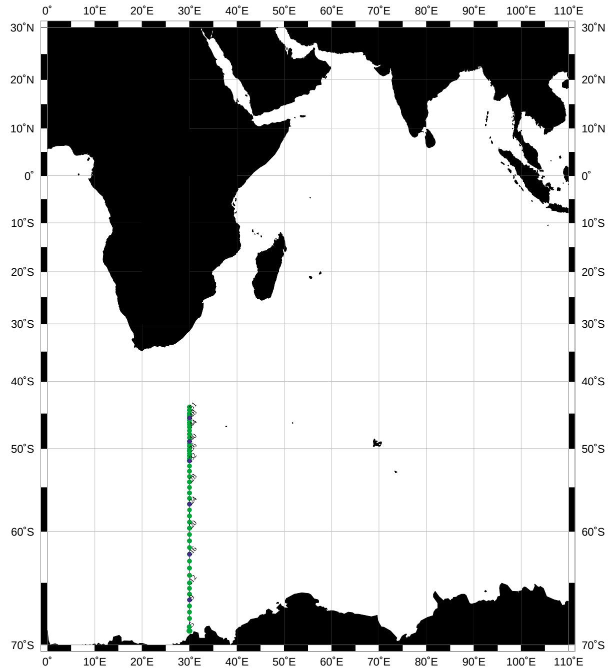
Station locations for i06



WHP Cruise Summary Information

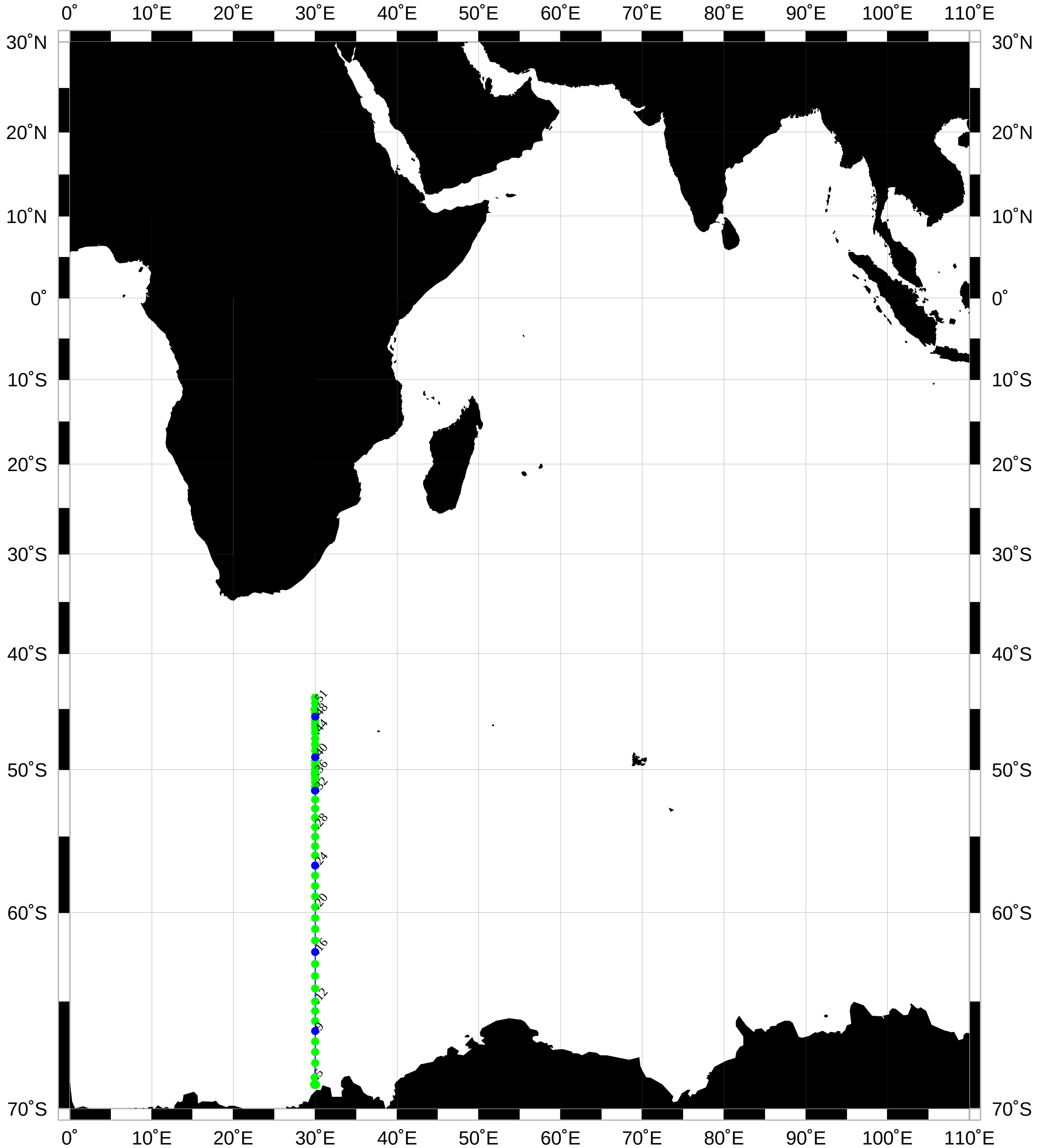
WOCE section designation	**I06**
Expedition designation (EXPOCODE)	**35MFCIVA_1**
Chief Scientist(s) and their affiliation	**Alain Poisson**
Dates	1993.01.23 - 1993.03.09
Ship	R/V Marion Dufresne
Ports of call	La R union (France) to Durban (Republic of South Africa)
Number of stations	133
Geographic boundaries of the stations	30°00.54'S 28°56.59'E 31°09.00'E 68°59.71'S
Floats and drifters deployed	None
Moorings deployed or recovered	None
Contributing Authors	M. Fieux and T. Huck J.F. Minster and J. Escalier B. Schauer C. Brunet

WHP Cruise and Data Information

Instructions: Click on any item to locate primary reference(s) or use navigation tools above.

Cruise Summary Information	Hydrographic Measurements
Description of scientific program	CTD - general
Geographic boundaries of the survey	
Cruise track (figure)	
Description of stations	
Description of parameters sampled	
	Salinity
	Oxygen
	Nutrients
	CFCs
Principal Investigators for all measurements	Helium
Cruise Participants	Tritium
	Radiocarbon
Problems and goals not achieved	CO2 system parameters
	Other parameters
Underway Data Information	
	DQE Reports
XBT and/or XCTD	
	S/O2/nutrients (begun: A Mantyla
	Data Status Notes

Station locations for i06



Produced from .sum file by WHPO-SIO

WOCE Designation: **I06**

Expedition Designation: **35MFCIVA_1**

Chief scientist:

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Ship: R/V Marion Dufresne

Ports of call: La R union (France) to Durban (Republic of South Africa)

Cruise dates: January 23 to March 9, 1993

CRUISE SUMMARY

Cruise track: The track of the cruise is shown in Figure 1.

Type and number of Stations: Two types of stations were occupied:

- Long stations: 3 CTD/rosette casts to get 36 water samplings from the surface to the bottom.
- short stations: 2 CTD/rosette casts to get 24 water samplings from surface to 1600m, but with CTD down to the bottom..

- 28 long stations and 21 short stations were occupied from 69°S to 44°S at 30°E. The other stations were adapted to the depth, especially near the antarctic continent. The location of the CTD stations are shown in Figure 2.

- 113 XBT probes, T6 and T7 type, were launched along the track of the cruise between the stations. Their locations are indicated in Figure 3 and in the summary Table 1.

Sampling accomplished.

Salinity, Temperature, Pressure and Oxygen concentration were measured using a CTD probe and Temperature also with XBT; The location in the water column of the measurement of these parameters all along the section is shown in Figure 4. Water bottle samples were collected, using a 12 bottle rosette with 12 litres Niskin/General Oceanic water sampling bottles; shipboard measurements of Salinity, Oxygen, Nutrients (Nitrate, Nitrites, Phosphate and Silicate), Total Inorganic Carbon, Total Alkalinity as well as the CFC-11 and CFC-12 concentrations were made on all the bottles collected. The locations in the water column of the bottle samplings of these parameters are shown in Figure 5a.

Additional samples were collected for shore based laboratory measurements: Tritium, Helium-3, Carbon-14 (small samples), Oxygen-18, Carbon-13 and Barium. The locations in the water column of these samplings are respectively shown in figure 5b, 5c, 5d, and 5e.

List of Principal Investigators.

Names	Responsibility	Affiliation
Arnold M.	Carbon 14	CFR/CEA/CNRS
Dehairs F.	Barium	LVAS/VUB
Fieux M.	CTD, S, XBT, ADCP	LODYC/UPMC/CNRS
Jean-Baptiste P.	Helium/Tritium	LMCE/CEA
Minster J.F.	Nutrients	GRGS/CNES
Pierre C.	Oxygen 18, Carbon 13	LODYC/UPMC/CNRS
Poisson A.	O2, CFCs, TCO2, pCO2, AT	LPCM/UPMC/CNRS

Scientific programme and methods.

The aim of the CIVA programme was to study the circulation and the ventilation of the Antarctic ocean in the Indian sector, especially in the western zone of this sector. The principal objectives of this programme were to study:

- the flux at the Atlantic/Indian ocean boundary
- the zonal circulation in this region
- the evolution of the Weddell Antarctic bottom water
- the air-sea flux of CO_2 in this region

The Marion Dufresne being also a supply ship for the French Indian ocean subantarctic islands, she departed La R union for Kerguelen archipelago on January 23, and occupied the station Kerfix (WOCE station SRS1), 60 nautical miles south of Kerguelen, to test the CTD and the rosette.

The CTD used was a Niel Brown Mark III instrument equipped with a dissolved oxygen sensor. The rosette, manufactured by General Oceanics, was equipped with 12 Niskin bottles of 12 litres manufactured by General Oceanics and a 10 kHz location pinger. The cable was a 8.6mm steel rope and the winch was built by Kley France. After each cast the rosette was secured on the deck and washed with fresh water, especially the sensors which were then covered with protective housings; samples were collected following the order recommended in the WOCE operations manual: CFC, Helium, Oxygen, TCO2+TA, Carbon-14, Tritium, Carbon-13, Oxygen-18, Nutrients, Salinity, Barium. The temperature, pressure and conductivity sensors of the CTD were calibrated at IFREMER in Brest before and after the cruise. The conductivity and oxygen sensors were also calibrated using data collected during the cruise on the bottles taken at all the stations : Salinity was measured with a 8400 type Guildline salinometer in a constant temperature laboratory and Oxygen by an automatic potentiometric titration system (Metler DL21).

Samples were collected from each Niskin bottle for shipboard measurements of nutrients (Nitrate, Nitrites, Silicate and Phosphate) with two automatic Technicon AAII analysers, Total Alkalinity and Total Inorganic Carbon with a semi-automated potentiometric titration system (Radiometer) and Total Inorganic carbon with a coulometer UIC Coulometrics 5011. Samples were also collected with Pyrex 100ml syringes directly on all the Niskin bottles to measure CFC-11 and CFC-12 with a Shimadzu GC8A gas chromatograph in a portable laboratory located on the deck of the ship.

All the samplings were performed on the deck. The methods of measurement are reported later in this report.

Underway measurements:

XBTs were launched between the stations every about 10 nm using a Sippican system. Acoustic Dopler Current Profiler measurements were made with a R.D. Instruments ADCP only on the way from Antarctica to Durban; It was the first time that this instrument was used on the R/V Marion Dufresne and some problems arose especially during the transits, due to the instrument itself and the roughness of the sea. Underway measurements of Temperature and Salinity were made by a Bisset-Berman thermosalinograph; Depth was recorded all along the track of the cruise on thermal paper using an EDO system. Fugacity of carbon dioxide was measured all along the track of the cruise with a Siemens IR analyzer, together with fluorescence with a Turner fluorimeter and Oxygen with an Orbisphere Laboratory sensor.

