011.6		1010.0		1009.0	
Wind Dir	SE		NE		NE		E		ESE		SE		S		SSW		E		N	
Wind Spd/F	S 4		S 7		S 5		S 5		S 4		S 2		S 6		S 6		S 3		S 3	
Transparency			14		18		18		18		18		12		18		15		23	
Depth			493		571		252		143		195		114		73		722		697	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.0	33.710	19.6	33.366	19.6	33.787	19.4	33.620	19.3	33.638	21.2	33.462	21.6	33.142	21.3	33.869	23.1	33.743	23.6	33.89*
10m	18.63	33.778	19.45	33.825	19.48	33.863	18.94	33.678	18.96	33.719	20.43	33.784	20.78	33.352	20.51	33.875	23.14	33.789	23.84	33.889
20m	9.43	34.189	13.58	34.062	14.09	34.190	18.84	33.687	18.90	33.727	18.72	33.958	20.39	33.725	20.28	33.909	23.11	33.800	23.58	33.933
30m	6.82	34.133	8.23	34.121	11.28	34.178	14.64	34.098	14.51	34.095	16.17	34.094	19.89	33.853	20.27	33.919	19.51	34.080	18.06	34.310
50m	3.81	34.112	5.15	34.112	9.44	34.111	10.72	34.126	10.50	34.100	13.60	34.161	15.96	34.073	19.50	33.896	14.13	34.254	14.91	34.412
75m	2.49	34.098	3.47	34.095	7.26	34.089	8.92	34.101	9.30	34.106	9.96	34.143	12.13	34.113			8.84	34.164	10.83	34.177
100m	2.04	34.097	2.76	34.092	5.28	34.084	7.78	34.096	7.73	34.097	8.55	34.101	9.34	34.121			6.87	34.123	9.57	34.131
125m	1.82	34.096	2.14	34.092	4.46	34.067	6.89	34.078	6.92	34.079	7.44	34.082					5.67	34.106	8.69	34.115
150m	1.49	34.096	1.87	34.093	3.59	34.085	5.11	34.072			6.32	34.088					4.50	34.102	7.15	34.107
200m	1.24	34.094	1.48	34.096	2.20	34.097	3.20	34.089									2.77	34.094	5.08	34.086
250m	1.04	34.090	1.21	34.094	1.56	34.093											1.78	34.094	3.00	34.091
300m	0.92	34.089	1.02	34.091	1.12	34.088											1.33	34.093		
400m	0.75	34.088	0.80	34.088	0.67	34.081											0.91	34.088		
500m	0.57	34.083			0.51	34.079											0.68	34.084		
600m																	0.54	34.081		
700m																				
800m																				
900m																				
1000m																				

Table 3-24

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	CSR101		CSR102		CSR103		CSR104		CSR105		CSR106		CSR107		CSR108		CSR109		CSR110	
Latitude:N	43-30.0		43-30.5		43-30.0		44- 0.0		44- 0.0		44- 2.2		44-30.0		44-30.1		44-59.9		45- 0.0	
Longitude:E	140- 0.1		139-21.9		138-40.1		138-40.2		139-20.2		140- 0.0		140- 0.0		139-22.8		139-30.0		140- 0.1	
Date	1999/08/25		1999/08/25		1999/08/26		1999/08/26		1999/08/26		1999/08/26		1999/08/27		1999/08/27		1999/08/28		1999/08/28	
Time(JST)	13:11		18:00		07:40		10:39		13:24		18:02		10:32		18:03		10:40		13:01	
Weather	C		BC		BC		BC		BC		BC		R		B		C		C	
Air Temp.	24.1		23.5		25.4		25.4		25.2		22.0		19.3		21.5		22.9		21.6	
Bar	1008.5		1009.1		1012.0		1012.0		1011.8		1011.0		1008.4		1008.0		1010.0		1010.0	
Wind Dir	N		N		WNW		CALM		CALM		SW		SE		WNW		NE		NE	
Wind Spd/F	S 4		S 3		S 3		S 0		S 0		S 3		S 4		S 2		S 5		S 8	
Transparency	22		22		22		25		22		22				18		18		15	
Depth	1230		3339		3291		3291		1651		740		576		989		957		229	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	24.6	33.870	24.2	34.001	23.5	33.907	22.9	33.656	22.6	33.552	23.5	33.861	22.1	33.038	21.6	33.388	21.3	33.423	22.4	33.628
10m	24.45	33.875	24.33	34.034	23.80	33.906	22.83	33.718	22.09	33.544	23.51	33.852	22.42	33.530	21.53	33.426	17.53	33.889	22.47	33.631
20m	24.42	33.882	24.36	34.073	17.91	34.228	15.39	34.182	10.89	34.184	20.23	33.996	17.17	34.107	11.04	34.224	8.95	34.185	14.16	34.203
30m	23.29	33.961	20.28	34.164	13.32	34.294	9.10	34.203	6.72	34.158	14.55	34.304	11.88	34.250	8.45	34.166	6.35	34.141	11.10	34.264
50m	14.04	34.232	15.18	34.518	8.70	34.152	6.69	34.126	3.58	34.131	9.95	34.204	8.64	34.133	6.22	34.122	4.49	34.107	7.96	34.148
75m	10.64	34.137	11.45	34.276	7.09	34.111	4.61	34.099	2.58	34.105	7.49	34.124	6.60	34.103	4.57	34.098	2.98	34.095	5.72	34.097
100m	9.92	34.090	9.47	34.164	6.02	34.105	3.59	34.096	2.07	34.093	6.09	34.108	5.05	34.085	3.28	34.091	2.37	34.092	4.32	34.082
125m	9.57	34.074	7.60	34.133	5.05	34.098	2.88	34.091	1.75	34.089	4.95	34.099	4.21	34.082	2.61	34.094	2.09	34.094	3.27	34.085
150m	8.84	34.100	5.82	34.108	3.77	34.095	2.21	34.091	1.55	34.086	3.71	34.094	3.42	34.084	2.24	34.096	1.87	34.093	2.39	34.091
200m	6.18	34.096	3.21	34.090	2.40	34.091	1.61	34.095	1.18	34.085	2.15	34.092	2.07	34.092	1.73	34.095	1.39	34.093	1.89	34.089
250m	3.35	34.096	2.23	34.093	1.69	34.084	1.33	34.093	0.99	34.087	1.63	34.091	1.40	34.089	1.43	34.093	1.07	34.087		
300m	2.14	34.089	1.55	34.092	1.29	34.084	1.11	34.089	0.83	34.086	1.32	34.089	1.01	34.085	1.16	34.091	0.92	34.088		
400m	1.35	34.093	1.08	34.090	0.89	34.084	0.82	34.085	0.63	34.081	0.97	34.087	0.74	34.081	0.79	34.085	0.72	34.083		
500m	0.98	34.091	0.80	34.087	0.63	34.079	0.65	34.082	0.50	34.079	0.68	34.081	0.53	34.078	0.58	34.080	0.53	34.079		
600m	0.70	34.085	0.60	34.083	0.48	34.078	0.49	34.079	0.41	34.078	0.53	34.079								
700m																				
800m																				
900m																				
1000m																				

Table 3-25



Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199909		199909		199909	
Station No	CSR111		CSR112		CSR113		CSR114		CSR115		CSR119		CSR117		CIS202		CIS225		CIS226	
Latitude:N	45-30.1		45-29.9		45- 0.0		45- 0.4		44-30.1		44-30.8		43-13.3		43-14.6		43-18.8		43-20.5	
Longitude:E	139-59.5		140-30.0		140-30.1		140-59.2		141- 9.9		140-40.1		141-15.3		141-14.9		141- 9.8		141- 8.0	
Date	1999/08/28		1999/08/29		1999/08/29		1999/08/29		1999/08/30		1999/08/30		1999/08/31		1999/09/06		1999/09/06		1999/09/06	
Time(JST)	18:01		11:36		14:41		18:00		11:29		17:56		18:00		10:00		11:30		12:14	
Weather	BC		BC		BC		BC		C		C		R		BC		BC		BC	
Air Temp.	18.4		19.2		20.4		19.7		22.4		22.1		21.3		25.2		27.1		27.3	
Bar	1011.5		1014.6		1013.0		1013.0		1013.6		1011.9		1006.7		1011.7		1011.5		1010.9	
Wind Dir	NE		NNE		NNE		ENE		SSE		SSE		SE		ESE		ESE		ESE	
Wind Spd/F	S 10		S 8		S 6		S 11		S 5		S 11		S 7		S 5		S 6		S 6	
Transparency	15		22		16		10		14		14		10							
Depth	593		417		309		113		134		143		23		24		38		41	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.1	33.464	21.1	33.692	22.3	33.846	22.2	33.217	23.1	33.478	22.3	33.603	22.9	33.78*	23.6	33.64*	24.0	33.51*	23.6	33.97*
10m	20.84	33.457	21.33	33.688	22.45	33.836	22.50	33.209	23.12	33.483	22.42	33.596	23.15	33.789	23.55	33.863	23.44	33.962	23.31	33.971
20m	7.17	34.211	14.46	34.228	18.05	34.200	21.41	33.817	21.23	33.969	18.21	34.137	21.66	33.928	23.15	33.900	23.33	33.964	23.19	33.975
30m	4.31	34.176	11.53	34.218	15.18	34.242	20.55	33.896	18.93	34.094	12.78	34.236					20.36	34.153	19.07	34.249
50m	2.38	34.127	8.66	34.116	10.37	34.218	15.26	34.170	13.66	34.353	9.10	34.147								
75m	1.76	34.104	6.90	34.083	8.15	34.106	11.05	34.183	10.02	34.178	6.77	34.097								
100m	1.58	34.097	5.49	34.087	6.17	34.080			8.47	34.116	5.31	34.084								
125m	1.45	34.096	4.42	34.080	5.31	34.073														
150m	1.29	34.093	3.63	34.080	4.04	34.074														
200m	1.06	34.088	2.17	34.092	2.12	34.091														
250m	0.89	34.085	1.52	34.089	1.48	34.085														
300m	0.78	34.083	1.09	34.084																
400m	0.53	34.078																		
500m	0.37	34.075																		
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-26

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	CIS227		CIS228		CIS229		CIS210		CIS203		CIS207		CIS204		CIS211		CIS208		CIS205	
Latitude:N	43-22.1		43-24.5		43-25.9		43-25.1		43-25.1		43-30.1		43-35.2		43-35.1		43-40.1		43-45.2	
Longitude:E	141- 5.5		141- 2.2		141- 0.8		141- 4.8		141-14.9		141- 9.8		141-11.8		141- 4.9		141- 9.8		141-14.7	
Date	1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06	
Time(JST)	13:03		13:57		14:42		16:29		17:15		17:55		18:31		19:06		19:51		20:35	
Weather	BC		BC		BC		C		C		C		C		C		C		C	
Air Temp.	28.0		27.3		26.2		25.8		24.9		24.3		24.1		24.0		24.0		24.4	
Bar	1010.8		1010.6		1010.3		1010.0		1010.3		1010.7		1010.9		1011.3		1011.6		1011.6	
Wind Dir	ESE		E		ESE		ESE		ESE		SE		SE		ESE		ESE		SSE	
Wind Spd/F	S 6		S 5		S 5		S 7		S 8		S 8		S 7		S 9		S 7		S 9	
Transparency																				
Depth	49		66		79		62		42		60		64		91		85		122	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	23.5	33.97*	24.2	34.01*	24.1	33.99*	24.0	33.98*	23.7	33.66*	23.4	33.93*	23.1	33.98*	23.3	33.94*	23.5	33.91*	24.4	33.96*
10m	23.55	33.985	23.94	34.011	23.92	34.008	23.84	33.972	23.52	33.913	23.41	33.936	23.23	33.984	23.46	33.940	23.67	33.908	23.48	33.964
20m	23.43	33.977	23.90	34.005	23.90	34.011	23.58	34.003	23.41	33.967	23.20	33.955	20.87	34.123	23.32	33.937	23.53	33.909	23.33	33.968
30m	19.74	34.216	20.64	34.218	21.37	34.127	20.64	34.177	18.95	34.177	18.12	34.204	18.62	34.256	19.52	34.140	19.58	34.143	20.32	34.144
50m			15.05	34.300	14.64	34.283	15.23	34.407			14.00	34.261	13.83	34.267	13.44	34.275	12.81	34.314	14.18	34.267
75m					11.98	34.231									9.85	34.156	10.29	34.171	10.58	34.180
100m																			9.38	34.130
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-27

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	CIS212		CIS215		CIS218		CIS214		CIS220		CIS222		CIS224		CIS223		CIS221		CIS219	
Latitude:N	43-45.1		43-40.2		43-35.2		43-30.1		43-30.2		43-25.2		43-25.1		43-20.1		43-18.1		43-20.1	
Longitude:E	141- 4.9		140-59.9		140-54.9		140-59.8		140-49.8		140-44.9		140-34.9		140-39.8		140-44.8		140-49.9	
Date	1999/09/06		1999/09/06		1999/09/06		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07	
Time(JST)	21:25		22:18		23:12		00:01		00:51		01:48		02:42		03:30		04:04		04:36	
Weather	C		C		C		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	23.5		22.7		22.6		22.4		22.8		22.9		22.8		22.5		22.1		22.6	
Bar	1011.6		1011.7		1011.7		1011.1		1010.5		1010.2		1009.7		1009.7		1010.0		1009.7	
Wind Dir	SE		ESE		ESE		ESE		SE		ESE		ESE		ESE		SE		ESE	
Wind Spd/F	S 10		S 11		S 10		S 12		S 9		S 5		S 8		S 3		S 3		S 4	
Transparency																				
Depth	282		315		127		95		455		192		191		112		77		82	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	23.3	34.00*	23.3	33.96*	23.4	33.95*	23.4	33.94*	23.4	33.96*	23.6	33.94*	23.7	33.96*	23.7	33.96*	23.6	33.99*	23.6	33.97*
10m	23.56	34.003	23.53	33.956	23.59	33.957	23.56	33.936	23.54	33.957	23.73	33.940	23.73	33.963	23.86	33.970	23.84	34.001	23.81	33.965
20m	23.46	34.000	23.50	33.956	23.53	33.946	23.57	33.936	23.53	33.959	23.57	33.939	23.69	33.967	23.78	33.956	23.72	33.998	23.74	33.949
30m	19.99	34.231	19.90	34.243	20.40	34.200	19.56	34.213	22.23	34.073	23.53	33.941	23.69	33.970	23.75	33.959	23.62	33.986	23.69	33.947
50m	14.57	34.388	13.96	34.206	14.25	34.290	14.57	34.196	15.17	34.177	16.77	34.309	17.45	34.296	18.90	34.210	17.39	34.281	15.87	34.266
75m	10.21	34.182	10.44	34.195	10.39	34.172	10.98	34.212	11.41	34.198	12.04	34.295	13.60	34.363	13.90	34.348			11.38	34.226
100m	8.53	34.118	8.76	34.132	8.68	34.117			9.66	34.153	9.95	34.147	10.43	34.171	11.13	34.203				
125m	6.81	34.086	7.01	34.088					7.79	34.103	8.80	34.125	8.69	34.119						
150m	5.65	34.085	5.59	34.086					6.61	34.092	6.89	34.095	6.67	34.093						
200m	3.63	34.076	3.36	34.079					3.45	34.083										
250m	2.34	34.082	2.10	34.083					2.00	34.085										
300m			1.29	34.079					1.41	34.080										
400m									0.80	34.073										
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-28

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	CIS216		CIS213		CIS217		CIS206		CIS201		CIS230		CIS231		CIS209		CIS101		CIS102	
Latitude:N	43-15.1		43-20.2		43-25.1		43-20.1		43-20.3		43-13.3		43-12.9		43-15.1		43-15.0		43-17.1	
Longitude:E	140-52.3		140-59.7		140-54.9		141- 9.7		141-19.8		141-13.8		141-12.6		141- 5.0		141-13.1		141-10.5	
Date	1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/08		1999/09/08	
Time(JST)	05:16		06:06		06:47		08:00		08:48		09:42		10:12		11:16		08:33		09:20	
Weather	BC		BC		BC		BC		C		R		R		C		C		C	
Air Temp.	21.9		22.7		24.0		23.0		22.5		22.6		22.1		22.8		23.9		24.0	
Bar	1009.4		1009.4		1009.7		1009.8		1010.6		1010.3		1009.6		1009.0		1003.1		1003.8	
Wind Dir	SE		ESE		SE		SE		SE		ESE		ESE		ESE		SE		SSE	
Wind Spd/F	S 3		S 8		S 9		S 13		S 11		S 9		S 9		S 10		S 6		S 3	
Transparency																				
Depth	44		52		87		40		24		23		23		31		25		33	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	23.4	34.01*	23.5	34.00*	23.6	33.94*	23.3	33.96*	23.0	32.43*	23.3	33.80*	23.3	33.82*	23.4	33.95*	23.3	33.87*	23.4	33.89*
10m	23.78	34.012	23.76	34.000	23.66	33.939	23.35	33.960	23.31	33.586	23.51	33.855	23.48	33.829	23.58	33.954	23.30	33.874	23.46	33.936
20m	23.56	33.979	23.76	33.999	23.66	33.938	23.35	33.960							23.37	33.969	23.30	33.880	23.43	33.945
30m	23.19	33.970	23.37	33.995	23.08	33.972	20.47	34.182												
50m					16.26	34.282														
75m					12.59	34.280														
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-29

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	CIS103		CIS104		CIS105		CIS106		CIS107		CIS108		CIS109		CJ31		CJH01		CJ311	
Latitude:N	43-20.8		43-27.1		43-31.8		43-27.6		43-22.4		43-13.8		43-14.0		43-20.0		43-22.1		43-19.9	
Longitude:E	141- 6.4		140-59.5		140-59.6		141- 1.8		141- 5.9		141-12.0		141-10.1		141- 9.6		141-23.6		141- 9.2	
Date	1999/09/08		1999/09/08		1999/09/08		1999/09/09		1999/09/09		1999/09/09		1999/09/09		1999/09/20		1999/09/20		1999/09/20	
Time(JST)	10:24		12:06		13:27		07:54		09:52		12:10		12:48		10:18		12:04		22:07	
Weather	C		C		C		B		B		B		B		C		C		C	
Air Temp.	23.8		23.2		23.3		25.0		24.3		27.2		28.4		14.3		14.6		15.9	
Bar	1003.7		1003.2				1003.3		1003.4		1002.9		1002.7		1014.5		1014.5		1016.6	
Wind Dir	SW		W				SSE		SE		CALM		WNW		SSE		CALM		NE	
Wind Spd/F	S 7		S 7				S 5		S 3		S 0		S 4		S 3		S 0		S 4	
Transparency															11		3			
Depth	43		89		102		83		52		24		26		39		22		39	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	23.5	33.97*	23.6	33.97*	23.4	33.97*	23.8	33.97*	23.6	33.91*	23.9	34.04*	23.9	33.93*	22.1	33.855	21.3	32.561	22.0	33.963
10m	23.58	33.990	23.67	33.966	23.53	33.970	23.71	33.968	23.50	33.941	23.56	33.926	23.63	33.923	22.60	33.898	22.86	33.883	22.56	33.956
20m	23.56	33.990	23.66	33.967	23.51	33.969	23.70	33.965	23.48	33.940			23.56	33.928	22.60	33.900			22.56	33.959
30m	19.90	34.209	20.96	34.126	20.07	34.218	23.65	33.956	23.48	33.940					22.60	33.900			22.59	33.975
50m			15.22	34.316	14.85	34.176	17.21	34.206												
75m			11.43	34.230	11.68	34.235	14.35	34.297												
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-30

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	CJ32		CJ33		CJ331		HW001		HW002		HW003		HW004		HW005		HW006		HW007	
Latitude:N	43-30.1		43-30.1		43-29.8		42- 0.3		42- 5.8		42-13.4		42-20.0		42-15.1		42-18.1		42-12.1	
Longitude:E	141- 0.0		140-39.9		140-39.9		141-20.0		141-21.3		141-22.6		141-35.1		141-42.0		141-49.1		141-56.1	
Date	1999/09/21		1999/09/21		1999/09/21		1999/09/29		1999/09/29		1999/09/30		1999/09/30		1999/09/30		1999/09/30		1999/09/30	
Time(JST)	10:13		11:58		20:01		13:57		16:46		09:02		15:23		17:33		18:37		20:34	
Weather	BC		BC		B		BC		BC		C		BC		BC		BC		BC	
Air Temp.	20.4		18.5		17.1		21.6				20.9		20.4		18.6		17.7		17.5	
Bar	1019.5		1019.9		1021.1		1017.0													
Wind Dir	ENE		NE		NNE															
Wind Spd/F	S 1		S 5		S 4															
Transparency	29		30																	
Depth	95		697		692		307		360		414		457		642		516		795	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.6	34.096	21.5	34.188	21.2	34.162	20.1	33.62*	19.8	33.60*	20.5	33.85*	20.5	33.73*	19.4	33.55*	19.9	33.72*	19.4	33.53*
10m	21.78	34.082	21.70	34.173	21.72	34.160	19.97	33.613	19.99	33.606	20.64	33.849	20.54	33.729	19.55	33.554	20.22	33.722	19.81	33.525
20m	21.77	34.082	21.64	34.162	21.73	34.161	19.12	33.888	19.88	33.643	20.61	33.849	20.47	33.735	19.39	33.582	20.18	33.721	19.82	33.526
30m	21.50	34.100	21.59	34.153	21.62	34.147	16.18	34.121	19.66	33.834	19.07	33.863	19.51	33.817	19.26	33.620	19.05	33.857	19.14	33.852
50m	14.13	34.332	14.58	34.395	15.61	34.398	13.81	34.206	14.20	34.198	15.52	34.197	15.54	34.171	14.59	34.220	12.87	34.201	14.60	34.206
75m	11.05	34.209	11.40	34.241	11.25	34.238	12.36	34.173	12.33	34.175	13.57	34.207	13.96	34.233	11.01	34.096	9.09	33.985	11.34	34.106
100m			9.36	34.137	8.77	34.127	9.79	34.022	9.09	33.967	11.29	34.092	11.60	34.121	7.10	33.776	8.15	33.866	9.22	33.974
125m			7.67	34.107	7.12	34.103	6.49	33.727	5.21	33.588	9.58	33.990	8.84	33.915	6.55	33.725	7.44	33.800	7.93	33.855
150m			5.61	34.094	5.88	34.092	4.76	33.552	4.30	33.492	7.31	33.797	5.52	33.637	6.14	33.683	7.18	33.768	5.03	33.631
200m			3.57	34.081	3.91	34.082	3.61	33.483	3.80	33.506	3.43	33.512	3.96	33.496	4.20	33.499	4.29	33.501	3.11	33.549
250m			2.08	34.085	2.10	34.087	3.21	33.510	3.27	33.558	3.15	33.547	3.55	33.518	3.38	33.478	3.98	33.537	3.11	33.627
300m			1.58	34.083	1.57	34.083			3.22	33.635	3.14	33.617	3.20	33.575	3.21	33.555	3.31	33.559	3.32	33.733
400m			0.94	34.077	0.94	34.077					3.29	33.755								
500m			0.64	34.073	0.67	34.073														
600m					0.55	34.071														
700m																				
800m																				
900m																				
1000m																				

Table 3-31

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199910		199910		199910		199910		199910		199910	
Station No	HW008		HW009		HW010		HW011		CK02		CK01		J63		J62		J61		J51	
Latitude:N	42-15.0		41-50.1		42- 0.0		42-10.0		41-42.0		41-42.1		41- 0.2		41- 9.3		41-20.1		41-30.1	
Longitude:E	142- 3.0		141-38.0		141-30.1		141-24.0		141-41.8		141-10.5		139-59.9		140- 0.0		140- 0.0		139-50.1	
Date	1999/09/30		1999/10/01		1999/10/01		1999/10/01		1999/10/04		1999/10/04		1999/10/04		1999/10/04		1999/10/05		1999/10/05	
Time(JST)	21:51		02:46		09:01		14:24		11:15		13:42		21:51		22:58		00:06		01:28	
Weather	BC				BC		BC				BC		BC		BC				BC	
Air Temp.	16.8				18.5		18.1				17.3		14.9		14.9		14.4		14.5	
Bar	1016.3										1020.8		1023.0		1023.0		1022.8		1022.6	
Wind Dir											W		W		W		W		W	
Wind Spd/F											S 12		S 4		S 3		S 4		S 4	
Transparency																				
Depth	532		741		481		436				180		512		103		221		1355	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.7	33.81*	17.4	34.02*	18.9	33.28*	20.1	33.72*	17.8	33.79*	19.6	33.78*	22.0	33.394	21.9	33.432	20.9	33.710	20.6	33.587
10m	20.11	33.806	17.68	34.019	18.41	33.971	20.21	33.717	17.47	33.819	19.53	33.778	22.62	33.385	22.46	33.447	21.38	33.711	21.01	33.582
20m	20.12	33.807	17.42	34.030	17.06	34.059	20.18	33.710	17.42	33.834	18.39	33.734	22.64	33.391	22.54	33.686	21.29	33.707	21.01	33.583
30m	19.68	33.822	16.04	34.083	14.48	34.145	20.08	33.755	17.38	33.844	17.97	33.763	22.63	33.389	22.34	33.708	20.93	33.710	21.01	33.583
50m	14.43	34.214	13.72	34.188	13.18	34.194	16.17	34.149	16.56	33.968	16.31	33.984	22.35	33.636	21.64	33.684	17.99	34.403	15.83	34.339
75m	11.38	34.099	12.09	34.153	11.62	34.104	12.92	34.132	11.12	34.124	10.31	34.038	17.50	34.371	16.21	34.435	15.96	34.432	10.69	34.257
100m	9.67	33.990	10.39	34.009	9.81	34.060	10.53	34.039	8.71	33.942	8.19	33.872	14.90	34.441			10.27	34.223	8.34	34.138
125m	7.33	33.804	8.96	33.969	7.47	33.811	7.62	33.827	6.67	33.736	6.47	33.712	10.34	34.228			8.29	34.165	7.07	34.111
150m	5.68	33.664	7.92	33.926	6.38	33.696	4.34	33.520	6.34	33.744	5.20	33.610	8.43	34.150			7.79	34.140	5.39	34.089
200m	3.47	33.503	4.15	33.679	4.01	33.515	3.51	33.476	3.97	33.514			4.45	34.091			7.04	34.121	2.94	34.073
250m	3.31	33.605	3.33	33.672	3.25	33.508	3.15	33.531	3.31	33.518			2.21	34.079					1.69	34.076
300m	3.28	33.707	3.41	33.771	3.12	33.566	3.11	33.608	2.72	33.568			1.37	34.078					1.48	34.074
400m													0.79	34.077					0.81	34.079
500m																			0.59	34.075
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-32

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	J52		J53		J54		J55		J56		J57		J58		J47		J46		J45	
Latitude:N	41-30.1		41-30.2		41-30.2		41-30.1		41-30.0		41-30.0		41-30.0		42-30.0		42-30.5		42-29.9	
Longitude:E	139-30.0		139-15.1		139- 0.1		138-40.1		138-20.1		138- 0.2		137-30.0		137-30.0		138- 0.7		138-19.6	
Date	1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/06	
Time(JST)	03:07		04:30		05:53		07:44		09:44		11:54		14:44		20:23		22:45		01:11	
Weather	BC		BC		C		C		C		C		C		C		C		C	
Air Temp.	14.3		14.6		14.1		14.6		15.6		15.9		15.9		15.7		15.1		14.5	
Bar	1022.2		1022.1		1022.0		1022.5		1022.5		1021.5		1020.0		1019.8		1019.6		1019.1	
Wind Dir	WNW		NW		NW		WNW		NNE		S		S		SSW		SSW		SSW	
Wind Spd/F	S 5		S 6		S 5		S 1		S 1		S 3		S 4		S 6		S 6		S 6	
Transparency							18		17		17		17							
Depth	1664		1130				3050		3691		3686		3673		3678		3678		3652	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.7	33.680	20.1	33.638	19.3	33.763	19.0	33.685	16.2	33.721	16.0	33.827	16.8	33.616	15.2	33.820	14.8	33.900	15.3	33.903
10m	20.37	33.667	20.24	33.653	19.48	33.756	18.33	33.737	16.23	33.724	15.98	33.823	16.82	33.613	15.35	33.820	14.79	33.901	15.42	33.904
20m	20.37	33.668	20.02	33.689	19.45	33.759	17.50	33.731	15.58	33.748	15.95	33.825	16.78	33.618	15.36	33.820	14.79	33.901	15.01	33.906
30m	20.21	33.689	19.07	33.821	15.37	34.059	12.90	34.052	14.91	33.769	13.87	33.886	7.12	34.130	14.93	33.837	11.63	33.967	13.68	33.928
50m	12.82	34.386	9.77	34.223	7.22	34.156	4.77	34.129	9.31	33.972	8.20	34.063	3.65	34.085	3.72	34.125	4.03	34.109	3.90	34.131
75m	9.59	34.185	7.74	34.143	5.08	34.108	3.60	34.091	1.96	34.100	3.48	34.098	2.35	34.063	2.34	34.084	2.59	34.079	2.02	34.088
100m	7.62	34.131	4.65	34.096	3.40	34.088	2.65	34.082	1.66	34.073	2.90	34.090	1.88	34.063	1.87	34.073	2.03	34.071	1.66	34.072
125m	4.64	34.088	2.95	34.087	2.73	34.073	1.90	34.071	1.45	34.070	2.41	34.090	1.59	34.064	1.68	34.077	1.77	34.079	1.55	34.080
150m	3.31	34.088	2.19	34.077	1.93	34.074	1.62	34.070	1.31	34.071	2.17	34.090	1.47	34.077	1.54	34.080	1.62	34.083	1.42	34.081
200m	1.74	34.075	1.27	34.079	1.32	34.074	1.21	34.073	1.15	34.074	1.88	34.092	1.27	34.077	1.28	34.082	1.37	34.086	1.25	34.083
250m	1.33	34.077	1.09	34.076	1.13	34.076	1.02	34.077	1.03	34.077	1.65	34.091	1.10	34.079	1.16	34.087	1.19	34.087	1.10	34.082
300m	0.98	34.078	0.89	34.078	0.82	34.080	0.90	34.080	0.89	34.076	1.45	34.090	1.05	34.088	1.05	34.088	1.04	34.088	0.98	34.085
400m	0.70	34.076	0.80	34.080	0.64	34.078	0.73	34.079	0.79	34.083	1.09	34.090	0.82	34.084	0.81	34.084	0.84	34.086	0.76	34.083
500m	0.50	34.073	0.52	34.076	0.52	34.076	0.51	34.077	0.63	34.080	0.87	34.086	0.65	34.081	0.62	34.080	0.63	34.079	0.59	34.079
600m																	0.48	34.077		
700m																	0.39	34.076		
800m																	0.34	34.076		
900m																	0.30	34.075		
1000m																	0.27	34.074		

Table 3-33



Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	J44		J43		J42		J41		JC11		JC12		JC13		JC14		JC15		J38	
Latitude:N	42-29.9		42-30.1		42-30.1		42-30.0		43- 0.0		43- 0.2		43- 0.1		43- 0.0		43- 0.0		43-26.7	
Longitude:E	138-40.0		139- 0.0		139-19.9		139-40.1		140-20.1		140- 0.1		139-40.1		139-20.2		139- 0.1		138-59.9	
Date	1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/07	
Time(JST)	02:44		04:19		05:57		07:30		13:58		16:06		17:52		19:52		22:05		01:25	
Weather	BC		BC		BC		BC		C		C		C		BC		BC		BC	
Air Temp.	14.4		14.4		14.7		14.9		18.5		17.4		16.9		16.8		16.1		17.2	
Bar	1019.5		1019.5		1019.5		1019.5		1017.0		1016.0		1016.0		1015.6		1014.5		1012.6	
Wind Dir	SSW		SW		SW		SE		WSW		WSW		SW		SW		SSW		SW	
Wind Spd/F	S 7		S 6		S 4		S 6		S 4		S 5		S 5		S 6		S 5		S 6	
Transparency					14		13		14		15									
Depth	3669		3680		3300		1830		469		1250		3200		2317		3547		3160	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.1	33.828	16.9	33.760	18.8	33.701	16.2	33.883	19.6	33.979	18.7	34.016	19.1	33.921	19.1	34.148	18.1	34.070	18.3	33.986
10m	16.34	33.825	17.14	33.759	19.06	33.694	15.27	33.952	19.61	33.950	18.82	34.028	19.30	33.915	19.38	34.116	18.40	34.069	18.61	33.975
20m	16.35	33.825	16.32	33.824	19.04	33.719	14.03	34.008	19.57	33.949	18.50	34.091	19.17	34.056	19.38	34.116	18.41	34.072	18.61	33.975
30m	15.28	33.829	15.62	33.896	18.38	33.710	12.90	34.076	19.58	33.951	18.41	34.114	14.39	34.409	19.39	34.116	18.41	34.096	18.61	33.976
50m	6.94	34.078	9.72	34.014	12.45	34.228	11.29	34.117	19.53	33.989	14.55	34.302	10.18	34.205	14.33	34.358	12.64	34.364	15.86	34.169
75m	3.13	34.100	3.13	34.112	7.97	34.142	8.80	34.165	11.70	34.279	9.54	34.159	7.73	34.124	10.20	34.177	9.91	34.153	9.60	34.192
100m	2.18	34.085	2.33	34.084	4.91	34.103	6.80	34.121	9.97	34.162	7.32	34.116	6.61	34.100	8.29	34.124	8.85	34.138	6.83	34.122
125m	1.77	34.084	1.83	34.073	3.40	34.091	5.47	34.105	8.08	34.117	6.22	34.094	4.67	34.091	5.98	34.109	6.68	34.111	4.63	34.095
150m	1.61	34.086	1.54	34.072	2.77	34.077	4.23	34.083	6.62	34.101	4.08	34.090	2.98	34.081	3.48	34.084	4.93	34.083	3.49	34.084
200m	1.31	34.081	1.29	34.075	1.65	34.078	2.56	34.077	3.79	34.085	2.39	34.081	1.84	34.075	2.05	34.074	2.44	34.072	1.81	34.079
250m	1.12	34.081	1.13	34.079	1.27	34.076	1.79	34.076	2.22	34.086	1.80	34.085	1.38	34.075	1.63	34.079	1.62	34.070	1.38	34.076
300m	1.01	34.082	1.00	34.081	1.07	34.077	1.34	34.079	1.58	34.085	1.42	34.083	1.12	34.077	1.28	34.076	1.28	34.075	1.22	34.076
400m	0.80	34.084	0.86	34.084	0.75	34.078	0.81	34.077	0.88	34.079	0.81	34.080	0.79	34.076	0.91	34.078	0.95	34.079	0.88	34.081
500m	0.61	34.079	0.70	34.080	0.57	34.075	0.53	34.074			0.52	34.074	0.60	34.075	0.66	34.078	0.73	34.078	0.59	34.075
600m							0.40	34.073					0.45	34.074	0.52	34.076	0.55	34.076	0.51	34.074
700m							0.33	34.073												
800m							0.29	34.073												
900m							0.26	34.073												
1000m							0.23	34.073												

Table 3-34

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	J37		J36		J35		J34		J31		J32		J33		J22		J21		J23	
Latitude:N	43-30.1		43-30.1		43-30.1		43-30.1		43-20.1		43-29.7		43-30.1		44-30.0		44-30.0		44-30.0	
Longitude:E	139-19.9		139-39.8		139-59.9		140-19.9		141-10.3		141- 0.2		140-40.0		141-15.2		141-30.0		141- 0.0	
Date	1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/12		1999/10/12		1999/10/12		1999/10/12		1999/10/12		1999/10/12	
Time(JST)	03:48		05:35		07:21		09:00		09:57		11:26		13:07		19:18		20:24		22:36	
Weather	C		BC		BC		BC		BC		B		BC				BC		BC	
Air Temp.	16.7		17.0		17.5		18.4		19.0		20.5		17.6		15.0		15.1		15.2	
Bar	1011.2		1011.0		1011.0		1011.0		1017.8		1018.5		1019.0		1020.5		1021.5		1021.0	
Wind Dir	SW		SW		SW		SSW		WNW		W		W		W		SSW		SW	
Wind Spd/F	S 5		S 6		S 6		S 6		S 9		S 8		S 8		S 5		S 4		S 4	
Transparency									10		14		19							
Depth	3169		2034		1247		646		38		93		688		116		78		199	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.0	34.123	19.3	34.098	19.3	34.110	19.0	34.078	18.7	33.810	18.5	34.082	18.8	34.078	18.1	34.078	18.1	34.041	18.3	34.090
10m	19.42	34.105	19.57	34.091	19.54	34.106	19.18	34.071	18.80	33.809	18.65	34.081	19.04	34.073	18.34	34.077	18.36	34.040	18.49	34.088
20m	19.40	34.102	19.58	34.091	19.54	34.106	19.18	34.072	18.79	33.821	18.60	34.085	19.03	34.073	18.34	34.077	18.38	34.039	18.49	34.088
30m	19.36	34.099	19.58	34.091	19.55	34.106	19.16	34.069	18.80	33.849	18.54	34.092	19.02	34.073	18.35	34.077	18.38	34.040	18.50	34.088
50m	15.56	34.391	19.58	34.090	19.30	34.117	16.31	34.291			18.45	34.103	18.98	34.073	18.35	34.081	18.36	34.039	18.48	34.095
75m	11.73	34.277	13.39	34.267	12.95	34.315	12.48	34.327			11.95	34.273	11.98	34.290	12.60	34.309			12.25	34.329
100m	9.70	34.154	10.81	34.189	10.06	34.176	7.44	34.135					7.91	34.140	9.49	34.146			8.79	34.146
125m	7.95	34.115	10.01	34.144	7.99	34.126	5.72	34.095					5.95	34.104					6.24	34.109
150m	6.37	34.101	8.22	34.116	5.77	34.111	4.41	34.086					4.43	34.091					4.15	34.101
200m	2.87	34.085	4.35	34.094	2.63	34.089	2.56	34.083					2.10	34.088						
250m	1.88	34.077	2.67	34.085	1.77	34.087	1.61	34.086					1.57	34.086						
300m	1.50	34.080	1.61	34.085	1.35	34.086	1.27	34.082					1.24	34.084						
400m	0.99	34.083	0.98	34.079	0.97	34.081	0.80	34.077					0.85	34.080						
500m	0.68	34.078	0.72	34.076	0.71	34.077	0.58	34.074					0.59	34.076						
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-35

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	J24		J25		J26		J27		J18		J17		J16		J15		J14		JW03	
Latitude:N	44-30.0		44-30.1		44-30.1		44-30.0		45-30.0		45-30.0		45-30.0		45-30.0		45-30.1		45-44.8	
Longitude:E	140-40.0		140-20.0		140- 0.3		139-30.3		139-40.0		140- 0.0		140-20.0		140-40.0		140-53.1		140-59.9	
Date	1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/13	
Time(JST)	00:08		01:32		03:03		05:29		11:05		12:54		14:27		15:53		17:07		18:47	
Weather	BC		C		C		BC		BC		BC		BC		C		C		C	
Air Temp.	15.2		15.5		15.3		15.0		15.7		15.6		15.1		15.4		15.6		15.5	
Bar	1020.7		1020.1		1020.1		1019.0		1016.8		1015.5		1014.0		1014.0		1013.5		1012.0	
Wind Dir	SW		SSW		SW		SW		SSW		SSW		SSW		SW		WSW		SSW	
Wind Spd/F	S 5		S 7		S 6		S 5		S 6		S 7		S 6		S 6		S 6		S 5	
Transparency									16		17		16		18					
Depth	143		250		573		505		837		590		397		544		420		480	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.9	34.056	16.5	33.987	14.6	33.942	15.0	33.975	13.2	33.646	14.5	33.830	14.4	33.900	16.2	33.983	15.5	33.935	16.6	34.035
10m	18.14	34.055	16.73	33.986	14.68	33.944	15.37	33.972	13.13	33.647	14.43	33.834	14.41	33.903	16.33	33.989	15.69	33.941	16.80	34.042
20m	18.08	34.049	16.72	33.987	14.68	33.944	15.37	33.972	13.12	33.663	14.45	33.844	14.26	33.881	15.59	33.950	15.56	33.926	16.80	34.042
30m	17.84	34.036	16.73	33.986	14.68	33.944	15.35	33.975	9.43	34.046	9.13	34.137	8.53	34.150	15.29	33.976	15.40	33.910	16.79	34.045
50m	13.57	34.384	11.90	34.329	8.34	34.167	8.75	34.168	3.21	34.096	2.79	34.112	5.96	34.101	8.93	34.150	11.03	34.252	15.15	34.155
75m	9.69	34.156	7.72	34.137	5.24	34.106	6.08	34.111	2.43	34.091	2.14	34.095	4.61	34.092	7.20	34.107	8.23	34.123	9.81	34.177
100m	8.55	34.123	5.92	34.098	3.92	34.087	3.96	34.092	2.01	34.084	1.85	34.091	3.47	34.087	5.48	34.087	6.84	34.101	7.60	34.117
125m	6.70	34.102	4.81	34.090	3.01	34.087	2.84	34.086	1.73	34.090	1.64	34.089	2.93	34.084	4.13	34.082	5.83	34.087	6.59	34.098
150m			3.70	34.086	2.46	34.085	2.13	34.085	1.42	34.089	1.41	34.090	2.41	34.087	3.07	34.087	5.24	34.081	5.24	34.092
200m			2.75	34.086	1.93	34.087	1.61	34.087	1.16	34.088	1.14	34.088	1.90	34.087	1.94	34.092	2.44	34.093	3.18	34.084
250m					1.38	34.090	1.36	34.089	0.93	34.084	0.96	34.085	1.45	34.087	1.37	34.089	1.59	34.089	2.20	34.088
300m					1.13	34.087	1.15	34.087	0.81	34.081	0.83	34.084	1.17	34.087	1.05	34.085	1.13	34.086	1.22	34.089
400m					0.83	34.083	0.87	34.085	0.65	34.079	0.66	34.080			0.66	34.078			0.70	34.079
500m					0.67	34.081			0.49	34.076	0.52	34.077			0.37	34.074				
600m									0.37	34.075										
700m																				
800m																				
900m																				
1000m																				

Table 3-36

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	JW02		JW01		J13		J12		J11		JW11		JW12		CJ46		CJ47		CHA101	
Latitude:N	45-45.0		45-45.0		45-30.0		45-30.0		45-30.0		45- 0.0		45- 0.1		42-30.0		42-30.0		43-55.0	
Longitude:E	141- 9.9		141-19.9		141-10.0		141-25.0		141-40.0		141-29.9		141-15.1		138- 0.0		137-30.1		141-12.3	
Date	1999/10/13		1999/10/13		1999/10/13		1999/10/13		1999/10/14		1999/10/14		1999/10/14		1999/10/19		1999/10/20		1999/10/25	
Time(JST)	19:42		20:28		22:13		23:29		00:30		04:18		05:41		23:36		02:39		13:01	
Weather	C		C		C		BC		C		C		C		BC		B		BC	
Air Temp.	15.6		15.0		16.2		16.9		17.1		14.8		13.7		11.7		11.9		16.6	
Bar	1011.6		1011.1		1010.1		1009.7		1009.0		1009.0		1009.5		1021.0		1019.3			
Wind Dir	SSW		SW		SW		SW		WSW		W		NW		ESE		E		CALM	
Wind Spd/F	S 4		S 7		S 8		S 8		S 9		S 9		S 13		S 2		S 3		S 0	
Transparency																				
Depth	121		125		126		111		53		65		85		3680		3680		202	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.9	34.053	16.6	34.047	17.3	34.036	17.5	34.043	17.8	33.909	18.2	34.007	17.3	34.084	12.9	33.913	13.3	33.936	14.9	34.09*
10m	17.06	34.057	16.83	34.051	17.70	34.034	17.78	34.041	17.93	33.962	18.36	34.006	17.56	34.078	13.14	33.908	13.42	33.936	14.74	34.099
20m	17.06	34.056	16.84	34.051	17.25	34.052	17.67	34.046	17.66	34.037	18.36	34.006	17.46	34.074	13.15	33.913	13.43	33.936	14.71	34.098
30m	17.06	34.056	16.83	34.051	17.02	34.050	17.24	34.062	17.61	34.047	18.35	34.009	17.07	34.059	13.11	33.927	13.43	33.935	14.70	34.098
50m	17.07	34.057	16.80	34.048	13.09	34.208	16.87	34.065			18.22	34.021	16.38	34.111	5.52	34.130	4.80	34.140	14.69	34.099
75m	12.00	34.196	12.15	34.197	10.46	34.142	11.73	34.194					11.18	34.183	3.04	34.098	2.60	34.096	10.41	34.218
100m	7.83	34.124	8.55	34.125	7.24	34.083	8.17	34.089							2.26	34.090	2.01	34.083	7.90	34.154
125m															1.96	34.088	1.81	34.086	5.43	34.102
150m															1.67	34.085	1.45	34.077	3.55	34.097
200m															1.31	34.081	1.27	34.084		
250m															1.21	34.087	1.06	34.080		
300m															1.06	34.088	0.99	34.086		
400m															0.85	34.086	0.77	34.082		
500m															0.64	34.080	0.59	34.077		
600m															0.49	34.076	0.46	34.075		
700m															0.40	34.076	0.39	34.075		
800m															0.33	34.075	0.33	34.074		
900m															0.29	34.074	0.28	34.073		
1000m															0.26	34.074	0.25	34.073		

Table 3-37

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199911		199911	
Station No	CHA102		CHA103		CHA104		CHA105		CHA106		CHA107		CHA108		CHA109		CIS103		CIS104	
Latitude:N	43-52.4		43-52.7		44- 0.0		44- 6.3		43-54.1		43-51.6		43-45.3		43-45.7		43-30.7		43-31.0	
Longitude:E	141- 8.3		141-12.5		141-14.6		141-15.9		141-15.5		141-10.3		141- 9.8		141-10.8		141- 7.2		141- 5.5	
Date	1999/10/25		1999/10/26		1999/10/26		1999/10/26		1999/10/26		1999/10/27		1999/10/27		1999/10/27		1999/11/08		1999/11/08	
Time(JST)	14:55		07:13		08:57		11:40		12:49		08:50		10:08		12:32		11:23		12:39	
Weather	BC				BC		C										C		D	
Air Temp.	13.9				15.0		15.9				14.5		15.6				12.2		13.0	
Bar											1020.0						1010.0			
Wind Dir	CALM						SSW		SW		S		SE				SE		D	
Wind Spd/F	S 0						S 8		S 9		S 9		S 8				S 4			
Transparency																				
Depth	279		198		176		132		150		239		210		191		75		81	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.6	34.07*	14.1	34.05*	15.4	33.53*	15.4	33.92*	15.7	33.92*	14.1	34.04*	14.6	34.09*	16.9	34.11*	14.0	34.04*	13.5	34.09*
10m	14.60	34.091	14.19	34.060	15.69	33.677	15.41	33.711	15.88	33.945	14.24	34.051	14.60	34.090	14.86	34.111	13.93	34.041	13.44	34.100
20m	14.53	34.084	14.19	34.059	15.27	34.082	15.54	34.100	14.90	34.053	14.24	34.051	14.37	34.068	14.62	34.093	13.81	34.055	13.44	34.100
30m	14.50	34.077	14.19	34.059	14.86	34.100	15.23	34.110	14.78	34.077	14.23	34.050	14.19	34.057	14.17	34.052	13.66	34.078	13.43	34.099
50m	13.11	34.236	14.18	34.059	14.67	34.079	14.34	34.133	14.56	34.062	13.73	34.027	12.90	33.991	13.98	34.085	13.39	34.081	13.39	34.095
75m	9.65	34.185	10.27	34.225	11.22	34.265	10.51	34.218	11.52	34.269	10.49	34.226	10.24	34.211	10.63	34.216				
100m	6.52	34.115	7.55	34.133	8.02	34.141	7.62	34.128	7.47	34.128	8.67	34.159	8.21	34.147	7.94	34.143				
125m	4.89	34.101	5.11	34.100	5.63	34.094			4.99	34.097	6.33	34.111	5.99	34.106	5.91	34.097				
150m	3.58	34.093	3.56	34.089	4.05	34.084					4.76	34.089	4.34	34.088	3.72	34.082				
200m	1.72	34.093									2.23	34.087	2.44	34.084						
250m	1.17	34.083																		
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-38

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	CIS105		CIS128		CIS129		CIS111		CIS108		CIS114		CIS112		CIS109		CIS115		CIS118	
Latitude:N	43-31.7		43-30.7		43-31.7		43-30.1		43-35.0		43-34.8		43-40.0		43-45.0		43-45.1		43-39.8	
Longitude:E	141- 3.1		141- 7.2		141- 6.2		141-10.1		141-11.9		141- 5.1		141- 9.1		141-15.2		141- 5.3		141- 0.1	
Date	1999/11/08		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10	
Time(JST)	13:58		10:47		12:02		13:03		13:39		14:15		14:57		15:40		16:32		17:28	
Weather	BC		C		C		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	12.4				9.2		10.5		12.4		9.7		11.7		9.6		8.3		8.1	
Bar	1020.0				1020.0		1020.0		1020.0		1020.0		1020.0		1020.0		1019.5		1020.0	
Wind Dir	W				W		W		W		W		WSW		SW		W		W	
Wind Spd/F	S 7				S 6		S 6		S 7		S 7		S 6		S 5		S 7		S 7	
Transparency																				
Depth	91		74		80		60		64		91		85		115		279		290	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.8	33.72*	12.8	33.83*	13.0	34.04*	12.9	33.76*	12.8	33.72*	13.3	34.10*	12.9	34.10*	13.1	34.08*	12.9	34.09*	12.5	34.08*
10m	13.70	34.108	13.07	33.855	13.40	34.071	13.29	33.884	12.88	33.724	13.57	34.106	13.10	33.968	13.34	34.082	13.17	34.091	12.90	34.084
20m	13.70	34.108	13.28	34.001	13.47	34.100	13.45	34.060	13.64	34.031	13.56	34.105	13.21	34.088	13.28	34.083	13.18	34.091	12.89	34.083
30m	13.70	34.108	13.29	34.019	13.46	34.100	13.44	34.066	13.57	34.093	13.57	34.105	13.19	34.087	13.17	34.080	13.18	34.091	12.89	34.083
50m	13.64	34.106	13.41	34.088	13.40	34.099	13.32	34.075	13.20	34.071	13.40	34.102	13.10	34.088	13.13	34.085	12.93	34.082	12.80	34.080
75m	12.48	34.146									10.47	34.206	9.90	34.156	10.07	34.162	8.90	34.128	10.31	34.138
100m															7.91	34.119	6.58	34.107	6.91	34.105
125m																	4.84	34.082	5.61	34.086
150m																	3.70	34.078	3.70	34.082
200m																	2.49	34.078	2.41	34.077
250m																	1.62	34.079	1.55	34.080
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-39

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	CIS121		CIS123		CIS117		CIS101		CIS120		CIS125		CIS127		CIS126		CIS124		CIS122	
Latitude:N	43-35.1		43-30.1		43-29.9		43-25.0		43-25.0		43-25.0		43-25.0		43-20.0		43-18.0		43-20.1	
Longitude:E	140-55.0		140-50.3		141- 0.1		141- 5.0		140-55.0		140-45.0		140-35.0		140-40.0		140-45.1		140-49.9	
Date	1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/11		1999/11/11		1999/11/11	
Time(JST)	18:21		19:08		20:08		20:50		21:37		22:24		23:14		00:02		00:37		01:08	
Weather	BC		BC		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	8.4		8.8		9.3		9.0				9.3		10.2		9.5		9.4		9.6	
Bar	1020.0		1020.0		1020.0		1020.0				1019.5				1019.6		1019.4		1019.4	
Wind Dir	W		WSW		SW		SW				SSW		WSW				S		S	
Wind Spd/F	S 6		S 2		S 7		S 6				S 5		S 8				S 6		S 8	
Transparency																				
Depth	129		461		95		62		85		166		198		106		78		83	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.1	34.10*	12.9	34.09*	13.4	34.12*	13.3	34.06*	13.2	34.06*	13.4	34.08*	13.2	34.10*	13.3	34.43*	13.3	34.11*	13.2	34.08*
10m	13.51	34.102	13.29	34.088	13.60	34.118	13.41	33.961	13.48	34.069	13.55	34.087	13.44	34.108	13.40	34.091	13.47	34.105	13.41	34.091
20m	13.52	34.102	13.31	34.088	13.61	34.118	13.43	34.020	13.48	34.070	13.55	34.087	13.47	34.107	13.41	34.092	13.46	34.105	13.41	34.090
30m	13.52	34.102	13.31	34.088	13.60	34.117	13.41	34.035	13.47	34.066	13.55	34.089	13.47	34.107	13.40	34.092	13.46	34.106	13.40	34.093
50m	13.51	34.102	13.31	34.088	13.48	34.105	13.35	34.081	13.40	34.085	13.46	34.088	13.47	34.106	13.40	34.092	13.47	34.106	13.33	34.091
75m	10.78	34.057	12.08	34.139	12.75	34.105			8.82	34.168	10.04	34.169	12.04	34.056	11.08	34.153				
100m	7.53	34.101	7.16	34.116							6.62	34.119	7.96	34.126						
125m			4.96	34.085							4.96	34.095	5.74	34.092						
150m			3.72	34.077							4.57	34.076	4.28	34.083						
200m			2.40	34.079																
250m			1.65	34.081																
300m			1.23	34.078																
400m			0.86	34.075																
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-40

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199912		199912		199912	
Station No	CIS119		CIS116		CIS113		CIS106		CIS102		CIS107		CIS110		J31		J32		J33	
Latitude:N	43-15.0		43-20.0		43-15.1		43-14.9		43-20.0		43-25.0		43-19.9		43-20.2		43-30.0		43-30.0	
Longitude:E	140-52.3		140-59.9		141- 5.0		141-14.6		141-19.9		141-15.0		141- 9.9		141- 9.9		141- 0.0		140-40.2	
Date	1999/11/11		1999/11/11		1999/11/11		1999/11/11		1999/11/11		1999/11/11		1999/11/11		1999/11/24		1999/11/24		1999/11/24	
Time(JST)	01:48		02:35		03:17		04:04		04:53		05:39		06:27		10:02		11:16		12:53	
Weather	BC		BC		BC		BC		BC		BC		C		B		B		B	
Air Temp.	9.3		9.9		9.7		7.1		6.5		7.8		8.2		11.7		16.8		13.5	
Bar	1019.4		1019.2		1019.2		1019.3		1019.5		1018.5		1018.5		1016.0		1015.2		1013.2	
Wind Dir	S		SW		SW		SE		SE		SE		SE		ESE		W		WSW	
Wind Spd/F	S 7		S 7		S 6		S 7		S 7		S 8		S 7		S 3		S 2		S 9	
Transparency															10		14		14	
Depth	43		52		31		25		25		43		37		40		95		691	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.2	33.93*	13.3	34.07*	12.9	33.53*	12.0	32.47*	11.8	31.82*	12.2	33.06*	13.1	33.73*	11.2	33.588	12.1	34.122	12.2	34.106
10m	13.55	33.965	13.50	34.074	13.44	33.650	13.36	33.131	12.90	33.099	12.96	33.396	13.43	33.753	11.70	33.880	12.10	34.113	12.14	34.102
20m	13.65	34.035	13.51	34.076	13.56	33.733					13.72	33.910	13.93	33.981	11.73	33.981	12.09	34.112	12.09	34.105
30m	13.63	34.053	13.50	34.078							13.85	34.050	13.70	33.971	11.86	34.027	12.06	34.112	11.98	34.124
50m																	11.70	34.117	11.52	34.119
75m																	11.30	34.116	11.23	34.109
100m																			9.23	34.129
125m																			6.13	34.113
150m																			4.36	34.088
200m																			2.51	34.082
250m																			1.72	34.083
300m																			1.33	34.080
400m																			0.83	34.076
500m																			0.63	34.073
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-41



Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		200002	
Station No	J34		J35		J36		J37		J38		JC11		JC12		JC13		JC14		J63	
Latitude:N	43-30.0		43-30.1		43-30.1		43-29.9		43-29.9		43- 0.2		43- 0.1		43- 0.0		43- 0.0		41- 0.2	
Longitude:E	140-20.1		139-59.9		139-40.0		139-20.1		139- 0.0		140-23.4		140- 0.1		139-40.0		139-20.1		140- 0.2	
Date	1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/12/01		1999/12/01		1999/12/01		1999/12/01		2000/01/28	
Time(JST)	14:59		16:45		18:24		20:01		21:34		13:08		16:03		18:38		20:42		00:19	
Weather	BC		BC		C		C		C		C		BC		C		C		S	
Air Temp.	12.3		11.2		10.9		10.7		10.5		3.0		3.4		4.3		5.1		0.8	
Bar	1012.8		1012.6		1012.0		1011.3		1010.5		1027.5		1026.5		1026.9		1024.5		1020.1	
Wind Dir	WSW		WNW		NNE		NE		NE		W		WSW		W		SSW		W	
Wind Spd/F	S 6		S 3		S 2		S 4		S 7		S 9		S 8		S 9		S 10		S 8	
Transparency	10																			
Depth	641		1247		2070		3180		3400		466		1247		3265		2313		502	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	11.7	34.111	12.7	33.986	12.4	34.186	12.2	34.184	11.5	34.105	11.8	33.933	11.6	33.961	10.8	33.986	10.8	34.066	10.4	33.947
10m	11.73	34.107	12.67	33.998	12.44	34.183	12.40	34.177	11.57	34.098	12.16	33.922	12.00	33.942	11.14	33.973	11.10	34.056	10.80	33.946
20m	11.73	34.107	12.41	34.044	12.43	34.183	12.41	34.177	11.58	34.098	12.16	33.922	12.00	33.941	11.15	33.972	11.10	34.057	10.80	33.946
30m	11.73	34.107	12.40	34.044	12.35	34.177	12.04	34.142	11.58	34.098	12.16	33.922	12.00	33.942	11.14	33.972	11.10	34.058	10.79	33.945
50m	11.43	34.116	12.22	34.071	11.84	34.124	11.68	34.121	11.51	34.095	12.16	33.923	11.99	33.942	10.27	34.073	11.11	34.058	10.81	33.945
75m	10.70	34.107	11.46	34.099	11.14	34.092	11.15	34.104	11.20	34.076	12.16	33.924	11.33	33.997	7.55	34.114	8.65	34.166	10.80	33.947
100m	9.79	34.080	9.74	34.136	9.45	34.131	9.07	34.134	9.61	34.159	12.16	33.924	8.02	34.129	5.75	34.095	6.86	34.117	10.74	33.953
125m	8.44	34.124	7.39	34.127	7.54	34.113	6.39	34.112	6.67	34.121	12.10	33.934	6.69	34.104	5.24	34.087	4.65	34.092	9.77	34.126
150m	5.92	34.099	5.67	34.105	5.88	34.102	4.54	34.094	4.94	34.093	8.20	34.146	5.60	34.091	3.63	34.078	3.67	34.075	7.64	34.056
200m	2.94	34.085	3.20	34.079	2.50	34.090	2.18	34.083	2.65	34.076	5.33	34.093	3.16	34.080	2.15	34.073	1.95	34.075	4.70	34.081
250m	1.90	34.084	2.00	34.078	1.70	34.079	1.51	34.074	1.81	34.073	3.21	34.081	1.81	34.074	1.53	34.076	1.41	34.072	2.92	34.077
300m	1.31	34.080	1.31	34.080	1.39	34.080	1.24	34.073	1.42	34.082	1.89	34.085	1.35	34.073	1.22	34.075	1.10	34.072	1.67	34.070
400m	0.84	34.077	0.84	34.076	0.80	34.075	0.90	34.076	0.95	34.081	1.51	34.074	0.96	34.074	0.87	34.075	0.75	34.072	0.96	34.072
500m	0.58	34.073	0.62	34.073	0.55	34.072	0.62	34.072	0.78	34.079			0.66	34.072	0.66	34.073	0.53	34.069		
600m									0.61	34.075			0.51	34.070	0.51	34.070	0.43	34.068		
700m																				
800m																				
900m																				
1000m																				

Table 3-42

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	J62		J61		J51		J52		J53		J54		J55		J56		J57		J58	
Latitude:N	41-10.1		41-20.0		41-30.1		41-30.1		41-30.2		41-30.2		41-30.2		41-30.1		41-30.2		41-30.2	
Longitude:E	140- 0.0		140- 0.0		139-49.9		139-29.9		139-14.9		139- 0.1		138-40.1		138-20.0		138- 0.0		137-30.0	
Date	2000/01/28		2000/01/28		2000/01/28		2000/01/28		2000/01/28		2000/01/28		2000/01/28		2000/01/28		2000/01/28		2000/01/28	
Time(JST)	01:30		02:36		04:13		06:08		07:37		09:03		10:58		12:53		14:43		17:15	
Weather	C		C		C		C		C		BC		BC		BC		BC		BC	
Air Temp.	1.6		2.2		2.0		2.1		1.2		1.6		1.6		1.1		1.0		0.5	
Bar	1020.0		1019.7				1020.0		1022.5		1023.5		1023.5		1024.0		1024.9		1026.5	
Wind Dir	W		W		W		W		NW		WNW		WNW		NW		NNW		NNW	
Wind Spd/F	S 8		S 9		S 9		S 9		S 8		S 7		S 6		S 6		S 4		S 3	
Transparency									24		16		18		17		14			
Depth	113		223		1369		1660		1100		1330		3100		3691		3682		3680	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.1	33.962	10.1	33.977	10.6	33.941	11.3	33.980	11.3	33.944	10.6	33.955	10.3	34.000	7.9	33.978	8.2	33.939	10.0	33.944
10m	10.64	33.960	10.48	33.971	10.54	33.952	11.50	33.975	11.44	33.939	11.33	33.950	10.70	33.995	7.97	33.979	8.51	33.944	10.03	33.948
20m	10.64	33.960	10.49	33.970	10.12	33.975	11.52	33.975	11.44	33.939	11.33	33.951	10.70	33.995	7.97	33.978	8.00	34.000	10.04	33.948
30m	10.64	33.960	10.50	33.970	10.09	33.983	11.52	33.974	11.44	33.939	11.33	33.952	10.69	33.995	7.86	33.982	8.02	33.998	9.80	33.953
50m	10.46	33.976	10.40	33.973	10.08	33.980	11.52	33.975	11.44	33.939	11.33	33.951	10.66	33.996	7.27	34.057	6.97	34.032	9.64	33.955
75m	10.21	33.980	9.90	33.986	9.25	34.037	11.52	33.975	11.45	33.938	11.33	33.950	10.49	33.999	5.33	34.082	6.12	34.025	7.19	34.085
100m	9.89	34.037	9.48	34.006	7.43	34.045	11.52	33.974	11.45	33.938	11.33	33.950	7.86	34.080	4.35	34.096	5.37	34.028	5.06	34.028
125m			8.16	34.051	6.00	34.078	11.42	34.160	11.45	33.938	11.33	33.950	5.34	34.033	2.82	34.071	4.04	34.063	3.44	34.085
150m			7.00	34.051	3.26	34.091	10.55	34.143	11.45	33.938	11.12	34.143	4.41	34.016	2.05	34.076	2.76	34.046	2.30	34.062
200m			6.33	34.053	1.80	34.070	6.13	34.115	9.13	34.128	6.64	34.071	1.77	34.063	1.29	34.064	2.13	34.043	1.83	34.072
250m					1.28	34.073	3.24	34.082	3.61	34.095	3.28	34.092	1.17	34.068	1.08	34.065	1.87	34.072	1.45	34.076
300m					1.06	34.072	1.61	34.073	1.68	34.073	1.75	34.071	0.98	34.070	0.95	34.070	1.60	34.074	1.26	34.077
400m					0.77	34.073	0.97	34.073	1.02	34.073	0.96	34.073	0.80	34.072	0.78	34.073	1.26	34.077	1.02	34.080
500m					0.56	34.070	0.74	34.073	0.75	34.074	0.68	34.072	0.62	34.072	0.68	34.073	1.00	34.080	0.90	34.084
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-43

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	J47		J46		J45		J44		J43		J42		J41		J39		J38		J37	
Latitude:N	42-30.1		42-30.1		42-30.2		42-30.2		42-30.2		42-30.2		42-30.1		43-30.0		43-30.1		43-30.1	
Longitude:E	137-29.9		137-59.9		138-19.9		138-39.9		138-59.9		139-19.9		139-40.0		138-29.9		138-59.8		139-19.9	
Date	2000/01/28		2000/01/29		2000/01/29		2000/01/29		2000/01/29		2000/01/29		2000/01/29		2000/01/29		2000/01/29		2000/01/30	
Time(JST)	23:06		01:22		03:54		05:35		07:15		09:04		10:37		19:34		22:03		00:19	
Weather	C		BC		BC		C		C		BC		BC		S		S		S	
Air Temp.	-0.4		0.4		1.4		2.2		2.9		4.0		4.6		0.7		1.6		1.0	
Bar	1028.0		1027.4		1027.0		1026.9		1027.6		1028.0		1028.0		1026.5		1025.1		1023.0	
Wind Dir	WSW		SW		SW		WSW		WSW		WSW		SW		ESE		E		ENE	
Wind Spd/F	S 6		S 8		S 7		S 7		S 8		S 7		S 8		S 1		S 3		S 6	
Transparency									17		15		17							
Depth	3680		3682		3660		3669		3647		3300		1840		3421		3420		3182	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	3.1	34.074	5.1	34.030	5.4	34.058	8.6	33.995	8.3	33.985	6.9	34.017	9.3	33.970	4.2	34.124	6.7	34.016	8.7	34.011
10m	3.20	34.069	5.29	34.026	5.56	34.051	8.72	33.996	7.99	34.003	7.32	34.012	9.71	33.951	4.13	34.119	7.84	34.009	9.03	34.008
20m	3.21	34.069	5.29	34.026	5.55	34.051	7.47	34.037	7.27	34.018	6.68	34.040	9.09	33.986	4.13	34.119	7.52	34.011	9.05	34.007
30m	3.21	34.069	5.26	34.029	5.45	34.049	6.82	34.052	6.73	34.038	6.20	34.040	8.11	34.025	4.13	34.119	7.08	34.017	9.05	34.007
50m	3.21	34.069	4.37	34.061	5.32	34.053	4.92	34.079	6.46	34.041	5.59	34.044	7.87	34.017	4.13	34.120	5.60	34.075	8.98	34.005
75m	3.21	34.069	4.10	34.067	4.76	34.070	3.57	34.084	5.76	34.045	5.06	34.053	7.28	34.006	4.11	34.128	4.51	34.088	6.31	34.054
100m	3.08	34.068	2.10	34.085	2.59	34.085	2.24	34.078	4.34	34.077	3.71	34.077	7.02	34.016	3.59	34.115	3.05	34.085	5.37	34.057
125m	1.74	34.076	1.71	34.081	1.90	34.080	1.91	34.079	3.14	34.076	3.06	34.077	6.02	34.052	3.42	34.108	2.44	34.075	4.68	34.070
150m	1.45	34.073	1.48	34.081	1.64	34.076	1.64	34.079	2.21	34.066	2.33	34.072	4.29	34.091	2.28	34.081	1.84	34.073	3.07	34.072
200m	1.22	34.074	1.27	34.079	1.30	34.075	1.29	34.076	1.64	34.075	1.56	34.072	2.19	34.070	1.78	34.088	1.46	34.073	1.75	34.069
250m	1.09	34.075	1.15	34.083	1.14	34.078	1.16	34.080	1.29	34.071	1.22	34.073	1.35	34.072	1.40	34.087	1.16	34.071	1.39	34.073
300m	1.00	34.082	1.02	34.084	1.07	34.083	1.05	34.084	1.08	34.071	0.96	34.075	1.11	34.072	1.14	34.075	1.05	34.078	1.16	34.073
400m	0.83	34.081	0.84	34.082	0.87	34.083	0.85	34.082	0.79	34.074	0.64	34.073	0.91	34.074	0.93	34.082	0.80	34.078	0.88	34.077
500m	0.64	34.076	0.64	34.077	0.69	34.078	0.67	34.077	0.65	34.074	0.54	34.071	0.68	34.074	0.75	34.079	0.61	34.073	0.65	34.073
600m			0.51	34.073									0.51	34.072			0.49	34.072		
700m			0.41	34.071									0.43	34.070						
800m			0.36	34.070									0.37	34.070						
900m			0.30	34.069									0.33	34.069						
1000m			0.26	34.069									0.29	34.069						

Table 3-44

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200003		200003		200003		200003	
Station No	J36		J35		J34		J33		J32		J31		CIS201		CIS202		CIS203		CIS204	
Latitude:N	43-30.1		43-29.5		43-30.1		43-30.1		43-30.1		43-20.1		43-14.2		43-22.8		43-24.4		43-25.1	
Longitude:E	139-39.9		139-59.5		140-19.9		140-39.9		140-59.8		141- 9.7		141-13.9		141- 6.2		141- 4.7		141- 4.8	
Date	2000/01/30		2000/01/30		2000/01/30		2000/01/30		2000/01/30		2000/01/30		2000/03/16		2000/03/16		2000/03/16		2000/03/16	
Time(JST)	01:58		03:57		06:02		07:47		09:31		10:54		10:12		12:11		12:59		13:11	
Weather	S		C		C		C		C		C		C		C		C		C	
Air Temp.	1.7		2.7		3.0		3.5		2.7		2.7				0.7		2.9		3.3	
Bar	1026.5		1018.5		1017.2		1015.5		1014.5		1013.0				1010.0		1007.0		1000.6	
Wind Dir	E		E		E		SE		SE		SE				ESE		ESE		ESE	
Wind Spd/F	S 6		S 7		S 3		S 4		S 9		S 7				S 7		S 8		S 8	
Transparency							16		14		15									
Depth	2100		1273		648		693		92		41				55		61		63	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	8.5	34.007	8.3	34.018	6.1	34.037	7.3	34.015	7.2	34.010	6.9	34.019	4.0	33.904	6.2	33.769	6.2	34.046	6.2	34.045
10m	8.70	34.002	8.57	34.016	6.17	34.033	7.41	34.012	7.29	34.006	6.97	34.013	4.23	33.830	6.17	34.034	6.16	34.028	6.11	34.032
20m	8.41	33.999	8.57	34.016	5.98	34.047	7.42	34.011	7.29	34.005	6.97	34.013	4.40	33.900	6.17	34.034	6.14	34.028	6.10	34.033
30m	8.38	33.995	8.57	34.016	5.91	34.049	7.42	34.012	7.29	34.005	6.97	34.013			6.16	34.033	6.12	34.029	5.98	34.045
50m	8.07	33.987	8.01	34.020	5.35	34.057	7.42	34.012	7.27	34.004					5.98	34.045	5.97	34.045		
75m	7.83	34.015	6.37	34.050	5.01	34.074	7.42	34.011	7.22	33.998										
100m	7.10	34.086	5.73	34.047	3.86	34.079	7.35	34.019												
125m	5.54	34.049	4.93	34.081	3.02	34.076	6.87	34.047												
150m	4.40	34.075	4.24	34.112	2.27	34.073	6.52	34.063												
200m	2.26	34.069	2.20	34.074	1.65	34.071	3.42	34.073												
250m	1.64	34.071	1.47	34.073	1.28	34.074	1.62	34.077												
300m	1.24	34.073	1.17	34.073	1.08	34.075	1.15	34.076												
400m	0.86	34.074	0.82	34.075	0.86	34.075	0.83	34.073												
500m	0.66	34.072	0.62	34.072	0.65	34.074	0.76	34.073												
600m			0.50	34.071																
700m																				
800m																				
900m																				
1000m																				

Table 3-45

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	200003		200003		200003		200003		200003		200003		200003		200003		200003		200003	
Station No	CIS205		CIS206		CIS207		CIS208		CIS209		CIS210		CIS211		CIS212		CIS213		CIS214	
Latitude:N	43-27.3		43-20.1		43-20.1		43-25.1		43-30.0		43-30.1		43-35.1		43-35.1		43-40.0		43-45.1	
Longitude:E	141- 4.7		141- 9.9		141-19.4		141-14.9		141- 9.9		140-59.9		141- 5.0		141-11.9		141- 9.8		141-14.9	
Date	2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/16	
Time(JST)	14:02		14:57		15:43		16:21		17:02		17:48		18:31		19:06		19:42		20:25	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	3.9		3.5		3.9		3.8		3.6		3.6		3.3		3.0		3.1		2.9	
Bar	1005.7		1003.9		1004.2		1003.8		1003.4		1003.6		1003.4		1003.6		1003.3		1002.8	
Wind Dir	ESE		ESE		ESE		ESE		ENE		NE		NE		E		ENE		NE	
Wind Spd/F	S 7		S 6		S 5		S 4		S 5		S 6		S 5		S 6		S 4		S 6	
Transparency																				
Depth	71		41		26		45		62		98		93		65		86		120	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.1	34.052	6.4	34.049	4.2	29.977	6.1	34.045	6.3	34.038	6.2	34.054	6.0	34.051	6.2	34.046	6.1	34.037	6.3	34.061
10m	6.01	34.040	5.68	34.034	4.23	33.713	5.98	34.039	6.16	34.031	6.11	34.046	5.90	34.043	6.12	34.036	6.10	34.036	6.16	34.043
20m	5.99	34.042	5.67	34.034	4.91	33.978	5.95	34.039	6.16	34.031	6.11	34.046	5.90	34.043	5.97	34.041	6.12	34.039	6.15	34.044
30m	5.96	34.042	5.66	34.034			5.92	34.039	6.15	34.030	6.08	34.047	5.90	34.042	5.91	34.044	6.14	34.043	6.13	34.046
50m	5.85	34.044							6.15	34.030	6.00	34.047	5.89	34.040	5.85	34.045	6.01	34.051	5.95	34.047
75m											5.98	34.047	5.86	34.040			5.93	34.047	5.57	34.053
100m																			4.94	34.050
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-46

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	200003		200003		200003		200003		200003		200003		200003		200003		200003		200003	
Station No	CIS215		CIS216		CIS217		CIS218		CIS219		CIS220		CIS221		CIS222		CIS223		CIS224	
Latitude:N	43-45.1		43-40.1		43-35.2		43-30.5		43-25.1		43-25.1		43-25.1		43-20.2		43-18.1		43-20.0	
Longitude:E	141- 4.9		141- 0.0		140-55.0		140-50.3		140-54.9		140-44.9		140-35.0		140-39.8		140-44.8		140-49.8	
Date	2000/03/16		2000/03/16		2000/03/16		2000/03/16		2000/03/17		2000/03/17		2000/03/17		2000/03/17		2000/03/17		2000/03/17	
Time(JST)	21:12		21:55		22:40		23:22		00:15		01:05		01:55		02:44		03:18		03:50	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	2.9		2.8		5.9		3.1		2.9		3.0		2.6		2.1		1.7		1.8	
Bar	1012.5		1002.0				1001.0		1000.0		1000.1		999.8		999.8		999.9		1000.2	
Wind Dir	NE		NE		NNE		E		E		ENE		NE		NNE		NE		ENE	
Wind Spd/F	S 8		S 7		S 3		S 5		S 5		S 3		S 10		S 7		S 4		S 5	
Transparency																				
Depth	282		315		130		464		90		179		191		116		80		84	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.2	34.060	6.4	34.061	5.9	34.016	6.0	34.020	5.9	34.048	6.3	34.066	6.4	34.075	6.2	34.070	6.1	34.062	6.0	34.055
10m	6.02	34.047	6.25	34.048	5.78	34.010	5.88	34.012	5.81	34.020	6.26	34.043	6.35	34.051	6.17	34.051	6.08	34.045	5.98	34.039
20m	6.03	34.047	6.25	34.048	5.79	34.011	5.87	34.012	5.82	34.020	6.26	34.043	6.35	34.051	6.18	34.051	6.08	34.046	6.00	34.039
30m	6.01	34.047	6.25	34.048	5.79	34.010	5.86	34.011	5.81	34.021	6.26	34.043	6.35	34.051	6.18	34.051	6.08	34.045	6.00	34.038
50m	5.98	34.047	6.25	34.048	5.85	34.026	5.80	34.003	5.80	34.025	6.26	34.043	6.34	34.051	6.18	34.051	6.04	34.046	6.00	34.039
75m	5.81	34.048	6.24	34.047	5.80	34.029	5.84	34.017	5.56	34.039	6.24	34.044	6.26	34.053	6.13	34.054				
100m	5.46	34.060	6.23	34.046	5.81	34.036	5.78	34.037			6.11	34.049	5.93	34.057	5.79	34.054				
125m	5.01	34.056	6.02	34.048			5.61	34.046			5.85	34.052	5.34	34.067						
150m	4.22	34.068	5.04	34.051			4.99	34.057			5.17	34.060	4.69	34.064						
200m	2.32	34.076	4.22	34.077			1.84	34.077												
250m	1.56	34.079	1.70	34.083			1.48	34.075												
300m			1.44	34.074			1.17	34.074												
400m							0.90	34.075												
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 3-47

