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The Oceanographic Conditions along 134°E from 12°N to 30°N in September, 2003 and 2009

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Key words: CTD, XBT, Oceanographic Conditions, 134°E, Pacific Ocean, Fishing Training Ship

Abstract

The CTD observations were carried out along 134°E from 12°N to 30°N in the northwestern part of the North Pacific in September's of 2003 and 2009. The surface layers warmer than 27.5℃ were observed from 12°N to 27°N in 2003 and observed from 12°N to 22°N in 2009. The present paper aims to comparing the September's hydrographic conditions for the two years. The subtropical Mode Water occupied the subsurface layer between 200m and 400m depths in the region between 18°N and 24°N for 2003, while in that between 18°N and 26°N for 2009. The North Equatorial Current, which is identified by the downward slope of isotherms toward the south, was observed north of 17°N in 2003 while north of 15°N in 2009. The saline water higher than 34.8 psu occupied the subsurface layer between 100 m and 250 m depths in the almost whole section in 2003, whereas only in the region north of 21°N in 2009. The halocline below the subsurface saline water, was identified between 34.5 psu and 34.7 psu in the entire sections for both the years. The intermediate water fresher than 34.2 psu occupied within the depths from 550 m to 850 m in the region between 18°N and 27°N in 2003, but the depths from 550 m to 750 m in the region between 19°N and 27°N in 2009.

It is very important to perform the oceanographic surveys as many times as possible for monitoring the oceanic circulation in the western part of the Pacific Ocean.

This is because the oceanographic conditions in the Pacific Ocean affect the climate over the world and have an influence upon the fishing affairs.

We, using the Kagoshima Maru (G.T. 1297.08 tons), the fishing training ship of the Kagoshima University, have the routine cruise for training the cadets in every year which passes through the northwesten Pacific Ocean from kagoshima to the Indian Ocean.

The oceanographic observations were carried out for the return cruise from Palau Islands to Kagoshima in 2003 and 2009.

Some results of the oceanographic survey to the 137°E section and its adjunct sections have been published by J.Masuzawa *et al.* [1] in 1975, by the Japan Meteorological Agency several times in a year from 1967, by T.Suga *et al.*[2] , which focuses on the Subtropical Mode Water in the 137°E Section, by M.Higashi [3] with data along 131°E from 30°N to 15°N in 1989, by Uchiyama *et al.*[4] for the section from the west of Okinawa to Palau Islands in 1995, by M.Higashi *et al.*[5] for the section between the south of Kyusyu and the Yap islands in 1999. Furthermore, the Japan Meteorological Agency's data of the 137°E section were analyzed to explain the inter-annual variation of the catch for the Japanese eel with the processes that such a variation depends on the meridional location of the low-salinity water within the North Equatorial Current (S.Kimura *et al.*[6]), and the Kuroshio's effect on the larval transport of the Japanese eel (Kimura *et al* [7]).

In this paper, we describe the results of the observations along 134°E from 12°N to 30°N in 2003 and 2009. We expect these data turn to account for elementary materials

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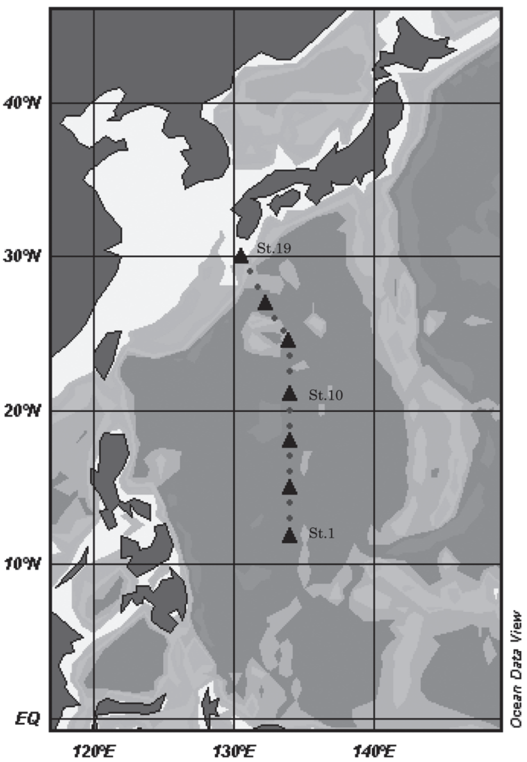

