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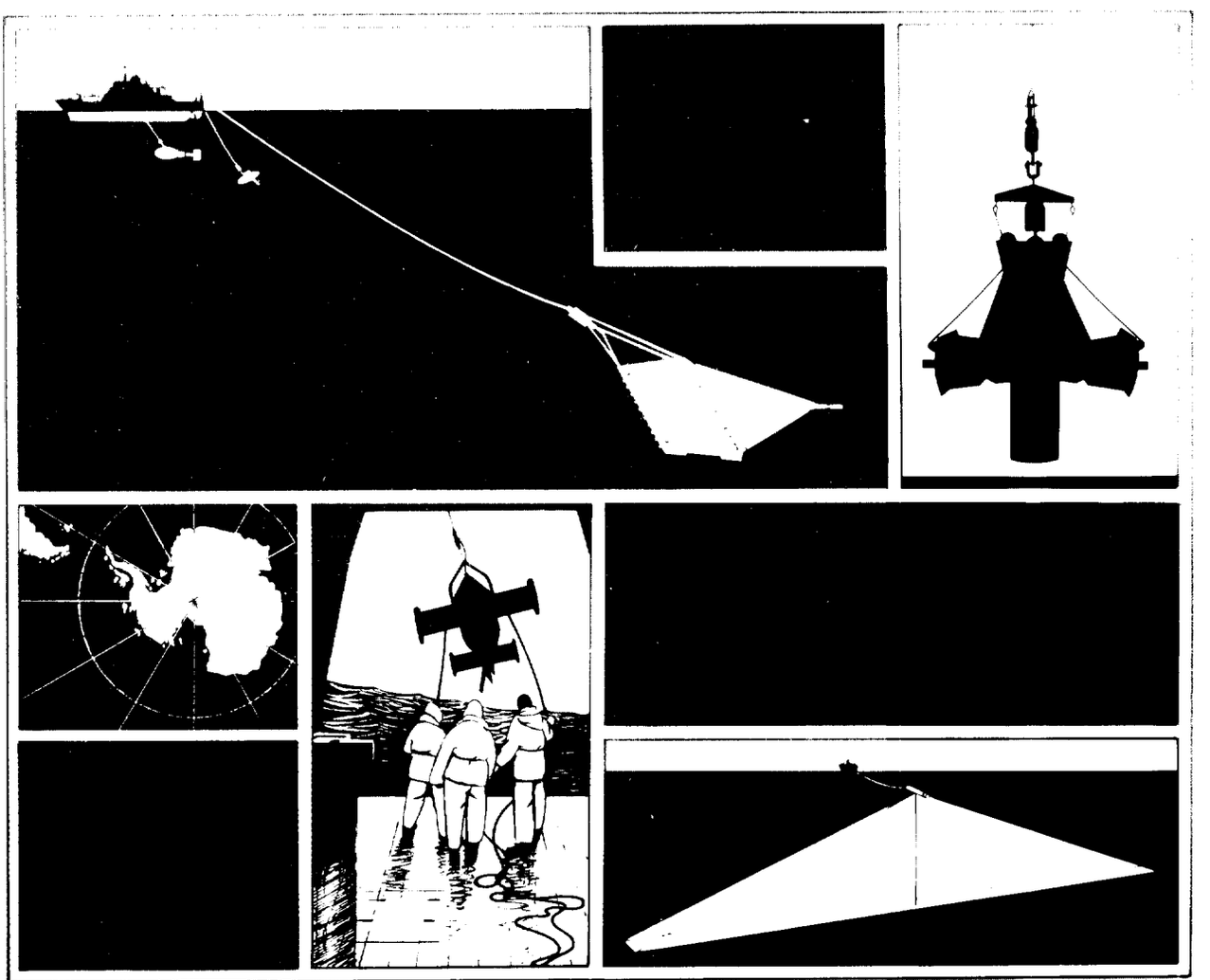

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ABSTRACT

This data report covers CTD and sample data recorded on Cruises 58 and 59 of RRS *Charles Darwin*. The cruises were a trial of the Vivaldi concept of seasonal surveys of the North-East Atlantic. The concept uses a combination of deep CTD stations spaced at 300 km with SeaSoar tows between to map the ocean over a wide area with high resolution in the upper layers where seasonal changes are important. Vivaldi forms part of the UK contribitons to the World Ocean Circulation Experiment.

Forty deep CTD stations were occupied using an EG & G MkIIIb CTD with an oxygen sensor and a 24 bottle rosette sampler. A transmissometer and a fluorometer were also mounted on the package. Water samples were analysed for dissolved oxygen, salinity, nitrate, silicate phosphate, chlorofluorocarbons (CFC-11, CFC-12 and CFC-113), chlorophyll-a and, on Cruise 58, for alkalinity and pH.

Contoured sections of the CTD and water sample measurements are shown, with listings of all sample data and listings at selected depths of standard variables from the CTD stations. The report also details the instrument calibrations and discusses the quality of the data.

KEYWORDS

ATLNE
CFC 11, 12, 113
"CHARLES DARWIN"/RRS - cruise(1991)(58)
"CHARLES DARWIN"/RRS - cruise(1991)(59)
CHLOROFLUOROCARBONS
CTD OBSERVATIONS
DISSOLVED OXYGEN
NITRATE
NORTH-EAST ATLANTIC
PHOSPHATE
PROJECT - VIVALDI 91
SEASOAR
SEASONAL VARIATIONS
SILICATE
UPPER OCEAN
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CONTENTS

1. INTRODUCTION

RRS Charles Darwin Cruises 58 and 59 were a trial of the Vivaldi concept of a series of seasonal surveys covering the NE Atlantic. The aim of achieving a large spatial coverage at high resolution was tackled using a combination of SeaSoar sections and deep CTD stations. Nearly north-south SeaSoar sections, 300 km apart, were augmented by deep CTD stations every 3 degrees of latitude. The final positions of the CTD stations were adjusted if the nominal positions were untypical, eg shallow water, or a seamount. In such cases the CTD stations were moved into adjacent deep water.