Table 3 Results of serial oceanographic observations. Hokkaido Central Fisheries Experimental Station

Stn-prefix	200003		200003															
Station No	CIS225		CIS226															
Latitude:N	43-15.4		43-20.0															
Longitude:E	140-52.0		140-59.9															
Date	2000/03/17		2000/03/17															
Time(JST)	04:38		05:36															
Weather	C		C															
Air Temp.	2.0		1.1															
Bar	1000.7		1001.0															
Wind Dir	ENE		NE															
Wind Spd/F	S 7		S 7															
Transparency																		
Depth	48		53															
Equipment	CTD		CTD															
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.8	33.972	6.0	34.042														
10m	5.67	33.942	6.01	34.033														
20m	5.82	33.993	6.02	34.033														
30m	5.81	33.994	6.03	34.033														
50m																		
75m																		
100m																		
125m																		
150m																		
200m																		
250m																		
300m																		
400m																		
500m																		
600m																		
700m																		
800m																		
900m																		
1000m																		

Table 3-48

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904		
Station No	HFS15		HFS16		HFS17		HFS18		HFS19		HFS20		HFS21		HFS22		HFS23		HFS24		
Latitude:N	42-15.1		42-10.1		42- 7.6		42- 8.7		42-10.7		42-13.2		42-15.6		42-17.9		42-24.9		42-20.1		
Longitude:E	140-59.9		140-55.0		140-52.5		140-44.9		140-46.7		140-49.8		140-52.7		140-55.6		140-50.1		140-45.1		
Date	1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		
Time(JST)	16:16		17:04		17:33		18:19		18:43		19:12		19:40		20:08		21:06		21:48		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	3.1	32.14*	2.6	32.76*	3.8	32.97*	3.5	32.73*	3.6	32.95*	2.8	32.75*	3.0	32.57*	3.0	32.58*	3.4	32.54*	2.8	32.82*	
10m	2.50	32.740	2.55	32.795	3.49	32.982	3.10	32.887	3.48	32.948	2.67	32.872	2.53	32.747	2.80	32.593	3.05	32.552	2.77	32.817	
20m	1.47	32.771	3.08	33.000	2.79	33.044	2.88	32.966	2.51	33.002	2.41	32.976	1.47	32.764	1.62	32.735	2.49	32.761	2.79	32.879	
30m	1.56	32.797	2.40	32.981	2.87	33.057	2.61	33.032	2.76	33.046	2.63	33.024	1.51	32.789	1.51	32.754	2.52	32.826	2.69	32.888	
50m	1.68	32.904	3.21	33.155	2.72	33.154	2.73	33.143	2.68	33.236	2.94	33.133	2.25	32.981	1.60	32.785			2.39	32.993	
75m					2.81	33.414			2.81	33.412											
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-1



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904		
Station No	HFS25		HFS26		HFS27		HFS28		HFS29		HFS30		HFS31		HFS32		HFS33		HFS34		
Latitude:N	42-15.1		42-10.1		42-14.9		42-17.5		42-20.1		42-22.4		42-24.9		42-27.5		42-30.0		42-25.1		
Longitude:E	140-40.2		140-35.2		140-30.1		140-32.5		140-34.1		140-37.4		140-39.9		140-42.5		140-35.0		140-30.1		
Date	1999/04/15		1999/04/15		1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/16		
Time(JST)	22:33		23:18		00:03		00:29		02:22		02:54		03:25		03:54		04:42		05:30		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	3.2	32.85*	3.6	32.81*	4.0	32.30*	3.6	32.83*	3.3	32.90*	3.1	32.92*	3.0	32.80*	3.7	32.27*	3.6	32.59*	3.6	32.86*	
10m	3.17	32.899	3.55	32.807	3.36	32.615	3.62	32.831	3.24	32.908	2.98	32.928	2.83	32.812	2.82	32.835	2.70	32.908	3.59	32.862	
20m	2.87	32.948	3.01	32.868	2.73	32.932	3.54	32.827	2.92	32.954	2.73	32.950	2.64	32.805	2.60	32.852	2.71	32.928	3.23	32.920	
30m	2.74	32.961	2.70	32.946	2.05	32.940	2.62	33.004	2.68	32.963	2.70	32.959	2.18	32.857	2.50	32.912	2.61	32.931	2.58	32.997	
50m	2.41	33.077	2.75	33.168	2.75	33.209	2.83	33.244	2.64	33.166	2.55	33.153	2.18	32.952	2.31	32.952	2.21	32.941	2.59	33.205	
75m	2.83	33.439			2.85	33.311	2.82	33.417	2.79	33.411	2.82	33.437							2.81	33.426	
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-2

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	HFS36		HFS35		HFS37		HFS38		H01		P65		P64		P63		HDK01		HDK02	
Latitude:N	42-17.6		42-19.9		42-25.0		42-29.9		41-40.1		41-40.0		41-50.0		41-59.9		42- 0.1		42- 5.0	
Longitude:E	140-25.0		140-25.0		140-25.1		140-29.8		140-40.0		141-19.9		141-20.1		141-20.0		141- 0.0		140-55.0	
Date	1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/19		1999/04/19		1999/04/19		1999/04/19		1999/04/19		1999/04/19	
Time(JST)	06:33		06:54		07:34		08:17		10:34		13:35		14:47		15:58		17:47		18:36	
Weather									C		C		BC		C		C		C	
Air Temp.									11.0		7.5		9.5		7.5		7.0		6.5	
Bar									1016.5		1016.0		1015.0		1015.5		1015.0		1015.5	
Wind Dir									NE		SE		SE		SSE		ENE		NNE	
Wind Spd/F									S 1		S 5		S 8		S 4		S 5		S 5	
Transparency									9		9		10		8					
Depth									120		231		287		313		90		91	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	3.9	32.29*	4.0	32.37*	3.5	32.63*	3.3	32.49*	9.2	33.87*	8.2	33.940	8.1	33.936	4.5	33.201	3.9	32.909	3.8	32.994
10m	3.94	32.564	3.87	32.601	2.87	32.876	3.35	32.534	8.10	33.927	7.86	33.915	7.69	33.871	4.27	33.180	3.94	32.957	3.84	32.996
20m	2.82	32.927	2.74	32.927	2.32	32.922	2.71	32.874	7.68	33.944	7.84	33.927	7.65	33.874	4.48	33.343	3.43	33.004	3.64	32.991
30m	2.70	32.960	2.27	32.947	2.33	32.976	2.60	32.914	7.52	33.965	7.87	33.930	7.59	33.910	4.86	33.472	2.73	33.034	2.34	32.980
50m	2.42	33.066	2.28	33.017	2.47	33.042	2.35	33.005	7.45	33.977	7.86	33.949	7.43	33.895	4.82	33.497	3.88	33.297	3.28	33.218
75m									6.95	33.995	7.76	33.955	6.98	33.842	4.97	33.552	3.65	33.411	2.82	33.383
100m									6.78	34.003	7.74	33.956	5.64	33.654	5.22	33.621				
125m											7.34	33.953	5.25	33.635	5.68	33.722				
150m											7.02	33.932	5.37	33.706	5.58	33.733				
200m											5.58	33.827	5.53	33.767	5.12	33.724				
250m													5.51	33.797	4.11	33.719				
300m															3.48	33.661				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-3

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	HDK03		HDK04		HDK05		HDK06		HDK07		HDK08		HDK09		HDK10		HDK11		HDK12	
Latitude:N	42-10.0		42-14.9		42-19.9		42-24.9		42-29.9		42-20.1		42-20.0		42-20.1		42-20.0		42-20.0	
Longitude:E	140-50.0		140-45.1		140-40.1		140-35.2		140-30.1		140-25.1		140-30.0		140-35.0		140-39.9		140-45.0	
Date	1999/04/19		1999/04/19		1999/04/19		1999/04/19		1999/04/19		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20	
Time(JST)	19:25		20:14		21:09		22:01		22:51		00:11		00:44		01:16		01:50		02:22	
Weather	C		F		F		F		F		F		F		F		F		F	
Air Temp.	5.5		5.0		6.0		6.0		6.0		6.0		6.0		6.0		5.5		5.5	
Bar	1014.5		1010.5		1015.5		1016.0		1016.0		1016.5		1016.5		1016.5		1016.5		1016.5	
Wind Dir	E		CALM		ESE		E		S		ESE		SSE		SE		SE		SSE	
Wind Spd/F	S 7		S 0		S 5		S 2		S 3		S 1		S 3		S 3		S 3		S 3	
Transparency																				
Depth	91		82		79		93		68		70		95		95		80		60	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	2.6	32.861	4.1	32.781	4.0	32.827	3.6	32.896	5.0	32.347	5.6	30.891	5.5	31.462	4.5	32.404	4.0	32.754	3.9	32.795
10m	2.60	32.840	4.01	32.693	3.97	32.780	3.51	32.864	3.67	32.651	3.55	32.907	4.42	32.356	3.59	32.868	3.56	32.803	3.34	32.819
20m	2.66	32.854	2.90	32.882	3.43	32.816	2.56	32.849	2.72	32.897	2.97	32.963	3.13	32.933	3.14	32.877	2.57	32.814	3.16	32.818
30m	2.27	32.944	2.29	32.933	2.58	32.828	2.41	32.861	2.54	32.926	2.19	32.936	2.75	32.968	3.11	32.877	2.52	32.868	1.82	32.793
50m	2.90	33.117	2.57	33.044	2.24	32.956	2.38	32.953	2.23	32.934	2.45	33.015	2.84	33.275	2.43	32.992	2.35	32.963	2.10	32.906
75m	2.82	33.426					2.81	33.335					2.81	33.423	2.81	33.392				
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-4

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	HDK13		HDK14		HDK15		HDK16		HDK17		HDK18		P62		P61		P60		P51	
Latitude:N	42-20.0		42-30.0		42-25.1		42-20.1		42-15.0		42-10.1		42- 9.9		42-19.9		42-26.9		42-10.0	
Longitude:E	140-49.9		140-40.1		140-39.9		140-40.0		140-40.0		140-39.9		141-19.8		141-20.0		141-19.8		142-29.9	
Date	1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20	
Time(JST)	02:56		04:22		05:06		05:48		06:27		07:08		10:24		11:41		12:37		18:34	
Weather	C		F		F		F		F		F		F		F		F		B	
Air Temp.	6.0		5.0		5.0		6.0		6.5		6.5		8.0		9.5		10.5		7.5	
Bar	1016.5		1016.5		1016.5		1017.0		1017.0		1017.5		1017.5		1017.5		1017.0		1017.5	
Wind Dir	ENE		N		W		S		W		NW		W		CALM		NNW		WNW	
Wind Spd/F	S 4		S 1		S 3		S 1		S 2		S 3		S 3		S 0		S 2		S 3	
Transparency													7		8		7			
Depth	48		67		79		79		89		85		356		248		80		122	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	3.1	32.113	5.1	31.715	3.5	32.557	4.2	32.763	4.5	32.558	4.3	33.526	3.5	32.712	4.3	32.540	4.1	32.444	2.3	32.597
10m	2.94	32.128	3.89	32.637	3.25	32.721	3.73	32.801	4.34	32.559	3.43	32.731	3.77	32.917	1.75	32.567	1.46	32.503	3.26	32.871
20m	2.94	32.207	3.26	32.780	3.27	32.732	3.26	32.774	3.79	32.842	2.57	32.957	2.03	32.926	1.05	32.661	1.01	32.539	3.92	33.011
30m	2.91	32.382	2.78	32.911	3.29	32.756	3.09	32.881	2.96	32.916	2.41	33.015	2.73	33.051	1.99	32.808	0.60	32.559	3.58	33.069
50m			2.44	32.959	2.53	32.962	2.41	32.989	2.74	33.165	2.78	33.173	4.58	33.368	2.53	33.042	1.48	32.746	3.65	33.181
75m									2.83	33.440	2.79	33.385	4.97	33.487	3.37	33.223			4.66	33.417
100m													4.95	33.497	4.42	33.440			4.96	33.518
125m													4.95	33.505	4.80	33.562				
150m													4.89	33.511	5.14	33.678				
200m													4.33	33.548	5.32	33.760				
250m													4.49	33.670						
300m													4.34	33.694						
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-5

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199905		199905		199905		199905	
Station No	P52		P53		P54		P55		P56		P66		HFS15		HFS16		HFS17		HFS18	
Latitude:N	42- 0.0		41-50.1		41-40.0		41-30.0		41-20.0		41-30.0		42-15.1		42-10.0		42- 7.6		42- 8.7	
Longitude:E	142-20.1		142-10.1		141-59.9		141-50.0		141-40.0		141-20.2		140-59.9		140-55.0		140-52.7		140-45.0	
Date	1999/04/20		1999/04/20		1999/04/21		1999/04/21		1999/04/21		1999/04/21		1999/05/11		1999/05/11		1999/05/11		1999/05/11	
Time(JST)	20:00		21:56		00:14		01:55		03:32		06:37		11:20		12:05		12:32		13:19	
Weather	B		B		B		B		B		B		B		B		B		B	
Air Temp.	6.0		5.0		4.0		5.0		6.0		11.0									
Bar	1019.0		1021.0		1022.0		1024.0		1025.0		1025.5									
Wind Dir	W		NNW		NNW		NW		NW		NW									
Wind Spd/F	S 10		S 6		S 7		S 6		S 6		S 5									
Transparency											13									
Depth	1000		1082		1056		949		750		242									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.7	33.127	4.5	33.228	3.6	33.006	4.6	33.295	7.6	33.842	8.5	33.982	6.0	31.81*	6.1	31.92*	6.3	31.77*	8.4	31.63*
10m	4.52	33.185	4.51	33.198	3.61	32.969	5.27	33.299	7.76	33.855	8.39	33.896	4.11	32.144	5.19	31.962	5.57	31.915	7.13	31.874
20m	4.57	33.293	4.51	33.284	3.17	33.012	5.74	33.409	7.77	33.854	8.38	33.896	3.88	32.627	4.11	32.038	2.82	32.483	5.85	32.225
30m	5.11	33.473	5.02	33.465	6.04	33.559	6.14	33.562	7.76	33.856	8.39	33.895	6.02	33.177	3.40	32.306	2.64	32.618	4.01	32.670
50m	5.35	33.536	5.05	33.498	6.89	33.739	5.53	33.550	7.72	33.856	8.40	33.895	4.93	33.385	3.78	32.966	3.29	33.052	2.89	32.900
75m	5.39	33.555	5.31	33.543	6.62	33.705	5.06	33.541	7.74	33.871	8.38	33.893					3.35	33.363		
100m	5.40	33.561	5.34	33.549	5.63	33.576	5.07	33.571	7.72	33.871	8.36	33.891								
125m	5.40	33.561	5.34	33.550	5.14	33.521	4.00	33.448	7.74	33.880	8.35	33.891								
150m	5.41	33.563	5.33	33.548	5.11	33.532	4.85	33.579	7.74	33.880	8.34	33.891								
200m	5.25	33.549	5.30	33.553	5.39	33.682	1.73	33.258	7.68	33.902	8.21	33.893								
250m	4.28	33.509	5.78	33.756	5.56	33.789	2.18	33.329	7.49	33.912										
300m	5.26	33.699	6.01	33.825	5.22	33.798	2.85	33.454	7.39	33.913										
400m	4.51	33.705	5.38	33.852	4.98	33.794	4.00	33.711	4.88	33.752										
500m	3.58	33.735	3.32	33.494	3.33	33.725	3.54	33.807	3.35	33.751										
600m	3.56	33.918	3.60	33.884	3.55	33.945	3.82	34.127	3.64	33.979										
700m																				
800m																				
900m																				
1000m																				

Table 4-6

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS19		HFS20		HFS21		HFS22		HFS23		HFS24		HFS25		HFS26		HFS27		HFS28		
Latitude:N	42-10.7		42-13.1		42-15.5		42-17.8		42-24.9		42-20.1		42-15.1		42-10.0		42-14.9		42-17.4		
Longitude:E	140-46.7		140-49.5		140-52.6		140-55.8		140-50.1		140-45.1		140-40.1		140-35.1		140-30.1		140-32.4		
Date	1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		
Time(JST)	13:42		14:11		14:38		15:05		16:08		16:54		17:38		18:25		19:12		19:38		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	6.0	31.90*	6.7	31.94*	8.3	31.97*	7.5	31.73*	6.2	31.96*	8.1	32.12*	8.2	32.12*	8.0	32.09*	8.1	32.08*	7.4	32.09*	
10m	5.47	31.879	5.52	31.949	5.19	31.952	4.22	32.056	4.42	32.013	6.37	32.191	6.68	32.126	6.47	32.079	7.93	32.078	6.93	32.095	
20m	4.31	32.049	3.73	32.172	3.97	32.314	2.56	32.504	3.37	32.452	3.44	32.831	3.62	32.679	5.07	32.477	4.70	32.340	5.76	32.148	
30m	3.40	32.515	2.88	32.418	3.17	32.635	2.32	32.734	2.51	32.577	2.89	32.896	2.80	32.885	3.54	32.810	3.54	32.786	3.52	32.844	
50m	4.00	33.012	3.89	32.953	2.65	32.854	5.03	33.419			2.54	33.021	2.46	32.941	2.67	32.922	2.60	32.925	2.43	32.960	
75m	3.26	33.280											2.80	33.313			2.80	33.313	2.78	33.292	
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-7

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS29		HFS30		HFS31		HFS32		HFS33		HFS34		HFS36		HFS35		HFS37		HFS38		
Latitude:N	42-19.9		42-22.4		42-24.9		42-27.4		42-29.9		42-25.1		42-17.5		42-19.9		42-24.9		42-29.8		
Longitude:E	140-35.0		140-37.4		140-39.9		140-42.4		140-35.0		140-30.1		140-25.1		140-25.1		140-25.0		140-30.1		
Date	1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/12		1999/05/12		1999/05/12		
Time(JST)	20:06		20:34		21:01		21:29		22:16		23:00		23:59		00:25		01:07		01:54		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	6.7	31.95*	6.9	32.02*	6.8	32.03*	5.9	32.03*	6.2	31.91*	7.1	31.86*	78.0	31.97*	8.0	32.01*	7.6	31.78*	7.5	31.81*	
10m	4.40	32.089	4.44	32.087	4.21	32.067	4.90	32.197			6.00	32.106	7.68	32.035	6.29	32.079	6.79	32.087	6.31	32.054	
20m	2.30	32.671	2.31	32.700	2.54	32.657	2.29	32.561	4.39	32.091	3.99	32.567	5.17	32.330	4.66	32.428	5.15	32.323	4.87	32.325	
30m	3.03	32.857	2.06	32.793	2.87	32.825	2.19	32.677	2.65	32.703	2.93	32.737	2.83	32.853	3.29	32.851	2.84	32.817	3.28	32.818	
50m	2.55	32.944	2.39	32.957	2.46	32.967	2.27	32.889	2.44	32.929	2.62	32.933	2.51	32.965	2.48	32.979	2.49	32.981	2.65	32.924	
75m	2.83	33.396			2.88	33.362					2.85	33.415									
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-8

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS115		HFS116		HFS117		HFS118		HFS119		HFS120		HFS121		HFS122		HFS123		HFS124		
Latitude:N	42-15.0		42-10.1		42- 7.5		42- 8.6		42-10.7		42-13.1		42-15.4		42-17.8		42-24.8		42-20.3		
Longitude:E	141- 0.0		140-55.0		140-52.5		140-45.0		140-46.7		140-49.7		140-52.8		140-55.7		140-50.1		140-45.1		
Date	1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		
Time(JST)	09:20		10:04		10:29		11:15		11:38		12:06		12:34		13:03		14:02		14:42		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	7.9	32.03*	7.2	31.90*	7.0	32.02*	8.0	31.66*	6.5	31.94*	6.9	31.88*	7.5	32.02*	7.6	32.07*	6.5	32.11*	7.3	32.13*	
10m	7.23	32.083	4.96	31.990	5.95	31.973	6.58	31.830	6.16	31.933	6.19	31.924	5.80	32.026	6.36	32.127	5.90	32.138	6.56	32.160	
20m	3.23	32.751	3.35	32.379	4.06	32.305	4.35	32.119	3.98	32.097	3.25	32.303	2.89	32.527	2.22	32.677	3.24	32.589	3.05	32.700	
30m	2.71	32.864	2.37	32.594	3.87	32.872	4.27	32.757	3.12	32.370	2.88	32.494	3.44	32.777	4.21	33.191	2.36	32.693	2.64	32.876	
50m	4.87	33.425	4.32	33.269	2.62	32.982	2.68	32.980	3.76	32.990	3.48	33.015	2.87	32.916	5.04	33.467			2.40	32.959	
75m					4.75	33.501			3.00	33.344											
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-9



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS125		HFS126		HFS127		HFS128		HFS129		HFS130		HFS131		HFS132		HFS133		HFS136		
Latitude:N	42-15.2		42-10.1		42-14.9		42-17.4		42-19.9		42-22.4		42-24.9		42-27.4		42-30.0		42-17.6		
Longitude:E	140-40.0		140-35.1		140-30.2		140-32.3		140-34.9		140-37.4		140-40.0		140-42.4		140-35.1		140-25.0		
Date	1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13		
Time(JST)	15:25		16:10		16:52		17:17		17:43		18:09		18:35		19:00		19:44		21:29		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	6.8	32.01*	7.3	32.06*	7.1	32.09*	6.4	31.91*	6.6	31.98*	6.8	32.09*	6.6	32.04*	6.7	31.80*	6.2	31.94*	7.4	32.09*	
10m	6.56	32.037	7.34	32.079	7.02	32.099	6.47	31.953	5.66	32.007	6.85	32.102	6.64	32.191	4.73	32.187	5.32	31.968	7.27	32.085	
20m	4.12	32.615	5.44	32.341	5.41	32.216	4.54	32.453	2.69	32.708	3.07	32.745	3.83	32.758	2.03	32.603	3.88	32.433	4.58	32.558	
30m	2.86	32.865	3.12	32.865	3.55	32.817	2.40	32.742	1.95	32.758	2.31	32.823	2.65	32.885	2.21	32.725	3.17	32.866	3.42	32.815	
50m	2.30	32.929	2.48	32.944	2.48	32.937	2.56	32.944	2.47	32.934	2.43	32.979	2.51	33.017	2.11	32.881	2.46	32.971	2.63	32.947	
75m	3.06	33.344			2.77	33.257	2.81	33.340	2.82	33.391	2.84	33.401									
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-10

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905	199905	199905	199905	199905	199905	199905	199905	199905	199905										
Station No	HFS135	HFS137	HFS138	HFS176	HFS175	HFS174	HFS173	HFS172	HFS171	HFS215										
Latitude:N	42-19.9	42-25.0	42-29.9	42-23.5	42-24.4	42-25.9	42-26.9	42-28.9	42-30.9	42-15.1										
Longitude:E	140-25.0	140-25.0	140-29.9	141-39.9	141-40.9	141-41.9	141-42.9	141-44.9	141-46.9	140-59.9										
Date	1999/05/13	1999/05/13	1999/05/13	1999/05/14	1999/05/14	1999/05/14	1999/05/14	1999/05/14	1999/05/14	1999/05/15										
Time(JST)	21:51	22:27	23:10	04:59	05:19	05:38	05:53	06:16	06:38	12:15										
Weather																				
Air Temp.																				
Bar																				
Wind Dir																				
Wind Spd/F																				
Transparency																				
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	7.3	32.04*	6.7	32.00*	6.9	31.97*	5.7	31.21*	5.3	31.37*	5.2	31.49*	5.7	31.36*	5.5	31.58*	5.4	32.19*	6.0	32.12*
10m	7.27	32.037	6.27	32.188	6.78	32.033	3.75	31.918	3.74	32.086	3.83	32.000	3.82	31.948	4.09	32.142	5.66	32.318	3.52	32.619
20m	4.86	32.454	5.90	32.268	4.35	32.468	5.25	32.859	5.15	32.780	3.59	32.382	4.03	32.651	5.70	32.929	6.45	33.286	3.07	32.858
30m	3.42	32.832	3.28	32.827	2.16	32.705	6.52	33.376	6.79	33.385	5.20	32.931	5.65	33.070	6.81	33.408	6.09	33.527	4.26	33.187
50m	2.48	32.947	2.53	33.012	2.41	32.941	6.08	33.633	5.26	33.537	6.37	33.686	6.24	33.647					5.03	33.516
75m							5.88	33.654	5.21	33.562	5.74	33.685								
100m							5.57	33.671	5.29	33.635										
125m							5.83	33.741												
150m							5.56	33.720												
200m							5.23	33.726												
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-11

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905	199905	199905	199905	199905	199905	199905	199905	199905	199905										
Station No	HFS216	HFS217	HFS218	HFS219	HFS220	HFS221	HFS222	HFS223	HFS224	HFS225										
Latitude:N	42-10.2	42- 7.7	42- 8.7	42-10.6	42-13.1	42-15.5	42-17.8	42-25.0	42-20.1	42-15.2										
Longitude:E	140-55.1	140-52.5	140-45.3	140-46.6	140-49.5	140-52.7	140-55.8	140-50.1	140-45.1	140-40.0										
Date	1999/05/15	1999/05/15	1999/05/15	1999/05/15	1999/05/15	1999/05/15	1999/05/15	1999/05/15	1999/05/15	1999/05/15										
Time(JST)	12:59	13:28	14:08	14:28	14:55	15:21	15:46	16:45	17:28	18:13										
Weather																				
Air Temp.																				
Bar																				
Wind Dir																				
Wind Spd/F																				
Transparency																				
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD			
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S		
0m	7.2	32.11*	7.1	32.01*	8.1	31.92*	7.6	32.03*	7.1	31.93*	7.5	32.03*	7.1	32.00*	7.3	31.92*	7.5	32.08*	7.7	31.94*
10m	6.65	32.152	6.65	32.017	7.18	31.942	6.67	32.058	6.56	31.933	7.20	32.041	5.61	32.098	3.57	32.447	7.03	32.137	7.23	32.048
20m	4.64	32.131	5.42	32.250	5.62	32.053	6.43	32.071	4.36	32.075	3.43	32.297	2.46	32.686	2.23	32.772	4.09	32.703	5.44	32.252
30m	3.90	32.898	3.12	32.782	2.68	32.640	3.95	32.642	2.93	32.485	3.05	32.768	3.45	33.087	2.08	32.873	2.70	32.857	3.35	32.833
50m	3.87	33.180	4.30	33.212	4.30	33.186	3.28	33.017	3.28	33.102	2.61	32.926	4.98	33.479			2.41	32.964	3.61	33.075
75m			5.67	33.715			3.63	33.419											3.24	33.351
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-12

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS226		HFS227		HFS228		HFS229		HFS230		HFS231		HFS232		HFS233		HFS234		HFS236		
Latitude:N	42-10.1		42-15.0		42-17.5		42-20.0		42-22.5		42-24.9		42-27.4		42-29.9		42-25.2		42-17.7		
Longitude:E	140-35.0		140-30.0		140-32.5		140-34.9		140-37.4		140-39.9		140-42.4		140-35.0		140-30.2		140-24.9		
Date	1999/05/15		1999/05/15		1999/05/15		1999/05/15		1999/05/15		1999/05/15		1999/05/15		1999/05/15		1999/05/16		1999/05/16		
Time(JST)	19:00		19:43		20:09		20:37		21:46		22:13		22:40		23:26		00:15		01:19		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	8.8	31.85*	7.3	31.99*	7.1	31.97*	7.8	32.14*	7.5	32.08*	7.1	31.91*	7.1	31.94*	7.6	31.96*	7.7	31.96*	7.8	32.05*	
10m	7.67	32.093	6.87	32.007	6.08	32.013	7.56	32.141	7.44	32.078	6.48	31.955	5.22	32.058	7.35	31.989	7.64	31.966	7.37	32.071	
20m	3.98	32.677	4.95	32.363	4.22	32.466	2.55	32.638	5.17	32.306	4.84	32.286	2.02	32.615	3.23	32.636	5.25	32.360	4.47	32.625	
30m	2.79	32.848	3.11	32.867	2.82	32.778	2.78	32.843	2.30	32.757	2.97	32.917	2.77	32.803	1.91	32.743	3.31	32.849	3.07	32.876	
50m	2.48	32.943	2.32	32.943	2.45	32.957	2.46	32.922	2.46	32.956	2.48	33.011	2.51	33.042	2.35	32.925	2.53	32.946	2.51	33.002	
75m			2.83	33.354	2.81	33.345	2.83	33.390	2.86	33.388	2.87	33.357					2.86	33.411			
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-13

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS235		HFS237		HFS238		HFS315		HFS316		HFS317		HFS318		HFS319		HFS320		HFS321		
Latitude:N	42-19.5		42-24.8		42-29.9		42-15.1		42-10.1		42- 7.6		42- 8.6		42-10.7		42-13.1		42-15.4		
Longitude:E	140-24.8		140-25.0		140-29.9		140-59.9		140-55.1		140-52.6		140-44.7		140-46.6		140-49.5		140-52.8		
Date	1999/05/16		1999/05/16		1999/05/16		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		
Time(JST)	01:37		02:15		02:59		12:21		13:06		13:34		14:18		14:44		15:16		15:45		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	7.3	32.06*	7.7	32.03*	8.1	31.89*	3.9	32.65*	8.1	31.94*	8.0	32.02*	7.9	32.01*	7.8	31.92*	7.8	31.96*	8.0	32.06*	
10m	7.22	32.090	7.53	32.058	7.02	32.060	3.24	32.644	5.99	31.996	6.85	32.006	6.74	32.042	7.54	32.008	7.48	31.954	7.96	32.059	
20m	4.38	32.617	4.55	32.555	3.18	32.701	2.64	32.766	3.25	32.342	4.03	32.418	3.66	32.629	5.29	32.191	3.84	32.294	4.73	32.500	
30m	3.08	32.881	3.16	32.878	2.50	32.827	3.20	32.935	3.12	32.625	3.73	32.721	3.43	32.956	3.78	32.782	2.96	32.630	3.15	32.812	
50m	2.47	32.990	2.56	33.029	2.43	32.943	4.73	33.443	6.02	33.523	5.25	33.613	2.90	33.079	4.86	33.300	3.89	33.056	3.97	33.237	
75m											5.25	33.624			5.42	33.687					
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-14

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905		
Station No	HFS322		HFS323		HFS324		HFS325		HFS326		HFS327		HFS328		HFS329		HFS330		HFS331		
Latitude:N	42-17.9		42-24.8		42-20.1		42-15.1		42-10.0		42-14.9		42-17.4		42-19.9		42-22.5		42-25.0		
Longitude:E	140-55.7		140-50.0		140-45.1		140-40.1		140-35.0		140-30.0		140-32.4		140-34.9		140-37.4		140-40.0		
Date	1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/17		
Time(JST)	16:20		17:24		18:04		18:48		19:31		20:16		20:44		21:13		21:42		22:12		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	6.9	32.12*	7.5	32.09*	8.1	31.98*	8.1	31.93*	8.3	31.91*	7.7	31.99*	7.7	32.05*	7.9	31.95*	8.2	32.03*	8.1	32.07*	
10m	5.26	32.504	4.75	32.402	7.80	32.013	7.84	31.978	8.01	32.002	7.38	32.003	7.66	32.080	7.58	31.989	7.07	32.018	7.94	32.080	
20m	3.49	33.024	2.27	32.799	4.13	32.659	5.36	32.108	3.12	32.558	3.73	32.600	3.33	32.532	4.80	32.435	5.03	32.462	4.50	32.573	
30m	4.31	33.200	2.16	32.887	2.89	32.839	4.22	32.872	2.89	32.850	3.21	32.857	2.12	32.820	2.12	32.724	2.60	32.800	3.05	32.897	
50m	4.97	33.447			2.54	33.015	4.25	33.235	2.40	32.955	2.41	32.959	2.40	32.943	2.42	32.932	2.50	32.941	2.54	33.032	
75m					4.33	33.441			2.82	33.338	2.82	33.372	2.82	33.373	2.82	33.373	2.85	33.381			
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-15

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199906		199906		199906								
Station No	HFS332		HFS333		HFS334		HFS336		HFS335		HFS337		HFS338		H01		P66		P56								
Latitude:N	42-27.5		42-30.0		42-25.2		42-18.0		42-20.0		42-24.9		42-30.0		41-40.1		41-30.0		41-20.1								
Longitude:E	140-42.5		140-35.0		140-30.0		140-25.3		140-25.0		140-25.1		140-29.9		140-39.9		141-19.9		141-39.9								
Date	1999/05/17		1999/05/17		1999/05/18		1999/05/18		1999/05/18		1999/05/18		1999/05/18		1999/05/24		1999/05/24		1999/05/24								
Time(JST)	22:39		23:24		00:15		01:15		01:39		02:19		03:05		12:27		15:37		17:43								
Weather																C		C		C							
Air Temp.																14.0		12.5		11.5							
Bar																1008.0		1007.0		1006.0							
Wind Dir																E		ESE		ESE							
Wind Spd/F																S 4		S 4		S 4							
Transparency																11		14		8							
Depth																119		244		757							
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD								
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S							
0m	7.7	32.01*	6.9	32.21*	8.1	31.98*	7.5	32.01*	8.0	32.07*	7.7	31.99*	8.5	32.01*	11.6	33.94*	11.2	33.82*	10.7	33.72*							
10m	4.19	32.477	4.98	32.443	7.45	31.990	7.49	32.007	7.96	32.074	7.76	31.992	8.35	32.020	10.73	33.953	10.91	33.834	9.87	33.615							
20m	3.34	32.747	1.75	32.707	5.10	32.365	5.25	32.270	5.47	32.274	5.39	32.197	3.53	32.742	10.12	33.941	10.88	33.841	9.70	33.739							
30m	2.50	32.890	2.30	32.810	3.41	32.821	2.75	32.810	3.38	32.842	3.22	32.830	2.97	32.881	9.44	33.994	10.80	33.854	9.57	33.770							
50m	2.38	32.970	2.45	32.958	2.43	32.937	2.45	32.964	2.51	32.943	2.49	32.946	2.45	32.975	8.55	34.036	10.02	33.926	8.38	33.705							
75m					2.87		33.404								8.32		34.036		9.93		33.926		8.33		33.783		
100m																8.16		34.038		9.69		33.945		8.16		33.813	
125m																				9.54		33.957		8.10		33.887	
150m																				9.19		33.978		7.01		33.776	
200m																				8.64		34.009		5.83		33.693	
250m																								3.93		33.737	
300m																								4.75		33.567	
400m																								3.55		33.776	
500m																								3.98		33.963	
600m																								3.60		34.121	
700m																											
800m																											
900m																											
1000m																											

Table 4-16

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	P55		P54		HDK54		HDK01		HDK02		HDK03		HDK04		HDK05		HDK06		HDK07	
Latitude:N	41-29.9		41-40.0		42-15.1		42- 0.0		42- 4.9		42- 9.9		42-14.9		42-19.8		42-24.8		42-29.9	
Longitude:E	141-49.7		141-59.9		140-55.1		140-59.9		140-55.0		140-49.9		140-45.0		140-40.1		140-35.0		140-30.1	
Date	1999/05/24		1999/05/24		1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/25	
Time(JST)	19:31		21:25		13:07		14:54		15:45		16:35		17:27		18:18		19:09		20:01	
Weather	C		R		R		R		C		C		C		C		C		C	
Air Temp.	10.5		9.5		12.0		11.5		11.5		12.5		12.5		12.0		11.5		11.0	
Bar	1005.5		1004.5		997.0		998.0		999.0		1000.5		1001.0		1001.5		1002.5		1004.0	
Wind Dir	ESE		ESE		WSW		WNW		W		NW		W		NW		W		NW	
Wind Spd/F	S 8		S 8		S 3		S 3		S 3		S 5		S 8		S 4		S 5		S 5	
Transparency																				
Depth	944		1260		62		88		89		91		80		78		93		68	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.2	33.15*	9.5	33.45*	9.2	31.92*	9.1	31.98*	8.4	31.80*	9.4	31.95*	9.4	31.93*	9.4	31.89*	9.6	31.91*	9.3	32.01*
10m	9.95	33.257	9.75	33.449	8.84	32.038	5.19	32.388	8.58	31.997	8.41	32.007	9.31	31.979	9.20	31.979	9.30	31.998	8.49	32.098
20m	9.30	33.699	9.46	33.598	6.97	33.305	4.42	32.904	4.91	32.454	7.43	32.947	6.77	32.189	6.13	32.266	6.21	32.264	3.66	32.712
30m	9.29	33.800	9.62	33.773	6.49	33.445	7.96	33.823	3.41	32.880	4.49	33.148	5.81	33.174	2.33	32.709	2.89	32.762	3.19	32.859
50m	9.02	33.928	7.30	33.448	5.93	33.513	6.13	33.710	3.82	33.262	4.54	33.422	4.15	33.301	3.85	33.255	2.45	32.967	2.47	32.972
75m	8.58	33.906	7.36	33.577			5.96	33.752	4.45	33.537	4.43	33.556	4.47	33.528			3.09	33.353		
100m	8.41	33.909	7.22	33.732																
125m	6.65	33.696	6.65	33.717																
150m	6.20	33.671	5.95	33.643																
200m	4.42	33.481	5.54	33.583																
250m	4.56	33.256	5.44	33.611																
300m	4.94	33.623	5.38	33.752																
400m	3.88	33.743	4.55	33.779																
500m	3.59	33.894	3.62	33.798																
600m	3.60	34.059	3.61	33.991																
700m																				
800m																				
900m																				
1000m																				

Table 4-17



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	HDK51		HDK08		HDK09		HDK10		HDK11		HDK12		HDK13		HDK52		HDK14		HDK15	
Latitude:N	42-25.1		42-20.1		42-20.0		42-19.9		42-19.9		42-19.9		42-20.0		42-24.9		42-29.9		42-25.1	
Longitude:E	140-27.5		140-25.0		140-29.9		140-35.0		140-39.9		140-45.0		140-49.9		140-45.1		140-40.0		140-40.0	
Date	1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/25		1999/05/26		1999/05/26		1999/05/26		1999/05/26	
Time(JST)	20:46		21:30		22:05		22:39		23:13		23:47		00:21		01:14		02:02		02:42	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	11.0		10.5		10.0		10.5		10.5		10.0		10.5		11.0		11.0		11.5	
Bar	1005.0		1005.5		1006.0		1000.0		1006.0		1006.0		1005.0		1007.0		1007.0		1007.0	
Wind Dir	WSW		W		WSW		WNW		NW		SSW		W		SSW		NW		S	
Wind Spd/F	S 2		S 5		S 3		S 7		S 5		S 2		S 5		S 2		S 1		S 1	
Transparency																				
Depth	83		70		95		95		79		61		49		58		66		78	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.3	31.78*	9.1	31.84*	9.3	31.83*	9.3	31.93*	9.2	31.91*	9.2	31.94*	9.7	31.86*	9.3	31.98*	9.3	31.95*	9.4	31.95*
10m	8.62	31.894	8.26	31.949	9.36	31.988	9.55	31.928	9.16	31.973	9.11	31.966	9.36	31.949	9.26	31.983	8.99	31.984	9.27	31.959
20m	4.86	32.581	3.57	32.571	6.12	32.322	7.26	32.139	8.53	32.014	6.28	32.208	3.59	32.749	5.74	32.380	4.01	32.680	8.38	32.050
30m	3.58	32.815	2.89	32.889	3.14	32.873	3.40	32.793	2.45	32.685	2.89	32.814	3.09	33.017	2.90	32.794	2.71	32.864	2.93	32.739
50m	2.41	32.946	2.52	33.012	2.49	32.940	3.70	33.156	2.57	32.944	2.49	32.953			2.42	32.950	2.51	32.983	2.44	32.962
75m	2.88	33.362			2.85	33.361	3.83	33.406												
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-18

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199906		199906		199906		199906		199906		199906	
Station No	HDK16		HDK17		HDK18		HDK53		P62		P61		P60		P51		P52		P53	
Latitude:N	42-20.0		42-15.1		42-10.4		42-14.9		42-10.0		42-20.0		42-27.0		42- 9.8		42- 0.0		41-50.1	
Longitude:E	140-40.0		140-40.0		140-39.8		140-35.1		141-19.9		141-20.0		141-20.0		142-29.6		142-20.3		142-10.1	
Date	1999/05/26		1999/05/26		1999/05/26		1999/05/26		1999/05/26		1999/05/26		1999/05/26		1999/05/26		1999/05/26		1999/05/26	
Time(JST)	03:22		04:01		04:38		05:26		09:10		10:24		11:20		17:27		18:52		20:46	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	11.5		11.5		11.5		11.5		13.0		13.5		14.0		13.0		12.0		11.5	
Bar	1007.5		1007.5		1008.5		1008.5		1010.5		1011.0		1012.0		1014.0		1015.0		1015.5	
Wind Dir	S		N		CALM		NE		SE		ESE		NNE		ESE		E		ESE	
Wind Spd/F	S 1		S 1		S 0		S 3		S 2		S 3		S 3		S 3		S 5		S 6	
Transparency									10		10		9		9					
Depth	79		88		87		93		360		246		80		122		997		1082	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.4	31.90*	9.3	31.83*	9.2	31.84*	8.9	31.72*	10.6	33.37*	9.9	32.36*	8.3	32.52*	10.4	32.96*	9.2	33.34*	9.3	33.39*
10m	9.14	31.976	8.78	31.960	8.30	31.968	8.56	31.931	9.98	33.386	7.85	32.873	7.33	32.825	9.45	33.133	8.61	33.411	8.93	33.372
20m	9.03	31.979	8.38	32.094	4.09	32.603	8.07	32.272	10.05	33.795	7.26	32.889	6.73	33.062	8.61	33.340	9.21	33.686	8.84	33.521
30m	3.92	32.556	4.84	32.843	2.80	32.859	4.16	32.816	9.16	33.927	7.79	33.112	6.13	33.184	7.99	33.595	8.84	33.831	8.87	33.805
50m	2.88	32.927	3.32	33.158	2.66	32.987	3.22	33.064	8.64	33.959	7.07	33.723	7.56	33.714	8.23	33.933	8.56	33.890	8.75	33.924
75m			3.48	33.419	2.79	33.273	2.84	33.382	8.26	33.945	6.95	33.790			7.59	33.899	8.36	33.897	8.49	33.927
100m									7.74	33.916	6.49	33.749			6.52	33.778	7.67	33.894	8.21	33.936
125m									7.41	33.912	5.96	33.690					7.43	33.887	7.84	33.910
150m									6.05	33.736	5.80	33.701					6.83	33.840	6.53	33.727
200m									5.76	33.729	5.54	33.755					4.37	33.293	5.62	33.721
250m																	5.24	33.699	5.24	33.615
300m																	4.84	33.807	5.32	33.739
400m																	3.76	33.781	5.10	33.773
500m																	3.60	33.875	3.64	33.788
600m																	3.62	34.022	3.61	33.915
700m																				
800m																				
900m																				
1000m																				

Table 4-19

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	P64		HSR001		HSR002		HSR003		HSR005		HSR013		HSR006		HSR014		HSR007		HSR008	
Latitude:N	41-50.1		41- 0.1		41- 0.0		41- 0.0		40-30.1		40- 0.0		40-29.9		40-30.0		39-59.9		39-30.0	
Longitude:E	141-20.1		139- 0.0		138-30.2		138- 0.2		138- 0.1		138- 0.0		138-29.9		138-59.8		138-30.4		138-30.0	
Date	1999/05/27		1999/06/01		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/03		1999/06/03		1999/06/03	
Time(JST)	01:19		18:49		04:10		06:49		10:29		14:00		18:05		05:37		10:16		13:49	
Weather	C		BC		C		C		C		C		C		F		B		BC	
Air Temp.	11.0		20.0		5.0		11.0		16.5		17.5		12.0		15.5		19.5		22.0	
Bar	1012.0		1013.0		1010.0		1010.0		1009.2		1009.5		1010.0		1012.0		1012.0		1014.0	
Wind Dir	SE		CALM		SE		S		S		SW		S		SW		SW		W	
Wind Spd/F	S 7		S 0		S 4		S 5		S 3		S 5		S 4		S 5		F 2		S 2	
Transparency			13				14		11		17		13		18		15		24	
Depth	289																		1000	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.5	32.14*	15.6	34.011	13.8	34.033	13.3	34.058	13.5	34.001	15.2	34.152	15.2	34.093	14.5	34.067	16.0	34.209	18.3	34.322
10m	10.26	33.267	13.57	33.994	11.97	34.008	11.89	34.059	10.86	33.985	13.39	34.129	13.80	34.119	13.91	34.105	14.05	34.155	16.45	34.292
20m	9.66	33.824	11.08	34.075	11.07	34.034	11.23	34.054	7.42	34.065	12.66	34.121	11.86	34.206	12.60	34.112	13.30	34.158	15.47	34.379
30m	8.81	33.920	8.75	34.102	6.03	34.103	9.07	34.083	3.86	34.099	11.30	34.137	9.19	34.153	10.47	34.144	12.68	34.147	14.11	34.455
50m	8.13	33.934	7.10	34.104	3.35	34.087	4.70	34.092	2.59	34.079	8.36	34.121	7.37	34.110	7.86	34.119	8.89	34.140	11.91	34.313
75m	6.43	33.754	5.38	34.092	2.38	34.071	3.30	34.083	1.96	34.076	6.66	34.102	5.06	34.103	6.36	34.095	7.68	34.109	10.57	34.182
100m	6.11	33.752	3.65	34.082	1.91	34.074	2.71	34.085	1.67	34.080	5.04	34.093	3.62	34.096	4.30	34.092	5.95	34.096	9.10	34.098
125m	5.64	33.708	2.56	34.081	1.63	34.074	2.08	34.090	1.52	34.081	3.32	34.096	2.60	34.073	2.80	34.069	4.31	34.099	7.73	34.108
150m	5.47	33.706	2.22	34.078	1.50	34.081	1.80	34.087	1.42	34.082	2.47	34.084	2.12	34.072	2.08	34.068	3.33	34.091	5.44	34.089
200m	5.18	33.743	1.59	34.075	1.18	34.080	1.39	34.089	1.26	34.085	1.62	34.073	1.59	34.073	1.55	34.073	1.91	34.079	3.48	34.068
250m	4.42	33.753	1.35	34.076	1.04	34.086	1.25	34.090	0.99	34.083	1.22	34.075	1.28	34.073	1.23	34.078	1.23	34.076	2.00	34.084
300m			1.19	34.084	0.93	34.085	1.10	34.089	0.86	34.083	0.87	34.077	1.11	34.079	1.02	34.081	0.93	34.076	1.36	34.079
400m			0.82	34.081	0.73	34.082	0.87	34.086	0.65	34.079	0.54	34.074	0.83	34.080	0.75	34.077	0.67	34.075	0.78	34.073
500m			0.64	34.097	0.54	34.077	0.72	34.082	0.49	34.076	0.41	34.073	0.58	34.077	0.59	34.077	0.48	34.073	0.56	34.072
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-20

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	HSR011		HSR009		HSR024		HSR028		HSR025		HSR010		HSR012		HSR015		HSR019		HSR018	
Latitude:N	39-59.9		39-30.1		39- 0.1		38-29.6		39- 0.0		39-30.0		39-59.9		40-35.1		40-59.9		40-59.9	
Longitude:E	138-59.9		139- 0.0		139- 0.0		138-59.8		139-29.9		139-30.0		139-30.0		139-29.4		139-59.9		139-50.1	
Date	1999/06/03		1999/06/04		1999/06/04		1999/06/06		1999/06/06		1999/06/06		1999/06/06		1999/06/06		1999/06/07		1999/06/07	
Time(JST)	17:51		03:13		06:46		08:32		12:32		15:52		19:14		23:40		07:25		12:50	
Weather	BC		C		R		B		C		C		C		C		C		R	
Air Temp.	24.0		18.0		20.0		19.5		22.5		21.5		18.5		14.0		16.0		14.0	
Bar	1013.5		1012.0		1012.0		1019.5		1017.0		1015.0		1014.5		1012.5		1009.5		1007.0	
Wind Dir	CALM		N		S		SE		ESE		NNE		NNW		E		NE		E	
Wind Spd/F	S 0		S 3		S 2		S 2		S 2		S 2		S 4		S 5		S 6		S 7	
Transparency	16				21		17		16		17						8		9	
Depth			551		608		199		448		575				960		516		1000	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.0	34.025	17.4	34.193	17.2	33.365	18.6	33.764	19.6	33.734	18.1	34.102	17.6	34.092	15.2	33.971	14.3	33.975	15.9	32.987
10m	15.35	34.067	15.36	34.251	15.39	33.908	15.11	33.890	15.50	33.986	16.30	34.137	15.89	33.896	14.56	34.029	14.36	33.951	16.06	32.870
20m	12.25	34.101	14.77	34.248	14.25	33.911	14.03	34.030	14.47	34.130	15.17	34.131	15.29	34.114	12.84	34.156	14.36	33.959	14.49	33.492
30m	11.51	34.245	13.69	34.289	12.54	33.948	12.36	34.052	13.79	34.115	14.49	34.188	14.12	34.196	12.08	34.144	13.56	34.029	13.88	33.720
50m	10.53	34.123	12.20	34.327	10.38	34.063	11.32	34.186	11.37	34.067	11.26	34.156	11.15	34.175	10.80	34.137	11.32	34.155	10.97	33.890
75m	10.05	34.099	11.15	34.204	9.83	34.055	11.08	34.182	10.82	34.096	10.57	34.117	10.56	34.144	9.37	34.090	10.54	34.119	10.26	34.029
100m	9.53	34.080	10.69	34.198	9.47	34.035	10.58	34.121	10.73	34.116	10.07	34.111	9.90	34.111	6.84	34.098	10.20	34.102	10.16	34.055
125m	8.61	34.104	9.92	34.111	9.10	34.046	10.13	34.087	10.32	34.079	9.59	34.066	9.37	34.096	5.36	34.093	9.83	34.057	9.67	34.035
150m	7.16	34.101	9.50	34.146	8.53	34.064	9.66	34.066	9.69	34.039	9.38	34.085	8.42	34.098	4.15	34.085	9.08	34.039	9.41	34.043
200m	4.15	34.091	7.42	34.103	6.49	34.085			8.34	34.074	7.30	34.094	5.27	34.092	2.74	34.082	7.09	34.084	8.69	34.102
250m	2.76	34.073	3.83	34.089	3.86	34.090			3.37	34.092	3.89	34.088	2.60	34.079	1.40	34.078	2.63	34.088	3.71	34.092
300m	1.70	34.072	2.46	34.079	2.29	34.082			1.69	34.079	2.26	34.078	1.81	34.075	1.07	34.076	1.56	34.078	2.05	34.079
400m	1.05	34.078	1.22	34.076	1.03	34.076			0.79	34.073	1.07	34.076	0.99	34.074	0.67	34.073	0.88	34.075	0.97	34.077
500m	0.83	34.079	0.74	34.074	0.59	34.072					0.62	34.071	0.60	34.070	0.47	34.072	0.57	34.071	0.65	34.072
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-21

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199906		199906		199906		199906		199906		199906	
Station No	HSR016		HSR021		HSR020		HSR022		H001		HFS15		HFS16		HFS17		HFS18		HFS19	
Latitude:N	41- 0.1		41-14.9		41-29.9		41-39.9		41-52.9		42-15.1		42-10.1		42- 7.6		42- 8.7		42-10.7	
Longitude:E	139-30.0		139-50.0		139-50.0		140-40.0		141- 7.1		140-59.9		140-55.0		140-52.5		140-45.0		140-46.7	
Date	1999/06/07		1999/06/07		1999/06/08		1999/06/08		1999/06/14		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15	
Time(JST)	14:36		17:12		06:50		17:58		21:12		09:07		09:53		10:19		11:01		11:24	
Weather	C		C		C		C		B											
Air Temp.	15.0		15.0		16.0		14.0		21.0											
Bar	1005.5		1005.5		1007.5		1009.5		1011.5											
Wind Dir	ESE		ENE		W		W		W											
Wind Spd/F	S 4		S 5		S 3		S 5		S 5											
Transparency	12		8		16		9													
Depth	1000						120		72											
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.1	32.721	15.9	32.768	15.5	33.836	13.5	33.892	15.6	31.59*	11.2	31.81*	12.8	31.74*	14.8	31.55*	16.3	31.57*	15.6	31.46*
10m	14.64	33.182	16.18	32.762	14.41	34.021	12.95	33.931	10.21	31.988	8.13	32.478	12.25	32.431	13.45	32.580	13.34	31.801	11.54	31.810
20m	13.83	33.601	15.39	33.997	13.56	34.021	11.74	33.991	10.37	33.190	8.41	33.225	9.34	33.293	6.40	32.911	8.78	33.123	10.75	33.090
30m	13.00	34.159	14.27	34.121	12.02	34.021	10.43	34.024	7.64	33.562	7.80	33.317	9.15	33.693	4.82	33.049	4.65	32.984	6.18	33.136
50m	11.03	34.117	12.71	34.092	9.51	34.079	9.44	34.053	8.07	33.905	6.55	33.551	5.57	33.423	3.29	33.049	2.58	32.959	2.84	33.011
75m	10.59	34.133	10.53	34.057	8.54	34.051	8.89	34.052							4.11	33.446			4.63	33.493
100m	9.92	34.069	10.23	34.085	7.69	34.058	8.57	34.058												
125m	9.49	34.055	9.40	34.049	6.75	34.059														
150m	8.92	34.081	8.71	34.103	5.60	34.090														
200m	6.72	34.101	5.98	34.085	3.27	34.081														
250m	2.30	34.082	2.37	34.083	2.01	34.079														
300m	1.56	34.076	1.25	34.079	1.51	34.078														
400m	0.82	34.073	0.76	34.075	0.93	34.075														
500m	0.55	34.071	0.49	34.072	0.70	34.137														
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-22

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906		
Station No	HFS20		HFS21		HFS22		HFS23		HFS24		HFS25		HFS26		HFS27		HFS28		HFS29		
Latitude:N	42-13.2		42-15.5		42-17.9		42-25.0		42-20.1		42-15.1		42-10.1		42-14.9		42-17.5		42-19.9		
Longitude:E	140-49.7		140-52.9		140-55.7		140-50.1		140-45.0		140-40.1		140-35.0		140-30.1		140-32.4		140-34.8		
Date	1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		
Time(JST)	11:54		12:23		12:57		13:50		14:37		15:25		16:13		16:56		17:22		17:48		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	14.8	31.66*	12.2	31.72*	13.5	32.26*	14.2	31.55*	14.9	31.55*	15.2	31.51*	16.6	31.64*	16.0	31.58*	16.2	31.52*	16.1	31.58*	
10m	10.06	32.063	8.96	32.564	10.00	32.468	8.23	32.334	12.57	32.283	11.91	31.793	12.37	32.709	12.59	31.746	14.42	31.972	14.51	31.697	
20m	9.67	33.299	6.66	32.803	5.38	32.790	6.60	32.949	8.84	32.745	9.24	32.414	7.00	32.873	7.04	32.710	8.92	32.525	10.86	32.501	
30m	8.91	33.463	7.06	33.284	6.85	33.229	4.28	32.940	7.99	32.918	9.13	33.358	3.06	32.860	3.71	32.885	5.87	32.975	6.89	32.949	
50m	7.50	33.675	6.44	33.556					3.57	33.056	3.60	33.060	2.48	32.991	2.45	32.983	4.77	33.281	3.10	33.056	
75m											3.90	33.373			2.90	33.366	2.87	33.393	3.36	33.361	
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-23

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906		
Station No	HFS30		HFS31		HFS32		HFS33		HFS34		HFS36		HFS35		HFS37		HFS38		HFS76		
Latitude:N	42-22.5		42-25.0		42-27.3		42-30.0		42-25.0		42-17.6		42-19.9		42-25.0		42-30.1		42-23.4		
Longitude:E	140-37.3		140-39.8		140-42.4		140-35.1		140-30.1		140-25.1		140-25.1		140-25.1		140-30.0		141-39.8		
Date	1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/15		1999/06/16		1999/06/16		
Time(JST)	18:59		19:26		19:51		20:39		21:28		22:31		22:54		23:32		00:16		06:15		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																F					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	15.8	31.57*	15.8	31.47*	15.0	31.56*	15.4	31.68*	16.0	31.75*	15.8	31.58*	15.9	31.72*	15.8	31.71*	14.9	31.68*	14.1	33.05*	
10m	13.51	31.783	13.19	31.752	10.00	31.972	12.36	31.705	12.06	31.888	12.83	32.504	12.36	32.356	13.10	32.307	11.03	31.845	11.64	33.721	
20m	10.07	32.035	8.36	32.289	7.52	32.620	6.07	32.585	8.69	32.452	6.94	32.798	6.40	32.716	5.84	32.588	5.25	32.649	9.57	33.800	
30m	6.98	32.932	8.02	33.192	5.33	33.019	4.45	32.914	3.92	32.820	2.68	32.852	2.91	32.835	3.10	32.856	3.12	32.861	8.70	33.876	
50m	3.42	33.079	4.44	33.227	3.63	33.074	2.79	32.998	2.53	32.918	2.46	32.994	2.44	32.961	2.51	32.976	2.49	32.961	8.17	33.868	
75m	3.53	33.308	4.11	33.383					3.19	33.336									7.87	33.871	
100m																			7.31	33.817	
125m																			5.80	33.733	
150m																			5.38	33.719	
200m																			4.69	33.680	
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-24

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	HFS75		HFS74		HFS73		HFS72		HFS71		H101		HDK01		HDK02		HDK03		HDK04	
Latitude:N	42-24.3		42-25.8		42-26.9		42-28.9		42-30.8		41-39.8		42- 0.1		42- 5.0		42-10.0		42-14.8	
Longitude:E	141-40.9		141-41.9		141-43.0		141-45.0		141-46.9		140-40.1		140-59.9		140-55.1		140-50.1		140-45.1	
Date	1999/06/16		1999/06/16		1999/06/16		1999/06/16		1999/06/16		1999/06/16		1999/06/21		1999/06/21		1999/06/21		1999/06/21	
Time(JST)	06:34		06:52		07:07		07:30		07:52		19:36		13:45		14:34		15:25		16:15	
Weather											C		B		B		B		B	
Air Temp.											15.0		22.0		22.5				21.5	
Bar											999.5		1017.0		1017.0		1016.5		1016.5	
Wind Dir											SW		SSE		SE		CALM		W	
Wind Spd/F											F 3		S 3		S 2		S 0		S 5	
Transparency																				
Depth											121		87		88		89		80	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.2	33.08*	14.2	33.08*	14.3	33.09*	14.5	33.01*	14.3	33.13*	12.2	33.96*	16.8	32.38*	16.7	32.46*	17.5	32.37*	17.2	31.64*
10m	11.43	33.667	11.72	33.576	11.55	33.566	10.21	33.309	12.10	33.540	11.67	34.026	14.87	32.630	11.08	32.988	11.71	32.431	12.22	32.415
20m	10.21	33.840	10.38	33.837	10.23	33.860	10.08	33.862	9.87	33.655	11.27	34.016	8.56	33.033	9.75	33.465	9.44	33.379	8.65	32.906
30m	9.32	33.887	9.11	33.866	9.26	33.872	9.28	33.858	7.26	33.549	11.10	34.027	4.74	32.911	7.79	33.418	8.27	33.388	6.50	33.053
50m	8.14	33.832	8.29	33.859	7.85	33.778					9.94	34.056	4.53	33.173	6.50	33.560	4.57	33.237	6.52	33.553
75m	7.79	33.848	6.32	33.749							9.91	34.064	7.03	33.782	4.86	33.540	3.11	33.342	5.57	33.557
100m	5.33	33.700									9.31	34.078								
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-25



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	HDK05		HDK06		HDK07		HDK51		HDK08		HDK09		HDK10		HDK11		HDK12		HDK13	
Latitude:N	42-19.9		42-24.9		42-29.8		42-25.0		42-20.0		42-20.0		42-19.9		42-20.0		42-19.9		42-19.9	
Longitude:E	140-40.1		140-35.0		140-30.0		140-27.7		140-25.0		140-29.9		140-34.9		140-39.9		140-44.9		140-49.9	
Date	1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/21	
Time(JST)	17:06		17:56		18:48		19:37		20:18		20:50		21:22		21:53		22:25		22:58	
Weather	B		B		B		B		B		B		B		B		B		B	
Air Temp.	20.5		20.5		19.0		18.5		19.5		18.0		17.5		17.0		17.5		17.0	
Bar	1017.0		1017.5		1017.5		1018.5		1018.5		1019.0		1019.0		1019.0		1017.5		1019.5	
Wind Dir	WNW		NW		NNW		NNW		W		W		NW		WNW		WNW		WNW	
Wind Spd/F	S 6		S 5		S 7		S 3		S 5		S 2		S 3		S 4		S 5		S 5	
Transparency																				
Depth	77		92		68		84		70		94		94		78		60		48	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.9	31.68*	16.5	31.76*	17.1	31.58*	17.3	31.62*	16.0	31.77*	16.0	31.70*	16.2	31.61*	15.9	31.62*	16.4	31.66*	16.2	31.65*
10m	15.79	31.662	15.69	31.763	13.76	31.814	16.21	31.726	11.19	32.130	15.29	31.688	15.75	31.590	15.79	31.664	15.64	31.621	12.97	32.778
20m	9.61	32.403	10.96	32.652	6.69	32.616	7.31	32.414	7.15	32.816	8.16	32.926	9.93	32.368	10.30	32.349	9.71	32.767	8.67	33.269
30m	7.81	32.979	6.12	32.961	4.03	32.900	4.37	32.889	3.16	32.854	3.40	32.836	7.66	33.025	7.91	32.949	7.04	33.096	8.30	33.495
50m	3.51	33.021	4.27	33.157	3.01	33.018	3.60	33.065	3.01	33.014	2.77	32.982	4.13	33.098	4.69	33.153	6.30	33.462		
75m			3.34	33.387			3.28	33.360			3.12	33.364	3.05	33.390						
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-26

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	HDK52		HDK14		HDK15		HDK16		HDK17		HDK18		HDK53		HDK54		H201		HTW006	
Latitude:N	42-24.9		42-30.0		42-25.0		42-20.0		42-15.0		42-10.5		42-14.9		42-14.9		41-11.9		41-40.0	
Longitude:E	140-45.0		140-40.0		140-40.0		140-40.0		140-40.0		140-40.0		140-35.2		140-54.8		139-48.9		141-19.9	
Date	1999/06/21		1999/06/22		1999/06/22		1999/06/22		1999/06/22		1999/06/22		1999/06/22		1999/06/22		1999/06/23		1999/06/28	
Time(JST)	23:52		00:41		01:22		02:04		02:46		03:24		04:20		06:07		19:17		17:34	
Weather	B		B		B		B		B		B		BC		BC		C		B	
Air Temp.	17.0		16.5		16.0		16.0		16.5		16.5		16.0		17.0		23.0		17.0	
Bar	1019.0		1019.5		1019.5		1019.0		1019.0		1019.0		1020.0		1020.0		1010.0		1016.5	
Wind Dir	NW		N		NNW		NNW		W		SW		SW		NNE		ESE		SE	
Wind Spd/F	S 8		S 5		S 3		S 3		S 5		S 4		S 3		S 1		F 1		F 3	
Transparency																				
Depth	57		65		78		77		88		87		92		60				232	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.4	31.66*	16.6	31.51*	15.9	31.73*	15.8	31.65*	16.3	31.65*	15.8	31.73*	16.0	31.67*	15.3	32.61*	20.8	33.58*	14.1	34.182
10m	14.99	31.760	12.73	32.154	15.74	31.780	15.87	31.649	15.53	31.758	11.40	32.066	14.12	31.914	12.96	33.143	18.77	N.D.	12.02	34.147
20m	9.03	32.780	8.91	32.916	9.49	32.577	9.78	32.588	10.41	32.915	8.33	33.026	9.21	32.548	9.65	33.543	17.98	N.D.	11.34	34.097
30m	5.56	32.972	5.99	33.040	5.62	32.997	7.62	32.993	8.04	33.022	6.14	33.044	8.61	32.989	9.16	33.703	14.40	N.D.	11.29	34.094
50m	4.41	33.155	4.36	33.179	3.10	33.055	3.63	33.102	5.90	33.317	2.82	33.013	3.01	32.920	7.39	33.645	11.87	N.D.	11.22	34.087
75m									3.82	33.396	2.86	33.315	3.04	33.259			10.66	N.D.	10.99	34.067
100m																	9.72	N.D.	10.50	34.038
125m																	9.13	N.D.	8.57	33.940
150m																	8.58	N.D.	7.35	33.872
200m																	5.35	N.D.	4.72	33.978
250m																	2.53	N.D.		
300m																	1.67	N.D.		
400m																	0.93	N.D.		
500m																	0.60	N.D.		
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-27

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	HTW005		HTW001		HTW004		HTW003		HTW002		HTW000		HTW014		HTW015		HTW013		HTW012	
Latitude:N	41-49.8		41-52.5		41-59.9		42- 9.9		42-20.2		42-26.9		42-10.1		42- 1.0		42- 0.0		41-50.1	
Longitude:E	141-20.1		141-12.7		141-19.8		141-19.9		141-19.8		141-20.0		142-29.9		142-32.6		142-20.1		142-10.1	
Date	1999/06/28		1999/06/28		1999/06/29		1999/06/29		1999/06/29		1999/06/29		1999/06/29		1999/06/29		1999/07/02		1999/07/02	
Time(JST)	18:46		19:57		04:55		06:12		07:33		08:28		15:02		17:51		11:24		13:16	
Weather	F		F		F		C		C		C		C		C		C		C	
Air Temp.	15.0		15.0		14.0		14.0		14.0		15.5		16.5		14.0		17.0		17.0	
Bar	1017.0		1018.0		1020.0		1020.0		1020.0		1022.0		1022.0		1021.0		1012.0		1013.0	
Wind Dir	SE		SSE		ESE		ESE		ESE		ESE		E		ESE		W		SW	
Wind Spd/F	F 3		S 5		F 3		F 3		F 3		F 3		S 5		F 3		S 3		S 2	
Transparency											7		9				11		12	
Depth	285		215		305		355		224		78		122		770		1000		1080	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.7	33.204	13.6	33.010	13.4	33.507	13.7	33.382	15.4	32.855	15.0	32.906	13.8	33.449	13.3	33.561	14.2	33.879	14.2	33.968
10m	11.81	33.267	13.35	33.471	13.31	33.562	12.74	33.480	14.13	33.013	13.66	33.171	13.75	33.479	13.36	33.558	13.63	33.963	12.95	33.957
20m	10.04	33.740	10.76	33.644	12.10	33.621	12.75	33.665	12.99	33.363	12.38	33.262	12.72	33.789	12.46	33.600	13.48	33.982	12.71	33.947
30m	9.65	33.940	9.42	33.809	11.34	33.791	11.44	33.816	10.73	33.858	8.48	33.440	11.14	34.011	11.99	33.983	13.29	33.992	12.38	33.938
50m	8.75	33.928	8.29	33.893	9.01	33.944	9.26	33.867	9.18	33.938	8.68	33.748	9.48	33.978	10.29	34.024	13.05	34.002	10.18	33.993
75m	7.52	34.017	7.52	33.836	8.29	33.909	8.84	34.018	8.93	33.959			8.15	33.868	8.79	33.975	12.21	33.958	9.62	34.019
100m	6.76	33.942	6.77	33.781	7.48	33.829	7.77	34.093	8.07	33.870			7.23	33.774	7.53	33.859	9.66	33.969	8.02	33.917
125m	5.83	33.825	6.55	33.759	6.97	33.816	7.10	33.914	6.81	33.921					7.17	33.852	8.89	33.907	7.68	33.887
150m	5.25	33.866	6.28	33.735	6.47	33.791	6.70	33.882	6.16	33.960					6.13	33.747	8.02	33.899	7.61	33.878
200m	4.90	33.735	5.59	33.683	5.01	33.678	5.80	33.960	5.50	33.930					5.07	33.689	6.21	33.718	7.14	33.856
250m	4.75	33.740			3.77	33.791	4.17	33.771							4.56	33.729	3.60	N.D.	4.59	33.653
300m							3.82	33.669							3.82	33.716	3.60	N.D.	3.68	33.655
400m															3.59	33.834	3.61	33.742	3.55	33.810
500m															3.64	33.976	3.58	33.986	3.59	33.990
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-28

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199907		199907		199907		199907	
Station No	HTW011		HTW010		HTW009		HTW008		HTW007		HTW017		HTW117		HTW116		HTW115		HTW114	
Latitude:N	41-40.0		41-30.1		41-20.1		41-16.3		41-30.0		41-15.1		41-23.1		41-20.7		41-18.3		41-15.9	
Longitude:E	142- 0.2		141-50.1		141-40.1		141-37.1		141-20.1		139-44.8		140-10.6		140-11.1		140-11.7		140-12.4	
Date	1999/07/02		1999/07/02		1999/07/02		1999/07/02		1999/07/03		1999/07/05		1999/07/06		1999/07/06		1999/07/06		1999/07/06	
Time(JST)	15:35		20:23		21:57		23:13		06:36		19:01		05:57		06:27		06:59		07:29	
Weather	C		C		C		C		C		B		BC		BC		BC		B	
Air Temp.	17.0		16.0		16.0		16.5		18.0		20.0		18.0		18.0		17.5		17.5	
Bar	1013.0		1014.0		1014.0		1013.5		1012.5		1014.0		1015.5		1016.4		1016.5		1016.2	
Wind Dir	SSE		SE		SE		SE		ESE		ENE		E		E		ENE		E	
Wind Spd/F	S 4		S 3		S 3		F 3		S 2		F 3		S 7		S 3		S 8		S 7	
Transparency	10								17		12									
Depth	1056				776		636		242				53		110		133		146	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.3	33.897	15.2	33.804	15.9	33.877	16.1	33.921	14.1	34.046	18.0	34.179	17.6	33.25*	17.7	34.34*	18.8	33.68*	18.8	33.59*
10m	13.87	33.990	15.20	33.802	15.99	33.918	16.23	33.969	12.66	34.100	17.85	34.158	15.87	34.159	17.78	34.231	18.19	33.932	18.98	33.537
20m	13.56	34.009	15.05	33.846	14.62	33.882	15.84	33.924	12.40	34.086	16.48	34.283	14.74	34.238	15.23	34.349	18.09	34.022	18.48	33.895
30m	13.33	34.024	14.36	33.880	14.17	33.927	14.76	33.874	12.18	34.082	15.00	34.395	11.85	34.235	13.08	34.317	18.05	34.169	18.05	34.021
50m	13.11	34.041	12.39	33.988	13.52	34.071	13.13	34.068	11.90	34.093	11.58	34.256			12.07	34.250	15.98	34.349	14.74	34.262
75m	12.69	34.052	11.75	34.015	12.06	34.024	12.30	34.116	11.67	34.114	10.56	34.222			9.87	34.172	11.22	34.210	11.93	34.227
100m	11.48	34.065	10.63	34.028	11.22	34.037	11.19	34.061	11.35	34.121	8.42	34.121			7.74	34.118	9.68	34.097	10.03	34.105
125m	10.62	34.004	9.94	33.991	10.66	34.061	10.07	34.009	11.31	34.120	6.79	34.100					8.40	34.099	9.49	34.087
150m	9.45	33.996	9.40	33.954	9.85	34.031	9.56	34.000	11.29	34.120	4.74	34.095								
200m	5.56	33.632	8.08	33.887	7.54	33.872	8.14	33.930	10.64	34.128	2.82	34.079								
250m	5.03	33.640	5.64	33.664	4.79	33.554	5.40	33.623			1.92	34.076								
300m	4.14	33.597	4.68	33.602	3.96	33.509	4.13	33.515			1.53	34.076								
400m	3.49	33.741	3.32	33.617	3.66	33.650	3.84	33.667			0.99	34.076								
500m	3.61	33.928	3.35	33.851	3.65	33.787					0.64	34.075								
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-29

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	HTW113		HTW112		HTW111		HTW141		HTW142		HTW143		HTW144		HTW145		HTW181		HTW182	
Latitude:N	41-13.5		41-11.0		41- 8.6		41- 8.7		41-10.7		41-13.4		41-15.8		41-18.1		41- 8.6		41-10.8	
Longitude:E	140-13.1		140-13.6		140-14.3		140-14.2		140-13.7		140-13.2		140-12.4		140-11.9		140-14.2		140-13.6	
Date	1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/06		1999/07/07		1999/07/07	
Time(JST)	08:00		08:31		09:02		15:14		15:44		16:19		16:46		17:17		03:38		04:08	
Weather	B		B		B		B		BC		B		B		B		BC		BC	
Air Temp.	18.0		18.0		19.0		21.0		20.0		19.0		19.0		19.0		17.0		17.5	
Bar	1015.8		1015.6		1015.5		1014.5		1014.5		1015.1		1015.0		1015.2		1017.0		1017.0	
Wind Dir	NE		NE		NE		NNE		NNE		NNE		NNE		NE		NE		NE	
Wind Spd/F	S 10		S 9		S 5		S 5		S 10		S 6		S 7		S 6		S 4		S 5	
Transparency																				
Depth	126		87		66		65		86		126		140		135		65		87	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.0	33.57*	19.3	33.50*	19.9	33.53*	19.2	33.65*	19.0	33.68*	19.3	33.50*	19.2	33.54*	18.4	33.94*	18.8	33.61*	19.1	33.49*
10m	18.65	33.748	19.25	33.422	19.18	33.445	18.94	33.585	19.11	33.586	19.25	33.485	19.11	33.604	18.02	34.159	19.08	33.464	19.40	33.411
20m	17.98	33.819	18.88	33.680	18.87	33.638	18.71	33.683	18.59	33.683	18.08	34.040	16.92	34.042	14.95	34.424	19.10	33.590	18.41	33.743
30m	17.32	34.001	18.29	33.852	18.27	33.869	17.74	33.936	17.44	33.834	16.13	34.147	14.41	34.193	12.33	34.331	17.84	33.863	17.51	33.928
50m	13.72	34.367	16.42	34.227	15.25	34.131	12.84	34.181	14.05	34.324	12.30	34.250	10.97	34.152	11.65	34.277	14.14	34.168	12.84	34.167
75m	11.60	34.238	11.64	34.247					11.21	34.201	10.68	34.138	9.96	34.098	8.87	34.095			11.21	34.195
100m	10.43	34.132									10.22	34.114	9.32	34.075	7.97	34.102				
125m													8.86	34.090	7.94	34.097				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-30

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	HTW183		HTW184		HTW185		HTW186		HTW187		HDH01		HFS15		HFS16		HFS17		HFS18	
Latitude:N	41-13.2		41-15.7		41-18.1		41-20.5		41-23.1		41-40.0		42-15.0		42-10.1		42- 7.6		42- 8.7	
Longitude:E	140-13.1		140-12.4		140-11.8		140-11.1		140-10.5		140-40.0		141- 0.0		140-55.0		140-52.6		140-44.6	
Date	1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/07		1999/07/12		1999/07/12		1999/07/12		1999/07/12	
Time(JST)	04:38		05:10		05:41		06:12		06:44		17:55		15:55		16:45		17:12		17:58	
Weather	C		C		C		C		BC		BC									
Air Temp.	17.0		17.0		17.0		17.0		17.0		19.5									
Bar	1017.2		1017.5		1017.9		1018.0		1018.1		1018.5									
Wind Dir	NE		NE		NE		NE		ENE		E									
Wind Spd/F	S 6		S 8		S 9		S 8		S 7		S 6									
Transparency											11									
Depth	124		145		132		115		59		119									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.2	33.48*	19.0	33.53*	18.6	33.85*	18.1	34.25*	17.3	34.21*	16.4	34.113	16.8	32.62*	16.9	32.84*	17.0	32.70*	16.9	32.42*
10m	19.09	33.551	18.57	34.086	18.30	34.143	18.12	34.223	16.85	34.137	15.52	34.123	16.63	33.248	15.45	33.036	15.72	33.121	14.46	32.841
20m	17.97	34.248	17.82	34.186	18.19	34.205	17.62	34.227	16.28	34.138	14.38	34.168	13.72	33.418	13.78	33.473	13.33	33.609	13.22	33.406
30m	15.93	34.097	16.16	34.317	18.04	34.223	14.47	34.386	13.49	34.317	13.10	34.179	12.79	33.622	11.22	33.533	11.75	33.652	11.62	33.533
50m	11.66	34.164	14.67	34.374	14.70	34.382	12.00	34.285	8.14	34.164	11.04	34.181	9.74	33.790	10.00	33.865	8.73	33.650	3.82	32.965
75m	11.05	34.170	11.49	34.237	11.18	34.188	9.59	34.171			10.06	34.149					4.20	33.479		
100m	10.29	34.109	9.87	34.095	9.01	34.116	7.79	34.108			9.89	34.134								
125m			9.20	34.077	8.04	34.101														
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-31