Fig.1. The positions of oceanographic observation along 134°E in 2009
(CTD stations : ● XBT stations : ▲)

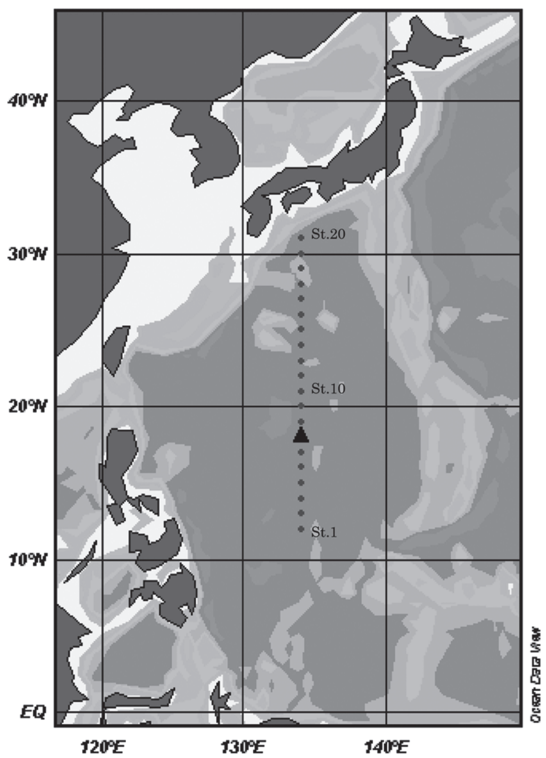

Fig. 2. The positions of oceanographic observation along 134°E in 2003
(CTD stations : ● XBT stations : ▲)

Materials and Methods

CTD, and XBT observations

Fig. 1 shows the position of oceanographic observation along 134°E in 2009.

Fig. 2 shows in 2003.

The oceanographic observations were carried out with CTD system (Model 911 plus SEA-BIRD ELECTRONICS INC.), and XBT (TS-MK130 TSURUMI SEIKI). The CTD casts were performed from the sea surface to the maximum depth of 1000 m. Salinity measured by CTD was corrected by that measured accurately with AUTOSAL from water samples.

The values of temperature and salinity at the serial depths for the international standard were tabulated in Appendix.

Results and Discussion

Vertical section of temperature

Fig. 3 shows the distribution of water temperature in the vertical section in 2009.

Fig. 5 shows in 2003.

The surface water with temperature higher than 27.5 ℃ was observed from 12°N to 27°N in 2003, while from 12°N to 22°N in 2009.

The strong downward-slope of isotherms from the north to the south, which was associated with the Kuroshio, was found from 28°N to 29°N in 2003 and from 28°N to 30°N in 2009,

The upward-slope of isotherms from the north to the south around 27°N showed the existence of the Kuroshio counter-current, or mesoscale eddies for both2003 and 2009.

The subtropical Mode Water occupied the subsurface layer between 200 m and 400 m in the region between 18°N and 24°N in 2003, although it was seen between 18°N and 26°N in 2009.

The maximum value of the sea surface temperature was 30.49 ℃ at 15°N in 2003 while 30.76 ℃ at 17°N in 2009.

The North Equatorial Current, which is identified by the downward slope of isotherms toward the south, was observed north of 17°N in 2003 while north of 15°N in 2009.