Each station was given a reference number eg CTD12v12 - where the numbers signify year - here (1 for 1991), survey number (1 for CD58, 2 for CD59) and a serial number (012). In addition, each station position has a Vivaldi reference eg X48, for section X at 48°N, as shown on the Cruise track, Figure 1. Forty CTD stations were occupied during the two Cruises, Table 1. The first two stations on Cruise 58 - CTD11v01 and CTD11v02 - were equipment test stations not on the Vivaldi grid. Only one station, X48 on Cruise 58, was not occupied due to bad weather. Three of the stations on Cruise 59 were occupied with both the MKIIIb and a new MKV EG & G CTD (CTDs 12v12, 12v16 and 12v17). The acquisition and initial processing of the MKV CTD data are described briefly here, but as detailed calibrations have yet to be performed, no data from the MKV are included in this report.

At each station the lowering consisted of a CTD cast with a General Oceanics 24 by 10 litre bottle rosette, a Chelsea Instruments fluorometer, and a Sea Tech 1 m path transmissometer. Water samples were acquired on the up cast with the winch stopped, but with no interruption to the CTD data as a new EG & G bottle firing unit was used. The practise was to stop the winch, wait some 15 seconds, fire the bottle, wait some 15 seconds then restart the winch. Three bottles were equipped with two SIS, Germany, reversing digital temperature meters, two of these bottles also had SIS digital pressure meters. Sampling from the water bottles commenced immediately upon recovery, in a strict rotation. Dissolved gasses were sampled first - the chlorofluorocarbons followed by oxygen, then chlorophyll and nutrients (silicate, phosphate and nitrate), followed by salinity, and, on Cruise 58, by samples for alkalinity, pH, inorganic carbon and pCO_2.

Other measurements made on the Cruises were: continuous underway acoustic Doppler current profiling, surface temperature and salinity from a Seabird thermosalinograph, surface currents from the em log, surface nutrients and chlorophyll, bacteria and lugol samples, zooplankton nets over the upper 100 and 300 metres, surface meteorology using the multimet system, atmospheric particulate sampling on Cruise 59, and a MACSAT satellite receiver. Further

details of these measurements can be found in the Cruise report, Pollard, Leach and Griffiths (1991).

2. COLLECTION AND ANALYSIS OF SAMPLE DATA

Identification

On each station, 24 consecutive sample numbers were assigned to each bottle, whether the bottles were successfully fired or not. These sample numbers incremented over the two Cruises such that each bottle sample number was unique. Problems with misfiring of the rosette meant that pressures could only be assigned to sample numbers after samples were analysed. In general salinity sample values were used to check bottle firing depths, confirmed by oxygen samples or pressure meters where necessary.

Chlorofluorocarbons

Analyses were made for three CFC compounds: CFC-11, CFC-12 and CFC-113. Fourteen of the Niskin bottles were routinely sampled using ground glass syringes of about 200 ml capacity. A unique instrument, developed at the Plymouth Marine Laboratory, using Gas Chromatography and Electron Capture Detection was used to remove dissolved gasses from the sea water sample, separate the compounds, and measure their concentration. The ECD was calibrated using a standard gas with a known fraction of each compound.

Oxygen

Duplicate samples for dissolved oxygen analysis were taken from the Niskin bottles. Cruises 58 and 59 differed from our previous practice in that the pickling reagents were added to the samples on deck, immediately after drawing and before capping.

The analytical method adhered closely to the Carpenter modification of the Winkler technique. An automatic endpoint detection system, supplied by SIS, was used. This equipment employs a solid state light source and a photodiode detector to determine the endpoint photometrically. Blanking was performed using pure water and not sea water to avoid differences due to depth and position. To calculate the oxygen concentrations the equations specified in the WOCE operations and methods manual (Culberson, 1991), were used in preference to the equations used in the software supplied by SIS.

The standard deviation between pairs of the oxygen measurements on Cruise 58 was 0.00325 ml/l, and 0.005 ml/l on Cruise 59.

Upon returning ashore, and checking the oxygen values against historic data, we became aware of a discrepancy between our absolute measurements and those of previous workers. Given the excellent agreement between duplicate samples, an error in making up the standard was thought most likely. Indeed, a simple arithmetical slip had resulted in the concentration of the standard being in error by 6.045%. All the oxygen bottle data were then corrected by this factor. In addition, because of small day to day changes in volume delivered by the standard dispensing pipette on Cruise 59, station by station adjustments were made to the bottle oxygen values.

Salinity

Salinity samples from the Niskin bottles were analysed using Guildline 8400 bench salinometers set to run at 21°C in the temperature controlled laboratory (20°C). Two salinometers were available, an 8400 (old) and a 8400A (new). From station 11v03 to 11v09 inclusive, duplicate salinity samples were taken from the 12 odd numbered Niskin bottles. As the reproducibility was better than 0.001, from station 11v10 onwards a single salinity sample was drawn from each of the 24 Niskin bottles. This procedure was modified on the double MKIIIb and MKV stations: samples were drawn from the deepest six bottles on both casts, and six other bottles were sampled, spaced throughout the remaining depth range.

The new 8400A gave problems with trapped air bubbles near an electrode and most of the analyses were carried out with the old 8400 instrument. An uninterruptible power supply was used in an attempt to reduce the occurrence of small jumps in the data readings. Standardisation was done every 12 bottles using IAPSO Standard Sea water batch P115.

Analysis of deep water samples (>4000 m) suggested that the water was fresher by 0.002 compared with the cannonical TS relationship for the eastern North Atlantic (Saunders, 1986). To check the accuracy of our measurements, eight deep samples (four pairs) were analysed ashore by Ocean Scientific International. Their analysis were 0.001 higher than our at sea measurements.

Nutrients

Samples from the Niskin bottles were analysed for nitrate, silicate and phosphate using an Alpkhem continuous flow autoanalyser. A heating bath, set at 37°C, had been added to the silicate channel of the original instrument prior to the Cruise. This reduced temperature effects and

allowed the chemical reaction to proceed to completion before colour development was measured, thereby increasing analytical precision and accuracy. The silicate and nitrate chemistries worked well throughout Cruise 58 but there were problems with the nitrate channel on Cruise 59. This was first noted on the second day of Cruise 59 when the nitrate photometer could not be stabilised above a 2.8 volt gain setting; the photometer output is normally maximised at a 5 volt output. This resulted in the loss of sensitivity in nitrate detection.