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907		
Station No	HFS19		HFS20		HFS21		HFS22		HFS23		HFS24		HFS25		HFS26		HFS27		HFS28		
Latitude:N	42-10.8		42-13.2		42-15.6		42-18.0		42-24.9		42-20.2		42-15.1		42-10.1		42-15.0		42-17.4		
Longitude:E	140-46.7		140-49.7		140-52.8		140-55.8		140-50.1		140-45.0		140-40.2		140-35.0		140-30.2		140-32.4		
Date	1999/07/12		1999/07/12		1999/07/12		1999/07/12		1999/07/12		1999/07/12		1999/07/12		1999/07/12		1999/07/12		1999/07/13		
Time(JST)	18:21		18:53		19:20		19:47		20:44		21:29		22:16		23:07		23:52		00:18		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	17.0	32.60*	16.7	32.80*	17.0	32.77*	17.5	32.50*	16.8	32.14*	16.6	32.48*	17.0	32.29*	15.9	32.30*	16.8	32.18*	16.8	32.31*	
10m	16.00	33.091	16.41	32.842	16.07	32.818	17.26	32.564	16.60	32.153	15.85	32.548	16.48	32.471	14.98	32.349	16.04	32.436	16.33	32.420	
20m	13.74	33.410	14.04	33.278	14.30	33.268	14.19	33.362	14.07	32.986	14.73	32.809	14.69	32.858	13.03	32.730	13.97	32.753	14.21	32.853	
30m	11.71	33.585	11.28	33.497	13.33	33.538	12.35	33.632	12.20	33.228	13.76	33.098	14.31	32.892	10.33	32.789	8.96	32.781	11.88	33.221	
50m	8.82	33.745	7.18	33.368	9.18	33.580	9.34	33.598			9.00	33.545	4.66	33.042	3.87	33.010	3.65	33.028	3.19	32.956	
75m	5.61	33.408											6.07	33.050			3.69	33.278	3.52	33.216	
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-32

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907		
Station No	HFS29		HFS30		HFS31		HFS32		HFS33		HFS34		HFS36		HFS35		HFS37		HFS38		
Latitude:N	42-19.9		42-22.4		42-24.9		42-27.4		42-30.0		42-25.1		42-17.5		42-19.9		42-24.9		42-29.9		
Longitude:E	140-34.9		140-37.4		140-40.1		140-42.4		140-35.1		140-30.1		140-25.0		140-25.0		140-25.0		140-29.9		
Date	1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		
Time(JST)	00:44		01:27		01:53		02:19		03:01		03:44		04:46		05:08		05:47		06:33		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	17.0	32.24*	16.9	32.25*	16.8	32.31*	17.0	32.09*	17.6	32.03*	17.5	32.14*	17.7	31.94*	17.4	31.97*	17.9	31.95*	16.4	31.98*	
10m	16.39	32.351	16.07	32.582	16.76	32.332	16.01	32.242	16.63	32.099	16.44	32.188	15.74	32.036	16.31	31.996	15.99	32.001	16.09	32.000	
20m	14.70	32.530	15.31	32.697	14.90	32.605	14.09	32.915	12.14	32.696	14.10	33.126	12.84	32.469	13.28	32.477	13.27	32.820	13.90	32.908	
30m	12.90	33.054	13.47	33.159	13.44	33.030	12.39	32.965	9.82	32.943	9.44	32.844	12.35	33.200	11.18	32.837	11.01	32.993	11.52	33.296	
50m	4.45	33.062	5.57	33.052	6.60	33.286	6.77	33.408	5.63	33.190	3.97	33.028	4.21	33.041	4.78	33.091	7.06	33.317	5.58	33.187	
75m	5.07	33.236	4.31	33.334							4.00	33.373									
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-33



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907		
Station No	HFS81		HFS82		HFS83		HFS84		HFS85		HFS86		HFS87		HFS88		HFS89		HFS76		
Latitude:N	42-19.8		42-17.7		42-14.9		42-12.6		42-10.1		42- 7.6		42- 5.0		42- 2.5		42- 0.0		42-23.4		
Longitude:E	140-30.2		140-34.8		140-40.0		140-44.9		140-49.9		140-55.1		140-59.9		141- 4.8		141- 9.9		141-39.9		
Date	1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		
Time(JST)	07:42		08:28		09:21		10:09		10:57		11:44		12:30		13:20		14:08		18:29		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	16.4	32.49*	16.8	32.46*	17.1	32.31*	16.7	32.84*	16.3	32.90*	16.6	32.83*	16.3	32.85*	16.7	32.72*	16.2	33.01*	16.1	33.24*	
10m	15.80	32.445	16.55	32.474	16.44	32.536	16.43	32.935	15.24	33.103	15.89	33.123	15.65	32.899	15.39	32.957	13.59	33.332	15.64	33.534	
20m	14.48	32.762	15.23	32.709	15.64	32.581	13.43	32.879	13.81	33.440	13.27	33.548	13.18	33.537	12.38	33.166	13.04	33.635	13.80	33.692	
30m	9.31	32.844	13.25	32.961	13.68	32.917	11.89	33.299	12.52	33.661	11.14	33.536	10.58	33.631	11.51	33.332	11.24	33.743	13.50	33.941	
50m	4.21	33.085	4.23	32.970	4.69	33.036	5.36	33.150	8.41	33.642	9.26	33.719	8.90	33.739	9.58	33.920	8.44	33.784	11.95	33.989	
75m	3.63	33.340	4.53	33.362	3.52	33.188	4.97	33.434	3.85	33.229	4.36	33.510	8.29	33.772	8.59	33.836	8.23	33.785	9.80	34.002	
100m																8.17	33.839	8.28	33.847	8.97	33.968
125m																		6.90	33.783	8.33	33.917
150m																				7.13	33.821
200m																				4.66	33.670
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-34

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199908		199908		199908		199908		199908	
Station No	HFS75		HFS74		HFS73		HFS72		HFS71		H01		P65		P64		P63		HDK01	
Latitude:N	42-24.4		42-25.9		42-27.0		42-28.9		42-30.9		41-40.3		41-40.0		41-49.9		41-59.9		42- 0.0	
Longitude:E	141-40.8		141-41.9		141-43.0		141-44.9		141-46.9		140-40.3		141-20.0		141-20.1		141-20.0		141-11.2	
Date	1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/13		1999/07/26		1999/07/26		1999/07/26		1999/07/26		1999/07/26	
Time(JST)	18:48		19:07		19:23		19:47		20:12		13:51		16:26		17:43		19:06		20:53	
Weather											C		C		C		C		C	
Air Temp.											24.5		22.5		23.5		24.0		25.0	
Bar											1014.0		1013.5		1013.5		1013.5		1014.0	
Wind Dir											SW		WSW		SW		SSW		E	
Wind Spd/F											S 8		S 7		S 8		S 3		S 2	
Transparency											8		12		13					
Depth											120		230		285		310		88	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	15.9	33.26*	16.9	33.26*	16.2	33.02*	15.6	33.20*	16.0	33.47*	18.9	34.008	15.5	34.069	19.7	33.322	19.8	33.088	20.5	31.937
10m	15.48	33.494	14.94	33.418	14.76	33.316	14.00	33.662	15.02	33.774	18.47	33.979	13.46	34.163	12.71	33.899	15.90	34.042	17.78	32.253
20m	13.52	33.616	13.43	33.547	13.51	33.550	13.65	33.956	12.94	33.585	17.23	34.019	13.29	34.158	10.44	33.951	12.97	34.079	13.71	33.863
30m	13.59	33.963	13.02	33.866	12.97	33.805	13.10	33.993	11.83	33.758	15.61	34.103	13.25	34.155	10.38	34.033	11.77	34.057	10.78	33.904
50m	10.71	33.763	11.01	33.986	10.47	33.934					13.02	34.195	13.21	34.154	9.30	33.950	11.41	34.083	9.32	33.970
75m	9.60	33.962	8.59	33.829							10.76	34.183	13.11	34.155	8.35	33.900	9.39	33.995	7.61	33.858
100m	8.56	33.902									9.88	34.155	12.97	34.156	7.44	33.818	8.43	33.938		
125m													12.61	34.162	6.90	33.797	7.81	33.879		
150m													8.46	33.960	6.38	33.764	6.80	33.793		
200m													6.00	33.766	5.16	33.662	5.01	33.627		
250m															4.20	33.658	4.56	33.656		
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-35

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	HDK02		HDK03		HDK04		HDK05		HDK06		HDK07		HDK08		HDK09		HDK10		HDK11	
Latitude:N	42- 4.9		42- 9.9		42-15.0		42-19.9		42-24.9		42-29.9		42-20.0		42-20.0		42-20.0		42-20.0	
Longitude:E	140-55.3		140-50.1		140-45.2		140-40.1		140-35.1		140-30.0		140-25.0		140-29.9		140-34.9		140-39.9	
Date	1999/07/26		1999/07/26		1999/07/26		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27	
Time(JST)	21:47		22:39		23:33		00:26		01:16		02:07		03:27		03:57		04:30		05:03	
Weather	C		C		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	25.5		25.5		25.0		25.0		24.5		24.5		24.0		24.0		26.0		26.5	
Bar	1014.0		1014.0		1014.0		1013.5		1013.5		1013.5		1013.0		1013.0		1013.0		1013.0	
Wind Dir	WE		SW		NE		W		WSW		W		SW		W		W		W	
Wind Spd/F	S 3		S 1		S 2		S 4		S 4		S 1		S 2		S 1		S 4		S 2	
Transparency																				
Depth	88		90		79		78		92		67		71		93		94		78	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	20.6	31.896	20.8	31.690	20.7	31.837	20.7	31.696	20.6	31.765	19.7	31.312	20.5	31.857	20.9	31.848	20.6	31.832	12.7	31.731
10m	16.95	32.405	16.31	32.306	17.28	32.280	18.62	32.048	18.00	32.112	15.92	32.634	16.65	32.713	17.90	32.104	19.41	31.885	19.10	31.911
20m	13.51	33.314	13.46	32.850	13.59	32.832	14.82	32.896	14.95	33.001	13.29	33.107	13.33	33.123	15.41	32.755	15.00	32.747	15.05	32.743
30m	13.13	33.901	13.71	33.656	13.44	33.662	12.12	32.945	11.50	32.983	10.80	33.198	9.89	33.115	13.10	33.220	14.05	33.197	11.82	32.914
50m	10.31	34.028	4.41	33.173	11.42	33.998	6.54	33.436	5.96	33.284	6.67	34.244	6.63	33.291	5.29	33.110	6.33	33.271	6.25	33.444
75m	8.65	33.935	6.09	33.596					4.31	33.867					3.66	33.295	4.22	33.319		
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-36

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	HDK12		HDK13		HDK14		HDK15		HDK16		HDK17		HDK18		P62		P61		P60	
Latitude:N	42-20.0		42-20.0		42-29.9		42-25.2		42-20.0		42-15.0		42-10.2		42-10.1		42-20.0		42-27.0	
Longitude:E	140-45.0		140-49.9		140-40.1		140-40.1		140-40.1		140-40.0		140-40.0		141-19.9		141-20.3		141-20.1	
Date	1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27	
Time(JST)	05:41		06:13		07:44		08:23		09:05		09:50		10:33		13:49		14:58		15:48	
Weather	BC		BC		BC		BC		BC		BC		BC		BC		B		B	
Air Temp.	27.0		27.5		32.5		31.0		29.5		31.0		29.0		33.5		35.0		33.5	
Bar	1013.0		1013.0		1013.5		1013.5		1014.0		1014.0		1013.5		1013.0		1012.0		1012.0	
Wind Dir	NNW		NW		CALM		W		SSW		SSE		WSW		ESE		SSE		S	
Wind Spd/F	S 3		S 4		S 0		S 3		S 3		S 1		S 4		S 2		S 4		S 6	
Transparency															14		15		9	
Depth	59		47		64		76		76		87		84		360		258		80	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	20.5	31.698	20.4	31.636	21.5	31.798	21.2	31.726	21.2	31.804	21.8	31.784	21.7	31.784	22.7	32.999	22.0	33.025	19.0	33.027
10m	17.20	32.163	15.24	32.761	15.25	32.473	17.02	32.451	18.48	32.035	18.81	32.023	17.79	32.237	16.81	33.334	16.18	33.479	14.19	33.776
20m	13.09	32.714	12.75	33.207	12.81	33.083	14.30	32.736	15.54	32.607	15.09	32.956	13.85	33.227	14.53	33.595	14.46	33.854	12.80	33.946
30m	10.44	33.118	11.86	33.827	10.68	33.288	11.17	32.918	12.64	32.994	12.74	33.122	10.95	33.081	13.39	33.764	12.44	33.921	10.69	33.830
50m	8.49	33.748			7.34	33.379	5.69	33.232	7.63	33.548	5.78	33.279	4.47	33.027	11.96	33.941	10.90	33.966	9.92	33.972
75m											3.77	33.406	4.35	33.359	10.23	34.018	9.11	33.902		
100m															9.61	33.992	8.72	33.945		
125m															8.46	33.927	8.04	33.895		
150m															7.62	33.859	7.19	33.829		
200m															5.73	33.684	5.99	33.720		
250m															4.87	33.668				
300m															4.05	33.664				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-37

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	P51		P52		P53		P54		P55		P56		P66		HSR116		HSR101		HSR105	
Latitude:N	42-10.1		42- 0.0		41-50.1		41-40.1		41-30.1		41-20.1		41-30.0		41-39.1		41-52.9		41-50.2	
Longitude:E	142-29.9		142-20.2		142-10.1		142- 0.0		141-50.1		141-40.0		141-20.0		140-41.1		141- 7.1		141-19.9	
Date	1999/07/27		1999/07/27		1999/07/28		1999/07/28		1999/07/28		1999/07/28		1999/07/28		1999/08/03		1999/08/23		1999/08/24	
Time(JST)	21:20		22:49		00:39		02:40		04:43		07:02		09:37		17:53		18:54		01:29	
Weather	B		B		B		B		B		BC		C		BC		BC		C	
Air Temp.	23.5		24.0		23.0		22.5		24.0		30.5		35.0		26.5		28.0		24.0	
Bar	1013.0		1012.5		1012.0		1012.5		1012.5		1012.5		1012.5		1017.5		1016.0		1015.0	
Wind Dir	NE		ENE		E		E		E		S		NW		S		SW		NE	
Wind Spd/F	S 1		S 3		S 4		S 3		S 2		S 2		S 2		S 3		S 2		F 3	
Transparency											17		14		7					
Depth	122		1002		1077		1056		940		761		239		125		72		283	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.2	32.979	21.1	32.684	18.8	33.653	18.5	33.931	21.8	32.977	21.7	33.346	20.4	33.556	21.5	33.98*	23.4	31.08*	21.5	33.63*
10m	14.41	33.926	15.46	33.557	17.08	34.007	18.31	33.948	16.12	33.746	18.05	33.950	17.49	33.801	17.90	34.074	21.13	32.253	19.56	33.915
20m	12.49	34.135	14.09	33.820	15.35	34.043	18.10	33.956	13.92	33.998	16.18	33.835	17.16	33.839	15.70	34.196	17.22	33.103	14.53	34.188
30m	11.74	34.145	12.77	33.903	15.31	34.038	17.92	33.955	13.49	34.143	16.36	34.000	15.99	33.989	13.10	34.223	12.03	33.933	13.04	34.151
50m	10.52	34.058	11.51	34.046	14.26	34.101	16.68	33.932	12.18	34.055	14.09	34.008	13.37	34.143	12.44	34.190	9.98	33.912	11.58	34.128
75m	10.09	34.036	10.61	34.041	13.05	34.121	13.00	34.031	11.52	34.068	12.49	34.095	12.87	34.137	10.92	34.167			9.49	34.002
100m	9.13	33.973	9.45	33.982	12.22	34.128	12.13	34.096	10.99	34.063	11.45	34.073	11.55	34.163	10.75	34.158			9.37	33.986
125m			8.38	33.911	11.56	34.126	11.51	34.100	10.79	34.070	11.20	34.138	11.12	34.152					8.69	33.940
150m			7.30	33.829	10.25	34.036	11.28	34.088	10.53	34.079	11.03	34.140	10.88	34.154					7.85	33.867
200m			5.77	33.725	9.63	34.050	9.86	34.006	9.58	34.005	9.74	34.086	10.51	34.141					6.77	33.769
250m			4.31	33.675	7.67	33.906	8.26	33.913	7.04	33.768	5.72	33.644							6.14	33.704
300m			3.64	33.704	4.80	33.647	5.04	33.583	4.74	33.753	4.55	33.599								
400m			3.60	33.881	3.66	33.742	3.09	33.555	3.80	33.692	3.76	33.725								
500m			3.61	34.032	3.63	33.931	3.45	33.699	3.60	33.775	3.20	33.836								
600m			3.53	34.148	3.59	34.073	3.58	34.086	3.22	33.854	3.59	34.020								
700m																				
800m																				
900m																				
1000m																				

Table 4-38

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	HSR104		HSR103		HSR002		HSR100		HSR114		HSR113		HSR115		HSR112		HSR111		HSR110	
Latitude:N	41-59.9		42-10.0		42-19.4		42-26.9		42-10.1		42- 0.0		42- 0.1		41-50.1		41-40.0		41-30.0	
Longitude:E	141-19.9		141-20.0		141-20.0		141-20.0		142-29.9		142-20.1		142-39.8		142-10.1		142- 0.0		141-50.2	
Date	1999/08/24		1999/08/24		1999/08/24		1999/08/24		1999/08/24		1999/08/24		1999/08/24		1999/08/25		1999/08/25		1999/08/25	
Time(JST)	02:48		04:14		05:26		06:23		13:09		14:42		17:35		06:55		08:40		10:36	
Weather	C		C		C		C		R		C		C		C		C		BC	
Air Temp.	23.0		24.0		25.0		25.0		22.0		23.0		23.5		21.0		22.0		22.5	
Bar	1015.0		1015.0		1015.5		1015.5		1015.0		1014.5		1013.5		1012.5		1013.0		1013.5	
Wind Dir	NE		NE		NE		CALM		SE		E		ESE		CALM		CALM		SW	
Wind Spd/F	S 2		S 2		S 4		S 0		F 4		F 3		S 5		S 0		S 0		S 4	
Transparency					15		15		18		17		12		17		15		15	
Depth	307		360		253		79		121		997		555		1080		1034		933	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.5	33.60*	21.8	33.61*	21.3	33.65*	21.5	33.25*	21.9	33.55*	21.3	33.64*	22.1	33.50*	20.7	33.62*	20.0	33.99*	23.0	33.69*
10m	18.56	33.957	20.96	33.603	17.41	33.943	20.44	33.518	22.14	33.555	21.45	33.658	22.40	33.499	21.00	33.630	19.77	34.011	22.42	33.805
20m	14.35	34.110	14.39	34.180	14.62	34.077	14.94	34.068	19.44	33.884	13.71	34.067	17.91	33.998	15.87	34.126	16.10	34.116	21.64	33.920
30m	13.36	34.169	13.16	34.178	13.36	34.154	11.73	33.783	14.52	34.146	13.00	34.140	15.83	34.057	13.06	34.179	13.69	34.119	17.95	34.205
50m	12.01	34.142	12.07	34.099	11.99	34.150	10.89	34.073	11.31	34.110	12.03	34.194	12.98	34.089	11.54	34.125	12.66	34.191	16.79	34.260
75m	11.21	34.100	11.51	34.118	10.49	34.068			9.73	34.023	11.23	34.148	11.00	34.022	10.86	34.121	12.24	34.196	16.18	34.288
100m	10.06	34.042	10.15	34.026	9.13	33.975			6.80	33.773	10.06	34.041	9.96	34.030	10.19	34.076	11.53	34.156	15.35	34.286
125m	8.97	33.957	8.90	33.960	8.07	33.892					9.28	33.986	8.62	33.941	9.16	33.984	11.09	34.106	13.94	34.211
150m	8.59	33.940	7.63	33.842	6.21	33.723					7.35	33.745	7.02	33.759	7.84	33.880	9.78	34.027	10.35	33.999
200m	5.51	33.680	4.58	33.568	4.61	33.591					4.38	33.479	4.26	33.492	5.84	33.690	7.53	33.797	4.90	33.542
250m	4.10	33.637	4.24	33.608							3.29	33.427	4.03	33.539	4.44	33.611	5.77	33.681	3.15	33.412
300m	3.68	33.685	3.69	33.675							2.63	33.444	3.91	33.610	3.10	33.510	4.15	33.589	3.01	33.481
400m											3.21	33.692	3.60	33.708	2.46	33.584	3.62	33.721	3.17	33.657
500m											3.62	33.897	3.60	33.888	3.34	33.829	3.56	33.961	3.57	33.940
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-39

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199909		199909		199909	
Station No	HSR107		HSR116		HSR106		HSR109		HSR108		HSR117		HSR217		HFS16		HFS17		HFS18	
Latitude:N	41-30.0		41-39.2		41-40.0		41-20.0		41-10.1		41-15.1		41-23.9		42-10.1		42- 7.6		42- 8.6	
Longitude:E	141-20.1		140-42.1		141-20.0		141-40.0		141-30.0		139-50.0		139-55.1		140-55.1		140-52.5		140-44.9	
Date	1999/08/25		1999/08/25		1999/08/26		1999/08/26		1999/08/26		1999/08/30		1999/08/31		1999/09/06		1999/09/06		1999/09/06	
Time(JST)	14:54		18:22		10:07		13:10		17:53		17:40		17:52		17:11		17:37		18:19	
Weather	BC		BC		BC		C		C		C		R							
Air Temp.	23.5		26.0		27.0		31.0		26.5		27.0		26.0							
Bar	1012.0		1012.5		1015.5		1015.0		1014.5		1015.0		1009.5							
Wind Dir	S		CALM		W		CALM		E		E		S							
Wind Spd/F	F 6		S 0		S 1		S 0		S 1		S 4		S 1							
Transparency	17				18		16		13											
Depth	240		137		231		752		492		850		130							
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	22.2	33.93*	25.0	33.77*	24.8	33.81*	22.8	33.96*	23.4	33.87*	24.9	<i>N.D.</i>	24.7	<i>N.D.</i>	22.2	33.25*	22.5	33.33*	23.2	31.86*
10m	21.55	33.959	25.60	33.762	22.58	33.949	22.19	33.967	22.71	33.905	25.68	33.748	25.44	33.746	21.89	33.546	22.16	33.440	22.47	33.055
20m	21.38	33.973	23.29	34.059	22.03	33.940	21.77	33.980	22.05	33.944	24.69	34.053	24.86	33.975	21.47	33.642	21.45	33.536	19.56	33.119
30m	21.01	33.991	21.79	34.123	21.66	33.980	21.66	33.989	21.35	34.009	20.73	34.262	19.34	34.342	20.36	33.742	20.14	33.628	17.11	33.215
50m	20.10	34.057	18.69	34.204	16.06	34.168	21.41	33.990	20.22	34.085	16.42	34.411	16.33	34.465	11.07	33.824	11.36	33.736	10.66	33.668
75m	18.18	34.161	15.00	34.288	12.07	34.064	21.03	34.036	18.09	34.169	13.63	34.429	12.36	34.331			7.19	33.681		
100m	15.80	34.242	12.82	34.269			15.38	34.267	17.41	34.178	10.56	34.210	10.21	34.177						
125m	15.23	34.250	12.54	34.262	8.77	33.954	14.47	34.267	14.36	34.260	8.72	34.114								
150m	13.43	34.271			6.59	33.778	13.29	34.254	13.25	34.248	6.04	34.105								
200m	12.87	34.251			4.40	33.643	8.57	33.890	9.77	34.003	3.40	34.088								
250m							4.69	33.509	5.03	33.530	2.13	34.080								
300m							3.27	33.449	3.09	33.414	1.03	34.080								
400m							2.91	33.629	3.51	33.842	0.61	34.075								
500m							3.56	33.848			0.41	34.071								
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-40

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909			
Station No	HFS19		HFS20		HFS21		HFS22		HFS23		HFS24		HFS25		HFS26		HFS27		HFS28			
Latitude:N	42-10.8		42-13.1		42-15.6		42-17.9		42-24.9		42-20.1		42-15.1		42-10.1		42-15.0		42-17.4			
Longitude:E	140-46.7		140-49.7		140-52.7		140-55.7		140-50.1		140-45.1		140-40.0		140-35.0		140-30.0		140-32.4			
Date	1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/06		1999/09/07		1999/09/07			
Time(JST)	18:43		19:14		19:46		20:17		21:15		22:00		22:47		23:34		00:18		00:46			
Weather																						
Air Temp.																						
Bar																						
Wind Dir																						
Wind Spd/F																						
Transparency																						
Depth																						
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD			
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S		
0m	23.2	31.86*	23.1	31.86*	23.2	31.67*	22.4	32.94*	23.5	31.54*	23.4	31.52*	23.2	31.55*	23.1	31.73*	23.3	31.68*	23.5	31.45*		
10m	22.26	32.787	22.30	33.145	21.91	33.108	21.71	33.498	23.51	31.563	23.45	31.518	23.23	31.548	20.87	32.986	22.71	32.268	23.47	31.450		
20m	21.91	33.437	21.97	33.427	21.88	33.492	20.73	33.702	22.21	33.205	22.42	32.979	22.68	32.783	20.31	33.248	21.11	33.227	20.44	33.381		
30m	20.74	33.645	21.32	33.536	21.10	33.633	18.17	33.830	20.61	33.560	20.98	33.360	18.05	33.437	18.50	33.231	17.46	33.468	17.30	33.379		
50m	11.50	33.708	13.17	33.984	12.77	33.920	15.08	33.895					12.30	33.803	10.90	33.607	11.40	33.638	10.37	33.575	9.73	33.556
75m	7.08	33.627											5.91	33.473			6.04	33.512	6.33	33.566		
100m																						
125m																						
150m																						
200m																						
250m																						
300m																						
400m																						
500m																						
600m																						
700m																						
800m																						
900m																						
1000m																						

Table 4-41



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HFS29		HFS30		HFS31		HFS32		HFS33		HFS34		HFS36		HFS35		HFS37		HFS38		
Latitude:N	42-20.0		42-22.5		42-25.0		42-26.8		42-30.0		42-25.1		42-17.1		42-19.9		42-25.0		42-30.1		
Longitude:E	140-34.9		140-37.4		140-39.9		140-41.7		140-35.1		140-29.8		140-25.0		140-24.7		140-25.0		140-30.2		
Date	1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		
Time(JST)	01:14		02:11		02:38		02:59		03:40		04:28		05:42		06:16		06:55		07:42		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	23.3	31.66*	23.3	31.70*	23.2	31.66*	23.3	31.60*	23.2	31.72*	23.3	31.80*	23.2	31.86*	23.0	31.97*	22.9	32.27*	23.2	31.76*	
10m	23.31	31.679	23.27	31.695	23.24	31.669	23.27	31.602	23.14	31.824	23.24	31.823	22.29	32.625	22.25	33.071	22.85	32.406	23.23	31.798	
20m	20.62	32.937	21.57	32.730	22.32	32.354	22.39	32.630	21.80	33.438	21.40	33.527	20.33	33.053	21.70	33.468	22.05	33.263	20.94	33.172	
30m	15.78	33.545	16.88	33.476	17.51	33.425	19.78	33.356	20.67	33.554	20.69	33.564	20.16	33.673	21.20	33.521	21.22	33.518	20.26	33.534	
50m	10.51	33.765	10.24	33.807	10.42	33.628	10.87	33.751	11.29	33.710	12.05	33.774	12.00	33.701	12.46	33.704	12.38	33.730	12.49	33.606	
75m	7.43	33.628	5.75	33.490							5.89	33.510									
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-42

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HFS81		HFS82		HFS83		HFS84		HFS85		HFS86		HFS87		HFS88		HFS89		HFS76		
Latitude:N	42-20.1		42-17.6		42-15.1		42-12.6		42-10.1		42- 7.6		42- 5.1		42- 2.6		42- 0.1		42-23.4		
Longitude:E	140-30.0		140-34.9		140-39.9		140-44.9		140-49.9		140-54.8		140-59.9		141- 4.9		141- 9.9		141-39.9		
Date	1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		
Time(JST)	08:56		09:47		10:50		11:40		12:30		13:20		14:11		15:06		16:04		20:37		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	23.1	31.87*	23.3	31.64*	22.6	32.41*	22.6	32.61*	22.1	33.18*	22.2	33.45*	21.8	33.54*	22.1	33.48*	21.6	33.58*	21.6	33.60*	
10m	22.35	32.562	23.17	31.838	22.62	32.474	22.25	32.894	21.98	33.223	21.92	33.635	21.82	33.552	22.13	33.481	21.60	33.585	21.58	33.603	
20m	21.35	33.486	21.34	33.396	22.28	33.289	21.88	33.490	21.90	33.452	21.08	33.699	20.70	33.813	18.55	33.839	17.22	34.182	21.20	33.629	
30m	18.91	33.569	17.21	33.507	16.24	33.359	21.50	33.684	21.05	33.615	20.44	33.770	14.15	33.924	14.93	34.150	15.19	34.172	18.12	34.014	
50m	10.52	33.582	10.17	33.704	11.22	33.658	12.04	33.630	13.21	33.686	12.79	34.027	9.96	33.695	12.72	34.147	12.29	34.157	13.15	34.168	
75m	6.24	33.515	7.35	33.623	6.16	33.504	5.63	33.459	7.12	33.676	5.60	33.536	9.20	33.823	11.31	34.106	11.33	34.112	11.73	34.140	
100m															9.74	33.997	9.77	33.960	10.89	34.091	
125m																	10.09	34.047			
150m																	7.41	33.822			
200m																	4.18	33.611			
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-43

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909	199909	199909	199909	199909	199909	199909	199909	199909	199909										
Station No	HFS75	HFS74	HFS73	HFS72	HFS71	HDH01	HTW17	HTW16	HTW14	HTW13										
Latitude:N	42-24.4	42-25.9	42-26.9	42-28.9	42-30.9	41-40.0	41-23.2	41-20.7	41-15.9	41-13.5										
Longitude:E	141-40.9	141-41.9	141-42.9	141-44.9	141-46.9	140-40.3	140-10.5	140-11.1	140-12.4	140-13.0										
Date	1999/09/07	1999/09/07	1999/09/07	1999/09/07	1999/09/07	1999/09/08	1999/09/16	1999/09/16	1999/09/16	1999/09/16										
Time(JST)	20:59	21:21	21:40	22:08	22:37	16:37	13:50	14:23	15:22	15:54										
Weather																				
Air Temp.																				
Bar																				
Wind Dir																				
Wind Spd/F																				
Transparency																				
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.6	33.55*	21.7	33.51*	21.9	33.50*	22.1	33.42*	22.2	33.41*	24.3	33.79*	24.2	33.76*	24.5	33.72*	24.6	33.72*	24.8	33.47*
10m	21.60	33.552	21.74	33.515	21.88	33.504	22.15	33.419	22.17	33.414	23.46	33.898	24.31	33.791	24.46	33.719	24.62	33.721	24.89	33.601
20m	20.62	33.675	21.51	33.579	21.56	33.617	22.13	33.434	22.17	33.419	21.88	33.966	22.49	33.960	24.52	33.805	24.63	33.743	24.94	33.643
30m	18.56	33.962	19.81	33.746	20.63	33.726	21.47	33.561	21.55	33.542	20.78	34.070	18.85	34.269	24.37	33.831	24.40	33.782	24.79	33.729
50m	13.80	34.179	14.11	34.130	14.41	34.076					18.32	34.253			16.26	34.489	22.44	34.079	21.06	34.241
75m	12.24	34.147									14.15	34.328			10.73	34.247	16.47	34.451	17.54	34.470
100m	9.93	33.987									13.21	34.304			8.90	34.166	13.38	34.413	15.65	34.467
125m																	10.72	34.227		
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-44

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HTW12		HTW11		HTW57		HTW56		HTW55		HTW54		HTW53		HTW52		HTW81		HTW82		
Latitude:N	41-11.0		41- 8.6		41-23.1		41-20.7		41-18.3		41-15.9		41-13.5		41-11.1		41- 8.6		41-10.8		
Longitude:E	140-13.6		140-14.3		140-10.4		140-11.2		140-11.7		140-12.4		140-13.1		140-13.5		140-14.3		140-13.6		
Date	1999/09/16		1999/09/16		1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/17		
Time(JST)	16:25		16:55		02:16		02:48		03:16		03:47		04:19		04:51		11:32		12:03		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	25.1	33.22*	25.2	33.13*	23.9	33.72*	24.1	33.82*	24.4	33.89*	24.4	33.75*	24.8	33.59*	25.1	33.46*	25.3	33.23*	25.1	33.18*	
10m	25.12	33.225	25.24	33.134	23.91	33.720	24.13	33.817	24.39	33.888	24.48	33.749	24.93	33.752	25.12	33.461	25.22	33.268	25.10	33.226	
20m	25.14	33.244	25.23	33.215	20.37	34.199	24.12	33.820	24.39	33.890	24.48	33.749	24.86	33.851	25.16	33.485	25.38	33.644	25.11	33.693	
30m	25.20	33.355	25.23	33.264	17.25	34.381	20.84	34.139	24.40	33.897	24.48	33.750	21.37	34.189	22.57	33.957	24.21	33.850	24.54	33.829	
50m	22.00	34.125	23.30	33.992	13.57	34.363	16.14	34.420	23.31	34.016	23.14	34.017	19.34	34.318	20.44	34.291	20.27	34.304	19.59	34.366	
75m	17.95	34.463					9.78	34.185	17.65	34.364	16.79	34.440	17.42	34.460	17.47	34.463			17.30	34.471	
100m							8.93	34.150	10.24	34.200	14.26	34.447	14.88	34.452							
125m												10.97	34.227								
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-45

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HTW83		HTW84		HTW85		HTW86		HTW87		HST921		HHT103		HHT101		HHT104		HHT102		
Latitude:N	41-13.3		41-15.7		41-18.1		41-20.5		41-22.8		41-24.1		42- 4.4		42-32.8		42- 4.7		42-51.7		
Longitude:E	140-13.0		140-12.4		140-11.7		140-11.0		140-10.5		139-55.2		143-26.7		143-49.8		143-25.2		144-30.4		
Date	1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/17		1999/09/28		1999/09/28		1999/09/29		1999/09/29		
Time(JST)	12:33		13:05		13:36		14:07		14:37		16:16		10:31		21:44		10:53		23:28		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	24.8	33.45*	24.8	33.66*	24.5	33.80*	24.4	33.82*	24.0	33.76*	24.3	33.77*	16.7	33.59*	17.1	33.23*	16.6	33.31*	17.3	33.45*	
10m	24.72	33.603	24.75	33.722	24.54	33.805	24.36	33.821	23.98	33.762	24.39	33.886	16.75	33.620	16.97	33.241	16.35	33.289	17.31	33.453	
20m	24.82	33.765	24.75	33.823	24.48	33.814	24.32	33.817	23.99	33.796	20.91	34.279	14.95	33.955	16.69	33.317	15.02	33.311	17.20	33.457	
30m	23.56	33.970	24.48	33.851	24.41	33.816	24.28	33.818	23.93	33.805	18.77	34.438	13.08	33.633	16.53	33.389	14.64	33.338	16.84	33.474	
50m	19.07	34.346	19.77	34.218	19.96	34.323	19.04	34.392	16.14	34.361	15.85	34.498	10.74	33.345	8.84	33.169	13.62	33.388	14.54	33.445	
75m	17.92	34.404	17.52	34.402	16.39	34.448	14.64	34.388			12.01	34.314	7.70	33.266	4.77	33.237			12.02	33.363	
100m	14.74	34.443	14.74	34.462	13.04	34.380	10.15	34.217			9.15	34.167									
125m			11.27	34.256	9.96	34.174															
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-46

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	P65		P66		P56		P55		P54		P53		P52		P51		P60		P61	
Latitude:N	41-40.0		41-30.1		41-20.0		41-29.8		41-40.1		41-49.9		41-59.9		42- 8.7		42-27.0		42-20.0	
Longitude:E	141-19.9		141-20.0		141-40.0		141-49.9		141-59.9		142- 9.9		142-19.9		142-28.8		141-20.2		141-20.3	
Date	1999/10/04		1999/10/04		1999/10/04		1999/10/04		1999/10/04		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05	
Time(JST)	15:59		17:18		19:24		21:35		23:25		01:18		03:11		04:45		10:43		11:36	
Weather	BC		BC		BC		B		B		BC		BC		BC		C		C	
Air Temp.	24.0		17.0		16.0		16.0		16.0		16.0		16.0		15.0		17.0		18.0	
Bar	1024.5		1025.0		1025.5		1026.0		1026.0		1026.0		1026.0		1026.0		1026.0		1026.0	
Wind Dir	W		W		W		W		WNW		W		N		NNE		S		CALM	
Wind Spd/F	S 5		S 3		S 4		S 5		S 2		S 4		S 6		S 3		S 2		S 0	
Transparency	13																9		15	
Depth	230		241		750		938		1040		1077		1000		254		78		254	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.1	33.76*	19.6	33.76*	18.8	33.75*	18.6	33.79*	20.3	33.87*	20.0	33.88*	20.0	33.88*	17.2	33.88*	17.7	33.53*	17.2	33.74*
10m	18.40	33.784	19.84	33.761	19.66	33.772	18.88	33.784	20.30	33.875	20.52	33.880	20.65	33.878	17.17	33.881	17.79	33.539	17.32	33.754
20m	16.42	33.862	19.85	33.763	19.56	33.785	17.63	33.829	20.28	33.869	20.52	33.880	20.65	33.878	17.17	33.881	16.71	33.868	17.27	33.746
30m	15.77	33.945	19.81	33.771	19.42	33.799	17.15	33.838	20.28	33.867	20.52	33.880	20.65	33.878	16.76	33.941	12.89	34.012	17.07	33.769
50m	14.82	34.128	18.97	33.864	19.33	33.802	16.34	33.910	20.17	33.847	20.53	33.880	20.64	33.879	12.33	34.046	10.46	34.002	13.66	34.067
75m	12.24	34.082	16.02	34.058	19.16	33.820	12.41	34.054	12.66	33.740	19.87	33.928	14.13	34.038	11.32	34.126			11.69	34.101
100m	9.58	33.969	14.69	34.144	17.11	33.937	11.53	34.093	12.21	34.072	13.86	34.172	12.73	34.193	9.65	33.981			10.07	34.012
125m	7.94	33.837	13.71	34.163	16.53	34.086	11.36	34.085	8.42	33.736	12.31	34.151	10.88	34.086	7.14	33.765			8.61	33.894
150m	6.88	33.736	13.15	34.170	14.06	34.153	10.73	34.048	5.85	33.593	9.97	33.998	8.59	33.866	4.64	33.564			7.90	33.829
200m	3.72	33.514	10.54	34.106	5.28	33.421	4.84	33.484	3.55	33.427	5.34	33.556	5.51	33.595	3.00	33.494			5.25	33.583
250m					2.50	33.307	2.86	33.386	3.08	33.456	3.41	33.406	3.80	33.530						
300m					1.87	33.365	2.11	33.379	3.15	33.546	3.38	33.503	3.29	33.546						
400m					3.25	33.727	3.25	33.724	3.41	33.764	3.15	33.633	3.41	33.685						
500m					3.50	33.916	3.28	33.897	3.51	33.914	3.54	33.866	3.32	33.772						
600m					3.58	34.063	3.50	34.039	3.46	34.032	3.55	34.027	3.59	34.034						
700m																				
800m																				
900m																				
1000m																				

Table 4-47

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	P62		P63		P64		H01		HDH01		HW001		HW002		HW003		HW004		HW005	
Latitude:N	42-10.0		42- 0.0		41-50.1		41-41.3		41-39.9		41-20.1		41-29.9		41-39.9		41-49.7		41-59.9	
Longitude:E	141-20.2		141-19.9		141-20.0		140-43.6		140-40.0		139-55.8		139-55.0		139-55.0		139-59.8		139-59.9	
Date	1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/14		1999/10/18		1999/10/18		1999/10/18		1999/10/18		1999/10/19	
Time(JST)	16:29		17:47		19:03		23:07		16:41		15:28		18:02		19:41		22:06		01:07	
Weather	C		C		C		C				BC		C		C		B		C	
Air Temp.	17.5		17.0		17.0		15.6				11.0		11.0		11.0		12.0		12.0	
Bar	1024.0		1024.0		1024.5		1023.0				1026.5		1027.5		1028.0		1027.0		1028.0	
Wind Dir	SE		CALM		E		N				W		W		W		W			
Wind Spd/F	S 3		S 0		S 2		S 2				S 5		S 6		S 10		S 8		S 8	
Transparency	12										12									
Depth	360		308		286		128				137		252				960		714	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.1	33.80*	18.9	33.80*	17.6	33.76*	20.0	33.70*	19.2	33.80*	16.3	33.78*	16.5	33.86*	17.3	33.86*	16.5	33.78*	17.0	33.83*
10m	19.31	33.789	19.26	33.793	17.71	33.781	20.56	33.766	19.25	33.802	15.37	33.768	17.69	33.861	17.56	33.857	16.87	33.783	17.36	33.830
20m	18.95	33.726	19.13	33.770	16.38	33.957	19.64	33.842	19.08	33.809	15.11	33.765	17.68	33.862	17.56	33.859	16.88	33.784	17.35	33.832
30m	18.48	33.847	18.88	33.768	15.89	34.006	18.66	33.845	18.33	33.879	14.91	33.761	17.40	33.853	17.32	33.882	16.83	33.802	16.76	33.902
50m	14.73	34.211	13.84	34.113	11.91	34.124	16.47	33.989	15.49	34.081	12.84	33.889	15.80	33.945	13.45	34.266			9.55	34.191
75m	12.41	34.153	10.50	34.076	10.17	34.058	13.73	34.264	13.67	34.168	7.56	34.123	8.67	34.168	9.54	34.183	6.92	34.125	7.04	34.131
100m	9.72	33.977	7.42	33.714	8.12	33.857	12.81	34.201	12.97	34.179	2.61	34.110	6.58	34.123	7.27	34.140	4.75	34.100	4.84	34.104
125m	8.24	33.839	5.69	33.514	5.22	33.527					2.46	34.080	4.12	34.104	5.19	34.096	2.99	34.078	3.62	34.084
150m	7.38	33.777	3.73	33.385	4.36	33.489							2.34	34.083	3.54	34.081	2.09	34.075	2.52	34.084
200m	4.23	33.512	3.68	33.486	3.49	33.472							1.68	34.076	1.81	34.076	1.35	34.078	1.76	34.077
250m	3.13	33.535	3.38	33.538	3.17	33.533									1.30	34.077	1.04	34.077	1.23	34.078
300m	3.20	33.640	3.22	33.614											1.08	34.077	0.83	34.078	0.99	34.078
400m															0.62	34.075	0.60	34.075	0.58	34.076
500m															0.50	34.074	0.51	34.075	0.43	34.074
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-48

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199909		199910		199909	
Station No	HW006		HW007		HW008		HW009		HW010		HW011		HW012		HW101		HSR101		HFS16	
Latitude:N	42- 0.1		41-50.1		41-50.0		41-40.1		41-30.1		41-30.0		41-20.1		41-17.0		41-39.9		42-10.1	
Longitude:E	139-40.1		139-30.0		139-44.9		139-40.1		139-30.2		139-39.8		139-40.0		139-51.5		140-40.0		140-55.1	
Date	1999/10/19		1999/10/19		1999/10/19		1999/10/19		1999/10/19		1999/10/19		1999/10/19		1999/10/19		1999/10/25		1999/11/08	
Time(JST)	04:04		06:10		07:43		09:15		10:59		12:12		13:36		17:41		16:11		18:36	
Weather	C		BC		BC		BC		B		BC		BC							
Air Temp.	12.0		12.0		13.5		14.0		11.5		17.0		14.0							
Bar	1028.5		1029.0		1029.5		1029.5		1029.0		1028.5		1027.5							
Wind Dir	WNW		W		W		SW		SW		S		SE							
Wind Spd/F	S 7		S 4		S 3		S 2		S 5		S 5		S 2							
Transparency			16		17		16		11		14		14							
Depth	900		650										536							
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.5	33.90*	17.5	33.89*	17.2	33.82*	17.6	33.90*	17.1	33.85*	17.5	33.85*	15.9	33.79*	17.4	33.74*	16.5	33.96*	13.3	33.84*
10m	17.73	33.901	17.73	33.894	17.37	33.821	17.84	33.896	17.20	33.833	17.66	33.854	15.40	33.776	17.11	33.717	16.42	33.972	13.26	33.847
20m	17.73	33.901	17.73	33.894	17.37	33.820	17.84	33.895	16.95	33.818	17.52	33.862	15.31	33.780	17.04	33.731	16.28	33.984	13.05	33.867
30m	17.72	33.903	17.72	33.895	17.35	33.818	17.83	33.896	16.91	33.818	17.34	33.866	15.26	33.786	16.77	33.748	16.03	34.002	12.99	33.863
50m	12.39	34.320	14.49	34.268	13.48	34.212	12.24	34.295	10.11	34.166	10.04	34.198	12.75	34.034	15.69	33.876	15.40	34.055	12.62	33.872
75m	9.11	34.173	9.85	34.200	9.23	34.188	9.15	34.173	6.84	34.128	6.63	34.120	6.15	34.106	11.28	34.280	14.10	34.185		
100m	6.97	34.117	6.24	34.105	7.11	34.125	7.10	34.120	4.91	34.096	4.86	34.093	4.46	34.089	8.08	34.123	13.77	34.194		
125m	4.51	34.092	4.50	34.082	5.35	34.105	4.48	34.099	3.65	34.084	4.34	34.200	3.27	34.086	5.89	34.101				
150m	3.04	34.083	2.81	34.084	4.13	34.087	2.61	34.086	2.69	34.077	3.79	34.395	2.19	34.082	4.45	34.079				
200m	1.53	34.078	1.66	34.078	2.31	34.076	1.81	34.076	1.59	34.076	2.09	34.453	1.51	34.075	2.60	34.080				
250m	1.34	34.077	1.23	34.078	1.52	34.078	1.36	34.078	1.23	34.077	1.32	34.596	1.12	34.078	1.81	34.073				
300m	1.07	34.079	0.97	34.078	1.21	34.078	1.13	34.078	1.04	34.079	1.10	34.987	1.02	34.076	1.45	34.074				
400m	0.69	34.077	0.69	34.076	0.76	34.077	0.79	34.079	0.72	34.077	1.02	35.105	0.65	34.076	0.96	34.078				
500m	0.45	34.074	0.55	34.075	0.53	34.075	0.52	34.074	0.48	34.074	1.04	35.418	0.44	34.073	0.66	34.076				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-49



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HFS17		HFS18		HFS19		HFS20		HFS21		HFS22		HFS23		HFS24		HFS25		HFS26		
Latitude:N	42- 7.5		42- 8.6		42-10.8		42-13.2		42-15.5		42-18.0		42-24.9		42-20.1		42-15.1		42-10.3		
Longitude:E	140-52.5		140-44.8		140-46.7		140-49.8		140-52.7		140-55.7		140-50.1		140-45.0		140-40.0		140-35.0		
Date	1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/09		1999/11/09		
Time(JST)	19:03		19:50		20:14		20:44		21:14		21:44		22:45		23:29		00:14		00:58		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	13.2	33.74*	13.2	33.67*	13.1	33.74*	13.1	33.84*	13.1	33.63*	12.9	33.52*	12.7	33.55*	13.7	33.67*	13.7	33.67*	13.5	33.67*	
10m	13.19	33.740	13.17	33.670	13.13	33.736	13.08	33.838	13.00	33.650	12.68	33.607	12.70	33.557	13.74	33.666	13.66	33.672	13.51	33.668	
20m	12.92	33.844	13.16	33.669	12.92	33.829	12.87	33.843	12.79	33.783	12.38	33.689	12.88	33.630	13.75	33.666	13.62	33.672	13.44	33.674	
30m	12.82	33.839	12.09	33.845	12.67	33.844	12.72	33.828	12.67	33.798	12.56	33.828	12.26	33.897	13.75	33.674	13.41	33.719	13.21	33.707	
50m	11.85	33.918	10.69	33.950	12.04	33.932	12.63	33.827	12.53	33.840					13.69	33.691	12.71	33.802	10.56	33.948	
75m	7.94	33.789			8.62	33.869											9.62	33.927			
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-50

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HFS27		HFS28		HFS29		HFSS30		HFS31		HFS32		HFS33		HFS34		HFS36		HFS35		
Latitude:N	42-15.0		42-17.4		42-19.9		42-22.4		42-24.8		42-27.4		42-30.0		42-25.0		42-17.6		42-19.8		
Longitude:E	140-30.0		140-32.2		140-34.7		140-37.4		140-39.9		140-42.4		140-35.2		140-29.8		140-25.1		140-25.0		
Date	1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		
Time(JST)	01:47		02:17		02:47		04:02		04:32		05:01		05:49		06:36		07:35		07:57		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	13.1	33.67*	13.7	33.65*	13.8	33.66*	13.8	33.66*	13.6	33.63*	13.5	33.70*	13.2	33.70*	13.1	33.68*	13.2	33.64*	13.0	33.70*	
10m	13.10	33.665	13.73	33.648	13.82	33.656	13.78	33.660	13.61	33.642	13.51	33.704	13.21	33.698	13.09	33.681	13.20	33.643	12.95	33.698	
20m	13.11	33.669	13.70	33.655	13.82	33.656	13.78	33.660	13.61	33.662	13.52	33.704	13.21	33.697	13.09	33.681	13.20	33.651	12.96	33.699	
30m	13.02	33.728	13.50	33.694	13.82	33.658	13.78	33.660	13.61	33.673	13.50	33.705	13.22	33.701	13.03	33.693	11.66	33.949	11.80	33.963	
50m	10.73	33.973	10.94	33.947	13.19	33.895	13.76	33.679	13.55	33.722	12.07	33.932	10.82	33.972	10.46	33.977	11.02	33.990	10.63	33.981	
75m	9.55	33.922	8.84	33.874	8.57	33.851	7.73	33.785							8.17	33.805					
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-51

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	HFS37		HFS38		HFS81		HFS82		HFS83		HFS84		HFS85		HFS86		HFS87		HFS88		
Latitude:N	42-24.9		42-30.0		42-20.1		42-17.5		42-15.0		42-12.6		42- 9.9		42- 7.6		42- 5.1		42- 2.6		
Longitude:E	140-25.0		140-29.9		140-30.0		140-34.9		140-39.9		140-44.8		140-50.0		140-54.9		141- 0.0		141- 4.7		
Date	1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		
Time(JST)	08:36		09:22		10:33		11:12		11:50		12:27		13:06		13:43		14:19		14:52		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	13.1	33.70*	12.8	33.60*	13.6	33.67*	13.6	33.68*	13.2	33.73*	12.8	33.78*	12.8	33.85*	12.8	33.82*	13.2	33.88*	13.0	33.87*	
10m	13.12	33.701	12.74	33.600	13.57	33.667	13.55	33.679	13.18	33.734	12.84	33.793	12.82	33.845	12.82	33.821	13.19	33.877	12.98	33.870	
20m	13.10	33.706	12.64	33.596	13.52	33.674	13.52	33.678	13.11	33.746	12.85	33.829	12.82	33.844	12.82	33.822	12.95	33.868	12.88	33.871	
30m	12.57	33.867	12.63	33.913	13.28	33.676	13.49	33.677	12.93	33.791	12.73	33.841	12.75	33.846	12.84	33.832	12.92	33.861	12.57	33.885	
50m	11.05	33.960	10.42	33.983	10.64	33.980	12.47	33.870	12.58	33.850	12.26	33.887	12.41	33.859	12.84	33.834	12.76	33.860	11.64	33.931	
75m					8.48	33.849	8.60	33.851	9.39	33.911	9.88	33.947	8.78	33.873	12.28	33.817	10.81	33.843	10.93	33.959	
100m																			9.34	33.893	
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-52

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199909	199909	199909	199909	199909	199909	199909	199909	199911	199911										
Station No	HFS89	HFS90	HFS76	HFS75	HFS74	HFS73	HFS72	HFS71	HAP07	HAP06										
Latitude:N	41-59.8	41-57.5	42-23.5	42-24.5	42-25.9	42-26.9	42-29.0	42-30.9	41-23.2	41-20.7										
Longitude:E	141-10.1	141-14.9	141-39.9	141-40.8	141-41.9	141-42.9	141-44.9	141-46.9	140-10.6	140-11.1										
Date	1999/11/09	1999/11/09	1999/11/09	1999/11/09	1999/11/09	1999/11/09	1999/11/09	1999/11/09	1999/11/24	1999/11/24										
Time(JST)	15:32	16:09	20:56	21:20	21:40	21:57	22:22	22:46	13:32	14:05										
Weather																				
Air Temp.																				
Bar																				
Wind Dir																				
Wind Spd/F																				
Transparency																				
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.0	33.79*	13.1	33.74*	14.3	33.83*	14.3	33.85*	14.1	33.84*	13.9	33.83*	13.4	33.79*	12.2	33.47*	17.2	33.81*	17.5	33.80*
10m	12.91	33.838	13.10	33.739	14.30	33.829	14.30	33.862	14.06	33.836	13.89	33.833	13.39	33.794	12.24	33.472	17.06	33.821	17.49	33.804
20m	12.88	33.846	13.11	33.740	14.30	33.830	14.30	33.862	14.07	33.837	13.63	33.796	13.38	33.795	12.73	33.633	16.36	33.825	17.38	33.794
30m	12.46	33.927	13.11	33.741	14.30	33.831	14.29	33.862	14.04	33.833	13.16	33.734	13.39	33.795	13.02	33.729	16.29	33.830	17.34	33.790
50m	11.57	34.002	13.09	33.746	14.33	33.845	14.28	33.900	13.54	33.771	12.92	33.681							17.41	33.994
75m	9.99	33.958	12.37	33.886	12.77	34.024	12.23	34.007	12.63	34.005									16.18	34.356
100m	9.03	33.897	10.49	33.991	10.98	33.997													13.09	34.229
125m	6.26	33.683	9.02	33.909	10.54	33.973														
150m			5.40	33.630	9.53	33.887														
200m			3.55	33.499	6.65	33.700														
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-53

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911		
Station No	HAP05		HAP04		HAP03		HAP02		HAP01		HAP42		HAP43		HAP44		HAP45		HAP46		
Latitude:N	41-18.4		41-15.9		41-13.4		41-11.2		41- 8.6		41-10.8		41-13.4		41-15.9		41-18.2		41-20.6		
Longitude:E	140-11.7		140-12.7		140-13.1		140-13.6		140-14.3		140-13.7		140-13.1		140-12.6		140-11.8		140-11.9		
Date	1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/25		1999/11/25		1999/11/25		
Time(JST)	14:35		15:07		15:39		16:19		16:45		23:23		23:54		00:25		00:57		01:29		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	17.5	33.80*	17.5	33.80*	17.5	33.80*	17.4	33.80*	17.1	33.56*	17.6	33.79*	17.5	33.79*	17.6	33.79*	17.4	33.80*	17.4	33.81*	
10m	17.51	33.804	17.41	33.797	17.46	33.802	17.33	33.802	17.40	33.803	17.63	33.783	17.51	33.791	17.65	33.786	17.41	33.802	17.37	33.808	
20m	17.36	33.802	17.35	33.793	17.35	33.810	17.31	33.806	17.32	33.797	17.63	33.786	17.52	33.792	17.63	33.794	16.87	33.840	17.36	33.806	
30m	17.28	33.815	17.34	33.792	17.33	33.809	17.29	33.805	17.25	33.777	17.46	33.771	17.52	33.792	17.57	33.807	16.76	33.833	16.89	33.844	
50m	17.20	33.800	16.71	33.784	16.98	33.873	16.89	33.829	17.28	33.809	17.46	33.807	17.45	33.798	17.44	33.875	13.55	34.364	15.54	34.247	
75m	17.13	34.242	16.41	33.762	16.71	33.906	16.50	33.836			17.39	33.811	17.22	33.796	16.43	33.901	10.33	34.226	9.90	34.235	
100m	15.04	34.364	15.90	34.347	16.52	34.347							16.85	33.819	13.43	34.360	8.72	34.164	6.63	34.116	
125m	11.72	34.284	14.44	34.383											9.15	34.193	7.75	34.131			
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-54

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199911		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	HAP47		P64		P63		P62		P61		P60		P51		P52		P53		P54	
Latitude:N	41-23.0		41-49.9		42- 0.0		42- 9.9		42-19.9		42-27.0		42-10.1		42- 0.1		41-50.1		41-40.4	
Longitude:E	140-11.8		141-19.9		141-20.1		141-20.0		141-20.4		141-20.2		142-29.7		142-20.2		142-10.0		141-59.9	
Date	1999/11/25		1999/11/29		1999/11/30		1999/11/30		1999/11/30		1999/11/30		1999/11/30		1999/11/30		1999/11/30		1999/11/30	
Time(JST)	02:08		22:33		00:00		01:35		03:05		04:07		09:34		11:05		13:08		15:19	
Weather			BC		B		B		C		C		S		R		R		C	
Air Temp.			1.9		2.0		2.5		3.5		-1.5		2.8		4.3		5.0		5.0	
Bar			1023.4		1023.0		1021.8		1020.5		1020.0		1020.0		1019.2		1019.0		1020.2	
Wind Dir			W		W		W		NW		WNW		SW		W		WNW		W	
Wind Spd/F			S 4		S 5		S 5		S 4		S 4		S 1		S 11		S 10		S 12	
Transparency													13		12		13		13	
Depth			283		312		361		262		78		121		1000		1077			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.5	33.81*	11.4	33.74*	11.4	33.92*	11.0	33.86*	10.8	33.86*	10.7	32.85*	10.1	33.70*	10.7	29.01*	12.3	33.92*	13.0	33.29*
10m	17.14	33.806	11.85	33.739	11.76	33.915	11.08	33.863	11.01	33.853	11.03	33.849	10.56	33.798	10.96	33.668	12.67	33.920	13.63	33.926
20m	17.10	33.809	11.85	33.741	11.77	33.916	11.08	33.863	11.01	33.855	11.03	33.849	10.54	33.795			12.48	33.900	13.64	33.926
30m			11.86	33.742	11.77	33.915	11.06	33.861	11.01	33.854	11.02	33.849	10.53	33.792	10.93	33.660	11.96	33.826	13.63	33.927
50m			11.86	33.747	11.77	33.915	11.07	33.862	11.00	33.854	9.62	33.828	10.40	33.772	10.90	33.654	11.78	33.799	13.30	33.915
75m			8.94	33.695	11.78	33.915	11.06	33.861	9.13	33.876			9.09	33.905	10.87	33.659	11.81	33.812	11.13	33.900
100m			8.33	33.861	11.75	33.911	11.05	33.861	7.71	33.803			8.74	34.044	9.57	33.928	10.88	33.771	9.28	33.858
125m			6.41	33.689	9.10	33.897	8.84	33.884	5.94	33.643					7.48	33.761	6.57	33.675	7.52	33.817
150m			5.31	33.595	7.54	33.782	6.36	33.690	4.66	33.525					5.62	33.615	5.43	33.574	6.48	33.766
200m			3.78	33.506	3.82	33.495	3.70	33.484	3.63	33.479					3.80	33.502	4.00	33.517	4.42	33.599
250m			3.16	33.542	3.28	33.512	3.12	33.546	3.14	33.518					3.02	33.495	3.64	33.564	3.52	33.570
300m					3.14	33.614	3.15	33.644							2.98	33.577	3.47	33.645	3.01	33.591
400m															3.53	33.824	3.55	33.804		
500m															3.52	33.984	3.58	33.953		
600m															3.49	34.109	3.78	34.118		
700m																				
800m																				
900m																				
1000m																				

Table 4-55

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		200002		200002		200002		200002		200002	
Station No	P56		HIK100		H01		P65		P66		P66		P56		P55		P54		P53	
Latitude:N	41-20.0		41-44.3		41-40.0		41-40.0		41-30.0		41-30.1		41-20.0		41-29.9		41-39.9		41-50.0	
Longitude:E	141-39.9		140-43.6		140-39.9		141-19.8		141-20.0		141-19.9		141-40.0		141-49.9		141-59.9		142- 9.9	
Date	1999/12/01		1999/12/08		1999/12/08		1999/12/08		1999/12/09		2000/02/14		2000/02/14		2000/02/14		2000/02/14		2000/02/14	
Time(JST)	08:58		16:02		20:44		23:25		00:45		13:14		15:33		17:26		19:10		21:13	
Weather	C		B		C		BC		BC		S		C		C		S		S	
Air Temp.	4.3		4.0		4.0		6.0		6.0		2.0		1.5		0.0		-0.5		-1.5	
Bar	1033.2		1026.5		1026.0		1025.0		1024.0		1010.0		1008.5		1008.0		1007.0		1006.0	
Wind Dir	W		NNW		N		SE		S		N		NE		NE		NE		NE	
Wind Spd/F	S 8		S 2		S 3		S 4		S 5		S 3		S 3		S 2		S 3		S 4	
Transparency	12										16		16							
Depth	750		20		117		229		242		244		757		940		1052		1040	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.9	33.92*	14.7	33.96*	14.2	33.95*	11.5	33.91*	13.2	33.93*	9.8	33.95*	9.0	33.94*	7.0	33.76*	2.6	32.89*	1.7	32.94*
10m	14.83	33.917	14.41	33.959	14.72	33.954	11.94	33.907	14.72	33.930	10.09	33.950	9.69	33.941	8.28	33.757	3.02	32.888	7.48	33.668
20m	14.84	33.918			14.72	33.956	11.78	33.899	14.75	33.928	10.08	33.951	9.68	33.941	8.27	33.756	3.14	32.911	7.52	33.692
30m	14.84	33.918			14.69	33.963	11.75	33.896	14.68	33.923	10.09	33.951	9.67	33.944	8.27	33.755	3.56	32.986	7.54	33.697
50m	14.84	33.919			14.26	34.005	11.52	33.889	14.63	33.919	10.08	33.950	9.67	33.943	8.14	33.740	6.42	33.481	7.45	33.689
75m	14.80	33.922			13.45	34.038	10.63	33.870	13.92	33.950	10.09	33.951	9.66	33.944	7.78	33.692	6.51	33.508	7.05	33.623
100m	14.80	33.921			13.34	34.037	10.56	33.869	13.95	33.970	10.09	33.952	9.55	33.932	7.76	33.689	6.82	33.567	6.92	33.606
125m	14.78	33.928					10.35	33.869	13.96	33.976	10.06	33.954	9.44	33.919	7.45	33.646	6.75	33.565	6.86	33.597
150m	14.75	33.926					9.95	33.864	11.74	33.929	10.04	33.955	9.34	33.904	7.25	33.633	6.29	33.535	6.80	33.589
200m							6.22	33.681	8.23	33.775	9.94	33.963	9.23	33.886	6.97	33.605	6.50	33.617	5.45	33.500
250m	3.54	33.593											9.09	33.867	4.63	33.461	4.04	33.404	4.45	33.513
300m	3.26	33.685											7.98	33.760	3.79	33.499	2.88	33.379	3.73	33.513
400m	3.47	33.873											4.36	33.777	2.88	33.564	2.73	33.525	2.60	33.533
500m	3.57	34.035											4.19	33.933	4.28	33.917	2.94	33.740	4.02	33.879
600m	3.47	34.151											3.66	34.019	4.18	34.081	4.68	34.121	4.03	34.071
700m																				
800m																				
900m																				
1000m																				

Table 4-56

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	P52		P51		P60		P61		P62		P63		P64		P65		H01		HAP07	
Latitude:N	42- 0.0		42-10.0		42-27.0		42-20.1		42-10.0		42- 0.0		41-50.1		41-40.1		41-40.0		41-23.2	
Longitude:E	142-19.9		142-29.9		141-20.2		141-20.0		141-20.0		141-19.9		141-19.9		141-20.0		140-40.2		140-10.5	
Date	2000/02/14		2000/02/15		2000/02/15		2000/02/15		2000/02/15		2000/02/15		2000/02/15		2000/02/15		2000/02/15		2000/02/22	
Time(JST)	23:00		00:44		06:44		07:39		08:57		10:14		11:26		12:57		16:34		13:26	
Weather	S		C		C		BC		BC		BC		BC		C		S			
Air Temp.	-2.0		-2.0		-4.0		-3.5		-1.5		-2.0		-1.5		-1.0		-1.0			
Bar	1004.0		1002.0		1000.0		1000.0		1000.0		999.0		998.0		997.5		998.0			
Wind Dir	NE		NNE		N		CALM		W		W		W		WNW		NW			
Wind Spd/F	S 4		S 2		S 1		S 0		S 4		S 5		S 6		S 8		S 8			
Transparency					12				13		14		12		16					
Depth	1006		125		82		250		364		312		277		226		122			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	0.2	32.26*	0.5	31.98*	0.8	32.45*	1.1	32.49*	0.9	32.42*	1.0	32.44*	0.6	32.40*	8.2	33.87*	9.1	33.99*	10.3	34.01*
10m	0.42	32.260	0.67	32.275	0.94	32.453	1.14	32.505	1.02	32.443	0.93	32.441	0.83	32.397	8.94	33.868	9.20	33.995	10.02	34.020
20m	0.41	32.275	0.71	32.322	0.94	32.453	1.46	32.558	1.32	32.524	0.96	32.449	0.82	32.399	8.88	33.858	9.20	33.995	9.29	34.031
30m	0.45	32.302	0.72	32.340	0.94	32.454	1.49	32.564	1.30	32.526	1.03	32.464	0.88	32.415	8.75	33.839	9.20	33.996	9.15	34.028
50m	1.48	32.555	0.83	32.342	2.18	32.640	2.23	32.692	1.60	32.570	1.15	32.492	1.34	32.510	8.47	33.789	9.19	33.997		
75m	3.01	32.876	1.51	32.296	5.49	33.312	4.08	33.018	2.04	32.666	2.08	32.617	3.95	32.976	8.17	33.761	9.13	34.003		
100m	4.37	33.192	2.86	32.370			6.36	33.471	4.19	33.055	5.97	33.332	6.17	33.383	8.00	33.763				
125m	5.62	33.436					6.64	33.549	5.38	33.304	7.24	33.582	7.30	33.611	8.05	33.823				
150m	6.29	33.559					6.35	33.533	6.04	33.459	7.09	33.567	7.04	33.575	8.08	33.866				
200m	5.86	33.527					6.34	33.584	6.61	33.618	4.49	33.524	5.30	33.522	4.56	33.522				
250m	4.54	33.445							4.80	33.513	3.77	33.514	4.55	33.526						
300m	4.35	33.561							4.09	33.544										
400m	3.31	33.649																		
500m	3.63	33.869																		
600m	3.75	34.031																		
700m																				
800m																				
900m																				
1000m																				

Table 4-57



Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	HAP06		HAP05		HAP04		HAP03		HAP02		HW002		HW003		HW004		HW005		HW006	
Latitude:N	41-20.7		41-18.3		41-15.9		41-13.4		41-11.0		41-29.5		41-39.9		41-49.8		41-59.8		42- 0.0	
Longitude:E	140-11.1		140-11.7		140-12.3		140-12.9		140-13.5		139-55.5		139-55.0		139-59.9		140- 0.0		139-40.1	
Date	2000/02/22		2000/02/22		2000/02/22		2000/02/22		2000/02/22		2000/02/29		2000/02/29		2000/02/29		2000/02/29		2000/03/01	
Time(JST)	13:55		14:25		14:57		15:27		15:59		18:40		20:21		22:14		23:49		01:49	
Weather											S		C		C		S		C	
Air Temp.											0.0		0.5		1.0		1.0		2.5	
Bar											1020.5		1021.0		1022.0		1022.0		1023.0	
Wind Dir											NW		NW				NW		WNW	
Wind Spd/F											S 10		S 10				S 8		S 7	
Transparency											158								900	
Depth											158								900	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.3	34.01*	10.5	34.00*	10.5	34.01*	10.5	34.01*	10.2	33.99*	7.7	34.03*	7.7	34.04*	7.8	34.03*	6.9	34.04*	8.4	34.03*
10m	10.34	34.009	10.48	34.002	10.48	34.007	10.46	34.011	10.18	33.991	7.70	34.031	7.71	34.037	7.81	34.035	6.85	34.038	8.37	34.031
20m	10.33	34.010	10.47	34.004	10.45	34.005	10.38	34.010	10.18	33.993	7.69	34.031	7.73	34.037	7.79	34.036	6.80	34.039	8.38	34.030
30m	10.33	34.010	10.46	34.005	10.44	34.005	10.36	34.006	10.19	33.996	7.63	34.033	7.73	34.038	7.80	34.036	6.35	34.049	8.39	34.030
50m	10.15	34.022	10.30	34.010	10.43	34.005	10.28	33.996	10.23	34.010	7.60	34.036	7.72	34.038	7.78	34.036	4.29	34.070	8.37	34.030
75m	9.55	34.032	9.90	34.033	10.36	34.000	10.18	33.981	10.17	34.012	6.38	34.048	7.68	34.040	7.45	34.038	3.45	34.069	8.32	34.032
100m	9.45	34.030	9.34	34.043	10.25	33.996	10.10	33.972			5.22	34.054	6.52	34.050	6.54	34.047	3.04	34.069	8.16	34.037
125m					9.96	34.025					4.45	34.054	5.85	34.046	5.05	34.063	2.85	34.070	7.72	34.044
150m													4.74	34.058	4.58	34.054	2.56	34.071	6.01	34.073
200m													3.60	34.067	3.50	34.069	1.99	34.072	2.67	34.083
250m													2.94	34.066	2.54	34.072	1.14	34.080	1.44	34.076
300m													2.41	34.070	1.83	34.074	0.91	34.079	1.11	34.075
400m													1.23	34.076	1.04	34.077	0.72	34.077	0.69	34.076
500m													0.93	34.077	0.69	34.076	0.53	34.076	0.55	34.076
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-58

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200003		200003		200003		200003	
Station No	HW007		HW008		HW009		HW010		HW011		HW012		HFS05		HFS06		HFS07		HFS08	
Latitude:N	41-50.1		41-49.9		41-40.2		41-30.1		41-29.9		41-20.1		42-15.1		42-10.1		42- 5.0		42- 0.1	
Longitude:E	139-30.3		139-44.9		139-40.0		139-30.1		139-40.0		139-39.9		141-19.8		141-15.1		141-10.1		141- 5.0	
Date	2000/03/01		2000/03/01		2000/03/01		2000/03/01		2000/03/01		2000/03/01		2000/03/12		2000/03/12		2000/03/12		2000/03/12	
Time(JST)	06:16		08:22		10:36		13:31		14:42		17:48		16:43		17:37		18:27		19:12	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	4.0		0.5		1.0		2.0		2.0		2.0		2.0		2.0		2.0		2.0	
Bar	1023.0		1025.0		1026.0		1024.5		1025.0		1024.0		1024.0		1024.0		1024.0		1024.0	
Wind Dir	W		W		W		W		W		W		W		W		W		W	
Wind Spd/F	S 5		S 8		S 8		S 8		S 7		S 2		S 2		S 2		S 2		S 2	
Transparency	549		549		549		549		549		549		549		549		549		549	
Depth	549		549		549		1000		1000		520		520		520		520		520	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	8.8	34.05*	8.0	34.03*	8.4	34.03*	7.6	34.04*	9.0	34.01*	9.7	34.02*	2.6	32.87*	1.5	32.70*	2.8	32.89*	2.2	32.81*
10m	8.85	34.053	8.05	34.040	8.40	34.032	7.66	34.042	9.00	34.008	9.71	34.016	2.66	32.878	1.53	32.707	2.81	32.891	2.25	32.811
20m	8.85	34.053	8.06	34.040	8.41	34.032	7.66	34.042	9.01	34.008	9.71	34.015	2.70	32.886	2.60	32.859	2.84	32.896	2.25	32.811
30m	8.83	34.052	8.06	34.040	8.41	34.032	7.54	34.054	8.98	34.010	9.71	34.016	2.70	32.893	2.81	32.901	3.05	32.941	2.26	32.813
50m	8.76	34.050	8.06	34.040	8.41	34.032	6.19	34.067	8.38	34.031	9.24	34.063	3.01	32.934	2.99	32.938	3.79	33.081	2.26	32.816
75m	7.89	34.041	8.06	34.041	8.41	34.031	5.35	34.061	8.28	34.035	7.53	34.070	4.83	33.270	3.19	32.982	4.52	33.203	3.79	33.144
100m	6.95	34.069	7.94	34.037	8.41	34.031	4.86	34.058	8.05	34.037	7.16	34.071	5.46	33.415	4.04	33.133	4.90	33.277	5.37	33.426
125m	6.48	34.063	7.63	34.066	6.65	34.073	3.87	34.052	7.59	34.059	6.79	34.071	5.55	33.465	5.37	33.375				
150m	5.76	34.058	6.07	34.064	5.71	34.062	3.45	34.059	5.61	34.076	5.83	34.073	6.01	33.567	5.16	33.419				
200m	3.65	34.066	4.04	34.059	3.91	34.057	2.09	34.079	3.34	34.061	2.87	34.063	4.63	33.524	3.92	33.521				
250m	2.07	34.072	2.28	34.074	2.00	34.077	1.35	34.076	1.84	34.075	1.75	34.076	3.85	33.543						
300m	1.21	34.080	1.59	34.075	1.39	34.076	1.02	34.078	1.40	34.074	1.32	34.076	3.73	33.618						
400m	0.77	34.078	0.85	34.078	0.87	34.078	0.78	34.079	0.87	34.077	0.66	34.077								
500m			0.61	34.076	0.66	34.077	0.57	34.077	0.68	34.077	0.48	34.074								
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 4-59

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	200003		200003		200003		200003		200003		200003		200003		200003		200003		200003		
Station No	HFS09		HFS10		HFS11		HFS12		HFS13		HFS14		HFS15		HFS16		HFS17		HFS18		
Latitude:N	41-57.5		42- 2.5		42- 5.1		42- 9.8		42-15.0		42-17.4		42-14.9		42- 9.9		42- 7.5		42- 8.6		
Longitude:E	141- 2.6		140-57.7		141- 0.0		141- 5.0		141-10.0		141- 5.1		141- 0.1		140-55.1		140-52.6		140-44.9		
Date	2000/03/12		2000/03/12		2000/03/12		2000/03/12		2000/03/12		2000/03/12		2000/03/12		2000/03/13		2000/03/13		2000/03/13		
Time(JST)	19:39		20:26		20:57		21:45		22:33		23:10		23:45		00:31		01:01		01:46		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	2.3	32.85*	3.1	33.01*	2.0	32.80*	2.0	32.80*	2.5	32.89*	3.0	33.01*	3.0	33.00*	2.2	32.86*	3.1	32.99*	2.6	32.88*	
10m	2.27	32.851	3.34	33.062	1.99	32.800	2.03	32.797	2.51	32.888	3.14	33.031	2.99	32.998	2.33	32.875	3.11	33.000	2.86	32.928	
20m	2.94	32.967	3.71	33.139	3.10	33.004	2.03	32.797	2.52	32.889	3.58	33.099	3.90	33.157	3.31	33.054	3.16	33.010	3.04	32.965	
30m	5.05	33.328	3.85	33.160	3.71	33.106	2.07	32.801	2.53	32.899	4.58	33.269	4.11	33.196	4.18	33.217	4.41	33.218	3.67	33.120	
50m	5.55	33.465	5.54	33.476	5.13	33.340	4.66	33.254	3.89	33.139	4.55	33.274	4.09	33.196	5.32	33.474	4.64	33.316	4.76	33.302	
75m	5.76	33.527	5.13	33.521	5.77	33.506	5.48	33.422	4.92	33.336					5.09	33.497					
100m	4.75	33.509																			
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-60