The fact that the eastward current in 2003 is stronger than in

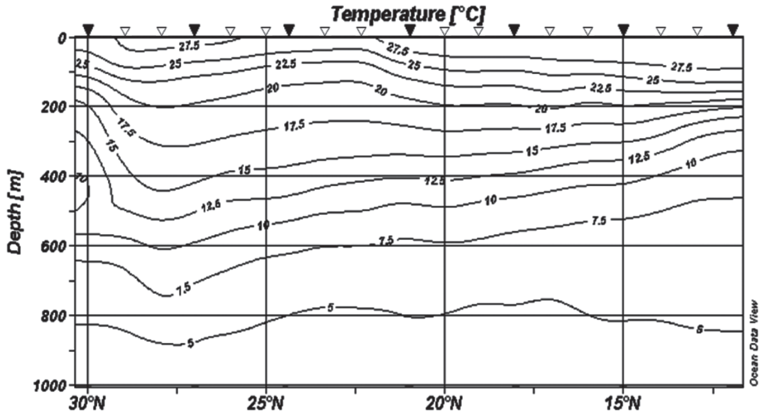

Fig. 3. The distribution of water temperature in the vertical section in 2009

(CTD stations ： ∇ XBT stations ： ▼)

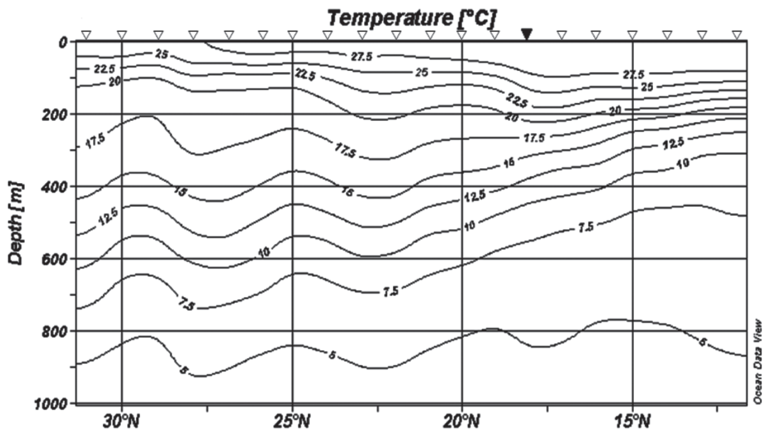

Fig. 5. The distribution of water temperature in the vertical section in 2003

(CTD stations ： ∇ XBT stations ： ▼)

2009, indicates that the circulation of the upper ocean in 2003 was more intensified than in 2009 for the western subtropical North Pacific.

Vertical section of salinity

Fig. 4 shows the distribution of salinity in the vertical section in 2009.

Fig. 6 shows in 2003.

The lowest value of the less saline surface water was 33.935 psu at the sea surface of 14°N in 2003 while 33.625 psu at that of 25°N in 2009.

A water core characterized by the salinity maximum (> 34.9 psu) was seen in the depths less than 200 m between 21°N and 24°N in 2003. It indicates that pressure is higher below this core than the surrounding waters.

Salinity of the water between 100 m and 200 m depths was higher in 2003 than in 2009.

The salinity minimum existed at 16°N in 2003 while at 13°N in 2009. This difference is probably explained as follows ; the *El Nino* event [6] occurred in 2009 so that the low salinity water shifted southward, comparing to the usual year such as 2003.

The saline water (> 34.75 psu) below the surface water, occupied the subsurface layer between 100 m and 250 m depths in the almost whole section in 2009 and especially this subsurface saline water with a character of the highest salinity (> 35.028 psu) extended from the south to 13°N.

In 2003, the saline water higher than 34.8 psu occupied between 100 m and 250 m depths in the almost whole section, having a core with salinity higher than 35.0 psu at 22°N - 23°N (the highest salinity value was 35.116 psu at 22°N).