During both Cruises calibration of the phosphate channel was hampered by baseline shifts associated with the chemical complex coating the inner surfaces of the flow cell and cartridge tubing. Periodic replacement of all the PVC tubing on the cartridge reduced the problem to a minimum.

At station 12v17 on Cruise 59 the light source failed completely and no further analysis could be carried out at sea. From then on samples were stored frozen for analysis back in the laboratory. However, this laboratory analysis was not possible due to delays in the delivery of a replacement light source and the need to prepare the equipment for the Convex Cruise. Recent work on the analysis of frozen samples has shown that the measurement reproducability is significantly degraded.

The quality of the nutrient data was checked for each station by comparison of plots of nutrient concentration versus depth. Plots for consecutive stations were overlaid to observe obvious errors such as large spikes resulting from contamination of the sample. Where data appeared questionable analytical logsheets were scrutinised to ensure correct standardisation procedures and reagent composition. If no explanation was obvious, further comparisons were made using plots of nutrient concentration versus pressure, oxygen profiles and topography. The standard deviation for duplicate samples on Cruise 58 was 0.07 umol/l for silicate, 0.06 umol/l for nitrate and 0.01 umol/l for phosphate. On Cruise 59 the corresponding figures were 0.05, 0.18 and 0.02 umol/l: the lower nitrate reproducibility reflecting the loss of sensitivity.

Data accuracy was checked by comparison with historical TTO data from the same area in 1981. This was done in two ways:-

Firstly, nutrient data from all Vivaldi stations were plotted against potential temperature on a single graph. Similar plots were prepared for the TTO data and the two graphs overlaid. This exercise was repeated using nutrient versus pressure plots. In both cases the Vivaldi data fell within the scatter of the TTO data.

Secondly, three TTO stations from the same location as three Vivaldi stations were selected and comparisons of data below 1000 m were made. Comparisons in the surface waters were not valid due to seasonal differences and biological activity affecting the surface nutrient concentrations. The comparisons suggested that on Cruise 58 there was no detectable difference for nitrate, phosphate and oxygen concentrations but silicate concentrations differed from TTO by up to 0.3 umol/l. On Cruise 59, however the nitrate data also showed some discrepancy, with values higher than TTO by up to 3 umol/l. A similar difference was noted when comparison was made of data from a repeat station occupied on both Vivaldi Cruises as 12010 and 11016. Again this is consistent with the lost sensitivity outlined above.

In conclusion, the nitrate data for Cruise 59 are suspect and have been replaced by absent data. The problem arose from a loss of signal from the photometer unit caused by diminishing output of the light source prior to its total failure. It is not obvious from the data that the silicate or phosphate analysis were effected by this problem, since the data from the repeat station are consistent.

Chlorophyll

A laboratory fluorometer (Turner Designs) was used to analyse chlorophyll samples taken from the Niskin bottles. The fluorometer was calibrated using a standard chlorophyll solution (Sigma chemicals) (at a number of dilutions). The accuracy of the standard is guaranteed to 5%.

Linear response chlorophyll a fluorescence (fluor) was calculated for the fluorometer on the CTD, giving:

$$fluor = antilog_{10} (fvolts/1000)$$

This corresponds to the input voltage to the logarithmic unit of the fluorometer. A linear response fluorescence offset of 2mV for zero chlorophyll a was estimated by comparison with the extracted chlorophyll data from the bottle samples and the fluorescence yield reciprocal (chlorophyll per unit fluorescence) was calculated for each sample using the offset corrected fluorescence.

The fluorescence has been further calibrated to allow for regional variations in fluorescence yield but not light induced changes. The horizontal variation in fluorescence yield reciprocal exhibited by data from night-time CTD stations (in the top 50 metres) was well correlated with the unquenched fluorescence yield signal derived from the SeaSoar data ($R^2 = 0.92$). A yield factor was therefore derived for each station, from the SeaSoar yield data, to give a derived chlorophyll variable (chlflq).

Alkalinity and pH

Alkalinity and pH were measured on Cruise 58 by Ms Aida Rios of the Institute de Investigaciones Marinas, Vigo, Spain. From these measurements, total inorganic carbon and pCO_2 were calculated using published equations for the oceanic carbon system (Mehrbach et al, 1973 and Weiss, 1973).

A Metrohm 654 pH meter with a Ross combination glass electrode was used to determine pH. The temperature of the sample was measured using a platinum resistance thermometer to correct for the effect of temperature on pH (Perez and Fraga, 1987a). All the pH values have been corrected to a standard temperature of 15°C.

Alkalinity was measured using a Metrohm E-510 pH meter with a separate glass electrode and a reference electrode connected to an automatic burette and an impulsomat. Potentiometric titrations were carried out with HCl to a final pH of 4.44 (Perez and Fraga, 1987b). The electrodes were standardised using an NBS buffer of pH 7.413 and checked using an NBS buffer of 4.008. Relative alkalinity was obtained on board ship and absolute values were obtained after the HCl molarity had been established at the laboratory.

3. COLLECTION AND PROCESSING OF MKIIIb CTD DATA

The CTD data were acquired and preprocessed as on previous Cruises (eg. Saunders et al., 1991). However, with the new EG & G bottle firing unit a new procedure was used to reconcile the bottle firings with CTD data. The CTD data acquisition system, based on an IBM PS/2 and software supplied by EG & G sends out a bottle firing code at the time of bottle firing. This code signifies a misfire or an odd or even bottle fire. The code was logged as serial data by the RVS shipboard computer system, which timestamps its arrival. By merging this code, on time, with the CTD data, then the CTD variables were reconciled with the sample values. As no interruption to CTD operation now takes place to fire the bottles, the values of parameters for the oxygen sensor, previously taken from the down cast, were now compared directly with the samples on the up cast.