TABLE 1: Location of XBTs

XBT NBR	DATE	TIME UTC CODE	POSITION LATITUDE	POSITION LONGITUDE	POSITION CODE	PROBE TYPE	MAX DEPTH (m)	BOTTOM DEPTH (m)
X01	020693	1411 DE	67 42.25 S	30 00.28 E	GPS	T7	460	3525
X02	020693	2042 DE	67 18.24 S	30 00.12 E	GPS	T7	780	3953
X03	020693	2131 DE	67 09.42 S	30 00.18 E	GPS	T7	350	4088
X04	020793	0829 DE	66 41.69 S	30 00.13 E	GPS	T6	400	4260

XBT NBR	DATE	TIME UTC CODE	POSITION LATITUDE	POSITION LONGITUDE	CODE	PROBE TYPE	MAX DEPTH (m)	BOTTOM DEPTH (m)
X05	020793	1519 DE	66 19.19 S	30 00.47 E	GPS	T6	420	4350
X06	020793	1618 DE	66 10.11 S	30 00.33 E	GPS	T7	510	4530
X07	020893	0129 DE	65 49.29 S	30 00.36 E	GPS	T6	480	4725
X08	020893	0232 DE	65 37.71 S	30 00.03 E	GPS	T6	430	4755
X09	020893	1042 DE	65 17.70 S	30 00.07 E	GPS	T6	440	4845
X10	020893	1131 DE	65 09.19 S	30 00.18 E	GPS	T6	430	4875
ET1	020893	1256 DE	65 00.10 S	30 00.19 E	GPS	T6	440	4890
X11	020993	0635 DE	64 48.33 S	30 00.43 E	GPS	T6	440	4988
X12	020993	0715 DE	64 38.66 S	29 59.68 E	GPS	T6	130	5048
X13	020993	0756 DE	64 28.94 S	30 00.13 E	GPS	T6	480	5048
X14	020993	1715 DE	64 08.57 S	30 00.47 E	GPS	T7	750	5115
X15	020993	1811 DE	63 55.28 S	29 59.88 E	GPS	T7	750	5138
X16	021093	0515 DE	63 07.17 S	29 59.99 E	GPS	T7	790	5183
X17	021093	1114 DE	62 48.33 S	29 59.94 E	GPS	T7	800	5175
X18	021093	1148 DE	62 40.26 S	30 00.28 E	GPS	T7	800	5175
X19	021093	1230 DE	62 30.53 S	29 60.00 E	GPS	T7	730	5175
X20	021093	2130 DE	62 10.11 S	30 00.01 E	GPS	T7	700	5175
X21	021093	2211 DE	62 00.40 S	30 00.11 E	GPS	T7	800	5213
X22	021093	2253 DE	61 50.31 S	29 59.96 E	GPS	T7	770	5213
X23	021193	0615 DE	61 25.43 S	29 59.93 E	GPS	T7	700	5258
X24	021193	0648 DE	61 17.56 S	29 59.77 E	GPS	T7	810	5258
X25	021193	0728 DE	61 07.71 S	30 00.20 E	GPS	T7	830	5265
X26	021193	1555 DE	60 48.26 S	30 00.42 E	GPS	T7	800	5258
X27	021193	1631 DE	60 39.78 S	30 00.28 E	GPS	T7	800	5265
X28	021193	1713 DE	60 30.35 S	30 00.61 E	GPS	T7	270	5243
X29	021193	2342 DE	60 10.55 S	30 00.24 E	GPS	T7	160	5213
X30	021293	0034 DE	59 59.75 S	30 00.29 E	GPS	T7	140	5220
X31	021293	0123 DE	59 49.97 S	30 00.04 E	GPS	T7	350	5231
X32	021293	2024 DE	59 30.45 S	30 01.13 E	GPS	T7	230	5258
X33	021393	2241 DE	59 08.75 S	29 59.94 E	GPS	T7	310	5408
X34	021393	0548 DE	58 48.12 S	30 00.34 E	GPS	T7	370	5385
X35	021393	0641 DE	58 39.48 S	30 00.04 E	GPS	T7	180	5400
X36	021393	0740 DE	58 29.92 S	29 59.89 E	GPS	T7	190	5438
X37	021393	1709 DE	58 08.01 S	30 00.97 E	GPS	T7	640	5445
X38	021393	1821 DE	57 55.30 S	30 00.79 E	GPS	T7	420	5453
X39	021493	0146 DE	57 29.68 S	29 59.93 E	GPS	T6	470	5453
X40	021493	0235 DE	57 19.75 S	30 00.13 E	GPS	T7	660	5460
X41	021493	0332 DE	57 08.23 S	30 00.13 E	GPS	T7	750	5468
X42	021493	1149 DE	56 48.51 S	30 00.14 E	GPS	T7	800	5468
X43	021493	1222 DE	56 40.94 S	30 00.04 E	GPS	T6	480	5460
X44	021493	1310 DE	56 29.89 S	30 00.33 E	GPS	T6	440	5464
X45	021493	1902 DE	56 08.40 S	30 01.07 E	GPS	T6	480	5468
X46	021493	1935 DE	56 00.76 S	30 01.37 E	GPS	T6	450	5468
X47	021493	2019 DE	55 50.75 S	30 01.05 E	GPS	T6	480	5468
X48	021593	0528 DE	55 28.86 S	30 00.05 E	GPS	T7	750	5468
X49	021593	0630 DE	55 15.03 S	30 00.07 E	GPS	T6	230	5468

XBT NBR	DATE	TIME UTC CODE	POSITION LATITUDE	LONGITUDE	CODE	PROBE TYPE	MAX DEPTH (m)	BOTTOM DEPTH (m)
X50	021593	0702 DE	55 07.73 S	30 00.34 E	GPS	T7	600	5475
X51	021593	1325 DE	54 50.53 S	30 00.30 E	GPS	T7	760	5490
X52	021593	1411 DE	54 40.38 S	29 59.89 E	GPS	T6	500	5498
X53	021593	1457 DE	54 30.41 S	29 59.99 E	GPS	T6	480	5505
X54	021693	0543 DE	54 02.51 S	29 59.75 E	GPS	T6	440	5498
X55	021693	0941 DE	53 53.19 S	30 00.49 E	GPS	T6	440	5505
X56	022893	1306 DE	53 20.48 S	30 00.37 E	GPS	T7	800	4883
X57	022893	1407 DE	53 09.98 S	30 00.54 E	GPS	T7	800	5535
X58	030193	1120 DE	52 37.41 S	30 00.26 E	GPS	T6	260	4320
X59	030193	1219 DE	52 29.52 S	30 00.25 E	GPS	T6	480	4598
X60	030293	1030 DE	51 25.46 S	30 00.31 E	GPS	T7	320	4605
X61	030393	2320 DE	50 10.08 S	30 01.45 E	GPS	T7	280	4733
X62	030593	2001.DE	49 29.90 S	30 00.59 E	GPS	T7	760	5708
X63	030693	0204 DE	49 09.17 S	30 00.58 E	GPS	T7	780	4275
X64	030693	1055 DE	48 49.88 S	30 01.43 E	GPS	T7	560	3233
X65	030693	1137 DE	48 39.25 S	30 00.01 E	GPS	T7	600	4208
X66	030693	1839 DE	48 20.51 S	30 00.28 E	GPS	T7	710	4793
X67	030693	1936 DE	48 10.42 S	30 00.17 E	GPS	T7	740	4830
X68	030793	0549 DE	47 48.82 S	30 00.07 E	GPS	T7	700	5288
X69	030793	0639 DE	47 40.24 S	30 00.22 E	GPS	T7	460	5115
X70	030793	1340 DE	47 18.07 S	30 00.13 E	GPS	T7	790	4665
X71	030793	1414 DE	47 09.94 S	30 00.09 E	GPS	T7	760	4403
X72	030793	2140 DE	46 50.27 S	30 00.08 E	GPS	T7	750	4680
X73	030893	0351 DE	46 30.52 S	29 59.41 E	GPS	T7	760	4635
X74	030893	1145 DE	46 10.29 S	30 00.02 E	GPS	T7	760	4635
X75	030893	1947 DE	45 49.70 S	30 00.16 E	GPS	T7	800	5145
X76	030993	0540 DE	45 30.16 S	30 00.01 E	GPS	T7	800	5813
X77	030993	1222 DE	45 08.40 S	29 59.98 E	GPS	T7	700	5160
X78	030993	1824 DE	45 00.18 S	29 59.66 E	GPS	T7	800	5340
X79	030993	2123 DE	44 50.43 S	30 00.00 E	GPS	T7	800	5168
X80	030993	2209 DE	44 39.82 S	30 00.10 E	GPS	T7	760	5145
X81	031093	0703 DE	44 20.17 S	30 00.13 E	GPS	T7	740	5408
X82	031093	0749 DE	44 09.91 S	30 00.09 E	GPS	T7	750	5490
X83	031093	1912 DE	43 31.06 S	30 03.73 E	GPS	T7	750	5130
X84	031093	2119 DE	42 59.53 S	30 07.43 E	GPS	T7	690	5760
X85	031093	2243 DE	42 38.47 S	30 09.40 E	GPS	T7	780	5370
X86	031093	2356 DE	42 19.93 S	30 11.42 E	GPS	T7	680	5243
X87	031193	0116 DE	41 59.52 S	30 13.96 E	GPS	T7	770	5228
X88	031193	0308 DE	41 30.36 S	30 15.53 E	GPS	T7	790	4718
X89	031193	0503 DE	41 00.18 S	30 15.23 E	GPS	T7	770	4530
X90	031193	0701 DE	40 30.28 S	30 18.35 E	GPS	T7	740	4688
X91	031193	0834 DE	40 07.80 S	30 21.95 E	GPS	T7	700	4815
X92	031193	0953 DE	39 49.91 S	30 24.46 E	GPS	T7	750	4740
X93	031193	1121 DE	39 30.29 S	30 26.66 E	GPS	T7	640	4575
X94	031193	1352 DE	39 00.00 S	30 29.60 E	GPS	T7	800	4680
X95	031193	1628 DE	38 27.95 S	30 29.42 E	GPS	T7	610	4133

XBT NBR	DATE	TIME UTC CODE	POSITION LATITUDE	LONGITUDE	CODE	PROBE TYPE	MAX DEPTH (m)	BOTTOM DEPTH (m)
X96	031193	1837 DE	38 00.36 S	30 28.10 E	GPS	T7	600	4200
X97	031193	2058 DE	37 30.23 S	30 30.08 E	GPS	T7	830	4275
X98	031193	2324 DE	37 00.00 S	30 32.61 E	GPS	T7	790	4433
X99	031293	0158 DE	36 30.26 S	30 36.03 E	GPS	T7	820	4515
X100	031293	0425 DE	35 59.84 S	30 39.47 E	GPS	T7	750	4538
X101	031293	0639 DE	35 30.02 S	30 42.62 E	GPS	T7	860	4478
X102	031293	0918 DE	34 53.68 S	30 44.48 E	GPS	T7	800	4395
X103	031293	1128 DE	34 21.67 S	30 45.28 E	GPS	T7	830	4208
X104	031293	1307 DE	33 57.98 S	30 48.48 E	GPS	T7	810	3930
X105	031293	1507 DE	33 27.74 S	30 54.16 E	GPS	T7	790	3848
X106	031293	1658 DE	33 02.38 S	30 59.22 E	GPS	T6	510	3773
X107	031293	1856 DE	32 35.86 S	30 59.03 E	GPS	T6	520	3578
X108	031293	2119 DE	32 01.20 S	30 58.18 E	GPS	T6	410	3248
X109	031293	2336 DE	31 29.62 S	30 59.92 E	GPS	T6	500	2918
X110	031393	0204 DE	31 00.02 S	31 04.03 E	GPS	T6	490	2993
X111	031393	0432 DE	30 30.68 S	31 06.05 E	GPS	T6	500	1845
X112	031393	0654 DE	30 00.54 S	31 09.00 E	GPS	T6	370	390

Major Problems encountered during the cruise.

Several technical problems arose during the cruise and a sanitary evacuation imposed to go directly to Durban when the ship was at 54S. Twelve days were lost and the section expected to be occupied was not entirely completed.

When the cast was at a depth greater than 4500/5000m the General Oceanics rosette presented a malfunctioning from time to time: either there was no back signal but the bottle closed, or there was a back signal but the bottle did not close, or there was a double-trigging of the bottles. Although the tension of the trigging lanyards was reduced this problem remained until the end of the cruise for the deep casts.

We had problems with the pumps of the "Autosal" salinometer, although this apparatus was new, especially when the sea was rough: it was difficult or at least very long to fill the cell with seawater. The instrument was disassembled and the cell was cleaned and the pumps were checked. Nevertheless the problem was not entirely resolved.

We also had a problem with the winch, the wheel of which broke down; it was repaired but the cheeks were not exactly parallel and the wire could not be rewound well and the deep casts took a longer time than usually.

TABLE 2: Cruise participants

Name	Responsibility	Affiliation
POISSON Alain	Chief Scientist	LPCM/UPMC
CHARRIAUD Edwige	CTD, XBT	LOP/MNHN
BOUFFARD Brice	CTD, Salinity	LODYC/UPMC
KESTENARE Elodie	CTD	LODYC/UPMC
DOUCELANCE R gis	Sampling	LODYC/UPMC
SARAGONI Gilles	Sampling	LODYC/UPMC
LACAZE Thomas	Sampling	LODYC/UPMC
NIZARD Ga lle	Salinity, Oxygen	LPCM/UPMC
HUCK Thierry	CTD, Salinity	LPO/UBO
LOUANCHI Ferial	Data managing	LPCM/UPMC
BROTONS Pascal	Oxygen	LPCM/UPMC
MANGALO Raymond	Oxygen	LPCM/UPMC
LEROUX M-Madeleine	Oxygen	LPCM/UPMC
SCHAUER Bernard	CFCs	LPCM/UPMC
REVERT Ludovic	CFCs	LPCM/UPMC
THOMAS Fabienne	CFCs	LPCM/UPMC
ESCALIER Jocelyne	Nutrients	GRGS/CNES
LEMOINE Jean-Michel	Nutrients	GRGS/CNES
SARTHOU G raldine	Nutrients	GRGS/CNES
BOURGOIN Pascal	TCO2/coulometry	LPCM/UPMC
CLAVEL Olivier	TCO2/coulometry	LPCM/UPMC
RAILLON Rapha le	TCO2/coulometry	LPCM/UPMC
BRUNET Christian	AT+TCO2/potentiometry	LPCM/UPMC
CABON Suzane	AT+TCO2/potentiometry	LPCM/UPMC
MAURICE Laurence	AT+TCO2/potentiometry	LPCM/UPMC
BLANC Christine	pCO2	LPCM/UPMC
YIOU Pascal	C14+He/Tritium	LMCE/CEA
PICOT Gabriel	Sampling	LPCM/UPMC
LAGARDE Jean-Philippe	Sampling	LPCM/UPMC
MORTIER Laurent	Sampling	LPCM/UPMC
OLLIVIER Bernard	Hardware, electronics	IFRTP
BOUCHARD Olivier	Software	IFRTP
KLEIN Christophe	Electronics	IFRTP

Measurement Techniques and Calibrations.

Salinity

(M. Fieux and T. Huck)

Salinities were measured with a Guildline Autosal Model 8400B Laboratory salinometer. It was calibrated for each set of measurements (about daily) with IAPSO Standard Seawater batch P-121. The cell was rinsed and filled with distilled water after each set of measurements. Before the standardization, the cell was rinsed at least ten times with seawater from previous set of samples, then at least 3 times with Standard Seawater and 5 measurements were made on this Standard Seawater in order to calibrate the instrument. The cell was rinsed 3 times between each sample and 3 measurements were made; All the measurements were made between 24 and 48H after the samplings. The reported salinity data are the arithmetic means of the 3 measurements.