A halocline below the subsurface saline water, was seen as

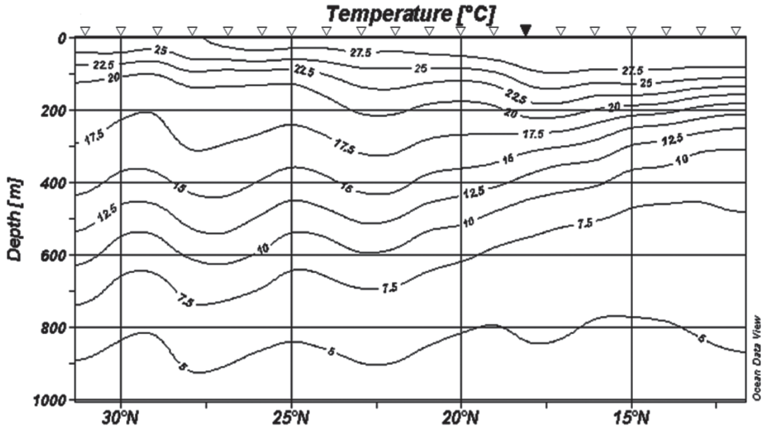

Fig. 4. The distribution of salinity in the vertical section in 2009
(CTD stations : ∇ XBT stations : ▼)

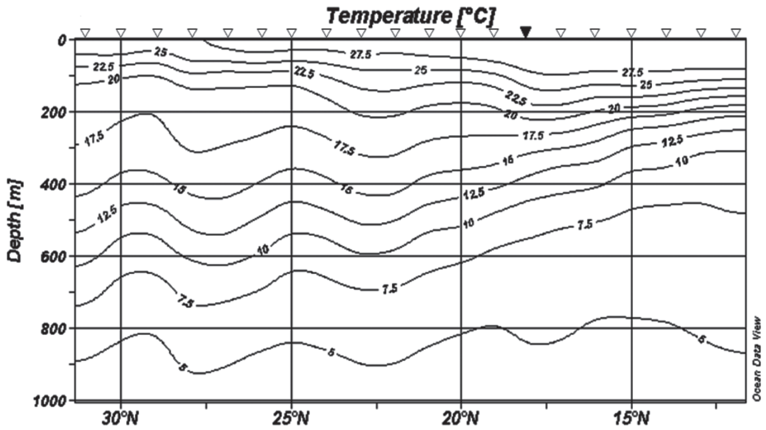

Fig. 6. The distribution of salinity in the vertical section in 2003
(CTD stations : ∇ XBT stations : ▼)

salinity changes from 34.5 psu to 34.7 psu in the entire sections in both the years.

Below the halocline, the North Pacific Intermediate Water, which was characterized by the low salinity water ($<$ 34.2 psu) appeared between 550 m and 850 m depths in the region between 18°N and 27°N in 2003, although it was seen between 550 m and 750 m depths in the region between 19°N and 27°N in 2009. The salinity minimum layers for both the years had the tendency of shallowing toward the south of 18-19° N.