Pressure

The pre Cruise pressure calibration, obtained on 2 April 1991, using 12 points covering 0 to 5500 db was:

$$p = 0.9973544\ p_{raw} + 4.165E\text{-}7\ p_{raw}^2 - 6.99$$

at a temperature of 20°C. The goodness of fit was 0.9 db and the deadweight tester was certified to an accuracy of 0.03% of full scale, viz 1.8 db at 6000 db. The calibration was made under increasing pressure and therefore applies strictly to the down cast.

A post Cruise calibration, on 10 July 1991, using 14 points covering 0 to 5500 db was:

$$p = 0.997069\ p_{raw} + 4.091\ E\text{-}7\ p_{raw}^2 - 7.31$$

at a temperature of 20°C. The goodness of fit was 1.0 db.

The difference between these two calibrations amounts to less than 2 db over the range 0 to 5500 db, the April calibration tending to read lower than the July calibration for pressures over 1000 db.

Because of the temperature sensitivity of the pressure sensor the following correction is applied:

$$p_{cor} = p - 0.39\ (t_l - 9)$$

where t_l is a lagged temperature, in °C, formed from the CTD temperature using a first order equation with a time constant of 400 seconds. The reference temperature (9°C) used in the above equation was left as the default, following Saunders et al., 1991. However, this gives rise to a pressure offset at the surface of between 3 and 4 db, depending on ambient temperature, with the CTD reading low. This offset was corrected by adding 3 db to the corrected pressure. The reference temperature used in the equation above is, perhaps, best obtained from a plot of the CTD raw pressure against temperature (Figure 2), and taking the temperature at which the pressure offset added to the y intercept of the calibration equation equals zero. For this Cruise this value was 17°C. Therefore the 9°C reference temperature over-corrected the pressure by 0.39 (17-9) db or 3.1 db, hence our correction above.

On the up cast, a further correction is made for the hysteresis of the pressure sensor. This can amount to 5 db.

Comparison of pressure measurements

Two of the Niskin bottles were fitted with digital reversing pressure meters made by SIS, Kiel, Germany. These pressure meters had been calibrated by SIS and their accuracy certified by the Schleswig-Holstein Standards Bureau. The two instruments were of different grades, one was grade S, certified accurate to 0.1%, the other, grade H, was certified to be accurate to 0.2%.

On the cruise, it was noticed that there was a significant, systematic difference between both the RPM pressure meters and the CTD. This difference (CTD-PM) was some -5dbar at depths of less than 100 m (6132H only), increasing linearly to +20dbar at 2000m (6132H and 6075S), then slowly increasing to +25dbar at 4000 metres. The calibration of the CTD pressure sensor was carefully checked and each step of the computer calibrations was checked by hand. Saunders et al. (1991) also found a systematic discrepancy between the same CTD and pressure meters, though as their mean comparison depth was 1100 m the differences were not as marked as our comparison over full oceanic depth. Discussions with the manufacturer on the corrections to be applied to the RPMs as a function of temperature and pressure led to the corrected differences shown in Figure 3. Instrument 6132H now shows a lower error range, clustered at -2dbar at depths of less than 500 metres, and substantially constant at +7dbar from 1500 to 3500 metres. However, the corrections to 6075S (a higher grade instrument) result in an almost linearly increasing error with pressure, amounting to a slope error of 0.57%.

A comparison of the same pressure meters versus the same CTD on the Convex cruise (*RRS Charles Darwin* Cruise 62), 3 months later, gave a similar slope error of 0.6% for instrument 6075S (P.M. Saunders personal communication). The manufacturers have been consulted but they have been unable to provide a reason for our observations.

Temperature

The pre Cruise temperature calibration, carried out on 27 March 1991, was

$$T = 0.99877\ T_{raw} - 0.0146.$$

The goodness of fit of a 30 point calibration (5 readings at each of 6 temperatures from 0.8°C to 25°C) was 0.6 mK. Temperatures are given in the above calibration on the ITS90 scale.

The post Cruise calibration, over the same temperature range, on 8 July 1991 was:

$$T = 0.99865\ T_{raw} - 0.0162.$$

The goodness of fit was 0.4 mK. The pre Cruise calibration giving the higher temperatures, increasing from 1.7 mK at 1°C to 4.0 mK at 20°C.

A lag of 250 ms was used to correct the temperature to minimise salinity spiking.

Comparison of Temperature measurements

The CTD temperatures were compared with 6 digital reversing thermometers made by SIS, Germany, that were fitted to 3 Niskin bottles. The table below shows the comparison of individual thermometers and the CTD temperature. Note that instruments 401 and 238 were used only for deep measurements.

Overall, the difference of 149 comparisons was -6.8 mK with a standard error of ±2.7 mK, the reversing thermometers all reading higher than the CTD. The differences are shown graphically in Figure 4. The CTD temperatures are taken to be correct as it receives frequent calibration against triple point cells whereas the reversing thermometers use the original manufacturer's calibration.

Comparison of CTD temperature and digital reversing thermometers

difference T_{CTD} - T_{DRT} in mK.

Instrument	number	mean	std deviation	std error of mean
204	30	-0.8	13	2.3
238	32	-8.1	8	1.4
398	18	-8.3	5	1.2
399	30	-9.2	14	2.6
400	30	-11.2	25	4.6
401	9	-3.3	1	0.2

CTD Salinity calibration

The same conductivity sensor was used throughout both Cruises with a constant cell factor of 0.996501. The cell factor temperature and pressure coefficients were the nominal values as used previously.

On each station 11v03-12v21 values of apparent salinity difference S_{bot} - S_{CTD} were calculated, where S_{bot} is the bottle salinity and S_{CTD} the CTD estimated salinity on the up cast when the bottle was fired. For each station an adjustment to the CTD salinity was made on the basis of

deep (>1500 m) bottle salinity measurements. These adjustments are shown in Figure 5 and are listed in Table 2. A gradual drift toward a more negative salinity correction was observed, with salinity jumps noted on 5 stations.