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	200003		200003		200003		200003		200003		200003		200003		200003		200003		200003		
Station No	HFS19		HFS20		HFS21		HFS22		HFS23		HFS24		HFS25		HFS26		HFS27		HFS28		
Latitude:N	42-10.7		42-13.1		42-15.5		42-17.9		42-24.9		42-20.0		42-15.0		42-10.1		42-14.9		42-17.5		
Longitude:E	140-46.7		140-49.7		140-52.7		140-55.7		140-50.0		140-45.0		140-40.1		140-35.0		140-30.0		140-32.4		
Date	2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		
Time(JST)	02:09		02:35		03:02		03:29		04:31		05:14		05:58		06:44		07:30		07:58		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	3.0	32.98*	2.8	32.99*	2.6	32.92*	3.3	33.08*	2.3	32.81*	2.0	32.82*	2.0	32.82*	2.2	32.88*	2.3	32.85*	2.2	32.84*	
10m	3.26	33.027	2.86	32.989	2.64	32.922	3.29	33.076	2.31	32.824	2.04	32.820	2.01	32.820	2.26	32.880	2.29	32.848	2.20	32.844	
20m	3.89	33.158	2.90	32.995	3.24	33.025	3.39	33.090	3.62	33.186	2.06	32.825	2.02	32.823	2.37	32.909	2.29	32.848	2.21	32.844	
30m	4.27	33.234	4.75	33.354	5.22	33.397	4.05	33.184	4.95	33.497	2.07	32.825	2.07	32.834	2.50	32.936	2.28	32.847	2.21	32.849	
50m	4.63	33.313	5.10	33.440	5.25	33.419	4.43	33.288			3.09	33.023	2.04	32.843	3.48	33.096	2.13	32.841	2.59	32.930	
75m	4.74	33.343											4.33	33.280			5.09	33.539	5.32	33.431	
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-61

Table 4 Results of serial oceanographic observations. Hokkaido Hakodate Fisheries Experimental Station

Stn-prefix	200003		200003		200003		200003		200003		200003		200003		200003		200003		200003		
Station No	HFS29		HFS30		HFS31		HFS32		HFS33		HFS34		HFS36		HFS35		HFS37		HFS38		
Latitude:N	42-19.8		42-22.4		42-25.0		42-27.4		42-29.9		42-25.1		42-17.6		42-19.9		42-24.9		42-29.9		
Longitude:E	140-34.9		140-37.5		140-39.9		140-42.5		140-35.1		140-30.2		140-25.1		140-24.9		140-25.0		140-29.9		
Date	2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		2000/03/13		
Time(JST)	08:28		09:33		10:01		10:30		11:16		11:59		12:57		13:20		13:57		14:42		
Weather																					
Air Temp.																					
Bar																					
Wind Dir																					
Wind Spd/F																					
Transparency																					
Depth																					
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	2.2	32.85*	2.1	32.83*	2.1	32.84*	2.0	32.78*	2.0	32.77*	2.0	32.81*	2.1	32.83*	2.1	32.82*	2.0	32.78*	2.0	32.77*	
10m	2.18	32.853	2.12	32.835	2.13	32.841	2.02	32.781	2.00	32.776	2.02	32.813	2.11	32.828	2.10	32.824	2.02	32.777	2.02	32.772	
20m	2.18	32.852	2.14	32.838	2.12	32.841	2.04	32.808	2.00	32.789	2.03	32.816	2.10	32.829	2.10	32.824	2.02	32.783	2.01	32.776	
30m	2.25	32.865	2.17	32.843	2.12	32.841	2.04	32.823	3.38	33.124	4.01	33.277	2.10	32.829	2.19	32.848	2.23	32.850	2.06	32.797	
50m	2.51	32.921	3.03	33.070	3.00	33.075	3.12	33.065	4.21	33.328	5.07	33.534	4.63	33.420	3.92	33.234	4.75	33.464	5.23	33.570	
75m	4.89	33.493	5.19	33.574					5.20	33.581											
100m																					
125m																					
150m																					
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 4-62

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904		
Station No	P31		P32		P33		PK21		PK22		P34		P35		PK23		PK31		PK32		
Latitude:N	42-45.0		42-30.1		42-15.1		42-15.0		42- 0.0		41-59.1		41-30.1		41-30.0		41-29.1		41- 0.1		
Longitude:E	144- 0.0		143-59.9		143-59.9		143-30.0		143-29.8		143-59.9		144- 0.1		143-30.1		143- 0.1		143- 0.0		
Date	1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/14		1999/04/14		1999/04/14		
Time(JST)	11:31		12:59		14:34		16:48		18:14		20:21		23:19		01:45		04:21		07:35		
Weather	F		C		C		R		R		C		C		BC		C		C		
Air Temp.	4.0		3.5		2.5		2.2		2.0		3.2		3.2		9.3		9.1		6.0		
Bar	998.0		996.9		996.0		996.1		995.5		995.0		996.5		996.4		996.0		999.0		
Wind Dir	E		ESE		S		SSW		S		SW		S		SSW		SW		WSW		
Wind Spd/F	F 3		F 2		F 2		F 2		F 3		F 4		F 3		F 4		F 5		F 4		
Transparency	9		8		12		6												10		
Depth	65		488		938		67		115		1124		1500				1170				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	2.0	32.037	0.8	32.727	0.7	32.828	0.3	32.430	0.9	32.615	1.9	33.180	1.3	32.822	8.4	34.098	8.7	34.132	2.4	33.025	
10m	-0.03	32.250	0.10	32.696	0.26	32.819	-0.07	32.386	0.78	32.575	1.65	33.110	1.03	32.703	8.46	33.996	8.67	34.013	0.99	32.871	
20m	-0.10	32.272	0.06	32.696	-0.10	32.849	-0.45	32.393	0.78	32.593	1.54	33.114	0.60	32.723	8.47	33.998	8.67	34.013	4.35	33.292	
30m	-0.44	32.397	0.03	32.700	0.22	32.902	-0.39	32.512	0.54	32.620	1.52	33.127	0.26	32.740	8.47	33.997	8.66	34.017	6.28	33.638	
50m	-0.70	32.527	-0.13	32.820	0.55	33.021	0.12	32.639	0.13	32.781	1.49	33.136	0.34	32.857	8.39	33.978	8.09	33.941	6.28	33.654	
75m			0.85	32.977	0.87	33.114			0.86	32.934	1.80	33.181	0.80	32.999	6.94	33.767	6.68	33.730	5.47	33.550	
100m			1.20	33.041	1.02	33.157			1.16	32.997	2.24	33.253	2.04	33.192	6.85	33.773	6.41	33.693	4.23	33.395	
125m			1.99	33.175	1.37	33.232					2.50	33.297	3.04	33.342	6.53	33.724	6.28	33.675	3.40	33.292	
150m			2.57	33.263	1.84	33.329					2.68	33.335	3.38	33.398	5.95	33.644	5.90	33.627	4.77	33.490	
200m			3.22	33.409	1.84	33.361					2.17	33.389	3.61	33.458	5.12	33.564	5.12	33.541	2.93	33.341	
250m			3.22	33.515	1.97	33.403					2.49	33.516	2.49	33.404	5.63	33.706	5.45	33.650	3.39	33.414	
300m			3.26	33.606	2.28	33.503					2.74	33.651	2.50	33.502	4.41	33.606	5.31	33.680	4.07	33.566	
400m			3.38	33.747	3.04	33.775					3.21	33.892	3.42	33.835	3.52	33.628	4.05	33.672	3.68	33.664	
500m					3.24	33.887					3.39	33.971	3.43	34.033	3.56	33.856	3.86	33.825	3.84	33.850	
600m										3.38	34.066	3.43	34.131	3.60	34.021	3.74	33.972	3.94	34.080		
700m																					
800m																					
900m																					
1000m																					

Table 5-1

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	PKA02		PKA01		PKA03		PKA04		PKA07		PKA10		PKA13		PKA16		PKA19		PKA22	
Latitude:N	41- 0.0		40-59.1		40-30.1		40- 0.1		40- 0.0		39-59.1		39-59.9		40- 0.1		40- 0.0		40- 0.0	
Longitude:E	142-30.0		142- 0.1		142-20.0		142-19.1		143- 0.1		143-40.1		144-20.1		145- 0.0		145-29.9		145-59.9	
Date	1999/04/14		1999/04/14		1999/04/14		1999/04/14		1999/04/14		1999/04/14		1999/04/15		1999/04/15		1999/04/15		1999/04/15	
Time(JST)	09:58		12:17		15:19		18:08		20:58		23:45		02:19		04:46		06:48		09:00	
Weather	C		C		C		C		BC		BC		C		R		C		BC	
Air Temp.	7.0		6.9		7.9		9.5		9.6		9.6		9.3		8.5		6.9		6.0	
Bar	999.9		1000.2		1002.0		1005.0		1007.0		1008.2		1010.0		1011.0		1013.0		1014.5	
Wind Dir	WSW		WSW		WNW		W		W		WNW		WNW		WNW		WNW		WNW	
Wind Spd/F	F 4		F 4		F 6		F 5		F 5		F 5		F 6		F 6		F 6		F 5	
Transparency	10		10		9								6		9		17			
Depth	1516		866		861		565		1300		2000									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	2.6	32.938	1.7	32.690	4.0	33.206	8.2	33.965	11.0	34.393	11.3	34.421	10.9	34.280	10.3	34.149	8.8	33.884	4.4	33.237
10m	2.18	32.811	1.35	32.563	3.18	33.042	8.11	33.822	11.14	34.320	11.45	34.352	11.21	34.347	10.46	34.219	8.73	33.954	4.08	33.301
20m	2.95	33.151	0.53	32.566	4.25	33.290	8.13	33.830	11.14	34.320	11.44	34.353	11.21	34.351	10.47	34.220	8.69	33.948	3.92	33.302
30m	3.88	33.311	0.95	32.763	4.36	33.371	8.37	33.916	11.13	34.321	11.39	34.355	11.22	34.347	10.46	34.220	8.73	33.952	3.13	33.313
50m	4.92	33.500	0.68	32.882	4.68	33.436	8.50	33.995	11.05	34.327	11.32	34.359	11.22	34.350	10.36	34.220	7.52	33.836	2.95	33.299
75m	4.45	33.484	1.82	33.088	4.63	33.449	7.17	33.795	10.90	34.318	11.29	34.359	11.22	34.352	10.06	34.205	5.87	33.597	2.98	33.303
100m	5.45	33.680	3.64	33.356	4.91	33.492	6.02	33.632	10.91	34.323	11.28	34.358	11.20	34.352	9.68	34.162	5.14	33.497	3.03	33.310
125m	5.99	33.793	3.90	33.433	4.98	33.510	6.06	33.644	10.79	34.306	11.26	34.354	11.19	34.352	9.67	34.172	5.57	33.572	3.13	33.324
150m	6.06	33.826	3.55	33.412	5.22	33.580	5.77	33.610	10.79	34.312	11.27	34.357	11.19	34.352	8.91	34.028	5.88	33.640	3.03	33.325
200m	4.43	33.615	4.26	33.558	4.89	33.596	5.70	33.650	10.75	34.307	11.22	34.352	11.05	34.331	6.99	33.744	5.26	33.582	3.17	33.430
250m	5.40	33.791	3.29	33.488	6.50	33.873	5.09	33.611	10.20	34.220	11.19	34.349	10.91	34.303	6.88	33.753	3.66	33.392	3.04	33.569
300m	4.70	33.747	3.09	33.493	5.39	33.726	4.98	33.633	8.08	33.906	11.13	34.343	10.64	34.262	5.47	33.566	4.36	33.561	3.31	33.705
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-2

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	PKA27		PKA30		PKA29		PKA26		PKA21		PKA18		PKA15		PKA12		PKA09		PKA06	
Latitude:N	40- 0.0		40- 0.0		40-29.9		40-30.1		40-30.1		40-30.0		40-29.1		40-30.0		40-30.0		40-30.0	
Longitude:E	146-29.1		146-59.9		146-59.1		146-30.1		146- 0.0		145-30.1		145- 0.1		144-20.1		143-40.2		143- 0.1	
Date	1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/16		1999/04/16		1999/04/16		1999/04/16	
Time(JST)	11:11		13:18		16:13		18:28		20:48		23:10		01:35		04:34		07:33		10:57	
Weather	B		BC		BC		BC		BC		BC		BC		B		B		BC	
Air Temp.	7.5		8.3		5.9		6.0		6.1		6.6		3.9		3.5		9.3		11.3	
Bar	1015.7		1016.0		1016.5		1017.5		1019.5		1019.7		1020.0		1021.0		1020.5		1019.0	
Wind Dir	WNW		WNW		W		WNW		W		WNW		W		W		SW		S	
Wind Spd/F	F 4		F 4		F 3		F 4		F 4		F 5		F 4		F 2		F 3		F 5	
Transparency	12		15		14												13		12	
Depth																			1567	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.7	33.603	7.4	33.580	4.5	33.350	4.5	33.314	6.3	33.474	7.1	33.651	3.4	33.069	1.9	32.871	9.8	34.084	10.8	34.190
10m	6.26	33.553	6.54	33.624	4.25	33.301	4.36	33.350	6.23	33.546	7.11	33.712	3.37	33.138	1.79	32.942	9.73	34.140	10.62	34.256
20m	6.11	33.549	6.84	33.683	3.90	33.290	3.96	33.342	6.23	33.546	7.10	33.711	3.36	33.138	1.79	32.942	9.71	34.142	10.29	34.216
30m	5.60	33.556	7.49	33.804	3.08	33.301	3.43	33.336	6.23	33.570	7.14	33.741	3.28	33.148	1.86	32.977	9.69	34.139	10.12	34.189
50m	5.65	33.625	5.23	33.557	2.88	33.288	2.97	33.306	5.84	33.552	6.33	33.676	1.51	33.114	2.51	33.183	9.10	34.058	9.54	34.128
75m	5.21	33.571	4.60	33.503	2.94	33.295	2.95	33.308	5.13	33.529	5.71	33.593	0.98	33.091	1.98	33.170	8.51	33.979	9.02	34.061
100m	5.30	33.604	4.69	33.529	3.24	33.345	2.95	33.308	5.16	33.538	5.88	33.629	2.20	33.230	2.70	33.263	7.50	33.817	7.90	33.867
125m	4.77	33.548	5.13	33.611	3.66	33.410	2.96	33.311	5.02	33.529	6.09	33.674	3.03	33.334	3.78	33.423	6.78	33.727	6.78	33.725
150m	4.04	33.469	4.54	33.552	3.46	33.460	3.16	33.340	4.63	33.491	5.33	33.573	3.02	33.345	4.46	33.536	5.34	33.531	6.53	33.699
200m	4.01	33.575	4.30	33.655	2.91	33.603	3.15	33.485	4.32	33.475	3.99	33.426	1.62	33.238	4.18	33.585	4.77	33.462	5.65	33.585
250m	4.25	33.725	3.11	33.614	3.17	33.716	3.17	33.611	4.25	33.573	3.96	33.486	2.29	33.434	3.08	33.509	5.12	33.556	5.77	33.624
300m	4.22	33.831	3.44	33.757	3.50	33.861	3.38	33.763	3.38	33.607	4.01	33.561	3.73	33.772	2.82	33.544	5.65	33.691	5.86	33.663
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-3



Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	PK24		P36		PK16		P27		PK07		P18		PKA25		PKA28		PKA24		P17	
Latitude:N	40-59.1		40-59.9		40-59.1		41- 0.1		41- 0.1		41- 0.0		40-59.9		41- 0.0		41-29.1		41-29.1	
Longitude:E	143-29.1		143-59.9		144-29.1		144-59.9		145-29.9		145-59.9		146-29.8		146-59.8		146-30.0		146- 0.1	
Date	1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/16		1999/04/17		1999/04/17		1999/04/17		1999/04/17		1999/04/17	
Time(JST)	14:16		16:38		18:57		21:21		23:48		02:13		04:44		07:03		10:29		12:45	
Weather	BC		BC		BC		C		BC		C		BC		C		R		R	
Air Temp.	11.1		5.8		5.0		8.1		7.5		6.5		6.1		4.3		6.1		6.9	
Bar	1016.7		1016.0		1016.0		1016.5		1016.0		1015.0		1014.5		1015.0		1014.2		1013.5	
Wind Dir	SSE		SSE		SSE		SSE		SSE		SSE		SE		ESE		E		ENE	
Wind Spd/F	F 5		F 5		F 5		F 5		F 5		F 5		F 5		F 5		F 4		F 3	
Transparency	17		5												5		9		15	
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.6	33.923	1.6	32.614	2.4	32.599	9.0	33.932	7.1	33.615	6.6	33.517	6.6	33.521	4.5	33.115	6.2	33.482	8.3	33.753
10m	8.72	34.005	1.09	32.702	2.22	32.669	8.99	33.995	6.95	33.685	6.54	33.587	6.60	33.585	4.30	33.180	6.12	33.551	8.22	33.895
20m	8.51	34.004	0.82	32.727	7.43	33.746	8.92	33.988	6.95	33.686	6.52	33.590	6.52	33.578	3.81	33.206	6.30	33.592	8.24	33.918
30m	8.46	33.997	0.85	32.732	8.26	33.939	8.53	33.960	6.95	33.686	6.25	33.590	6.35	33.578	4.00	33.281	6.42	33.617	8.22	33.918
50m	8.41	33.990	0.21	32.782	6.68	33.727	7.37	33.789	6.56	33.699	5.84	33.557	5.33	33.512	4.31	33.399	6.71	33.695	7.95	33.882
75m	8.38	33.986	0.47	32.881	5.75	33.600	6.40	33.675	6.39	33.701	5.03	33.497	5.61	33.577	3.77	33.389	6.39	33.679	7.14	33.766
100m	7.93	33.921	1.00	33.016	5.22	33.548	6.28	33.658	6.41	33.706	5.14	33.515	5.96	33.633	3.12	33.334	5.77	33.592	6.32	33.658
125m	6.73	33.735	1.61	33.134	5.00	33.564	5.85	33.613	6.33	33.693	5.10	33.509	5.96	33.643	3.00	33.328	5.40	33.550	5.89	33.617
150m	6.34	33.686	2.14	33.219	4.60	33.558	5.55	33.575	5.99	33.642	5.02	33.500	5.30	33.556	3.33	33.377	5.10	33.533	5.45	33.544
200m	6.40	33.720	2.80	33.327	5.09	33.681	5.07	33.527	4.74	33.500	3.43	33.347	4.67	33.535	3.21	33.445	3.72	33.418	5.34	33.560
250m	6.15	33.724	2.75	33.378	2.15	33.410	4.72	33.529	4.26	33.481	3.68	33.408	3.59	33.462	3.31	33.567	2.53	33.309	4.98	33.565
300m	5.22	33.657	2.64	33.446	2.12	33.440	4.07	33.563	4.05	33.521	3.86	33.494	3.70	33.564	3.86	33.747	4.18	33.581	4.50	33.586
400m	4.12	33.639	3.76	33.755	3.90	33.905	2.94	33.629	3.30	33.657	3.78	33.739							3.06	33.589
500m	3.80	33.771	3.88	33.982	3.42	33.999	3.57	33.902	3.90	33.890	3.90	33.920							3.83	33.908
600m	4.24	34.004	3.71	34.095	3.74	34.165	3.51	34.044	3.48	33.987	3.95	34.105							3.97	34.105
700m																				
800m																				
900m																				
1000m																				

Table 5-4

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	PK06		P26		PK15		PK14		P25		PK05		P16		P15		P14		P13	
Latitude:N	41-29.1		41-30.0		41-29.1		41-59.9		42- 0.0		41-59.1		41-59.1		42-14.9		42-29.1		42-44.1	
Longitude:E	145-30.1		145- 0.2		144-30.2		144-29.9		144-59.9		145-29.9		145-59.9		146- 0.0		145-59.9		145-54.1	
Date	1999/04/17		1999/04/17		1999/04/17		1999/04/17		1999/04/18		1999/04/18		1999/04/18		1999/04/18		1999/04/18		1999/04/18	
Time(JST)	15:06		17:29		19:50		22:50		01:12		03:30		05:47		07:34		09:13		10:55	
Weather	C		F		F		F		C		BC		F		F		F		F	
Air Temp.	7.5		4.0		2.9		3.5		3.2		2.2		1.6		1.6		1.7		2.0	
Bar	1013.7		1015.2		1017.9		1019.4		1020.0		1019.5		1020.5		1021.7		1023.0		1022.9	
Wind Dir	NE		NW		N		ENE		N		NE		ENE		CALM		WSW		CALM	
Wind Spd/F	F 1		F 3		F 4		F 3		F 1		F 3		F 2		F 0		F 1		F 0	
Transparency	17		5										5		11		16		16	
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	8.2	33.651	5.8	33.288	3.4	33.088	2.9	32.969	8.4	33.085	3.3	33.064	3.2	32.933	2.7	33.034	2.7	33.047	1.9	32.994
10m	6.88	33.642	7.86	33.791	3.07	33.177	2.53	33.003	3.24	33.141	3.14	33.153	3.09	32.989	2.50	33.097	2.43	33.100	1.49	33.030
20m	6.97	33.665	7.93	33.823	2.91	33.185	2.13	33.056	2.70	33.199	2.99	33.189	3.61	33.256	2.43	33.110	1.91	33.119	1.24	33.040
30m	7.83	33.833	7.25	33.762	2.72	33.190	2.04	33.145	2.49	33.194	2.91	33.201	3.15	33.225	1.97	33.125	1.30	33.130	0.95	33.042
50m	6.18	33.660	6.01	33.649	2.53	33.194	1.67	33.134	2.24	33.195	2.47	33.213	4.55	33.460	1.43	33.136	1.41	33.148	0.79	33.087
75m	6.07	33.653	5.84	33.626	2.38	33.214	2.26	33.229	2.50	33.229	2.38	33.217	3.99	33.444	1.57	33.163	1.39	33.153	0.50	33.092
100m	5.85	33.624	5.75	33.628	2.65	33.263	3.59	33.399	2.67	33.255	2.59	33.271	3.42	33.389	1.75	33.189	1.51	33.207	0.73	33.151
125m	6.18	33.680	4.68	33.506	3.27	33.357	3.40	33.391	2.93	33.306	2.95	33.346	3.01	33.346	1.70	33.191	1.91	33.277	0.88	33.194
150m	6.41	33.725	4.13	33.440	3.11	33.364	3.11	33.383	3.20	33.408	2.96	33.395	2.78	33.333	1.96	33.274	2.00	33.322	1.18	33.274
200m	4.33	33.464	4.07	33.491	2.75	33.512	2.43	33.432	2.75	33.562	2.65	33.527	3.46	33.496	2.47	33.450	2.06	33.406	1.56	33.372
250m	4.76	33.588	4.26	33.603	2.83	33.661	3.49	33.713	2.88	33.693	2.96	33.651	3.71	33.652	2.74	33.614	2.28	33.481	1.77	33.425
300m	4.17	33.571	2.10	33.447	3.05	33.794	3.27	33.775	3.09	33.834	2.94	33.745	3.72	33.762	2.97	33.728	2.42	33.577	1.99	33.501
400m	3.68	33.736	3.82	33.884	3.31	33.969	3.28	33.951	3.27	34.013	3.30	33.971	3.50	33.899	3.16	33.908	3.19	33.825	2.91	33.777
500m	4.14	34.011	3.56	34.034	3.46	34.109	3.39	34.076	3.33	34.135	3.63	34.125	3.65	34.080	3.26	34.034	3.20	33.971	3.18	33.918
600m	3.95	34.125	3.52	34.155	3.29	34.194	3.31	34.178	3.19	34.226	3.33	34.180	3.66	34.217	3.15	34.140	3.22	34.099	3.28	34.090
700m																				
800m																				
900m																				
1000m																				

Table 5-5

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	P12		P11		PK01		PK02		PK03		PK04		P24		PK13		PK12		P23	
Latitude:N	42-54.9		43- 4.9		42-55.0		42-45.0		42-30.0		42-15.1		42-14.1		42-15.0		42-29.9		42-29.9	
Longitude:E	145-50.0		145-45.0		145-29.1		145-29.1		145-29.1		145-29.9		144-59.9		144-29.1		144-29.9		144-59.9	
Date	1999/04/18		1999/04/18		1999/04/18		1999/04/18		1999/04/18		1999/04/18		1999/04/18		1999/04/19		1999/04/19		1999/04/19	
Time(JST)	12:08		13:22		14:54		15:54		18:09		19:46		21:54		00:09		01:48		04:09	
Weather	F		F		C		C		F		C		BC		C		F		C	
Air Temp.	2.5		2.2		1.5		2.0		2.5		4.4		4.0		3.7		3.2		3.7	
Bar	1022.2		1022.0		1021.2		1021.0		1021.5		1021.7		1021.4		1020.0		1020.5		1020.0	
Wind Dir	ESE		SSE		SSW		SSW		S		S		S		SE		SE		S	
Wind Spd/F	F 2		F 3		F 2		F 3		F 3		F 3		F 3		F 3		F 2		F 5	
Transparency	16		8		6		21													
Depth			104		157		1689													
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	2.0	32.971	1.2	32.531	1.1	32.390	2.6	32.961	3.2	33.064	3.8	33.105	4.2	33.066	3.0	33.017	2.0	32.899	2.5	32.910
10m	1.42	33.021	0.34	32.579	-0.04	32.513	1.98	33.049	2.78	33.149	3.62	33.187	3.72	33.218	2.81	33.093	1.79	32.981	2.30	32.994
20m	1.29	33.031	0.29	32.593	-0.66	32.624	1.93	33.052	2.73	33.145	3.21	33.224	3.34	33.261	2.41	33.138	1.34	33.011	2.22	33.136
30m	0.79	33.058	0.20	32.601	-0.39	32.649	1.65	33.093	2.47	33.149	2.90	33.221	2.90	33.261	1.80	33.180	0.92	33.048	1.93	33.181
50m	0.53	33.067	-0.01	32.782	-0.13	32.829	1.38	33.136	1.70	33.173	2.91	33.281	2.48	33.242	1.70	33.176	0.49	33.071	1.83	33.189
75m	0.51	33.081	0.45	32.974	0.42	32.997	1.34	33.138	1.62	33.166	3.19	33.333	2.52	33.248	1.77	33.185	0.55	33.077	1.93	33.209
100m	0.56	33.101			0.62	33.087	1.35	33.150	1.97	33.207	3.27	33.355	2.92	33.307	1.74	33.187	0.89	33.145	1.94	33.213
125m	0.68	33.136			0.72	33.136	0.95	33.157	2.46	33.287	3.36	33.371	3.29	33.373	1.73	33.188	0.94	33.205	2.34	33.284
150m	0.87	33.188					1.03	33.196	2.45	33.290	3.34	33.412	3.20	33.387	1.93	33.210	1.21	33.276	2.03	33.263
200m	1.77	33.349					2.04	33.352	2.23	33.348	2.88	33.569	3.11	33.529	1.51	33.245	1.82	33.417	2.44	33.429
250m	2.00	33.426					2.49	33.474	3.37	33.637	2.87	33.664	3.05	33.604	2.03	33.393	2.24	33.512	2.45	33.536
300m	2.14	33.497					2.36	33.528	2.84	33.673	3.52	33.845	3.50	33.767	2.84	33.626	2.35	33.576	2.39	33.599
400m	2.29	33.578					2.85	33.740	3.17	33.866	3.54	34.009	3.27	33.925	3.08	33.801	3.01	33.785	3.10	33.848
500m	2.92	33.776					3.20	33.934	3.26	33.993	3.49	34.130	3.54	34.092	3.28	34.006	3.18	33.902	3.72	34.059
600m	3.13	33.901					3.27	34.057	3.17	34.102	3.52	34.235	3.36	34.180	3.49	34.131	3.37	34.016	3.76	34.176
700m																				
800m																				
900m																				
1000m																				

Table 5-6

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199905		199905		199905		199905		199905		199905		199905	
Station No	P22		P21		PK11		SU01		HA01		SU02		SU03		SU04		SU05		SU06	
Latitude:N	42-44.9		42-54.9		42-44.1		42-49.9		42-52.5		42-48.3		42-46.7		42-43.5		42-46.1		42-48.9	
Longitude:E	144-59.9		145- 0.0		144-30.0		144- 5.2		144- 3.5		144- 8.6		144-11.9		144-18.8		144-24.4		144-30.8	
Date	1999/04/19		1999/04/19		1999/04/19		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10	
Time(JST)	05:46		06:47		08:53		10:59		11:23		12:32		13:14		14:10		15:19		16:24	
Weather	C		F		F		BC		BC		BC		BC		BC		BC		C	
Air Temp.	3.2		2.9		2.5		12.3		12.3		8.1		8.1		8.8		9.1		8.5	
Bar	1020.0		1020.5		1020.2		1011.0		1011.0		1011.2		1011.2		1011.2		1011.2		1011.5	
Wind Dir	S		SSE		ESE		NW		SSE		SSE		SE		SSE		ESE		SE	
Wind Spd/F	F 4		F 3		F 2		F 2		F 2		F 3		F 2		F 3		F 1		F 2	
Transparency	5		6		7															
Depth	171		67		132		57		30		97		195		760		215		100	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	1.3	32.676	1.2	32.146	1.2	32.561	5.8	30.40*	6.7	30.43*	6.1	30.82*	5.9	31.37*	6.6	31.59*	6.3	32.08*	5.3	32.00*
10m	1.30	32.855	0.81	32.280	0.89	32.652	2.81	31.901	2.67	31.896	3.54	31.490	1.87	32.258	3.92	32.721	5.01	32.071	2.95	32.378
20m	1.73	32.997	0.15	32.430	0.84	32.668	1.26	32.446	1.29	32.458	2.40	32.085	0.91	32.491	4.18	33.008	1.93	32.574	1.29	32.604
30m	0.65	33.044	-0.40	32.427	0.54	32.745	0.66	32.573			0.95	32.536	2.81	32.845	3.30	33.093	2.57	32.909	0.72	32.786
50m	0.39	33.066	-0.42	32.553	0.30	32.881	0.61	32.884			0.46	32.729	0.68	32.913	5.22	33.490	2.80	33.232	1.69	33.129
75m	0.45	33.100			0.83	33.069					1.29	33.049	1.41	33.055	4.80	33.508	1.51	33.171	2.37	33.279
100m	0.77	33.169			1.15	33.132							0.98	33.098	3.31	33.349	2.26	33.258		
125m	0.79	33.177											2.20	33.229	2.66	33.307	2.25	33.301		
150m	0.80	33.183											2.56	33.302	3.77	33.449	3.35	33.501		
200m															2.54	33.409	2.78	33.545		
250m															2.45	33.511				
300m															2.83	33.639				
400m															3.37	33.859				
500m															3.39	33.986				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-7

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	SU07		HA02		SU08		SU09		SU10		SU11		HA03		HA04		HA05		HA06	
Latitude:N	42-52.9		42-55.4		42-40.5		42-42.5		42-50.3		42-54.9		42-56.1		42-59.6		43- 4.1		43- 9.1	
Longitude:E	144-39.2		144-39.5		144-59.3		144-58.4		144-54.8		144-52.1		144-52.6		145- 4.3		145-16.9		145-31.3	
Date	1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/10		1999/05/11		1999/05/11		1999/05/11		1999/05/11	
Time(JST)	17:25		17:48		21:12		21:53		23:12		23:55		04:05		05:32		07:15		09:13	
Weather	C		C		BC		BC		C		C		C		C		F		C	
Air Temp.	7.0		6.6		6.0		6.1		5.8		5.3		5.1		4.9		4.4		5.0	
Bar	1012.0		1012.0		1012.5		1012.5		1013.0		1012.5		1012.2		1012.0		1012.2		1012.0	
Wind Dir	SE		SE		SE		SE		ESE		NE		ENE		ENE		E		ESE	
Wind Spd/F	F 3		F 3		F 4		F 3		F 2		F 2		F 2		F 3		F 3		F 2	
Transparency																				
Depth	59		34		534		200		100		51		44		34		39			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.5	32.08*	5.3	31.88*	7.0	33.30*	7.1	33.30*	4.9	32.10*	4.8	32.09*	4.8	43.16*	4.6	32.18*	3.8	32.42*	3.3	32.31*
10m	4.63	32.073	3.53	32.123	6.97	33.299	6.57	33.313	2.78	32.264	3.75	32.110	3.44	32.149	4.29	32.161	3.31	32.319	2.81	32.329
20m	2.26	32.334	2.29	32.315	6.47	33.303	6.35	33.327	2.15	32.612	2.65	32.218	2.71	32.230	2.10	32.377	2.13	32.429	2.38	32.388
30m	1.61	32.490	1.41	32.527	5.97	33.333	6.09	33.403	3.69	32.943	1.47	32.456	2.04	32.334	1.89	32.406	1.91	32.467	2.29	32.400
50m					4.71	33.462	5.94	33.446	4.58	33.155										
75m					4.03	33.409	4.89	33.511	1.49	33.082										
100m					4.21	33.440	4.69	33.501												
125m					3.62	33.396	4.54	33.488												
150m					3.65	33.408	4.47	33.482												
200m					3.24	33.390														
250m					3.47	33.510														
300m					3.65	33.643														
400m					3.71	33.841														
500m					3.23	33.929														
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-8

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	HA07		SU12		SU13		SU14		SU15		SU16		SU17		SU18		SU19		HA08	
Latitude:N	43-14.5		43-12.5		43- 6.2		43- 0.1		42-59.0		43- 1.1		42-56.3		42-51.1		42-49.5		41-59.7	
Longitude:E	145-40.5		145-42.3		145-45.1		145-47.5		145-48.5		145-18.9		145-20.8		145-22.7		145-23.7		143-18.8	
Date	1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/11		1999/05/12	
Time(JST)	10:46		11:43		12:50		13:56		14:21		17:36		18:30		19:21		19:52		06:41	
Weather	F		C		C		F		F		F		F		F		F		BC	
Air Temp.	4.5		5.0		5.3		5.3		4.5		4.6		4.1		4.0		4.0		9.0	
Bar	1012.0		1011.5		1011.0		1011.0		1011.0		1011.2		1011.2		1011.5		1012.0		1012.5	
Wind Dir	E		ENE		E		CALM		CALM		NNE		SE		ESE		S		W	
Wind Spd/F	F 2		F 2		F 2		F 0		F 0		F 1		F 1		F 1		F 1		F 5	
Transparency																				
Depth	34		54		98		185		565		53		98		203		617		29	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	2.8	32.42*	3.4	32.26*	3.1	32.62*	3.4	32.78*	3.3	32.73*	3.7	32.25*	3.6	32.40*	3.2	32.38*	4.4	32.66*	4.8	29.09*
10m	2.16	32.447	3.02	32.246	2.72	32.663			2.71	32.644	3.22	32.284	2.30	32.435	2.22	32.470	4.28	32.664	1.64	32.385
20m	2.02	32.459	2.17	32.499	1.70	32.678	1.72	32.849	1.58	32.793	1.90	32.429	1.41	32.552	2.12	32.708	1.46	32.594	0.55	32.537
30m	1.85	32.473	2.12	32.504	1.41	32.744	1.13	32.932	1.06	32.925	1.53	32.546	1.42	32.645	2.11	32.734	2.90	32.845		
50m			2.11	32.500	1.28	32.844	0.80	33.042	0.93	33.047			1.21	32.822	0.90	32.839	3.91	33.132		
75m					1.23	32.905	0.95	33.115	0.98	33.129			0.90	32.929	1.01	33.017	4.14	33.326		
100m							1.05	33.150	0.98	33.139					0.98	33.112	3.45	33.300		
125m							1.10	33.165	1.00	33.166					1.24	33.157	4.38	33.461		
150m							1.30	33.233	1.04	33.182					1.60	33.218	4.14	33.472		
200m									1.30	33.237							3.28	33.501		
250m									1.91	33.404							3.39	33.633		
300m									2.23	33.518							3.17	33.689		
400m									3.08	33.859							2.96	33.784		
500m									3.19	33.987							3.22	33.940		
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-9

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	HA11		SU31		SU30		SU29		SU28		HA09		SU20		SU21		SU22		SU23	
Latitude:N	42-19.2		42-12.4		42-14.5		42-17.2		42-18.9		41-53.6		41-50.7		41-45.8		41-38.8		41-36.9	
Longitude:E	143-27.3		143-44.5		143-40.1		143-34.3		143-30.3		143-15.8		143-15.1		143-10.6		143- 4.9		143- 2.8	
Date	1999/05/12		1999/05/12		1999/05/12		1999/05/12		1999/05/12		1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/13	
Time(JST)	09:07		16:51		17:50		18:52		19:34		05:48		06:43		07:37		11:47		12:12	
Weather	C		BC		BC		C		C		BC		BC		B		C		BC	
Air Temp.	10.5		8.6		7.1		8.1		12.0		6.9		8.1		8.6		11.8		12.3	
Bar	1010.5		1007.5		1007.0		1007.2		1007.0		1010.0		1010.5		1010.2		1009.5		1008.9	
Wind Dir	SW		S		SSW		SW		SW		NNW		NW		WSW		WSW		SW	
Wind Spd/F	F 4		F 4		F 4		F 5		F 5		F 2		F 3		F 4		F 2		F 3	
Transparency																				
Depth	32		540		207		100		54		37		62		100		226		513	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.8	31.56*	5.0	32.71*	2.4	32.60*	3.6	32.16*	6.6	29.50*	4.0	31.65*	4.8	31.80*	5.8	31.65*	8.4	33.24*	11.4	33.81*
10m	1.70	32.126	4.65	32.706	1.92	32.475	3.20	32.189	0.63	32.663	2.37	32.191	3.47	31.965	5.34	31.652	8.06	33.395	10.99	33.800
20m	0.62	32.599	5.04	32.932	2.00	32.549	1.33	32.525	1.06	32.817	1.04	32.619	3.79	32.424	3.98	31.908	7.62	33.613	10.60	33.794
30m			5.79	33.357	2.34	32.704	0.27	32.728	0.81	32.861	0.96	32.683	1.77	32.676	2.18	32.114	6.96	33.671	9.72	33.945
50m			5.31	33.513	3.18	33.189	0.96	32.917					1.22	32.742	2.86	32.693	6.65	33.730	6.44	33.674
75m			5.04	33.530	1.90	33.201	1.11	33.092							3.30	33.169	5.96	33.632	5.84	33.606
100m			4.40	33.473	0.98	33.150											4.16	33.428	4.67	33.468
125m			3.93	33.432	1.29	33.192											4.05	33.461	4.92	33.556
150m			3.86	33.440	1.53	33.251											4.20	33.488	4.80	33.553
200m			3.99	33.530	2.01	33.403											4.05	33.485	4.02	33.506
250m			3.84	33.636															3.49	33.530
300m			3.23	33.657															3.75	33.677
400m			3.60	33.901															3.54	33.817
500m			3.41	34.022															3.62	33.999
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-10

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199905		199905		199905		199905	
Station No	SU24		SU25		SU26		SU27		HA10		SU32		SU33		SU34		SU35		SU50	
Latitude:N	41-47.6		41-52.8		41-58.0		41-59.9		42-38.1		42-28.3		42-31.2		42-32.7		42-35.5		41-43.0	
Longitude:E	143-46.7		143-36.8		143-26.3		143-22.3		143-43.2		144- 0.8		143-55.1		143-51.2		143-45.7		143-25.5	
Date	1999/05/13		1999/05/13		1999/05/13		1999/05/13		1999/05/14		1999/05/17		1999/05/17		1999/05/17		1999/05/17		1999/05/18	
Time(JST)	19:15		20:56		22:23		22:57		04:51		14:03		15:24		16:10		17:10		08:12	
Weather	R		C		BC		B		BC		BC		BC		BC		BC		BC	
Air Temp.	8.1		7.0		7.3		7.0		5.4		8.6		8.0		8.6		7.6		11.0	
Bar	1008.5		1008.0		1009.0		1009.0		1009.0		1014.5		1014.7		1015.0		1014.7		1020.5	
Wind Dir	WSW		W		N		W		WNW		SSW		WSW		SW		SSW		ESE	
Wind Spd/F	F 4		F 4		F 3		F 2		F 2		F 3		F 4		F 3		F 3		F 1	
Transparency																				
Depth	537		204		101		65		30		550		209		99		52		152	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.0	31.95*	4.5	31.64*	4.1	31.73*	3.5	31.69*	6.0	30.18*	7.2	32.10*	6.2	32.26*	5.9	32.41*	6.7	31.68*	7.6	31.87*
10m	4.15	32.059	3.33	31.903	3.87	31.740	2.53	32.232	3.20	32.017	5.18	32.493	4.65	32.415	4.35	32.462	4.76	32.242	6.13	31.871
20m	3.32	32.373	1.47	32.606	1.31	32.678	1.66	32.611	0.90	32.520	5.23	33.266	1.32	32.716	4.06	32.658	3.31	32.672	4.93	32.093
30m	3.27	32.664	1.03	32.868	1.70	32.907	0.94	32.797			4.19	33.216	1.13	32.830	4.25	33.024	1.99	32.685	6.32	32.747
50m	1.79	32.944	1.11	32.999	1.38	33.018	1.16	33.040			5.24	33.444	3.68	33.302	2.34	32.970			5.26	33.255
75m	1.12	33.087	1.27	33.141	1.82	33.159					4.72	33.462	3.21	33.324	2.00	33.123			6.13	33.601
100m	0.93	33.111	1.36	33.166							3.19	33.319	2.49	33.268					5.12	33.534
125m	0.86	33.142	1.55	33.211							2.88	33.303	2.32	33.271					2.76	33.342
150m	1.21	33.217	1.57	33.223							3.06	33.342	2.52	33.294						
200m	1.86	33.365	2.03	33.391							3.02	33.432	2.31	33.293						
250m	2.12	33.450									2.04	33.412								
300m	2.27	33.520									2.96	33.618								
400m	2.85	33.718									3.65	33.879								
500m	3.30	33.965									3.43	34.068								
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-11



Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199905		199905		199905		199906		199906		199906		199906	
Station No	SU51		SU52		SU53		SU54		SU55		SU56		P31		P32		P33		PK21	
Latitude:N	41-53.7		42-27.6		42-35.7		42-40.8		42-43.5		42-46.1		42-45.1		42-30.1		42-15.1		42-14.9	
Longitude:E	143-35.1		143-50.1		143-52.4		144-53.9		144-51.8		144-57.6		143-59.1		144- 0.0		143-59.1		143-30.1	
Date	1999/05/18		1999/05/19		1999/05/19		1999/05/24		1999/05/24		1999/05/25		1999/05/31		1999/05/31		1999/05/31		1999/05/31	
Time(JST)	12:01		08:28		11:57		13:47		15:53		08:17		11:25		12:52		14:34		17:09	
Weather	C		R		C		BC		BC		R		B		B		B		BC	
Air Temp.	10.8		8.6		8.8		6.8		5.5		4.4		12.5		11.1		10.5		11.1	
Bar	1020.0		1012.5		1010.0		1007.5		1007.5		1000.0		1016.7		1015.5		1015.5		1014.5	
Wind Dir	S		SSE		SSE		ESE		ESE		ENE		SE		S		SW		SW	
Wind Spd/F	F 3		F 3		F 5		F 4		F 3		F 5		F 1		F 4		F 6		F 6	
Transparency													8		11				10	
Depth	170		145		88		379		179		134									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.6	32.18*	5.6	32.51*	5.5	32.38*	5.6	32.91*	4.8	32.66*	4.9	32.40*	7.2	32.077	9.1	33.070	7.9	32.841	6.4	32.383
10m	3.68	32.204	5.21	32.501	4.59	32.462	5.05	32.910	4.41	32.662	4.54	32.433	6.08	32.212	8.15	33.048	6.55	32.833	6.00	32.676
20m	0.94	32.728	4.10	32.675	3.84	32.972	4.51	32.983	3.55	32.761	2.56	32.787	4.81	32.357	7.42	33.054	5.38	32.842	4.54	32.820
30m	0.78	32.810	3.16	32.922	4.32	33.096	4.83	33.083	3.09	32.970	2.28	32.917	4.44	32.391	6.74	33.223	5.16	32.933	3.46	32.803
50m	0.89	32.975	2.26	33.149	2.79	33.111	2.27	33.083	2.94	33.127	1.11	32.969	2.33	32.658	5.88	33.548	4.56	33.385	2.70	32.857
75m	2.84	33.262	2.46	33.245			1.54	33.118	3.43	33.298	1.22	33.060			5.50	33.565	3.85	33.387		
100m	2.71	33.301	2.25	33.239			1.24	33.130	1.62	33.197	1.34	33.145			5.35	33.565	3.09	33.331		
125m	1.65	33.219	2.52	33.279			1.27	33.171	3.18	33.380					4.61	33.495	3.15	33.351		
150m	1.52	33.206					2.00	33.272	1.96	33.352					3.59	33.396	2.76	33.344		
200m							2.89	33.479							2.26	33.347	3.09	33.452		
250m							2.88	33.549							3.35	33.601	3.14	33.528		
300m							2.11	33.508							3.25	33.638	3.21	33.616		
400m															3.38	33.770	3.36	33.804		
500m																	3.25	33.931		
600m																	3.37	34.036		
700m																				
800m																				
900m																				
1000m																				

Table 5-12

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	PK22		P34		P35		PK23		PK31		PK32		PKA02		PKA01		PKA03		PKA04	
Latitude:N	42- 0.2		42- 0.0		41-30.0		41-29.1		41-30.1		41- 0.1		41- 0.0		40-59.9		40-29.9		39-59.9	
Longitude:E	143-30.3		143-59.9		143-59.9		143-30.0		142-59.9		143- 0.1		142-30.0		142- 0.1		142-19.3		142-20.0	
Date	1999/05/31		1999/05/31		1999/05/31		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01	
Time(JST)	18:41		20:41		23:34		01:55		04:14		07:12		09:25		11:34		15:49		18:32	
Weather	BC		B		B		BC		B		B		BC		BC		BC		F	
Air Temp.	10.0		9.6		11.3		10.1		10.1		13.8		14.8		16.8		14.0		12.8	
Bar	1017.5		1018.0		1018.4		1016.5		1015.7		1016.2		1015.2		1015.0		1013.0		1012.2	
Wind Dir	WSW		SW		S		S		S		S		SSE		ESE		SE		SSE	
Wind Spd/F	F 5		F 4		F 3		F 3		F 3		F 3		F 2		F 1		F 3		F 2	
Transparency	7								8		12		19		13		17		8	
Depth			1000																	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	7.4	32.564	8.3	32.628	7.7	32.777	7.2	32.506	7.2	32.387	11.4	33.501	11.4	33.519	12.8	32.866	12.5	33.237	13.3	33.711
10m	6.93	32.843	7.89	32.656	7.80	32.816	7.24	32.860	6.04	32.515	11.98	33.519	11.20	33.540	8.68	32.851	11.33	33.362	12.07	33.755
20m	5.97	33.211	7.24	32.951	6.96	32.944	6.11	33.114	5.08	32.645	11.15	33.591	10.75	33.563	7.97	33.073	11.59	33.665	10.71	33.762
30m	5.10	33.242	6.69	33.056	5.97	33.066	4.48	33.241	4.08	32.908	9.62	33.500	10.19	33.618	9.14	33.384	11.28	33.713	9.82	33.819
50m	3.69	33.273	3.24	33.200	3.95	33.241	3.16	33.303	3.85	33.300	6.68	33.568	7.74	33.720	7.90	33.348	8.17	33.858	8.86	33.949
75m	2.44	33.225	2.36	33.215	3.60	33.336	2.40	33.263	2.95	33.314	6.10	33.644	6.69	33.723	7.98	33.862	6.98	33.770	8.61	33.928
100m	2.48	33.252	2.72	33.286	3.17	33.333	2.73	33.308	2.71	33.302	5.55	33.605	5.35	33.570	7.54	33.862	6.11	33.665	8.04	33.897
125m			2.58	33.289	2.89	33.321	2.29	33.310	2.79	33.330	5.44	33.624	4.74	33.521	5.57	33.597	4.99	33.538	7.91	33.889
150m			2.40	33.317	2.70	33.314	2.66	33.424	3.19	33.402	4.79	33.570	4.20	33.459	5.00	33.548	3.35	33.378	7.41	33.824
200m			3.23	33.533	2.68	33.381	2.76	33.479	3.40	33.498	4.71	33.613	3.55	33.421	4.11	33.489	3.97	33.495	5.95	33.643
250m			3.08	33.644	3.32	33.570	3.06	33.544	2.41	33.472	4.53	33.687	3.91	33.555	4.19	33.579	3.46	33.528	4.30	33.479
300m			3.57	33.776	3.34	33.678	3.16	33.643	2.71	33.579	3.85	33.673	3.95	33.682	3.59	33.591	3.46	33.629	5.05	33.679
400m			3.46	33.942	3.38	33.879	3.54	33.833	3.30	33.792	4.20	33.910								
500m			3.37	34.033	3.55	34.028	3.45	33.978	3.24	33.915	3.74	34.019								
600m			3.36	34.153	3.42	34.145	3.46	34.112	3.41	34.057	3.83	34.162								
700m																				
800m																				
900m																				
1000m																				

Table 5-13

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906	199906	199906	199906	199906	199906	199906	199906	199906	199906	199906									
Station No	PKA07	PKA10	PKA13	PKA16	PKA19	PKA22	PKA27	PKA30	PKA29	PKA26										
Latitude:N	40- 0.1	40- 0.1	39-59.1	39-59.8	39-59.1	39-59.1	40- 0.1	39-59.9	40-29.1	40-29.1										
Longitude:E	142-59.1	143-39.9	144-19.8	144-59.9	145-29.9	145-59.9	146-29.1	146-59.1	147- 0.0	146-30.1										
Date	1999/06/01	1999/06/02	1999/06/02	1999/06/02	1999/06/02	1999/06/02	1999/06/02	1999/06/02	1999/06/02	1999/06/02										
Time(JST)	21:21	00:28	03:55	07:32	10:04	12:22	14:31	16:38	19:29	21:47										
Weather	F	C	C	C	F	F	F	C		F										
Air Temp.	13.8	14.1	13.8	14.0	14.1	12.6	11.1	12.8	9.6	10.6										
Bar	1012.0	1008.5	1006.5	1005.7	1006.7	1006.2	1006.5	1006.5	1008.9	1010.0										
Wind Dir	N	NNE	NNE	NNW	NNW	NNW	WNW	NW	WNW	W										
Wind Spd/F	F 2	F 4	F 4	F 4	F 4	F 4	F 3	F 5	F 3	F 3										
Transparency				8	11	8	6	7												
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD									
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S								
0m	13.9	33.707	14.2	34.177	14.1	34.228	14.4	34.218	14.5	33.869	11.3	33.369	8.7	32.985	15.1	34.308	7.4	32.910	9.9	33.023
10m	11.79	33.772	13.85	34.216	13.67	34.277	14.02	34.257	13.88	33.888	10.72	33.410	5.88	33.027	14.83	34.347	5.91	33.002	8.61	33.083
20m	10.14	33.646	12.96	34.244	12.89	34.283	13.10	34.268	12.32	33.901	9.40	33.543	5.01	33.017	14.78	34.351	5.41	33.042	6.69	33.122
30m	9.50	33.580	12.70	34.260	12.78	34.279	12.94	34.266	11.82	33.948	9.06	33.517	4.59	33.008	13.58	34.386	4.37	33.051	6.29	33.126
50m	8.99	33.873	11.13	34.258	12.63	34.277	12.50	34.276	9.87	34.028	8.50	33.852	4.07	33.118	11.34	34.300	2.57	33.184	3.79	33.176
75m	7.60	33.836	11.03	34.325	11.47	34.331	11.13	34.259	9.14	34.024	7.55	33.816	3.91	33.350	10.18	34.196	2.34	33.241	2.30	33.207
100m	6.21	33.656	10.92	34.318	11.23	34.351	10.96	34.305	8.15	33.908	6.63	33.720	1.66	33.186	9.06	34.070	1.77	33.216	2.34	33.241
125m	5.85	33.624	10.76	34.294	11.20	34.347	10.84	34.305	7.11	33.777	5.39	33.578	1.76	33.232	7.62	33.931	1.61	33.223	2.37	33.259
150m	5.82	33.622	10.60	34.274	11.16	34.345	10.65	34.279	6.45	33.690	5.17	33.569	2.29	33.321	6.31	33.774	2.18	33.322	2.40	33.307
200m	4.97	33.551	10.10	34.191	11.06	34.332	10.29	34.226	5.63	33.593	4.34	33.529	2.38	33.430	5.62	33.747	2.40	33.463	3.11	33.532
250m	3.92	33.452	8.75	33.989	10.96	34.321	9.57	34.111	5.05	33.558	3.01	33.424	2.90	33.584	4.65	33.728	2.62	33.601	3.26	33.677
300m	3.92	33.512	7.07	33.767	10.74	34.290			4.71	33.576	2.06	33.406	2.97	33.682	5.07	33.877	3.30	33.786	2.80	33.701
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-14

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	PKA21		PKA18		PKA15		PKA12		PKA09		PKA06		PK24		P36		PK16		P27	
Latitude:N	40-30.0		40-29.9		40-29.8		40-30.0		40-30.0		40-30.1		41- 0.1		41- 0.1		41- 0.1		41- 0.0	
Longitude:E	146- 0.1		145-30.1		144-59.8		144-20.0		143-40.1		143- 0.1		143-30.1		144- 0.0		144-30.0		145- 0.0	
Date	1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/03	
Time(JST)	00:05		02:22		04:46		07:50		10:55		13:55		17:04		19:06		21:14		23:15	
Weather	F		C		BC		C		BC		B		BC		BC		B		B	
Air Temp.	12.0		14.5		15.5		15.0		17.2		18.2		17.2		16.5		16.2		15.0	
Bar	1010.5		1010.0		1009.0		1010.4		1010.0		1010.0		1009.5		1010.5		1011.2		1010.5	
Wind Dir	WSW		SSW		S		SW		W		WNW		WSW		WSW		SW		W	
Wind Spd/F	F 3		F 3		F 3		F 2		F 2		F 2		F 2		F 3		F 4		F 4	
Transparency					9		7		12		13		13							
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	11.2	33.178	14.6	34.232	14.7	34.264	14.7	34.260	15.7	34.224	16.4	33.859	14.2	33.336	15.4	33.489	15.1	33.667	13.5	33.280
10m	10.80	33.181	14.29	34.263	14.33	34.297	14.32	34.300	14.05	34.269	14.78	33.885	13.04	33.451	15.21	33.897	14.56	33.812	13.04	33.308
20m	11.38	33.761	13.07	34.264	13.07	34.303	12.89	34.306	13.45	34.277	11.27	33.679	11.84	33.636	14.18	33.929	12.52	33.826	10.87	33.322
30m	10.59	33.736	12.65	34.252	12.69	34.302	12.43	34.316	12.89	34.278	9.70	33.705	10.89	33.803	11.54	33.654	11.45	33.784	9.88	33.402
50m	6.68	33.541	12.18	34.260	12.43	34.306	12.15	34.321	11.91	34.274	8.51	33.816	7.44	33.722	11.18	34.015	10.93	34.090	7.55	33.583
75m	5.45	33.542	11.10	34.259	11.42	34.345	11.46	34.349	11.17	34.336	7.66	33.848	6.17	33.654	8.76	33.950	9.29	33.993	6.36	33.635
100m	4.57	33.455	10.74	34.290	11.26	34.353	11.29	34.365	11.10	34.338	6.66	33.746	5.45	33.567	7.65	33.854	7.92	33.883	5.56	33.582
125m	3.90	33.406	10.47	34.250	11.23	34.350	11.29	34.359	11.03	34.329	5.43	33.584	5.13	33.558	6.81	33.763	6.17	33.653	5.35	33.583
150m	3.22	33.346	9.89	34.164	11.20	34.348	11.28	34.356	10.95	34.320	5.14	33.563	4.22	33.465	6.22	33.688	5.72	33.608	4.07	33.455
200m	2.87	33.350	8.36	33.939	11.15	34.342	11.27	34.353	10.73	34.291	4.07	33.471	3.93	33.462	5.13	33.581	4.83	33.528	4.34	33.536
250m	2.90	33.424	6.82	33.735	11.04	34.329	11.25	34.352	10.34	34.233	4.48	33.566	3.54	33.478	3.67	33.434	3.77	33.430	3.95	33.548
300m	3.52	33.590	5.92	33.636	10.90	34.311	11.22	34.348	9.41	34.086	4.67	33.667	4.45	33.716	5.31	33.711	4.12	33.514	4.48	33.700
400m													3.19	33.706	3.99	33.700	2.95	33.539	3.71	33.758
500m													4.03	33.988	3.83	33.850	3.39	33.751	3.68	33.912
600m													3.79	34.082	3.75	34.017	3.55	33.939	3.65	34.046
700m																				
800m																				
900m																				
1000m																				

Table 5-15

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	PK07		P18		PKA25		PKA28		PKA24		P17		PK06		P26		PK15		PK14	
Latitude:N	41- 0.1		41- 0.0		40-59.1		41- 0.0		41-29.9		41-29.9		41-29.1		41-29.9		41-29.1		41-59.9	
Longitude:E	145-29.9		145-59.9		146-30.0		146-59.9		146-30.0		145-59.9		145-30.0		145- 0.0		144-30.1		144-30.0	
Date	1999/06/04		1999/06/04		1999/06/04		1999/06/04		1999/06/04		1999/06/04		1999/06/04		1999/06/04		1999/06/04		1999/06/04	
Time(JST)	01:18		03:31		05:48		08:09		11:34		13:45		16:03		18:20		20:31		23:21	
Weather	BC		BC		F		F		C		C		C		C		C		F	
Air Temp.	14.6		13.1		9.6		8.8		12.1		13.1		12.8		13.3		12.3		9.1	
Bar	1011.5		1011.5		1012.2		1013.0		1013.5		1012.9		1013.0		1012.5		1013.0		1013.0	
Wind Dir	WNW		WNW		NNW		NE		E		E		SE		ESE		E		E	
Wind Spd/F	F 3		F 2		F 2		F 2		F 3		F 3		F 3		F 3		F 2		F 3	
Transparency					7		11		11		9		11		8					
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	15.5	33.958	12.2	33.588	8.7	32.660	8.5	32.913	13.2	33.616	11.7	33.404	14.5	33.795	13.4	33.269	11.1	32.923	8.1	32.825
10m	15.06	33.974	11.82	33.641	7.49	32.742	7.46	32.952	12.45	33.660	10.89	33.423	14.21	33.820	12.38	33.401	9.74	32.888	5.35	32.869
20m	12.75	33.805	10.09	33.535	5.60	33.007	5.57	33.001	10.06	33.561	9.03	33.415	11.71	33.707	10.29	33.361	10.64	33.742	3.72	32.906
30m	11.18	33.684	8.46	33.468	4.16	33.226	4.88	33.005	8.96	33.854	7.73	33.475	11.01	33.869	9.23	33.471	5.71	33.232	3.21	32.923
50m	9.04	33.775	7.92	33.835	4.61	33.444	3.73	33.038	7.89	33.860	5.86	33.601	8.64	33.811	7.41	33.610	3.83	33.315	1.43	33.034
75m	7.36	33.737	6.70	33.715	3.74	33.396	1.85	33.119	6.83	33.742	5.58	33.585	7.47	33.807	6.31	33.652	3.66	33.352	0.74	33.108
100m	6.12	33.646	5.65	33.592	3.25	33.371	1.49	33.150	5.86	33.623	5.03	33.533	5.91	33.639	5.20	33.544	3.09	33.321	0.59	33.123
125m	5.91	33.631	5.04	33.527	3.28	33.401	1.70	33.215	5.59	33.618	4.21	33.466	5.58	33.624	5.00	33.560	3.04	33.325	0.78	33.183
150m	5.37	33.565	4.65	33.494	4.18	33.590	1.69	33.243	4.92	33.561	3.41	33.404	4.89	33.566	5.01	33.598	2.97	33.345	1.17	33.248
200m	4.29	33.483	3.73	33.436	2.03	33.425	2.37	33.478	4.52	33.587	2.47	33.380	5.10	33.638	4.49	33.634	2.63	33.351	1.47	33.330
250m	4.33	33.543	3.40	33.455	1.86	33.453	2.86	33.680	2.88	33.479	1.81	33.363	4.31	33.608	4.35	33.719	3.11	33.501	1.92	33.439
300m	3.75	33.529	3.47	33.542	2.00	33.529	3.58	33.841	2.53	33.524	1.91	33.410	3.66	33.592	3.51	33.728	3.35	33.660	2.03	33.515
400m	3.41	33.636	3.56	33.701					2.15	33.497	3.65	33.769	3.62	33.914	3.58	33.882	2.83	33.753		
500m	3.69	33.843	3.55	33.860					2.49	33.614	3.65	33.946	3.63	34.052	3.72	34.048	3.08	33.941		
600m	3.75	34.020	3.50	34.003					3.45	33.838	3.77	34.100	3.65	34.159	3.57	34.158	3.24	34.078		
700m																				
800m																				
900m																				
1000m																				

Table 5-16

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	P25		PK05		P16		P15		P14		P13		P12		P11		PK01		PK02	
Latitude:N	42- 0.1		41-59.1		42- 0.7		42-14.9		42-29.9		42-44.9		42-54.9		43- 4.9		42-55.0		42-44.1	
Longitude:E	144-59.9		145-29.9		145-59.9		145-59.9		145-59.9		145-54.9		145-49.9		145-45.1		145-29.9		145-29.8	
Date	1999/06/05		1999/06/05		1999/06/05		1999/06/05		1999/06/05		1999/06/05		1999/06/05		1999/06/05		1999/06/05		1999/06/05	
Time(JST)	01:37		03:48		06:12		07:45		09:31		11:17		12:34		13:47		15:11		16:14	
Weather	F		F		F		F		F		F		C		C		F		F	
Air Temp.	8.5		8.8		8.8		9.3		9.3		8.1		9.1		9.3		8.6		8.6	
Bar	1013.0		1014.0		1015.2		1015.4		1015.5		1015.5		1016.0		1015.5		1015.5		1015.2	
Wind Dir	ESE		SE		SE		SE		SE		SE		SSE		S		SE		SE	
Wind Spd/F	F 2		F 2		F 3		F 4		F 2		F 3		F 3		F 2		F 1		F 2	
Transparency					8		7		8		5		4		5		4		5	
Depth															105		154			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	7.8	32.912	8.4	32.902	8.4	32.935	8.3	32.920	7.2	32.798	7.0	32.926	7.8	32.845	7.3	32.824	6.7	32.825	7.9	32.854
10m	6.53	32.919	7.75	32.981	7.51	32.937	7.74	32.972	5.20	32.783	5.89	32.902	6.75	32.878	4.53	32.890	5.68	32.873	7.39	32.899
20m	4.01	32.911	4.14	32.981	4.84	33.027	5.82	33.025	2.23	32.819	3.64	32.947	4.03	32.938	3.51	32.924	4.39	32.901	3.74	32.947
30m	3.57	32.904	3.65	32.970	4.34	33.042	4.60	33.018	1.88	32.864	2.48	33.020	3.64	32.929	2.90	32.951	3.62	32.904	3.55	32.922
50m	2.39	32.974	1.12	33.054	3.02	33.058	3.85	33.040	0.29	32.918	1.25	33.071	3.06	32.965	1.26	32.935	2.19	33.027	2.32	33.009
75m	0.80	33.086	0.79	33.121	1.29	33.096	1.70	33.136	0.56	33.068	1.40	33.201	1.16	33.121	1.16	32.982	1.16	33.132	0.87	33.102
100m	0.73	33.119	0.81	33.167	1.21	33.132	1.64	33.179	0.86	33.136	3.22	33.418	0.66	33.120	1.28	33.060	1.15	33.181	0.93	33.157
125m	0.73	33.153	0.98	33.234	1.34	33.182	1.64	33.213	0.69	33.178	3.80	33.513	0.77	33.169			1.18	33.205	1.18	33.213
150m	0.98	33.196	1.14	33.276	1.24	33.238	1.70	33.263	1.04	33.255	2.90	33.447	1.55	33.271					1.08	33.236
200m	2.02	33.406	1.55	33.380	2.23	33.503	2.64	33.568	1.71	33.413	1.55	33.361	1.91	33.354					1.95	33.364
250m	2.40	33.564	1.94	33.481	2.79	33.660	3.00	33.728	2.82	33.646	1.69	33.425	1.93	33.407					1.95	33.420
300m	2.40	33.640	2.25	33.580	3.14	33.792	3.13	33.851	3.12	33.785	2.17	33.533	1.82	33.448					2.09	33.484
400m	2.86	33.825	3.00	33.848	3.27	33.971	3.28	34.023	3.28	33.955	2.86	33.758	2.33	33.613					2.42	33.636
500m	3.26	34.004	3.27	34.030	3.23	34.097	3.19	34.136	3.31	34.081	3.17	33.944	3.08	33.838					2.98	33.863
600m	3.29	34.136	3.18	34.115	3.14	34.197	3.17	34.233	3.24	34.164	3.28	34.080	3.27	33.999					3.33	34.059
700m																				
800m																				
900m																				
1000m																				

Table 5-17

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	PK03		PK04		P24		PK13		PK12		P23		P22		P21		PK11		IK01	
Latitude:N	42-30.0		42-15.1		42-14.1		42-14.9		42-29.1		42-29.9		42-44.9		42-54.9		42-45.1		41-40.1	
Longitude:E	145-29.8		145-29.1		145- 0.1		144-30.1		144-30.0		144-59.1		144-59.1		145- 0.0		144-30.0		144- 0.7	
Date	1999/06/05		1999/06/05		1999/06/05		1999/06/06		1999/06/06		1999/06/06		1999/06/06		1999/06/06		1999/06/06		1999/06/10	
Time(JST)	18:10		20:02		22:31		00:58		02:46		05:15		07:12		08:24		10:34		18:05	
Weather	F		R		F		F		C		C		C		C		BC		BC	
Air Temp.	9.3		9.6		10.3		9.3		9.0		8.1		8.3		9.1		12.3		11.3	
Bar	1016.0		1016.5		1016.2		1015.5		1016.0		1016.4		1016.7		1016.5		1016.5		1013.0	
Wind Dir	S		S		SSW		NE		NE		ENE		NE		NE		S		SW	
Wind Spd/F	F 2		F 3		F 2		F 3		F 3		F 3		F 4		F 2		F 1		F 4	
Transparency	5										5		7		5		7		7	
Depth													170		66		131			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	7.6	32.884	7.9	32.825	9.3	32.814	8.4	32.779	8.7	32.784	7.0	32.830	7.4	32.804	7.4	32.327	8.2	32.418	9.1	32.85*
10m	4.66	32.945	4.99	32.889	5.00	32.930	7.60	32.840	6.78	32.996	4.13	32.942	5.08	32.866	5.93	32.376	6.49	32.598	8.55	32.843
20m	3.38	32.951	2.76	32.915	3.50	32.915	6.88	33.082	5.44	32.946	3.47	32.933	4.35	32.971	3.16	32.575	2.80	32.783	3.66	32.941
30m	2.81	32.958	2.25	32.942	2.57	32.947	5.57	33.122	3.68	32.908	3.32	32.942	3.36	32.995	3.02	32.667	2.69	32.870	2.74	32.974
50m	1.42	33.038	0.91	33.046	0.88	33.081	4.39	33.272	5.27	33.318	0.89	33.073	1.24	33.086	2.81	32.869	1.83	32.942	1.46	33.021
75m	0.79	33.151	0.86	33.138	0.74	33.130	4.88	33.475	4.63	33.340	1.06	33.118	1.01	33.190			1.50	33.022	0.69	33.094
100m	0.79	33.190	0.84	33.179	0.76	33.174	4.66	33.483	3.11	33.243	0.37	33.117	1.16	33.232			1.91	33.201	0.61	33.130
125m	1.43	33.278	0.86	33.214	0.97	33.237	3.52	33.388	2.48	33.222	0.83	33.191	1.20	33.247					0.70	33.157
150m	1.66	33.325	1.17	33.266	1.14	33.270	2.62	33.335	2.43	33.255	1.23	33.247	1.18	33.252					1.04	33.213
200m	1.50	33.367	1.63	33.394	1.70	33.379	2.61	33.427	3.30	33.430	1.56	33.331							1.51	33.302
250m	1.80	33.441	2.01	33.501	1.81	33.452	3.32	33.579	3.22	33.553	1.86	33.429							1.48	33.356
300m	2.16	33.562	2.51	33.637	1.95	33.520	3.01	33.629	3.27	33.732	1.94	33.486							1.89	33.461
400m	2.88	33.772	3.02	33.875	2.70	33.742	3.08	33.761	3.50	33.871	2.44	33.698								
500m	3.17	33.952	3.35	34.075	2.86	33.915	3.09	33.877	3.50	33.965	2.97	33.903								
600m	3.14	34.066	3.17	34.166	3.18	34.071	3.64	34.060	3.72	34.096	3.13	34.042								
700m																				
800m																				
900m																				
1000m																				

Table 5-18

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906			
Station No	IK02		IK03		IK04		IK05		IK06		IK07		IK08		IK09		IK10		IK11			
Latitude:N	41-20.2		41- 1.7		41- 0.2		41- 0.0		40-59.1		41- 0.0		41-19.9		41-40.1		41-39.1		41-40.1			
Longitude:E	144- 0.2		144- 0.8		144-30.6		145- 0.0		145-30.0		145-59.8		146- 0.2		146- 0.1		145-30.2		144-59.9			
Date	1999/06/11		1999/06/11		1999/06/12		1999/06/12		1999/06/13		1999/06/13		1999/06/14		1999/06/14		1999/06/15		1999/06/15			
Time(JST)	05:38		17:57		05:27		18:42		05:00		18:00		14:35		17:57		06:34		17:59			
Weather	BC		BC		BC		BC		BC		BC		C		C		F		F			
Air Temp.	15.6		17.5		16.2		16.6		15.1		16.2		16.3		14.8		11.5		12.8			
Bar	1013.2		1011.9		1010.7		1010.5		1010.5		1009.0		1007.2		1008.5		1008.5		1005.5			
Wind Dir	SSW		SSW		S		SW		SSW		SW		SW		NNW		SW		SSW			
Wind Spd/F	F 4		F 4		F 4		F 3		F 4		F 4		F 5		F 2		F 3		F 3			
Transparency	14		9		11		10		12		13		13		15		13		10			
Depth																						
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S		
0m	14.3	33.91*	15.4	34.17*	15.2	34.23*	15.9	34.17*	13.7	33.21*	14.9	33.36*	14.1	33.42*	13.9	33.25*	9.2	32.81*	8.7	32.77*		
10m	13.85	33.910	14.76	34.173	14.74	34.234	14.80	34.147	13.09	33.285	13.83	33.489	13.34	33.421	13.41	33.252	8.31	32.814	7.24	32.779		
20m	12.08	33.781	13.91	34.172	14.12	34.242	14.37	34.159	12.94	33.455	12.68	33.624	12.63	33.437	10.47	33.469	5.13	32.923	6.39	32.783		
30m	10.50	33.714	12.73	34.180	12.91	34.278	12.86	34.234	10.72	33.717	9.50	33.746	10.07	33.536	8.82	33.607	3.02	32.909	2.63	32.898		
50m	9.46	34.004	12.10	34.256	12.01	34.274	11.36	34.228	8.00	33.759	7.52	33.752	6.92	33.585	6.83	33.714	2.40	32.959	1.71	32.898		
75m	8.36	33.934	10.96	34.297	11.18	34.287	10.63	34.250	7.13	33.761	6.01	33.631	5.42	33.535	5.72	33.597	1.27	33.079	0.78	33.053		
100m	7.17	33.781	10.83	34.302	11.01	34.311	10.54	34.262	6.32	33.669	5.37	33.568	4.37	33.458	5.20	33.555	1.10	33.113	0.73	33.111		
125m	6.46	33.692	10.55	34.264	10.96	34.319	10.01	34.173	5.48	33.583	4.77	33.540	3.56	33.391	4.34	33.472	1.01	33.146	0.49	33.155		
150m	6.07	33.643	10.23	34.214	10.82	34.302	9.09	34.043	4.50	33.500	4.29	33.503	4.15	33.483	4.09	33.474	1.15	33.215	0.92	33.229		
200m	5.58	33.617	8.55	33.962	10.59	34.269	7.37	33.804	4.01	33.493	4.04	33.554	4.31	33.562	3.91	33.549	2.42	33.506	1.27	33.321		
250m	4.62	33.554	6.71	33.717	9.99	34.176	6.17	33.650	4.83	33.677	3.58	33.598	4.07	33.635	3.57	33.636	2.83	33.677	1.47	33.396		
300m	4.98	33.677	5.92	33.629	8.79	33.996	5.51	33.589	3.84	33.649	3.52	33.667	3.66	33.683	3.72	33.745	3.12	33.819	1.62	33.450		
400m																						
500m																						
600m																						
700m																						
800m																						
900m																						
1000m																						

Table 5-19



Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906			
Station No	IK12		IK13		IW01		IW02		IW03		IW04		IW05		IW06		IW09		IW10			
Latitude:N	42- 0.0		42-20.0		41-51.7		41-35.0		41-19.6		40-54.1		40-30.6		40-20.0		40- 9.4		40-29.8			
Longitude:E	145- 0.1		144-59.1		144-20.4		143-45.0		143-10.8		142-50.0		142-30.5		143- 4.9		143-39.6		144- 9.6			
Date	1999/06/16		1999/06/16		1999/06/23		1999/06/24		1999/06/26		1999/06/27		1999/06/27		1999/06/28		1999/06/28		1999/06/29			
Time(JST)	05:04		18:08		17:35		09:30		17:34		09:18		17:31		08:35		17:10		09:25			
Weather	F		R		B		R		C		C		R		BC		C		C			
Air Temp.	11.3		12.0		18.7		14.0		16.8		18.6		17.7		17.6		17.0		15.3			
Bar	1001.0		997.0		1009.0		1004.0		1013.0		1013.4		1010.0		1012.0		1014.0		1020.0			
Wind Dir	S		SW		SSW		SSE		CALM		ESE		SSE		NNE		ENE		SE			
Wind Spd/F	F 4		F 4		F 4		F 4		F 0		F 2		F 3		F 5		F 3		F 3			
Transparency	14		13		12		8		8		11		13		15		12		13			
Depth																						
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	8.7	32.85*	9.2	32.75*	19.4	34.43*	10.9	32.43*	14.8	33.84*	18.6	34.39*	15.7	33.07*	21.0	34.64*	17.8	34.05*	17.8	34.17*		
10m	8.02	32.847	8.49	32.749	18.97	34.431	8.67	32.547	13.12	33.833	17.91	34.394	15.45	33.020	20.51	34.637	17.14	34.042	17.34	34.171		
20m	4.48	32.895	6.33	32.869	17.20	34.675	5.83	32.925	12.93	33.827	17.72	34.376	13.88	33.188	20.50	34.637	17.16	34.046	17.34	34.170		
30m	3.27	32.934	3.63	32.921	15.81	34.616	4.20	33.026	11.88	33.937	17.04	34.181	9.63	33.062	18.77	34.699	16.60	34.007	15.95	34.236		
50m	1.20	33.006	1.97	33.016	14.16	34.554	2.53	32.977	10.23	34.024	13.72	34.511	7.36	33.292	17.02	34.671	15.35	34.127	12.06	34.294		
75m	0.68	33.097	0.95	33.100	12.18	34.427	0.72	33.119	9.21	33.924	11.67	34.301	5.94	33.450	15.45	34.615	12.17	34.081	11.28	34.333		
100m	0.62	33.138	0.86	33.150	10.06	34.234	0.67	33.152	8.61	33.940	6.50	33.580	5.23	33.532	14.14	34.554	10.70	34.111	11.22	34.337		
125m	0.71	33.182	0.98	33.193	9.35	34.210	0.70	33.174	7.68	33.882	3.96	33.372	3.92	33.424	12.48	34.420	10.14	34.149	11.18	34.335		
150m	0.99	33.239	1.24	33.242	5.34	33.638	1.01	33.226	3.63	33.364	3.48	33.374	4.23	33.483	9.51	33.923	8.48	33.907	11.14	34.331		
200m	1.28	33.312	1.53	33.321	3.64	33.458	1.48	33.319	2.63	33.351	3.80	33.453	4.81	33.651	7.00	33.768	6.80	33.736	11.07	34.323		
250m	1.58	33.412	1.71	33.389	3.60	33.507	1.65	33.406	3.98	33.572	4.94	33.714	4.38	33.684	4.81	33.511	5.26	33.554	10.94	34.307		
300m	2.00	33.510	2.00	33.470	5.09	33.802	2.08	33.511	5.45	33.890	5.07	33.827	3.69	33.719	4.56	33.539	4.57	33.526	10.77	34.282		
400m																						
500m																						
600m																						
700m																						
800m																						
900m																						
1000m																						