Acknowledgements

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Appendix

Date	2009.9.19		2009.9.20		2009.9.20		2009.9.20		2009.9.21	
JST	23:22		8:02		16:33		23:26		7:58	
St.No.	1 (XBT)		2		3		4 (XBT)		5	
Lat.	12-00.00N		13-00.00N		13-59.95N		15-00.00N		16-00.01N	
Long.	134-00.13E		134-00.07E		134-00.02E		134-00.00E		133-59.98E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	28.83						29.50		29.59	
10	29.22		29.33	34.359			29.71		29.58	
20	29.22		29.33	34.436	29.50	34.265	29.61		29.58	34.261
30	29.23		29.34	34.437	29.48	34.266	29.56		29.57	34.260
50	29.22		29.16	34.554	29.18	34.543	29.35		29.16	34.480
75	28.59		28.22	34.960	28.15	34.872	27.74		27.18	34.798
100	27.39		27.60	35.028	26.32	34.894	25.68		25.05	34.907
150	22.94		23.65	35.022	22.85	34.983	23.15		21.44	34.891
200	18.12		18.63	34.787	18.85	34.835	20.17		18.69	34.818
250	13.07		14.40	34.486	16.70	34.690	17.82		17.17	34.747
300	10.73		11.44	34.342	14.26	34.503	15.08		15.21	34.586
400	8.42		8.99	34.397	9.93	34.270	10.71		10.83	34.298
500	7.15		6.92	34.355	7.47	34.289	8.10		7.76	34.198
600	6.44		6.47	34.476	6.22	34.391	6.46		6.63	34.290
700	5.83		5.79	34.508	5.55	34.468	5.51		5.79	34.412
800			5.22	34.522	5.05	34.501			5.08	34.473
900			4.69	34.528	4.58	34.527			4.67	34.506
1000			4.25	34.546	4.20	34.541			4.23	34.525
1200			3.59	34.567						
	5.53(760m)						5.15(760m)			

Date	2009.9.21		2009.9.21		2009.9.22		2009.9.22		2009.9.22	
JST	14:57		22:16		8:00		15:08		22:09	
St.No.	6		7 (XBT)		8		9		10 (XBT)	
Lat.	17-00.04N		18-00.00N		18-59.99N		19-59.99N		21-00.02N	
Long.	134-00.03E		134-00.00E		133-59.82E		133-59.80E		134-00.00E	
	Sal. (psu)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	30.76		29.69		29.70				29.10	
10	29.68	34.332	29.79		29.70		29.82	34.257	29.59	
20	29.49	34.302	29.69		29.65	34.309	29.80	34.268	29.59	
30	29.47	34.302	29.67		29.62	34.302	29.79	34.272	29.49	
50	29.16	34.358	28.51		28.40	34.687	28.45	34.575	27.21	
75	26.93	34.615	25.74		26.65	34.809	26.19	34.757	24.59	
100	26.08	34.796	24.17		25.12	34.764	24.93	34.768	23.35	
150	23.76	34.935	21.56		22.13	34.865	22.19	34.830	20.90	
200	20.93	34.893	19.33		19.50	34.733	20.13	34.837	18.83	
250	18.21	34.798	17.74		18.07	34.791	18.24	34.803	17.43	
300	15.78	34.600	16.40		16.40	34.688	16.90	34.722	16.18	
400	11.32	34.314	12.20		12.39	34.382	13.27	34.448	12.44	
500	8.37	34.212	8.81		9.20	34.222	10.06	34.240	9.14	
600	6.73	34.265	6.80		7.16	34.229	7.55	34.165	6.79	
700	5.41	34.339	5.62		5.58	34.264	5.77	34.211	5.49	
800	4.54	34.409			4.66	34.367	5.05	34.323		
900	3.94	34.474			4.23	34.436	4.43	34.395		
1000	3.58	34.519			3.90	34.486	4.03	34.450		
1200										
			5.11(760m)						5.11(760m)	