The apparatus was located in a laboratory container, the temperature of which was stabilized at about 1°C below the temperature of the salinometer water bath. This was 18°C when the atmospheric temperature was low and 21°C when the outside temperature was greater than about 15°C. At each station at least 2 or 3 duplicate samples were collected; the differences of the two measurements are shown in Table 4.

The samples were collected in IAPSO bottles which were stored in the same laboratory container at least 10 hours before the measurements.

Oxygen:

(B. Schauer)

An automated potentiometric titration system (Mettler DL21) was used to measure oxygen on the samples collected in all the Niskin bottles, according to the Winkler method revised by Carpenter (1969). Samples were collected in special Pyrex flasks with a grounded stopper designed in such a way that approximately a volume equivalent to the one of the titrant to add was preserved for the titration. The flask was rinsed three times with seawater and filled in order to overflow three times its volume. The concentration of the titrant ($Na_2S_2O_3{,}5H_2O$) was measured with a potassium iodate (KIO_3) solution prepared by weight in a shore based laboratory before the cruise and stored in recycled standard seawater ampoules. Duplicate measurements were made on several samples; the differences are shown in Table 4.

Nutrients:

(J.F. Minster and J. Escalier)

The measurements of nutrients were made using two automatic Technicon AAII analysers.

Nitrates were reduced according to the Woods method (1967), adapted to the automatic systems by Grasshof (1983) and Tr guer and Le Corre (1974). Nitrites obtained are titrated with the colorimetric technique described by Benschreider and Robinson (1952). The cadnium column was a U-shaped Pyrex tube filled with Cd granulates whose diameters were 0.315 and 0.715 _m; the reduction occurred at room temperature.

Phosphates were measured using the Murphy and Riley method (1962), modified by Tr guer (1976); The reaction occurred at 37°C.

Silicates were measured according to the Mullin and Riley technique (1962) revised by Grasshoff (1983) and Treguer (1976); the reaction occurred at 37°C.

Samples were collected in 125 ml prolypropylene flasks after three rinsings. Analyses were performed immediately after the sampling of the water.

Replicate samples were taken at all the stations The difference between the two measurements are shown in Table 4.

Standard solutions were prepared by diluting NO_3, PO_4 and SiO_2 standards with surface seawater collected near la R union island, filtered on 0.45 _m filter and stored at room temperature.

- NO_3 standard was a 5000 µmol/kg KNO_3 solution
- PO_4 standard was a 500 µmol/kg KH_2PO4 solution
- SiO_2 standard was a 17000 µmol/kg Na_2SiO_3 solution.

Concentrations of standard solutions (mmol/litre):

	Sdt 0	**Sdt 1**	**Sdt 2**	**Sdt 3**	**Sdt4**
NO3	0	5	10	20	30
PO4	0	0.5	1	2	3
SiO2	0	34	85	136	170

Wavelength for NO3 : 540 nm
PO4 : 880 nm
SiO2 : 660 nm

length of the cell for NO3 : 1.5 / 50 mm
PO4 : 2 / 50 mm
SiO2 : 1.5 / 1.5 mm

CFC-11 and CFC-12
(B. Schauer):

The measurement of CFC-11 (trichlorofluoromethane) and CFC-12 (dichloro- difluoromethane) were performed by a Shimadzu GC8A electron -capture gas chromatograph, according to the method described by Bullister and Weiss (1988); The peacks were integrated using a Spectra Physics SP4920 integrator during the measurements; they will be checked in a shore-based laboratory using the Winner programme.

Seawater was collected in 100 ml glass syringes, with a metal tap, directly on the Niskin bottles when the rosette arrived on the deck. The Niskin bottles were previously cleaned with Decon detergent and the O-rings and taps were cleaned and put in an oven under low pressure at 60°C during 24H. The syringes were stored in an open tank where a flow of surface water was continuously running. All the measurements were done in the 5 hours following the samplings.

The ECD detector signal was calibrated at each station with an air from Kerguelen Island, whose CFC-11 and CFC-12 concentrations (close to the ones in seawater) were previously calibrated relatively to SIO standards with a precision of 0.5% for both the CFC.

The precision of the method was tested at station 12 and duplicate samples were collected at all the stations. the results of these measurements are shown in Table 3 and Table 4 respectively. At station 12, measurements were made on 9 Niskin bottles; the precision were 0.4% for CFC-11 and 1.1% for CFC-12, including the blank correction which was not taken into account for all these preliminary data. The signals were checked using Winner program in a base laboratory after the cruise.

TABLE 3: Replicate measurement of CFC-11 and CFC-12 in surface water at station 12.

depth (m)	**CFC-11 (µmol/kg)**	**CFC-12 (µmol/kg)**
10	7,297	3,075
10	7,367	3,030
10	7,334	3,027
10	7,375	3,002
10	7,386	3,079
10	7,359	3,022
10	7,369	3,010
10	7,360	3,002
10	7,353	2,977
mean	7,356	3,025
std dev	0,36%	1,11%

Total Alkalinity, TA_p and Total Inorganic Carbon, $TCO2_p$
(C. Brunet)**:**

Samples were collected in 500 ml Pyrex flasks with a screw stopper; the flask was rinsed twice with seawater and filled in order to overflow twice its volume.

A potentiometric titration derived from the method developed by Edmond (1970) was used to estimate Total Inorganic Carbon ($TCO2_p$) and Total Alkalinity (TA_p). The titration system was composed of a Radiometer ABU 80 burette, a Radiometer PHM80 pH meter and a PC/AT Tandon micro-computer to drive the burette and record the data. The titration curve was used as recommended in the US Department of Energy report (DOE, 1991) to determine TCO2 and TA. The acid (HCl, 0.1N) used for the titration was calibrate once or twice a day with the Reference Material prepared by A. Dickson from Scripps Institution for the JGOFS programme. The measurements were made between 12 and 48H after the sampling.

To test the precision of the method, replicate samples were taken at all the stations The difference between the two measurements are shown in Table 4. Another way to estimate the precision of the measurements is to calculate the regression curve of TCO2 versus potential temperature in deep water. the calculation was made on the 460 samples whose temperature is between -0.8°C and 0.4°C; 14 data of TA and 22 of TCO2 were rejected because very far from the regression curve. This is possibly due to bad samplings or any problem during the titration. The standard deviation was 2.4µeq./kg for TA and 3.7 µmol/kg for TCO2.

Total Inorganic Carbon,$TCO2_c$
(B. Schauer)**:**

Samples were collected in 500 ml Pyrex flasks with a screw stopper; the flask was rinsed twice with seawater and filled in order to overflow twice its volume.

A coulometric titration described by Johnson et al (19) was used with a 5011 UIC Coulometrics coulometer. Phosphoric acid was used for the titration and nitrogen for the bubbling in the stripper. A micro-computer drive the coulometer and the device used for the titration.

The calibration of the method was made using sodium carbonate solutions prepared under nitrogen atmosphere whose concentrations were between 0 and 2200 mmol/kg.

To test the precision of the method, replicate samples were taken at all the stations The difference between the two measurements are shown in Table 4.

CTD

The pressure and temperature sensors of the CTD probe were calibrated at the IFREMER standard laboratory in Brest before the cruise. As the CTD was used also by the cruise following CIVA-1 (ANTARES-1) on board the Marion Dufresne, the probe was calibrated a second time in the same laboratory after the cruise

Conductivity and oxygen sensors were calibrated using salinity and oxygen concentrations measured on the Niskin bottles of the rosette.

TABLE 4: Differences of replicate measurements.

STN NBR	uncorrected depth (m)	SALNTY PSS-78	OXYGEN MOL/KG	SILICAT MOL/KG	NITRAT MOL/KG	PHSPHT MOL/KG	CFC-11 pMOL/KG	CFC-12 pMOL/KG	TA mEQ/KG	TCO2 p mMOL/KG	TCO2 c mMOL/KG
2	250	0,000	0,2	4,63	0,07	0,04	0,001	0,016	0,001	0,004	0,008
3	255	0,000		0,76	0,14	0,02	0,059	0,001			0,001
3	1255	0,000	1,9	0,00	0,00	0,00	0,004	0,009	0,008	0,002	0,008
4	250	0,002	0,5	0,00	0,14	0,12	0,028	0,009	0,059	0,055	0,017
4	2177	0,000	0,2	0,00	0,14	0,02	0,393	0,028	0,000	0,005	0,003
5	250	0,002	0,5	0,00	0,00	0,05	0,056	0,036	0,001	0,010	0,001
5	3055	0,005	2,1	1,67	0,29	0,03	0,008	0,005	0,000	0,010	0,003
6	250	0,002	1,1	0,84	0,00	0,00	0,011	0,006	0,006	0,011	0,002
7	250	0,002	0,3	1,64	0,17	0,01	0,041	0,009	0,014	0,018	0,001
7	1600	0,002	1,5	0,82	0,00	0,03	0,000	0,011			0,001
8	250	0,004	0,2	0,81	0,00	0,00	0,013	0,008	0,004	0,005	0,000
8	1300	0,001	0,2	1,56	0,00	0,00	0,015	0,012	0,003	0,008	0,003
8	3987	0,001	0,4	1,55	0,00	0,01	0,035	0,008	0,012	0,001	0,001
9	250	0,003	0,8	0,00	0,00	0,05	0,070	0,023	0,003	0,001	0,000
9	1600	0,002	0,0	0,80	0,15	0,00	0,045	0,038	0,007	0,006	0,005
10	250	0,000	0,8	0,00	0,13	0,09	0,034	0,010	0,000	0,007	0,002
10	1350	0,001	1,5	0,81	0,13	0,01			0,006	0,002	0,004
10	4000	0,004	2,3	0,80	0,06	0,02	0,214	0,077	0,004	0,018	0,001
11	1600	0,000	0,2	0,00	0,13	0,02	0,001	0,002	0,004	0,005	0,001
12	250	0,004	1,1	0,00	1,41	0,02	0,066	0,015	0,000	0,007	0,009
12	1350	0,001	0,3	2,46	0,16	0,00	0,005	0,003	0,003	0,006	0,003
12	3000	0,001	0,1	0,00	0,00	0,02	0,009	0,011	0,009	0,009	0,000
13	250	0,001	1,1	0,92	0,16	0,00	0,008	0,026			0,002
13	1600	0,000	0,2	1,38	0,08	0,02	0,000	0,007	0,012		0,003
13	4000	0,002	2,8	2,20	0,23	0,19	0,017	0,014	0,007	0,007	0,003
14	250	0,000	0,1	0,00	0,00	0,03	0,031	0,009	0,000	0,002	0,001
14	1350	0,000	0,8	0,00	0,00	0,00	0,005	0,021	0,002	0,002	0,001
14	4000	0,002	1,8	7,67	0,00	0,02	0,178	0,080	0,001	0,018	0,001
15	250	0,000	0,5	0,00	0,00	0,02	0,005	0,004	0,001	0,002	0,003

STN NBR	uncorrected depth (m)	SALNTY PSS-78	OXYGEN MOL/KG	SILICAT MOL/KG	NITRAT MOL/KG	PHSPHT MOL/KG	CFC-11 pMOL/KG	CFC-12 pMOL/KG	TA mEQ/KG	TCO2 p mMOL/KG	TCO2 c mMOL/KG
15	1600	0,002	0,2	0,84	0,00	0,00	0,009	0,010	0,001	0,003	0,002
16	250	0,001	0,0	0,00	0,00	0,00	0,017	0,010	0,001	0,001	0,005
16	1350	0,000	3,1	0,42	0,00	0,02	0,024	0,013	0,000		0,004
16	4000	0,000	0,4	0,00	0,00	0,00		0,003	0,002	0,014	0,012
17	250	0,000	0,7	0,00	0,00	0,00	0,006	0,007			0,002
17	1600	0,000	0,1	0,85	0,09	0,00	0,001	0,001	0,003	0,004	0,004
18	250	0,000	0,1	2,17	0,00	0,01	0,002	0,032	0,003	0,000	0,002
18	1350	0,001	0,1	1,73	0,00	0,01	0,012	0,020	0,001	0,005	0,003
18	4000	0,001	0,3	1,73	0,00	0,01	0,114	0,042	0,012	0,001	0,001
19	250	0,001	0,8	0,41	0,00	0,03	0,019	0,027	0,001	0,001	0,001
19	1600	0,002	0,3	0,83	0,08	0,04	0,035	0,020	0,003	0,033	0,005
20	250	0,003	0,7	0,81	0,15	0,03	0,001	0,010	0,000	0,000	0,001
20	1350	0,000	0,4	0,00	0,08	0,02	0,000	0,005	0,001	0,007	0,006
20	4000	0,000	0,5	0,82	0,15	0,02	0,006	0,019	0,000	0,001	0,025
21	250	0,002	0,4	0,82	0,23	0,02	0,064	0,012			0,001
21	1600	0,007	0,1	0,82	0,07	0,02	0,000	0,000	0,002	0,001	0,003
22	250	0,001	0,2	0,00	0,00	0,00	0,035	0,024	0,002	0,005	0,002
22	1350	0,000	0,6	0,84	0,07	0,01	0,041	0,033	0,001	0,001	0,001
23	250	0,002	0,2	0,41	0,00	0,01	0,006	0,010	0,003	0,001	0,000
23	1600	0,001	0,7	0,00	0,00	0,00	0,008	0,007	0,001	0,004	0,045
24	250	0,011	2,4	2,08	0,16	0,02	0,123	0,062			0,001
24	1350	0,000	0,5	0,41	0,00	0,02	0,029	0,005	0,005	0,001	0,003
25	250	0,006		0,00	0,00	0,01	0,062	0,021	0,000	0,004	0,000
25	1600	0,000	0,2	0,00	0,00	0,00	0,004	0,004	0,000	0,006	0,002
26	250	0,000	0,7	0,00	0,08	0,01	0,006	0,002	0,001	0,002	0,004
26	1350	0,002	0,1	0,42	0,00	0,01	0,016	0,034	0,004	0,003	0,003
27	250	0,000	1,1	0,00	0,08	0,00	0,091	0,001	0,002	0,000	0,006
27	1600	0,001	0,3	0,00	0,00	0,00	0,007	0,014	0,000	0,001	0,014
28	250	0,002	1,2	0,00	0,00	0,01	0,032	0,042	0,002	0,002	0,033
28	1350	0,000	0,7	0,43	0,00	0,03	0,030	0,054	0,004	0,002	0,001
29	250			2,82	0,40	0,05	0,558	0,264	0,003	0,002	0,007