Table 5-20

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199906	199906	199906	199906	199906	199907	199907	199907	199907	199907										
Station No	IW11	IW12	IW13	IW14	IW17	SM01	SM02	SM03	SM04	SM05										
Latitude:N	40–50.1	40–59.1	41–10.1	41–39.9	42– 9.9	45–30.6	45–59.1	46–29.9	46–30.0	46–29.1										
Longitude:E	144–40.7	145–19.9	146– 3.2	145–50.0	145–40.0	162–29.9	161–40.1	161– 0.8	160–20.2	159–31.3										
Date	1999/06/29	1999/06/30	1999/06/30	1999/06/30	1999/07/01	1999/07/12	1999/07/13	1999/07/13	1999/07/14	1999/07/14										
Time(JST)	17:34	11:43	17:28	22:14	07:18	17:34	10:26	17:25	07:50	17:25										
Weather	C	C	C	C	C	R	C	F	C	F										
Air Temp.	15.3	14.3	14.8	13.0	12.1	12.0	11.3	9.3	8.3	9.1										
Bar	1020.0	1018.0	1017.4	1017.7	1017.2	1019.4	1016.0	1014.0	1014.5	1014.5										
Wind Dir	SE	SE	SE	SE	ESE	SE	SW	WSW	NW	NW										
Wind Spd/F	F 3	F 5	F 6	F 5	F 6	F 3	F 3	F 3	F 3	F 2										
Transparency	18	8	7		10	16	17	14	20	16										
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.9	34.27*	14.8	33.32*	16.5	33.44*	11.4	32.86*	11.2	32.78*	10.9	32.85*	10.2	32.91*	9.1	32.82*	8.4	33.32*	9.2	33.21*
10m	17.56	34.267	11.41	33.027	16.05	33.440	10.60	32.862	10.56	32.784	7.96	32.954	8.51	32.858	8.15	32.865	7.57	32.870	8.47	32.866
20m	17.50	34.257	9.59	32.996	15.48	33.403	10.07	32.881	4.44	33.007	7.50	32.955	7.22	32.881	6.93	32.937	6.23	32.927	6.38	32.912
30m	13.10	34.213	8.91	33.059	8.61	33.316	8.65	32.797	3.05	33.007	6.42	32.982	6.77	32.892	6.51	32.940	5.95	32.926	6.18	32.910
50m	12.07	34.258	7.89	33.466	4.45	33.250	4.17	33.087	1.67	33.126	3.31	33.114	3.46	33.013	2.50	33.042	2.29	33.064	2.45	33.042
75m	11.24	34.301	1.65	33.064	4.25	33.402	2.35	33.150	1.35	33.143	3.33	33.296	1.69	33.077	1.37	33.088	1.24	33.101	1.09	33.110
100m	11.01	34.316	3.55	33.366	2.93	33.309	1.62	33.168	1.17	33.177	2.44	33.244	1.37	33.126	1.05	33.110	0.97	33.135	0.95	33.171
125m	10.90	34.301	3.16	33.345	3.16	33.364	2.14	33.238	1.41	33.259	3.03	33.359	1.45	33.191	1.35	33.229	2.01	33.421	2.34	33.531
150m	10.78	34.286	2.03	33.257	3.63	33.463	1.75	33.304	1.98	33.402	3.26	33.484	1.89	33.356	2.35	33.478	3.21	33.746	3.45	33.855
200m	10.38	34.227	3.78	33.541	3.33	33.551	2.41	33.582	2.45	33.578	3.28	33.651	3.31	33.794	3.28	33.827	3.52	33.952	3.52	33.976
250m	9.38	34.074	2.66	33.482	3.19	33.631	2.93	33.741	3.20	33.739	3.99	33.858	3.40	33.923	3.39	33.947	3.51	34.016	3.50	34.046
300m	7.55	33.817	2.02	33.509	3.29	33.729	3.10	33.855	3.27	33.839	3.61	33.892	3.43	34.000	3.42	34.013	3.47	34.083	3.46	34.102
400m											3.36	34.014	3.37	34.118	3.36	34.145	3.33	34.183	3.32	34.189
500m											3.33	34.129	3.26	34.206	3.22	34.220	3.18	34.252	3.17	34.256
600m											3.24	34.212	3.27	34.279	3.04	34.283	3.00	34.313	3.02	34.307
700m											3.20	34.285	2.99	34.311	2.89	34.336	2.85	34.357	2.88	34.348
800m											3.05	34.331	2.85	34.354	2.75	34.377	2.71	34.397	2.73	34.391
900m											2.84	34.375	2.74	34.391	2.65	34.424	2.57	34.431	2.60	34.424
1000m											2.71	34.411	2.60	34.426	2.50	34.449	2.45	34.459	2.48	34.453

Table 5–21

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199907	199907	199907	199907	199907	199907	199907	199907	199907	199907	199907									
Station No	SM06	SM07	SM08	SM09	SM10	SM11	SM12	SM13	SM14	SM15										
Latitude:N	46- 0.0	45-29.7	45- 0.1	44-30.2	43-59.1	43-30.3	43- 0.0	42-29.4	42- 0.0	41-30.1										
Longitude:E	159- 0.1	158-29.6	158- 0.1	157-29.2	156-30.2	155-31.1	154-30.1	153-29.8	152-30.1	151-30.1										
Date	1999/07/15	1999/07/15	1999/07/16	1999/07/16	1999/07/17	1999/07/17	1999/07/18	1999/07/18	1999/07/19	1999/07/19										
Time(JST)	08:25	17:26	08:34	17:26	10:17	16:29	11:32	17:32	10:33	16:47										
Weather	C	C	C	C	F	F	C	C	R	R										
Air Temp.	10.3	8.8	10.5	11.3	14.8	17.7	14.5	12.1	16.2	18.5										
Bar	1015.9	1016.7	1015.5	1012.5	1014.5	1007.0	1008.5	1010.5	1013.9	1007.0										
Wind Dir	N	NE	ESE	E	SSW	SW	NNW	N	ESE	E										
Wind Spd/F	F 3	F 3	F 4	F 4	F 2	F 4	F 3	F 3	F 4	F 5										
Transparency	14	13	15	14	16	9	10	15	13	12										
Depth	CTD		CTD		CTD		CTD		CTD		CTD									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD									
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S								
0m	9.7	32.85*	10.5	32.72*	11.0	32.65*	10.8	32.69*	13.4	32.57*	17.2	33.86*	17.8	33.62*	13.8	32.43*	18.0	32.92*	19.0	33.17*
10m	8.42	32.754	8.78	32.754	8.24	32.857	9.46	32.731	12.15	32.626	16.06	33.832	16.68	33.755	11.41	32.578	17.14	33.336	17.10	33.433
20m	6.63	32.891	7.03	32.871	6.18	32.884	7.91	32.832	9.26	32.801	13.23	34.056	14.14	33.979	7.43	32.785	15.31	33.752	15.88	33.605
30m	4.09	32.974	6.32	32.880	4.08	32.927	7.12	32.847	6.93	32.856	12.88	34.011	13.44	33.958	5.02	32.869	13.37	33.778	12.47	34.207
50m	1.78	33.062	3.42	32.987	2.00	33.011	3.93	32.911	3.22	33.003	10.90	33.997	12.42	34.077	2.72	32.933	3.68	33.077	10.70	34.199
75m	1.06	33.118	1.41	33.093	1.43	33.068	1.74	33.041	1.66	33.062	8.88	34.009	10.20	34.110	1.68	33.036	3.52	33.322	8.73	34.017
100m	0.96	33.153	1.36	33.184	1.13	33.136	1.28	33.083	1.22	33.099	8.32	33.955	8.71	33.998	1.24	33.104	3.04	33.320	7.22	33.841
125m	1.28	33.251	2.32	33.479	1.60	33.298	1.12	33.181	1.24	33.189	8.11	33.948	8.08	33.932	1.08	33.144	2.86	33.354	5.93	33.672
150m	2.31	33.502	3.27	33.784	2.75	33.607	3.00	33.679	1.87	33.341	7.97	33.953	7.60	33.882	1.25	33.234	3.75	33.496	4.10	33.481
200m	3.48	33.904	3.44	33.929	3.48	33.950	3.46	33.927	2.85	33.671	7.83	33.939	6.10	33.703	2.05	33.503	3.96	33.638	4.35	33.608
250m	3.49	33.995	3.43	34.017	3.44	34.021	3.48	34.025	3.28	33.846	7.25	33.863	5.50	33.711	2.68	33.685	3.08	33.641	5.04	33.819
300m	3.48	34.075	3.41	34.073	3.32	34.058	3.44	34.080	3.35	33.939	6.06	33.730	5.02	33.780	3.10	33.859	3.09	33.750	4.95	33.924
400m	3.35	34.172	3.30	34.168	3.29	34.182	3.31	34.175	3.32	34.089	5.25	33.833	4.48	33.922	3.24	34.001	3.82	34.029	4.10	33.983
500m	3.18	34.251	3.13	34.245	3.12	34.239	3.16	34.250	3.17	34.178	4.62	33.945	4.10	34.048	3.24	34.130	3.33	34.087	3.79	34.086
600m	3.01	34.310	2.97	34.304	3.04	34.295	3.01	34.308	3.07	34.257	4.05	34.056	3.81	34.154	3.17	34.204	3.35	34.189	3.32	34.143
700m	2.87	34.352	2.85	34.346	2.89	34.344	2.85	34.357	2.91	34.311	3.77	34.166	3.59	34.229	3.00	34.268	3.08	34.241	3.26	34.240
800m	2.73	34.392	2.74	34.383	2.72	34.392	2.73	34.392	2.81	34.348	3.59	34.241	3.40	34.294	2.87	34.320	3.03	34.309	3.05	34.293
900m	2.57	34.430	2.59	34.423	2.55	34.429	2.57	34.430	2.67	34.394	3.31	34.311	3.15	34.341	2.76	34.361	2.90	34.362	3.00	34.363
1000m	2.43	34.464	2.45	34.454	2.44	34.461	2.45	34.459	2.56	34.428	3.12	34.356	2.90	34.364	2.62	34.405	2.67	34.387	2.85	34.403

Table 5-22

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199907		199907		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	SM16		SM17		P21		PK01		P11		P12		P13		P14		P15		P16	
Latitude:N	41- 0.0		40-28.9		42-55.5		42-54.1		43- 4.1		42-55.1		42-45.1		42-29.1		42-15.1		41-59.1	
Longitude:E	150-30.2		149-30.2		144-59.8		145-29.9		145-44.9		145-50.1		145-54.9		145-59.9		145-59.1		146- 0.2	
Date	1999/07/20		1999/07/20		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/03	
Time(JST)	01:23		17:25		12:23		14:41		16:13		17:45		19:08		21:05		22:54		00:50	
Weather	R		BC		F		F		F		F		BC		F		F		F	
Air Temp.	19.2		18.6		17.2		17.3		16.7		17.3		18.1		19.2		20.7		20.5	
Bar	1004.4		1012.0		1013.0		1012.0		1012.0		1012.4		1013.0		1015.5		1016.5		1016.7	
Wind Dir	NNW		N		WNW		SSW		SSW		SW		WSW		SW		SW		SW	
Wind Spd/F	F 3		F 3		F 2		F 4		F 3		F 4		F 5		F 5		F 5		F 4	
Transparency			15		4		4		5		9									
Depth					58		155		103											
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.0	33.42*	21.4	33.84*	12.0	32.482	13.6	32.574	12.6	32.906	15.6	32.794	17.6	32.514	17.4	32.586	20.0	32.995	19.2	32.541
10m	19.72	33.618	21.93	33.842	9.77	32.619	11.79	32.693	10.94	33.032	14.31	32.852	16.79	32.570	16.48	32.641	19.19	33.048	18.27	32.594
20m	17.93	34.135	16.14	34.106	8.24	32.812	7.19	33.116	7.37	33.196	7.29	32.999	6.83	32.862	12.40	33.078	17.94	33.166	13.05	33.514
30m	17.08	34.105	14.24	34.340	7.99	33.052	5.39	33.156	7.65	33.404	5.30	32.933	4.14	33.008	4.97	33.107	7.74	33.102	6.47	33.105
50m	4.07	33.169	12.52	34.408	6.87	33.244	3.62	33.201	6.60	33.386	3.51	33.122	2.59	33.111	4.38	33.345	3.05	33.150	3.67	33.233
75m	4.81	33.473	11.57	34.356			3.22	33.239	6.44	33.381	3.41	33.255	1.00	33.129	2.66	33.278	3.55	33.370	2.27	33.238
100m	4.19	33.451	10.09	34.194			2.43	33.203			2.02	33.215	1.39	33.198	3.14	33.366	4.42	33.522	1.78	33.239
125m	2.78	33.312	7.87	33.897			2.65	33.247			2.54	33.304	2.36	33.333	2.67	33.348	3.90	33.479	3.20	33.429
150m	2.32	33.313	6.16	33.716							2.01	33.306	2.03	33.337	2.51	33.362	3.92	33.520	2.59	33.438
200m	3.57	33.547	3.80	33.439							1.76	33.371	1.97	33.372	2.84	33.503	2.80	33.491	1.61	33.438
250m	4.76	33.789	3.47	33.493							2.33	33.481	1.87	33.410	3.90	33.734	2.93	33.610	2.70	33.661
300m	4.64	33.879	3.48	33.579							2.75	33.627	2.05	33.483	2.31	33.635	3.90	33.819	2.66	33.743
400m	4.28	34.014	4.08	33.868							3.00	33.768	2.61	33.685	2.88	33.841	3.28	33.911	3.55	34.014
500m	3.96	34.106	3.66	33.988							3.28	33.929	2.91	33.879	3.08	34.014	3.42	34.068	3.47	34.130
600m	3.47	34.177	3.55	34.123							3.31	34.057	3.52	34.084	2.89	34.069	3.01	34.129	3.33	34.210
700m	3.12	34.231	3.47	34.219																
800m	3.08	34.291	3.29	34.295																
900m	3.03	34.360	2.95	34.327																
1000m	2.87	34.402	2.90	34.401																

Table 5-23

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	P17		P18		PK07		P27		PK16		P36		PK24		PK32		PK31		PK23	
Latitude:N	41-30.1		41- 0.0		40-59.8		40-59.1		41- 0.0		41- 0.0		41- 0.1		40-59.1		41-29.9		41-29.1	
Longitude:E	145-59.1		145-59.1		145-30.1		145- 0.1		144-30.1		144- 0.1		143-30.1		142-59.9		143- 0.0		143-29.9	
Date	1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/04		1999/08/04	
Time(JST)	04:14		07:10		09:56		12:39		15:37		18:30		21:19		23:57		03:20		05:39	
Weather	F		F		F		B		B		B		BC		C		BC		F	
Air Temp.	20.1		19.2		23.2		23.6		23.0		23.1		23.3		21.7		21.5		20.1	
Bar	1017.5		1018.5		1018.5		1017.7		1016.7		1016.5		1017.0		1016.4		1016.0		1016.2	
Wind Dir	SW		SSW		SSW		SSW		SSW		SSW		SW		SSW		S		SSW	
Wind Spd/F	F 4		F 3		F 4		F 4		F 5		F 4		F 3		F 3		F 2		F 5	
Transparency			7		16		16		19										11	
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.3	32.581	17.3	32.648	22.7	33.267	22.9	33.657	22.7	33.758	23.3	33.680	23.1	33.422	21.3	33.080	20.7	33.826	19.2	32.569
10m	17.72	32.651	15.70	32.701	21.73	33.310	21.99	33.702	21.90	33.810	21.81	33.848	22.25	33.500	19.63	33.575	18.21	33.983	17.02	32.974
20m	11.36	32.797	9.61	32.851	17.58	33.577	17.31	34.112	19.49	33.821	17.09	34.120	20.69	33.671	17.73	33.979	15.93	34.046	13.73	33.822
30m	4.84	33.064	4.47	32.956	13.80	33.750	15.65	34.160	15.84	34.223	15.01	34.205	16.64	34.049	16.60	33.988	15.14	34.068	11.87	33.763
50m	3.02	33.083	2.33	33.004	7.60	33.285	12.20	34.203	12.19	34.289	12.39	34.259	13.16	34.198	14.19	34.091	14.61	34.087	9.92	33.889
75m	1.51	33.142	1.46	33.115	7.25	33.607	11.11	34.250	11.25	34.326	11.30	34.275	11.29	34.143	11.10	33.686	13.15	34.119	8.79	33.883
100m	1.46	33.169	1.45	33.153	6.09	33.567	10.84	34.281	11.13	34.335	11.07	34.313	9.84	34.062	9.77	33.812	12.04	34.121	7.17	33.785
125m	1.68	33.249	1.64	33.221	5.88	33.634	10.62	34.263	11.09	34.330	10.96	34.311	8.72	33.959	9.19	33.854	11.66	34.116	5.67	33.658
150m	2.01	33.387	1.75	33.288	4.94	33.538	10.32	34.219	11.00	34.319	10.85	34.298	7.73	33.845	8.85	33.914	10.52	34.067	4.59	33.610
200m	2.66	33.610	2.08	33.443	4.35	33.522	9.25	34.052	10.85	34.299	10.52	34.251	6.07	33.654	6.47	33.710	9.42	34.002	3.94	33.632
250m	2.94	33.742	2.51	33.601	2.79	33.406	7.37	33.798	10.42	34.236	9.59	34.109	4.98	33.548	4.71	33.632	7.65	33.871	3.59	33.659
300m	3.20	33.865	2.83	33.730	2.66	33.462	6.14	33.645	9.46	34.090	7.73	33.846	4.32	33.521	3.68	33.580	5.18	33.661	3.63	33.731
400m	3.30	34.022	2.63	33.858	3.51	33.691	4.19	33.479	6.36	33.669	5.70	33.615	2.24	33.421	3.59	33.743	3.61	33.756	3.50	33.866
500m	3.33	34.144	3.24	34.059	3.87	33.912	3.65	33.578	4.98	33.582	4.89	33.635	3.38	33.687	3.62	33.894	3.59	33.926	3.58	33.998
600m	3.20	34.233	3.17	34.161	3.52	34.013	3.88	33.797	3.72	33.565	3.47	33.611	3.27	33.837	3.52	34.022	3.59	34.057	3.52	34.089
700m																				
800m																				
900m																				
1000m																				

Table 5-24

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	P35		PK15		P26		PK06		PK05		PK04		PK03		PK02		P22		P23	
Latitude:N	41-30.0		41-30.0		41-30.0		41-30.0		41-59.9		42-14.9		42-29.9		42-44.9		42-45.7		42-30.0	
Longitude:E	143-59.9		144-29.9		144-59.1		145-30.0		145-29.9		145-29.1		145-30.1		145-29.9		144-59.0		144-59.1	
Date	1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/05		1999/08/05	
Time(JST)	07:54		10:01		12:09		14:19		17:20		18:55		20:35		22:17		00:37		02:13	
Weather	F		F		F		F		F		F		F		F		F		F	
Air Temp.	20.7		22.5		23.6		23.1		21.7		20.8		18.7		18.3		18.0		19.6	
Bar	1017.2		1017.5		1017.5		1017.4		1017.0		1017.2		1017.5		1017.0		1017.0		1017.0	
Wind Dir	SW		SW		SW		SW		SW		SSW		CALM		SSW		SSE		S	
Wind Spd/F	F 4		F 5		F 4		F 3		F 3		F 2		F 0		F 2		F 3		F 1	
Transparency	10		12		11		12		13											
Depth																			148	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	20.0	33.003	20.6	33.084	21.2	33.103	20.5	32.513	21.5	32.574	19.2	32.382	18.2	32.358	16.2	32.709	15.7	32.393	19.4	32.498
10m	18.74	33.076	19.00	33.480	18.17	33.560	19.03	32.614	20.33	32.670	17.59	32.437	16.51	32.451	7.31	32.826	11.25	32.859	13.04	32.457
20m	15.26	33.778	16.42	33.797	14.68	33.571	11.97	32.741	18.99	33.026	11.11	33.207	11.31	33.270	3.40	32.937	6.88	33.184	6.47	32.871
30m	12.92	33.897	13.34	33.726	12.15	33.876	6.96	32.847	6.19	32.935	5.61	33.167	7.14	33.340	1.77	32.990	5.33	33.162	3.88	32.959
50m	11.38	34.070	10.67	33.839	9.87	33.938	2.56	32.995	2.51	33.073	5.14	33.413	2.58	33.140	1.22	33.035	4.81	33.314	2.22	33.021
75m	9.62	34.013	8.50	33.756	7.91	33.841	1.58	33.101	2.12	33.196	4.98	33.503	2.63	33.263	1.23	33.126	2.68	33.261	1.57	33.132
100m	8.97	33.974	7.96	33.816	6.18	33.682	1.37	33.143	1.60	33.173	2.23	33.257	2.43	33.286	0.88	33.151	2.57	33.288	1.39	33.188
125m	7.01	33.780	6.46	33.678	4.36	33.513	1.30	33.173	2.18	33.286	2.10	33.268	1.86	33.332	0.98	33.188	2.32	33.281	1.55	33.232
150m	5.94	33.670	4.65	33.505	3.89	33.476	1.80	33.284	1.90	33.321	2.52	33.359	1.81	33.315	1.23	33.231			1.47	33.275
200m	4.76	33.606	4.31	33.509	3.49	33.499	2.49	33.548	2.19	33.455	2.74	33.478	1.49	33.349	1.06	33.277			1.53	33.354
250m	3.79	33.592	3.24	33.470	3.05	33.510	2.89	33.700	2.79	33.634	2.83	33.606	1.79	33.458	1.27	33.345			1.81	33.438
300m	3.35	33.621	3.12	33.519	3.26	33.613	2.92	33.793	3.12	33.758	3.07	33.712	2.26	33.581	1.67	33.448			1.82	33.488
400m	3.20	33.761	3.32	33.710	3.56	33.795	3.33	33.989	3.18	33.910	3.33	33.931	2.68	33.771	2.56	33.682			2.40	33.684
500m	3.51	33.956	3.57	33.885	3.59	33.958	3.29	34.104	3.31	34.046	3.17	34.035	3.16	33.964	2.77	33.835			3.09	33.918
600m	3.84	34.124	3.50	34.010	3.43	34.066	3.35	34.201	3.28	34.154	3.22	34.147	3.13	34.083	3.20	34.026			3.30	34.077
700m																				
800m																				
900m																				
1000m																				

Table 5-25

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	P24		P25		PK14		PK13		PK12		PK11		P31		P32		P33		P34	
Latitude:N	42-15.0		42- 0.0		42- 0.0		42-14.9		42-29.9		42-44.1		42-45.0		42-30.1		42-15.0		42- 0.0	
Longitude:E	144-59.9		144-59.1		144-30.0		144-29.1		144-29.1		144-29.9		143-59.1		143-59.1		144- 0.0		144- 0.0	
Date	1999/08/05		1999/08/05		1999/08/05		1999/08/05		1999/08/05		1999/08/05		1999/08/05		1999/08/05		1999/08/05		1999/08/05	
Time(JST)	03:58		05:40		07:53		09:31		11:18		12:59		14:54		16:28		18:08		19:51	
Weather	F		F		F		F		F		F		F		F		F		F	
Air Temp.	19.6		20.1		20.3		19.7		19.8		19.7		18.0		18.3		18.8		20.5	
Bar	1016.5		1016.5		1016.4		1016.0		1015.0		1014.7		1014.0		1012.5		1012.5		1013.2	
Wind Dir	SSW		S		S		S		SSW		SSE		E		SSW		SSW		SSW	
Wind Spd/F	F 2		F 3		F 4		F 4		F 2		F 2		F 2		F 4		F 4		F 3	
Transparency			13		12		5		8		8		5		7					
Depth											130		64		487		930			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	18.7	32.523	19.8	32.523	19.8	32.363	16.6	32.362	16.5	32.633	16.2	32.457	17.6	32.274	15.5	32.725	16.2	32.264	19.0	32.180
10m	17.45	32.617	18.28	32.537	14.09	32.928	13.71	32.757	12.34	32.894	11.64	32.585	11.51	32.483	12.61	32.809	13.67	32.395	13.03	32.836
20m	7.06	32.891	8.48	33.214	5.69	33.427	8.20	33.191	8.01	32.799	9.72	32.993	9.44	32.929	8.07	33.030	11.52	32.879	9.36	33.004
30m	3.98	32.986	4.05	32.991	4.21	33.402	6.49	33.308	5.16	32.931	7.29	33.255	6.86	33.141	6.17	33.241	7.56	32.997	7.43	33.158
50m	1.53	33.010	2.51	33.084	3.38	33.360	3.90	33.230	2.33	33.064	5.27	33.309	6.54	33.112	2.87	33.124	5.04	33.295	5.70	33.352
75m	1.17	33.094	2.42	33.200	2.59	33.316	4.26	33.408	1.78	33.117	3.07	33.256			3.99	33.415	4.65	33.466	3.56	33.275
100m	1.54	33.204	1.79	33.210	1.70	33.267	4.11	33.433	1.53	33.178	2.34	33.264			3.63	33.388	3.86	33.451	3.18	33.286
125m	1.08	33.204	1.98	33.266	1.41	33.255	2.89	33.341	1.46	33.243					3.31	33.388	3.86	33.485	3.08	33.338
150m	2.19	33.345	2.43	33.358	1.47	33.285	2.75	33.366	1.45	33.263					3.19	33.399	3.59	33.480	2.93	33.351
200m	2.32	33.472	1.81	33.401	1.63	33.327	2.97	33.446	1.03	33.289					2.98	33.426	3.39	33.516	2.32	33.389
250m	2.74	33.581	2.31	33.533	2.11	33.419	3.13	33.532	1.62	33.409					2.62	33.440	3.20	33.570	3.66	33.622
300m	2.03	33.569	3.25	33.729	1.94	33.433	3.43	33.645	1.91	33.501					2.29	33.480	3.19	33.641	3.21	33.654
400m	2.79	33.786	3.51	33.924	2.21	33.542	3.21	33.756	2.27	33.661					2.96	33.730	3.38	33.821	3.79	33.894
500m	3.49	34.028	3.51	34.049	2.70	33.685	3.91	33.999	3.01	33.893							3.42	33.964	3.55	34.004
600m	3.47	34.128	3.39	34.156	3.30	33.944	3.22	34.031	3.31	34.061							3.46	34.096	3.34	34.086
700m																				
800m																				
900m																				
1000m																				

Table 5-26

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199909	
Station No	PK22		PK21		IK01		IK02		IK03		IK04		IK05		IK06		IK07		IW01	
Latitude:N	41-59.1		42-14.1		42-35.0		42-15.0		41-55.0		41-55.0		41-54.8		42-14.9		42-35.1		42-20.8	
Longitude:E	143-29.1		143-29.9		144- 0.0		143-59.1		143-59.9		144-29.1		145- 0.2		145- 0.0		145- 0.2		144- 0.0	
Date	1999/08/05		1999/08/05		1999/08/23		1999/08/24		1999/08/24		1999/08/25		1999/08/25		1999/08/26		1999/08/26		1999/08/31	
Time(JST)	22:10		23:40		18:03		05:42		17:52		14:26		18:06		05:50		17:47		17:29	
Weather	F		F		F		R		R		BC		BC		BC		BC		R	
Air Temp.	19.7		18.0		19.5		18.7		17.7		18.5		18.6		18.7		19.7		18.3	
Bar	1013.5		1012.0		1012.5		1014.5		1012.7		1010.0		1010.4		1012.5		1012.4		1010.5	
Wind Dir	CALM		S		NNE		NE		NE		NE		NE		NNE		SE		ENE	
Wind Spd/F	F 0		F 5		F 3		F 5		F 5		F 4		F 4		F 1		F 3		F 4	
Transparency																				
Depth	110		67		465															
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.4	32.418	13.5	31.880	18.8	33.21*	19.8	32.52*	19.1	32.54*	20.7	32.62*	22.3	32.65*	21.2	32.75*	21.0	32.86*	19.6	32.76*
10m	10.65	32.561	8.76	32.734	17.01	33.252	18.83	32.526	18.16	32.549	19.72	32.619	21.66	32.648	20.54	32.748	19.58	32.868	18.80	32.778
20m	9.35	32.648	6.64	32.997	12.54	33.439	11.33	33.157	9.27	33.059	8.66	33.174	13.56	32.927	8.55	33.321	10.48	33.474	16.11	32.929
30m	7.33	32.812	5.88	33.031	10.99	33.474	8.31	33.229	7.42	33.100	6.89	33.281	6.43	32.898	7.18	33.284	7.33	33.320	9.50	33.277
50m	5.10	33.019	5.36	33.046	9.22	33.392	5.00	33.178	5.65	33.344	2.97	33.080	2.86	33.000	4.45	33.295	5.57	33.318	7.22	33.394
75m	4.25	33.042			7.74	33.340	4.51	33.334	4.85	33.455	3.57	33.332	2.51	33.187	3.70	33.355	3.68	33.312	3.63	33.181
100m	3.26	33.091			5.96	33.298	4.07	33.426	4.01	33.410	2.59	33.288	1.64	33.171	2.86	33.303	2.77	33.280	4.62	33.441
125m					1.89	33.146	3.60	33.414	4.16	33.480	1.51	33.221	1.32	33.198	2.24	33.274	1.18	33.189	3.21	33.368
150m					1.01	33.113	3.24	33.416	3.27	33.423	2.19	33.310	1.39	33.244	2.59	33.341	1.33	33.232	3.27	33.415
200m					1.73	33.291	3.41	33.489	2.94	33.464	1.70	33.343	1.72	33.366	1.72	33.328	1.94	33.346	3.27	33.490
250m					2.09	33.387	3.01	33.512	3.10	33.565	1.86	33.422	2.26	33.533	1.78	33.409	1.57	33.376	3.10	33.551
300m					1.96	33.466	3.19	33.616	3.11	33.650	2.10	33.501	2.95	33.683	2.52	33.575	1.88	33.457	3.23	33.649
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-27



Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909		
Station No	IW02		IW03		IW04		IW05		IW06		IW07		IW08		IW09		IW10		IW11		
Latitude:N	41-55.0		41-29.2		41-44.1		41-59.7		41-30.0		40-59.1		41- 0.0		41- 0.8		41-24.9		41-40.5		
Longitude:E	143-35.1		143-10.4		142-35.1		142- 0.5		142- 9.9		142-19.8		142-59.9		143-42.7		144- 4.9		144-37.3		
Date	1999/09/01		1999/09/01		1999/09/02		1999/09/02		1999/09/03		1999/09/03		1999/09/04		1999/09/04		1999/09/05		1999/09/05		
Time(JST)	09:29		17:28		09:44		17:28		10:04		17:32		11:28		22:10		10:01		20:05		
Weather	C		C		BC		BC		B		B		B		B		B		BC		
Air Temp.	17.8		22.1		23.0		22.5		22.2		23.7		26.5		23.0		24.3		23.0		
Bar	1007.9		1009.2		1014.5		1016.2		1022.0		1020.7		1019.5		1018.2		1016.7		1015.0		
Wind Dir	NNE		W		NNW		NW		N		S		W		WSW		SW		SW		
Wind Spd/F	F 3		F 4		F 4		F 3		F 2		F 3		F 3		F 4		F 4		F 5		
Transparency																					
Depth	143																				
Equipment	CTD																				
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	19.3	32.66*	22.9	33.03*	22.7	33.56*	22.2	33.53*	24.3	33.88*	24.0	33.89*	24.0	33.36*	24.0	33.83*	23.9	33.12*	23.4	33.40*	
10m	18.52	32.666	21.98	33.033	21.58	33.621	20.97	33.629	23.13	33.891	22.32	33.949	22.75	33.383	22.55	33.811	21.99	33.145	22.48	33.398	
20m	15.57	32.976	16.07	33.625	16.00	34.243	16.14	34.037	22.66	33.935	21.16	34.035	22.15	33.287	20.60	33.907	19.33	33.426	22.05	33.755	
30m	11.08	33.025	12.08	33.593	14.20	34.168	13.53	34.070	21.33	34.016	20.10	34.109	12.14	33.361	17.28	34.008	17.11	34.071	14.61	33.401	
50m	8.33	33.511	7.21	33.346	12.43	34.182	11.91	34.072	18.14	34.102	17.18	34.205	6.80	33.408	15.10	34.054	14.09	34.046	8.98	33.354	
75m	5.36	33.296	4.87	33.360	10.90	34.054	10.86	34.080	13.45	34.231	15.40	34.228	3.89	33.261	12.55	34.164	12.07	34.098	6.62	33.409	
100m	2.70	33.215	4.98	33.495	9.70	34.008	9.52	33.992	11.86	34.191	14.28	34.223	3.26	33.326	10.98	34.063	8.68	33.590	3.14	33.220	
125m	1.59	33.184	2.89	33.312	7.88	33.828	7.28	33.757	11.81	34.191	13.10	34.200	3.48	33.391	10.22	34.070	9.15	33.904	4.54	33.450	
150m			2.87	33.342	6.42	33.689	5.91	33.631	11.45	34.141	11.79	34.135	2.61	33.319	10.74	34.272	6.61	33.660	3.99	33.425	
200m			2.68	33.412	3.47	33.399	4.27	33.503	5.97	33.641	7.44	33.739	2.21	33.373	9.14	34.016	4.85	33.566	3.33	33.418	
250m			3.21	33.555	3.33	33.469	3.42	33.505	4.02	33.463	4.11	33.471	2.44	33.491	7.36	33.797	2.60	33.360	3.19	33.501	
300m			2.66	33.593	2.78	33.470	2.69	33.475	2.95	33.449	3.38	33.482	2.66	33.603	5.89	33.653	2.63	33.429	2.85	33.558	
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 5-28

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199909	199909	199909	199909	199909	199909	199909	199909	199909	199909	199909
Station No	IW12	IW13	IW14	IW15	SM01	SM02	SM03	SM04	SM05	SM06	
Latitude:N	41-55.0	42- 1.1	42-15.3	42-24.7	42-25.5	42-30.0	42-30.4	42-10.1	41-50.3	41-25.1	
Longitude:E	145- 9.9	145-50.2	145-24.8	145- 0.2	144-21.1	145- 4.9	145-47.3	145-59.1	146-18.9	146-29.1	
Date	1999/09/06	1999/09/06	1999/09/07	1999/09/07	1999/09/16	1999/09/17	1999/09/17	1999/09/18	1999/09/18	1999/09/19	
Time(JST)	11:07	17:30	08:23	17:28	17:26	10:22	17:28	07:52	17:30	08:16	
Weather	BC	BC	C	C	BC	BC	BC	C	BC	C	
Air Temp.	22.7	22.7	21.8	20.7	18.6	19.5	19.1	19.6	19.7	20.5	
Bar	1015.0	1015.0	1016.5	1013.5	1018.0	1019.5	1019.0	1022.5	1022.9	1021.9	
Wind Dir	S	SSW	SSE	SSE	SE	WNW	SW	NNE	CALM	E	
Wind Spd/F	F 4	F 4	F 3	F 4	F 2	F 3	F 3	F 2	F 0	F 1	
Transparency						20		14		20	
Depth											
Equipment	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD
STND. Dep	T S	T S	T S	T S	T S	T S	T S	T S	T S	T S	T S
0m	20.7 32.61*	22.4 32.70*	21.0 32.69*	19.5 32.68*	18.8 32.93*	20.6 32.75*	20.4 32.61*	20.4 32.65*	21.6 32.62*	21.5 32.90*	
10m	19.45 32.610	21.21 32.697	19.95 32.693	17.21 32.704	17.08 33.317	20.00 32.763	19.86 32.604	19.96 32.652	21.11 32.624	21.02 32.899	
20m	10.33 32.735	20.64 32.675	17.74 32.768	6.91 33.020	15.83 33.184	13.80 32.734	17.79 32.612	16.94 33.450	13.13 33.077	15.45 33.204	
30m	4.91 32.941	10.34 33.143	5.18 32.947	3.75 33.133	7.46 32.996	5.65 33.147	7.84 32.961	10.90 33.676	6.89 33.036	8.24 33.114	
50m	2.25 32.995	6.24 33.320	2.13 33.048	2.98 33.256	7.46 33.251	2.89 33.039	3.37 33.070	8.90 33.730	3.08 33.112	3.09 33.095	
75m	1.58 33.112	2.71 33.221	1.35 33.099	2.35 33.235	3.84 33.188	3.02 33.248	1.65 33.103	2.20 33.104	1.60 33.132	2.81 33.266	
100m	1.37 33.164	3.23 33.334	1.35 33.163	2.29 33.262	2.59 33.145	2.18 33.239	1.31 33.162	2.41 33.237	1.75 33.189	2.69 33.313	
125m	1.44 33.197	2.00 33.254	1.42 33.243	1.87 33.261	2.19 33.249	1.59 33.241	1.44 33.241	3.24 33.372	2.04 33.264	2.95 33.423	
150m	1.44 33.254	2.55 33.389	1.76 33.357	1.82 33.296	1.80 33.263	1.62 33.290	2.11 33.410	3.32 33.474	1.69 33.316	2.86 33.499	
200m	1.70 33.396	3.29 33.626	2.06 33.505	2.21 33.409	1.93 33.352	2.38 33.508	2.74 33.650	3.08 33.589	2.69 33.567	3.18 33.668	
250m	2.19 33.528	3.50 33.764	2.44 33.633	2.00 33.440	1.84 33.396	2.66 33.635	3.01 33.782	2.79 33.649	3.05 33.733	3.32 33.769	
300m	2.89 33.698	3.57 33.861	2.83 33.774	2.27 33.546	2.00 33.481	2.89 33.725	3.13 33.872	3.18 33.793	3.22 33.845	3.46 33.882	
400m						2.70 33.715	3.27 33.938	3.31 34.035	3.65 34.017	3.34 33.996	3.49 34.047
500m						3.48 33.972	3.37 34.079	3.23 34.134	3.53 34.125	3.38 34.126	3.32 34.134
600m						3.46 34.076	3.48 34.166	3.18 34.219	3.35 34.206	3.35 34.218	3.23 34.225
700m											
800m											
900m											
1000m											

Table 5-29

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199910	
Station No	SM07		SM08		SM09		SM10		SM11		SM12		SM13		SM14		SM15		P21	
Latitude:N	40-59.5		40-30.1		40- 0.2		40-19.9		40-38.1		41- 4.9		41-29.9		41-44.9		41-59.9		42-55.0	
Longitude:E	146-39.7		146-50.0		146-59.1		146-29.1		146- 0.3		146- 0.1		146- 0.1		145-30.2		144-59.1		144-59.9	
Date	1999/09/19		1999/09/20		1999/09/20		1999/09/21		1999/09/21		1999/09/22		1999/09/22		1999/09/22		1999/09/23		1999/10/04	
Time(JST)	17:27		09:43		17:29		10:44		17:32		11:39		17:43		22:01		09:03		12:30	
Weather	C		C		R		C		C		C		C		C		BC		B	
Air Temp.	21.2		22.2		22.1		17.8		17.2		16.7		16.3		16.2		17.5		16.7	
Bar	1018.0		1010.0		1009.5		1017.0		1018.0		1023.5		1024.5		1026.0		1027.0		1021.0	
Wind Dir	E		NNW		NE		ENE		ENE		ENE		E		E		E		SW	
Wind Spd/F	F 1		F 3		F 4		F 5		F 5		F 6		F 5		F 5		F 6		F 5	
Transparency			18								14						17		11	
Depth																			64	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	21.0	32.61*	21.1	32.60*	24.7	33.48*	20.4	32.88*	18.9	32.70*	19.7	32.96*	19.4	32.69*	19.3	32.80*	19.5	32.67*	16.5	33.307
10m	20.29	32.611	20.46	32.594	24.43	33.587	19.93	33.014	18.45	32.719	19.28	33.137	19.10	32.686	18.91	32.806	18.91	32.671	15.58	33.381
20m	15.68	32.685	16.30	32.790	18.70	33.897	14.15	33.962	12.83	32.916	19.29	33.138	19.10	32.686	18.92	32.806	18.91	32.673	15.36	33.372
30m	6.25	32.943	7.84	33.090	15.22	34.090	12.70	34.156	6.50	33.089	8.21	32.968	9.24	33.080	10.00	32.879	11.70	32.851	14.18	33.351
50m	2.03	33.015	3.27	33.017	13.45	34.272	9.59	33.845	4.09	33.251	3.19	33.071	3.34	33.078	3.27	33.033	5.58	32.982	13.88	33.352
75m	0.83	33.051	2.09	33.124	11.62	34.218	4.81	33.417	2.60	33.266	2.34	33.195	1.73	33.132	1.71	33.103	2.38	33.161		
100m	1.13	33.154	1.72	33.181	9.76	34.090	3.69	33.389	2.70	33.303	2.59	33.287	1.51	33.167	1.44	33.159	1.42	33.201		
125m	1.42	33.239	1.80	33.238	9.39	34.181	3.85	33.438	2.92	33.380	2.43	33.337	1.56	33.239	1.56	33.234	1.71	33.301		
150m	1.66	33.322	2.14	33.342	8.39	34.150	2.66	33.365	2.50	33.402	2.81	33.428	1.80	33.339	1.93	33.371	2.05	33.411		
200m	1.97	33.487	2.57	33.530	7.47	34.158	2.50	33.440	3.39	33.605	3.07	33.563	3.41	33.651	2.73	33.577	2.65	33.608		
250m	2.53	33.630	2.67	33.641	6.84	34.166	2.58	33.552	2.73	33.644	2.57	33.642	2.81	33.691	2.90	33.716	3.05	33.771		
300m	2.81	33.753	2.65	33.710	5.85	34.142	2.54	33.633	3.17	33.763	3.01	33.781	2.89	33.790	3.11	33.837	3.22	33.878		
400m	3.20	33.958	3.11	33.911	4.74	34.133	3.74	33.966	3.53	33.964	3.19	33.938	3.07	33.949	3.21	33.995	3.36	34.026		
500m	3.40	34.124	3.43	34.079	4.53	34.246	3.65	34.088	3.55	34.080	3.33	34.073	3.50	34.123	3.39	34.126	3.30	34.126		
600m	3.22	34.196	3.36	34.187	3.64	34.229	3.29	34.151	3.51	34.183	3.26	34.185	3.39	34.212	3.28	34.206	3.23	34.224		
700m																				
800m																				
900m																				
1000m																				

Table 5-30

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	PK01		P11		P12		P13		P14		P15		P16		P17		P18		PK07	
Latitude:N	42-55.0		43- 4.1		42-55.1		42-45.1		42-30.1		42-15.1		42- 0.6		41-29.1		41- 0.1		40-59.1	
Longitude:E	145-29.8		145-44.9		145-49.9		145-54.1		146- 0.1		146- 0.2		146- 0.9		145-59.8		146- 0.1		145-30.0	
Date	1999/10/04		1999/10/04		1999/10/04		1999/10/04		1999/10/04		1999/10/04		1999/10/05		1999/10/05		1999/10/05		1999/10/05	
Time(JST)	14:41		16:15		17:29		18:51		20:56		22:49		01:16		04:30		07:22		09:43	
Weather	B		B		B		BC		BC		BC		BC		BC		C		C	
Air Temp.	17.1		14.6		14.5		15.0		15.8		15.8		15.8		15.8		16.1		17.7	
Bar	1021.0		1020.9		1020.5		1021.4		1022.2		1022.7		1023.0		1024.0		1023.7		1023.2	
Wind Dir	SW		SW		SW		WSW		WSW		WSW		W		CALM		SW		S	
Wind Spd/F	F 5		F 5		F 5		F 5		F 5		F 5		F 4		F 4		F 0		F 4	
Transparency	9		9														10		16	
Depth	147		102																	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	15.9	33.356	15.8	33.213	14.9	33.247	16.5	32.884	16.9	32.818	16.8	32.935	16.1	33.030	17.3	32.741	17.6	32.687	19.4	33.696
10m	14.67	33.373	14.72	33.262	14.26	33.278	16.16	32.897	16.53	32.854	16.53	32.959	15.61	33.041	16.81	32.770	17.10	32.712	18.97	33.724
20m	14.62	33.367	14.73	33.266	13.86	33.275	16.17	32.898	16.54	32.854	16.52	32.959	15.62	33.046	16.84	32.821	17.10	32.712	18.98	33.724
30m	14.37	33.373	14.73	33.270	13.57	33.244	16.03	32.890	14.49	32.902	11.21	33.456	15.39	33.052	16.20	32.781	16.61	32.715	18.93	33.716
50m	6.03	33.191	10.74	33.244	6.30	33.118	3.85	33.021	3.86	33.165	6.70	33.552	8.47	33.539	5.88	32.938	4.96	33.017	14.05	34.091
75m	3.61	33.247	6.42	33.250	3.30	33.135	2.16	33.098	2.21	33.175	4.36	33.427	5.03	33.436	2.82	33.045	2.76	33.093	12.13	34.113
100m	3.02	33.279			3.12	33.274	1.60	33.146	1.81	33.186	3.06	33.333	3.21	33.332	1.72	33.181	1.47	33.124	10.82	34.081
125m	3.01	33.280			2.39	33.266	1.47	33.173	2.07	33.247	3.25	33.409	2.95	33.343	1.90	33.354	1.45	33.182	10.21	34.103
150m					1.90	33.265	1.63	33.246	2.36	33.334	2.46	33.375	2.95	33.415	2.22	33.445	1.76	33.306	9.80	34.114
200m					2.38	33.423	2.38	33.459	2.86	33.553	3.03	33.536	3.24	33.549	2.63	33.582	2.61	33.576	8.02	33.876
250m					4.11	33.716	2.73	33.622	3.12	33.718	2.92	33.611	3.07	33.651	3.05	33.751	3.25	33.787	5.79	33.619
300m					2.93	33.661	3.03	33.752	3.32	33.834	3.10	33.721	3.16	33.751	3.19	33.847	3.35	33.891	4.54	33.528
400m					3.33	33.879	3.45	33.941	3.85	34.052	3.59	33.967	3.49	33.963	3.37	34.008	3.49	34.032	3.12	33.555
500m					3.46	34.036	3.45	34.060	3.40	34.106	3.38	34.066	3.51	34.079	3.34	34.171	3.64	34.162	3.62	33.805
600m					3.48	34.151	3.49	34.174	3.29	34.198	3.28	34.170	3.39	34.180	3.11	34.264	3.35	34.207	3.51	33.973
700m																				
800m																				
900m																				
1000m																				

Table 5-31

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	P27		PK16		P36		PK24		PK32		PK31		PK23		P35		PK15		P26	
Latitude:N	40-59.1		40-59.1		40-59.1		40-59.1		41- 0.1		41-30.0		41-30.1		41-29.1		41-30.0		41-29.1	
Longitude:E	145- 0.1		144-30.0		144- 0.0		143-30.1		142-59.1		143- 0.1		143-30.1		144- 0.0		144-29.9		145- 0.1	
Date	1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/05		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06	
Time(JST)	12:22		15:01		17:19		19:34		21:59		00:52		03:06		05:13		07:15		09:16	
Weather	C		C		C		R		BC		BC		R		BC		BC		BC	
Air Temp.	18.3		17.8		17.6		16.6		16.6		16.1		15.8		15.6		16.2		17.8	
Bar	1022.0		1021.0		1021.2		1021.0		1020.5		1020.0		1019.5		1020.5		1020.9		1020.5	
Wind Dir	SSW		SSW		ESE		S		S		NNE		S		SSW		W		E	
Wind Spd/F	F 4		F 3		F 1		F 5		F 3		F 3		F 3		F 2		F 2		F 2	
Transparency	15		18														25		17	
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	19.4	33.955	18.8	33.763	18.7	33.941	19.6	33.708	19.4	33.908	18.1	33.931	20.1	33.805	19.4	33.847	19.2	33.887	19.3	33.588
10m	18.61	33.977	18.28	33.802	18.10	33.971	19.23	33.734	19.14	33.937	17.69	33.950	19.75	33.823	18.97	33.870	18.82	33.911	18.58	33.601
20m	18.50	33.981	17.83	33.988	17.95	33.988	19.23	33.734	19.15	33.939	17.55	33.946	18.68	33.680	18.96	33.903	18.82	33.911	18.55	33.607
30m	18.31	33.988	17.69	33.988	17.29	34.012	19.22	33.736	19.12	33.946	17.47	33.947	17.98	33.625	18.93	33.939	18.82	33.912	18.46	33.586
50m	14.37	34.179	15.16	34.120	11.69	34.339	15.45	34.092	18.61	33.971	15.90	34.195	15.54	33.896	16.15	34.093	18.12	33.978	15.66	33.957
75m	11.48	34.297	11.45	34.340	11.29	34.337	12.97	34.160	14.66	34.217	13.69	34.253	12.54	34.160	13.64	34.094	13.90	34.119	12.96	34.125
100m	11.23	34.329	11.28	34.341	11.23	34.336	11.34	34.120	10.82	34.046	12.51	34.202	10.94	34.051	11.88	34.114	11.64	34.063	10.48	33.911
125m	11.16	34.329	11.26	34.339	11.20	34.332	10.40	34.097	8.80	33.909	10.30	34.008	9.79	33.963	10.64	34.076	10.65	34.050	10.59	34.137
150m	11.10	34.322	11.25	34.337	11.16	34.329	10.25	34.171	6.92	33.718	9.10	33.946	8.35	33.868	10.03	34.047	10.11	34.061	5.77	33.551
200m	10.96	34.306	11.21	34.333	11.09	34.321	8.86	33.985	3.12	33.351	3.36	33.374	6.18	33.647	9.14	34.021	9.44	34.064	2.97	33.325
250m	10.75	34.276	11.16	34.328	10.98	34.307	7.27	33.776	2.58	33.378	4.60	33.617	3.98	33.440	7.16	33.769	7.77	33.838	2.42	33.358
300m	10.20	34.191	11.08	34.318	10.83	34.284	6.16	33.645	2.73	33.476	3.88	33.575	3.54	33.451	5.74	33.606	6.11	33.651	2.86	33.490
400m	6.83	33.724	10.58	34.240	9.51	34.080	4.62	33.537	2.40	33.538	3.58	33.719	3.01	33.549	3.34	33.464	2.56	33.343	3.08	33.681
500m	5.20	33.610	7.77	33.843	6.26	33.656	3.39	33.524	3.31	33.825	3.13	33.808	3.68	33.792	2.95	33.605	2.84	33.553	3.28	33.897
600m	4.00	33.620	5.53	33.639	4.85	33.595	3.35	33.693	3.84	34.042	3.39	33.997	4.53	34.113	3.38	33.873	2.90	33.762	3.49	34.060
700m																				
800m																				
900m																				
1000m																				

Table 5-32

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	PK06		PK05		PK04		PK03		PK02		P22		P23		P24		P25		PK14	
Latitude:N	41-29.8		41-59.9		42-14.9		42-29.9		42-44.9		42-44.9		42-30.0		42-15.1		42- 0.0		41-59.9	
Longitude:E	145-30.0		145-30.0		145-29.1		145-29.1		145-29.1		144-59.9		145- 1.2		144-59.1		144-59.1		144-30.1	
Date	1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/06		1999/10/07		1999/10/07		1999/10/07	
Time(JST)	11:26		14:31		16:15		17:54		19:34		21:43		23:17		01:00		02:42		05:04	
Weather	BC		C		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	18.5		19.2		18.2		16.0		15.5		15.3		15.6		16.2		16.2		16.0	
Bar	1019.7		1018.7		1018.2		1018.5		1018.5		1017.7		1016.7		1016.2		1016.0		1014.5	
Wind Dir	SE		SSE		SSE		S		S		S		S		SSE		SSE		SE	
Wind Spd/F	F 3		F 2		F 2		F 3		F 4		F 2		F 3		F 3		F 3		F 3	
Transparency	16		14		15															
Depth											168									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	18.1	32.810	17.5	32.861	17.1	32.901	16.6	32.873	16.6	32.891	15.5	33.086	15.6	33.110	17.1	32.804	16.3	32.935	16.7	33.204
10m	16.82	32.881	16.24	32.901	16.37	32.912	16.11	32.901	16.16	32.913	14.82	33.113	15.03	33.153	16.55	32.812	15.67	32.949	16.17	33.239
20m	16.78	32.907	16.16	32.909	16.34	32.917	15.79	32.921	15.98	32.938	14.72	33.106	14.06	33.234	16.47	32.821	15.20	32.959	16.08	33.256
30m	16.55	32.934	15.80	32.899	11.75	32.995	14.40	32.963	15.52	32.985	14.46	33.157	13.67	33.200	16.36	32.878	11.55	33.373	15.68	33.382
50m	4.38	33.172	3.35	33.058	3.81	33.191	3.28	33.098	5.31	33.286	6.87	33.188	4.56	33.078	6.22	33.398	6.02	33.286	8.43	33.121
75m	3.34	33.259	2.38	33.204	2.40	33.211	1.58	33.128	5.21	33.464	4.75	33.209	1.95	33.075	3.64	33.259	2.94	33.164	4.10	33.279
100m	2.15	33.228	2.88	33.303	2.51	33.265	1.86	33.203	1.72	33.174	3.39	33.237	1.52	33.140	2.09	33.222	2.38	33.235	3.13	33.286
125m	2.04	33.276	2.99	33.350	2.48	33.316	1.81	33.253	2.91	33.346	3.02	33.254	1.40	33.181	2.29	33.299	2.03	33.249	2.13	33.286
150m	2.27	33.383	1.90	33.303	2.81	33.435	2.06	33.371	2.93	33.368	2.62	33.269	1.50	33.241	2.82	33.405	2.27	33.339	2.25	33.338
200m	3.11	33.616	2.57	33.535	3.21	33.621	2.79	33.580	2.52	33.463			2.26	33.455	2.91	33.524	2.98	33.557	2.02	33.396
250m	3.10	33.692	2.55	33.669	3.17	33.722	3.17	33.747	3.11	33.617			2.97	33.640	2.95	33.660	3.03	33.661	2.36	33.513
300m	2.99	33.782	2.78	33.760	3.37	33.826	3.33	33.846	2.97	33.696			3.19	33.756	3.28	33.783	3.42	33.798	2.70	33.616
400m	3.38	33.974	3.51	33.997	3.52	33.995	3.94	34.065	3.37	33.908			3.47	33.947	3.48	33.987	3.55	33.980	3.43	33.885
500m	3.42	34.095	3.44	34.092	3.55	34.127	3.52	34.123	3.47	34.045			3.52	34.072	3.33	34.081	3.28	34.067	3.27	33.999
600m	3.34	34.189	3.34	34.179	3.33	34.194	3.44	34.206	3.40	34.140			3.30	34.150	3.32	34.176	3.13	34.144	3.43	34.120
700m																				
800m																				
900m																				
1000m																				

Table 5-33

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	PK13		PK12		PK11		P31		P32		P33		P34		PK22		PK21		IK06	
Latitude:N	42-14.9		42-29.9		42-44.1		42-45.0		42-30.1		42-15.1		42- 0.1		42- 0.1		42-14.9		43-55.9	
Longitude:E	144-30.0		144-30.1		144-29.8		144- 0.1		144- 0.0		144- 0.0		144- 0.1		143-30.2		143-30.1		145-12.6	
Date	1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/07		1999/10/14	
Time(JST)	06:46		08:28		10:13		12:15		13:36		15:11		16:45		19:11		20:50		22:30	
Weather	C		C		C		C		C		C		C		C		C		BC	
Air Temp.	15.8		16.1		16.6		16.1		15.5		15.3		14.8		15.1		15.0		9.1	
Bar	1014.4		1014.5		1013.5		1012.0		1011.5		1010.7		1010.0		1011.0		1010.9		1020.0	
Wind Dir	SSE		S		SW		NW		NNW		N		NNE		SE		SSE		NNW	
Wind Spd/F	F 3		F 3		F 3		F 3		F 2		F 2		F 2		F 1		F 2		F 4	
Transparency	12		11		10		12		12		7		10							
Depth					129		64		490		920				122		67		80	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.2	33.052	15.6	33.184	16.1	33.430	17.0	33.399	16.2	33.059	15.4	33.102	16.7	33.246	16.8	33.223	16.7	32.842	16.3	33.66*
10m	15.62	33.087	14.86	33.231	15.45	33.460	16.31	33.417	15.62	33.080	14.69	33.121	16.18	33.268	16.36	33.238	16.15	32.904	16.15	33.662
20m	15.50	33.169	14.75	33.317	15.27	33.455	16.17	33.448	15.55	33.091	14.50	33.155	16.19	33.293	16.32	33.341	16.20	33.308	16.15	33.664
30m	15.30	33.193	14.03	33.321	15.22	33.453	15.39	33.435	14.74	33.070	12.71	33.183	14.12	33.205	16.29	33.364	15.28	33.366	16.15	33.664
50m	5.61	33.074	5.06	33.103	14.85	33.447	12.46	33.372	6.26	33.240	5.50	33.257	9.87	33.295	12.95	33.385	13.32	33.375	15.24	33.742
75m	2.91	33.158	2.15	33.115	14.12	33.394			3.12	33.218	3.86	33.309	6.67	33.265	7.17	33.247				
100m	2.13	33.214	2.62	33.254	12.53	33.342			2.73	33.242	3.04	33.329	3.83	33.315	3.95	33.271				
125m	2.20	33.278	2.52	33.288					2.08	33.223	2.39	33.342	2.56	33.281						
150m	2.36	33.360	2.48	33.305					2.09	33.279	2.24	33.395	2.55	33.308						
200m	2.71	33.529	2.42	33.382					2.33	33.384	2.45	33.502	2.31	33.353						
250m	2.96	33.659	2.19	33.449					2.78	33.481	2.78	33.603	2.56	33.454						
300m	3.33	33.803	2.52	33.587					2.20	33.482	2.74	33.658	2.79	33.564						
400m	3.43	33.970	3.48	33.904					3.09	33.705	3.25	33.893	2.97	33.766						
500m	3.44	34.084	4.04	34.042							3.35	33.983	3.23	33.939						
600m	3.33	34.161	3.51	34.092							3.37	34.115	3.34	34.085						
700m																				
800m																				
900m																				
1000m																				

Table 5-34

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	IK05		IK04		IK03		IK02		IK01		IK27		IK28		IK29		IK13		IK12	
Latitude:N	43-58.1		44- 2.0		44- 4.1		44- 8.0		44-10.1		44-18.6		44-24.3		44-26.2		44-20.0		44-29.1	
Longitude:E	145-15.1		145-17.5		145-19.1		145-22.5		145-25.0		145-30.8		145-19.5		145-12.6		144-49.1		144-49.9	
Date	1999/10/14		1999/10/14		1999/10/15		1999/10/15		1999/10/15		1999/10/15		1999/10/15		1999/10/15		1999/10/15		1999/10/15	
Time(JST)	22:59		23:34		00:17		00:57		01:37		04:07		05:45		07:10		10:53		12:01	
Weather	BC		BC		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	9.5		9.6		9.3		9.1		8.8		8.8		8.6		9.8		12.0		12.6	
Bar	1019.5		1019.4		1019.5		1020.0		1020.5		1021.0		1021.2		1021.0		1018.2		1017.0	
Wind Dir	E		N		NNW		WNW		NNW		NNE		ENE		SE		S		S	
Wind Spd/F	F 3		F 2		F 5		F 3		F 2		F 1		F 1		F 2		F 4		F 4	
Transparency																				
Depth	400		800		567								740							
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.3	33.65*	16.3	33.65*	15.9	33.70*	15.8	33.72*	15.9	33.72*	15.3	33.50*	16.1	33.75*	12.1	32.57*	12.1	32.78*	13.6	33.20*
10m	16.09	33.656	16.04	33.655	15.78	33.705	15.85	33.725	15.82	33.724	14.97	33.503	15.87	33.755	11.72	32.645	11.53	32.779	12.93	33.191
20m	16.10	33.656	16.02	33.659	15.81	33.705	15.86	33.725	15.82	33.724	14.97	33.503	15.82	33.742	12.00	32.849	11.64	32.854	12.58	33.132
30m	16.10	33.657	15.99	33.665	15.81	33.706	15.87	33.725	15.82	33.725	15.00	33.513	15.87	33.781	12.25	33.325	11.43	33.076	11.79	33.143
50m	15.98	33.694	15.71	33.698	15.81	33.704	15.86	33.725	15.83	33.724	15.27	33.618	13.39	33.787	9.48	33.602	6.97	33.458	6.70	33.432
75m	13.21	33.798	13.89	33.799	15.74	33.704	15.52	33.725	15.46	33.723	15.13	33.659	11.52	33.861	5.34	33.436	5.18	33.515	4.11	33.383
100m	10.76	33.828	12.02	33.807	12.52	33.823	13.68	33.779	13.97	33.781	13.43	33.776	6.50	33.365	1.65	33.218	2.31	33.265	1.22	33.141
125m	8.76	33.778	9.36	33.787	9.98	33.792	9.30	33.791	9.91	33.806	10.90	33.802	4.77	33.412	1.76	33.315	1.44	33.251	0.78	33.194
150m	7.60	33.775	6.98	33.710	8.12	33.813	8.14	33.814	6.97	33.728	7.35	33.726	3.37	33.368	1.69	33.346	0.65	33.238	0.75	33.219
200m	3.72	33.496	5.30	33.619	5.54	33.638	6.00	33.682	4.25	33.541	4.83	33.580	1.63	33.337	1.31	33.367	1.08	33.315	1.23	33.337
250m	2.19	33.421	2.33	33.417	2.60	33.429	2.96	33.450	2.96	33.466	2.77	33.463	2.01	33.416	1.32	33.415	1.18	33.388	1.03	33.377
300m	1.68	33.451	1.76	33.431	1.83	33.431	1.89	33.381	1.83	33.427	1.69	33.436	1.88	33.411	1.92	33.515	1.26	33.433	1.03	33.427
400m			1.60	33.560	1.63	33.566	1.66	33.559	1.82	33.542	1.66	33.583	2.21	33.552	1.83	33.601				
500m			1.79	33.741	1.80	33.740	1.78	33.701	1.74	33.650	1.78	33.710	1.65	33.707	1.58	33.683				
600m			2.01	33.938			2.05	33.919	2.01	33.882	2.02	33.907	2.05	33.910	1.99	33.872				
700m																				
800m																				
900m																				
1000m																				

Table 5-35



Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	IK11		IK10		IK07		IK08		IK09		SM07		SM06		SM05		SM04		SM03	
Latitude:N	44-30.0		44-20.1		44- 3.9		44- 4.0		44-11.5		42-40.1		42-20.1		42- 0.1		41-55.0		41-50.0	
Longitude:E	144-20.1		144-20.0		144-30.1		144-45.1		145-24.1		145-28.8		145-15.1		145- 0.1		144-25.2		143-50.1	
Date	1999/10/15		1999/10/15		1999/10/18		1999/10/18		1999/10/19		1999/10/25		1999/10/26		1999/10/26		1999/10/27		1999/10/27	
Time(JST)	14:11		15:50		18:22		22:30		18:07		17:34		09:01		17:37		12:57		16:10	
Weather	BC		BC		BC		BC		BC		B		B		BC		BC		C	
Air Temp.	11.6		12.3		11.6		10.1		12.8		11.0		11.5		13.1		14.3		14.8	
Bar	1014.0		1012.0		1019.0		1021.0		1027.0		1021.9		1025.0		1023.9		1021.7		1020.2	
Wind Dir	S		S		W		WSW		SSW		NNW		SE		SSW		SSE		SE	
Wind Spd/F	F 5		F 6		F 5		F 4		F 4		F 4		F 4		F 3		F 3		F 3	
Transparency													15				14		9	
Depth	868		262		100		240		754											
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.6	33.12*	12.0	32.21*	16.0	33.92*	16.0	33.94*	15.0	33.69*	11.0	33.02*	11.7	33.14*	11.9	33.43*	12.4	33.20*	13.6	33.41*
10m	12.06	33.115	11.56	32.234	15.90	33.922	15.81	33.937	14.75	33.688	10.75	33.020	11.46	33.082	11.59	33.346	12.44	33.346	13.61	33.404
20m	12.06	33.115	11.50	32.956	15.92	33.925	15.65	33.906	14.67	33.711	10.72	33.018	10.74	33.056	11.35	33.356	12.39	33.377	13.49	33.397
30m	10.48	33.444	13.09	33.892	15.89	33.937	15.61	33.893	14.65	33.716	10.61	33.016	9.90	33.107	10.82	33.287	11.62	33.323	13.20	33.376
50m	5.70	33.417	7.98	33.303	15.83	33.945	15.45	33.862	14.58	33.723	6.35	33.004	4.32	33.160	4.15	33.154	9.36	33.375	12.82	33.351
75m	0.92	33.150	3.48	33.352	14.93	33.908	15.37	33.871	13.91	33.640	2.60	33.097	2.38	33.159	2.27	33.146	4.46	33.243	10.45	33.346
100m	1.42	33.231	1.00	33.186			14.65	33.886	13.38	33.707	2.23	33.180	2.09	33.213	1.80	33.186	2.94	33.263	7.17	33.245
125m	1.02	33.239	1.67	33.280			14.42	33.863	11.50	33.728	1.91	33.207	2.16	33.267	1.82	33.237	2.36	33.267	4.19	33.221
150m	1.12	33.271	1.20	33.275			11.73	33.804	8.97	33.704	1.56	33.233	2.07	33.310	2.12	33.336	2.28	33.273	3.39	33.234
200m	1.52	33.333	1.09	33.315			5.46	33.570	4.98	33.580	1.37	33.299	2.19	33.439	2.52	33.513	2.40	33.362	2.40	33.305
250m	0.71	33.321	1.34	33.429					3.30	33.479	1.59	33.384	2.85	33.615	2.81	33.649	2.36	33.434	2.33	33.420
300m	1.08	33.417							2.43	33.433	1.69	33.445	2.99	33.712	4.54	33.942	2.34	33.543	2.17	33.519
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-36

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	SU18		SU19		SU21		SUA1		SUA2		SU20		SU22		SU23		SU24		SU25	
Latitude:N	42-53.1		42-39.6		42-40.5		42-42.6		42-49.3		42-54.9		42-57.5		42-45.0		43- 0.1		42-49.4	
Longitude:E	144-38.1		144-45.3		144-59.4		144-58.3		144-55.4		144-52.9		145- 5.9		145-11.7		145-18.8		145-23.6	
Date	1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/08		1999/11/09		1999/11/09		1999/11/09		1999/11/09	
Time(JST)	11:02		12:54		14:14		14:49		15:52		16:46		03:37		05:30		08:53		10:08	
Weather	B		B		BC		BC		C		C		C		C		C		C	
Air Temp.	12.6		12.5		12.3		12.1		12.1		11.6		8.1		7.9		7.3		8.1	
Bar	1012.0		1010.2		1009.7		1009.5		1009.2		1009.2		1011.0		1011.0		1014.0		1014.5	
Wind Dir	SW		S		SSW		SSW		SSW		WNW		N		N		N		N	
Wind Spd/F	F 2		F 3		F 4		F 3		F 3		F 3		F 2		F 5		F 6		F 6	
Transparency																				
Depth	57		530		530		200		106		50		51		600		54		679	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.0	33.27*	11.3	33.10*	11.6	33.16*	11.3	33.12*	11.7	33.47*	12.1	33.07*	11.9	33.46*	10.8	33.18*	11.9	33.44*	10.4	33.37*
10m	11.97	33.397	11.09	33.123	11.46	33.167	11.27	33.114	11.64	33.467	12.26	33.494	12.06	33.464	10.91	33.183	12.10	33.440	10.49	33.371
20m	12.08	33.451	10.87	33.308	11.41	33.168	11.14	33.117	11.24	33.457	12.23	33.494	12.06	33.465	10.90	33.195	12.11	33.440	10.47	33.369
30m	12.11	33.468	10.91	33.373	11.37	33.169	10.83	33.179	11.12	33.455	12.23	33.495	12.04	33.467	10.73	33.301	12.11	33.440	10.43	33.364
50m	12.13	33.475	9.67	33.299	11.17	33.163	9.84	33.160	10.83	33.425					9.67	33.317	12.02	33.440	9.89	33.336
75m			5.48	33.274	5.14	33.227	4.82	33.182	9.96	33.363					7.52	33.307			8.13	33.295
100m			3.56	33.234	2.85	33.228	3.94	33.367	9.05	33.322					3.90	33.180			5.82	33.256
125m			3.71	33.408	2.47	33.264	2.25	33.263							3.19	33.256			4.21	33.304
150m			2.45	33.308	2.46	33.292	2.54	33.324							3.41	33.368			3.85	33.401
200m			3.16	33.445	3.05	33.431									2.27	33.326			2.80	33.373
250m			2.96	33.503	2.38	33.457									2.17	33.375			2.77	33.414
300m			2.55	33.583	2.17	33.476									2.59	33.493			2.32	33.446
400m			3.05	33.805	2.87	33.746									2.79	33.654				
500m			3.33	34.010	3.33	34.003									3.14	33.896				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-37

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	SU13		SUA3		SUA4		SU12		SU10		SU11		SU15		SU17		SU16		SU14	
Latitude:N	42-28.4		42-30.1		42-32.6		42-35.3		42-27.7		42-20.8		42-36.8		42-43.5		42-49.8		42-43.0	
Longitude:E	144- 0.9		143-54.7		143-51.4		143-45.4		143-37.6		143-51.1		144- 7.1		144-18.8		144- 5.2		143-55.1	
Date	1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/10		1999/11/10		1999/11/10		1999/11/10	
Time(JST)	17:37		18:40		19:14		20:01		20:58		22:37		00:58		02:22		03:36		04:36	
Weather	C		BC		BC		BC		B		B		B		B		B		B	
Air Temp.	7.3		7.1		7.0		6.6		6.4		6.6		5.9		5.8		4.5		4.6	
Bar	1017.0		1018.0		1018.0		1018.7		1019.5		1019.0		1019.5		1019.2		1020.0		1020.5	
Wind Dir	NE		NE		NE		NNE		N		N		N		N		NNW		N	
Wind Spd/F	F 6		F 6		F 6		F 4		F 4		F 4		F 3		F 4		F 2		F 3	
Transparency																				
Depth	567		193		102		47		55		520		522		765		55		52	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.7	33.42*	11.3	33.44*	11.7	33.43*	11.6	33.38*	11.5	33.40*	11.7	33.48*	10.7	33.45*	11.0	33.47*	11.5	33.42*	11.1	33.34*
10m	10.84	33.421	11.64	33.440	11.94	33.431	11.85	33.389	11.84	33.398	11.90	33.479	11.01	33.449	11.38	33.469	11.88	33.421	11.68	33.336
20m	10.78	33.414	11.65	33.441	11.95	33.431	11.86	33.390	11.85	33.398	11.90	33.478	11.00	33.449	11.38	33.470	11.89	33.421	11.69	33.339
30m	10.78	33.414	11.61	33.434	11.95	33.433	11.86	33.392	11.85	33.398	11.91	33.478	10.97	33.447	11.27	33.466	11.89	33.422	11.71	33.349
50m	10.73	33.408	11.54	33.418	11.99	33.482			11.86	33.398	11.91	33.477	10.75	33.425	10.94	33.448	11.89	33.424		
75m	9.92	33.358	11.18	33.406	11.71	33.468					11.89	33.475	10.09	33.351	10.34	33.410				
100m	6.39	33.251	10.18	33.378							10.46	33.379	7.46	33.323	8.36	33.345				
125m	4.16	33.229	7.12	33.296							7.30	33.306	6.56	33.295	7.79	33.316				
150m	2.70	33.206	5.31	33.264							3.95	33.201	4.96	33.253	5.40	33.240				
200m	2.24	33.268									2.00	33.270	2.57	33.213	3.11	33.201				
250m	2.02	33.323									2.30	33.366	2.03	33.253	2.07	33.298				
300m	2.04	33.434									2.24	33.432	1.94	33.311	2.05	33.363				
400m	3.14	33.816									2.87	33.688								
500m	3.47	34.042									3.42	33.958								
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-38

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	SUT1		SUT2		SUT4		SUT5		SUT6		SUT7		SUT8		SUT9		SU27		SU29	
Latitude:N	42-27.3		42-26.7		42-27.8		42-46.7		42-45.0		42-41.3		42-48.1		42-51.5		42-54.2		42-58.9	
Longitude:E	143-47.9		143-49.1		143-50.2		144-55.0		144-54.8		144-43.2		144-33.7		144-37.8		145-35.1		145-48.4	
Date	1999/11/10		1999/11/10		1999/11/10		1999/11/11		1999/11/11		1999/11/11		1999/11/15		1999/11/15		1999/11/15		1999/11/15	
Time(JST)	08:35		10:11		14:41		08:11		10:00		12:47		12:10		13:36		18:18		19:29	
Weather	B		B		B		BC		BC		BC		BC				R		R	
Air Temp.	6.1		7.8		8.1		9.8		10.3		11.6		11.5		10.8		9.6		7.8	
Bar	1022.0		1021.5		1020.7		1021.5		1021.5		1020.0		1016.5		1016.0		1011.0		1011.0	
Wind Dir	NNW		NW		S		SSW		SW		SSW		ESE		SE		NNW		NNE	
Wind Spd/F	F 2		F 2		F 2		F 1		F 3		F 3		F 2		F 1		F 4		F 6	
Transparency																				
Depth	126		175		140		128		152		198		106		78		567		587	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	11.7	33.46*	11.4	33.44*	11.2	33.44*	11.0	33.44*	10.3	33.19*	11.3	33.43*	11.2	33.34*	11.1	33.37*	9.9	33.35*	10.8	33.39*
10m	11.71	33.461	11.01	33.436	11.40	33.438	10.91	33.441	10.06	33.188	11.13	33.346	11.08	33.369	9.85	33.346	11.06	33.396		
20m	11.69	33.460	10.93	33.435	11.34	33.442	10.39	33.408	9.64	33.198	9.27	33.194	11.13	33.355	10.98	33.372	9.75	33.344	11.05	33.417
30m	11.49	33.447	10.78	33.423	11.26	33.440	10.14	33.398	9.46	33.255	9.22	33.191	11.12	33.357	10.90	33.374	9.71	33.340	10.95	33.418
50m	11.34	33.446	10.68	33.414	11.17	33.434	10.05	33.389	8.23	33.322	8.85	33.187	10.40	33.394	7.69	33.326	9.51	33.312	10.60	33.396
75m	11.32	33.444	10.63	33.407	11.13	33.428	9.36	33.352	7.08	33.302	6.46	33.276	8.33	33.332			7.36	33.121	8.90	33.352
100m	11.23	33.431	9.48	33.343	10.65	33.420	7.05	33.313	6.28	33.284	4.41	33.258					6.71	33.353	6.96	33.317
125m			7.35	33.302	9.67	33.349			4.72	33.243	2.07	33.226					5.05	33.288	5.72	33.305
150m			3.59	33.245					2.00	33.238							3.44	33.256	3.29	33.175
200m																	2.03	33.265	1.89	33.243
250m																	1.82	33.325	1.73	33.327
300m																	1.83	33.399	1.82	33.392
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-39

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199911		199911		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	SU28		SU26		P21		PK01		P11		P12		P13		P14		P15		P16	
Latitude:N	43-12.4		43- 4.0		42-55.0		42-55.0		43- 5.0		42-55.1		42-45.1		42-30.1		42-15.1		41-59.9	
Longitude:E	145-42.5		145-31.9		144-59.1		145-29.9		145-44.8		145-49.9		145-54.9		145-59.9		146- 0.1		146- 0.3	
Date	1999/11/15		1999/11/15		1999/11/22		1999/11/22		1999/11/22		1999/11/22		1999/11/22		1999/11/22		1999/11/22		1999/11/23	
Time(JST)	21:04		22:04		12:27		14:31		16:03		17:13		18:36		20:23		22:09		00:03	
Weather	R		R		BC		BC		BC		BC		BC		BC		BC		B	
Air Temp.	7.3		6.8		12.8		11.3		9.1		10.0		8.6		8.1		8.0		11.8	
Bar	1011.0		1010.0		1019.5		1019.7		1020.0		1020.5		1021.0		1021.0		1022.0		1022.0	
Wind Dir	NE		NNE		SW		SW		S		SSW		SW		W		W		WSW	
Wind Spd/F	F 6		F 6		F 4		F 3		F 3		F 3		F 3		F 3		F 3		F 4	
Transparency					14		14													
Depth	53		51		65		154		103		834									
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.5	33.33*	10.3	33.39*	10.8	33.340	8.0	33.223	8.3	33.178	11.3	33.493	7.4	32.872	6.7	32.820	6.9	32.806	10.1	33.191
10m	10.76	33.331	10.70	33.394	10.28	33.389	6.98	33.122	8.21	33.241	11.09	33.508	6.92	32.917	6.46	32.873	6.74	32.889	10.10	33.258
20m	10.78	33.356	10.71	33.394	10.21	33.391	6.89	33.113	8.19	33.242	10.92	33.499	6.87	32.919	6.19	32.868	6.41	33.038	10.10	33.274
30m	10.76	33.410	10.71	33.394	10.21	33.391	6.84	33.109	8.18	33.241	10.91	33.498	6.75	32.922	6.08	32.875	6.23	33.039	10.09	33.354
50m	10.51	33.404			10.21	33.391	6.40	33.122	7.86	33.215	10.74	33.551	6.06	32.957	5.36	32.972	5.75	33.019	9.81	33.342
75m							5.97	33.126	5.71	33.154	9.76	33.634	3.52	33.190	2.99	33.241	2.64	33.086	8.64	33.328
100m							5.84	33.143			9.07	33.874	2.74	33.229	2.25	33.252	1.67	33.097	4.54	33.229
125m							5.43	33.139			5.80	33.450	2.45	33.283	2.02	33.295	1.74	33.215	3.90	33.326
150m											3.11	33.303	2.67	33.365	2.07	33.364	2.08	33.313	2.58	33.289
200m											3.10	33.457	2.33	33.446	2.48	33.514	2.02	33.449	3.38	33.408
250m											2.68	33.544	3.04	33.663	2.62	33.635	2.18	33.501	1.93	33.376
300m											3.24	33.712	3.61	33.844	3.04	33.787	2.10	33.545	2.21	33.452
400m											3.17	33.838	3.68	34.049	3.07	33.928	3.09	33.827	2.34	33.579
500m											3.09	33.957	3.48	34.124	3.06	34.054	3.68	34.076	3.07	33.815
600m											3.31	34.096	3.50	34.241	3.33	34.183	3.42	34.152	3.58	34.022
700m																				
800m																				
900m																				
1000m																				