Date	2009.9.23		2009.9.23		2009.9.23		2009.9.24		2009.9.24	
JST	7:31		14:48		22:19		7:29		15:05	
St.No.	11		12		13 (XBT)		14		15	
Lat.	22-30.09N		23-30.0N		24-30.02N		25-00.00N		25-59.95N	
Long.	133-59.95E		134-00.00E		133-44.10E		133-28.00E		132-56.19E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0			28.10		27.24		27.66		28.07	
10	29.07	34.465	28.10	34.400	27.44		27.65	33.625	28.04	34.095
20	29.07	34.466	27.98	34.442	27.45		27.69	34.423	28.04	34.505
30	25.04	34.673	27.84	34.442	27.44		27.69	34.422	28.01	34.504
50	23.53	34.701	23.65	34.655	23.87		24.87	34.589	27.99	34.508
75	21.76	34.780	21.55	34.722	21.45		22.93	34.737	23.55	34.645
100	20.77	34.810	20.97	34.731	20.59		22.01	34.790	22.35	34.727
150	19.21	34.760	19.61	34.779	19.57		19.80	34.755	20.75	34.738
200	18.31	34.801	18.37	34.798	18.50		19.08	34.790	19.16	34.794
250	17.31	34.755	17.33	34.754	17.38		17.97	34.783	18.18	34.788
300	16.19	34.679	16.22	34.677	16.58		17.02	34.732	17.19	34.745
400	12.94	34.430	13.55	34.486	14.47		14.54	34.557	14.39	34.549
500	10.16	34.256	10.09	34.266	10.96		11.67	34.362	11.17	34.328
600	7.53	34.145	7.41	34.151	8.09		8.08	34.181	8.95	34.214
700	5.77	34.183	5.89	34.153	6.14		6.06	34.165	6.72	34.155
800	4.84	34.286	4.73	34.245			5.04	34.221	5.42	34.202
900	4.15	34.366	4.02	34.327			4.37	34.291	4.60	34.290
1000	3.76	34.429	3.75	34.373			3.84	34.361	4.00	34.341
1200										
					5.63(760m)					

Date	2009.9.24		2009.9.25		2009.9.25		2009.9.25	
JST	22:36		7:58		15:17		23:40	
St.No.	16 (XBT)		17		18		19 (XBT)	
Lat.	27-00.00N		28-00.00N		29-00.09N		29-59.97N	
Long.	132-23.51E		131-49.9E		131-18.02E		130-45.09E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	27.78		28.17				26.96	
10	28.14		28.13	34.234	28.04		27.22	
20	28.14		28.13	34.378	28.17	34.338	27.10	
30	28.16		28.14	34.378	28.17	34.379	25.40	
50	28.13		28.14	34.378	28.12	34.385	24.05	
75	24.03		25.69	34.410	27.06	34.389	22.91	
100	22.68		24.15	34.631	24.41	34.598	20.45	
150	20.94		21.75	34.725	21.05	34.727	16.61	
200	19.75		20.26	34.746	19.33	34.761	13.64	
250	18.75		18.87	34.786	17.85	34.738	12.60	
300	17.76		17.85	34.770	16.84	34.688	11.59	
400	15.67		16.32	34.685	14.76	34.571	9.35	
500	12.65		14.18	34.532	12.13	34.419	7.81	
600	9.64		10.76	34.317	8.72	34.288	8.07	
700	7.63		8.52	34.249	6.70	34.202	8.15	
800			7.00	34.327	5.32	34.315		
900			4.67	34.350	4.18	34.378		
1000			3.87	34.368	3.54	34.399		
1200								
	6.74(760m)						8.11(760m)	

Appendix

Date	2003.9.21		2003.9.22		2003.9.22		2003.9.22		2003.9.22	
JST	19:01		1:45		7:45		17:42		23:43	
St.No.	1		2		3		4		5	
Lat.	12-00.10N		13-00.02N		14-00.10N		15-00.10N		16-00.10N	
Long.	133-59.90E		133-59.98E		133-59.90E		134-00.00E		133-59.90E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	29.67	34.171	29.49		29.81	33.942	30.49		30.30	34.384
10	29.53	34.166	29.48	34.154	29.74	33.935	29.73	34.051	30.28	34.383
20	29.36	34.156	29.23	34.129	29.65	33.935	29.66	34.060	29.99	34.362
30	29.33	34.155	29.21	34.153	29.68	34.000	29.62	34.057	30.01	34.396
50	29.30	34.159	29.21	34.189	29.60	34.305	29.61	34.106	29.92	34.417
75	28.87	34.451	28.21	34.556	28.83	34.474	28.61	34.561	28.42	34.657
100	26.63	34.694	26.37	34.845	26.95	34.767	27.10	34.796	27.10	34.802
150	20.13	34.883	21.73	34.930	22.84	34.952	23.79	35.089	23.00	35.038
200	15.67	34.621	16.32	34.673	18.79	34.831	18.74	34.819	19.57	34.885
250	12.18	34.429	13.28	34.482	14.64	34.566	14.64	34.559	16.79	34.692
300	10.30	34.403	10.23	34.361	11.71	34.401	11.93	34.365	14.29	34.522
400	8.41	34.489	7.96	34.384	8.72	34.333	8.54	34.211	10.51	34.314
500	7.35	34.509	7.03	34.454	6.92	34.394	6.91	34.276	7.67	34.286
600	6.52	34.516	6.21	34.507	6.07	34.453	5.92	34.391	6.16	34.321
700	5.89	34.521	5.52	34.504	5.47	34.489	5.35	34.456	5.46	34.430
800	5.37	34.529	5.11	34.537	4.88	34.519	4.85	34.490	4.83	34.480
900	4.85	34.541	4.65	34.539	4.40	34.538	4.35	34.523	4.45	34.518
1000	4.33	34.555	4.23	34.553	4.12	34.548	3.99	34.539	4.07	34.536
1200										