During the Cruises it was noticed that the salinity differences (S_{bot} - S_{CTD}) showed a consistent trend with pressure though with superimposed fluctuations. Whereas the deep differences average to zero, as they were forced to, the near-surface differences average -0.006. The reason for this discrepancy was found on Cruise 62 to be due to an error in the processing scripts than effectively failed to account for the cell factor temperature and pressure coefficients. When our data were corrected for this omission, the adjusted salinity differences, shown in Figure 6, do not show a trend with pressure. The mean salinity difference over the full pressure range is -.0005 and the standard deviation is .004.

CTD oxygen calibration

CTD oxygen values were calculated using a standard algorithm (Owens and Millard, 1985). Calibration values for α (pressure coefficient), β (temperature coefficient) and the cell factor were obtained for each station separately using a non-linear regression between the CTD oxygen data and the corrected sample values. As a simple single scaling factor adjustment of -6.045% was necessary for Cruise 58 oxygen bottle data, the original rho, χ and β coefficients were left untouched, and the correction factor applied directly to the CTD oxygen data. As station by station adjustments were needed for Cruise 59 oxygen bottle data, the coefficients have been recalculated for each station. On stations 12v11 and 12v15, oxygen samples were taken on the cast with the Mk V CTD. On station 12v20, no oxygen samples were taken and the average values of the coefficients from 12v19 and 12v21 were used. In addition a correction of 0.10 ml/l was necessary to bring the values of the deep oxygen on 12v20 to those of 12v19/21. Table 3 gives the values of these three coefficients for each station. Note that station 12v01 has significantly different values, after the sensor had been out of water for four days between the two Cruises.

A scatter plot of the difference between adjusted CTD oxygen values and the sample oxygen values is shown in Figure 7. The mean difference is 0.02 ml/l and the standard deviation is 0.10 ml/l after the data have been screened to eliminate outliers exceeding ±0.33 ml/l in the oxygen difference.

4. MKV CTD DATA PROCESSING

Because of the new format for the data stream from the Mark V CTD, the present level A software could not be used to preprocess and pass the data to the level B and C systems. Consequently, a program was written for use on the Sun to read the data from backup files written to floppy disks by the CTD deck unit. This program attempted to preprocess the data in a similar manner to the level A software. The data was despiked on pressure, eliminating spikes where a value differed from the previous one by more than 100 raw units. Following this, an estimate of the change of temperature over 1 second was made for later use in the salinity calibration. Then a 5 point moving median procedure eliminated spurious data in a 1 second period for all variables, before averaging.

The program was later found to differ from the original level A software in a number of ways. The despiking criteria were more stringent here (the level A eliminated raw pressure spikes greater than 500 units). The moving median threw out points which differed from the median by a small fixed proportion (the level A chooses the median value over a 1 second interval). A number of errors were also identified. The logging frequency, thought to be 35.25Hz when the program was written, turned out to be 15.625Hz; thus the data were averaged to 2 seconds. The level A calculated the temperature gradient whilst the new program calculated the difference.

In spite of these problems in preprocessing, data were successfully passed into the PEXEC system via the new program and the RVS utilities 'titsil' and 'datapup'. Three stations were made with the Mk V which were also made with the Mk III, for comparison. A modified version of the PEXEC calibration program 'ctdcal' was run to deal with the Mk V data, and plots of the resulting temperature and salinity profiles produced. At this point it was discovered that the form of the calibration required to convert some variables from raw units did not correspond to a simple polynomial form. In addition, other users have experienced difficulty with the pressure sensor, in particular its temperature sensitivity, resulting in a need for an involved calibration procedure. Rather than delay this report whilst these problems are solved, we have decided not to include data from the Mk V here.

5. DATA PRESENTATION

Sample data are listed for each bottle and for each measured quantity. Also listed are the CTD pressure, temperature and corrected salinity when stopped on the up cast whilst the bottle was fired. Absent data are shown as -999. A full graphical presentation of the data may be found in Cunningham et. al. (in preparation).

6. ACKNOWLEDGEMENTS

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TABLE 1a

CTD stations Cruise 58

Vivaldi reference	Station	Start date	Start time	Down time	End time	Latitude	Longitude	Depth of cast (dbar)
	CTD11v01	26/4/91	1047	1109	1123	48° 37.1'N	09° 21.7'W	140
	CTD11v02	26/4/91	1415	1437	1452	48° 28.0'N	09° 46.8'W	192
B48	CTD11v03	27/4/91	0314	0516	0712	47° 30.0'N	11° 59.6'W	4686
B45	CTD11v04	28/4/91	0410	0524	0704	44° 53.4'N	12° 16.8'W	2790
B42	CTD11v05	29/4/91	0636	0847	1112	42° 00.0'N	12° 44.9'W	5090
A42	CTD11v06	30/4/91	0306	0516	0734	41° 58.5'N	16° 22.1'W	5024
A45	CTD11v07	1/5/91	0655	0842	1044	44° 59.2'N	16° 11.3'W	4365
A48	CTD11v08	2/5/91	0847	1047	1317	48° 01.4'N	15° 59.1'W	4820
Z48	CTD11v09	3/5/91	0927	1058	1247	48° 00.5'N	19° 59.8'W	4384
Z45	CTD11v10	4/5/91	1320	1451	1631	44° 59.7'N	20° 00.5'W	4374
Z42	CTD11v11	5/5/91	1617	1709	1815	42° 01.4'N	19° 56.2'W	2841
Z39	CTD11v12	6/5/91	1853	2018	2212	39° 00.2'N	19° 57.4'W	4677
Y39	CTD11v13	7/5/91	1925	2036	2205	38° 59.1'N	23° 28.2'W	3909
Y42	CTD11v14	8/5/91	2125	2231	2357	42° 01.1'N	23° 37.7'W	3650
Y45	CTD11v15	10/5/91	0039	0140	0250	44° 59.7'N	23° 48.4'W	3217
Y48	CTD11v16	11/5/91	0231	0345	0519	48° 00.2'N	24° 01.8'W	4040
X45	CTD11v17	13/5/91	1115	1157	1300	45° 05.6'N	27° 38.1'W	2461
X42	CTD11v18	14/5/91	1331	1424	1536	41° 59.1'N	27° 06.0'W	2937
X39	CTD11v19	15/5/91	1413	1454	1549	39° 10.2'N	26° 43.3'W	2370