STN NBR	uncorrected depth (m)	SALNTY PSS-78	OXYGEN MOL/KG	SILICAT MOL/KG	NITRAT MOL/KG	PHSPHT MOL/KG	CFC-11 pMOL/KG	CFC-12 pMOL/KG	TA mEQ/KG	TCO2 p mMOL/KG	TCO2 c mMOL/KG
29	1600	0,001	0,2	0,00	0,00	0,02	0,005	0,031	0,004	0,003	0,003
30	250	0,002	0,6	0,00	0,08	0,00	0,061	0,013	0,001	0,000	0,003
30	4000	0,000	0,0	0,90	0,08	0,00	0,006	0,006	0,003	0,004	0,001
31	250	0,001	0,4	0,00	0,00	0,00	0,011	0,018	0,002	0,003	0,003
31		0,000	0,5	0,00	0,00	0,00	0,033	0,000	0,013	0,029	0,011
32	250	0,001	0,1	0,00	0,00	0,01	0,063	0,044	0,001	0,008	0,002
32	1350	0,001	1,2	0,42	0,07	0,01	0,048	0,009	0,001	0,003	0,001
32	4000	0,000	0,4	0,84	0,22	0,00	0,006	0,021	0,005	0,002	0,004
33	250	0,000	6,1	0,82	0,39	0,03	0,313	0,052	0,003	0,004	0,002
33	1600	0,000	0,2	0,00	0,00	0,03	0,057	0,059	0,005	0,000	0,009
34	250	0,000	0,0	0,42	0,15	0,00	0,043	0,045	0,003	0,015	0,001
34	1350	0,000	0,1	1,26	0,08	0,02	0,033	0,000	0,001	0,002	0,002
35	250	0,000	0,3	0,00	0,08	0,00	0,043	0,004	0,000	0,001	0,003
35	1600	0,000	0,3	0,44	0,08	0,00	0,013	0,000	0,001	0,002	0,005
36	250	0,010	3,7	1,35	0,33	0,00	0,177	0,085	0,001	0,001	0,003
36	1100	0,000	0,5	0,46	0,08	0,01	0,027	0,103	0,001	0,001	0,002
36	3865	0,000	0,4	0,00	0,08	0,00	0,061	0,083	0,002	0,005	0,003
37	250	0,004	1,4	0,91	0,07	0,01	0,000	0,048	0,000	0,003	0,001
37	1600	0,001	0,1	0,00	0,08	0,02	0,022	0,000	0,006	0,003	0,002
38	250	0,000	0,0	0,45	0,00	0,03	0,055	0,010	0,002	0,002	0,001
38	1350	0,001	0,1	0,00	0,07	0,01	0,012	0,040	0,004	0,000	0,002
39	250	0,000	0,3	0,00	0,23	0,01	0,014	0,052	0,002	0,005	0,001
39	1600	0,000		0,00	0,16	0,01	0,054	0,043	0,008	0,001	0,005
40	250	0,002	0,6	0,00	0,00	0,00	0,003	0,004	0,002	0,001	0,002
40	1350	0,002		0,43	0,00	0,05	0,011	0,010	0,001	0,010	0,002
40	3500	0,001	0,2	0,00	0,07	0,00	0,063	0,015	0,005	0,001	0,020
41	250	0,012	3,3	0,00	0,47	0,03	0,144	0,040	0,003	0,002	0,002
41	1600	0,002	0,4	0,89	0,15	0,02	0,008	0,018	0,007	0,006	0,001
42	250	0,004	0,7	0,45	0,08	0,03	0,016	0,049	0,006	0,002	0,001
42	1350	0,001	0,0	0,00	0,39	0,06	0,007	0,084	0,007	0,003	0,002
43	250	0,005	0,6	0,00	0,00	0,05	0,013	0,010	0,005	0,004	0,001

STN NBR	uncorrected depth (m)	SALNTY PSS-78	OXYGEN MOL/KG	SILICAT MOL/KG	NITRAT MOL/KG	PHSPHT MOL/KG	CFC-11 pMOL/KG	CFC-12 pMOL/KG	TA mEQ/KG	TCO2 p mMOL/KG	TCO2 c mMOL/KG
43	1600	0,001	1,0	0,00	0,30	0,00	0,006	0,029	0,000	0,014	0,007
44	250	0,000		0,42	0,00	0,02	0,011	0,011	0,001	0,003	0,001
44	1000	0,001	0,3	0,00	0,31	0,02	0,021	0,034	0,002	0,000	0,008
45	250	0,003	4,0	0,00	1,68	0,07	0,128	0,133			0,004
45	1600	0,000	0,6	0,00	0,00	0,01	0,029	0,034	0,002	0,003	0,000
46	250	0,007	0,5	0,00	0,22	0,03	0,094	0,065	0,002	0,005	0,006
46	1350	0,004	0,4	0,88	0,56	0,05	0,075	0,071	0,000	0,000	0,002
46	4000	0,000	0,6	0,44	0,07	0,00	0,091	0,052	0,001	0,004	0,001
47	250	0,000	0,5	0,00	0,15	0,03	0,002	0,009	0,002	0,002	0,004
47	1000	0,000	3,3	0,44	0,00	0,01	0,034	0,025	0,001	0,001	0,003
47	1600	0,002	8,4	0,88	0,22	0,00	0,000	0,034	0,002	0,002	0,004
48	250	0,005	0,4	0,00	0,15	0,02	0,014	0,035	0,001	0,003	0,003
48	1350	0,005	0,0	0,00	0,00	0,04	0,006	0,027	0,001	0,005	0,005
49	250	0,001	0,2	0,00	0,07	0,00	0,009	0,028	0,000	0,002	0,000
49	1600	0,005	0,1	0,00	0,15	0,03	0,002	0,056	0,001	0,001	0,006
50	250	0,004	0,0	0,52	0,07	0,01	0,005	0,005	0,001	0,004	0,000
50	1350	0,001	0,2	0,54	1,34	0,02	0,016	0,001	0,001	0,003	0,016
51	250	0,000	0,7	0,49	0,00	0,02	0,000	0,008	0,003	0,001	0,002
51	1350	0,001	0,1	0,52	0,00	0,01	0,059	0,010	0,001	0,004	0,002
52	250	0,000	1,8	0,00	0,00	0,00	0,044	0,047	0,003	0,007	0,003
52	1350	0,002	0,4	0,00	0,37	0,06	0,004	0,007	0,003	0,002	0,004
mean		0,002	0,8	0,59	0,13	0,02	0,043	0,027	0,003	0,005	0,004
sdt dev		0,002	1,2	1,00	0,25	0,03	0,077	0,034	0,006	0,007	0,006

Figure 1: Cruise Track

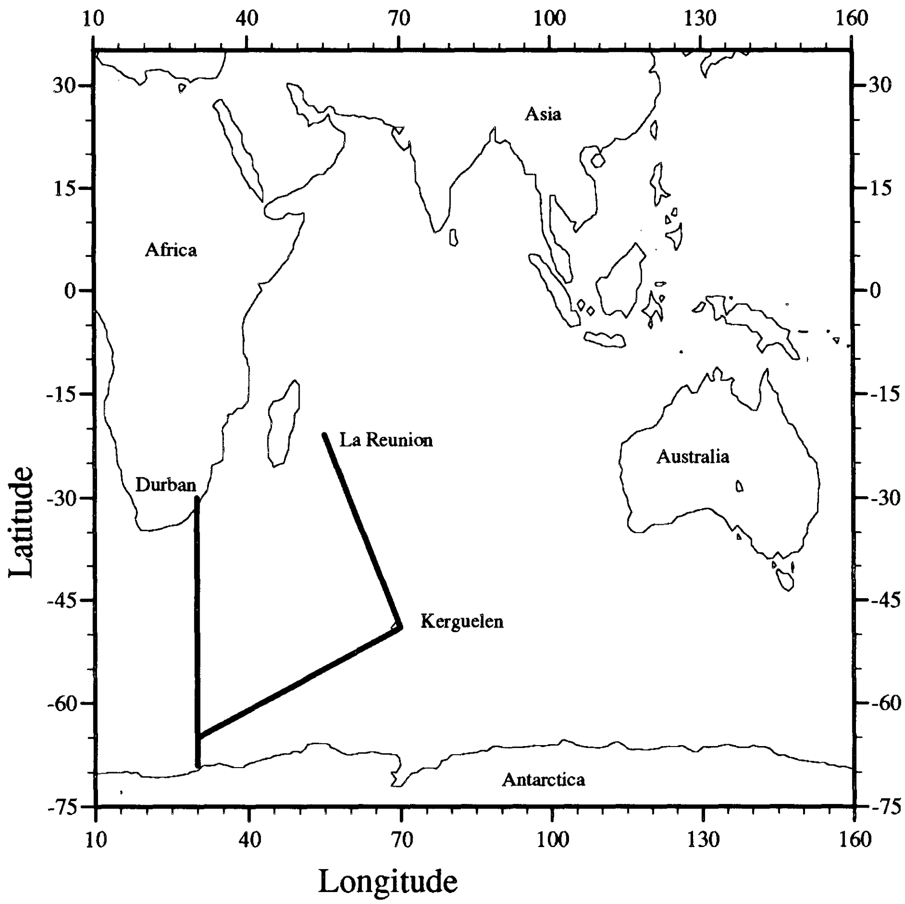
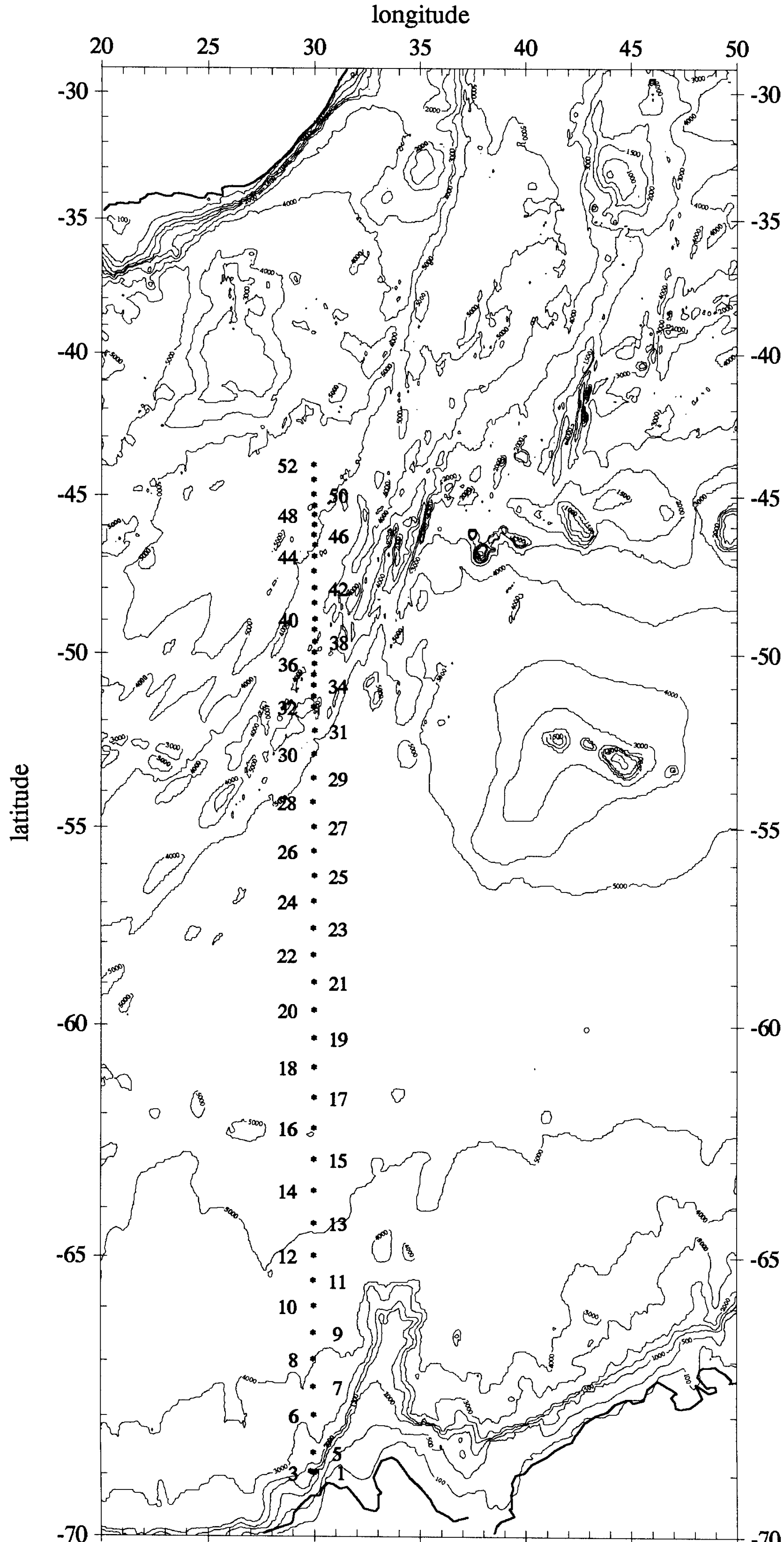
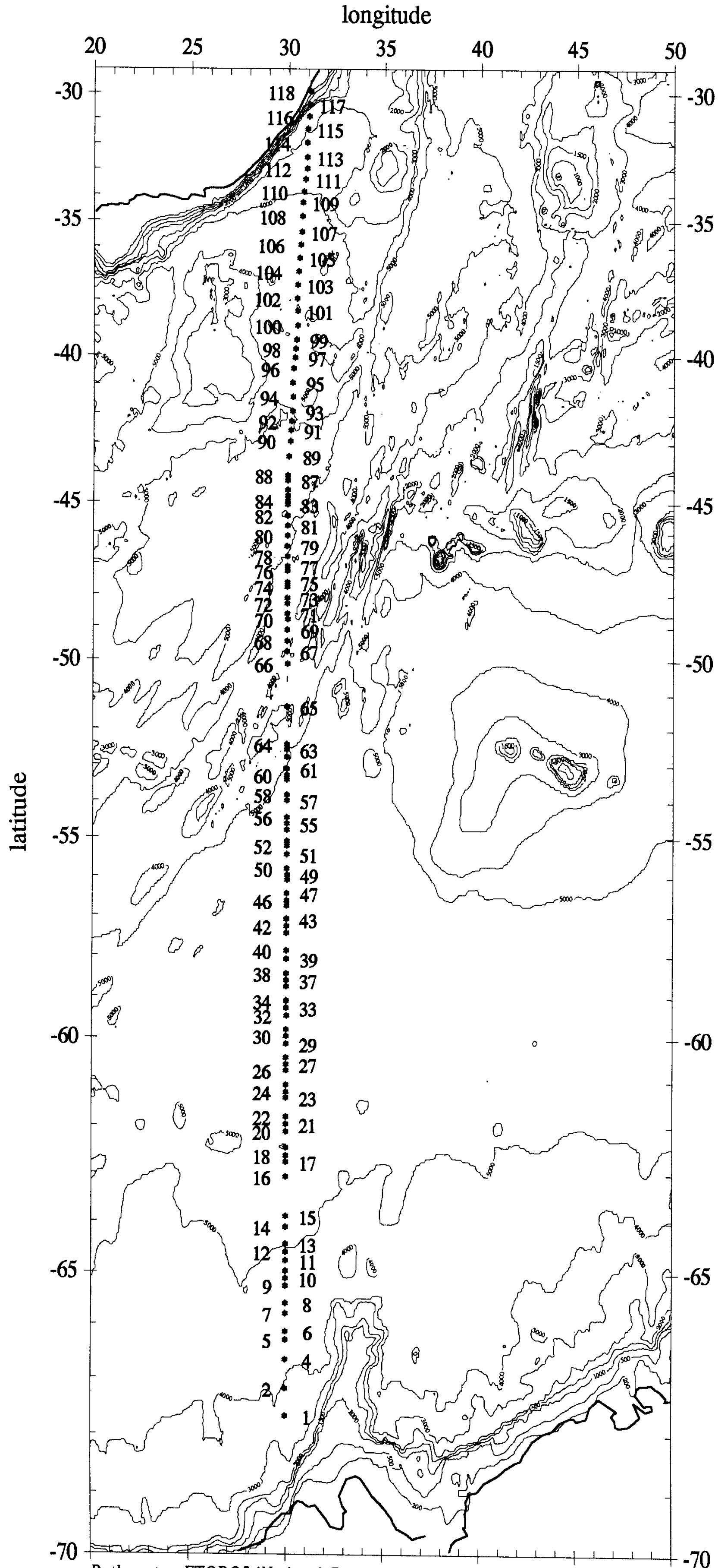