Date	2003.9.23		2003.9.23		2003.9.23		2003.9.24		2003.9.24	
JST	5:50		15:16		22:10		4:27		10:50	
St.No.	6		7		8		9		10	
Lat.	17-00.30N		17-59.99N		19-00.00N		19-59.90N		21-00.00N	
Long.	133-59.90E		134-00.02E		134-00.00E		134-00.00E		133-59.80E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	29.83		29.76		29.04	34.419	28.92		29.38	
10	29.83	33.977	29.59		29.06	34.418	28.92	34.558	29.32	34.748
20	29.64	33.956	29.56		29.06	34.417	28.92	34.558	29.31	34.768
30	29.59	33.958	29.52		29.13	34.478	28.92	34.560	29.29	34.813
50	29.66	34.116	29.47		29.21	34.610	28.87	34.595	28.53	34.838
75	29.21	34.399	28.53		26.94	34.866	25.80	34.889	25.13	35.014
100	27.98	34.613	27.62		23.83	35.000	23.14	34.929	23.75	35.026
150	24.55	35.011	24.87		21.08	34.935	20.66	34.917	21.30	34.962
200	21.37	35.002	21.84		19.19	34.857	19.28	34.864	19.13	34.856
250	18.17	34.783	18.53		17.85	34.775	18.04	34.791	18.12	34.796
300	15.09	34.574	15.81		16.76	34.708	16.62	34.700	16.98	34.721
400	10.62	34.284	11.52		13.19	34.463	14.00	34.520	14.08	34.528
500	7.97	34.217	8.41		9.21	34.208	10.89	34.309	10.81	34.287
600	6.39	34.294	6.72		7.06	34.171	7.92	34.165	8.04	34.162
700	5.67	34.410	5.95		5.35	34.235	6.06	34.175	6.40	34.182
800	5.12	34.477	5.30		4.84	34.365	5.08	34.277	5.32	34.247
900	4.67	34.507	4.77		4.44	34.440	4.52	34.386	4.63	34.335
1000	4.21	34.527	4.30		3.98	34.496	3.85	34.413	4.03	34.392
1200										