TABLE 1b

CTD stations Cruise 59

Vivaldi reference	Station	Start date	Start time	Down time	End time	Latitude	Longitude	Depth of cast (dbar)
W39	CTD12v01	19/5/91	0833	0915	1006	39° 00.7'N	30° 25.8'W	1789
W42	CTD12v02	20/5/91	0750	0830	0932	41° 59.9'N	30° 52.4'W	2219
W45	CTD12v03	21/5/91	1211	1311	1423	45° 00.3'N	31° 27.4'W	3185
W48	CTD12v04	22/5/91	1346	1501	1647	48° 01.1'N	32° 06.0'W	4061
W51	CTD12v05	23/5/91	1641	1807	2001	50° 44.4'N	32° 50.3'W	4161
W54	CTD12v06	24/5/91	2256	2350	0101	53° 59.4'N	33° 45.0'W	2556
X54	CTD12v07	25/5/91	2147	2248	0006	53° 59.6'N	29° 11.3'W	3043
X51	CTD12v08	27/5/91	0125	0238	0416	51° 05.4'N	28° 07.0'W	3694
X48	CTD12v09	28/5/91	0544	0652	0811	48° 00.2'N	28° 31.1'W	3070
Y48	CTD12v10	29/5/91	0725	0843	1029	48° 00.0'N	24° 02.6'W	4065
Y51	CTD12v11*	30/5/91	1103	1222	1359	50° 59.5'N	24° 37.2'W	4014
Y51	CTD12v12	30/5/91	1537	1657	1838	50° 59.5'N	24° 38.3'W	3956
Y54	CTD12v13	31/5/91	1738	1840	1959	54° 00.0'N	24° 34.9'W	3350
Z54	CTD12v14	01/6/91	1514	1605	1707	53° 59.9'N	20° 19.6'W	2667
Z51	CTD12v15	02/6/91	1700	1830	2014	51° 00.3'N	20° 38.7'W	4469
Z51	CTD12v16*	02/6/91	2128	2252	0050	51° 02.8'N	20° 39.1'W	4442
Z48	CTD12v17*	04/6/91	0146	0306	0502	48° 00.3'N	19° 59.4'W	4432
Z48	CTD12v18	04/6/91	0551	0714	0909	48° 01.9'N	19° 55.7'W	4420
A48	CTD12v19	05/6/91	0807	0943	1154	47° 59.9'N	15° 56.93'W	4913
A51	CTD12v20	06/6/91	1516	1644	1849	51° 00.42'N	15° 59.73'W	4450
A54	CTD12v21	08/6/91	0255	0351	0505	53° 59.70'N	14° 59.78'W	2864

* denotes station using EG&G MKV CTD

TABLE 2

CTD station	salinity calibration
11v03	-0.007
11v04	0.0035
11v05	0.000
11v06	-0.007
11v07	0.000
11v08	0.001
11v09	0.003
11v10	-0.010
11v11	0.001
11v12	0.000
11v13	0.001
11v14	0.003
11v15	-0.008
11v16	0.001
11v17	-0.009
11v18	0.000
11v19	0.000
12v01	0.0015
12v02	0.001
12v03	-0.001
12v04	-0.004
12v05	-0.006
12v06	-0.006
12v07	-0.006
12v08	-0.002
12v09	-0.004
12v10	-0.006
12v11	-0.006
12v13	-0.008
12v14	-0.004
12v15	-0.006
12v18	-0.006
12v19	-0.006
12v20	-0.014
12v21	-0.008

TABLE 3

Oxygen sensor calibration

CTD Station	rho	alpha	beta
11v01			
11v02			
11v03	1.346360	-0.051400	0.0001522
11v04	1.506430	-0.054000	0.0000962
11v05	1.334630	-0.047610	0.0001444
11v06	1.246878	-0.040300	0.0001589
11v07	1.327618	-0.047060	0.0001459
11v08	1.257687	-0.039220	0.0001573
11v09	1.296071	-0.046100	0.0001492
11v10	1.398688	-0.048980	0.0001424
11v11	1.094288	-0.030680	0.0002078
11v12	1.268751	-0.042400	0.0001571
11v13	1.200339	-0.037900	0.0001597
11v14	1.186184	-0.039900	0.0001669
11v15	1.173859	-0.039660	0.0001638
11v16	1.202800	-0.041110	0.0001573
11v17	1.177556	-0.037170	0.0001550
11v18	1.118330	-0.034820	0.0001728
11v19	1.195000	-0.038770	0.0001635
12v01	1.105561	-0.021210	0.000046
12v02	1.287857	-0.046450	0.000111
12v03	1.156362	-0.036780	0.000158
12v04	1.144753	-0.035830	0.000161
12v05	1.108318	-0.040130	0.000167
12v06	0.937156	-0.013970	0.000203
12v07	1.103058	-0.041570	0.000161
12v08	1.302329	-0.041620	0.000165
12v09	1.251116	-0.036820	0.000167
12v10	1.324372	-0.040820	0.000147
12v11	1.286030	-0.034540	0.000138
12v13	1.353201	-0.062910	0.000150
12v14	1.300576	-0.044290	0.000147
12v15	1.373022	-0.054030	0.000137
12v18	1.396602	-0.047580	0.000144
12v19	1.414542	-0.047060	0.000138
12v20	1.383463	-0.047180	0.000141
12v21	1.352383	-0.047300	0.000144