Table 5-40

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	P17		P18		PK07		P27		PK16		P36		PK24		PK23		P35		PK15	
Latitude:N	41-29.1		41- 0.1		41- 0.0		41- 0.1		41- 0.1		41- 0.4		41- 0.0		41-29.1		41-30.1		41-30.1	
Longitude:E	146- 0.1		146- 0.0		145-30.1		145- 0.1		144-29.1		144- 0.1		143-30.1		143-29.1		143-59.9		144-29.1	
Date	1999/11/23		1999/11/23		1999/11/23		1999/11/23		1999/11/23		1999/11/23		1999/11/23		1999/11/23		1999/11/23		1999/11/24	
Time(JST)	02:51		05:35		07:45		09:51		12:03		14:44		16:59		19:55		22:14		00:33	
Weather	B		B		B		BC		BC		B		BC		BC		BC		B	
Air Temp.	13.6		14.0		14.1		14.8		14.6		15.3		14.6		14.8		14.8		14.1	
Bar	1022.0		1023.0		1024.0		1024.5		1023.4		1022.5		1022.4		1023.0		1022.5		1021.7	
Wind Dir	SW		WSW		SW		W		W		WSW		SW		SW		SW		WSW	
Wind Spd/F	F 4		F 4		F 3		F 3		F 3		F 4		F 4		F 4		F 5		F 4	
Transparency					20		17		17		15									
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.1	33.972	13.9	33.909	13.0	34.026	13.2	34.013	12.8	33.596	15.8	33.826	14.2	33.920	14.7	33.841	15.8	33.941	13.5	33.893
10m	13.17	34.033	13.92	33.961	12.89	34.079	12.93	34.065	12.66	33.668	15.90	33.892	14.30	33.982	14.83	33.875	15.88	34.025	13.48	33.938
20m	13.17	34.033	13.94	33.963	12.88	34.083	12.90	34.068	12.64	33.668	15.89	33.891	13.94	33.948	14.84	33.876	15.79	34.007	13.47	33.956
30m	13.08	34.042	13.93	33.962	12.80	34.099	12.88	34.069	12.64	33.669	15.83	33.881	13.88	33.940	14.63	33.985	15.18	34.011	13.45	33.964
50m	12.97	34.058	13.93	33.962	12.75	34.115	12.84	34.083	12.64	33.668	15.78	33.868	13.48	33.889	13.73	33.851	14.31	33.965	13.28	34.021
75m	12.63	34.108	12.57	34.078	11.34	34.324	11.34	34.345	11.04	33.474	13.23	34.155	10.41	33.545	12.48	33.878	12.95	33.707	11.84	34.117
100m	11.01	34.229	11.09	34.091	11.22	34.344	11.22	34.345	9.12	33.543	11.72	34.239	9.61	33.981	9.55	33.547	10.35	33.485	10.85	34.095
125m	11.03	34.317	10.49	34.102	11.18	34.341	11.19	34.342	10.33	34.108	10.35	34.228	6.04	33.580	4.64	33.151	10.56	34.024	10.40	34.142
150m	10.88	34.303	10.48	34.197	11.15	34.337	11.17	34.340	9.73	34.108	9.07	34.160	7.70	33.967	2.29	33.186	9.06	34.030	10.41	34.192
200m	10.33	34.213	9.62	34.103	11.06	34.327	11.10	34.332	7.20	33.782	7.40	34.056	6.96	34.072	2.11	33.288	7.46	33.986	9.72	34.114
250m	8.62	33.965	7.77	33.849	10.97	34.315	11.00	34.317	5.39	33.601	6.70	34.145	7.22	34.262	3.00	33.454	1.63	33.302	8.26	33.914
300m	7.02	33.759	6.52	33.694	10.82	34.293	10.78	34.283	3.51	33.442	5.13	34.041	6.33	34.192	6.31	34.064	3.03	33.579	6.63	33.710
400m	5.08	33.588	3.77	33.463	9.67	34.112	8.45	33.947	2.80	33.424	4.81	34.156	5.39	34.197	2.47	33.707	3.28	33.775	4.79	33.585
500m	3.40	33.542	4.41	33.604	6.61	33.711	6.03	33.672	2.97	33.634	4.34	34.236	4.60	34.239	3.60	34.024	3.04	33.876	3.10	33.470
600m	2.52	33.559	2.85	33.524	5.27	33.653	4.47	33.604	3.33	33.906	3.69	34.247			3.64	34.160	3.24	34.040	2.62	33.565
700m																				
800m																				
900m																				
1000m																				

Table 5-41

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	P26		PK06		PK05		PK04		PK03		PK02		P22		P23		P24		P25	
Latitude:N	41-30.8		41-30.0		41-59.9		42-14.9		42-29.9		42-44.1		42-45.0		42-30.1		42-15.1		42- 0.1	
Longitude:E	145- 0.2		145-30.0		145-30.1		145-30.0		145-30.0		145-29.1		145- 0.1		145- 0.0		145- 0.1		145- 0.1	
Date	1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24		1999/11/24	
Time(JST)	03:03		05:18		08:22		10:08		12:05		13:51		16:14		17:41		19:28		21:20	
Weather	B		B		BC		BC		BC		BC		C		C		C		C	
Air Temp.	13.6		13.3		14.8		14.8		13.3		12.1		11.3		11.5		14.1		13.6	
Bar	1020.2		1020.0		1019.0		1017.4		1014.5		1013.7		1013.5		1013.7		1013.5		1012.5	
Wind Dir	SW		SW		SSW		SW		SW		SW		WSW		WSW		SSW		S	
Wind Spd/F	F 4		F 4		F 4		F 5		F 5		F 4		F 4		F 3		F 4		F 4	
Transparency					14		11		14		13									
Depth													167							
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.8	34.012	12.7	34.073	14.7	33.988	13.9	33.766	11.1	33.456	11.1	33.510	10.0	33.304	10.1	33.328	13.8	33.734	13.6	33.877
10m	12.85	34.069	12.62	34.110	14.45	34.030	13.71	33.830	11.08	33.503	11.08	33.554	9.93	33.369	9.89	33.367	13.87	33.792	13.64	33.930
20m	12.85	34.076	12.62	34.110	14.42	34.024	13.25	33.755	11.12	33.510	10.58	33.504	9.47	33.337	9.86	33.367	13.86	33.793	13.64	33.930
30m	12.70	34.120	12.61	34.116	13.76	33.956	11.82	33.576	11.18	33.530	10.32	33.495	8.32	33.263	9.75	33.372	14.28	33.952	13.60	33.932
50m	12.66	34.131	11.99	34.242	13.56	33.957	10.41	33.369	10.11	33.391	8.93	33.294	7.21	33.153	9.82	33.614	13.31	33.783	13.47	33.944
75m	11.27	34.353	11.27	34.350	13.50	33.971	9.62	33.453	7.36	33.177	6.82	33.125	6.36	33.134	6.25	33.274	12.64	33.894	13.29	33.998
100m	11.25	34.347	11.27	34.348	12.14	34.015	11.40	34.220	7.75	33.706	9.17	33.874	5.72	33.189	3.29	33.216	12.79	34.343	11.22	34.094
125m	11.24	34.346	11.26	34.348	10.44	34.027	4.76	33.308	3.86	33.300	7.86	33.875	4.99	33.153	3.62	33.363	9.77	34.011	10.39	34.110
150m	11.22	34.344	11.26	34.347	10.27	34.174	4.26	33.367	3.61	33.361	4.77	33.499	3.35	33.123	2.54	33.287	8.13	33.894	10.24	34.179
200m	11.18	34.340	11.22	34.343	5.81	33.564	2.78	33.309	2.54	33.366	3.30	33.466			2.65	33.411	4.95	33.546	9.17	34.038
250m	11.13	34.334	11.19	34.340	3.14	33.373	2.07	33.324	2.18	33.421	3.07	33.533			2.85	33.521	3.16	33.400	7.59	33.829
300m	11.04	34.322	11.15	34.335	3.52	33.463	2.60	33.448	2.14	33.531	3.01	33.610			3.09	33.635	2.35	33.402	6.03	33.642
400m	10.34	34.209	10.89	34.295	3.25	33.485	2.23	33.553	2.79	33.789	3.24	33.814			3.25	33.811	2.11	33.518	3.21	33.412
500m	7.26	33.800	7.84	33.861	3.19	33.626	2.79	33.762	3.11	33.941	3.02	33.913			3.20	33.948	2.52	33.717	2.60	33.434
600m	5.32	33.650	5.46	33.657	2.94	33.767	3.71	34.039	3.35	34.101	3.37	34.092			3.54	34.119	3.05	33.890	3.83	33.777
700m																				
800m																				
900m																				
1000m																				

Table 5-42

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	PK14		PK13		PK12		PK11		P31		P32		P33		P34		PK22		PK21	
Latitude:N	42- 0.1		42-15.0		42-29.9		42-44.1		42-44.1		42-30.1		42-15.1		42- 0.1		41-59.9		42-14.9	
Longitude:E	144-30.1		144-30.0		144-29.9		144-30.0		144- 0.1		144- 0.0		144- 0.0		144- 0.1		143-30.0		143-29.1	
Date	1999/11/25		1999/11/25		1999/11/25		1999/11/25		1999/11/25		1999/11/25		1999/11/25		1999/11/25		1999/11/25		1999/11/25	
Time(JST)	00:06		01:39		03:23		05:10		07:09		08:31		10:06		11:47		14:10		15:38	
Weather	C		C		C		C		C		C		C		BC		C		C	
Air Temp.	13.1		11.1		8.8		8.1		8.1		8.3		8.1		10.0		9.1		9.0	
Bar	1009.0		1008.0		1006.7		1006.0		1006.0		1005.0		1004.4		1001.5		1000.5		1000.4	
Wind Dir	SE		NE		NE		NE		NNE		NNE		NNW		NNE		NE		E	
Wind Spd/F	F 4		F 4		F 5		F 6		F 5		F 5		F 4		F 5		F 4		F 1	
Transparency									19		10		12		20		12		10	
Depth							128		64		497		932				120		66	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.7	33.849	10.4	33.288	8.7	33.191	9.5	33.300	9.6	33.293	9.8	33.462	9.6	33.269	13.5	33.723	10.1	33.451	10.3	33.291
10m	13.79	33.860	10.35	33.371	8.66	33.290	9.60	33.374	9.67	33.362	9.75	33.360	9.42	33.340	13.68	33.768	10.05	33.332	10.34	33.320
20m	13.74	33.858	10.26	33.385	8.66	33.289	9.56	33.369	9.67	33.362	9.75	33.360	9.41	33.340	13.69	33.769	10.05	33.332	10.34	33.319
30m	13.73	33.876	9.76	33.350	8.66	33.288	9.46	33.361	9.67	33.362	9.75	33.360	9.41	33.340	13.64	33.762	10.05	33.333	10.34	33.319
50m	13.54	33.849	9.06	33.297	8.34	33.264	9.05	33.331	9.66	33.362	9.31	33.350	9.19	33.336	12.67	33.646	9.89	33.331	10.32	33.370
75m	13.40	33.828	8.78	33.270	6.58	33.113	8.22	33.267			7.41	33.308	8.95	33.313	10.80	34.014	9.20	33.322		
100m	12.86	33.944	6.79	33.311	5.26	33.243	7.39	33.187			5.26	33.264	7.55	33.252	10.50	34.164	7.54	33.297		
125m	10.46	33.764	6.04	33.475	2.99	33.247					4.39	33.272	4.96	33.249	9.32	34.088				
150m	9.59	34.020	5.75	33.630	2.35	33.240					3.50	33.248	2.84	33.179	8.21	34.010				
200m	5.54	33.587	2.86	33.401	2.49	33.373					2.69	33.271	2.45	33.355	6.05	33.838				
250m	3.00	33.351	2.29	33.417	2.28	33.452					2.71	33.364	2.55	33.465	4.12	33.659				
300m	3.74	33.503	2.34	33.507	1.98	33.465					2.38	33.400	2.13	33.502	3.20	33.637				
400m	3.11	33.551	3.80	33.883	2.99	33.768					2.83	33.704	3.26	33.840	2.72	33.719				
500m	3.50	33.761	3.44	33.986	3.31	33.959							3.36	33.959	3.40	33.948				
600m	3.01	33.856			3.50	34.115							3.41	34.077	3.49	34.105				
700m																				
800m																				
900m																				
1000m																				

Table 5-43



Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	SUF0		SUE0		SUD0		SUC0		SUB0		SUA0		SU19		SU18		SU09		SU08	
Latitude:N	43-56.0		43-58.9		44- 1.1		44- 4.1		44- 7.1		44-10.1		44- 6.7		44- 4.0		44- 0.8		43-58.4	
Longitude:E	145-13.1		145-15.4		145-17.6		145-20.0		145-22.4		145-24.1		145-17.4		145-23.5		145-13.8		145-18.9	
Date	1999/12/05		1999/12/05		1999/12/05		1999/12/05		1999/12/05		1999/12/05		1999/12/05		1999/12/05		1999/12/05		1999/12/05	
Time(JST)	02:49		03:14		03:45		04:24		05:06		05:52		06:50		07:41		10:26		11:15	
Weather	S		S		S		S		S		C		S		S		S		C	
Air Temp.	0.2		0.0		0.0		0.7		0.4		0.7		1.5		1.7		0.6		0.7	
Bar	1009.0		1009.0		1009.0		1008.7		1009.2		1009.7		1009.5		1011.0		1013.5		1014.0	
Wind Dir	NNE		N		N		NW		NW		CALM		NNW		NNW		NNE		N	
Wind Spd/F	F 3		F 2		F 2		F 3		F 1		F 0		F 5		F 5		F 4		F 4	
Transparency																				
Depth	86		256				584						350		563		163		228	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.2	32.19*	5.1	32.12*	5.0	32.24*	5.4	32.33*	5.2	32.22*	4.8	32.29*	4.6	32.35*	5.8	32.47*	4.9	32.14*	5.5	32.28*
10m	5.43	32.213	5.19	32.124	5.73	32.286	5.72	32.328	5.64	32.311	5.57	32.307	5.91	32.350	6.11	32.478	5.25	32.143	5.59	32.304
20m	5.80	32.321	5.67	32.226	5.69	32.324	5.73	32.332	5.76	32.348	5.61	32.320	5.98	32.366	6.11	32.479	5.24	32.142	5.60	32.308
30m	5.83	32.331	5.87	32.288	5.60	32.317	5.79	32.344	5.85	32.376	5.78	32.361	6.05	32.378	6.12	32.481	5.57	32.207	5.65	32.327
50m	6.04	32.376	6.26	32.372	5.60	32.319	5.76	32.342	5.99	32.408	6.27	32.506	5.77	32.345	6.24	32.500	6.20	32.363	5.71	32.337
75m	6.44	32.449	6.33	32.401	5.73	32.342	5.76	32.344	6.69	32.601	6.70	32.627	5.72	32.335	6.99	32.670	5.98	32.381	5.92	32.380
100m			5.89	32.361	5.80	32.383	5.97	32.444	7.48	32.815	7.45	32.916	5.71	32.337	8.28	32.972	7.34	32.635	6.03	32.401
125m			7.79	32.736	6.38	32.521	6.63	32.611	8.18	33.089	7.24	32.992	5.82	32.378	8.90	33.317	8.31	32.878	8.18	32.985
150m			9.36	33.203	8.48	33.402	8.64	33.424	7.48	33.234	7.64	33.290	6.36	32.568	9.51	33.608	8.85	33.345	9.06	33.426
200m			8.41	33.705	7.99	33.655	8.14	33.697	7.97	33.652	8.02	33.608	7.98	33.649	7.60	33.705			8.01	33.695
250m			7.49	33.691	7.21	33.681	6.49	33.661	6.90	33.678	6.82	33.672	7.07	33.672	6.41	33.653				
300m					5.23	33.588	4.18	33.523	4.40	33.540	4.66	33.549	3.37	33.492	4.68	33.553				
400m					2.34	33.484	2.05	33.454	1.92	33.453	2.11	33.443			2.20	33.453				
500m					1.75	33.621			1.69	33.607	1.65	33.565			1.66	33.579				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 5-44

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		200002		200002		200002		200002	
Station No	SUA1		SU29		SU28		SU27		SU25		SU26		P31		P32		P33		PK21	
Latitude:N	44- 0.1		44-26.9		44-24.3		44-18.6		44-14.8		44-19.2		42-44.1		42-30.0		42-15.0		42-14.9	
Longitude:E	145-15.1		145-13.1		145-19.2		145-30.7		145-32.5		145-23.1		144- 0.1		144- 0.0		144- 0.0		143-30.1	
Date	1999/12/05		1999/12/06		1999/12/06		1999/12/06		1999/12/06		1999/12/06		2000/02/21		2000/02/21		2000/02/21		2000/02/21	
Time(JST)	13:57		04:00		04:58		06:32		07:13		08:33		11:29		12:50		14:21		16:36	
Weather	C		BC		BC		C		C		BC		BC		C		C		C	
Air Temp.	0.6		0.0		0.0		0.1		0.5		1.0		-0.7		0.0		0.3		-1.3	
Bar	1016.0		1019.2		1018.7		1018.5		1018.9		1019.0		998.0		998.0		998.0		999.5	
Wind Dir	E		WNW		WNW		WNW		WNW		SSE		NE		NNE		N		ENE	
Wind Spd/F	F 1		F 3		F 3		F 3		F 3		F 3		F 1		F 2		F 2		F 4	
Transparency													16		24		19			
Depth	670										270		67		488		937		69	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.3	32.18*	3.2	31.48*	3.4	31.46*	3.5	31.56*	7.3	32.87*	3.8	18.47*	-0.5	32.206	6.8	33.746	9.3	34.088	-0.2	32.180
10m	5.43	32.180	3.60	31.601	3.63	31.457	3.85	31.682	7.77	32.870	4.06	31.680	-0.64	32.204	7.50	33.833	9.59	34.117	-0.26	32.289
20m	5.45	32.185	3.77	31.698	3.64	31.461	4.02	31.748	7.80	32.872	4.29	31.722	-0.66	32.205	7.42	33.822	9.59	34.118	-0.27	32.289
30m	5.48	32.192	3.27	31.750	3.66	31.477	4.33	31.857	7.85	32.880	4.60	31.620	-0.67	32.206	7.07	33.771	9.59	34.118	-0.27	32.290
50m	5.93	32.292	4.05	32.186	4.60	32.116	5.25	32.154	7.84	32.879	4.83	32.030	-0.32	32.365	6.85	33.734	9.59	34.117	-0.26	32.333
75m	5.68	32.316	4.96	32.443	5.73	32.638	7.62	32.840	8.31	32.984	5.31	32.215			6.87	33.736	9.52	34.102		
100m	5.77	32.346	3.14	32.753	6.03	32.943	8.47	33.032	8.80	33.112	6.36	32.491			5.50	33.531	8.26	33.909		
125m	6.06	32.416	3.02	33.250	7.07	33.612	9.08	33.203	9.15	33.375	6.92	32.727			5.47	33.534	6.06	33.567		
150m	9.10	33.101	2.48	33.331	7.03	33.612	9.63	33.418	8.34	33.396	7.23	33.300			4.73	33.452	5.59	33.507		
200m	8.47	33.618	0.96	33.256	5.33	33.519	8.43	33.678	6.84	33.647	7.60	33.646			3.76	33.386	4.95	33.518		
250m	7.61	33.702	1.65	33.372	4.67	33.516	4.61	33.539	3.50	33.477	5.45	33.597			5.40	33.755	3.51	33.540		
300m	4.11	33.545	1.75	33.421	4.06	33.482	2.42	33.422	2.27	33.417					3.25	33.579	2.35	33.469		
400m	2.11	33.495	1.29	33.503	1.07	33.364	1.61	33.478	1.78	33.461					3.51	33.746	2.85	33.654		
500m	1.78	33.590	1.53	33.629	1.86	33.627	1.66	33.567	1.67	33.564							3.44	33.874		
600m																	3.55	34.036		
700m																				
800m																				
900m																				
1000m																				

Table 5-45

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	PK22		P34		P35		PK23		PK24		P36		PK16		P27		PK07		P18	
Latitude:N	42- 0.1		41-59.1		41-30.0		41-29.9		41- 0.0		41- 0.0		41- 0.1		40-59.9		40-59.1		40-59.1	
Longitude:E	143-29.1		143-59.1		144- 0.1		143-31.4		143-30.1		143-59.9		144-30.0		144-59.9		145-29.8		145-59.9	
Date	2000/02/21		2000/02/21		2000/02/21		2000/02/22		2000/02/22		2000/02/22		2000/02/22		2000/02/22		2000/02/22		2000/02/22	
Time(JST)	18:02		20:17		23:19		01:44		04:44		07:28		09:59		13:21		16:47		20:28	
Weather	C		C		C		BC		C		C		BC		BC		BC		S	
Air Temp.	-1.2		-0.8		0.0		-2.7		-0.1		0.0		-1.3		-1.7		0.0		0.1	
Bar	1000.5		1001.2		1001.0		1002.0		1003.0		1004.2		1005.7		1005.0		1006.2		1007.2	
Wind Dir	NNW		N		N		NNE		N		N		N		NNW		NW		NW	
Wind Spd/F	F 3		F 5		F 5		F 5		F 4		F 5		F 6		F 6		F 5		F 5	
Transparency											13		14				11			
Depth	124																			
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	0.0	32.268	7.1	33.780	11.4	34.399	4.5	33.505	10.1	34.228	12.7	34.581	3.5	33.165	2.0	33.068	7.4	33.950	7.0	33.860
10m	-0.23	32.299	7.51	33.802	11.68	34.435	5.20	33.454	10.41	34.249	13.17	34.558	3.56	33.212	1.83	33.081	7.77	33.966	7.27	33.875
20m	-0.29	32.304	7.53	33.806	11.38	34.396	5.23	33.457	8.36	33.911	13.18	34.557	3.55	33.211	1.81	33.079	7.77	33.966	7.27	33.876
30m	-0.15	32.343	7.08	33.729	11.05	34.346	5.22	33.454	8.55	34.009	13.18	34.559	4.08	33.282	1.82	33.079	7.79	33.967	7.28	33.875
50m	0.06	32.410	6.76	33.679	11.02	34.337	5.39	33.475	8.08	33.938	13.19	34.557	5.61	33.533	1.75	33.074	7.78	33.966	7.28	33.876
75m	1.49	32.729	6.89	33.719	10.97	34.328	5.50	33.510	7.83	33.905	13.20	34.556	5.87	33.581	1.90	33.090	7.82	33.973	7.29	33.876
100m	4.01	33.190	6.42	33.663	9.90	34.146	4.87	33.448	7.52	33.865	13.21	34.556	6.08	33.616	3.04	33.226	7.81	33.970	7.30	33.876
125m			5.15	33.508	8.88	33.998	3.81	33.428	5.49	33.649	13.21	34.556	6.77	33.742	3.32	33.268	7.81	33.971	7.31	33.876
150m			3.92	33.433	8.24	33.928	3.92	33.451	4.85	33.616	12.67	34.462	7.01	33.784	2.85	33.222	7.82	33.972	7.30	33.875
200m			4.05	33.546	8.19	34.104	4.00	33.474	4.82	33.770	10.23	34.230	4.66	33.473	5.29	33.550	7.83	33.973	7.31	33.876
250m			3.11	33.531	5.51	33.784	3.76	33.602	5.05	33.907	9.68	34.286	3.64	33.424	2.34	33.233	7.84	33.973	7.31	33.875
300m			2.89	33.568	6.51	34.067	3.83	33.617	3.99	33.859	8.34	34.199	2.31	33.353	1.95	33.299	7.83	33.969	6.78	33.805
400m			4.38	33.908	4.13	33.902	3.73	33.697	4.23	34.062	5.30	33.929	2.95	33.580	1.98	33.365	4.21	33.489	4.24	33.550
500m			3.61	33.949	4.74	34.116	3.82	33.882	4.16	34.199	5.57	34.249	3.30	33.802	3.04	33.650	3.65	33.564	2.99	33.532
600m					4.25	34.209	3.44	34.010	3.69	34.250	4.11	34.177	3.44	33.988	3.17	33.819	3.09	33.651	3.18	33.710
700m																				
800m																				
900m																				
1000m																				

Table 5-46

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	P17		PK06		P26		PK15		PK14		PK13		PK12		P24		P25		PK04	
Latitude:N	41-29.7		41-30.1		41-30.0		41-29.1		41-59.1		42-15.0		42-29.9		42-15.1		42- 0.1		42-15.0	
Longitude:E	146- 0.2		145-30.1		145- 0.2		144-30.1		144-30.0		144-30.0		144-29.9		145- 0.0		145- 0.2		145-30.1	
Date	2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23	
Time(JST)	01:49		05:20		07:52		10:20		13:25		15:03		16:40		19:12		20:54		23:24	
Weather	C		C		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	-0.5		-0.3		-0.8		-0.1		0.0		0.5		-0.4		-0.2		0.6		0.0	
Bar	1008.0		1009.0		1011.5		1011.5		1011.0		1010.5		1010.7		1010.5		1012.0		1011.5	
Wind Dir	NW		N		NW		NW		W		W		WNW		N		WNW		NW	
Wind Spd/F	F 6		F 6		F 4		F 5		F 3		F 2		F 3		F 2		F 4		F 2	
Transparency					13		17		19		20		12							
Depth																				
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	8.3	34.087	8.3	34.108	7.2	33.889	4.8	33.523	9.3	34.176	12.1	34.493	7.9	33.924	12.0	34.498	6.5	33.717	10.1	34.250
10m	8.73	34.135	8.69	34.127	7.50	33.924	4.78	33.503	9.74	34.184	12.42	34.511	8.20	33.941	12.55	34.529	6.75	33.809	10.72	34.276
20m	8.72	34.134	8.68	34.128	7.52	33.927	4.48	33.480	9.72	34.180	12.40	34.510	8.13	33.930	12.56	34.528	6.73	33.807	10.72	34.275
30m	8.73	34.134	8.69	34.127	7.52	33.927	4.50	33.480	9.71	34.179	12.30	34.507	8.08	33.925	12.55	34.528	6.69	33.799	10.71	34.274
50m	8.72	34.133	8.69	34.127	7.54	33.930	4.48	33.490	9.17	34.080	11.32	34.377	7.94	33.906	12.54	34.527	6.74	33.805	9.28	34.013
75m	8.73	34.134	8.69	34.127	7.54	33.929	4.57	33.505	8.60	33.992	10.85	34.303	7.48	33.834	10.61	34.190	6.69	33.801	9.00	34.033
100m	8.73	34.133	8.70	34.127	7.52	33.927	4.57	33.504	7.96	33.909	9.06	34.003	6.51	33.677	10.13	34.164	6.67	33.795	8.59	33.982
125m	8.73	34.133	8.69	34.126	7.55	33.930	4.64	33.515	7.43	33.858	9.04	34.043	5.62	33.546	9.00	34.001	6.63	33.789	8.46	33.973
150m	8.72	34.131	8.70	34.126	7.54	33.929	4.22	33.461	7.26	33.890	8.81	34.069	5.42	33.521	8.35	33.943	6.42	33.755	8.04	33.910
200m	8.70	34.127	8.70	34.127	7.54	33.928	3.92	33.433	6.36	33.884	4.06	33.507	4.40	33.400	7.32	33.768	6.07	33.696	6.00	33.611
250m	8.66	34.119	8.69	34.124	7.54	33.928	2.99	33.332	5.02	33.797	4.18	33.618	5.55	33.732	5.18	33.514	5.60	33.625	4.39	33.389
300m	8.68	34.120	8.71	34.125	7.56	33.930	2.24	33.279	6.23	34.125	3.31	33.607	5.30	33.828	3.40	33.447	4.53	33.479	2.32	33.192
400m	8.67	34.118	8.72	34.127	4.39	33.541	3.07	33.502	4.29	33.961	3.59	33.813	5.27	34.027	4.45	33.765	3.28	33.479	2.17	33.360
500m	8.48	34.081	8.73	34.127	2.92	33.482	3.00	33.681	4.63	34.139	4.54	34.076	4.08	34.002	3.94	33.833	2.75	33.560	3.13	33.637
600m	4.51	33.574	4.99	33.633	3.17	33.653	3.41	33.914	4.32	34.211	4.07	34.163	3.75	34.105	4.68	34.117	3.33	33.802	3.06	33.781
700m																				
800m																				
900m																				
1000m																				

Table 5-47

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	200002	200002	200002	200002	200002	200002	200002	200002	200002	200002											
Station No	PK05	P16	P15	P14	P13	P12	P11	PK01	PK02	P21											
Latitude:N	42- 0.1	41-59.9	42-14.9	42-29.9	42-44.9	42-54.9	43- 3.5	42-54.1	42-45.1	42-54.9											
Longitude:E	145-30.1	146- 0.0	146- 0.1	146- 0.1	145-54.8	145-49.9	145-45.5	145-33.1	145-30.0	144-59.9											
Date	2000/02/24	2000/02/24	2000/02/24	2000/02/24	2000/02/24	2000/02/24	2000/02/24	2000/02/24	2000/02/24	2000/02/24											
Time(JST)	01:10	03:15	05:02	06:54	08:37	10:05	11:25	12:53	14:22	16:44											
Weather	S	BC	S	C	C	C	C	C	C	BC											
Air Temp.	-1.1	-1.2	-2.2	-2.7	-4.0	-4.0	-4.4	-4.4	-4.1	-4.5											
Bar	1011.0	1011.0	1011.0	1011.4	1011.0	1010.0	1009.5	1008.9	1008.7	1009.0											
Wind Dir	WNW	E	NE	NE	NNE	NNE	NE	NNE	N	NNE											
Wind Spd/F	F 1	F 3	F 3	F 3	F 3	F 4	F 4	F 4	F 4	F 4											
Transparency				17	16	15	15	13	18	11											
Depth							116	260		67											
Equipment	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD	CTD											
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S			
0m	8.1	34.069	5.3	33.511	7.0	33.787	4.6	33.376	-0.1	32.603	-0.3	32.527	-0.9	32.382	-0.2	32.578	-0.1	32.602	-1.2	32.041	
10m	8.48	34.098	5.30	33.547	7.31	33.822	4.68	33.459	-0.02	32.669	-0.27	32.620	-0.89	32.460	-0.26	32.628	-0.12	32.617	-1.14	32.191	
20m	8.49	34.097	5.31	33.547	7.27	33.818	4.67	33.459	2.31	33.067	-0.10	32.662	-0.83	32.473	-0.10	32.679	-0.10	32.619	-1.05	32.212	
30m	8.49	34.097	5.30	33.546	6.84	33.760	4.64	33.456	4.98	33.449	0.07	32.704	-0.67	32.498	0.08	32.713	0.54	32.740	-0.94	32.254	
50m	8.50	34.097	5.26	33.543	6.85	33.764	4.61	33.453	5.55	33.551	0.35	32.779	-0.61	32.551	0.13	32.721	4.25	33.268	-1.04	32.277	
75m	8.48	34.092	5.16	33.529	7.18	33.848	4.66	33.460	5.63	33.574	0.42	32.799	-0.47	32.588	0.18	32.736	5.85	33.547			
100m	8.25	34.052	5.57	33.594	7.78	33.968	4.57	33.451	5.29	33.524	0.51	32.823	-0.04	32.674	0.22	32.751	5.95	33.573			
125m	8.12	34.028	6.41	33.721	7.94	34.001	4.30	33.415	4.92	33.472	0.57	32.842			0.29	32.765	5.75	33.559			
150m	8.03	34.014	6.35	33.725	7.79	33.976	3.83	33.358	4.58	33.428	0.58	32.859			0.59	32.830	5.70	33.561			
200m	8.01	34.009	6.57	33.765	7.62	33.944	3.30	33.319	4.90	33.485	1.12	33.004			0.97	32.948	4.60	33.450			
250m	8.03	34.011	6.21	33.707	6.92	33.831	2.35	33.233	4.20	33.470	3.83	33.403					3.88	33.466			
300m	7.97	34.000	6.20	33.703	4.88	33.553	2.71	33.311	3.08	33.448	3.25	33.470					2.92	33.437			
400m	5.26	33.598	3.97	33.391	2.96	33.463	3.11	33.514	3.71	33.674	2.64	33.519					3.20	33.611			
500m	4.14	33.570	3.62	33.511	3.01	33.597	2.83	33.630	3.46	33.803	2.47	33.639					3.97	33.899			
600m	2.75	33.537	2.84	33.565	3.02	33.763	4.57	34.056	3.40	33.932	3.46	33.978					4.13	34.068			
700m																					
800m																					
900m																					
1000m																					

Table 5-48

Table 5 Results of serial oceanographic observations. Hokkaido Kushiro Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002											
Station No	P22		PK03		P23		PK11											
Latitude:N	42-45.0		42-29.1		42-29.1		42-44.1											
Longitude:E	144-59.1		145-30.0		145- 0.1		144-30.0											
Date	2000/02/24		2000/02/24		2000/02/24		2000/02/25											
Time(JST)	17:40		20:41		23:07		01:47											
Weather	BC		BC		BC		C											
Air Temp.	-4.8		-3.5		-4.0		-6.8											
Bar	1009.2		1008.2		1009.0		1009.7											
Wind Dir	NNE		NNE		NNE		NNE											
Wind Spd/F	F 4		F 5		F 4		F 4											
Transparency																		
Depth	168						133											
Equipment	CTD		CTD		CTD		CTD											
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	-0.2	32.548	7.0	33.823	5.5	33.574	-1.2	33.453										
10m	-0.19	32.581	7.50	33.869	5.85	33.598	-0.88	32.358										
20m	-0.12	32.592	7.56	33.873	5.93	33.609	-0.79	32.369										
30m	0.56	32.726	7.56	33.875	5.87	33.600	-0.75	32.377										
50m	3.33	33.127	7.58	33.877	5.98	33.613	-0.67	32.408										
75m	5.70	33.553	7.44	33.853	6.27	33.665	0.36	32.644										
100m	5.88	33.590	7.30	33.830	5.88	33.604	1.64	32.890										
125m	5.95	33.609	7.15	33.787	5.42	33.543												
150m	4.87	33.464	5.21	33.504	5.16	33.522												
200m			4.63	33.475	3.74	33.473												
250m			3.68	33.454	4.04	33.597												
300m			3.90	33.565	3.07	33.545												
400m			5.72	34.011	3.37	33.732												
500m			5.00	34.059	3.69	33.911												
600m			3.25	33.935	4.29	34.165												
700m																		
800m																		
900m																		
1000m																		

Table 5-49

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	J101		J102		J103		J104		JW03		JW02		JW01		JA02		JA01		S103	
Latitude:N	45-30.0		45-30.0		45-30.0		45-30.2		45-45.0		45-45.0		45-44.9		45-43.5		45-41.9		45-39.9	
Longitude:E	141-39.9		141-24.9		141-10.0		140-53.0		141- 0.0		141- 9.8		141-19.9		141-33.0		141-46.6		142- 0.1	
Date	1999/04/12		1999/04/12		1999/04/12		1999/04/12		1999/04/12		1999/04/12		1999/04/12		1999/04/12		1999/04/12		1999/04/12	
Time(JST)	10:23		11:57		13:12		14:54		16:56		17:53		18:40		19:52		20:51		21:43	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	10.4		8.3		8.4		7.9		7.5		7.0		7.2		6.2		5.1		4.4	
Bar	1014.5		1013.5		1012.6		1011.5		1011.0		1011.0		1011.5		1011.5		1012.0		1011.5	
Wind Dir	SSW		S		S		SSE		S		S		S		S		E		NE	
Wind Spd/F	S 10		S 11		S 11		S 6		S 6		S 4		S 5		S 5		S 3		S 6	
Transparency																				
Depth	56		115		129		443		496		124		130		113		69		55	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.1	33.331	4.2	33.993	3.3	34.030	4.4	34.063	3.8	34.063	3.5	34.032	3.3	34.009	3.4	33.986	3.4	33.972	3.2	34.020
10m	3.92	33.297	3.84	33.997	3.62	34.030	3.87	34.067	3.70	34.064	3.44	34.029	3.15	34.004	3.26	33.984	3.37	33.972	3.05	34.016
20m	3.70	33.454	3.72	34.014	3.65	34.051	3.52	34.073	3.61	34.066	3.29	34.031	3.08	34.003	3.21	33.982	3.21	33.962	2.94	34.017
30m	3.60	33.534	3.59	34.026	3.55	34.051	3.39	34.074	3.54	34.068	3.28	34.035	2.97	33.998	3.05	33.979	3.12	33.958	2.87	34.017
50m			3.36	34.015	3.42	34.044	3.31	34.074	3.34	34.070	3.22	34.043	2.81	33.996	2.89	33.983	2.86	33.990		
75m			3.34	34.015	3.39	34.050	3.11	34.079	3.25	34.072	3.11	34.039	2.70	34.001	2.85	33.998				
100m			3.27	34.013	3.36	34.055	2.82	34.083	2.97	34.077	2.65	34.042	2.55	34.013	2.65	34.001				
125m							2.51	34.087	2.84	34.079			2.54	34.012						
150m							2.13	34.090	2.72	34.080										
200m							1.68	34.087	2.14	34.075										
250m							1.10	34.085	1.67	34.086										
300m							0.94	34.082	1.22	34.088										
400m							0.87	34.080	0.80	34.081										
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-1

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	S102		S101		S399		S302		OA01		S397		S404		S403		S402		S401	
Latitude:N	45-34.9		45-30.9		45-32.3		45-34.9		45-29.9		45-30.0		45-29.7		45-20.0		45-12.5		45- 8.0	
Longitude:E	142- 0.0		142- 0.1		142-12.6		142-15.1		142-30.0		142-35.0		142-49.8		142-40.0		142-32.5		142-28.1	
Date	1999/04/12		1999/04/12		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13	
Time(JST)	22:38		23:23		00:30		01:03		02:24		03:08		04:12		06:03		07:08		07:46	
Weather	C		C		C		C		C		C		C		C		C		C	
Air Temp.	3.4		3.2		2.9		2.6		2.1		2.3		1.9		1.7		1.7		2.3	
Bar	1010.5		1010.0		1008.5		1007.2		1006.6		1006.4		1006.1		1004.0		1003.0		1002.0	
Wind Dir	NE		NE		NNE		NE		SE		SE		E		E		E		E	
Wind Spd/F	S 6		S 4		S 5		S 2		S 4		S 4		S 2		S 7		S 8		S 9	
Transparency																				
Depth	40		24		44		48		83		85		120		100		62		33	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	3.3	33.882	3.5	33.697	2.9	33.971	2.6	34.022	1.6	33.875	0.0	32.833	-0.5	32.261	-0.6	32.518	0.2	32.971	3.4	31.303
10m	3.36	33.880	3.59	33.703	3.03	33.977	2.67	34.026	1.56	33.888	0.07	33.212	-0.63	32.258	-0.32	32.528	0.18	33.314	3.33	33.919
20m	3.36	33.880			3.03	33.977	2.66	34.026	1.51	33.966	0.08	33.358	-1.13	32.304	-1.33	32.805	1.60	33.682	3.31	33.916
30m	3.35	33.883			3.04	33.977	2.68	34.026	1.54	33.982	0.45	33.515	-1.38	32.383	0.27	33.160	2.51	33.979		
50m									1.58	33.990	1.58	33.982	-1.44	32.722	0.75	33.675	2.56	33.999		
75m											1.66	34.008	-1.73	32.888	1.54	33.966				
100m													0.20	33.375						
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-2



Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	S300		S301		JW11		JW12		JW13		J204		J203		J202		J201		J105	
Latitude:N	45-26.9		45-30.0		45- 0.0		45- 0.0		44-59.9		44-30.0		44-29.9		44-30.0		44-29.9		45-30.0	
Longitude:E	142- 7.9		142-10.0		141-30.0		141-15.0		141- 0.0		140-40.0		141- 0.1		141-15.1		141-30.0		140-40.1	
Date	1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/13		1999/04/14		1999/04/15	
Time(JST)	10:07		10:42		15:39		16:43		17:49		20:59		22:24		23:34		00:40		13:37	
Weather	C		C		R		R		R		C		R		R		R		C	
Air Temp.	3.8		3.3		4.1		4.0		4.1		4.7		5.1		5.1		5.2		1.8	
Bar	1002.0		1001.5		996.0		996.2		996.1		996.0		996.0		996.0		996.0		1017.5	
Wind Dir	E		E		NE		NE		ENE		ENE		NE		NNE		NNE		NW	
Wind Spd/F	S 7		S 8		S 7		S 7		S 7		S 5		S 3		S 2		S 3		S 5	
Transparency																				
Depth	24		37				87		104		146		203		119		79		548	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	3.4	33.841	3.4	33.938	4.4	32.320	4.0	33.974	4.6	34.011	4.6	34.015	5.0	33.995	5.2	33.943	4.9	33.821	3.6	34.064
10m	3.38	33.841	3.36	33.941	3.83	33.668	4.11	33.994	4.67	34.037	4.64	34.037	4.94	34.020	4.79	34.016	4.54	33.998	3.53	34.061
20m			3.36	33.941	3.85	33.763	3.90	34.033	4.37	34.044	4.44	34.051	4.85	34.033	4.31	33.993	4.03	33.989	3.51	34.061
30m					3.73	33.813	3.82	34.034	4.13	34.045	4.29	34.051	4.84	34.033	4.17	33.996	3.99	33.988	3.48	34.061
50m					3.65	33.956	3.69	34.028	4.01	34.043	4.16	34.052	4.84	34.032	4.03	33.994	4.03	34.002	3.31	34.077
75m							3.39	34.016	3.72	34.041	3.89	34.061	4.73	34.035	3.97	34.011			3.00	34.085
100m											3.42	34.073	4.41	34.050	3.61	34.064			2.75	34.086
125m											2.85	34.084	4.27	34.056					2.49	34.087
150m													3.96	34.062					2.26	34.087
200m																			1.88	34.086
250m																			1.44	34.087
300m																			1.08	34.083
400m																			0.72	34.077
500m																			0.42	34.071
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-3

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	J106		J107		J108		JW16		JW15		JW14		O15		O14		OA03		OA02	
Latitude:N	45-30.0		45-30.1		45-30.1		45- 0.0		45- 0.1		45- 0.1		45-30.1		45-30.1		45- 0.0		44-52.4	
Longitude:E	140-20.1		140- 0.0		139-39.9		139-59.9		140-20.0		140-39.9		142- 9.7		142-49.9		143- 0.1		142-52.6	
Date	1999/04/15		1999/04/15		1999/04/15		1999/04/15		1999/04/16		1999/04/16		1999/04/19		1999/04/19		1999/04/19		1999/04/19	
Time(JST)	15:19		16:53		19:16		23:16		00:43		02:05		11:24		14:05		17:32		18:32	
Weather	C		B		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	2.3		1.9		1.6		2.9		3.5		3.9		9.9		6.9		4.8		6.9	
Bar	1018.6		1017.7		1018.0		1018.5		1018.3		1017.5		1013.4		1013.2		1013.5		1013.5	
Wind Dir	W		SSW		S		S		S		SSE		SSE		SSE		ENE		SSE	
Wind Spd/F	S 2		S 3		S 5		S 8		S 8		S 9		S 8		S 9		S 3		S 3	
Transparency													8		4		9			
Depth	396		591		847		256		150		369		37		119		132		85	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.1	34.044	4.1	34.057	2.8	34.078	4.2	34.048	4.4	34.039	4.5	34.031	4.9	32.560	0.5	32.080	1.2	32.465	4.4	33.680
10m	4.05	34.046	3.94	34.042	2.98	34.073	4.12	34.047	4.62	34.035	4.55	34.028	4.19	32.561	-0.12	32.107	-1.06	32.515	3.48	33.898
20m	3.97	34.047	3.74	34.041	2.71	34.075	4.09	34.048	4.56	34.038	4.55	34.028	3.91	33.729	-0.98	32.304	-1.63	32.668	3.43	33.907
30m	3.91	34.049	3.71	34.042	2.67	34.074	3.59	34.069	4.54	34.038	4.31	34.047	3.90	33.845	-1.43	32.486	-1.64	32.859	3.38	33.913
50m	3.64	34.072	3.51	34.055	2.22	34.098	3.26	34.077	4.05	34.061	3.88	34.061			-1.50	32.657	-1.54	32.940	3.28	33.926
75m	3.43	34.073	2.31	34.087	1.92	34.094	2.95	34.082	3.56	34.070	3.37	34.076			-1.49	32.867	1.06	33.695	3.12	33.949
100m	3.16	34.075	2.14	34.088	1.55	34.092	2.33	34.090	3.24	34.076	3.11	34.076			0.24	33.307	1.78	33.928		
125m	2.82	34.082	1.84	34.080	1.32	34.088	1.67	34.092	2.81	34.082	2.90	34.078					1.98	33.972		
150m	2.54	34.085	1.50	34.088	1.17	34.086	1.35	34.087			2.45	34.086								
200m	1.94	34.090	1.15	34.085	0.98	34.084	1.12	34.083			1.72	34.088								
250m	1.24	34.085	0.93	34.081	0.87	34.083					1.34	34.084								
300m	0.75	34.078	0.76	34.079	0.75	34.079					0.97	34.080								
400m			0.57	34.074	0.57	34.074														
500m			0.36	34.070	0.44	34.072														
600m					0.31	34.068														
700m																				
800m																				
900m																				
1000m																				

Table 6-4

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	O22		O23		OA11		OA12		O32		OA20		O31		OA21		OA22		OA23	
Latitude:N	44-34.9		44-39.9		44-17.5		44-22.5		44-10.0		44- 4.9		44- 2.0		44- 1.9		44-10.0		44-20.1	
Longitude:E	143-15.1		143-20.1		143-37.5		143-42.5		144-19.9		144-20.0		144-19.9		144-49.9		144-49.9		144-50.0	
Date	1999/04/19		1999/04/19		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20	
Time(JST)	20:36		21:42		00:55		01:43		05:04		05:40		06:02		07:56		08:46		09:55	
Weather	C		C		R		R		R		R		C		BC		C		C	
Air Temp.	7.5		6.7		7.0		7.0		4.6		4.2		4.4		5.9		7.4		6.4	
Bar	1014.5		1014.5		1015.5				1016.5		1015.5		1016.6		1015.9		1016.0		1015.5	
Wind Dir	E		SSE		S		S		SSE		SE		SSE		S		SW		SSW	
Wind Spd/F	S 2		S 3		S 6		S 5		S 8		S 5		S 5		S 6		S 7		S 9	
Transparency											9		7		6		7		9	
Depth	74		114		46		92		118		38		35		80		597		1095	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	2.6	33.438	3.2	32.790	3.9	31.063	1.4	32.448	-0.3	32.476	-0.1	32.542	0.7	32.301	1.1	32.159	0.4	32.267	-0.7	32.291
10m	2.58	33.731	-1.09	32.956	-1.14	32.688	-0.06	32.773	-0.56	32.524	-0.11	32.610	0.14	32.741	0.68	32.170	0.22	32.262	-1.09	32.314
20m	2.99	33.892	-0.81	33.058	-1.08	32.899	-1.36	32.963	-1.27	32.740	-0.69	32.938	-0.39	32.832	0.49	32.193	0.03	32.301	-1.32	32.469
30m	2.94	33.897	0.56	33.456	-0.26	33.105	-1.16	33.030	-1.60	32.832	-0.60	32.981	-0.82	32.868	-0.08	32.546	-0.04	32.323	-1.61	32.687
50m	2.99	33.919	1.66	33.893			2.75	33.836	0.38	33.217					-0.44	32.814	-1.11	32.748	-1.63	32.814
75m			1.97	33.946			2.79	33.861	2.72	33.711					0.49	33.222	-0.22	32.929	-1.47	32.962
100m			1.93	33.946					2.76	33.730							-0.67	33.026	-1.61	33.012
125m																	-0.43	33.097	-1.38	33.052
150m																	-0.09	33.179	-1.31	33.083
200m																	0.86	33.464	-1.12	33.163
250m																	1.08	33.541	-0.30	33.248
300m																	1.32	33.586	-0.28	33.291
400m																	0.86	33.582	0.68	33.488
500m																	1.19	33.687	1.05	33.618
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-5

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	OA31a		OA24		O33		O34		OA14		OA13		O24		O25		O26		OA05	
Latitude:N	44-21.4		44-30.0		44-20.0		44-30.0		44-40.0		44-30.0		44-49.9		45- 0.0		45- 9.9		45-10.1	
Longitude:E	145- 1.6		144-50.0		144-20.0		144-19.9		144- 0.2		143-50.0		143-30.0		143-39.9		143-49.9		143-10.0	
Date	1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/20		1999/04/21		1999/04/21		1999/04/21		1999/04/21	
Time(JST)	10:57		12:22		15:30		16:37		18:33		20:12		05:16		07:02		08:46		12:16	
Weather	C		C		C		C		BC		B		B		B		B		B	
Air Temp.	6.2		6.5		3.1		2.0		1.2		1.1		1.2		1.9		2.9		3.3	
Bar	1015.5		1015.4		1017.0		1018.4		1020.3		1022.0		1023.9		1024.5		1025.2		1026.0	
Wind Dir	SW		SW		N		N		ESE		SSW		W		WNW		NW		NNE	
Wind Spd/F	S 5		S 5		S 6		S 4		S 3		S 1		S 5		S 7		S 5		S 1	
Transparency	8		7		10		11						15		15		6		5	
Depth	1086		1582		267		863		189		164		151		172		346		132	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	-1.1	31.815	-0.6	32.033	0.3	32.442	-1.0	32.596	0.4	32.408	1.6	32.593	0.0	32.298c	-0.4	32.378	0.5	32.070	2.1	31.943
10m	-1.25	31.970	-1.05	32.023	0.05	32.442	-1.04	32.589	0.26	32.403	-0.40	32.880	0.07	32.284	-0.46	32.374	0.26	32.065	0.81	31.936
20m	-1.28	32.230	-1.23	32.260	-0.28	32.528	-1.15	32.622	-0.03	32.420	-1.26	32.978	-1.31	32.525	-0.16	32.471	-1.22	32.459	-0.87	32.394
30m	-1.44	32.546	-1.30	32.731	-1.15	32.698	-1.53	32.763	-1.38	32.754	-0.71	33.087	-1.44	32.631	-0.58	32.584	-1.52	32.569	-1.09	32.458
50m	-1.58	32.754	-1.71	32.812	-1.44	32.878	-1.45	32.932	-1.60	32.895	0.40	33.456	-1.58	32.850	-0.69	32.737	-1.63	32.700	-1.47	32.626
75m	-1.59	32.901	-0.89	32.964	-1.40	33.010	-1.39	33.009	-1.58	32.977	1.74	33.938	-1.48	32.950	-1.31	32.930	-1.58	32.893	-1.58	32.891
100m	-1.49	32.972	-1.05	33.014	-1.50	33.045	-1.43	33.039	-1.51	33.040	1.63	33.951	-1.21	33.026	-1.29	33.007	-1.67	32.980	0.19	33.295
125m	-1.42	33.025	-1.38	33.037	-1.08	33.115	-1.49	33.056	-1.07	33.103	1.59	33.960	1.20	33.902	0.97	33.689	-1.39	33.048	1.20	33.789
150m	-1.21	33.069	-0.58	33.099	-1.02	33.176	-1.35	33.084	-0.49	33.200	1.58	33.961			1.35	33.929	-1.00	33.120		
200m	0.12	33.236	-0.16	33.206	-0.05	33.347	-0.98	33.154									-0.82	33.169		
250m	0.29	33.327	-0.25	33.263	1.84	33.930	-0.56	33.228									-0.61	33.207		
300m	0.86	33.428	0.01	33.325			-0.15	33.285									-0.28	33.277		
400m	1.40	33.578	1.05	33.503			0.71	33.437												
500m	1.27	33.669	1.33	33.657			1.05	33.557												
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-6

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199904		199904		199904		199904		199904		199904	
Station No	WTC01		WTC05		WTC08		WTC09		WTC10		WTC11		WTC06		WTC07		WTC04		WTC03	
Latitude:N	45-30.1		45-15.0		45- 0.0		45- 0.0		45- 0.0		45- 0.0		45-15.0		45-15.0		45-29.9		45-30.1	
Longitude:E	141-25.0		141-30.0		141-29.9		141-14.9		141- 0.0		140-40.0		140-59.9		140-39.9		140-39.9		140-55.0	
Date	1999/04/26		1999/04/26		1999/04/26		1999/04/26		1999/04/26		1999/04/26		1999/04/26		1999/04/26		1999/04/26		1999/04/27	
Time(JST)	11:01		12:42		14:17		15:29		16:42		18:18		20:22		21:54		23:34		00:52	
Weather	BC		BC		BC		BC		BC		BC		BC		BC		F		C	
Air Temp.	15.1		13.1		14.0		13.8		12.4		11.6		10.3		9.8		8.9		8.7	
Bar	1017.5		1016.0		1013.5		1013.6		1013.0		1015.0		1011.5		1011.0		1010.0		1010.0	
Wind Dir	ENE		NNW				SSW				CALM		S		SSE				SSW	
Wind Spd/F	S 3						S 2				S 0		S 1		S 3		S 3		S 4	
Transparency			4		14		16		13		11									
Depth	113		35		66		86		100		370		89		452		544		127	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.8	34.018	8.2	26.613	11.4	31.845	10.8	34.047	8.1	34.043	8.4	34.046	7.8	34.042	7.4	34.055	6.5	34.056	6.8	34.044
10m	5.30	34.010	5.51	33.343	5.17	33.871	5.63	34.038	5.53	34.053	5.81	34.042	5.47	34.038	5.13	34.055	5.54	34.048	5.64	34.044
20m	4.31	34.016	5.12	33.532	4.99	33.890	5.35	34.032	5.25	34.039	5.12	34.039	5.14	34.034	4.70	34.054	4.63	34.063	5.12	34.043
30m	4.27	34.013			4.53	33.895	5.07	34.026	5.16	34.035	5.00	34.040	4.84	34.039	4.15	34.065	4.44	34.060	4.93	34.041
50m	4.07	34.007			4.51	33.959	3.84	34.025	4.38	34.038	4.86	34.042	4.50	34.044	3.64	34.070	4.01	34.061	4.77	34.040
75m	3.68	34.010					3.66	34.007	3.97	34.033	4.62	34.041	3.90	34.050	3.31	34.074	3.02	34.084	4.21	34.052
100m	3.66	34.041									4.25	34.052			2.88	34.079	2.70	34.087	3.98	34.050
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-7

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199904		199904		199904		199904		199905		199905		199905		199905		199905		199905	
Station No	WTC02		WTC12		WTC13		WTC14		WCA01		WCA02		WPA01		WSU01		WSU02		WSU03	
Latitude:N	45-30.0		45-40.0		45-39.9		45-30.0		45-14.9		45-15.1		44-48.0		44-42.5		44-35.0		44-46.6	
Longitude:E	141-10.1		141-50.0		141-59.9		142- 9.9		141-14.9		141-15.0		140-39.0		144- 1.2		144- 3.2		144- 5.2	
Date	1999/04/27		1999/04/27		1999/04/27		1999/04/27		1999/05/11		1999/05/13		1999/05/19		1999/05/26		1999/05/26		1999/05/26	
Time(JST)	02:15		15:38		16:58		18:30		12:15		08:50		12:45		09:32		11:59		14:52	
Weather	C		C		R		C		BC		BC		R		C		C		BC	
Air Temp.	9.1		3.2		1.8		1.2		9.6		11.2				5.1		6.1		7.6	
Bar	1009.5		1007.5		1008.5		1009.2		1011.0		1010.5				1012.0		1012.5		1013.5	
Wind Dir	SSE		NE		NE		NE		SW		WSW				CALM		E		ENE	
Wind Spd/F	S 1		S 9		S 9		S 10		S 7		S 5				S 0		S 3		S 5	
Transparency			10		15				7				7		12		14		14	
Depth	129		67		53		37		35		48		147		191		202		197	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.5	34.037	5.4	33.077	3.4	34.058	4.0	33.811	7.1	33.872	7.2	33.913	9.2	34.023	3.8	32.231	3.6	32.226	4.5	32.292
10m	5.30	34.010	4.80	33.698	3.97	34.047	4.24	33.830	5.90	33.949	6.72	33.911	8.88	34.017	3.56	32.226	3.91	32.223	3.89	32.282
20m	4.31	34.016	4.12	34.037	3.82	34.049	4.18	33.976	5.59	33.966	6.64	33.928	8.09	34.027	1.66	32.438	0.32	32.375	0.82	32.435
30m	4.27	34.013	3.88	34.025	3.43	34.054	4.18	33.977	5.58	33.977	6.56	33.938	6.58	33.996	0.46	32.537	-0.86	32.581	0.06	32.559
50m	4.07	34.007	3.35	34.011									5.70	34.026	-1.16	32.804	-1.36	32.866	-1.05	32.811
75m	3.68	34.010											4.61	34.043	-1.52	32.955	-1.18	32.987	-1.46	32.968
100m	3.66	34.041											4.13	34.055	-1.19	33.026	-1.32	33.031	-1.49	33.015
125m													3.52	34.072	-0.74	33.104	-1.05	33.076	-1.49	33.049
150m															-0.71	33.148	-1.07	33.104	-0.98	33.109
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-8

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199905		199905		199905		199906		199906		199906		199906		199906		199906		199906	
Station No	WSU04		WSU05		WSU06		S102		S101		S300		S301		S399		S302		OA10	
Latitude:N	45- 7.0		45-23.8		45-27.5		45-35.0		45-31.1		45-27.0		45-29.9		45-32.5		45-34.9		45-30.0	
Longitude:E	143- 6.1		142-58.6		142-52.0		142- 0.1		142- 0.0		142- 8.1		142-10.0		142-12.5		142-15.1		142-30.1	
Date	1999/05/27		1999/05/27		1999/05/27		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/01	
Time(JST)	09:22		12:54		14:54		14:23		15:15		16:05		16:40		17:06		17:31		18:41	
Weather	C		C		R		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	6.8		6.3		5.7		19.5		17.0		17.7		16.9		16.7		16.6		15.7	
Bar	1010.5		1009.5		1008.0		1014.0		1013.5		1013.5		1013.0		1013.0		1013.5		1013.6	
Wind Dir	E		ESE		E		SW		SW		SW		SW		SSW		SSW		SW	
Wind Spd/F	S 4		S 4		S 9		S 9		S 8		S 8		S 6		S 4		S 2		S 2	
Transparency	15		14		13															
Depth	132		122		120		40		27		22		36		43		48		84	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.6	32.515	4.0	32.474	3.7	32.249	10.3	33.419	10.8	33.054	10.4	33.202	10.4	33.333	9.6	33.688	8.4	33.906	5.3	33.999
10m	4.30	32.505	3.61	32.467	3.49	32.251	10.15	33.425	10.51	33.109	10.30	33.202	10.18	33.349	9.62	33.693	8.34	33.910	6.20	34.004
20m	2.48	32.468	3.53	32.468	0.82	32.492	10.14	33.427	10.43	33.184			10.16	33.357	9.62	33.692	8.34	33.909	6.20	34.004
30m	-0.12	32.579	0.67	32.562	-0.01	32.717	10.14	33.428							9.62	33.691	8.34	33.909	6.21	34.003
50m	-0.96	32.879	-0.51	32.914	-1.25	32.940													6.21	34.003
75m	-1.23	33.001	-0.93	33.081	1.06	33.350													6.24	34.002
100m	-0.47	33.232	0.87	33.580	1.63	33.570														
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-9

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906							
Station No	S397		S404		S403		S402		S103		JA01		JA02		JW01		JW02		JW03							
Latitude:N	45-30.0		45-29.9		45-20.0		45-12.6		45-39.9		45-41.9		45-43.5		45-45.0		45-44.9		45-45.0							
Longitude:E	142-35.0		142-49.9		142-40.1		142-32.5		141-59.9		141-46.5		141-32.9		141-19.9		141-10.0		140-59.9							
Date	1999/06/01		1999/06/01		1999/06/01		1999/06/01		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02							
Time(JST)	19:08		20:10		21:51		23:04		02:38		03:53		04:49		05:44		06:32		07:21							
Weather	BC		BC		BC		BC		C		C		C		C		C		C							
Air Temp.	14.9		10.2		8.7		9.6		10.8		10.3		10.4		11.2		11.9		12.1							
Bar	1013.7		1014.0		1014.5		1013.0		1011.0		1010.5		1010.0		1010.0		1009.6		1009.4							
Wind Dir	SE		ESE		SE		SE		SE		SE		SSE		SSE		SSE		S							
Wind Spd/F	S 1		S 2		S 5		S 1		S 4		S 3		S 6		S 6		S 6		S 7							
Transparency																										
Depth	85		119		98		62		56		70		113		126		123		501							
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD							
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S						
0m	3.4	32.686	4.4	32.317	4.0	33.150	9.8	33.474	7.1	33.988	7.5	33.922	8.2	33.966	8.4	33.963	8.7	34.002	8.2	34.013						
10m	3.14	32.710	3.48	32.364	3.65	33.142	9.77	33.605	6.88	33.977	7.37	33.945	8.17	33.969	8.37	33.968	8.63	34.007	7.93	34.020						
20m	3.42	33.331	3.34	32.395	3.16	33.288	9.36	33.791	6.21	33.989	6.61	33.975	7.42	33.951	8.34	33.973	8.36	34.004	7.84	34.019						
30m	3.58	33.547	-0.29	32.651	3.07	33.563	9.00	33.838	5.81	33.997	6.22	33.973	7.02	33.948	8.10	33.970	8.30	34.005	7.69	34.012						
50m	4.00	33.793	-1.26	32.880	4.50	33.827	8.93	33.842			4.04	34.043	4.25	34.053	6.35	34.012	6.32	34.023	7.26	34.015						
75m	3.99	33.799	1.09	33.224	4.83	33.885							3.71	34.043	4.83	34.044	5.24	34.024	4.93	34.064						
100m			2.39	33.655									3.39	34.035	4.03	34.053	4.91	34.032	4.19	34.063						
125m																				3.56	34.076					
150m																					3.17	34.081				
200m																						2.33	34.095			
250m																							1.97	34.092		
300m																								1.35	34.090	
400m																									1.03	34.086
500m																										
600m																										
700m																										
800m																										
900m																										
1000m																										

Table 6-10



Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	J104		J105		J106		J107		J108		JW16		JW15		JW14		JW13		JW12	
Latitude:N	45-30.1		45-30.0		45-29.9		45-30.0		45-30.0		45- 0.1		45- 0.0		45- 0.0		45- 0.1		45- 0.1	
Longitude:E	140-52.9		140-40.0		140-20.0		139-59.9		139-40.0		139-59.8		140-19.8		140-39.9		140-59.9		141-15.0	
Date	1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/02		1999/06/03		1999/06/03	
Time(JST)	09:14		10:57		12:33		13:57		15:24		20:17		21:45		23:07		00:37		01:46	
Weather	C		C		BC		C		C		R		C		R		R		R	
Air Temp.	13.2		12.4		12.0		11.2		10.7		12.0		12.0		11.9		12.5		12.9	
Bar	1009.2		1008.6		1008.0		1007.0		1007.0		1007.5		1007.5		1007.7		1008.0		1008.0	
Wind Dir	SSE		SE		SSE		SSE		SSE		S		S		ESE		ESE		SE	
Wind Spd/F	S 6		S 7		S 4		S 4		S 5		S 6		S 3		S 6		S 4		S 2	
Transparency																				
Depth	447		546		402		593		840		376		144		370		102		85	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.7	33.985	9.1	34.007	8.0	34.020	7.9	34.009	7.7	34.006	9.0	33.885	9.6	33.702	9.5	33.728	11.7	33.786	12.8	33.316
10m	9.54	33.986	8.32	34.016	7.63	34.030	7.41	34.021	6.99	34.013	8.48	34.015	9.28	33.962	8.78	33.969	10.97	33.923	10.74	33.996
20m	9.22	33.972	8.07	34.015	7.45	34.033	7.07	34.027	6.71	34.017	8.23	34.009	9.00	33.965	8.65	33.973	10.02	33.980	10.51	33.995
30m	8.36	34.024	6.29	34.049	7.39	34.033	6.68	34.036	6.29	34.024	6.15	34.054	8.94	33.966	8.16	33.996	9.35	34.004	10.05	34.003
50m	6.33	34.037	4.59	34.059	4.88	34.084	3.24	34.111	2.46	34.111	4.93	34.045	6.63	34.042	5.15	34.047	8.66	34.005	9.04	33.996
75m	5.17	34.034	4.27	34.054	3.79	34.081	2.07	34.104	1.99	34.098	4.74	34.042	4.64	34.057	4.75	34.042	7.25	34.039	7.86	33.976
100m	4.90	34.026	3.92	34.066	3.08	34.087	1.78	34.098	1.77	34.094	4.50	34.046	4.21	34.067	4.52	34.048				
125m	4.72	34.032	3.80	34.066	2.55	34.093	1.62	34.095	1.52	34.094	3.97	34.067	4.01	34.066	3.94	34.066				
150m	4.39	34.043	3.66	34.069	2.14	34.094	1.41	34.092	1.33	34.091	3.34	34.078			3.68	34.069				
200m	2.84	34.089	2.23	34.094	1.76	34.094	1.25	34.090	1.00	34.087	2.39	34.091			2.88	34.086				
250m	2.09	34.093	1.69	34.092	1.41	34.091	1.02	34.086	0.85	34.084	1.55	34.092			2.12	34.092				
300m	2.06	34.090	1.29	34.090	1.05	34.087	0.90	34.086	0.76	34.084	1.19	34.089			1.75	34.094				
400m	1.56	34.091	0.77	34.083			0.65	34.080	0.57	34.079										
500m			0.39	34.076			0.40	34.076	0.41	34.076										
600m									0.33	34.074										
700m																				
800m																				
900m																				
1000m																				

Table 6-11

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	JW11		J103		J102		J101		S401		OA02		OA03		OA04		OA05		O26	
Latitude:N	45- 0.1		45-30.1		45-30.1		45-29.9		45- 8.1		44-52.5		45- 0.0		45-10.0		45-19.9		45- 9.9	
Longitude:E	141-30.0		141- 9.9		141-25.0		141-40.0		142-28.2		142-52.6		143- 0.1		143-10.1		143-20.1		143-49.8	
Date	1999/06/03		1999/06/03		1999/06/03		1999/06/03		1999/06/07		1999/06/07		1999/06/07		1999/06/07		1999/06/07		1999/06/07	
Time(JST)	02:55		05:55		07:07		08:09		14:53		16:55		17:51		19:05		20:15		22:23	
Weather	R		F		F		C		BC		BC		BC		BC		BC		BC	
Air Temp.	13.4		11.9		11.6		12.3		13.2		12.8		11.7		10.1		9.8		9.1	
Bar	1008.5		1008.4		1009.0		0.0		1010.0		1009.0		1009.0		1009.6		1009.3		1009.0	
Wind Dir	SE		S		SW		S		E		N		ESE		E		ENE		ESE	
Wind Spd/F	S 3		S 4		S 1		S 6		S 3		S 1		S 3		S 5		S 4		S 3	
Transparency									9		11		10							
Depth	64		128		113		55		33		84		129		130		140		342	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.6	33.556	9.8	33.876	9.8	33.890	12.2	31.991	12.5	33.209	11.0	33.929	8.4	32.489	8.6	32.492	8.7	32.506	7.3	32.160
10m	10.94	33.939	9.07	33.994	9.12	33.943	11.73	32.832	11.26	33.645	8.53	33.952	2.73	32.777	6.35	32.545	6.81	32.532	5.46	32.192
20m	10.45	33.884	8.56	33.987	8.85	33.956	11.00	32.990	10.40	33.734	7.53	33.980	-0.51	32.801	2.23	32.672	4.68	32.613	0.67	32.403
30m	10.32	33.882	8.53	33.989	8.66	33.968	9.92	33.581			7.24	33.986	-1.17	32.985	0.95	32.761	2.96	32.762	-0.57	32.587
50m	9.08	34.004	8.30	33.977	7.65	33.967					7.14	33.978	4.79	33.769	2.39	33.305	0.24	32.929	-1.09	32.867
75m			5.02	34.056	5.60	34.014					7.14	33.977	4.57	33.918	4.07	33.696	1.54	33.457	-0.83	32.977
100m			4.26	34.048	3.92	34.042							4.50	33.957	2.41	33.585	3.31	33.831	-0.88	33.016
125m																	2.93	33.826	-1.18	33.051
150m																			-1.16	33.063
200m																			-0.69	33.172
250m																			0.22	33.332
300m																			0.72	33.440
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-12

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906						
Station No	O25		O24		O23		O22		OA11		OA12		OA13		OA14		O35		O34						
Latitude:N	45- 0.0		44-50.0		44-39.9		44-35.1		44-17.2		44-22.6		44-30.0		44-40.1		44-50.0		44-30.0						
Longitude:E	143-40.0		143-30.2		143-20.2		143-15.1		143-37.6		143-42.4		143-50.1		144- 0.0		144-20.0		144-20.0						
Date	1999/06/07		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08						
Time(JST)	23:43		00:55		02:10		02:53		04:58		05:39		06:34		07:47		09:26		11:36						
Weather	BC		C		C		C		R		C		C		C		BC		BC						
Air Temp.	9.0		9.0		8.8		9.5		10.5		10.5		10.2		10.3		8.4		11.6						
Bar	1008.5		1008.5		1008.5		1008.0		1008.0		1008.2		1008.6		1008.6		1004.7		1008.7						
Wind Dir	S		ESE		ESE		SE		SE		SE		W		WSW		W		NW						
Wind Spd/F	S 3		S 2		S 4		S 6		S 4		S 4		S 2		S 4		S 3		S 1						
Transparency									7		6		9		8		10		12						
Depth	172		150		110		75		42		90		162		187		153		856						
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD						
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S					
0m	7.0	32.336	7.0	32.365	7.7	33.265	10.9	33.490	11.1	33.217	11.3	33.342	8.0	32.712	9.4	32.681	9.2	32.225	9.4	32.059					
10m	6.22	32.474	1.33	32.733	6.01	33.720	10.02	33.632	10.38	33.403	8.94	33.825	2.72	32.920	9.15	32.680	5.62	32.278	5.90	32.132					
20m	0.93	32.561	0.31	32.852	6.95	33.974	8.81	33.828	10.30	33.413	8.61	33.875	1.15	33.015	5.99	32.963	4.51	32.431	3.65	32.135					
30m	-0.48	32.693	-1.10	32.929	6.33	33.941	8.75	33.839	10.26	33.461	8.37	33.880	-0.79	33.044	3.74	33.044	1.07	32.541	0.63	32.317					
50m	-0.97	32.988	-1.23	33.045	5.83	33.916	8.02	33.940			7.49	33.900	-1.11	33.088	3.72	33.358	-1.08	32.812	-1.25	32.626					
75m	-1.40	33.049	-0.88	33.113	5.79	33.914					6.66	33.945	2.68	33.456	1.90	33.470	-1.32	32.958	-0.88	32.845					
100m	-0.72	33.124	-0.58	33.162									5.29	33.911	1.20	33.425	-1.38	33.037	-0.59	32.969					
125m	-0.09	33.218	2.10	33.530									5.01	33.903	4.06	33.769	-0.59	33.157	-0.75	33.019					
150m	0.07	33.292											4.90	33.896	2.94	33.727			-0.57	33.068					
200m																				-0.09	33.177				
250m																					0.32	33.288			
300m																						0.85	33.407		
400m																							1.31	33.552	
500m																								1.63	33.690
600m																									
700m																									
800m																									
900m																									
1000m																									

Table 6-13

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	O33		O32		OA20		O31		OA21		OA22		OA23		OA24		O41		O42	
Latitude:N	44-20.0		44-10.0		44- 5.0		44- 2.0		44- 2.0		44-10.0		44-20.0		44-30.1		44-21.9		44-30.0	
Longitude:E	144-20.1		144-20.1		144-20.0		144-20.0		144-50.1		144-50.0		144-50.0		144-50.0		145-19.9		145-20.0	
Date	1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08		1999/06/08	
Time(JST)	12:48		13:56		14:28		14:48		16:46		17:35		18:55		20:12		22:27		23:17	
Weather	C		C		B		B		C		C		BC		BC		BC		BC	
Air Temp.	12.3		13.5		13.2		13.0		13.6		12.6		10.7		9.9		9.8		9.9	
Bar	1009.0		1009.0		1009.0		1009.0		1008.8		1009.0		1009.0		1009.0		1010.0		1010.0	
Wind Dir	N		ENE		ESE		ESE		CALM		S		S		S		SE		SSE	
Wind Spd/F	S 2		S 2		S 2		S 2		S 0		S 3		S 4		S 4		S 2		S 3	
Transparency	12		10		10		9		9		13									
Depth	260		110		37		38		79		597		1082		1582		185		1680	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.5	31.908	11.4	33.384	11.1	33.078	11.1	32.979	10.1	33.004	8.9	32.293	9.6	32.121	8.6	32.191	9.4	33.222	9.5	33.443
10m	5.38	32.110	9.99	33.536	10.75	33.252	10.70	33.265	7.39	33.050	6.72	32.281	4.83	32.268	3.79	32.311	9.71	33.336	9.40	33.464
20m	1.63	32.196	9.52	33.626	10.29	33.518	9.16	33.249	6.54	33.341	1.33	32.501	0.99	32.623	1.41	32.354	9.22	33.356	9.11	33.502
30m	0.06	32.322	8.82	33.795					8.07	33.606	-0.34	32.677	-0.62	32.669	-0.77	32.485	9.21	33.375	8.65	33.596
50m	-1.21	32.698	7.50	33.887					8.02	33.635	-0.89	32.830	-0.79	32.826	-1.18	32.722	8.76	33.487	8.43	33.622
75m	-0.75	32.895	6.39	33.868					1.29	33.139	-0.72	32.956	-0.67	32.931	8.34	33.603	7.11	33.612		
100m	-1.27	32.985	6.04	33.844					-0.30	33.098	-1.38	33.004	-0.60	33.005	6.95	33.638	5.49	33.681		
125m	-1.27	33.025							-0.58	33.100	-0.61	33.080	-0.60	33.048	5.00	33.588	3.26	33.519		
150m	-1.39	33.049							-0.44	33.151	-0.69	33.111	-0.49	33.093			3.61	33.582		
200m	-0.39	33.191							3.06	33.526	-0.03	33.229	-0.04	33.195			1.60	33.436		
250m	1.49	33.555							2.61	33.544	0.07	33.279	0.31	33.282			2.11	33.519		
300m									2.80	33.624	0.09	33.333	0.69	33.364			2.83	33.642		
400m									2.08	33.643	1.31	33.534	1.23	33.513			2.46	33.674		
500m									2.39	33.721	1.46	33.665	1.64	33.669			2.42	33.734		
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-14