Figure 2:   CTD Stations



Bathymetry: ETOPO5 (National Geographic Data Center)
Mercator projection

Figure 3: XBT Locations



Bathymetry: ETOPO5 (National Geographic Data Center)
Mercator projection

Figure 4:   Location of CTD and XBT Measurements

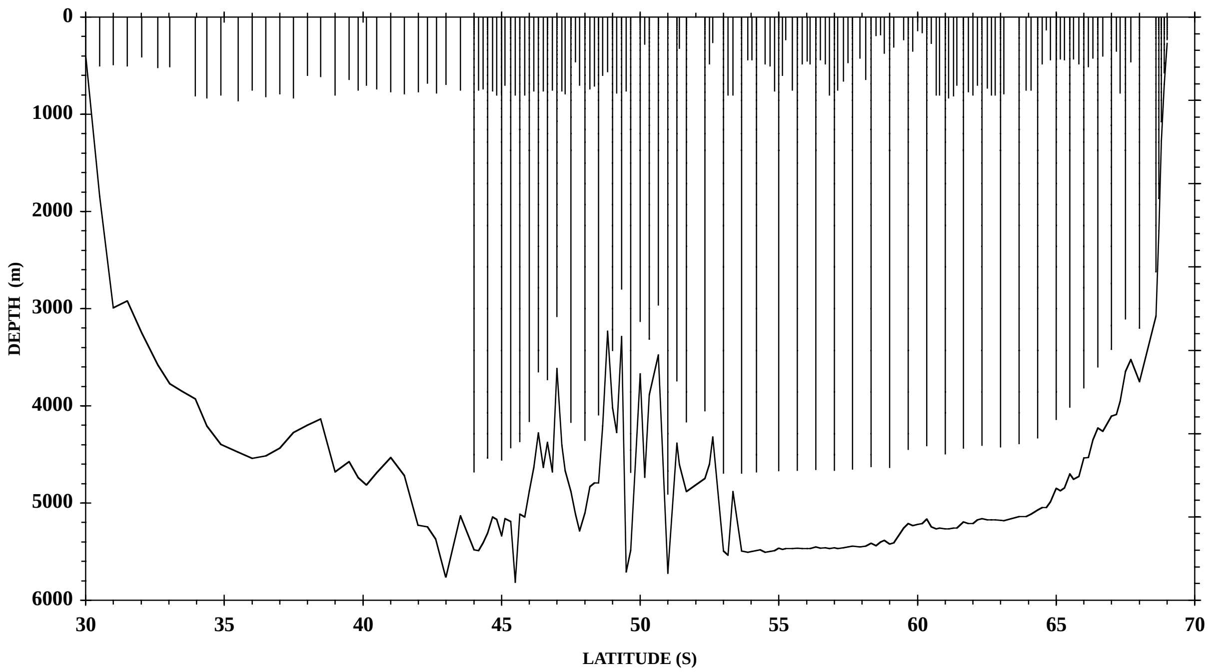


Figure 5a: Location of Salinity, Oxygen, Nutrients, TCO_2, TA, and samples collected during CIVA-1 cruise

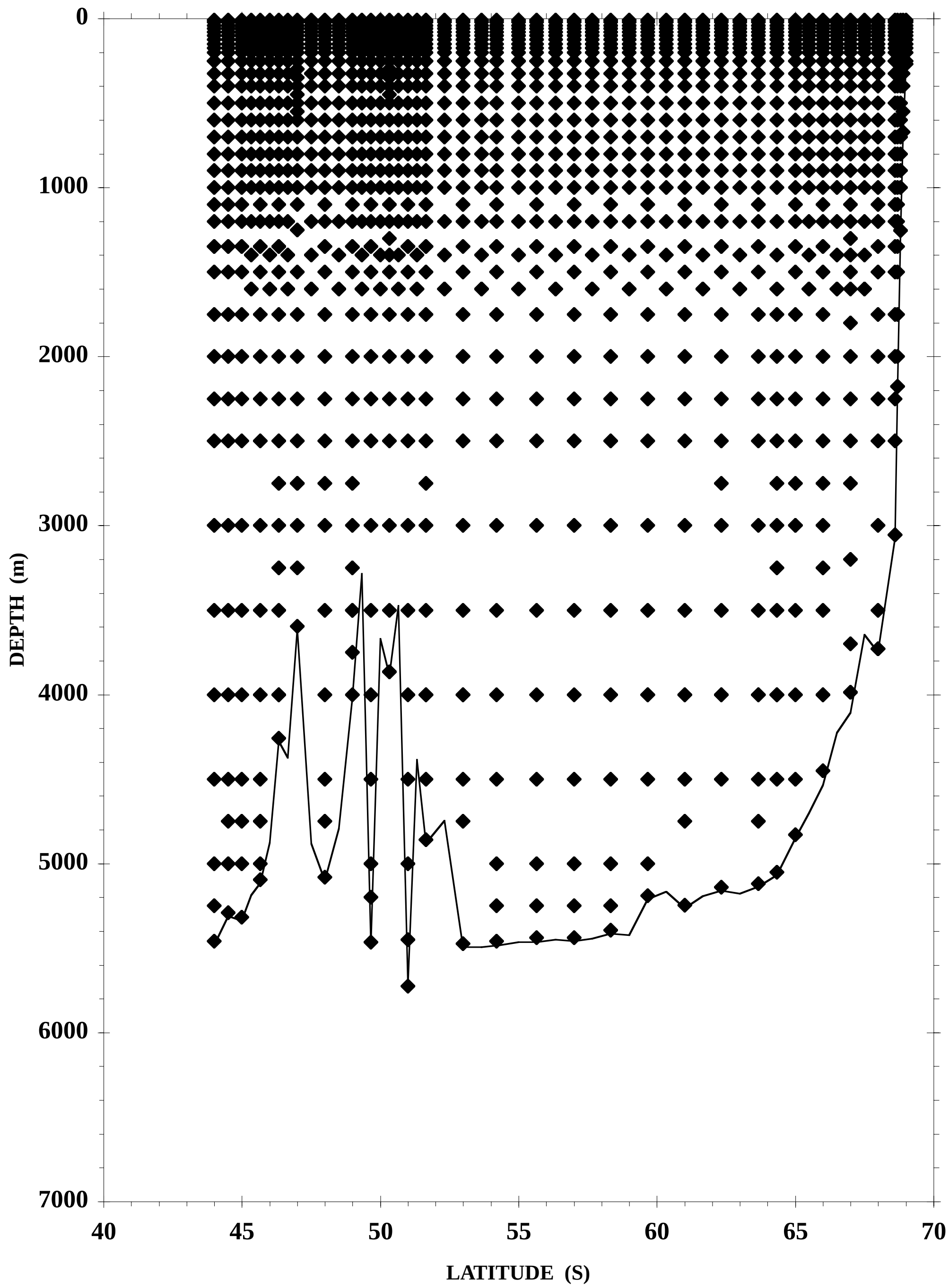


Figure 5b: Location of Tritium/Helium and C14 Samples collected during CIVA-1 cruise