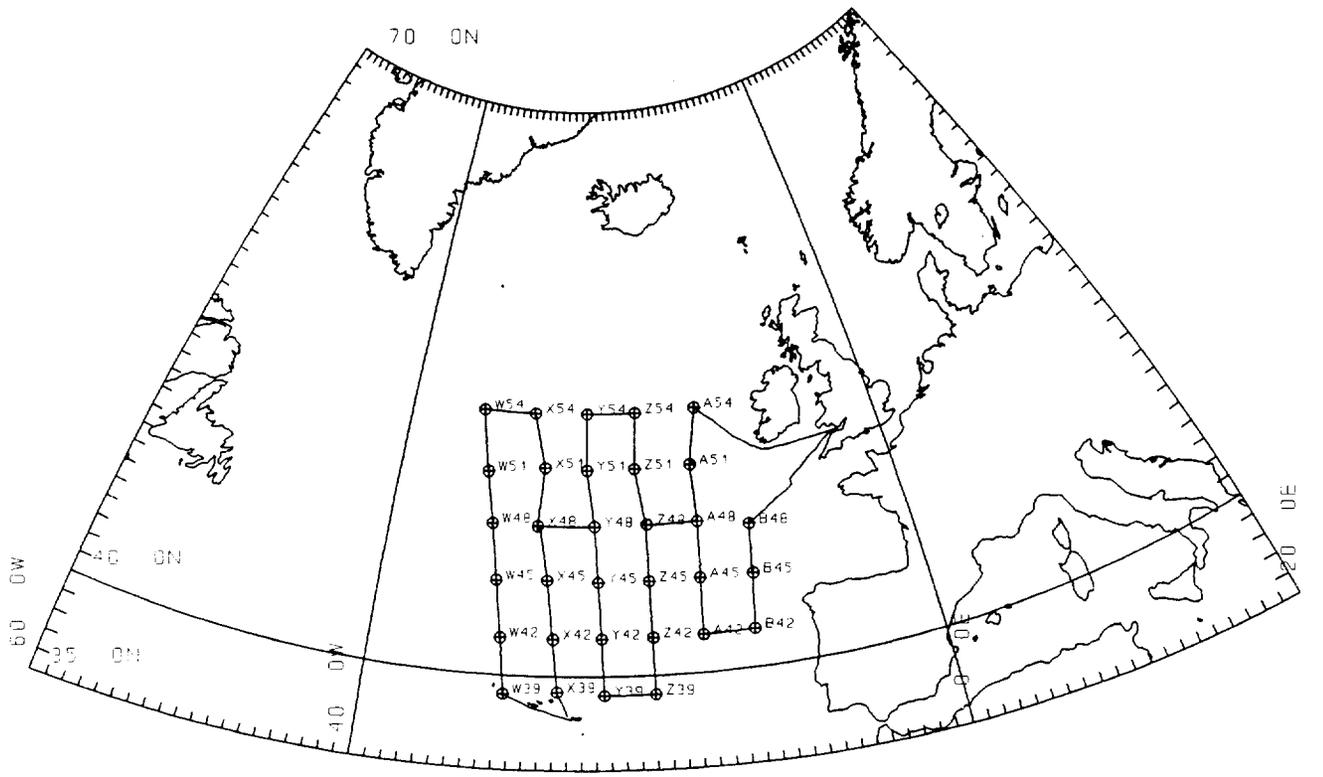

Figure 1 Track chart of the Vivaldi '91 trial Cruises. The crosses represent the sites of the CTD stations, with the Vivaldi reference codes.