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	O43		O44		O45		O46		O36		WSU01		WSU02		WSU03		WSU04		WSU05	
Latitude:N	44-40.0		44-50.0		45- 0.0		45-10.0		45- 8.0		45-25.9		45-27.8		45-26.6		45-20.5		45- 4.8	
Longitude:E	145-19.9		145-20.0		145-20.0		145-20.0		144-20.0		143- 8.6		142-58.9		143- 0.1		143- 2.1		143-13.1	
Date	1999/06/09		1999/06/09		1999/06/09		1999/06/09		1999/06/09		1999/06/15		1999/06/15		1999/06/17		1999/06/17		1999/06/17	
Time(JST)	00:28		01:42		02:57		04:12		08:12		09:24		11:51		09:21		12:36		15:44	
Weather	BC		BC		BC		BC		B		C		R		BC		BC		BC	
Air Temp.	9.7		8.7		8.4		8.2		12.2		12.1		12.3		13.4		13.2		14.5	
Bar	1011.0		1011.0		1010.0		1009.6		1010.0		1007.0		1006.0		996.5		997.5		998.5	
Wind Dir	SW		SW		SW		WSW		SSW		SE		SSE		W		WNW		NW	
Wind Spd/F	S 5		S 8		S 8		S 6		S 6		S 6		S 5		S 5		S 5		S 3	
Transparency							9		12		14		10		14		11		12	
Depth	2180		2212		2570		2786		806		121		120		120		122		139	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.7	32.155	7.0	32.128	6.8	32.380	7.0	32.367	8.4	32.175	9.6	32.301	8.8	32.365	9.4	32.303	10.8	32.369	10.9	32.524
10m	6.85	32.158	7.06	32.127	4.99	32.425	6.52	32.373	4.57	32.177	9.17	32.315	8.56	32.391	9.36	32.302	9.49	32.403	9.48	32.666
20m	3.11	32.376	2.32	32.314	1.95	32.521	4.97	32.385	2.73	32.209	1.72	32.453	7.65	32.440	5.30	32.444	0.05	32.733	1.45	32.989
30m	0.13	32.662	-0.48	32.486	0.59	32.659	2.37	32.656	0.57	32.335	-0.82	32.811	1.70	32.738	-0.06	32.656	-0.92	32.902	-0.80	33.067
50m	-1.03	32.854	-1.07	32.793	-1.23	32.882	1.69	32.990	-1.03	32.652	-1.31	32.950	-0.83	32.905	-0.94	32.963	-0.92	33.049	1.76	33.331
75m	-1.01	32.998	-0.66	32.939	-1.41	33.002	1.54	33.227	-1.21	32.895	-0.37	33.150	-0.30	33.151	-0.34	33.212	1.89	33.402	4.10	33.858
100m	-1.26	33.039	-0.66	33.003	-1.56	33.029	1.25	33.339	-1.05	32.986	1.45	33.448	0.00	33.265	0.62	33.362	4.32	33.862	4.45	33.983
125m	-1.09	33.070	-0.65	33.040	-0.82	33.100	1.33	33.415	-0.95	33.055									4.13	33.975
150m	-0.55	33.134	-0.54	33.087	-0.16	33.189	0.75	33.409	-1.06	33.098										
200m	-0.30	33.219	-0.32	33.186	0.74	33.334	0.98	33.472	-0.16	33.214										
250m	0.24	33.306	0.23	33.292	1.01	33.412	1.24	33.552	0.33	33.313										
300m	0.81	33.404	0.56	33.374	1.06	33.475	1.31	33.612	0.78	33.410										
400m	1.11	33.529	1.31	33.553	1.54	33.642	1.53	33.720	1.34	33.570										
500m	1.64	33.707	1.70	33.720	1.91	33.802	1.82	33.846	1.47	33.673										
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-15

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199906		199906		199906		199906	
Station No	WSU06		WSU07		WSU08		WSU09		AKE10		AKE11		AKE12		AKE09		AKE02		AKE01	
Latitude:N	44-41.8		44-34.4		44-46.2		44-36.9		44- 2.1		44- 1.9		44- 3.4		44-10.3		44-24.4		44-20.3	
Longitude:E	144- 2.6		144- 2.5		143-57.6		144- 1.6		144-19.9		144-25.7		144-26.5		144-19.8		143-45.0		143-42.2	
Date	1999/06/18		1999/06/18		1999/06/18		1999/06/19		1999/06/21		1999/06/21		1999/06/21		1999/06/21		1999/06/22		1999/06/22	
Time(JST)	09:13		11:53		15:49		08:42		10:01		11:30		12:56		15:11		07:46		09:29	
Weather	C		BC		C		BC		B		BC		BC		BC		B		B	
Air Temp.	11.1		10.8		11.4		10.0		14.2		15.2		15.6		14.7		15.2		18.9	
Bar	1006.5		1006.7		1009.0		1015.5		1016.6		1016.7		1016.4		1016.0		1019.0		1019.0	
Wind Dir	NW		NE		ENE		NNE		ENE		NE		E		ESE		S		E	
Wind Spd/F	S 1		S 5		S 2		S 3		S 2		S 2		S 3		S 5		S 2		S 2	
Transparency	12		12		12		13		15		14		13		15		9		11	
Depth	196		197		179		195		35		56		73		116		129		73	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.8	32.243	10.2	32.207	11.3	32.804	9.9	32.213	13.1	33.588	13.5	33.702	13.9	33.604	14.8	33.603	11.5	33.825	14.2	33.729
10m	8.00	32.230	7.41	32.246	11.20	32.769	7.01	32.247	12.12	33.600	12.35	33.683	12.90	33.621	12.33	33.780	8.31	33.811	11.78	33.832
20m	5.07	32.415	0.33	32.377	0.99	32.885	-0.46	32.517	11.98	33.621	11.82	33.767	12.84	33.675	11.73	33.841	7.95	33.955	11.23	33.882
30m	-0.57	32.581	-0.43	32.547	0.30	32.886	-1.14	32.728			11.80	33.765	11.42	33.852	10.89	33.871	7.49	33.951	10.75	33.933
50m	-0.65	32.784	-0.92	32.818	0.29	33.067	-0.97	32.906			10.84	33.891		8.46	33.982	7.33	33.943	9.92	33.973	
75m	-0.75	33.015	-0.73	32.976	-0.95	33.076	-0.86	33.019						7.87	33.975	6.83	33.947			
100m	-0.46	33.085	-0.86	33.064	-0.70	33.117	-0.50	33.110						7.17	33.932	6.55	33.925			
125m	-0.60	33.107	-0.69	33.105	1.59	33.339	0.09	33.179												
150m	-0.13	33.221	-0.53	33.135	1.82	33.514	1.02	33.306												
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-16

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199906		199906		199906		199906		199906		199906		199907		199907		199907		199907	
Station No	AKE03		AKE04		AKE05		AKE06		AKE07		AKE08		WEB01		WEB02		WEB03		WEB04	
Latitude:N	44-17.6		44-14.5		44-15.1		44-12.4		44-12.4		44-12.1		45-18.1		45-14.8		45-14.3		45-13.1	
Longitude:E	143-49.5		143-56.9		144- 1.8		144- 3.3		144-12.0		144-15.6		140-42.5		140-42.3		140-40.0		140-38.7	
Date	1999/06/22		1999/06/22		1999/06/22		1999/06/22		1999/06/23		1999/06/23		1999/07/06		1999/07/06		1999/07/07		1999/07/07	
Time(JST)	11:26		12:54		14:02		15:19		07:00		08:19		14:02		14:54		10:10		11:12	
Weather	B		B		B		B		BC		C		C		C		C		C	
Air Temp.	17.3		16.9		17.6		16.5		14.7		17.6		18.2		18.2		17.7		17.4	
Bar	1019.0		1018.0		1018.0		1017.5		1019.0		1013.5		1015.5		1015.0		1017.0		1017.0	
Wind Dir	E		E		E		E		CALM		WSW		SSW		SW		SSW		SSW	
Wind Spd/F	S 4		S 5		S 4		S 5		S 0		S 1		S 4		S 3		S 5		S 5	
Transparency	13		13		11		13		9		10		16		16		17		20	
Depth	78		75		100		74		100		123		510		473		443		415	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.7	33.674	14.3	33.697	13.1	33.902	14.1	33.749	14.0	33.765	14.1	33.738	16.1	33.968	15.9	33.868	14.0	33.830	16.1	33.927
10m	12.08	33.822	11.61	33.887	10.54	33.937	12.45	33.802	13.89	33.757	11.10	33.958	16.20	33.994	15.49	33.894	15.68	33.824	16.11	33.917
20m	11.19	33.899	11.21	33.908	9.59	33.967	11.09	33.924	11.48	33.940	10.06	33.973	15.93	34.026	15.36	33.888	14.97	33.819	15.07	33.829
30m	10.79	33.917	10.96	33.916	8.98	33.972	10.02	33.944	10.39	33.939	9.35	33.977	13.24	33.997	13.71	33.962	12.41	34.024	11.92	34.113
50m	10.14	33.937	10.18	33.936	8.75	33.971	9.96	33.938	9.59	33.972	9.16	33.972	9.49	34.106	9.69	34.078	8.20	34.066	8.48	34.066
75m					8.53	33.968			9.21	33.974	8.81	33.965	6.22	34.061	6.77	34.067	6.25	34.060	6.82	34.078
100m											7.37	33.942	5.00	34.058	5.23	34.055	5.11	34.052	5.33	34.056
125m													4.52	34.057	4.79	34.051	4.61	34.057	4.65	34.053
150m													4.24	34.060	4.40	34.057	4.24	34.063	4.12	34.066
200m													3.46	34.078	3.43	34.079	3.08	34.086	2.91	34.087
250m													2.50	34.092	1.91	34.098	1.98	34.096	1.98	34.096
300m													1.75	34.097	1.43	34.094	1.36	34.094	1.42	34.093
400m													0.97	34.088	0.84	34.084	0.81	34.083	0.67	34.081
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-17

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199907		199907		199907		199907		199907		199907		199907		199907		199907		199907	
Station No	WEB05		WEB06		WEB07		WEB09		WEB12		WEB14		WEB11		WEB13		WEB15		WEB16	
Latitude:N	45-13.9		45-11.2		45-10.6		45- 4.0		44-30.9		44-26.4		44-26.0		44-23.8		44-23.9		44-27.8	
Longitude:E	140-35.3		140-34.5		140-34.8		140-32.2		140-51.3		140-51.9		140-50.3		140-51.8		140-52.9		140-53.7	
Date	1999/07/08		1999/07/08		1999/07/09		1999/07/09		1999/07/11		1999/07/11		1999/07/12		1999/07/12		1999/07/13		1999/07/13	
Time(JST)	10:12		11:16		09:38		10:52		13:04		13:45		10:26		10:57		10:06		10:56	
Weather	C		C		C		C		BC		BC		C		C		C		C	
Air Temp.	17.2		17.5		18.8		18.6		18.5		19.0		20.0		19.5		20.7		20.7	
Bar	1018.5		1018.5		1018.0		1017.8		1015.0		1015.0		1016.5		1016.5		1014.5		1014.5	
Wind Dir	SSW		SSW		S		SSW		NE		NE		NNE		NNE		NNE		NNE	
Wind Spd/F	S 7		S 5		S 4		S 4		S 3		S 4		S 4		S 5		S 5		S 4	
Transparency	16		17		16		15		13		16		20		19		22		17	
Depth	398		389		383		334		247		283		256		269		292		295	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.4	34.007	16.4	34.020	17.1	34.042	15.9	34.014	18.3	33.589	18.9	33.445	18.5	33.622	18.5	33.659	18.5	33.744	18.5	33.963
10m	16.42	34.005	16.32	34.018	16.65	34.036	16.83	34.020	17.74	33.891	17.82	33.635	17.87	33.936	17.94	33.918	17.71	33.875	18.03	33.939
20m	14.72	34.023	15.41	34.010	15.26	33.998	13.54	33.984	16.16	33.968	16.67	33.959	16.76	33.946	16.68	33.951	16.73	33.911	16.81	33.974
30m	10.08	34.084	9.60	34.072	10.82	34.137	10.58	34.169	14.96	33.996	15.36	33.940	15.90	33.966	15.89	33.963	15.87	33.930	15.99	33.975
50m	7.62	34.083	7.68	34.082	7.47	34.105	8.36	34.131	10.34	34.102	11.15	34.075	11.98	34.059	11.77	34.049	11.78	34.082	11.27	34.136
75m	5.90	34.058	5.94	34.058	5.98	34.091	6.37	34.089	8.93	34.104	9.42	34.096	9.29	34.097	9.32	34.094	9.23	34.091	9.01	34.113
100m	4.97	34.056	4.92	34.057	4.78	34.054	5.09	34.045	7.54	34.095	8.37	34.097	7.99	34.081	8.23	34.094	7.95	34.100	7.39	34.084
125m	4.59	34.053	4.65	34.061	4.32	34.061	4.55	34.055	6.18	34.075	7.17	34.079	6.41	34.080	6.52	34.078	6.46	34.064	6.06	34.095
150m	4.07	34.068	3.92	34.073	3.87	34.074	4.06	34.067	5.19	34.053	5.58	34.067	6.33	34.069	6.10	34.068	5.47	34.063	4.98	34.053
200m	2.97	34.085	2.96	34.084	2.90	34.088	2.87	34.089	4.29	34.067	4.41	34.058	4.51	34.078	4.65	34.071	4.41	34.062	4.19	34.063
250m	1.94	34.096	1.89	34.096	1.87	34.095	1.76	34.094			2.90	34.089			2.82	34.092	3.17	34.084	2.07	34.097
300m	1.32	34.092	1.21	34.091	1.16	34.091	0.93	34.086												
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-18



Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199907		199907		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	WEB17		WEB18		J11		J12		J13		JW01		JW02		JW03		J14		J15	
Latitude:N	44-25.1		44-24.9		45-30.0		45-30.0		45-29.9		45-44.9		45-45.0		45-45.0		45-30.1		45-30.0	
Longitude:E	140-54.7		140-56.6		141-40.1		141-24.9		141-10.0		141-20.1		141-10.3		141- 0.0		140-52.9		140-40.1	
Date	1999/07/14		1999/07/14		1999/07/26		1999/07/26		1999/07/26		1999/07/26		1999/07/26		1999/07/26		1999/07/26		1999/07/26	
Time(JST)	10:05		10:49		10:15		11:46		12:54		14:42		15:31		16:19		18:12		19:38	
Weather	C		C		C		R		C		R		C		R		C		R	
Air Temp.	19.3		19.1		16.0		15.9		16.8		16.1		15.9		16.1		16.8		16.8	
Bar	1012.5		1012.0		1015.0		1015.0		1013.5		1014.0		1014.1		1014.0		1015.5		1014.5	
Wind Dir	NNE		NNE		E		ESE		SE		E		E		E		N		CALM	
Wind Spd/F	S 7		S 8		S 8		S 8		S 4		S 7		S 7		S 8		S 2		S 0	
Transparency	16		19		5		12		12		15		16		17					
Depth	307		318		53		113		127		124		122		494		450		546	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	18.3	33.387	18.3	34.012	18.9	33.663	17.8	33.803	18.2	33.901	16.0	33.746	18.4	33.868	18.3	33.888	19.0	33.960	18.6	33.843
10m	18.08	33.840	18.40	34.012	19.14	33.663	17.26	33.824	18.48	33.887	16.10	33.760	18.34	33.870	18.53	33.890	19.15	33.969	18.73	33.889
20m	16.88	33.944	16.86	33.994	18.10	33.869	14.89	33.966	16.05	33.917	12.93	34.033	15.34	33.887	14.51	34.112	14.31	34.070	16.30	34.103
30m	15.62	33.981	15.43	34.009	12.95	34.035	10.88	34.064	11.19	34.027	10.58	34.073	10.42	34.035	11.57	34.165	11.24	34.187	11.57	34.097
50m	10.71	34.114	10.58	34.102			8.60	34.034	9.09	34.048	8.40	34.042	8.86	34.079	8.36	34.103	8.80	34.109	6.54	34.131
75m	8.96	34.109	9.03	34.090			7.80	34.047	7.82	34.055	6.71	34.069	6.95	34.053	6.65	34.076	7.11	34.098	5.07	34.089
100m	7.50	34.097	6.88	34.064			5.78	34.053	6.14	34.057	4.99	34.052	4.88	34.072	5.94	34.070	6.14	34.077	3.82	34.082
125m	5.82	34.064	5.40	34.070											4.91	34.066	5.06	34.063	3.09	34.084
150m	4.79	34.053	4.79	34.055											4.69	34.062	4.50	34.062	2.59	34.090
200m	4.09	34.065	3.94	34.071											4.24	34.067	3.81	34.075	1.86	34.093
250m	1.76	34.098	1.95	34.095											3.36	34.079	2.24	34.093	1.43	34.090
300m			1.30	34.089											2.34	34.091	1.54	34.091	1.16	34.088
400m															1.09	34.088	0.85	34.083	0.84	34.083
500m																			0.31	34.073
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-19

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	J16		J17		J18		JW16		JW15		JW14		JW13		JW12		JW11		JA02	
Latitude:N	45-30.0		45-30.0		45-30.0		45- 0.1		45- 0.0		44-59.9		45- 0.0		45- 0.0		45- 0.1		45-43.1	
Longitude:E	140-20.0		139-59.8		139-40.1		140- 0.1		140-20.0		140-40.0		141- 0.0		141-15.1		141-30.1		141-33.0	
Date	1999/07/26		1999/07/26		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27	
Time(JST)	21:15		22:49		00:28		04:41		06:03		07:26		08:57		10:09		11:16		16:14	
Weather	C		R		C		C		F		R		R		R		F		C	
Air Temp.	16.7		16.7		16.5		18.1		18.4		18.6		18.7		18.4		19.2		18.8	
Bar	1015.0		1015.0		1015.0		1014.0		1014.0		1014.0		1015.0		1014.0		1014.0		1012.0	
Wind Dir	CALM		NNE		N		ENE		ENE		E		NNE		SSW		ESE		ESE	
Wind Spd/F	S 0		S 1		S 4		S 4		S 4				S 5		S 4		S 6		S 7	
Transparency											16		13		13		16		15	
Depth	399		593		840		250		143		366		98		85		64		110	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.8	33.860	17.8	33.697	17.9	33.755	19.3	33.880	19.3	33.752	19.3	33.862	18.8	33.824	18.4	33.771	19.1	33.750	16.8	33.879
10m	17.47	33.882	17.27	33.808	12.81	34.010	19.39	33.908	19.32	33.761	18.84	33.955	18.56	33.902	18.56	33.805	18.87	33.859	16.37	33.864
20m	10.09	34.084	8.81	34.101	7.44	34.094	17.40	34.031	18.18	33.879	14.74	34.079	17.03	33.969	15.69	33.981	17.29	33.928	16.19	33.867
30m	5.84	34.126	5.52	34.119	3.93	34.116	11.91	34.102	12.55	34.088	12.30	34.085	12.22	34.096	11.76	34.100	16.72	33.951	10.27	34.067
50m	3.16	34.119	2.94	34.121	2.32	34.108	7.70	34.114	10.22	34.123	9.89	34.167	8.88	34.107	10.44	34.087	11.96	34.001	7.69	34.063
75m	2.27	34.103	2.30	34.104	1.78	34.100	4.80	34.096	8.70	34.094	8.32	34.092	7.73	34.083	8.88	34.076			6.65	34.054
100m	1.83	34.098	1.98	34.098	1.50	34.096	3.11	34.096	7.81	34.085	7.04	34.087							5.45	34.042
125m	1.57	34.094	1.72	34.094	1.31	34.092	2.30	34.092	7.35	34.077	6.33	34.091								
150m	1.42	34.093	1.46	34.093	1.18	34.089	1.99	34.087			5.49	34.078								
200m	1.11	34.088	1.14	34.088	0.97	34.085	1.74	34.089			4.04	34.076								
250m	0.92	34.086	0.98	34.085	0.88	34.087					2.91	34.085								
300m	0.79	34.083	0.85	34.084	0.81	34.085					1.56	34.098								
400m			0.63	34.078	0.69	34.084														
500m			0.45	34.075	0.53	34.078														
600m					0.41	34.075														
700m																				
800m																				
900m																				
1000m																				

Table 6-20

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	JA01		LPS103		LPS102		LPS101		LPS300		LPS301		LPS399		LPS302		OA10		LPS397	
Latitude:N	45-42.0		45-40.0		45-35.0		45-31.1		45-26.8		45-29.9		45-32.4		45-34.9		45-29.9		45-29.9	
Longitude:E	141-46.4		142- 0.0		142- 0.2		142- 0.1		142- 8.1		142-10.2		142-12.7		142-15.2		142-30.2		142-34.8	
Date	1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/27		1999/07/28		1999/07/28	
Time(JST)	17:11		18:14		19:09		19:52		20:52		21:28		21:58		22:36		00:02		00:36	
Weather	C		C		C		C		C		C		C		C		BC		BC	
Air Temp.	17.1		15.5		15.3		15.9		16.6		17.5		17.5		16.8		18.0		18.4	
Bar	1012.0		1012.0		1012.0		1012.0		1012.0		1012.0		1012.0		1011.0		1010.5			
Wind Dir	E				NE		NE		ENE		ENE		ENE		ESE		S		SSW	
Wind Spd/F	S 6				S 5		S 4		S 1		S 2		S 2		S 2		S 4		S 6	
Transparency	16																			
Depth	69		54		43		26		22		36		43		48		82		84	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.8	33.805	16.7	33.619	17.3	33.658	17.4	33.568	17.3	33.740	18.2	33.730	17.1	33.543	16.8	33.823	13.6	33.650	12.5	32.368
10m	16.88	33.803	16.65	33.760	15.56	33.746	17.41	33.609	17.30	33.756	16.31	33.851	15.50	33.813	16.25	33.852	10.24	34.006	12.84	33.104
20m	13.88	34.013	10.34	34.061	12.07	33.987	17.43	33.723			15.70	33.883	13.99	33.887	11.45	34.008	10.11	34.003	7.66	33.391
30m	11.00	34.065	9.34	34.037	11.80	33.985							13.35	33.903	11.38	33.987	10.00	34.003	8.20	33.831
50m	7.69	34.055															9.80	34.004	8.20	34.020
75m																			8.16	34.019
100m																				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-21

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	LPS404		LPS403		LPS402		LPS401		COK01		COK02		OA02		OA03		OA04		OA05	
Latitude:N	45-29.9		45-20.1		45-12.5		45- 8.1		45-27.0		45-27.1		44-52.5		45- 0.0		45- 9.9		45-20.0	
Longitude:E	142-49.7		142-40.0		142-32.5		142-28.0		141-43.9		141-48.6		142-52.6		142-59.8		143-10.1		143-20.0	
Date	1999/07/28		1999/07/28		1999/07/28		1999/07/28		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02		1999/08/02	
Time(JST)	01:45		03:21		04:25		05:12		09:55		10:24		16:55		17:57		19:15		20:31	
Weather	BC		C		C		R		C		C		BC		BC		BC		C	
Air Temp.	17.6		17.1		19.4		20.4		20.8		20.9		23.8		21.7		19.3		18.3	
Bar	1010.2				1011.5		1011.0		1015.5		1015.5		1016.5		1017.0		1017.5		1018.0	
Wind Dir	SSW		WSW		SW		WSW		SSW		SSW		WSW		W		W		W	
Wind Spd/F	S 7		S 6		S 9		S 8		S 7		S 5		S 1		S 2		S 6		S 6	
Transparency									4		5		9		9					
Depth	118		96		60		31		24		23		84		129		132		142	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.3	32.044	11.9	32.584	15.8	33.802	17.6	33.403	19.4	32.430	19.5	32.791	18.1	33.444	10.1	33.152	15.2	31.829	14.6	31.958
10m	13.75	32.154	9.02	33.328	15.27	33.847	16.92	33.690	19.19	32.622	18.91	32.986	17.01	33.519	8.64	33.699	14.26	31.957	14.14	32.004
20m	3.24	32.633	7.17	33.577	14.80	33.864	16.81	33.660					16.17	33.724	9.39	33.936	2.72	32.887	3.84	32.724
30m	0.56	32.786	6.30	33.504	14.68	33.869							14.97	33.853	9.21	33.964	0.08	33.035	1.31	32.979
50m	-0.20	33.023	5.91	33.699									14.60	33.857	8.96	33.960	-0.85	33.065	-0.19	33.055
75m	-0.44	33.111	6.21	33.852									14.25	33.871	8.74	33.964	-0.41	33.165	0.54	33.189
100m	1.94	33.624													8.52	33.959	1.33	33.405	0.87	33.405
125m																	3.20	33.739	2.52	33.649
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-22

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	O26		O25		O24		O23		O22		OA11		OA12		OA13		OA14		O34	
Latitude:N	45-10.1		45- 0.1		44-50.0		44-39.8		44-34.9		44-17.4		44-22.3		44-29.8		44-39.9		44-30.0	
Longitude:E	143-49.9		143-40.0		143-29.9		143-20.1		143-15.0		143-37.6		143-42.6		143-50.1		144- 0.1		144-19.9	
Date	1999/08/02		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03	
Time(JST)	22:39		00:02		01:18		02:43		03:49		05:56		06:37		07:37		09:09		10:59	
Weather	C		C		R		R		R		BC		BC		BC		BC		BC	
Air Temp.	17.4		17.1		17.4		16.6		17.0		18.1		17.8		17.1		18.0		18.4	
Bar	1019.5		1019.5		1019.5		1019.0		1019.5		1019.5		1019.5		1019.0		1019.0		1018.5	
Wind Dir	SW		S		SSE		ENE		NE		E		ENE		ENE		E		ENE	
Wind Spd/F	S 3		S 4		S 4		S 4		S 3		S 3		S 3		S 4		S 4		S 3	
Transparency											8		16		12		11		9	
Depth	332		171		148		111		72		44		90		162		188		854	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	15.5	31.935	14.6	32.096	15.7	31.855	13.5	33.846	16.2	33.295	18.1	32.601	16.3	33.689	13.2	32.756	16.4	32.308	15.8	32.720
10m	14.27	32.025	12.87	32.370	14.36	32.174	12.90	33.897	16.39	33.673	17.12	33.461	16.06	33.702	11.98	33.862	6.66	33.102	11.24	33.063
20m	4.22	32.583	0.75	32.808	3.16	32.846	12.70	33.912	15.99	33.726	16.89	33.573	15.23	33.782	10.18	33.815	1.12	33.100	2.61	33.189
30m	0.71	32.754	0.16	32.895	0.16	32.926	12.32	33.920	15.86	33.736	16.75	33.626	14.88	33.813	9.77	33.817	0.42	33.137	-0.02	33.161
50m	-0.44	32.888	-0.43	33.003	0.28	33.161	10.98	33.958	14.50	33.857			14.58	33.819	7.54	33.773	0.45	33.198	0.02	33.133
75m	-0.87	32.974	-0.67	33.061	2.00	33.432	10.22	33.914					14.54	33.818	7.73	33.882	1.01	33.297	2.65	33.362
100m	-1.09	33.031	-0.29	33.128	4.76	33.867	9.57	33.868							6.05	33.709	1.85	33.430	1.02	33.279
125m	-0.75	33.069	1.33	33.320	4.57	33.934									4.20	33.594	1.86	33.490	1.04	33.302
150m	-0.72	33.129	3.62	33.701											4.10	33.730	3.03	33.665	2.07	33.434
200m	1.04	33.367																	1.00	33.392
250m	2.00	33.594																	1.08	33.454
300m	1.32	33.564																	1.36	33.503
400m																			1.49	33.613
500m																			1.84	33.798
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-23

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	O33		O32		OA20		O31		OA21		OA22		OA23		OA24		O41		O42	
Latitude:N	44-19.9		44- 9.9		44- 5.0		44- 1.9		44- 1.9		44- 9.9		44-19.9		44-29.9		44-22.1		44-30.1	
Longitude:E	144-20.0		144-20.1		144-19.9		144-20.0		144-50.5		144-50.3		144-50.2		144-50.1		145-20.0		145-20.0	
Date	1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03		1999/08/03	
Time(JST)	12:15		13:22		13:56		14:19		16:11		17:03		18:29		19:48		22:00		22:52	
Weather	BC		BC		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	19.3		21.3		23.6		24.9		26.1		23.2		21.7		20.1		18.9		18.8	
Bar	1017.5		1017.0		1017.0		1017.0		1017.5		1017.5		1018.0		1019.0		1019.0		1019.5	
Wind Dir	E		SE		SSW		SSW		WNW		NNE		SSE		WSW		SSW		WSW	
Wind Spd/F	S 4		S 2		S 4		S 4		S 5		S 4		S 1		S 5		S 5		S 3	
Transparency	10		9		5		5		7		8		8							
Depth	266		111		36		33		74		582		1082		1573		290		1712	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.8	32.202	20.3	32.833	20.0	33.200	21.1	30.403	19.5	33.243	16.1	33.433	18.2	31.957	17.4	31.946	16.7	33.594	18.4	31.994
10m	9.81	32.717	15.98	33.756	18.32	33.303	17.88	33.566	16.87	33.543	14.37	33.585	7.01	32.461	15.14	32.041	16.00	33.653	13.99	33.030
20m	3.31	32.954	15.87	33.750	17.41	33.545	16.44	33.705	16.69	33.570	11.56	33.669	0.38	32.632	4.66	32.457	15.25	33.782	8.71	33.344
30m	1.33	33.105	15.86	33.747	16.44	33.648			16.65	33.576	10.56	33.679	-0.55	32.840	0.90	32.673	14.89	33.793	9.40	33.794
50m	1.99	33.288	15.58	33.756					13.51	33.834	10.12	33.947	-0.36	32.962	-0.35	32.923	13.69	33.823	9.02	33.793
75m	1.60	33.291	11.96	33.839					4.30	33.204			-0.46	33.043	-0.39	33.064	13.12	33.863	7.08	33.552
100m	1.34	33.314	9.01	33.877					1.51	33.218			-0.43	33.093	0.27	33.168	12.14	33.846	4.97	33.593
125m	0.65	33.343							1.03	33.248			0.04	33.174	1.11	33.297	8.85	33.756	5.11	33.671
150m	2.49	33.500							1.08	33.292			0.36	33.245	0.97	33.321	5.24	33.687	4.10	33.651
200m	1.97	33.515							1.52	33.431			0.34	33.302	2.07	33.467	4.20	33.636	3.70	33.667
250m	3.16	33.871							3.70	33.772			0.54	33.365	2.38	33.537	2.95	33.585	3.36	33.676
300m									3.75	33.817			0.82	33.436	2.50	33.600			2.98	33.690
400m									3.49	33.817			1.29	33.591	1.85	33.598			2.38	33.701
500m									2.78	33.822			1.81	33.779	2.29	33.715			1.71	33.740
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-24

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199908		199908		199908		199908		199908		199908		199908		199908		199908	
Station No	O43		O44		O45		O46		O36		O35		WTC01		WTC02		WTC03		WTC04	
Latitude:N	44-40.0		44-50.1		45- 0.1		45-10.1		45- 8.1		44-50.0		41-59.9		43-15.6		43-45.8		44-49.8	
Longitude:E	145-20.0		145-20.0		145-20.0		145-20.1		144-20.0		144-20.1		139-34.3		140- 3.3		140-56.3		139-54.9	
Date	1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/04		1999/08/25		1999/08/26		1999/08/28		1999/08/30	
Time(JST)	00:02		01:14		02:25		03:38		07:25		09:18		16:11		15:58		16:46		09:13	
Weather	BC		BC		BC		C		C		BC		C		C		BC		BC	
Air Temp.	18.5		18.3		18.1		17.2		18.1		19.6		26.4		24.8		24.0		22.1	
Bar	1019.0		1019.0		1019.6		1020.0		1022.0		1022.0		1015.0		1017.6		1015.5		1019.6	
Wind Dir	SSW		SSW		WNW		CALM		NNW		CALM		NNW		WSW		NNE		SSE	
Wind Spd/F	S 3		S 4		S 1		S 0		S 1		S 0		S 3		S 2		S 8		S 2	
Transparency									14		16		29				11		19	
Depth	2165		2191		2569		2786		801		152		626		692		489		350	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	16.1	32.626	16.9	31.895	15.9	32.084	13.3	32.106	15.3	32.067	16.0	31.999	25.7	33.987	24.3	33.977	24.2	33.963	22.3	33.682
10m	10.97	33.424	12.94	32.278	13.76	32.186	10.05	32.269	13.44	32.179	10.99	32.312	25.58	33.965	23.96	33.864	23.81	33.928	22.33	33.649
20m	8.77	33.650	8.30	32.918	6.51	32.722	4.15	32.670	6.19	32.763	4.50	32.564	25.44	33.987	23.60	33.973	23.55	33.884	15.27	34.096
30m	6.63	33.646	3.59	32.820	2.94	32.895	0.28	32.949	1.77	32.818	0.96	32.849	23.20	34.064	19.01	34.244	20.31	34.070	10.75	34.195
50m	6.71	33.710	0.27	32.889	0.39	32.926	-1.07	33.040	0.57	32.955	-0.43	32.993	12.58	34.267	16.20	34.400	13.00	34.273	7.41	34.136
75m	4.09	33.534	-0.36	32.976	-0.30	32.993	-1.33	33.073	-0.25	33.057	-0.85	33.061	8.97	34.177	12.75	34.320	8.43	34.161	5.46	34.113
100m	2.09	33.415	-0.44	33.046	-0.92	33.053	-1.15	33.115	-0.96	33.064	-0.54	33.140	6.55	34.124	10.48	34.166	6.83	34.109	4.15	34.094
125m	2.05	33.390	-0.61	33.085	-0.03	33.136	-0.92	33.157	-0.37	33.130	0.19	33.235	3.72	34.091	9.15	34.139	5.77	34.092	3.29	34.091
150m	1.10	33.320	1.78	33.306	0.29	33.197	-0.71	33.198	0.01	33.195			2.29	34.096	7.24	34.111	4.71	34.093	2.58	34.093
200m	2.94	33.587	0.73	33.326	0.46	33.295	-0.47	33.250	0.27	33.276			1.57	34.085	2.72	34.103	3.02	34.093	1.73	34.095
250m	3.12	33.635	0.91	33.416	0.53	33.350	-0.12	33.316	0.63	33.357			1.18	34.083	1.47	34.096	2.01	34.096	1.29	34.088
300m	1.49	33.514	1.30	33.516	0.66	33.416	0.11	33.358	0.89	33.420			1.02	34.082	1.17	34.091	1.45	34.092	0.99	34.085
400m	1.43	33.601	1.56	33.657	1.10	33.554	0.43	33.440	1.27	33.553			0.65	34.079	0.70	34.082	0.89	34.085		
500m	1.76	33.753	1.86	33.809	1.69	33.726	0.83	33.531	1.62	33.680			0.48	34.076	0.47	34.077				
600m													0.36	34.074	0.36	34.076				
700m																				
800m																				
900m																				
1000m																				

Table 6-25

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199908		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	WTC05		WTC06		ASM08		ASM09		ASM10		ASM15		ASM14		ASM13		ASM12		ASM11	
Latitude:N	45- 1.6		45-30.1		44-49.9		44-40.0		44-29.9		44-30.0		44-40.1		44-50.0		45- 0.0		45-10.0	
Longitude:E	140-33.6		141-12.9		144-49.8		144-50.0		144-49.9		145-20.2		145-19.9		145-19.8		145-20.0		145-19.9	
Date	1999/08/30		1999/09/01		1999/09/06		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07		1999/09/07	
Time(JST)	13:43		13:55		22:56		04:24		05:41		07:47		09:01		10:09		11:20		12:33	
Weather	C		C		BC		BC		BC		BC		BC		BC		BC		B	
Air Temp.	24.7		20.2		20.2		19.2		18.6		20.6		22.3		23.9		26.3		27.6	
Bar	1019.0		1015.0		1018.7		1018.6		1019.0		1020.0		1020.3		1020.0		1020.0		1019.0	
Wind Dir	SW		NNW		SE		S		SE		SE		SE		SSE		SSE		SSE	
Wind Spd/F	S 3		S 6		S 3		S 4		S 4		S 9		S 7		S 6		S 4		S 6	
Transparency	18		10						11		12		17		16		14		15	
Depth	342		132		2150		1838		1578		1686		2200		2200		2580		2778	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	22.5	33.838	22.4	33.569	18.5	32.971	17.3	33.029	16.8	33.400	20.0	33.686	17.8	32.902	18.4	33.031	17.8	32.384	18.1	32.369
10m	22.49	33.815	22.18	33.554	16.66	32.967	17.05	33.010	9.74	33.320	19.93	33.666	16.69	32.891	14.64	33.275	13.55	32.597	15.73	32.737
20m	18.56	34.192	21.89	33.596	9.13	33.248	10.12	33.348	1.08	33.037	19.30	33.696	10.86	33.573	8.03	33.432	4.19	32.933	10.38	33.025
30m	15.33	34.289	20.65	33.781	1.77	32.882	3.31	33.124	0.32	33.064	18.79	33.754	7.82	33.583	4.09	33.341	1.59	33.014	3.36	32.972
50m	11.02	34.197	13.18	34.116	0.03	33.048	2.19	33.176	0.29	33.131	18.20	33.774	4.60	33.524	4.53	33.559	0.55	33.062	3.50	33.282
75m	8.67	34.140	9.39	34.104	-0.32	33.116	1.08	33.223	-0.18	33.138	9.39	33.584	3.91	33.526	2.47	33.371	-0.04	33.151	3.12	33.432
100m	7.04	34.077	8.10	34.078	-0.36	33.160	0.55	33.259	-0.12	33.174	2.06	33.216	3.03	33.459	2.30	33.376	1.87	33.296	2.04	33.368
125m	5.71	34.079			0.03	33.218	0.75	33.307	-0.57	33.180	-0.07	33.148	3.04	33.506	1.84	33.373	1.20	33.290	2.44	33.434
150m	4.63	34.068			0.18	33.256	0.90	33.363	0.46	33.264	0.07	33.254	1.59	33.400	1.81	33.406	0.13	33.251	2.52	33.463
200m	2.15	34.099			0.38	33.340	1.13	33.440	0.85	33.366	1.54	32.866	2.68	33.556	1.57	33.458	0.96	33.357	0.75	33.364
250m	1.10	34.092			0.62	33.405	1.24	33.499	1.07	33.441	1.56	33.452	3.33	33.675	1.19	33.468	0.63	33.372	0.77	33.417
300m	0.78	34.085			0.87	33.477	1.37	33.560	1.90	33.570	1.32	33.501	1.86	33.550	2.66	33.640	0.93	33.450	0.77	33.433
400m					1.84	33.665	1.73	33.712	1.93	33.665	1.37	33.595	1.83	33.657	1.71	33.622	0.94	33.525	1.24	33.550
500m					1.84	33.769	1.99	33.872	1.81	33.770	1.66	33.728	1.87	33.797	1.86	33.796	1.30	33.639	1.57	33.665
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-26



Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199909		199909		199909		199909		199909		199909		199909		199909		199909		199909	
Station No	ASM06		ASM07		ASM01		ASM02		ASM03		ASM04		ASM05		WTP01		WTP02		WTP03	
Latitude:N	45-10.0		45- 0.0		45- 8.0		45- 0.1		44-50.1		44-40.0		44-30.1		45-14.9		45-20.0		45-15.0	
Longitude:E	144-49.9		144-49.9		144-20.1		144-20.0		144-19.9		144-20.0		144-19.9		141-14.9		140-57.4		141-14.6	
Date	1999/09/07		1999/09/07		1999/09/08		1999/09/08		1999/09/08		1999/09/08		1999/09/08		1999/09/20		1999/09/20		1999/09/21	
Time(JST)	14:41		16:16		00:56		02:09		03:27		04:43		06:07		15:06		19:24		13:18	
Weather	BC		BC		C		R		R		C		BC		BC		BC		BC	
Air Temp.	21.4		21.7		19.4		19.6		19.8		19.7		19.5		17.4		14.1		21.7	
Bar	1018.0		1018.0		1012.5		1011.5		1010.5		1010.0		1009.0		1023.0		1025.0		1027.0	
Wind Dir	SE		SSE		SE		SE		SE		SE		SSE		N		NNE		CALM	
Wind Spd/F	S 6		S 6		S 9		S 8		S 9		S 8		S 8		S 8		S 7		S 0	
Transparency	14		13										13		14				13	
Depth	1795		1686		793		158		153		933		857		35		168		37	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	18.8	32.127	19.1	32.142	18.6	32.984	18.3	32.998	18.0	32.977	17.5	32.953	16.1	33.051	21.1	33.921	21.7	34.043	21.3	34.024
10m	11.63	33.065	17.36	32.274	17.37	33.052	17.48	32.991	16.89	33.030	17.37	32.950	14.11	33.174	21.37	33.899	21.90	34.029	21.23	33.925
20m	1.70	33.032	5.67	32.669	9.59	33.399	10.70	33.355	4.10	33.351	5.92	33.258	6.18	33.322	21.37	33.900	21.90	34.030	21.16	33.924
30m	-0.17	33.069	2.06	32.861	4.85	33.094	4.69	33.351	3.81	33.508	4.78	33.450	4.03	33.396	21.37	33.900	21.86	34.031	21.14	33.925
50m	-0.98	33.093	0.08	33.014	4.04	33.393	1.98	33.213	0.91	33.267	2.30	33.333	1.58	33.250			15.15	34.235		
75m	-1.02	33.122	-0.20	33.089	0.84	33.216	0.76	33.199	0.86	33.283	0.87	33.253	1.82	33.338			10.38	34.201		
100m	-0.85	33.171	1.18	33.223	1.70	33.300	1.77	33.313	1.33	33.370	0.98	33.311	1.62	33.373			8.35	34.132		
125m	-0.73	33.197	1.79	33.320	1.99	33.398	1.06	33.307	1.65	33.446	2.31	33.478	1.63	33.406			5.99	34.099		
150m	-0.61	33.225	1.64	33.352	1.66	33.396	2.16	33.490			1.63	33.453	1.58	33.426			3.80	34.091		
200m	-0.15	33.304	1.40	33.381	1.24	33.395					2.89	33.632	1.13	33.450						
250m	0.26	33.358	1.25	33.422	1.33	33.434					2.55	33.640	1.54	33.560						
300m	0.34	33.396	0.95	33.443	1.31	33.477					1.77	33.584	1.52	33.609						
400m	0.42	33.428	1.70	33.580	1.41	33.551					1.80	33.701	1.70	33.707						
500m	0.58	33.480	1.53	33.659	1.58	33.652					1.90	33.814	1.91	33.832						
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-27

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	S103		S102		S101		O15		OA10		O14		O13		O12		O11		OA02	
Latitude:N	45-40.0		45-35.0		45-31.1		45-30.0		45-30.1		45-30.1		45-20.0		45-12.5		45- 8.0		44-52.4	
Longitude:E	142- 0.3		142- 0.1		142- 0.2		142-10.1		142-30.0		142-49.9		142-40.0		142-32.5		142-28.0		142-52.5	
Date	1999/09/27		1999/09/27		1999/09/27		1999/09/27		1999/09/27		1999/09/27		1999/09/27		1999/09/27		1999/09/27		1999/09/27	
Time(JST)	11:22		12:00		12:29		13:06		14:17		15:34		16:56		18:03		18:44		21:08	
Weather	BC		BC		C		C		C		C		C		C		C		C	
Air Temp.	20.6		20.4		20.2		19.9		18.3		17.6		16.8		17.3		18.1		18.3	
Bar	1019.5		1020.3		1020.0		1019.0		1018.5		1020.0		1018.0		1017.5		1017.5		1017.0	
Wind Dir	SW		SW		SW		SW		SW		SW		SW		SW		SW		SSW	
Wind Spd/F	S 11		S 12		S 13		S 13		S 10		S 7		S 10		S 12		S 12		S 10	
Transparency	13		13		10		12		10		10		6		32		32		83	
Depth	56		42		25		37		83		119		96		60		32		83	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	17.0	33.904	19.1	33.965	19.3	33.961	18.4	33.968	13.4	32.024	13.5	31.979	12.0	32.438	16.3	33.999	17.3	33.802	15.2	33.734
10m	16.34	33.886	19.11	33.959	19.20	33.960	17.57	33.971	12.85	32.081	13.49	31.980	11.27	32.515	16.40	33.962	17.54	33.821	14.01	33.667
20m	15.00	33.912	18.13	34.001			16.23	34.006	9.09	33.259	11.82	32.106	10.11	33.026	15.76	33.952	17.44	33.872	13.10	33.808
30m	13.58	33.941	16.93	34.052					7.74	33.719	2.39	32.785	7.83	33.715	15.12	33.947			12.89	33.789
50m	10.06	34.132							7.13	34.014	-0.07	32.916	7.88	33.977	13.26	33.999			11.83	33.712
75m									7.14	34.013	-0.77	33.034	7.89	33.979					10.88	33.637
100m											-0.59	33.137								
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-28

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	OA03		OA04		OA05		ASM01		O26		O25		O24		O23		O22		OA11	
Latitude:N	45- 0.0		45-10.0		45-20.0		45-13.0		45-10.0		45- 0.0		44-50.1		44-40.1		44-35.1		44-17.3	
Longitude:E	142-59.9		143- 9.9		143-19.9		143-39.4		143-50.1		143-40.1		143-30.0		143-20.0		143-15.1		143-38.0	
Date	1999/09/27		1999/09/27		1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/28	
Time(JST)	22:14		23:31		01:19		04:08		05:07		07:02		08:28		09:55		10:44		12:58	
Weather	C		R		BC		BC		BC		BC		BC		B		B		C	
Air Temp.	17.3		15.5		15.2		14.7		14.5		14.6		15.1		15.2		16.5		17.5	
Bar	1016.5		1016.5		1017.5		1020.0		1021.0		1022.0		1023.5		1024.0		1024.1		1024.5	
Wind Dir	SW		WSW		W		W		W		W		WSW		W		NW		NNW	
Wind Spd/F	S 9		S 8		S 10		S 8		S 10		S 8		S 8		S 6		S 2		S 7	
Transparency											11		7		9		7		12	
Depth	129		132		143		184		348		173		150		112		74		45	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.2	32.062	12.1	32.307	12.5	32.446	13.0	32.418	12.6	32.310	12.2	32.524	11.0	32.207	12.3	32.175	12.4	32.356	17.3	33.881
10m	11.54	32.093	12.13	32.311	12.62	32.448	13.07	32.421	12.72	32.310	12.25	32.523	10.58	32.206	10.06	32.454	12.77	33.016	17.19	33.884
20m	7.51	32.425	3.74	32.711	10.23	32.574	7.85	32.612	10.25	32.517	10.42	32.708	5.47	32.561	4.75	33.026	13.38	33.757	17.00	33.895
30m	3.63	32.965	0.41	32.930	2.78	32.867	3.69	32.735	3.95	32.733	5.03	32.890	0.57	32.917	6.11	33.565	13.24	33.766	16.86	33.889
50m	3.86	33.358	0.24	33.071	0.37	33.008	-0.34	32.961	-0.38	32.922	-0.24	32.999	0.64	33.087	7.50	33.879	12.13	33.601		
75m	6.66	33.944	0.47	33.186	-0.40	33.073	-0.20	33.055	-0.53	33.066	-0.76	33.048	-0.26	33.125	7.42	33.912				
100m	6.64	33.970	0.79	33.322	0.67	33.195	-0.35	33.122	0.31	33.180	-0.55	33.143	1.42	33.390	7.40	33.915				
125m					0.29	33.278	0.07	33.225	-0.18	33.186	0.14	33.224	3.10	33.641						
150m							-0.21	33.224	-0.51	33.191	-0.15	33.245								
200m									-0.42	33.204										
250m									-0.30	33.224										
300m									-0.32	33.225										
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-29

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	OA12		OA13		OA14		O35		O36		ASM02		O46		O45		O44		O43	
Latitude:N	44-22.5		44-30.0		44-40.0		44-50.0		45- 8.0		45- 9.6		45-10.1		45- 0.1		44-50.0		44-40.0	
Longitude:E	143-42.7		143-50.0		144- 0.0		144-20.0		144-20.0		144-36.0		145-19.9		145-19.9		145-20.0		145-20.0	
Date	1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/28		1999/09/29		1999/09/29		1999/09/29		1999/09/29	
Time(JST)	13:39		14:37		16:14		18:08		20:02		22:58		02:25		03:44		05:33		06:51	
Weather	BC		BC		BC		BC		C		C		BC		BC		C		C	
Air Temp.	18.5		19.2		18.0		14.7		12.4		13.1		12.9		12.9		13.2		13.4	
Bar	1024.5		1025.0		1026.0		1027.0		1028.5		1029.0		1029.0		1029.0		1029.0		1029.0	
Wind Dir	NNW		NNW		WNW		NE		ESE		SE		CALM		NE		ENE		ENE	
Wind Spd/F	S 3		S 3		S 2		S 2		S 2		S 2		S 0		S 3		S 5		S 6	
Transparency	12		13		16												10		9	
Depth	88		164		187		152		791		782		2780		2550		2220		2199	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	12.8	32.892	13.0	32.617	12.7	32.652	12.6	32.488	9.2	32.770	13.7	33.012	14.8	33.274	12.3	33.228	12.4	32.998	12.1	33.024
10m	13.99	33.770	12.57	32.597	12.16	32.711	9.72	32.839	8.82	32.815	12.92	33.185	14.30	33.282	12.41	33.224	12.47	32.989	11.99	33.035
20m	13.83	33.767	10.68	32.760	9.66	33.156	6.06	32.997	7.92	32.960	11.18	33.293	12.05	33.331	12.18	33.240	12.19	32.984	11.59	33.108
30m	13.63	33.751	6.64	33.057	6.33	33.338	2.42	33.162	6.76	33.125	9.73	33.455	10.55	33.381	10.40	33.348	11.09	33.006	6.31	33.274
50m	11.29	33.827	4.48	33.623	0.72	33.199	1.40	33.171	4.55	33.338	8.03	33.703	7.44	33.585	4.64	33.511	2.54	33.216	2.09	33.227
75m	9.19	33.950	2.60	33.438	0.22	33.161	0.73	33.227	1.20	33.194	1.62	33.190	4.06	33.482	2.06	33.321	1.85	33.278	0.48	33.161
100m			3.76	33.616	0.72	33.249	0.41	33.253	1.78	33.286	0.33	33.143	2.37	33.360	1.26	33.287	0.93	33.264	1.33	33.262
125m			3.65	33.662	0.50	33.272	0.42	33.260	-0.59	33.167	0.39	33.178	1.86	33.355	1.26	33.323	1.00	33.317	0.45	33.245
150m			3.59	33.655	0.93	33.349			1.57	33.312	0.60	33.223	1.62	33.371	1.52	33.393	0.95	33.351	0.42	33.282
200m									1.11	33.355	0.73	33.296	1.59	33.429	1.12	33.424	1.19	33.446	0.65	33.352
250m									1.69	33.454	2.00	33.459	1.50	33.474	1.62	33.516	1.44	33.529	0.96	33.449
300m									1.44	33.482	1.58	33.462	1.56	33.526	1.69	33.584	1.41	33.560	1.39	33.536
400m									1.52	33.559	1.29	33.521	1.56	33.611	1.75	33.679	1.69	33.716	1.54	33.650
500m									1.54	33.688	1.56	33.626	1.70	33.705	1.88	33.826	2.00	33.871	1.80	33.793
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-30

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	O42		O41		OA21		OA22		OA23		OA24		ASM03		O31		OA20		O32	
Latitude:N	44-30.1		44-22.1		44- 2.0		44-10.0		44-20.0		44-30.0		44-39.7		44- 2.0		44- 5.0		44-10.0	
Longitude:E	145-20.0		145-20.0		144-50.1		144-50.1		144-50.0		144-50.0		144-52.2		144-20.0		144-20.1		144-20.1	
Date	1999/09/29		1999/09/29		1999/09/29		1999/09/29		1999/09/29		1999/09/29		1999/09/30		1999/09/30		1999/09/30		1999/09/30	
Time(JST)	08:11		09:28		12:35		13:23		14:35		15:46		00:14		08:18		08:41		09:16	
Weather	BC		BC		BC		BC		BC		BC		C		BC		BC		BC	
Air Temp.	14.9		16.0		17.4		18.7		19.6		18.6		14.4		18.6		19.8		20.6	
Bar	1028.7		1027.6		1025.5		1025.5		1025.5		1024.5		1019.5		1016.0		1016.0		1011.0	
Wind Dir	SE		SE		SE		SSE		SSE		SE		S		CALM		SW		S	
Wind Spd/F	S 7		S 11		S 12		S 10		S 6		S 5		S 5		S 0		S 3		S 5	
Transparency	9		11		12		13		14		11				5		8		11	
Depth	1699		141		77		584		1086		1580		1638		34		36		112	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	14.5	33.422	16.4	33.879	17.0	33.875	16.8	33.817	14.7	32.932	13.7	33.055	11.8	33.274	17.3	31.162	17.2	33.753	17.0	33.856
10m	14.11	33.579	16.48	33.875	17.01	33.871	16.77	33.812	13.63	32.867	12.73	33.023	11.75	33.259	17.01	33.796	16.73	33.817	16.76	33.857
20m	13.68	33.656	15.08	33.876	16.90	33.868	15.06	33.508	12.51	32.908	11.65	33.124	10.04	33.298	15.48	33.866	16.15	33.810	14.55	33.889
30m	11.24	33.408	14.68	33.847	16.49	33.864	13.18	33.161	7.00	33.069	5.10	33.155	6.22	33.288					14.39	33.888
50m	8.25	33.464	13.42	33.883	15.38	33.837	10.28	33.419	1.44	33.232	1.19	33.170	2.89	33.358					11.25	33.806
75m	4.64	33.594	11.86	33.937			7.37	33.848	-0.05	33.148	0.45	33.169	1.95	33.310					9.67	33.776
100m	4.15	33.602	10.35	33.909			6.91	33.839	0.34	33.212	0.99	33.221	1.58	33.311					8.24	33.836
125m	2.83	33.470	8.11	33.862			6.40	33.805	0.63	33.267	0.48	33.220	1.69	33.360						
150m	1.77	33.392					5.14	33.693	0.78	33.313	0.77	33.270	1.69	33.396						
200m	2.19	33.472					3.86	33.569	0.67	33.352	0.44	33.313	1.51	33.445						
250m	1.99	33.485					2.60	33.487	0.28	33.373	0.88	33.390	1.78	33.519						
300m	1.98	33.526					3.05	33.593	1.07	33.467	1.76	33.512	1.61	33.537						
400m	1.75	33.610					2.46	33.587	0.82	33.524	1.24	33.582	1.67	33.633						
500m	1.53	33.696					2.39	33.660	1.52	33.694	1.66	33.732	1.92	33.782						
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-31

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199910		199910		199910		199910		199910		199910		199910		199910		199910		199910	
Station No	O33		O34		WTC01		WTC02		WTC03		WTC04		WTC05		WTC06		WTC07		WTC08	
Latitude:N	44-20.0		44-30.0		43-20.9		42-59.9		43-16.5		42- 0.1		41-38.1		41-38.6		43-21.0		43-37.2	
Longitude:E	144-20.0		144-20.1		140-12.1		140-12.5		140- 0.7		139-57.7		139-18.1		139-56.5		140-11.3		140-49.1	
Date	1999/09/30		1999/09/30		1999/10/07		1999/10/09		1999/10/09		1999/10/11		1999/10/13		1999/10/13		1999/10/19		1999/10/21	
Time(JST)	10:18		11:21		14:52		10:38		14:25		10:04		08:54		14:20		09:17		09:15	
Weather	C		R		BC		BC		BC		C		C		C		BC		BC	
Air Temp.	19.5		17.1		19.0		15.3		16.3		18.2		17.4		18.8		13.9		14.0	
Bar	1015.6		1016.0		1004.8		1027.0		1026.8		1023.3		1024.5		1020.5		1030.5		1024.8	
Wind Dir	W		W				WSW		SW		E		NE		CALM		SW		NNW	
Wind Spd/F	S 3		S 4				S 4		S 6		S 7		S 4		S 0		S 6		S 3	
Transparency	8		7		14		16				15		15		13		15		14	
Depth	266		880		528		433		945		689		1906		567		557		600	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	13.0	32.561	12.3	32.781	19.3	34.105	18.8	34.029	18.3	34.095	18.8	33.818	18.7	33.771	19.1	33.776	16.5	34.129	15.0	34.123
10m	12.34	32.717	12.11	32.792	19.39	34.052	19.11	34.012	19.04	34.077	19.08	33.797	18.89	33.760	19.31	33.771	16.77	34.113	15.05	34.107
20m	9.49	33.135	5.42	33.103	19.36	34.052	19.11	34.012	19.01	34.077	19.04	33.799	18.88	33.777	19.21	33.773	16.68	34.116	14.95	34.104
30m	8.86	33.157	4.31	33.127	19.19	34.066	19.11	34.013	18.99	34.075	18.93	33.811	18.23	33.921	19.09	33.783	16.57	34.119	14.47	34.074
50m	3.76	33.254	2.74	33.180	16.80	34.156	18.83	34.064	17.67	34.151	16.80	33.964	11.76	34.279	17.26	33.995	16.49	34.120	12.14	34.257
75m	0.22	33.172	0.79	33.174	11.44	34.232	10.55	34.201	10.14	34.216	10.11	34.229	7.94	34.155	10.53	34.247	13.33	34.213	9.22	34.179
100m	0.33	33.224	0.55	33.214	7.12	34.138	8.19	34.135	6.53	34.130	6.69	34.140	5.95	34.114	6.48	34.157	8.20	34.157	6.37	34.117
125m	0.42	33.267	0.82	33.282	5.77	34.103	7.13	34.114	5.20	34.101	5.03	34.101	4.24	34.098	5.01	34.107	5.33	34.096	4.71	34.094
150m	0.26	33.270	0.82	33.289	3.99	34.096	5.21	34.095	4.42	34.094	3.58	34.094	2.97	34.087	4.21	34.083	3.01	34.098	3.58	34.087
200m	0.80	33.331	0.60	33.308	2.66	34.088	2.37	34.090	2.24	34.087	1.94	34.082	1.69	34.081	2.35	34.080	2.04	34.086	2.06	34.090
250m	1.89	33.512	0.68	33.344	1.77	34.088	1.60	34.087	1.73	34.082	1.41	34.077	1.23	34.079	1.51	34.078	1.41	34.085	1.46	34.088
300m			0.90	33.398	1.38	34.086	1.04	34.082	1.16	34.083	1.03	34.079	1.02	34.079	1.13	34.078	1.09	34.082	1.10	34.085
400m			1.46	33.517	0.85	34.082	0.71	34.077	0.75	34.079	0.68	34.076	0.75	34.080	0.79	34.077	0.71	34.078	0.79	34.080
500m			1.49	33.637	0.59	34.078			0.51	34.075	0.54	34.075	0.51	34.075	0.65	34.076	0.52	34.076	0.59	34.076
600m									0.44	34.073	0.41	34.073								
700m																				
800m																				
900m																				
1000m																				

Table 6-32

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199911		19991W		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	WTPS302		TPS301		WTPS300		WTPO11		WTPO12		WTPO13		WTPO14		WTPOA05		WTPOA04		WTPOA03	
Latitude:N	45-32.4		45-29.8		45-26.9		45- 7.9		45-12.5		45-19.9		45-30.0		45-20.0		45-10.1		45- 0.1	
Longitude:E	142-12.6		142-10.2		142- 8.1		142-28.1		142-32.6		142-40.0		142-50.0		143-20.2		143-10.0		143- 0.0	
Date	1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09		1999/11/09	
Time(JST)	12:15		12:40		13:05		15:11		15:47		16:43		18:09		20:29		21:46		23:06	
Weather	B		BC		BC		BC		BC		BC		BC		BC		BC		BC	
Air Temp.	8.6		8.4		7.8		6.9		6.6		5.2		4.3		3.6		4.1		4.0	
Bar	1018.0		1018.1		1018.1		1017.5		1018.5		1019.0		1019.5		1019.9		1020.0		1020.0	
Wind Dir	NE		NE		N		NNE		NNE		NNW		NNW		W		W		W	
Wind Spd/F	S 2		S 3		S 3		S 4		S 1		S 2		S 3		S 1		S 3		S 1	
Transparency	18		19		15		13													
Depth	44		36		23		32		62		97		118		143		130		130	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	10.0	34.033	12.1	34.113	12.5	34.117	12.2	34.134	7.0	30.714	6.6	30.607	6.6	30.766	6.6	31.034	6.8	31.017	6.5	30.723
10m	10.11	34.028	12.37	34.112	12.89	34.110	12.68	34.129	6.81	31.295	6.92	30.602	6.77	30.769	7.06	31.461	7.12	31.019	6.91	30.723
20m	10.11	34.029	12.37	34.112			12.66	34.129	8.69	33.749	6.93	30.612	7.03	31.333	7.51	31.974	7.26	31.087	7.05	30.974
30m	10.11	34.029	12.37	34.111			12.63	34.130	9.20	33.878	6.89	31.848	6.20	31.969	5.02	32.347	5.84	32.247	5.00	32.214
50m									8.99	33.890	3.12	33.560	0.85	32.813	0.58	32.935	4.54	33.257	4.17	33.665
75m											4.12	33.856	-0.45	32.993	0.19	33.044	3.92	33.437	3.39	33.820
100m													-0.57	33.068	-0.87	33.106	-0.54	33.171	3.18	33.840
125m															-0.61	33.154	3.66	33.724	3.07	33.834
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-33

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	WTPOA02		WTPO22		WTPO23		WTPO24		WTPO25		WTPO26		WTPOA30		WTPOA14		WTPOA13		WTPOA12	
Latitude:N	44-52.5		44-35.0		44-40.0		44-50.1		45- 0.0		45-10.1		44-50.0		44-40.1		44-30.0		44-22.4	
Longitude:E	142-52.6		143-15.1		143-20.0		143-30.1		143-40.0		143-50.1		144-10.1		143-59.8		143-49.8		143-42.6	
Date	1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10		1999/11/10	
Time(JST)	00:07		02:21		03:02		04:15		05:30		06:50		09:08		10:33		11:51		12:51	
Weather	BC		BC		BC		BC		BC		B		B		B		B		B	
Air Temp.	4.1		3.9		4.1		4.6		4.4		3.7		3.9		5.0		5.7		6.1	
Bar	1020.0		1019.5		1020.0		1019.5		1019.5		1020.0		1020.5		1020.1		1020.0		1019.5	
Wind Dir	WSW		W		W		WNW		WNW		NW		NW		WSW		SW		WNW	
Wind Spd/F	S 5		S 2		S 7		S 5		S 6		S 5		S 4		S 4		S 5		S 1	
Transparency											8		7		9		7		7	
Depth	84		73		113		149		172		340		206		187		163		90	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	6.8	30.682	7.6	31.717	6.9	30.831	6.6	31.083	6.6	31.220	6.9	31.737	7.1	31.988	7.9	31.954	7.8	31.484	7.2	31.270
10m	7.18	31.290	11.17	33.619	7.20	30.830	7.19	31.187	7.10	31.210	7.12	31.736	7.55	32.004	8.06	31.952	6.93	31.543	8.51	33.047
20m	10.10	33.901	9.85	33.981	6.44	32.068	7.43	31.441	7.01	31.591	7.37	31.888	7.77	32.082	7.99	31.962	7.07	31.573	11.06	33.884
30m	10.08	33.945	9.72	34.012	7.55	33.555	4.66	32.383	7.51	31.959	7.72	32.268	8.52	32.358	7.97	31.968	7.16	31.623	11.01	34.042
50m	9.18	33.938	9.44	33.979	7.64	33.859	4.84	33.344	0.39	33.020	1.55	33.085	2.20	33.054	3.70	32.673	5.45	33.209	10.85	34.045
75m	9.00	33.918			6.66	33.797	2.91	33.329	-0.15	33.096	-0.10	33.081	0.14	33.091	1.16	33.098	0.40	33.067	9.72	33.945
100m					6.06	33.823	1.83	33.365	-0.75	33.110	-0.25	33.118	-0.53	33.104	0.08	33.158	2.87	33.369		
125m							2.65	33.888	-0.79	33.142	-0.61	33.121	-0.32	33.167	-0.71	33.178	3.17	33.868		
150m									-0.49	33.191	-0.37	33.169	-0.53	33.181	2.20	33.458	3.12	33.873		
200m											-0.11	33.226								
250m											0.09	33.262								
300m											0.12	33.265								
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-34



Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911		
Station No	WTPOA11		WTPO21		WTPOA01		WTP01		WTP02		WTP03		WTP04		WSU01		WSU02		WSU03		
Latitude:N	44-17.5		44-30.1		44-48.6		44-55.4		44-58.3		44-49.9		44-54.8		45-29.0		44-51.1		44-55.6		
Longitude:E	143-37.8		143-10.1		142-48.4		143- 7.8		143- 6.4		143-18.3		143-18.8		142-47.8		143-31.4		143-46.3		
Date	1999/11/10		1999/11/10		1999/11/11		1999/11/11		1999/11/11		1999/11/11		1999/11/11		1999/11/18		1999/11/19		1999/11/19		
Time(JST)	13:33		15:56		06:34		08:35		10:05		11:39		13:16		15:17		09:42		12:08		
Weather	B		B		C		C		C		C		C		C		C		C		
Air Temp.	7.0		7.8		7.1		7.3		8.9		8.9		9.4		4.3		5.2		5.9		
Bar	1019.2		1019.0		1017.5		1017.2		1017.0		1017.0		1016.2		1005.0		1014.0		1013.0		
Wind Dir	WNW		WSW		S		SSW		SSW		S		S		SE		SW		SW		
Wind Spd/F	S 7		S 5		S 4		S 9		S 6		S 4		S 4		S 8		S 9		S 9		
Transparency	8		10				13		10		6		7				7		10		
Depth	47		34		44		134		134		140		143		118		153		176		
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	
0m	7.4	31.503	10.1	31.335	8.4	32.045	6.9	30.793	6.9	30.703	6.8	30.784	6.9	31.078	4.1	31.153	5.4	31.579	5.5	31.603	
10m	8.77	32.503	11.37	33.670	11.87	34.055	7.00	30.792	7.01	30.703	6.97	30.912	7.10	31.130	4.31	31.157	5.59	31.577	5.73	31.606	
20m	10.63	33.478	11.33	33.733	11.87	34.093	7.06	30.949	7.01	30.914	6.31	32.079	7.27	31.258	4.24	31.161	5.58	31.579	5.73	31.606	
30m	11.74	33.921	11.30	33.728	11.81	34.099	2.81	32.533	4.76	32.314	5.37	32.854	6.32	32.148	3.95	31.310	5.55	31.590	5.73	31.606	
50m							0.25	32.909	5.01	33.396	0.22	33.069	1.00	32.859	5.53	32.103	2.25	32.828	5.13	31.941	
75m							4.96	33.705	4.79	33.763	3.67	33.628	-0.49	33.018	0.10	32.954	0.51	33.059	1.12	33.121	
100m							4.02	33.746	3.35	33.884	3.42	33.808	1.08	33.336	1.06	33.198	-0.67	33.135	-0.46	33.074	
125m											2.84	33.781	2.54	33.867			2.47	33.566	-0.55	33.103	
150m																				-0.66	33.141
200m																					
250m																					
300m																					
400m																					
500m																					
600m																					
700m																					
800m																					
900m																					
1000m																					

Table 6-35

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199911	
Station No	WSU04		WSU05		WSU06		WSU07		WSUO24A		WSUO25A		WSUO26A		WSUOA05		WSUOA04		WSU08	
Latitude:N	45- 1.7		44-33.6		44-37.1		44-43.2		44-50.0		45- 0.0		45-10.0		45-20.1		45-10.0		45- 7.6	
Longitude:E	143-53.4		143-53.1		144- 5.8		143-55.6		143-30.0		143-39.9		143-49.8		143-19.9		143- 9.9		142-55.7	
Date	1999/11/19		1999/11/20		1999/11/20		1999/11/20		1999/11/20		1999/11/20		1999/11/20		1999/11/20		1999/11/20		1999/11/21	
Time(JST)	14:16		09:05		11:36		13:50		15:46		17:01		18:13		20:35		21:53		08:46	
Weather	C		BC		BC		BC		B		BC		BC		BC		BC		C	
Air Temp.	5.9		8.5		8.8		8.9		6.5		5.7		5.3		5.4		5.3		6.2	
Bar	1011.5		1020.0		1019.0		1018.3		1018.0		1018.3		1018.5		1017.5		1017.2		1016.0	
Wind Dir	SSW		SW		WSW		S		SSW		SSW		SSW		S		S		SSE	
Wind Spd/F	S 9		S 2		S 4		S 3		S 4		S 5		S 6		S 8		S 6		S 5	
Transparency	11		11		12		10												10	
Depth	205		169		210		175		149		171		341		142		132		129	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.4	31.785	5.7	31.734	5.9	32.040	6.0	31.664	5.9	31.111	5.3	31.760	4.8	31.640	4.2	31.101	5.6	31.185	4.3	30.985
10m	5.57	31.790	5.83	31.728	5.95	32.050	5.79	31.691	5.98	31.133	5.52	31.755	5.00	31.636	4.18	31.111	5.81	31.202	4.39	31.016
20m	5.58	31.790	5.82	31.729	5.98	32.066	5.66	31.721	5.92	31.190	5.59	31.775	4.99	31.654	4.17	31.132	5.36	31.416	4.42	31.463
30m	5.57	31.800	5.84	31.741	5.96	32.101	5.61	31.733	5.66	31.552	5.61	31.779	5.06	31.679	5.76	31.886	5.45	31.566	5.19	31.957
50m	2.24	33.112	7.17	33.178	4.61	32.726	5.61	31.951	4.19	32.451	4.73	32.459	2.58	32.776	4.06	32.534	2.63	32.555	0.85	32.902
75m	1.12	33.151	6.68	33.842	-0.07	33.029	1.39	33.122	0.19	32.923	0.34	33.057	-0.04	33.061	0.26	33.023	0.03	32.944	5.61	33.838
100m	0.52	33.147	2.09	33.391	0.00	33.104	-0.13	33.148	3.85	33.751	-0.43	33.077	-0.26	33.121	-0.47	33.093	0.17	33.193	5.56	33.844
125m	0.47	33.191	4.30	33.741	0.15	33.154	-0.44	33.171	3.71	33.765	-0.60	33.124	-0.14	33.154	-0.27	33.154	1.12	33.299		
150m	-0.03	33.194	4.09	33.732	-0.45	33.181	2.50	33.527			0.15	33.234	-0.14	33.174						
200m					2.32	33.759							-0.04	33.217						
250m													0.02	33.248						
300m													0.28	33.305						
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-36

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199911		199911		199911		199911		199911		199911		199911		199911		199911		199912	
Station No	WSU09		WSU10		WSUOA03A		WSUOA02A		WSUO23A		WSUO22A		WSUO21A		WSUOA01A		WSU11		OHS102	
Latitude:N	45- 8.1		45-14.6		44-59.9		44-52.4		44-40.1		44-35.1		44-30.0		44-48.1		45- 0.1		45-35.0	
Longitude:E	142-58.3		143- 0.7		143- 0.0		142-52.4		143-19.9		143-15.1		143-10.0		142-49.7		143- 5.6		142- 0.1	
Date	1999/11/21		1999/11/21		1999/11/21		1999/11/21		1999/11/22		1999/11/22		1999/11/22		1999/11/22		1999/11/22		1999/12/01	
Time(JST)	11:31		13:30		15:01		16:00		05:33		06:15		06:55		09:36		13:39		16:44	
Weather	B		BC		BC		C		BC		BC		BC		BC		BC		S	
Air Temp.	7.9		9.6		8.4		8.7		5.6		5.5		5.5		8.6		8.7		1.1	
Bar	1014.1		1013.0		1013.0				1017.5		1018.0		1018.2		1018.5		1018.0		1022.0	
Wind Dir	SE		S		SW		SW		NW		NNW		W		SE		SE		WSW	
Wind Spd/F	S 3		S 2		S 6		S 8		S 6		S 4		S 2		S 3		S 5		S 12	
Transparency	11		12		10								10		12		10			
Depth	130		125		130		83		113		75		34		49		138		43	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.4	31.000	5.8	31.191	5.8	31.364	10.3	34.086	6.9	31.097	5.1	32.455	6.6	32.613	10.6	34.056	5.3	31.410	10.1	34.118
10m	5.52	31.394	5.83	31.201	5.82	31.372	10.53	34.088	6.09	31.101	4.19	32.679	8.54	33.270	10.82	34.053	5.35	31.446	10.16	34.118
20m	5.24	31.582	5.81	31.330	5.00	31.569	10.51	34.088	6.09	31.214	6.07	33.440	9.22	33.514	10.82	34.054	5.23	31.541	10.16	34.118
30m	5.20	31.919	5.35	31.511	3.00	32.226	10.47	34.089	6.11	31.447	8.22	33.930			10.82	34.053	4.85	31.726	10.16	34.119
50m	1.93	32.660	4.43	32.305	3.60	33.314	10.43	34.089	6.87	33.651	8.22	33.945					1.21	32.768		
75m	2.21	33.326	0.16	32.969	5.93	33.824	10.32	34.093	7.53	33.938							-0.16	33.054		
100m	3.95	33.746	-0.73	33.087	5.92	33.833			6.76	33.874							-0.16	33.177		
125m					5.69	33.841											3.77	33.733		
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-37

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	OHS101		LPS300		LPS301		LPS399		LPS302		LPOA10		LPS397		LPS404		LPS403		LPS402	
Latitude:N	45-31.1		45-27.1		45-29.9		45-32.5		45-34.9		45-30.0		45-30.1		45-30.1		45-20.0		45-12.5	
Longitude:E	142- 0.1		142- 7.9		142-10.1		142-12.4		142-14.8		142-30.1		142-35.0		142-50.1		142-39.9		142-32.5	
Date	1999/12/01		1999/12/01		1999/12/01		1999/12/01		1999/12/01		1999/12/01		1999/12/01		1999/12/01		1999/12/02		1999/12/02	
Time(JST)	17:51		18:34		19:03		19:25		19:52		21:13		21:51		22:58		01:05		02:16	
Weather	BC		BC		BC		BC		BC		BC		BC		BC		BC		S	
Air Temp.	1.3		1.0		1.0		1.1		1.3		1.3		1.5		1.8		1.5		1.5	
Bar	1022.5		1022.5		1022.5		1022.5		1022.5		1022.0		1021.5		1020.5		1018.2		1017.0	
Wind Dir	WSW		WSW		SW		SW		SW		WSW		WSW		S		S		SSE	
Wind Spd/F	S 10		S 9				S 10		S 11		S 10		S 10		S 9		S 7		S 8	
Transparency																				
Depth	26		25		36		44		49		83		85		119		97		61	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	7.8	33.947	8.6	34.117	8.6	34.148	6.6	34.104	5.7	33.144	3.4	31.825	3.5	31.372	2.9	31.293	3.4	31.231	3.4	32.221
10m	8.24	33.942	10.18	34.091	9.00	34.121	7.35	34.098	5.73	33.144	3.81	31.785	3.89	31.351	2.76	31.289	3.63	31.230	3.80	32.231
20m	8.15	33.923	10.19	34.091	8.50	34.121	7.37	34.098	7.43	34.048	4.20	32.356	4.18	32.062	2.76	31.289	2.69	31.339	3.85	32.247
30m							7.36	34.098	7.43	34.058	5.20	33.063	5.39	33.224	2.77	31.297	2.65	31.396	6.86	33.555
50m											6.28	33.893	6.55	33.819	2.76	31.383	6.63	33.388	7.33	33.661
75m											6.32	33.917	6.26	33.801	2.75	31.680	7.05	33.911		
100m															2.36	32.153				
125m																				
150m																				
200m																				
250m																				
300m																				
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-38

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199912		199912		199912		199912		199912		199912		199912		199912		199912		199912	
Station No	LPS401		OA02		OA01		OA03		OA04		OA05		O26		O25		O24		O23	
Latitude:N	45- 8.0		44-52.4		44-49.0		45- 0.1		45-10.0		45-20.1		45- 9.7		45- 0.0		44-49.9		44-40.0	
Longitude:E	142-27.8		142-52.5		142-49.2		143- 0.1		143-10.0		143-20.0		143-49.8		143-40.1		143-30.1		143-20.0	
Date	1999/12/02		1999/12/08		1999/12/08		1999/12/08		1999/12/08		1999/12/08		1999/12/09		1999/12/09		1999/12/09		1999/12/09	
Time(JST)	02:56		19:28		20:00		21:17		22:38		23:52		02:07		03:29		04:44		06:11	
Weather	S		BC		BC		BC		BC		BC		BC		BC		C		BC	
Air Temp.	1.4		-1.7		-1.9		-1.9		-1.2		-0.9		-0.4		0.0		-0.4		-0.3	
Bar	1015.2		1020.5		1021.0		1020.5		1021.0		1019.5		1019.2		1018.2		1018.0		1016.5	
Wind Dir	SSE		CALM		SSW		S		S		SSW		S		SSE		SSE		SSE	
Wind Spd/F	S 4		S 0		S 4		S 4		S 6		S 8		S 8		S 9		S 8		S 7	
Transparency																				
Depth	32		85		50		131		132		143		356		172		150		113	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	9.1	34.080	1.8	31.313	1.4	31.425	1.7	31.510	1.2	31.662	0.7	31.990	1.9	32.246	1.9	32.174	1.5	31.481	1.3	31.855
10m	9.51	34.075	2.27	31.317	1.79	31.429	2.07	31.524	1.36	31.785	0.86	31.994	2.19	32.243	2.07	32.181	1.66	31.488	1.41	31.873
20m	8.44	33.930	2.28	31.318	1.78	31.567	2.06	31.532	1.26	31.875	0.89	31.994	4.09	32.742	2.65	32.330	2.06	31.949	1.14	31.904
30m			2.19	31.357	1.84	31.612	1.90	31.581	1.25	31.906	0.89	31.994	4.41	32.836	3.04	32.441	2.05	31.962	1.09	31.909
50m			2.19	31.725			1.61	31.695	1.20	31.917	0.94	32.004	4.75	32.918	2.86	32.619	2.12	32.005	1.03	31.912
75m			5.13	33.031			1.67	31.935	1.48	32.370	0.96	32.030	3.45	32.934	0.58	32.735	2.26	32.138	1.42	32.555
100m							1.59	32.134	0.56	32.765	1.30	32.421	2.45	33.173	0.45	32.760	1.09	32.607	3.44	33.145
125m							4.12	33.271	0.19	32.932	0.68	32.705	1.69	33.206	0.18	32.841	1.06	32.910		
150m													0.87	33.199	-0.15	32.955				
200m													0.58	33.268						
250m													0.65	33.340						
300m													0.72	33.359						
400m																				
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-39