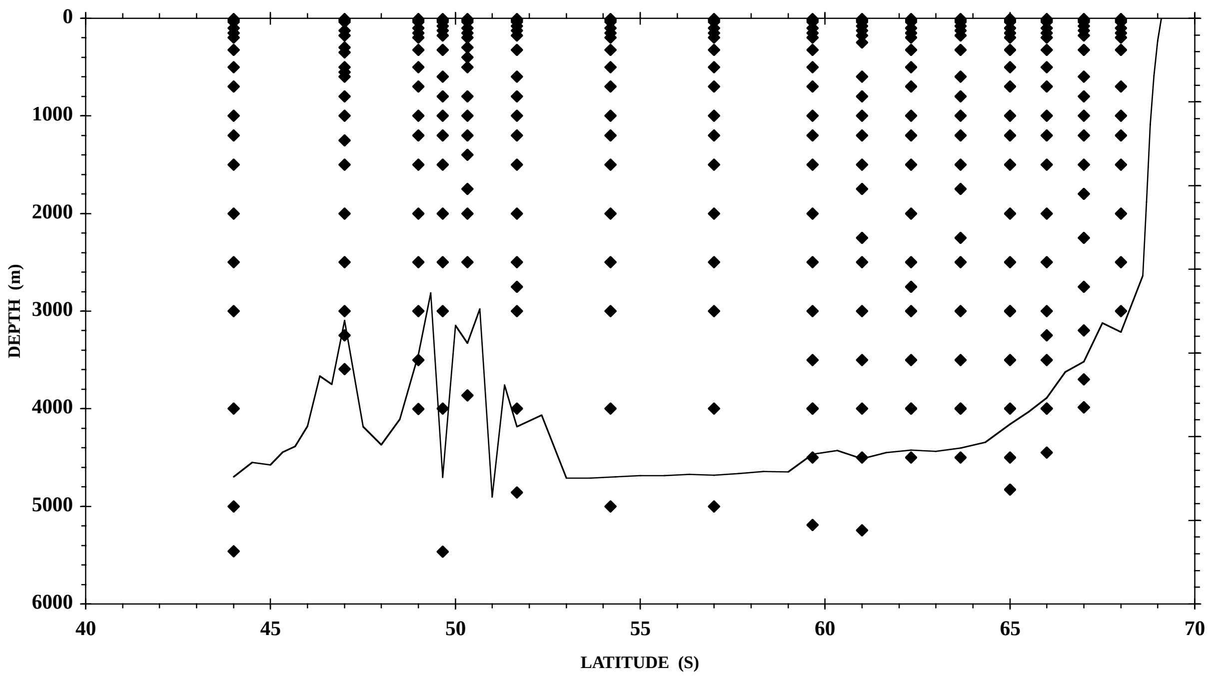


Figure 5c: Location of Oxygen 18 Samples collected during CIV-1 cruise

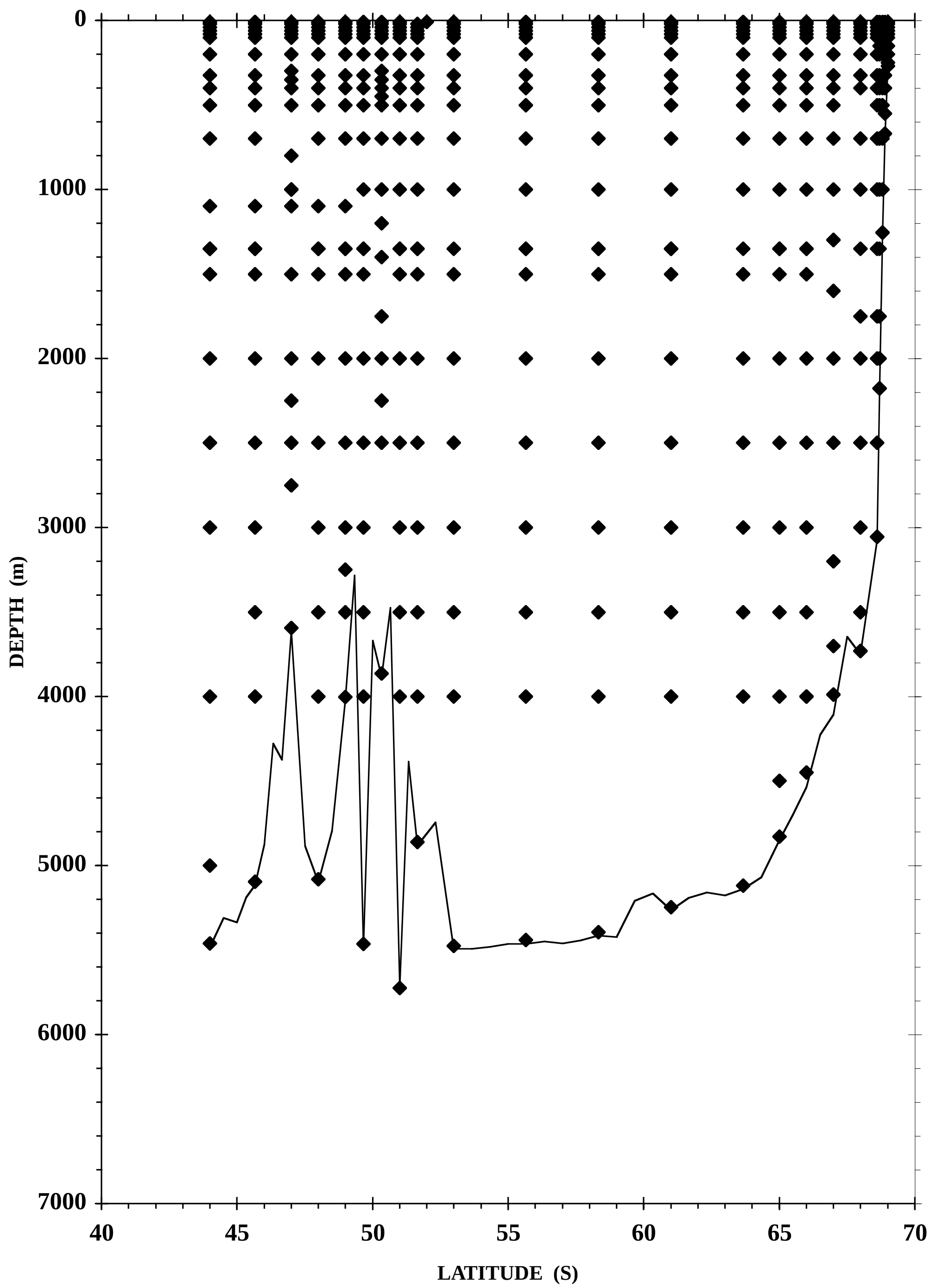


Figure 5d: Location of Carbon-13 Samples collected during CIVA-1 cruise

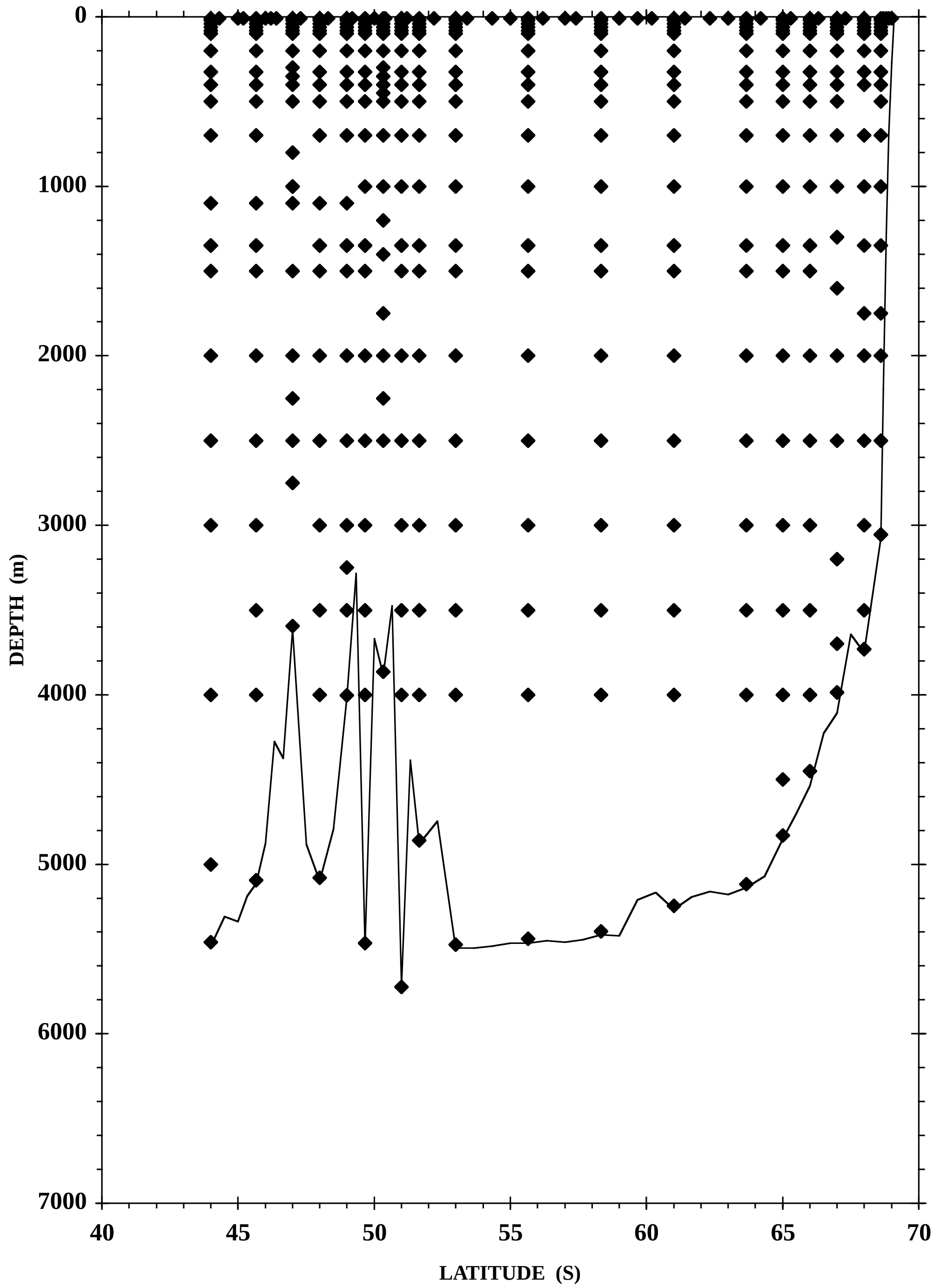
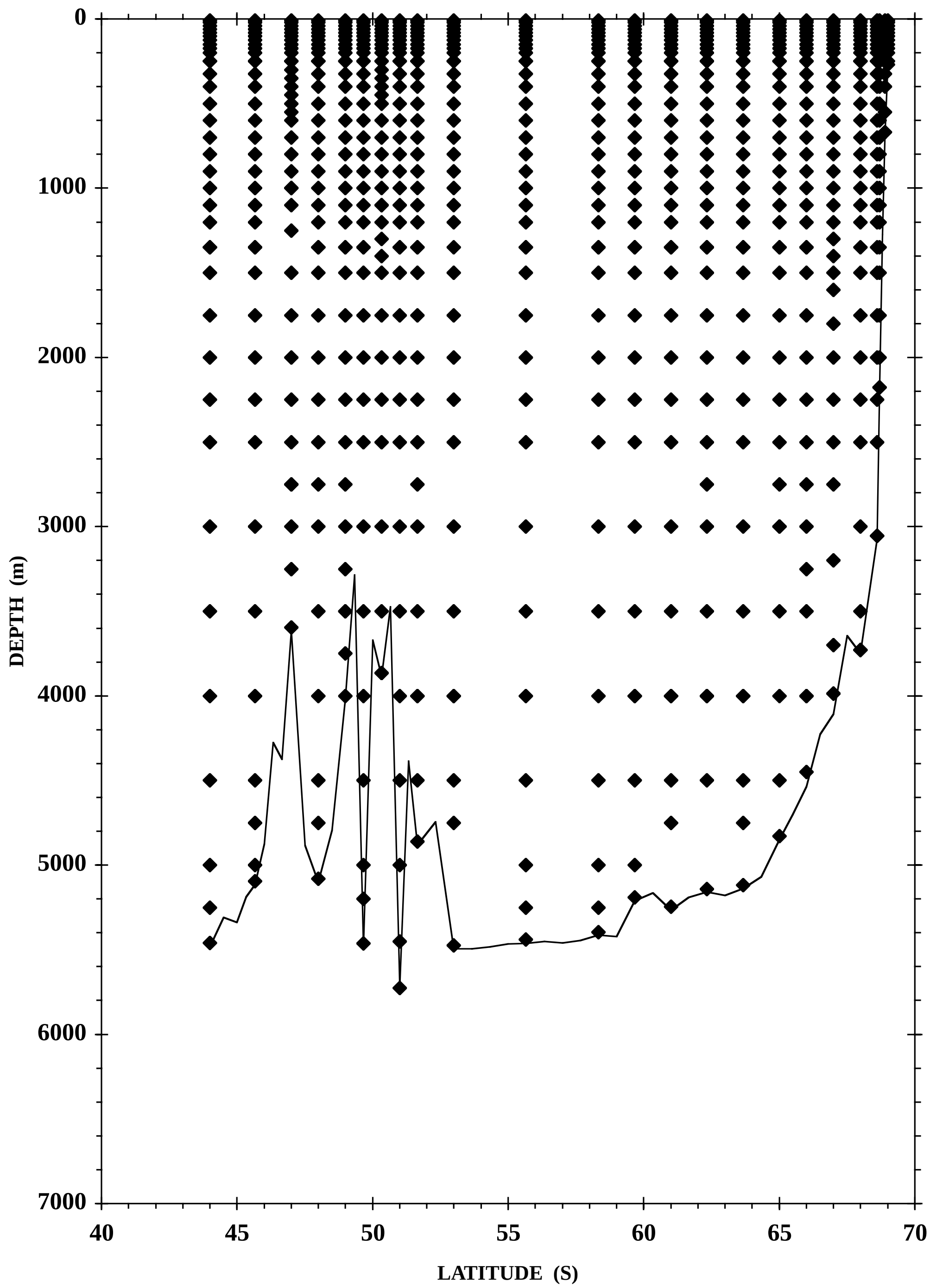
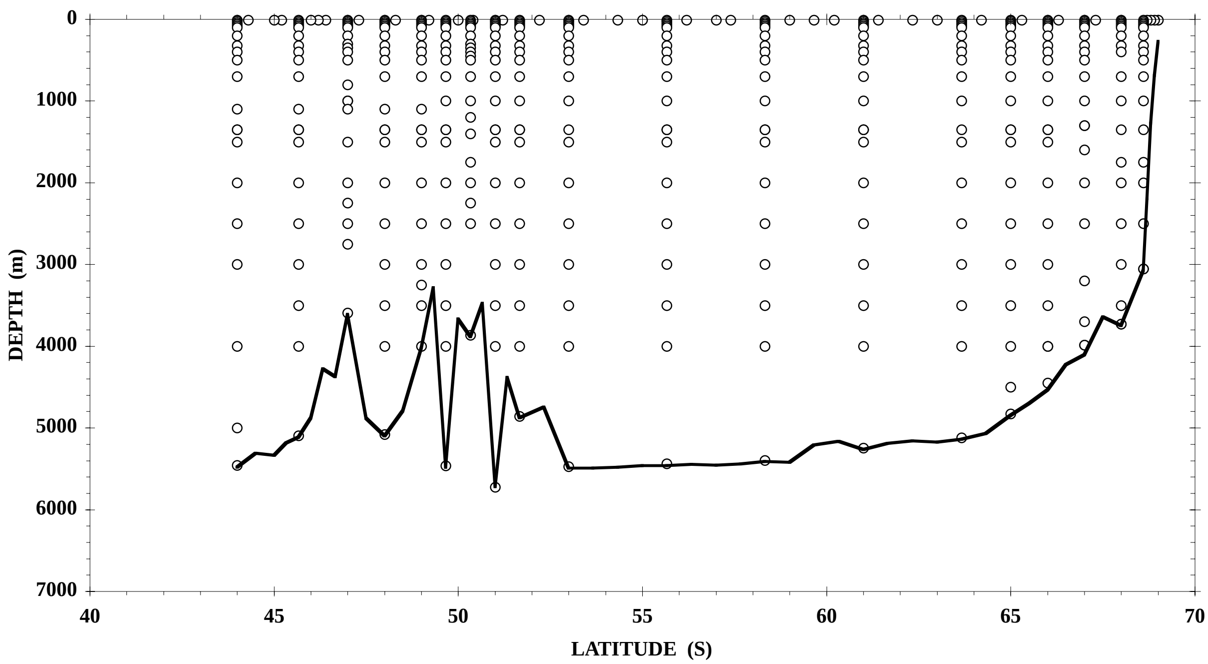