Date	2003.9.24		2003.9.24		2003.9.25		2003.9.25		2003.9.25	
JST	17:33		23:35		6:25		13:42		22:38	
St.No.	11		12		13		14		15	
Lat.	22-00.00N		23-00.20N		24-00.00N		25-00.05N		26-00.00N	
Long.	134-00.00E		134-00.20E		134-00.10E		133-59.94E		133-59.90E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	29.17		29.11		28.74		29.24		29.37	
10	29.14	34.829	29.11	34.778	28.76	34.719	29.23	34.889	29.36	34.777
20	29.09	34.846	29.12	34.781	28.75	34.728	29.15	34.887	29.37	34.777
30	29.07	34.894	29.11	34.800	28.74	34.729	29.14	34.900	29.38	34.804
50	26.47	35.116	28.17	35.077	26.30	34.728	26.75	34.870	27.76	34.834
75	25.22	35.115	25.36	35.095	23.91	34.866	22.50	34.896	24.61	34.895
100	24.32	35.095	24.25	35.085	22.46	34.927	20.91	34.914	21.23	34.907
150	22.31	35.038	22.04	35.028	20.34	34.896	18.81	34.836	19.33	34.871
200	20.54	34.956	20.55	34.953	18.80	34.833	18.01	34.791	18.44	34.833
250	19.12	34.858	19.14	34.856	17.80	34.779	17.19	34.739	17.88	34.796
300	18.16	34.786	18.01	34.775	16.95	34.725	16.16	34.679	17.15	34.745
400	16.11	34.665	16.01	34.661	14.58	34.579	13.45	34.498	15.03	34.604
500	12.68	34.423	13.13	34.455	11.48	34.367	10.79	34.317	12.36	34.420
600	9.59	34.213	9.85	34.230	8.53	34.195	8.10	34.178	9.83	34.252
700	7.34	34.168	7.30	34.158	6.85	34.163	6.32	34.160	7.51	34.160
800	5.86	34.214	5.90	34.205	5.65	34.198	5.28	34.192	5.69	34.177
900	5.02	34.276	5.05	34.295	4.70	34.281	4.36	34.274	4.67	34.256
1000	4.41	34.368	4.42	34.375	4.11	34.341	3.93	34.356	4.10	34.309
1200										

Date	2003.9.26		2003.9.26		2003.9.26		2003.9.27		2003.9.27	
JST	6:28		13:10		20:33		6:24		14:27	
St.No.	16		17		18		19		20	
Lat.	27-00.10N		27-59.99N		28-59.90N		29-59.90N		30-59.93N	
Long.	133-59.60E		134-00.15E		134-00.10E		133-59.70E		133-59.93E	
	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)	Temp. (℃)	Sal. (psu)
0	29.03		27.19		27.66		26.80		27.51	
10	29.02	34.847	27.16	34.610	27.67	34.586	26.80	34.553	27.51	34.554
20	29.02	34.847	26.72	34.618	27.42	34.602	26.80	34.552	27.51	34.554
30	29.03	34.847	26.63	34.630	26.85	34.607	26.76	34.550	27.49	34.554
50	26.02	34.938	26.49	34.639	22.46	34.797	26.48	34.559	24.57	34.729
75	23.00	34.943	25.43	34.741	20.72	34.829	21.18	34.836	21.98	34.862
100	20.97	34.919	21.58	34.891	19.23	34.815	20.01	34.875	20.56	34.886
150	19.40	34.879	19.74	34.898	17.83	34.789	18.57	34.837	19.42	34.875
200	18.56	34.843	19.17	34.874	17.31	34.757	17.81	34.787	18.68	34.828
250	18.03	34.810	18.60	34.831	16.77	34.741	17.04	34.739	18.22	34.817
300	17.42	34.766	18.04	34.796	16.36	34.718	16.40	34.704	17.41	34.751
400	15.99	34.665	16.10	34.675	14.09	34.549	14.08	34.550	16.14	34.694
500	13.60	34.507	13.58	34.511	11.07	34.363	10.95	34.345	13.41	34.499
600	11.13	34.340	10.60	34.310	8.35	34.241	8.48	34.252	10.95	34.348
700	8.06	34.165	8.34	34.250	6.21	34.218	6.43	34.237	8.62	34.232
800	6.41	34.139	6.48	34.234	4.97	34.269	5.26	34.273	6.04	34.197
900	5.09	34.200	5.41	34.278	4.14	34.346	4.46	34.329	4.99	34.267
1000	4.37	34.271	4.37	34.317	3.78	34.394	3.87	34.389	4.30	34.320
1200										