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	199912		199912		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	O22		O21		J11		J12		J13		J14		J15		J16		J17		J18	
Latitude:N	44-35.0		44-30.5		45-29.9		45-30.0		45-29.9		45-30.0		45-30.1		45-30.1		45-30.1		45-30.1	
Longitude:E	143-15.0		143-10.2		141-40.1		141-24.9		141-10.0		140-53.0		140-40.2		140-20.2		140- 0.1		139-40.0	
Date	1999/12/09		1999/12/09		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23		2000/02/23	
Time(JST)	06:55		08:18		10:27		11:48		13:21		15:12		16:25		18:09		19:54		22:07	
Weather	BC		BC		S		S		C		C		BC		C		C		BC	
Air Temp.	-4.0		-0.7		-5.1		-4.8		-4.8		-5.2		-5.3		-5.4		-5.4		-6.0	
Bar	1016.5		1015.0		1012.0		1012.0		1012.0		1012.0		1012.8		1013.2		1013.8		1014.0	
Wind Dir	SE		SSE		NNW		NNW		NNW		WNW		WNW		NW		NW		W	
Wind Spd/F	S 6		S 4		S 7		S 7		S 7		S 7		S 5		S 6		S 6		S 1	
Transparency			6		10		8		8		16		17							
Depth	75		38		56		110		130		430		550		395		593		835	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	1.5	31.750	1.9	31.515	3.0	33.976	3.9	34.013	3.4	34.020	4.6	34.088	4.9	34.088	4.1	34.111	4.0	34.091	2.5	34.081
10m	1.80	31.746	2.07	31.520	3.27	33.971	4.23	34.019	4.21	34.014	4.81	34.075	4.89	34.074	4.42	34.085	4.29	34.081	2.74	34.089
20m	1.80	31.747	2.10	31.528	3.27	33.971	4.23	34.019	4.21	34.014	4.81	34.072	4.89	34.074	4.42	34.086	4.28	34.081	2.74	34.089
30m	1.80	31.747	1.98	31.571	3.25	33.971	4.24	34.020	4.22	34.014	4.83	34.072	4.89	34.074	4.43	34.086	4.28	34.081	2.71	34.089
50m	2.35	32.020			3.24	33.970	4.21	34.018	4.21	34.014	4.84	34.074	4.89	34.074	4.41	34.085	4.27	34.081	2.46	34.087
75m							4.22	34.016	4.21	34.013	4.85	34.075	4.90	34.074	4.30	34.085	3.80	34.091	1.78	34.086
100m									4.11	34.006	4.79	34.071	4.91	34.074	3.74	34.092	3.21	34.097	1.51	34.086
125m									4.11	34.007	4.79	34.071	4.88	34.075	3.37	34.101	2.93	34.098	1.33	34.086
150m											4.75	34.067	3.97	34.089	2.52	34.085	2.15	34.083	1.19	34.086
200m											4.51	34.057	2.58	34.086	1.81	34.084	1.58	34.085	1.04	34.085
250m											1.68	34.091	1.59	34.086	1.33	34.086	1.18	34.084	0.95	34.084
300m											1.44	34.084	1.22	34.083	1.05	34.083	1.00	34.084	0.85	34.083
400m											1.08	34.082	0.83	34.080			0.75	34.080	0.68	34.080
500m													0.45	34.074			0.60	34.076	0.51	34.075
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-40

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200002		200002		200002		200002	
Station No	JW16		JW15		JW14		JW13		JW12		JW11		JW03		JW02		JW01		J21	
Latitude:N	45- 0.0		45- 0.0		45- 0.0		45- 0.0		44-59.9		45- 0.1		45-45.0		45-45.0		45-45.0		44-30.0	
Longitude:E	140- 0.1		140-20.2		140-40.0		141- 0.0		141-15.1		141-30.1		140-59.9		141-10.2		141-20.1		141-30.0	
Date	2000/02/24		2000/02/24		2000/02/24		2000/02/24		2000/02/24		2000/02/24		2000/02/24		2000/02/24		2000/02/24		2000/02/28	
Time(JST)	01:19		02:43		04:04		05:33		06:37		07:41		12:11		13:08		13:52		15:41	
Weather	S		C		C		S		BC		BC		C		C		C		C	
Air Temp.	-5.8		-5.0		-4.6		-4.9		-5.4		-6.6		-4.3		-4.6		-4.6		-3.3	
Bar	1013.0		1013.0		1012.2		1012.1		1012.0		1012.2		1011.0		1011.0		1011.0		1010.5	
Wind Dir	CALM		N		NNW		ENE		E		E		E		ENE		NNE		NE	
Wind Spd/F	S 0		S 2		S 2		S 5		S 4		S 6		S 7		S 3		S 3		S 12	
Transparency									13		7		18		14		15		11	
Depth	216		160		367		101		89		67		498		123		126		78	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	4.8	34.068	4.4	34.080	5.1	34.072	4.6	34.070	4.5	34.065	3.9	33.924	4.5	34.088	4.0	34.083	3.8	33.988	4.4	34.050
10m	5.10	33.887	4.58	34.060	5.38	34.058	4.94	34.060	4.75	34.058	4.16	33.927	4.92	34.078	4.53	34.071	3.98	33.888	4.87	34.039
20m	5.10	33.918	4.53	34.076	5.37	34.058	4.92	34.061	4.71	34.059	4.19	33.933	4.91	34.078	4.54	34.071	4.01	33.937	4.87	34.039
30m	5.11	34.019	4.50	34.076	5.37	34.058	4.91	34.061	4.70	34.059	4.45	33.973	4.93	34.079	4.55	34.071	4.03	33.951	4.87	34.039
50m	4.40	34.201	4.34	34.080	5.30	34.064	4.92	34.061	4.68	34.059	4.63	34.013	4.93	34.079	4.53	34.070	4.18	33.998	4.87	34.038
75m	3.35	34.092	4.16	34.081	5.10	34.064	4.90	34.062	4.66	34.058			4.90	34.078	4.51	34.068	4.30	34.036	4.92	34.047
100m	2.46	34.089	3.97	34.083	5.08	34.066							4.89	34.078	4.52	34.068	4.37	34.051		
125m	1.87	34.086	3.66	34.086	5.00	34.071							4.88	34.078						
150m	1.87	34.082	2.67	34.084	4.04	34.088							4.63	34.084						
200m	1.60	34.083			2.18	34.086							2.64	34.091						
250m					1.43	34.086							1.80	34.086						
300m					0.91	34.081							1.31	34.086						
400m													0.88	34.082						
500m																				
600m																				
700m																				
800m																				
900m																				
1000m																				

Table 6-41

Table 6 Results of serial oceanographic observations. Hokkaido Wakkanai Fisheries Experimental Station

Stn-prefix	200002		200002		200002		200002		200002		200002		200003		200003	
Station No	J22		J23		J24		J25		J26		J27		WTE01		WTE02	
Latitude:N	44-29.9		44-30.0		44-30.0		44-30.0		44-30.0		44-30.1		45-30.1		45-30.1	
Longitude:E	141-15.0		141- 0.0		140-39.9		140-19.9		140- 0.0		139-30.1		141-22.5		141-22.4	
Date	2000/02/28		2000/03/06		2000/03/06		2000/03/06		2000/03/06		2000/03/06		2000/03/22		2000/03/22	
Time(JST)	16:50		15:31		17:01		18:24		19:50		22:05		10:55		11:03	
Weather	BC		BC		BC		C		BC		C		BC		B	
Air Temp.	-3.6		2.5		2.0		1.5		2.8		2.1		-0.1		0.1	
Bar	1010.9		1011.5		1011.0		1010.5		1009.9		1007.5		1021.0		1021.0	
Wind Dir	NE		SW		SSW		S		S		S		SSE		S	
Wind Spd/F	S 14		S 6		S 5		S 3		S 8		S 6		S 4		S 2	
Transparency	7		14		16								12			
Depth	119		203		143		251		572		507		122		123	
Equipment	CTD		CTD		CTD		CTD		CTD		CTD		CTD		CTD	
STND. Dep	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
0m	5.2	33.995	5.3	34.053	5.6	34.045	5.2	34.074	5.2	34.069	5.5	34.072	4.4	34.091	4.4	34.091
10m	5.48	33.979	5.41	34.033	5.64	34.038	5.46	34.061	5.57	34.060	5.64	34.064	4.31	34.073	4.31	34.073
20m	5.50	33.986	5.41	34.033	5.64	34.038	5.45	34.061	5.55	34.060	5.22	34.073	4.28	34.072	4.28	34.073
30m	5.50	33.986	5.41	34.033	5.57	34.042	5.45	34.061	5.47	34.061	4.80	34.077	4.28	34.072	4.28	34.073
50m	5.50	33.987	5.38	34.033	5.24	34.061	5.44	34.061	5.20	34.066	4.18	34.081	4.27	34.072	4.27	34.073
75m	5.50	33.987	5.38	34.034	5.15	34.063	5.42	34.063	4.99	34.070	3.22	34.083	4.05	34.067	4.04	34.069
100m	5.50	33.987	5.38	34.035	4.83	34.070	5.41	34.062	4.89	34.070	2.78	34.078	3.93	34.061	3.94	34.061
125m			5.31	34.051	3.71	34.086	5.22	34.066	3.86	34.087	2.24	34.080				
150m			4.52	34.081			4.80	34.073	3.14	34.082	1.69	34.080				
200m							4.07	34.080	1.83	34.083	1.38	34.084				
250m									1.37	34.085	1.10	34.085				
300m									1.10	34.083	0.92	34.084				
400m									0.74	34.078	0.69	34.080				
500m									0.29	34.071						
600m																
700m																
800m																
900m																
1000m																

Table 6-42



## Part II. Results of Chemical Analyses

Water samples were taken with Nansen bottle cast on R/V Oyashio Maru cruises in West of Hokkaido, Japan Sea. Sea temperature was determined with Nansen bottles equipped with reversing thermometers. Salinity was measured with an Auto-Lab salinometer (PSS-78). Dissolved oxygen was analyzed in the land laboratory by the Winkler method within 24 hours after sampling at sea. Sea water samples of 200 to 500 ml from selected depth were filtered through Whatman GF/F glass fiber filter covered with a thin layer of  $\text{MgCO}_3$  on board immediately after sampling, stored at  $-20^\circ\text{C}$  in a deep freezer, and brought back to the land laboratory. The GF/C filter had been changed to GF/F glass fiber filter since 1995. These samples were analyzed with a Turner Designs Fluorometer Model 10 to determine concentration of chlorophyll *a*. Nutrients ( $\text{NO}_2\text{-N}$ ,  $\text{NO}_3\text{-N}$  and  $\text{PO}_4\text{-P}$ ) were analyzed with Technicon Auto-Analyzer II.  $\text{SiO}_3\text{-Si}$  was analyzed with molybdenum blue method.

Table 7. Results of chemical analysis. Hokkaido Central Fisheries Experimental Station. N.D.;not detected

Station No	Position		Japanese Standard		Depth m	Temperature	Salinity P.S.U.	Dissolved oxygen ml	Nutrients, $\mu\text{g-atoms/l}$				Chlorophyll-a $\mu\text{g/l}$	
	Latitude N	Longitude E	Date	Time					$\text{NO}_3\text{-N}$	$\text{NO}_2\text{-N}$	$\text{PO}_4\text{-P}$	$\text{NH}_4\text{-N}$	Si	
199904J41	42-30.0	139-40.0	1999/4/20	20:41	0	8.50	33.432		0.5	0.01	0.14	N.D.	1.5	4.12
					10	8.78	33.723		0.4	0.01	0.16	N.D.	0.9	5.20
					20	8.74	33.839		0.5	0.00	0.17	N.D.	1.1	6.67
					30	8.69	33.884		1.0	0.04	0.20	N.D.	2.1	5.69
					50	8.77	33.988		2.2	0.21	0.31	N.D.	3.4	4.12
					75	8.16	34.056		6.9	0.18	0.56	N.D.	9.6	0.43
					100	7.09	34.065		8.3	0.08	0.68	N.D.	12.4	0.35
					125	5.95	34.052		8.9	0.09	0.74	N.D.	14.1	0.34
					150	4.95	34.042		9.1	0.13	0.78	0.2	15.4	0.61
					204	2.54	34.077		15.8	0.11	1.23	N.D.	24.7	0.06
					296	1.26	34.081		20.2	0.05	1.57	N.D.	30.9	
					395	0.93	34.080		21.7	0.03	1.70	N.D.	32.7	
					487	0.69	34.079		23.9	0.01	1.87	N.D.	46.7	
					584	0.51	34.077		25.1	0.01	1.98	N.D.	55.4	
					199904J46	42-30.1	138-00.1	1999/4/21	7:05	0	6.20	34.054		4.8
10	6.19	34.053		4.8						0.13	0.49	N.D.	9.8	1.02
20	6.18	34.049		4.8						0.11	0.49	N.D.	9.9	1.05
30	5.40	34.049		5.0						0.13	0.52	N.D.	10.8	1.33
50	4.39	34.072		8.1						0.20	0.73	N.D.	14.7	0.41
75	3.25	34.078		10.2						0.22	0.88	N.D.	17.2	0.12
100	2.86	34.082		9.8						0.26	0.87	N.D.	16.7	0.10
125	2.36	34.084		12.1						0.17	1.00	N.D.	19.7	0.06
150	2.19	34.084		12.4						0.14	1.03	N.D.	19.8	0.05
200	1.72	34.089		13.7						0.09	1.11	N.D.	21.3	0.03
300	1.17	34.089		18.5						0.03	1.47	N.D.	29.2	
400	0.95	34.087		20.4						0.04	1.62	N.D.	34.4	
500	0.77	34.081		22.1						0.02	1.76	N.D.	41.1	
600	0.57	34.074		24.1						0.03	1.91	N.D.	42.9	
199904JC11	42-59.9	140-20.1	1999/4/22	19:16						0	9.50	33.861		0.7
					10	9.01	33.950		0.7	N.D.	0.16	N.D.	0.6	3.92
					20	8.67	33.967		0.8	0.01	0.19	N.D.	1.1	6.18
					30	8.57	33.974		1.1	0.03	0.22	N.D.	1.7	5.79
					50	8.38	33.989		1.5	0.06	0.26	N.D.	2.6	6.77
					75	8.01	33.980		2.0	0.08	0.31	N.D.	3.3	6.08
					100	6.92	34.000		3.9	0.12	0.47	0.3	6.0	4.41
					125	5.88	34.031		6.3	0.18	0.60	0.1	10.2	1.27
					150	4.79	34.052		8.9	0.18	0.76	N.D.	13.7	0.31
					200	2.97	34.077		12.9	0.07	1.03	N.D.	19.5	0.05
199904J38	43-30.0	139-00.0	1999/4/23	9:01	0	6.20	34.044							
					100	2.77	34.077							
					197	1.74	34.090							
					298	1.21	34.088							
					392	0.89	34.085							
					493	0.67	34.078							

Table 7. Results of chemical analysis. Hokkaido Central Fisheries Experimental Station. N.D.;not detected

Station No	Position		Japanese Standard		Depth m	Temperature	Salinity P.S.U.	Dissolved oxygen ml	Nutrients, $\mu\text{g-atoms/l}$				Chlorophyll-a $\mu\text{g/l}$	
	Latitude N	Longitude E	Date	Time					$\text{NO}_3\text{-N}$	$\text{NO}_2\text{-N}$	$\text{PO}_4\text{-P}$	$\text{NH}_4\text{-N}$	Si	
199904J35	43-30.0	140-00.1	1999/4/23	14:11	0	8.60	33.990							
					232	1.85	34.090							
					320	1.34	34.088							
					416	0.95	34.083							
					507	0.67	34.078							
					604	0.49	34.072							
199904J33	43-30.0	140-40.1	1999/4/23	22:31	0	8.00	34.002	N.D.	0.02	0.13	N.D.	0.7	3.05	
					5		33.964	0.1	0.02	0.13	N.D.	0.7	3.84	
					13		33.960	0.1	0.02	0.14	N.D.	0.9	3.99	
					21		33.930	0.3	0.02	0.17	N.D.	1.4	4.54	
					32		33.933	0.7	0.03	0.25	0.2	2.5	3.68	
					62		33.968	2.2	0.09	0.39	0.6	5.8	3.21	
					75		33.972	2.8	0.14	0.37	0.3	6.4	1.88	
					100		34.050	5.7	0.24	0.56	0.1	11.3	0.32	
					150		34.046	7.1	0.26	0.65	N.D.	13.1	0.16	
					200	4.08	34.051	7.7	0.22	0.69	N.D.	12.3	0.05	
					300	1.28	34.080	21.0	0.05	1.66	N.D.	50.7		
					400	0.90	34.080	19.2	0.02	1.62	N.D.	55.6		
					500	0.66	34.076	22.9	0.02	1.85	N.D.	62.5		
					600	0.58	34.075	19.1	0.01	1.69	N.D.	60.7		
199904J32	43-29.9	140-59.9	1999/4/25	9:33	0	7.50	33.982	N.D.	N.D.	0.08	N.D.	1.8	2.35	
					10	7.41	33.982	N.D.	0.04	0.08	N.D.	1.9	2.13	
					20	6.02	33.995	N.D.	0.02	0.12	N.D.	3.5	3.29	
					30	6.02	33.986	N.D.	0.03	0.12	0.3	2.3	2.66	
					50	5.28	34.016	2.3	0.14	0.34	0.4	8.8	2.82	
					75	5.20	34.026	4.2	0.22	0.48	0.7	11.5	0.53	
					85	5.17	34.029	3.6	0.18	0.42	0.4	11.3	0.53	
199904JH01	43-21.9	141-24.0	1999/4/25	12:54	0	9.40	20.680	12.1	0.17	0.84	0.2	94.0	42.00	
					10		33.439	N.D.	0.03	N.D.	0.1	1.7	1.41	
					18		33.701	0.6	0.06	0.89	0.2	2.1	4.46	
199904J31	43-20.0	141-09.3	1999/4/25	21:57	0	8.00	28.081	4.9	0.10	0.17	0.6	36.4	60.00	
					4		29.280	4.3	0.10	0.17	0.6	34.3	61.00	
					10		32.072	1.1	0.04	0.11	N.D.	11.5	1.41	
					14		33.527	N.D.	0.02	0.08	N.D.	1.8	2.00	
					19		33.582	N.D.	0.02	0.08	N.D.	1.8	2.03	
					29		33.913	N.D.	0.02	0.13	N.D.	2.5	5.33	
199906J41	42-30.0	139-40.0	1999/5/31	19:44	0	13.70	34.072	N.D.	0.00	0.09	N.D.	3.3	0.21	
					10	13.79	34.071	N.D.	0.03	0.11	N.D.	3.3	0.15	
					20	13.78	34.120	N.D.	0.05	0.13	N.D.	3.4	0.24	
					30	12.03	34.123	0.4	0.07	0.15	N.D.	3.9	1.16	
					50	10.31	34.066	3.0	0.15	0.23	N.D.	4.6	0.50	
					75	9.41	34.069	4.8	0.02	0.37	N.D.	6.2	0.08	
	100	8.94	34.061	5.6	0.03	0.45	N.D.	5.9	0.03					

Table 7. Results of chemical analysis. Hokkaido Central Fisheries Experimental Station. N.D.;not detected

Station No	Position		Japanese Standard		Depth m	Temperature	Salinity	Dissolved P.S.U. oxygen ml	Nutrients, $\mu\text{g-atoms/l}$				Chlorophyll-a $\mu\text{g/l}$	
	Latitude N	Longitude E	Date	Time					$\text{NO}_3\text{-N}$	$\text{NO}_2\text{-N}$	$\text{PO}_4\text{-P}$	$\text{NH}_4\text{-N}$		Si
199906J46	42-30.0	138-00.0	1999/6/1	6:13	125	8.16	34.057		6.8	0.02	0.50	N.D.	6.5	0.01
					209	2.92	34.080		13.0	0.06	0.88	N.D.	21.2	0.01
					248	2.39	34.079		13.6	0.04	0.98	N.D.	22.0	0.01
					338	1.27	34.082		16.1	0.0	1.13	N.D.	30.0	
					416	0.94	34.076		19.1	0.06	1.22	N.D.	28.0	
					505	0.71	34.077		21.9	0.02	1.60	N.D.	43.7	
					598	0.55	34.073		24.3	0.03	1.80	N.D.	47.8	
					0	10.00	34.029		1.0	0.06	0.22	N.D.	8.4	1.68
					10	10.02	34.030		0.8	0.06	0.22	N.D.	7.7	1.31
					20	8.94	34.031		1.1	0.07	0.24	N.D.	8.9	1.78
					30	7.26	34.048		3.1	0.08	0.35	N.D.	9.4	1.34
					50	4.87	34.065		5.0	0.13	0.36	0.3	12.2	0.34
					75	1.92	34.080		10.5	0.34	0.83	N.D.	18.5	0.10
					100	1.46	34.085		13.5	0.26	1.09	0.2	21.4	0.05
					125	1.28	34.084		15.1	0.06	1.13	N.D.	21.8	0.04
199906J38	43-30.1	139-00.1	1999/6/3	1:14	197	1.09	34.084		15.0	0.04	1.04	N.D.	26.0	0.00
					244	1.01	34.086		16.4	0.04	1.08	N.D.	27.6	0.00
					334	0.80	34.081		19.9	0.02	1.35	N.D.	31.8	
					428	0.65	34.077		21.8	0.02	1.55	N.D.	39.6	
					518	0.53	34.074		24.1	0.02	1.72	N.D.	44.2	
					612	0.45	34.071		24.4	0.0	1.76	N.D.	45.5	
					0	11.50	34.060							
					400	0.92	34.081							
					447	0.78	34.077							
					498	0.71	34.074							
					542	0.61	34.074							
					591	0.53	34.073							
					0	14.60	34.097		N.D.	0.01	0.16	N.D.	3.8	0.25
					10	14.73	34.105		N.D.	0.03	0.14	N.D.	3.8	0.22
					20	14.62	34.105		N.D.	0.02	0.13	N.D.	3.9	0.25
30	14.15	34.119		N.D.	0.07	0.14	N.D.	4.1	0.31					
50	11.62	34.123		1.0	0.17	0.23	N.D.	4.6	0.59					
75	9.71	34.077		4.7	0.07	0.40	N.D.	7.0	0.13					
100	8.50	34.069		6.4	0.04	0.52	N.D.	9.5	0.02					
125	6.81	34.072		8.9	0.03	0.70	N.D.	14.0	0.02					
150	5.08	34.061		9.5	0.15	0.73	N.D.	15.3	0.04					
200	2.76	34.076		14.3	0.02	1.12	N.D.	24.1	0.01					
199908J38	43-30.1	139-00.2	1999/7/27	7:32	0	20.60	34.079							
					263	1.36	34.086							
					337	1.03	34.092							
					418	0.74	34.090							
					495	0.59	34.086							
					576	0.48	34.084							
199908JC11	43-00.1	140-20.0	1999/7/27	21:44	0	21.00	34.045		N.D.	0.01	0.07	N.D.	3.7	0.10

Table 7. Results of chemical analysis. Hokkaido Central Fisheries Experimental Station.

N.D.; not detected

Station No	Position		Japanese Standard		Depth m	Temperature	Salinity P.S.U.	Dissolved oxygen ml	Nutrients, $\mu\text{g-atoms/l}$				Chlorophyll-a $\mu\text{g/l}$	
	Latitude N	Longitude E	Date	Time					$\text{NO}_3\text{-N}$	$\text{NO}_2\text{-N}$	$\text{PO}_4\text{-P}$	$\text{NH}_4\text{-N}$	Si	
					10	???	34.084		0.1	0.11	0.07	N.D.	3.7	0.08
					20	19.43	34.050		N.D.	0.06	0.07	0.2	4.8	0.09
					30	18.72	34.065		0.0	0.09	0.08	N.D.	3.7	0.13
					50	15.73	34.141		N.D.	0.12	0.11	N.D.	3.1	0.23
					75	10.68	34.140		2.7	0.44	0.31	0.2	5.4	0.37
					100	8.55	34.104		6.8	0.06	0.43	0.2	9.8	0.10
					125	7.40	34.095		8.1	0.06	0.64	N.D.	11.6	0.05
					150	6.58	34.088		9.2	0.07	0.69	0.1	14.0	0.03
					200	3.47	34.082		13.8	0.04	1.08	N.D.	22.6	0.01
199908J41	42-30.0	139-39.9	1999/7/28	2:09	0	21.90	34.039		N.D.	0.02	0.09	N.D.	4.1	0.14
					10	21.37	34.065		N.D.	0.03	0.09	N.D.	3.7	0.11
					20	20.92	34.088		N.D.	0.02	0.08	N.D.	3.5	0.12
					30	19.81	34.126		N.D.	0.02	0.08	N.D.	3.2	0.17
					50	13.71	34.340		0.3	0.09	0.19	N.D.	5.4	0.74
					75	9.80	34.173		5.3	0.11	0.46	N.D.	8.0	0.25
					100	7.24	34.106		9.1	0.06	0.72	N.D.	14.5	0.11
					125	5.70	34.086		10.7	0.05	0.83	N.D.	16.4	0.06
					154	4.36	34.086		13.5	0.04	1.03	0.1	21.5	0.02
					204	3.48	34.080		14.8	0.03	1.14	N.D.	24.4	0.01
					301	1.85	34.083		18.1	0.04	1.33	N.D.	28.1	
					400	1.18	34.084		21.2	0.06	1.27	0.0	34.7	
					498	0.72	34.084		23.8	0.03	1.90	N.D.	51.0	
					592	0.62	34.081		24.6	0.03	1.86	N.D.	48.0	
199908J46	42-29.9	138-00.1	1999/7/28	12:27	0	20.30	33.825		N.D.	0.01	0.10	N.D.	4.4	0.27
					10	20.30	33.828		N.D.	0.02	0.09	N.D.	4.5	0.23
					20	15.38	33.968		N.D.	0.02	0.15	0.1	4.4	0.31
					30	7.36	34.057		N.D.	0.02	0.33	N.D.	7.8	0.46
					50	4.59	34.081		11.7	0.09	0.94	N.D.	18.4	0.49
					75	3.12	34.080		14.7	0.03	1.15	N.D.	23.9	0.11
					100	2.42	34.084		14.9	N.D.	1.16	N.D.	24.3	0.02
					125	1.91	34.084		18.0	N.D.	1.38	N.D.	31.0	0.00
					152	1.62	34.088		17.8	0.04	1.35	N.D.	30.6	0.00
					199	1.23	34.088		18.9	0.03	1.44	N.D.	30.7	0.00
					297	1.03	34.088		20.5	0.03	1.57	N.D.	33.5	
					396	0.82	34.086		22.3	0.02	1.73	N.D.	39.1	
					494	0.61	34.084		24.1	0.03	1.86	N.D.	34.2	
					596	0.47	34.079		24.9	0.02	1.95	N.D.	49.2	
199908J27	44-29.9	139-30.1	1999/8/3	5:44	0	19.60	33.366							
					204	1.51	34.092							
					303	1.03	34.089							
					402	0.79	34.086							
199910J46	42-30.5	138-00.7	1999/10/5	22:45	0	14.70	33.900		N.D.	N.D.	0.15	N.D.	5.6	0.44
					20	14.80	33.896		N.D.	N.D.	0.15	N.D.	5.6	0.38
					29	12.97	33.910		0.6	0.06	0.25	N.D.	7.5	0.35

Table 7. Results of chemical analysis. Hokkaido Central Fisheries Experimental Station. N.D.;not detected

Station No	Position		Japanese Standard		Depth m	Temperature	Salinity P.S.U.	Dissolved oxygen ml	Nutrients, $\mu\text{g-atoms/l}$				Chlorophyll-a $\mu\text{g/l}$	
	Latitude N	Longitude E	Date	Time					$\text{NO}_3\text{-N}$	$\text{NO}_2\text{-N}$	$\text{PO}_4\text{-P}$	$\text{NH}_4\text{-N}$		Si
					37	10.33	33.950		2.7	0.10	0.39	N.D.	9.8	0.33
					55	4.63	34.073		11.3	0.08	0.84	N.D.	18.6	0.43
					78	3.69	34.068		13.4	0.01	1.06	N.D.	22.0	0.16
					100	3.03	34.068		14.7	0.00	1.17	N.D.	24.2	0.05
					122	2.45	34.075		15.2	N.D.	1.17	N.D.	20.2	0.02
					212	1.19	34.075		16.1	N.D.	1.22	N.D.	26.3	0.01
									-	-	-	-	-	0.01
					344	0.90	34.087		19.6	N.D.	1.46	N.D.	33.5	0.00
					429	0.72	34.083		22.5	N.D.	1.72	N.D.	34.1	
					509	0.58	34.079		23.9	N.D.	1.84	N.D.	43.3	
					599	0.48	34.077		24.6	N.D.	1.89	N.D.	45.6	
199910J41	42-29.9	139-40.1	1999/10/6	7:30	0	16.40	33.883		1.7	0.06	0.21	N.D.	5.2	0.77
					10	16.22	33.895		1.8	0.06	0.23	N.D.	5.5	0.79
					20	15.14	33.941		2.9	0.07	0.32	N.D.	6.2	0.63
					30	13.88	33.995		4.0	0.07	0.37	N.D.	7.4	0.45
					50	11.59	34.094		5.9	0.08	0.49	N.D.	9.0	0.20
					75	9.21	34.149		7.0	0.01	0.56	N.D.	9.2	0.04
					100	6.97	34.108		9.8	0.01	0.77	N.D.	13.5	0.02
					125	5.69	34.094		11.1	N.D.	0.87	N.D.	16.3	0.01
					146	4.27	34.078		12.8	N.D.	0.99	N.D.	18.7	0.00
					201	2.23	34.068		15.5	N.D.	1.21	N.D.	25.0	
					301	1.35	34.076		19.2	N.D.	1.48	N.D.	36.2	
					401	0.81	34.076		13.6	N.D.	1.45	N.D.	48.2	
					501	0.53	34.071		18.6	N.D.	1.83	N.D.	55.9	
					601	0.39	34.071		24.8	N.D.	1.82	N.D.	53.4	
199910JC11	43-00.1	140-20.1	1999/10/6	13:56	0	19.60	33.979		N.D.	N.D.	0.07	N.D.	3.0	0.44
					10	19.61	33.947		N.D.	N.D.	0.06	N.D.	2.6	0.38
					20	19.60	33.948		N.D.	N.D.	0.06	N.D.	2.7	0.35
					30	19.59	33.947		N.D.	N.D.	0.06	N.D.	2.5	0.33
					50	19.56			N.D.	N.D.	0.06	N.D.	2.1	0.43
					75	12.21	34.253		3.3	0.03	0.34	N.D.	4.9	0.16
					100	9.97	34.148		5.7	0.01	0.45	N.D.	6.3	0.05
					125	8.42	34.118		7.3	N.D.	0.56	N.D.	8.4	0.02
					150	7.29	34.094		8.8	N.D.	-	N.D.	11.7	0.01
					200	4.17	34.081		13.0	N.D.	-	N.D.	20.2	0.00
199912JC11	43-00.2	140-23.4	1999/12/1	13:05	0	11.80	33.890		1.4	0.20	0.22	0.1	2.8	0.79
				14:07	10	12.17	33.931		1.6	0.41	0.19	0.2	2.9	0.63
					20	12.18	33.932		1.4	0.24	0.19	N.D.	4.1	0.74
					30	12.18	33.936		1.4	0.26	0.19	N.D.	2.9	0.67
					50	12.15	33.958		1.3	0.22	0.20	0.3	3.0	0.72
					75	12.17	33.934		1.3	0.24	0.21	0.5	2.6	0.69
					100	12.18	33.937		1.5	0.25	0.21	0.2	3.0	0.63
					125	11.98	33.950		2.1	0.20	0.26	0.1	4.2	0.55
					143	8.05	34.129		8.0	0.05	0.62	N.D.	12.4	0.06

Table 7. Results of chemical analysis. Hokkaido Central Fisheries Experimental Station. N.D.;not detected

Station No	Position		Japanese Standard		Depth m	Temperature	Salinity P.S.U.	Dissolved oxygen ml	Nutrients, $\mu\text{g-atoms/l}$				Chlorophyll-a $\mu\text{g/l}$	
	Latitude N	Longitude E	Date	Time					$\text{NO}_3\text{-N}$	$\text{NO}_2\text{-N}$	$\text{PO}_4\text{-P}$	$\text{NH}_4\text{-N}$		Si
200002J46	42-30.1	137-59.9	2000/1/29	1:22	199	5.19	34.094		12.4	0.05	0.95	N.D.	18.6	0.02
					0	5.10	34.030	5.5	0.12	0.49	N.D.			
					11	5.32	34.016	5.6	0.17	0.47	N.D.			
					21	5.31	34.024	5.1	0.17	0.45	N.D.			
					31	5.09	34.041	5.3	0.16	0.45	N.D.			
					51	4.39	34.051	5.5	0.18	0.46	N.D.			
					75	4.17	34.061	6.4	0.14	0.57	N.D.			
					100	2.23	34.064	12.6	0.03	1.00	N.D.			
					125	1.71	34.074	14.4	0.08	1.06	-			
					152	1.44	34.079	14.3	0.06	1.12	N.D.			
					203	1.27	34.079	13.6	0.03	1.09	N.D.			
					300	1.05	34.083	18.8	0.05	1.46	N.D.			
					397	0.85	34.083	20.3	0.02	1.64	N.D.			
					492	0.66	34.073	22.7	0.03	1.64	N.D.			
					590	0.52	34.075	23.8	0.03	1.88	N.D.			
200002J41	42-30.1	139-40.0	2000/1/29	10:37	0	9.30	33.970		4.4	0.14	0.39	N.D.		
					16	9.58	33.998	4.4	0.13	0.38	N.D.			
					24	8.52	33.960	4.8	0.11	0.41	N.D.			
					33	8.00	34.015	5.1	0.11	0.44	N.D.			
					50	7.70	34.013	4.4	0.11	0.38	N.D.			
					72	7.40	34.016	4.7	0.13	0.43	N.D.			
					94	7.06	34.008	5.2	0.16	0.46	N.D.			
					115	6.47	34.033	6.4	0.19	0.55	N.D.			
					119	5.51	34.058	10.0	0.10	0.81	N.D.			
					146	4.49	34.060	12.1	0.05	0.97	N.D.			
					197	2.73	34.067	15.9	0.03	1.26	N.D.			
					259	1.75	34.063	17.2	0.02	1.39	N.D.			
					314	1.18	34.077	19.2	0.04	1.39	N.D.			
					378	0.95	34.076	21.5	0.03	1.71	N.D.			
					200002J38	43-30.1	138-59.8	2000/1/29	22:03	0	6.70	34.016		
200	1.50	34.071												
299	1.06	34.078												
396	0.83	34.078												
482	0.62	34.072												
200002J35	43-29.5	139.59.5	2000/1/30	3:57	557	0.53	34.072							
					0	8.30	34.018							
					203	2.15	34.069							
					303	1.18	34.075							
					399	0.81	34.075							
					504	0.61	34.073							
602	0.52	34.073												

### Part III. Plankton Collection Records

Vertical hauls with a paired NORPAC net (45 cm × 180 cm, conical, NGG 52 and NXX 13, 0.33 and 0.10 mm mesh openings, respectively) or a standard NORPAC net (NGG 52) were carried out from the near sea bottom to the surface but sometimes from a depth of 150 m to the surface when the bottom was deeper than 150m. A flowmeter (RGS, Rigosha) was mounted at the center of the mouth ring of each net to register the volume of water filtered by the net. Calibrations of the flowmeter on board were means of repeated vertical tows without nets on each observation. Wet weight measurements of the preserved samples with 10% formalin seawater solution were all together carried out at the land laboratory of Central Fisheries Experimental Station, Yoichi.



Table 8-1. Calibration data of flow-meters used for NORPAC net samplings, Oyashio Maru, April 1999- March 2000 .

Date	1999/4/24	1999/4/24	1999/6/1	1999/6/1	1999/7/29	1999/7/29	1999/10/6	1999/10/6	2000/1/29	2000/1/29
Wire length(m)	100	100	100	100	100	100	100	100	100	100
Wire angle(°)					19-38	19-38			2-7	2-7
RGS No.	1782	1787	1782	1787	1782	1787	1782	1787	1782	1787
Revolution	1040	1060	1045*	1050*	1390*	1650*	1265	1564*	1138	1194
	1050	1060	1046	1102	1872*	1632	1415*	1351	1085	1029*
	1040	1060	1053	1067	1431	1513	1300	1340	1182*	1225
	1060*	1060	1101*	1104*	1552	1320*	1188*	1286	1065*	1092
	1035*	1060	1069	1072	1500	1335	1240	1283*	1100	1970*
Mean revolution per 100m	1043	1060	1056	1080	1494	1493	1300	1326	1108	1170

Table 8-2. Calibration data of flow-meters used for NORPAC net samplings, Hokushin Maru, April 1999- March 2000 .

Date	1999/4/18	1999/6/5	1999/8/3	1999/10/5	1999/11/24	2000/2/24
Wire length(m)	100	100	100	100	100	100
Wire angle(°)			6-11	9-16	8-14	
RGS No.	1500	1500	1500	1500	1500	1500
Revolution	1080	1270*	1087*	1128	1180*	1100*
	1000	960*	1002	1145*	1110	1100
	1055	1030	952*	1118	1110*	1120*
	1082*	1070	1002	1100*	1160	1110
	952*	1100	1054	1145	1130	1160
Mean revolution per 100m	1045	1067	1019	1123	1145	1135

Table 8-3. Calibration data of flow-meters used for NORPAC net samplings, Hokuyo Maru, April 1999- March 2000 .

Date	1999/4/15	1999/4/15	1999/4/15	1999/4/19	1999/4/21	1999/6/8	1999/7/29	1999/7/29	1999/8/3	1999/9/28	1999/12/9	2000/2/23
Wire length(m)	100	100	100	100	100	100	100	100	100	100	100	100
Wire angle(°)				3	3	2-4				1	12	12
RGS No.	2416	2411	2439	2428	2439	2414	2411	2439	2439	2407	2429	2414
Revolution	825*	718		269	667	855	784	750*	802*	822*	413*	979*
	743	732*	725*	425*	653	869	763*	768	762	843	447	877
	488	727	773	415	647*	875*	766	751	785	875	420	840
	391	702*	804*	203*	681	847*	776	785	780	905*	444	828*
	266*	730	781	305	719*	856		818*	757*	890	446	913
Mean revolution per 100m	541	725	767	330	667	860	775	768	776	869	438	877

Table 8-4. Calibration data of flow-meters used for NORPAC net samplings, Kinsei Maru, April 1999- March 2000 .

Date	1999/7/28	1999/10/5
Wire length(m)	100	100
Wire angle(°)	4-8	2-7
RGS No.	2427	2427
Revolution	820	649
	781*	729*
	835*	656
	794	685
	784	640*
Mean revolution per 100m	799	663

Table 9. Data on plankton samples collected by vertical hauls with a paired NORPAC net or a standard NORPAC net, from April 1999 to March 2000.

Station No.	Position		Japan Standard Time		Length of wire (m)	Angle of wire (degree)	Estimated depth of haul (m)	Net	Flow meter (RGS)		Estimated volume of water filtered (m <sup>3</sup> )	Wet weight of sample (g)		Permanent Sample No.	Vessel	Remarks
	Lat N	Long E	Date	Hour					No.	Rev.		per haul	per 1000m <sup>3</sup>			
J41	42-30	139-40	1999/04/20	21:45	177	33	148	N52GG	1787	2380	35.9	13.68	381	C99013	Oyashio-Mar	
J41	42-30	139-40	1999/04/20	21:45	177	33	148	N13XX	1782	2215	33.4	21.28	636	C99014	Oyashio-Mar	
J43	42-30	139-00	1999/04/21	1:50	160	20	150	N52GG	1787	2060	31.1	8.14	262	C99015	Oyashio-Mar	*1
J43	42-30	139-00	1999/04/21	1:50	160	20	150	N13XX	1782	2060	31.1	6.36	205	C99016	Oyashio-Mar	*2
J45	42-30	138-20	1999/04/21	5:28	150	1	150	N52GG	1787	1535	23.2	7.94	343	C99017	Oyashio-Mar	*3
J45	42-30	138-20	1999/04/21	5:28	150	1	150	N13XX	1782	1532	23.1	4.48	194	C99018	Oyashio-Mar	*4
J47	42-30	137-30	1999/04/21	10:20	156	14	151	N52GG	1787	1622	24.5	0.48	20	C99019	Oyashio-Mar	
J47	42-30	137-30	1999/04/21	10:20	156	14	151	N13XX	1782	1580	23.8	1.88	79	C99020	Oyashio-Mar	
JC11	43-00	140-20	1999/04/22	19:58	153	12	150	N54GG	1787	1948	29.4	6.24	212	C99301	Oyashio-Mar	*5
JC11	43-00	140-20	1999/04/22	19:58	153	12	150	N13XX	1782	1826	27.8	26.64	957	C99302	Oyashio-Mar	*5
J34	43-30	140-20	1999/04/23	4:23	151	8	150	N52GG	1787	1855	28.0	2.98	106	C99011	Oyashio-Mar	
J34	43-30	140-20	1999/04/23	4:23	151	8	150	N13XX	1782	1611	24.3	10.80	444	C99012	Oyashio-Mar	
J33	43-30	140-40	1999/04/23	22:48	152	10	150	N52GG	1787	1550	23.4	5.44	233	C99009	Oyashio-Mar	*5
J33	43-30	140-40	1999/04/23	22:48	152	10	150	N13XX	1782	1068	16.1	14.72	913	C99010	Oyashio-Mar	
J32	43-30	141-00	1999/04/25	9:32				N52GG	1787	893	13.5	3.60	267	C99007	Oyashio-Mar	*6
J32	43-30	141-00	1999/04/25	9:32				N13XX	1782	683	10.3	24.96	2421	C99008	Oyashio-Mar	
JH01	43-22	141-24	1999/04/25	13:00	18	6	18	N52GG	1787	232	3.5	3.12	891	C99203	Oyashio-Mar	
JH01	43-22	141-24	1999/04/25	13:00	18	6	18	N13XX	1782	127	1.9	8.40	4382	C99204	Oyashio-Mar	
J31	43-20	141-10	1999/04/25	21:57	35	54	21	N52GG	1787	1158	17.5	1.82	104	C99005	Oyashio-Mar	
J31	43-20	141-10	1999/04/25	21:57	35	54	21	N13XX	1782	405	6.1	15.68	2565	C99006	Oyashio-Mar	
J41	42-30	139-40	1999/05/31	21:00	170	28	150	N52GG	1787	2321	34.4	4.44	129	C99029	Oyashio-Mar	
J41	42-30	139-40	1999/05/31	21:00	170	28	150	N13XX	1782	2278	34.4	15.36	447	C99030	Oyashio-Mar	
J43	42-30	139-00	1999/06/01	1:14	164	25	149	N52GG	1787	4053	60.0	10.22	170	C99031	Oyashio-Mar	
J43	42-30	139-00	1999/06/01	1:14	164	25	149	N13XX	1782	3470	52.4	14.28	273	C99032	Oyashio-Mar	*7
J45	42-30	138-20	1999/06/01	4:36	177	33	148	N52GG	1787	2787	41.3	2.34	57	C99033	Oyashio-Mar	*8
J45	42-30	138-20	1999/06/01	4:36	177	33	148	N13XX	1782	2615	39.5	7.52	191	C99034	Oyashio-Mar	
J47	42-30	137-30	1999/06/01	9:30	180	33	151	N52GG	1787	2823	41.8	1.56	37	C99035	Oyashio-Mar	
J47	42-30	137-30	1999/06/01	9:30	180	33	151	N13XX	1782	2538	38.3	5.20	136	C99036	Oyashio-Mar	
J34	43-30	140-20	1999/06/04	4:55	155	15	150	N52GG	1787	3354	49.7	2.08	42	C99027	Oyashio-Mar	
J34	43-30	140-20	1999/06/04	4:55	155	15	150	N13XX	1782	3215	48.5	6.48	134	C99028	Oyashio-Mar	
J33	43-30	140-40	1999/06/04	6:30	160	19	151	N52GG	1787	1781	26.4	10.04	381	C99025	Oyashio-Mar	*9
J33	43-30	140-40	1999/06/04	6:30	160	19	151	N13XX	1782	1762	26.6	8.24	310	C99026	Oyashio-Mar	
J32	43-30	141-00	1999/06/04	8:10	80	5	80	N52GG	1787	928	13.7	5.68	413	C99023	Oyashio-Mar	
J32	43-30	141-00	1999/06/04	8:10	80	5	80	N13XX	1782	918	13.9	11.52	831	C99024	Oyashio-Mar	
JH01	43-22	141-23	1999/06/04	10:10	18	13	18	N52GG	1787	200	3.0	1.06	358	C99205	Oyashio-Mar	
JH01	43-22	141-23	1999/06/04	10:10	18	13	18	N13XX	1782	128	1.9	7.84	4058	C99206	Oyashio-Mar	
J31	43-20	141-10	1999/06/04	11:04	30	9	30	N52GG	1787	338	5.0	1.00	200	C99021	Oyashio-Mar	
J31	43-20	141-10	1999/06/04	11:04	30	9	30	N13XX	1782	341	5.1	7.36	1430	C99022	Oyashio-Mar	
JC11	43-00	140-20	1999/06/07	16:10	150	4	150	N54GG	1787	1558	23.1	2.44	106	C99303	Oyashio-Mar	
JC11	43-00	140-20	1999/06/07	16:10	150	4	150	N13XX	1782	1505	22.7	7.84	345	C99304	Oyashio-Mar	

Table 9-1

Table 9. Data on plankton samples collected by vertical hauls with a paired NORPAC net or a standard NORPAC net, from April 1999 to March 2000.

Station No.	Position		Japan Standard Time		Length of wire (m)	Angle of wire (degree)	Estimated depth of haul (m)	Net	Flow meter (RGS)		Estimated volume of water filtered (m <sup>3</sup> )	Wet weight of sample (g)		Permanent Sample No.	Vessel	Remarks
	Lat N	Long E	Date	Hour					No.	Rev.		per haul	per 1000m <sup>3</sup>			
J31T	43-20	141-10	1999/06/09	23:12	35	7	35	N54GG	1787	416	6.2	0.98	159	C99037	Oyashio-Mar	
J31T	43-20	141-10	1999/06/09	23:12	35	7	35	N13XX	1782	470	7.1	2.96	417	C99038	Oyashio-Mar	
J43	42-30	139-00	1999/06/10	4:23	209	45	148	N13XX	1782	3475	42.8	10.28	240	C99064	Oyashio-Mar	
JS01	43-25	140-46	1999/06/10	23:20	125	20	117	N54GG	1787	1440	21.3	3.70	173	C99401	Oyashio-Mar	
JS01	43-25	140-46	1999/06/10	23:20	125	20	117	N13XX	1782	1370	20.7	14.72	712	C99402	Oyashio-Mar	
J31	43-20	141-10	1999/07/26	18:26	32	16	31	N52GG	1787	500	5.4	0.40	75	C99039	Oyashio-Mar	
J31	43-20	141-10	1999/07/26	18:26	32	16	31	N13XX	1782	572	6.1	2.08	339	C99040	Oyashio-Mar	
J32	43-30	141-00	1999/07/26	19:45	95	30	82	N52GG	1787	1390	14.9	1.64	110	C99041	Oyashio-Mar	
J32	43-30	141-00	1999/07/26	19:45	95	30	82	N13XX	1782	1255	13.5	3.58	266	C99042	Oyashio-Mar	
J33	43-30	140-40	1999/07/26	21:36	190	37	152	N52GG	1787	2698	29.0	17.14	592	C99043	Oyashio-Mar	*9
J33	43-30	140-40	1999/07/26	21:36	190	37	152	N13XX	1782	2472	26.5	13.72	517	C99044	Oyashio-Mar	
J34	43-30	140-20	1999/07/26	23:51	193	39	150	N52GG	1787	3303	35.5	8.56	241	C99045	Oyashio-Mar	
J34	43-30	140-20	1999/07/26	23:51	193	39	150	N13XX	1782	3333	35.8	15.48	433	C99046	Oyashio-Mar	
JC11	43-00	140-20	1999/07/27	22:15	150		150	N52GG	1787	1480	15.9	3.18	200	C99305	Oyashio-Mar	
JC11	43-00	140-20	1999/07/27	22:15	150		150	N13XX	1782	1424	15.3	20.16	1318	C99306	Oyashio-Mar	*10
J41	42-30	139-40	1999/07/28	2:07	160	20	150	N52GG	1787	1852	19.9	1.42	71	C99047	Oyashio-Mar	
J41	42-30	139-40	1999/07/28	2:07	160	20	150	N13XX	1782	1777	19.1	6.84	358	C99048	Oyashio-Mar	
J43	42-30	139-00	1999/07/28	6:43	173	30	150	N52GG	1787	1200	12.9	6.04	469	C99049	Oyashio-Mar	
J43	42-30	139-00	1999/07/28	6:43	173	30	150	N13XX	1782	1100	11.8	8.68	735	C99050	Oyashio-Mar	
J45	42-30	138-20	1999/07/28	10:24	196	40	150	N52GG	1787	2165	23.2	8.86	381	C99051	Oyashio-Mar	
J45	42-30	138-20	1999/07/28	10:24	196	40	150	N13XX	1782	2142	23.0	9.60	417	C99052	Oyashio-Mar	*1
J47	42-30	137-30	1999/10/05	20:45	166	46	115	N52GG	1787	3546	42.7	12.04	282	C99067	Oyashio-Mar	*11
J47	42-30	137-30	1999/10/05	20:45	166	46	115	N13XX	1782	3524	43.4	11.56	267	C99068	Oyashio-Mar	*11
J45	42-30	138-20	1999/10/06	1:17	202	42	150	N52GG	1787	3748	45.1	13.10	291	C99065	Oyashio-Mar	*11
J45	42-30	138-20	1999/10/06	1:17	202	42	150	N13XX	1782	3582	44.1	16.92	384	C99066	Oyashio-Mar	
J43	42-30	139-00	1999/10/06	4:23	209	45	148	N52GG	1787	3900	46.9	4.34	93	C99063	Oyashio-Mar	*1
J41	42-30	139-40	1999/10/06	7:33	152	10	150	N52GG	1787	1640	19.7	1.62	82	C99061	Oyashio-Mar	
J41	42-30	139-40	1999/10/06	7:33	152	10	150	N13XX	1782	1620	19.9	3.32	167	C99062	Oyashio-Mar	
JC11	43-00	140-20	1999/10/06	14:30	161	21	150	N52GG	1787	1640	19.7	1.28	65	C99307	Oyashio-Mar	
JC11	43-00	140-20	1999/10/06	14:30	161	21	150	N13XX	1782	1620	19.9	2.80	140	C99308	Oyashio-Mar	
J34	43-30	140-20	1999/10/07	9:14	190	38	150	N52GG	1787	2712	32.6	1.92	59	C99059	Oyashio-Mar	
J34	43-30	140-20	1999/10/07	9:14	190	38	150	N13XX	1782	2650	32.6	3.96	121	C99060	Oyashio-Mar	
J31	43-20	141-10	1999/10/12	10:02	35	17	33	N52GG	1787	536	6.4	1.08	167	C99053	Oyashio-Mar	
J31	43-20	141-10	1999/10/12	10:02	35	17	33	N13XX	1782	526	6.5	7.04	1087	C99054	Oyashio-Mar	
J32	43-30	141-00	1999/10/12	11:30	90	21	84	N52GG	1787	1080	13.0	1.32	102	C99055	Oyashio-Mar	
J32	43-30	141-00	1999/10/12	11:30	90	21	84	N13XX	1782	987	12.1	3.00	247	C99056	Oyashio-Mar	
J33	43-30	140-40	1999/10/12	13:27	185	37	148	N52GG	1787	2860	34.4	3.72	108	C99057	Oyashio-Mar	*12
J33	43-30	140-40	1999/10/12	13:27	185	37	148	N13XX	1782	2860	35.2	7.08	201	C99058	Oyashio-Mar	
J31	43-20	141-10	1999/11/24	10:00	35	0	35	N52GG	1787	325	3.9	0.44	113	C99069	Oyashio-Mar	
J31	43-20	141-10	1999/11/24	10:00	35	0	35	N13XX	1782	318	3.9	3.28	838	C99070	Oyashio-Mar	

Table 9-2

Table 9. Data on plankton samples collected by vertical hauls with a paired NORPAC net or a standard NORPAC net, from April 1999 to March 2000.

Station No.	Position		Japan Standard Time		Length of wire (m)	Angle of wire (degree)	Estimated depth of haul (m)	Net	Flow meter (RGS)		Estimated volume of water filtered (m <sup>3</sup> )	Wet weight of sample (g)		Permanent Sample No.	Vessel	Remarks
	Lat N	Long E	Date	Hour					No.	Rev.		per haul	per 1000m <sup>3</sup>			
J32	43-30	141-00	1999/11/24	11:22	95	20	89	N52GG	1787	1218	14.7	1.42	97	C99071	Oyashio-Mar	
J32	43-30	141-00	1999/11/24	11:22	95	20	89	N13XX	1782	1098	13.5	2.80	207	C99072	Oyashio-Mar	
J33	43-30	140-40	1999/11/24	13:13	196	40	150	N52GG	1787	3188	38.4	6.10	159	C99073	Oyashio-Mar	
J33	43-30	140-40	1999/11/24	13:13	196	40	150	N13XX	1782	3020	37.2	11.84	319	C99074	Oyashio-Mar	
J34	43-30	140-20	1999/11/24	15:10	168	27	149	N52GG	1787	2594	31.2	1.90	61	C99075	Oyashio-Mar	
J34	43-30	140-20	1999/11/24	15:10	168	27	149	N13XX	1782	2574	31.7	23.28	735	C99076	Oyashio-Mar	
J47	42-30	137-30	2000/01/28	23:20	167	27	149	N52GG	1787	2645	36.2	3.88	107	C00015	Oyashio-Mar	
J47	42-30	137-30	2000/01/28	23:20	167	27	149	N13XX	1782	2380	34.3	6.60	192	C00016	Oyashio-Mar	*13
J45	42-30	138-20	2000/01/29	3:55	173	31	148	N52GG	1787	2580	35.3	3.40	96	C00013	Oyashio-Mar	
J45	42-30	138-20	2000/01/29	3:55	173	31	148	N13XX	1782	2467	35.6	4.62	130	C00014	Oyashio-Mar	*13
J43	42-30	139-00	2000/01/29	7:23	173	31	148	N52GG	1787	4378	59.9	1.12	19	C00011	Oyashio-Mar	
J43	42-30	139-00	2000/01/29	7:23	173	31	148	N13XX	1782	3670	52.9	4.50	85	C00012	Oyashio-Mar	*13
J41	42-30	139-40	2000/01/29	11:00	268	56	150	N52GG	1787	5680	77.7	0.88	11	C00009	Oyashio-Mar	
J41	42-30	139-40	2000/01/29	11:00	268	56	150	N13XX	1782	4178	60.2	11.92	198	C00010	Oyashio-Mar	*13
J34	43-30	140-20	2000/01/30	6:05	153	12	150	N52GG	1787	1705	23.3	0.70	30	C00007	Oyashio-Mar	
J34	43-30	140-20	2000/01/30	6:05	153	12	150	N13XX	1782	1690	24.4	1.76	72	C00008	Oyashio-Mar	
J33	43-30	140-40	2000/01/30	7:57	158	18	150	N52GG	1787	2099	28.7	1.22	43	C00005	Oyashio-Mar	
J33	43-30	140-40	2000/01/30	7:57	158	18	150	N13XX	1782	2120	30.6	2.48	81	C00006	Oyashio-Mar	
J32	43-30	141-00	2000/01/30	9:34	104	29	91	N52GG	1787	425	5.8	0.22	38	C00003	Oyashio-Mar	
J32	43-30	141-00	2000/01/30	9:34	104	29	91	N13XX	1782	635	9.2	0.58	63	C00004	Oyashio-Mar	
J31	43-20	141-10	2000/01/30	11:00	35	0	35	N52GG	1787	479	6.6	0.16	24	C00001	Oyashio-Mar	
J31	43-20	141-10	2000/01/30	11:00	35	0	35	N13XX	1782	449	6.5	1.40	216	C00002	Oyashio-Mar	
P17	41-30	146-00	1999/04/17	12:45		13	150	N52GG	1500	1940	29.6	2.92	99	K9909	Hokushin-Mar	*13
P16	42-00	146-00	1999/04/18	5:47		10	150	N52GG	1500	1580	24.1	7.88	327	K9908	Hokushin-Mar	
P15	42-15	146-00	1999/04/18	7:34		11	150	N52GG	1500	1588	24.2	5.66	234	K9907	Hokushin-Mar	*14
P13	42-45	145-55	1999/04/18	10:55		4	150	N52GG	1500	1580	24.1	5.54	230	K9906	Hokushin-Mar	*15
P11	43-05	145-45	1999/04/18	13:22		9	90	N52GG	1500	1110	16.9	8.50	503	K9905	Hokushin-Mar	
P17	41-30	146-00	1999/06/04	13:45	170	28	150	N52GG	1500	2950	44.1	7.94	180	K9914	Hokushin-Mar	
P16	42-00	146-00	1999/06/05	6:12		12	150	N52GG	1500	1615	24.1	14.80	613	K9913	Hokushin-Mar	
P15	42-15	146-00	1999/06/05	7:45		10	150	N52GG	1500	1550	23.2			K9912	Hokushin-Mar	*16
P13	42-45	145-55	1999/06/05	11:17		10	150	N52GG	1500	1725	25.8	7.36	285	K9911	Hokushin-Mar	*17
P11	43-05	145-45	1999/06/05	13:47		8	100	N52GG	1500	1150	17.2			K9910	Hokushin-Mar	*17
P11	43-05	145-45	1999/08/02	16:12		5	90	N52GG	1500	890	14.0	3.24	232	K9915	Hokushin-Mar	
P13	42-45	145-55	1999/08/02	19:07	164	24	150	N52GG	1500	2712	42.5	8.48	199	K9916	Hokushin-Mar	
P15	42-15	146-00	1999/08/02	22:54		8	150	N52GG	1500	1740	27.3	4.16	152	K9917	Hokushin-Mar	
P16	42-00	146-00	1999/08/03	0:50		17	150	N52GG	1500	2040	32.0	5.58	174	K9918	Hokushin-Mar	
P17	41-30	146-00	1999/08/03	4:13	151	9	149	N52GG	1500	2059	32.3	6.30	195	K9919	Hokushin-Mar	
P11	43-05	145-45	1999/10/04	16:14	95	18	90	N52GG	1500	1250	17.9	2.92	164	K9920	Hokushin-Mar	
P13	42-45	145-55	1999/10/04	18:51	202	42	150	N52GG	1500	3050	43.6	9.22	212	K9921	Hokushin-Mar	

Table 9. Data on plankton samples collected by vertical hauls with a paired NORPAC net or a standard NORPAC net, from April 1999 to March 2000.

Station No.	Position		Japan Standard Time		Length of wire (m)	Angle of wire (degree)	Estimated depth of haul (m)	Net	Flow meter (RGS)		Estimated volume of water filtered (m <sup>3</sup> )	Wet weight of sample (g)		Permanent Sample No.	Vessel	Remarks
	Lat N	Long E	Date	Hour					No.	Rev.		per haul	per 1000m <sup>3</sup>			
P15	42-15	146-00	1999/10/04	22:49	190	38	150	N52GG	1500	3030	43.3	20.58	475	K9922	Hokushin-Mar	
P16	42-00	146-00	1999/10/05	1:16	182	35	149	N52GG	1500	2763	39.5	29.60	750	K9923	Hokushin-Mar	
P17	41-30	146-00	1999/10/05	4:30	151	8	150	N52GG	1500	2050	29.3	10.80	369	K9924	Hokushin-Mar	
P11	43-05	145-45	1999/11/22	16:03	91	9	90	N52GG	1500	1418	19.7	0.94	48	K9925	Hokushin-Mar	
P13	42-45	145-55	1999/11/22	18:36	153	11	150	N52GG	1500	1930	26.9	0.58	22	K9926	Hokushin-Mar	
P15	42-15	146-00	1999/11/22	22:09	160	20	150	N52GG	1500	3565	49.6	2.04	41	K9927	Hokushin-Mar	*12
P16	42-00	146-00	1999/11/23	0:03	163	23	150	N52GG	1500	2490	34.6	1.90	55	K9928	Hokushin-Mar	*12
P17	41-30	146-00	1999/11/23	2:51	167	26	150	N52GG	1500	2170	30.2	2.38	79	K9929	Hokushin-Mar	
P17	41-30	146-00	2000/02/23	1:26		23	150	N52GG	1500	2720	38.2	0.44	12	K0005	Hokushin-Mar	*18
P16	42-00	146-00	2000/02/24	3:15		8		N52GG	1500	1725	24.2	1.30	54	K0004	Hokushin-Mar	*19
P15	42-15	146-00	2000/02/24	5:02	154	13	150	N52GG	1500	1770	24.8	0.94	38	K0003	Hokushin-Mar	*18
P13	42-45	145-55	2000/02/24	8:37	216	46	150	N52GG	1500	3290	46.2	0.40	9	K0002	Hokushin-Mar	*20
P11	43-05	145-45	2000/02/24	11:25	117	27	104	N52GG	1500	1470	20.6	0.78	38	K0001	Hokushin-Mar	*21
P52	42-00	142-20	1999/02/16	11:20	181	34	150	N52GG	2427	2075	38.2	0.22	6	H9901	Kinsei-Mar	
P54	41-40	142-00	1999/02/16	18:10	196	40	150	N52GG	2427	1034	19.0	2.54	134	H9902	Kinsei-Mar	*22
P56	41-20	141-40	1999/02/16	22:40	160	20	150	N52GG	2427	1392	25.6	1.02	40	H9903	Kinsei-Mar	
P52	42-00	142-20	1999/04/20	20:01	216	45	153	N52GG	2427	2792	51.3	11.74	229	H9904	Kinsei-Mar	
P54	41-40	142-00	1999/04/20	23:53	216	46	150	N52GG	2427	2876	52.9	10.58	200	H9905	Kinsei-Mar	
P56	41-20	141-40	1999/04/21	3:34	173	30	150	N52GG	2427	1806	33.2	6.56	198	H9906	Kinsei-Mar	
P56	41-20	141-40	1999/05/24	17:41	156	16	150	N52GG	2427	1174	21.6	5.00	232	H9909	Kinsei-Mar	
P54	41-40	142-00	1999/05/24	21:25	209	44	150	N52GG	2427	2904	53.4	10.34	194	H9908	Kinsei-Mar	*15
P52	42-00	142-20	1999/05/26	18:52	158	18	150	N52GG	2427	1274	23.4	3.92	167	H9907	Kinsei-Mar	
P52	42-00	142-20	1999/07/27	22:48	150	0	150	N52GG	2427	877	17.5	2.42	138	H9910	Kinsei-Mar	
P54	41-40	142-00	1999/07/28	2:40	173	30	150	N52GG	2427	1691	33.8	2.64	78	H9911	Kinsei-Mar	
P56	41-20	141-40	1999/07/28	7:00	150	5	149	N52GG	2427	1009	20.2	13.66	677	H9912	Kinsei-Mar	*9
P56	41-20	141-40	1999/10/04	19:23	181	34	150	N52GG	2427	N.D.		5.50		H9915	Kinsei-Mar	
P54	41-40	142-00	1999/10/04	23:24	156	16	150	N52GG	2427	1040	25.2	4.52	179	H9914	Kinsei-Mar	*9
P52	42-00	142-20	1999/10/05	3:11	183	35	150	N52GG	2427	1719	41.7	2.70	65	H9913	Kinsei-Mar	*9
P52	42-00	142-20	1999/11/30	11:05	160	21	149	N52GG	2427	1793	43.5	0.96	22	H9916	Kinsei-Mar	
P56	41-20	141-40	1999/12/01	8:55	196	40	150	N52GG	2427	2791	67.7	2.86	42	H9917	Kinsei-Mar	*23
P56	41-20	141-40	2000/02/14	15:33	152	19	144	N52GG	2427	1377	25.6	8.34	326	H0003	Kinsei-Mar	*24
P54	41-40	142-00	2000/02/14	19:10	150	3	150	N52GG	2427	1252	23.3	1.46	63	H0002	Kinsei-Mar	*25
P52	42-00	142-20	2000/02/14	23:00	150	0	150	N52GG	2427	1314	24.4	1.40	57	H0001	Kinsei-Mar	*20
J11	45-30	141-40	1999/04/12	10:32	65	41	49	XX13	2416	670	19.9	2.70	136	W99010	Hokuyo-Mar	
J11	45-30	141-40	1999/04/12	10:32	65	41	49	N52GG	2411	552	12.1	1.72	142	W99009	Hokuyo-Mar	
J13	45-30	141-10	1999/04/12	13:25	135	35	111	XX13	2416	1380	40.9	3.16	77	W99012	Hokuyo-Mar	*15
J13	45-30	141-10	1999/04/12	13:25	135	35	111	N52GG	2411	1343	29.4	1.34	46	W99011	Hokuyo-Mar	
J15	45-30	140-40	1999/04/15	13:45	180	37	144	XX13	2416	2493	73.9	4.82	65	W99014	Hokuyo-Mar	*26

Table 9. Data on plankton samples collected by vertical hauls with a paired NORPAC net or a standard NORPAC net, from April 1999 to March 2000.

Station No.	Position		Japan Standard Time		Length of wire (m)	Angle of wire (degree)	Estimated depth of haul (m)	Net	Flow meter (RGS)		Estimated volume of water filtered (m <sup>3</sup> )	Wet weight of sample (g)		Permanent Sample No.	Vessel	Remarks
	Lat	Long	Date	Hour					No.	Rev.		per haul	per 1000m <sup>3</sup>			
J15	45-30	140-40	1999/04/15	13:45	180	37	144	N52GG	2411	3074	67.4	1.98	29	W99013	Hokuyo-Mar	
J17	45-30	140-00	1999/04/15	16:54	150	0	150	XX13	2416	1318	39.1	6.06	155	W99016	Hokuyo-Mar	*26
J17	45-30	140-00	1999/04/15	16:54	150	0	150	N52GG	2411	1361	29.8	2.96	99	W99015	Hokuyo-Mar	
O22	44-35	143-15	1999/04/19	20:48	70	15	68	N52GG	2428	181	8.8	1.06	121	W99005	Hokuyo-Mar	
O23	44-40	143-20	1999/04/19	21:56	111	27	99	N52GG	2428	306	14.8	2.06	139	W99006	Hokuyo-Mar	
O24	44-50	143-30	1999/04/21	5:38	151	22	140	N52GG	2439	1224	29.2	1.68	57	W99007	Hokuyo-Mar	
O26	45-10	143-50	1999/04/21	9:24	173	30	150	N52GG	2439	1520	36.3	2.44	67	W99008	Hokuyo-Mar	*26
J15	45-30	140-40	1999/06/02	11:00	193	39	150	N52GG	2411	1639	35.9	1.60	45	W99025	Hokuyo-Mar	
J17	45-30	140-00	1999/06/02	13:57	181	34	150	XX13	2416	1624	48.1	1.30	27	W99028	Hokuyo-Mar	
J17	45-30	140-00	1999/06/02	13:57	181	34	150	N52GG	2411	1568	34.4	0.38	11	W99027	Hokuyo-Mar	
J13	45-30	141-10	1999/06/03	5:58	116	19	110	XX13	2416	891	26.4	4.14	157	W99024	Hokuyo-Mar	
J13	45-30	141-10	1999/06/03	5:58	116	19	110	N52GG	2411	911	20.0	2.72	136	W99023	Hokuyo-Mar	
J11	45-30	141-40	1999/06/03	8:20	65	44	47	XX13	2416	423	12.5	5.68	453	W99022	Hokuyo-Mar	*26
J11	45-30	141-40	1999/06/03	8:20	65	44	47	N52GG	2411	727	15.9	0.90	56	W99021	Hokuyo-Mar	
J15	45-30	140-40	1999/06/03	11:00	193	39	150	XX13	2416	1962	58.1	2.84	49	W99026	Hokuyo-Mar	
O26	45-10	143-50	1999/06/07	22:17	153	12	150	N52GG	2414	1339	24.9	2.00	80	W99020	Hokuyo-Mar	*27
O24	44-50	143-30	1999/06/08	0:50	150	2	150	N52GG	2414	1136	21.1	4.42	209	W99019	Hokuyo-Mar	*28
O23	44-40	143-20	1999/06/08	2:05	105	18	100	N52GG	2414	1071	19.9	2.88	145	W99018	Hokuyo-Mar	
O22	44-35	143-15	1999/06/08	2:45	74	10	73	N52GG	2414	663	12.3	2.10	170	W99017	Hokuyo-Mar	*12
J11	45-30	141-40	1999/07/26	10:20	57	38	45	XX13	2416	237	4.9	3.46	712	W99034	Hokuyo-Mar	
J11	45-30	141-40	1999/07/26	10:20	57	38	45	N52GG	2411	621	13.6	1.66	122	W99033	Hokuyo-Mar	
J13	45-30	141-10	1999/07/26	12:48	124	15	120	XX13	2416	579	11.9	7.06	594	W99036	Hokuyo-Mar	
J13	45-30	141-10	1999/07/26	12:48	124	15	120	N52GG	2411	946	20.7	4.68	226	W99035	Hokuyo-Mar	*29
J15	45-30	140-40	1999/07/26	17:32	150	8	149	XX13	2416	422	8.7	6.92	799	W99038	Hokuyo-Mar	
J15	45-30	140-40	1999/07/26	17:32	150	8	149	N52GG	2411	629	13.8	6.98	506	W99037	Hokuyo-Mar	*30
J17	45-30	140-00	1999/07/26	22:46	181	34	150	XX13	2416	1091	22.4	4.64	207	W99040	Hokuyo-Mar	
J17	45-30	140-00	1999/07/26	22:46	181	34	150	N52GG	2411	1625	35.6	5.56	156	W99039	Hokuyo-Mar	*27
O26	45-10	143-50	1999/08/02	23:36	152	10	150	N52GG	2439	1270	26.1	11.36	436	W99032	Hokuyo-Mar	*29
O24	44-50	143-30	1999/08/03	1:15	158	14	153	N52GG	2439	1204	24.7	2.90	117	W99031	Hokuyo-Mar	*6
O23	44-40	143-20	1999/08/03	2:38	110	0	110	N52GG	2439	1158	23.8	0.84	35	W99030	Hokuyo-Mar	*31
O22	44-35	143-15	1999/08/03	3:44	72	8	71	N52GG	2439	558	11.4	0.58	51	W99029	Hokuyo-Mar	*31
O26	45-10	143-50	1999/09/28	4:57	258	45	182	N52GG	2407	723	13.3	2.84	214	W99044	Hokuyo-Mar	*27
O24	44-50	143-30	1999/09/28	8:19	148	46	103	N52GG	2407	458	8.4	1.32	157	W99043	Hokuyo-Mar	*32
O23	44-40	143-20	1999/09/28	9:47	96	20	90	N52GG	2407	865	15.9	1.12	70	W99042	Hokuyo-Mar	
O22	44-35	143-15	1999/09/28	10:38	63	17	60	N52GG	2407	567	10.4	0.94	90	W99041	Hokuyo-Mar	
J17	45-30	140-00	1999/10/13	13:00	185	35	152	XX13	1782	2745	33.8	2.94	87	W99052	Hokuyo-Mar	
J17	45-30	140-00	1999/10/13	13:00	185	35	152	N52GG	1787	2880	34.6	2.82	81	W99051	Hokuyo-Mar	*33
J15	45-30	140-40	1999/10/13	16:02	159	19	150	XX13	1782	1897	23.3	1.78	76	W99050	Hokuyo-Mar	
J15	45-30	140-40	1999/10/13	16:02	159	19	150	N52GG	1787	1960	23.6	0.74	31	W99049	Hokuyo-Mar	
J13	45-30	141-10	1999/10/13	22:19	123	33	103	XX13	1782	2032	25.0	1.58	63	W99048	Hokuyo-Mar	

Table 9. Data on plankton samples collected by vertical hauls with a paired NORPAC net or a standard NORPAC net, from April 1999 to March 2000.

Station No.	Position		Japan Standard Time		Length of wire (m)	Angle of wire (degree)	Estimated depth of haul (m)	Net	Flow meter (RGS)		Estimated volume of water filtered (m <sup>3</sup> )	Wet weight of sample (g)		Permanent Sample No.	Vessel	Remarks
	Lat N	Long E	Date	Hour					No.	Rev.		per haul	per 1000m <sup>3</sup>			
J13	45-30	141-10	1999/10/13	22:19	123	33	103	N52GG	1787	1913	23.0	2.96	129	W99047	Hokuyo-Mar	
J11	45-30	141-40	1999/10/14	0:39	49	35	40	XX13	1782	708	8.7	2.82	324	W99046	Hokuyo-Mar	
J11	45-30	141-40	1999/10/14	0:39	49	35	40	N52GG	1787	708	8.5	1.40	164	W99045	Hokuyo-Mar	
J11	45-30	141-40	2000/02/23	10:27	58	30	50	N52GG	2414	916	16.7	3.28	197	W0001	Hokuyo-Mar	*34
J13	45-30	141-10	2000/02/23	13:21	120	36	97	N52GG	2414	1388	25.2	0.74	29	W0002	Hokuyo-Mar	*35
J15	45-30	140-40	2000/02/23	16:28	178	23	164	N52GG	2414	961	17.5	0.74	42	W0003	Hokuyo-Mar	*26
J17	45-30	140-00	2000/02/23	19:54	150	30	130	N52GG	2414	1515	27.5	1.62	59	W0004	Hokuyo-Mar	*36

- \*1 Large copepods appear, *Parasagitta elegans* appear.
- \*2 Phytoplankton poor.
- \*3 Large copepods appear.
- \*4 Phytoplankton poor.
- \*5 Large copepods and *Parasagitta elegans* appear.
- \*6 Euphausiids appear.
- \*7 Large zooplankton abundant.
- \*8 P. el. Abundant.
- \*9 Slightly gelatinous.
- \*10 Salps appear.
- \*11 Large zooplankton abundant, *Parasagitta elegans* appear.
- \*12 Gelatinous.
- \*13 Phytoplankton abundant.
- \*13 Phytoplankton abundant.
- \*14 Amphipods1.
- \*15 Euphausiids.
- \*16 Phytoplankton slightly abundant.
- \*17 Large copepods.
- \*18 Zooplankton poor.
- \*19 Copepods.
- \*20 Small copepods.

- \*21 Small copepods, zooplankton poor.
- \*22 Small euphausiids.
- \*23 Sand mixed with sample a little.
- \*24 Copepods, appendicularians, gelatinous.
- \*25 Copepods, euphausiids.
- \*26 Phytoplankton abundant.
- \*26 Small copepods, chaetognaths.
- \*27 Euphausiids abundant.
- \*28 Copepods.
- \*29 Copepods abundant.
- \*30 Including jellyfish (gelatinous).
- \*31 Including fish larvae.
- \*32 Including 1 jellyfish (gelatinous).
- \*33 Large zooplankton.
- \*34 Mixture of sediments.
- \*35 Small copepods.
- \*36 Copepods, euphausiids, one fish was excluded and measured.



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