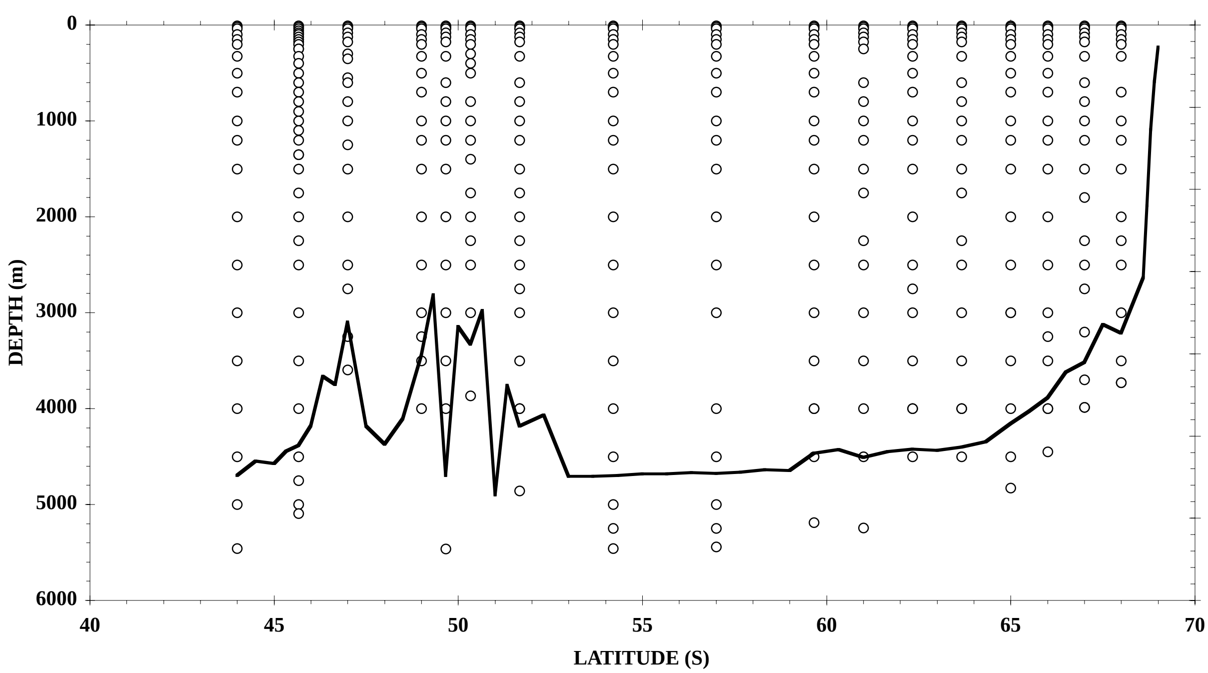
Figure 5e: Locations of Barium Samples collected during CIVA-1 cruise



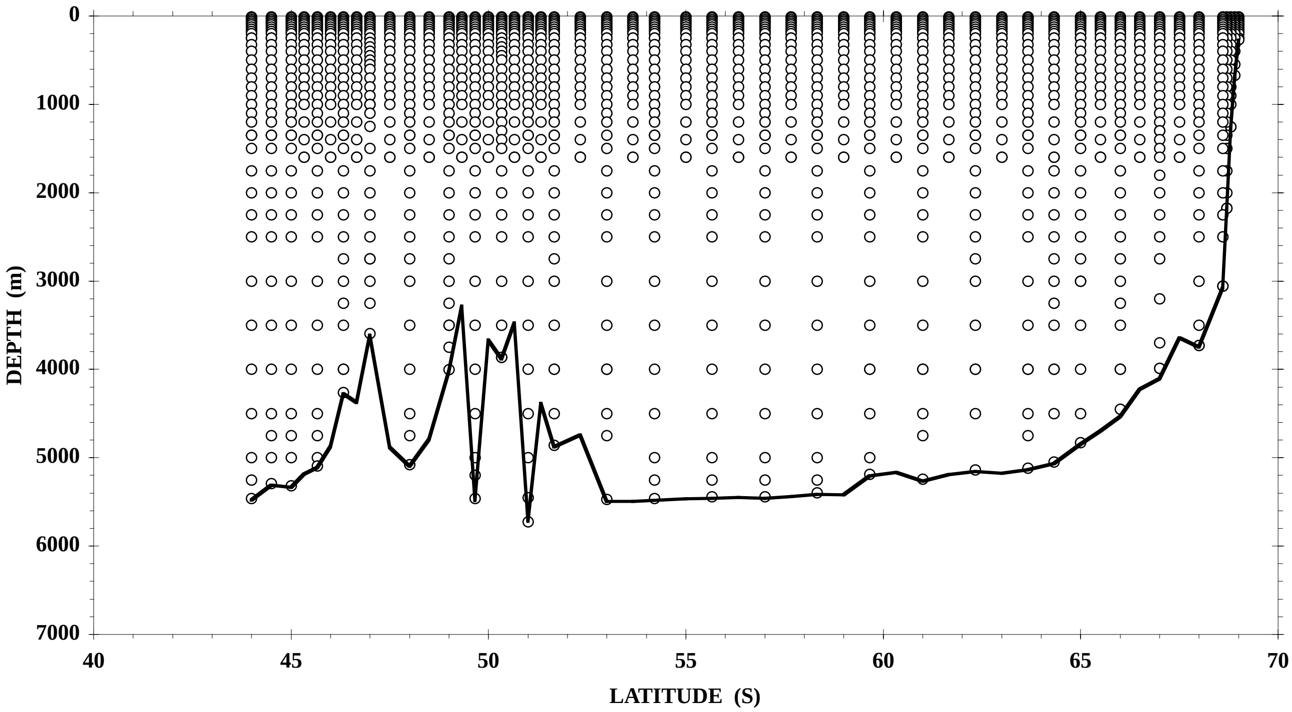
CARBON-13 SAMPLING



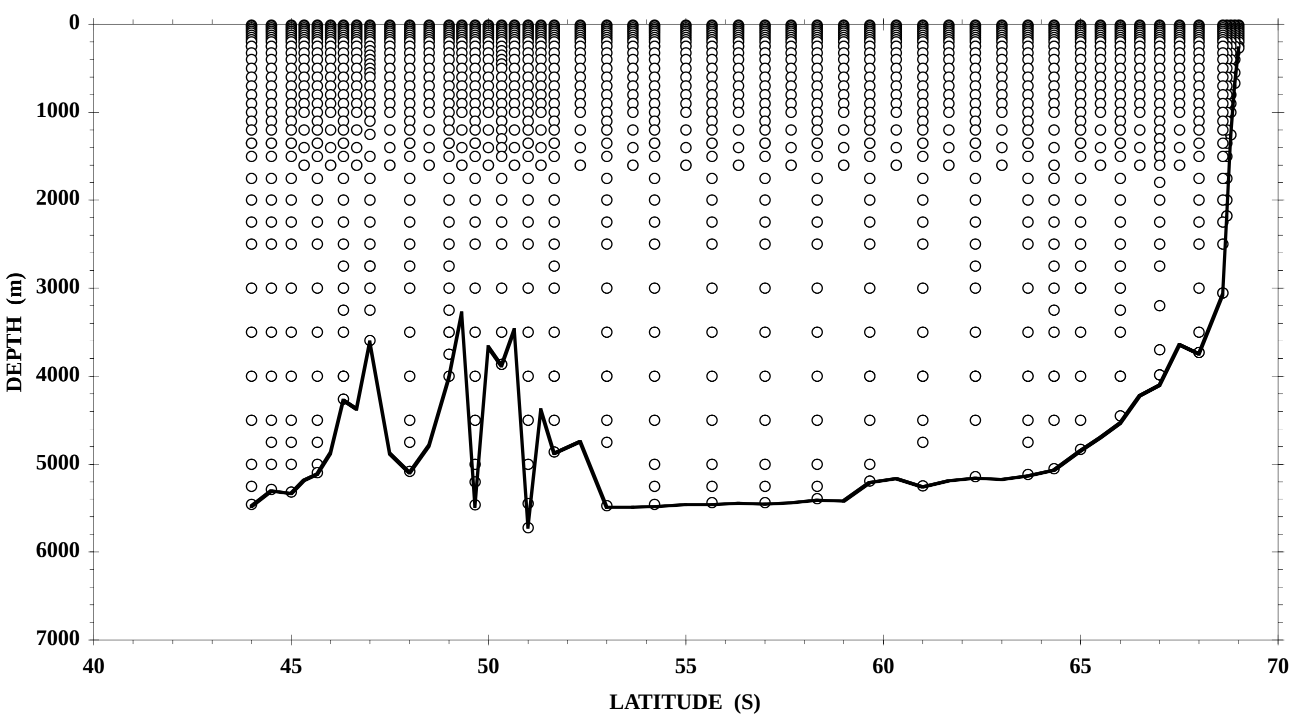
CARBON-14 SAMPLING

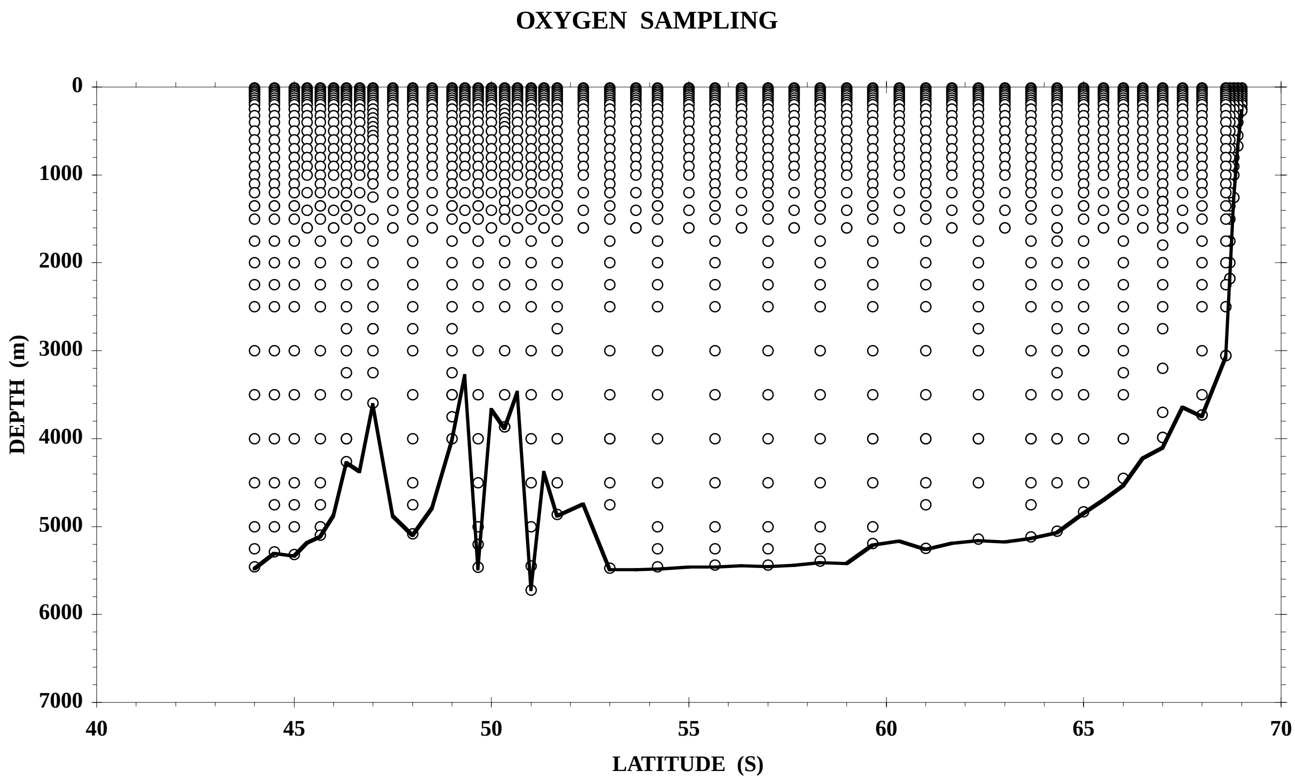


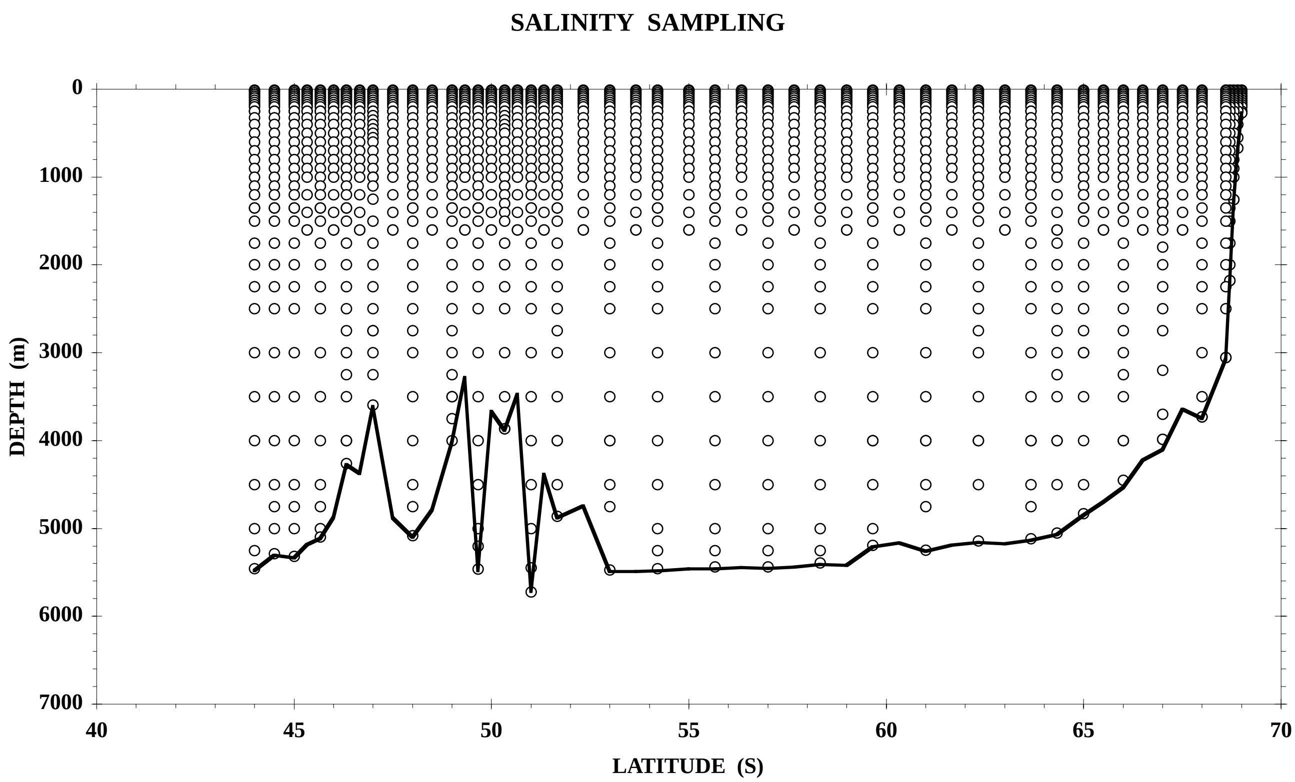
CFC SAMPLING

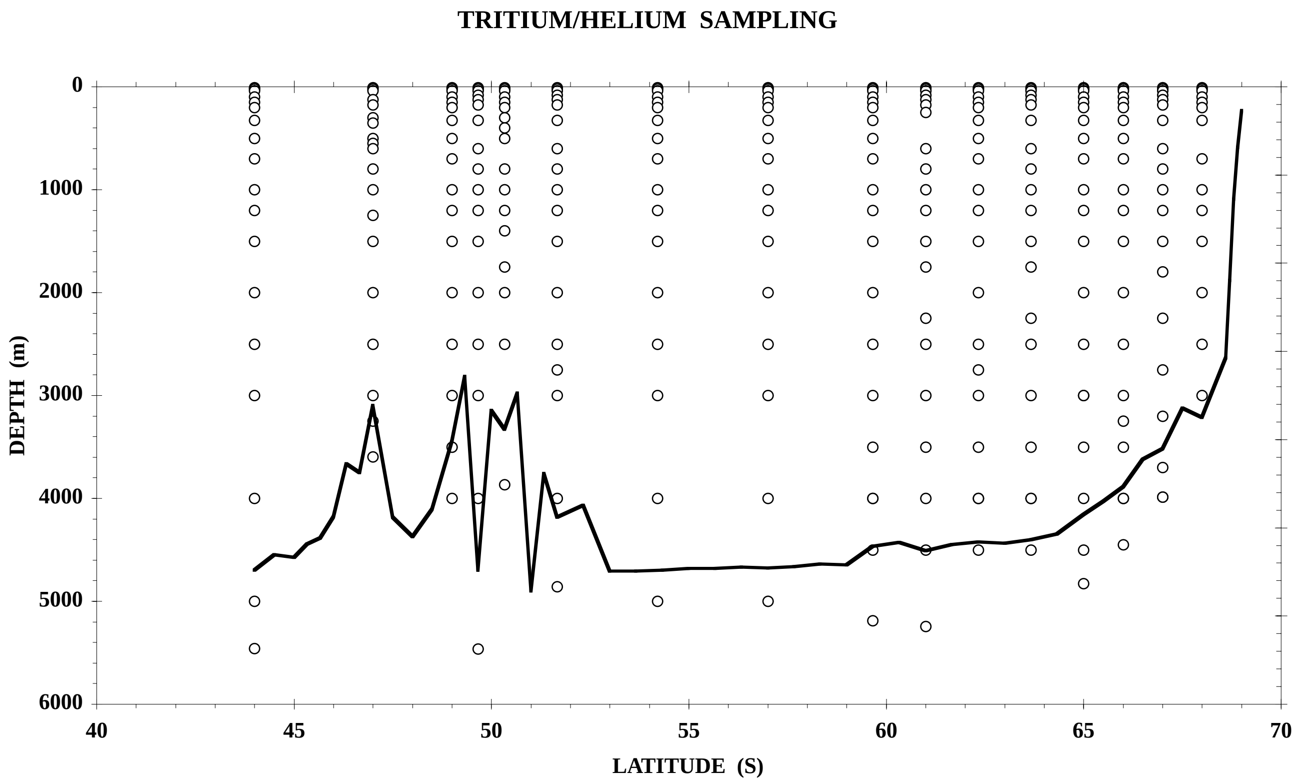


NUTRIENTS SAMPLING




OXYGEN SAMPLING
DEPTH (m)
0
1000
2000
3000
4000
5000
6000
7000
40
45
50
55
60
65
70
LATITUDE (S)


SALINITY SAMPLING
DEPTH (m)
0
1000
2000
3000
4000
5000
6000
7000
40
45
50
55
60
65
70
LATITUDE (S)


TRITIUM/HELIUM SAMPLING
DEPTH (m)
0
1000
2000
3000
4000
5000
6000
40
45
50
55
60
65
70
LATITUDE (S)

WHPO Data Processing History:

Date	Last Name	Data Type	Data Status	Summary
2/3/98	Anderson	BTL/SUM	Reformatted by WHPO	See Note

Files i06_sum.txt and i06_hyd.txt were reformatted to conform with what is, at this time, the WHP formats. This consisted mostly of adding spaces and shifting data. The following are other discrepancies that were found. Some that were obvious were "corrected" others were left as is for someone else to determine what should be done.--Sarilee Anderson, 3 Feb. 1998

i06_sum.txt:
--record 136 longitude input as 29 60.0 - changed to 30 00.0
--record 420 max. pressure input as 288?2 - changed to 288.2
--records 516, 517, and 518 all had the date as 31393 - changed to 031393

i06_hyd.txt:
--SAMPNO - these are strange numbers 10, 20 30,40,1750,2000, as if they were desired depths (pressure) for sample. Doesn't cause a problem, just strange. There are even some that have F-20 as a sample no, these are usually the deepest sample(s).

--Station 12, cast 1 and cast 4 - these casts do not have CTDPRS, CTDTMP, CTDSAL, CTDOXY, THETA, SILCAT, NITRAT or PHSPHT. But they do have SALNY, OXYGEN, CFC-11, CFC-12, and TCARBN. WOCECVT will not convert them because there are no pressures (depths)

--Station 25, records 720 to 731, sample 325 bottle 12 to sample 1600 bottle
1. data screwed up. THETA, SALNY, OXYGEN, and SILCAT columns do not have the correct values. QUALT1 flags not much help in determining what the problem might be. Values aren't even close to what they should be. Some values might be in the wrong columns, but that does not account for everything.

--Station 28, record 811 (last record in file) is incomplete.

The .hyd file stops at sta. 28, but the .sum file indicates there should be 52 stations.

In the following stations the cast number in the .sum file does not agree with the cast number in the .hyd file.

Station #s	cast #s in .sum	cast #s in .hyd
2	1 and 3	1 and 2
3	1 and 3	1 and 2
7	1 and 3	1 and 2
9	1 and 3	1 and 2
11	1 and 3	1 and 2
Station #s	cast #s in .sum	cast #s in .hyd
15	1 and 3	1 and 2
17	1 and 3	1 and 2
19	1 and 3	1 and 2

	21 1 and 3 1 and 2 23 1 and 3 1 and 2 25 1 and 3 1 and 2 27 1 and 3 1 and 2 I'm guessing the .hyd is correct and the .sum is incorrect. But I did not change either of them.			
2/5/98	Poisson	CTD/BTL	Data are Public	only have 22 of 58 stas
7/14/98	Anderson	SUM	Reformatted by WHPO	
	The .sum file now conforms with our new format EXCEPT for the max press. The original file had the maximum pressure to tenths (xxxx.x). I left it that way.			
9/14/98	Fieux	CTD/Sal	Data are Public	
	Request permission to use data on IO cd rom			
9/15/98	Talley	CTD	Update Needed	see note
	Station 25 on I06S has columns out of order (temperature and salinity switched etc etc). Can you please regrid all properties for I06S, leaving out station 25? It's too much trouble for me to correct the data set right now. Steve and Jerry - PLEASE keep this email in your comments for I06S which would be forwarded to a DQE or given to Dave Muus or Sarilee to fix before the data set is sent to a DQE. The data set should definitely be fixed before it is released to anyone else. The problem is in station 25 cast 1, where the columns are in a different order from all other casts on the section.			
9/15/98	Fieux	CTD/Sal	Data are Public	
9/16/98	Minster	NUTs	Data are Public	
	in view of the age of the data you are mentioning, I consider that they should be made available in the largest possible form, provided their origin is described in the data files, CD Roms or plots, and to the largest possible population of scientists, provided it is asked to them they refer to the initial origin of the data when they use them. -- Sincerely yours, JF Minster			

9/18/98	Anderson	CTD	Reformatted by WHPO	See Note:
	Completed reformatting the ctd files. Only the headers needed information to make them complete. Added NO. RECORDS= value, and changed the station and cast numbers. The originator had all casts set to 1 and the station numbers as pointed out by Lynne) were numbers like 11, 21, 33 where the first number is the station number and the second is the cast number, i.e. 33 is station 3, cast 3, etc. In most cases the originator reported more than one cast. There is not a standard in the files naming convention for this. I named the files i06sxxxx.wct for the deepest cast - usually cast 1. The other files were named i06sxxxx.x.wct, xxxx being the station number and the .x being the cast number.			
9/22/98	Poisson	CTD	Submitted on CD	
	I received the I06S (1996 version) which is complete from Alain Poisson today on CDROM. This CDROM also contains all of the CTD data for I06-1993, so we can get Sailee/Dave Muus to correct the truncated stations from the aborted effort.			
10/12/98	Anderson	CTD	Reformatted by WHPO	
	notes file included CTD stations 6, 10, 13.3, 14.2, 18, 21, 32, 40, 45, 47, 47.3, 48, 49, and 52 were truncated in transfer in the original files. They are now complete and have been reformatted.			
11/17/98	Poisson	BTL	Data Update	replace station 25
12/23/98	Muus	CTD	Data Update	
	i06ssu.txt - MAX PRESS given in tenths of decibars (f6.1) instead of i5. Consequently header adjusted to put extra space between WIRE OUT and MAX PRESS.MAX PRESS values unchanged. EXPOCODES not yet changed.			
3/10/99	Diggs	CTD	Submitted	
	49 ctd stations rcvd at N. Orleans conference			
3/11/99	Baptista	HELIUM	Submitted for DQE	
6/4/99	Kappa	DOC	PDF version created	
	Needs new figs; txt needs reformatting			
9/29/99	Falkner	BA	No Data Submitted	See note:
	The quality of the Ba data from most WOCE legs in the Indian Ocean turned out to be quite poor; far worse than attainable analytical precision (+/-20% as opposed to 2%). We recorded many vials which came back with loose caps and evaporation associated with that seems to be the primary problem. The only hope I have of producing a decent data set is to run both Ba and a conservative element simultaneously and then relating that to the original salinity of the sample. We will be taking delivery on a high resolution ICPMS here at OSU sometime this winter which would make the project analytically feasible and economical. I do not presently have the funds in hand to do this and so have archived the samples for the time being. I don’t think the WHPO would derive any benefit from the present data set. KKF			

8/25/00	Key	DELC14	Final Data Rcvd @ WHPO	

The data file I just submitted, "I6S.C14" is NOT my data. I sent on request from Piers. I received the original file from V. Leboucher. This data is public and has been published:

Leboucher, et al., 1999, Radiocarbon, 41(1), 51-73.

In the original file, the casts were identified by a letter code. I replaced the letters with numbers corresponding to the hyd file at WHPO and then merged. The replacement scheme was:

"S"=3
"I"=2
"P"=1

There was one id error in the original file which I fixed prior to merging. The errors are as reported with the original data. I carried out QC and assigned all flag values.

11/21/00	Muus	CTD	Reformatted by WHPO	See Note:

I've reformatted the I06S CTD data files CIVA2_0491.csv through CIVA2_9991.csv I06S EXPOCODE 35MF103_1 CTD Stations 49-96 plus 998 & 999.

1. Changed comma separated value files received from Steve Diggs November 15, 2000, to WOCE format CTD files.

   CIVA2_0491.csv to i06sb0049.wct
   CIVA2_0501.csv to i06sb0050.wct
   etc. etc.
   CIVA2_0951.csv to i06sb0095.wct
   CIVA2_0961.csv to i06sb0096.wct
   CIVA2_9981.csv to i06sb0998.wct
   CIVA2_9991.csv to i06sb0999.wct

2. Plotted all files and ran wctcvt. No apparent errors.

3. Sarilee Anderson has already reformatted Stations 1 - 48. The two sets of reformatted CTD files should be put in to on zipped file for posting to the web.

Dave Muus, November 21, 2000

2/7/01	Mantyla	NUTs/S/O	DQE Begun	

I would be glad to look over the Indian Ocean data for you. Sarilee has started plotting up I01 for me to start on. - Arnold

3/12/01	Diggs	BTL	Data Merged into BTL file	
	btl file now has correct flags, needs radiotracers merged in. The final bottle data that was in Excel format from Poisson is in and has the corrected flags. It's all set to have the radiotracers merged in. I finally finished getting the CIVA2 (I06-1996) Bottle data reformatted into (near) WOCE. It's in the following directory: ../indian/i06/i06sb /original/2001.03.07 _I06SB_BOTTLE_POISSON in the file called: I06S_Niskin_ CIVA_2_20010309.txt			
3/13/01	Poisson	BTL	File OK as submitted	
	Thank you for your timely reply to our request for an updated bottle data file for the 1996 I06S cruise. We have everything figured out and are currently in the process of updating all of our online files. Best Regards, - Steve Diggs +------> It is not always "2" which has to be put for the bottle number flag. Forget the first sentence of my message. The table is (should be !) OK. I hope you are able to read the table; if not, let me know. Best regards - Alain Poisson			
4/27/01	Kappa	DOC	Doc Update	
	Caroline reformatting report found in notebook, see note: complete report with graphics found in notebook, need to create pdf & txt versions.			
6/12/01	Anderson	CTD/SUM	Reformatted by WHPO	
	The cast numbers in the .sum files in the stations listed above agree with the cast numbers in the .ctd files. Therefore I will change the .hyd file.			