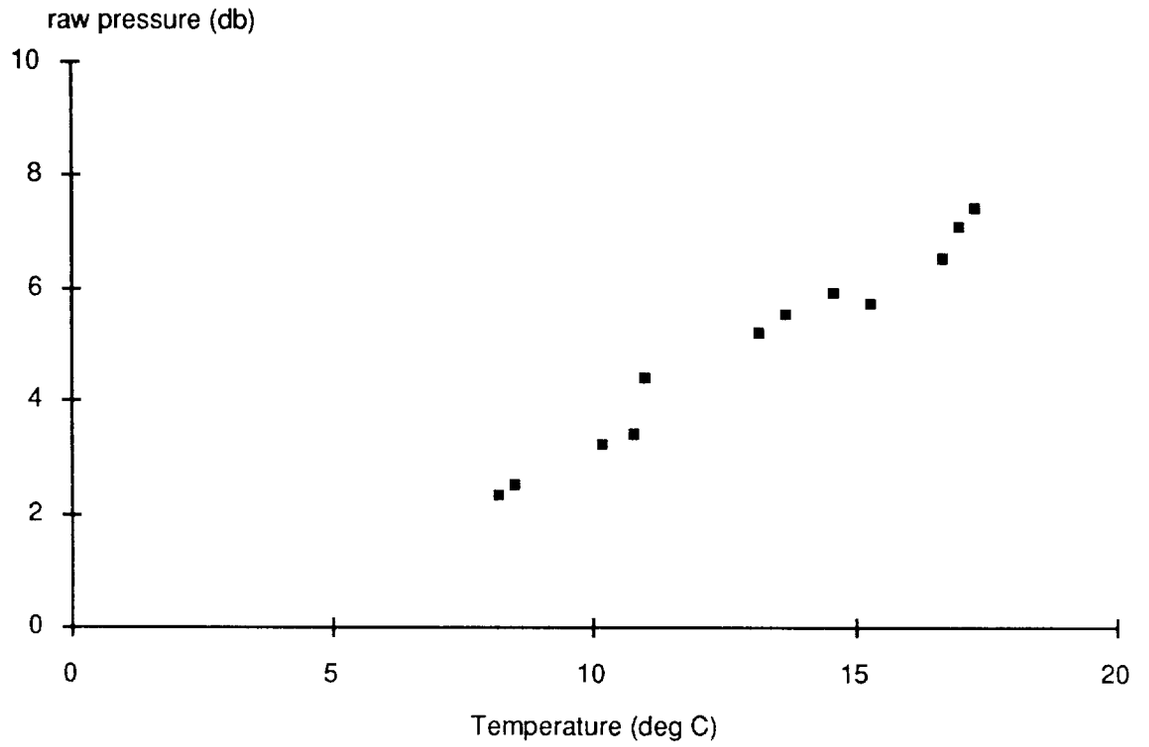

Figure 2 CTD raw pressure as a function of temperature

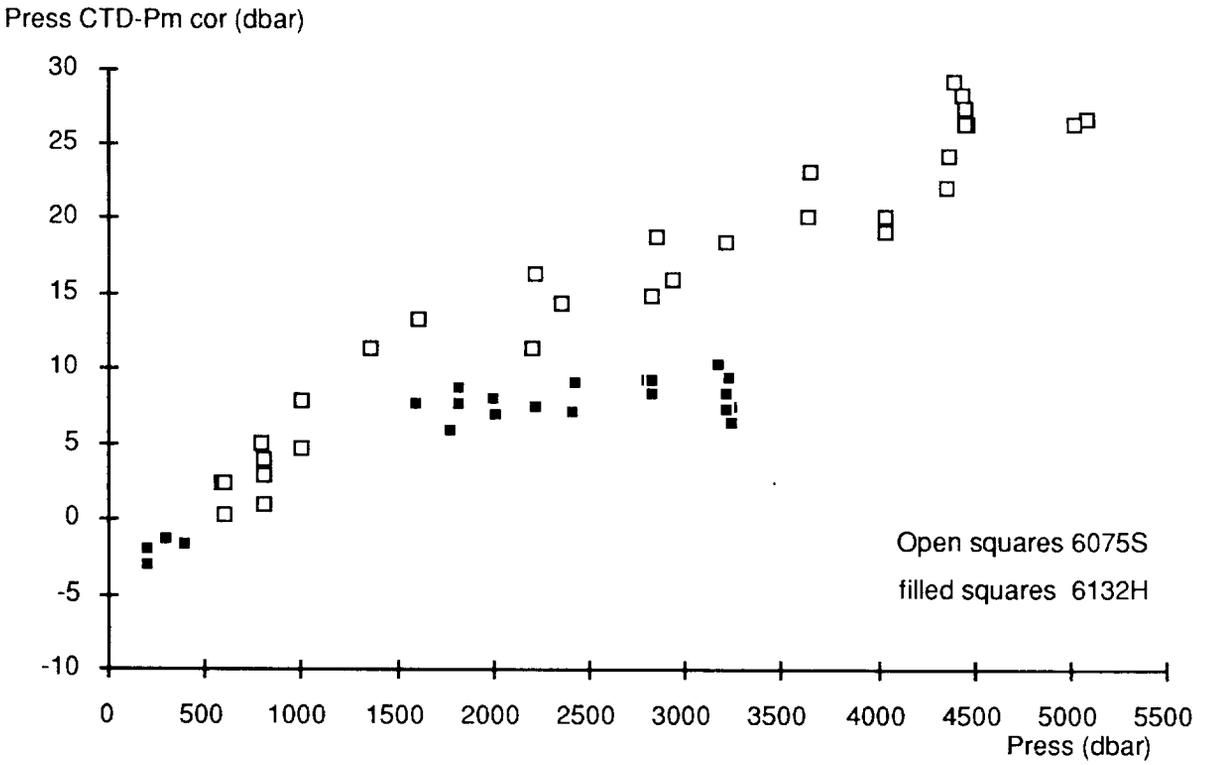

Figure 3 Comparison of CTD and SIS reversing pressure meters

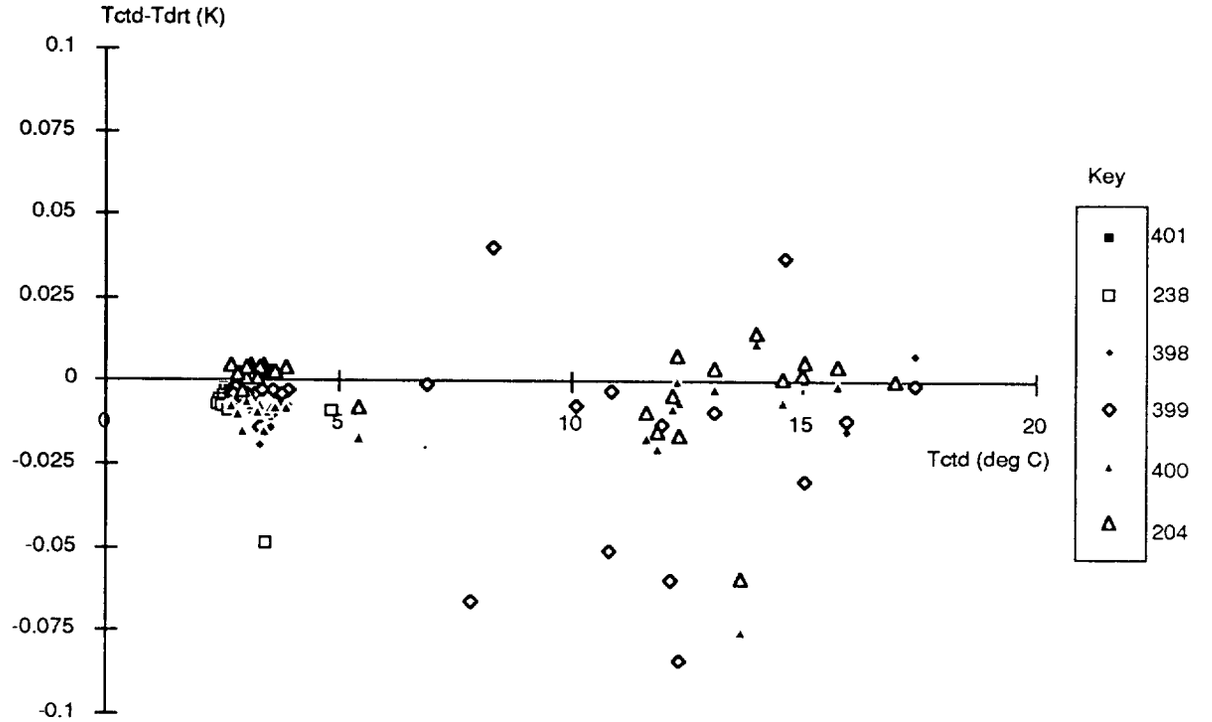

Figure 4 Comparison of CTD temperature and SIS reversing thermometers

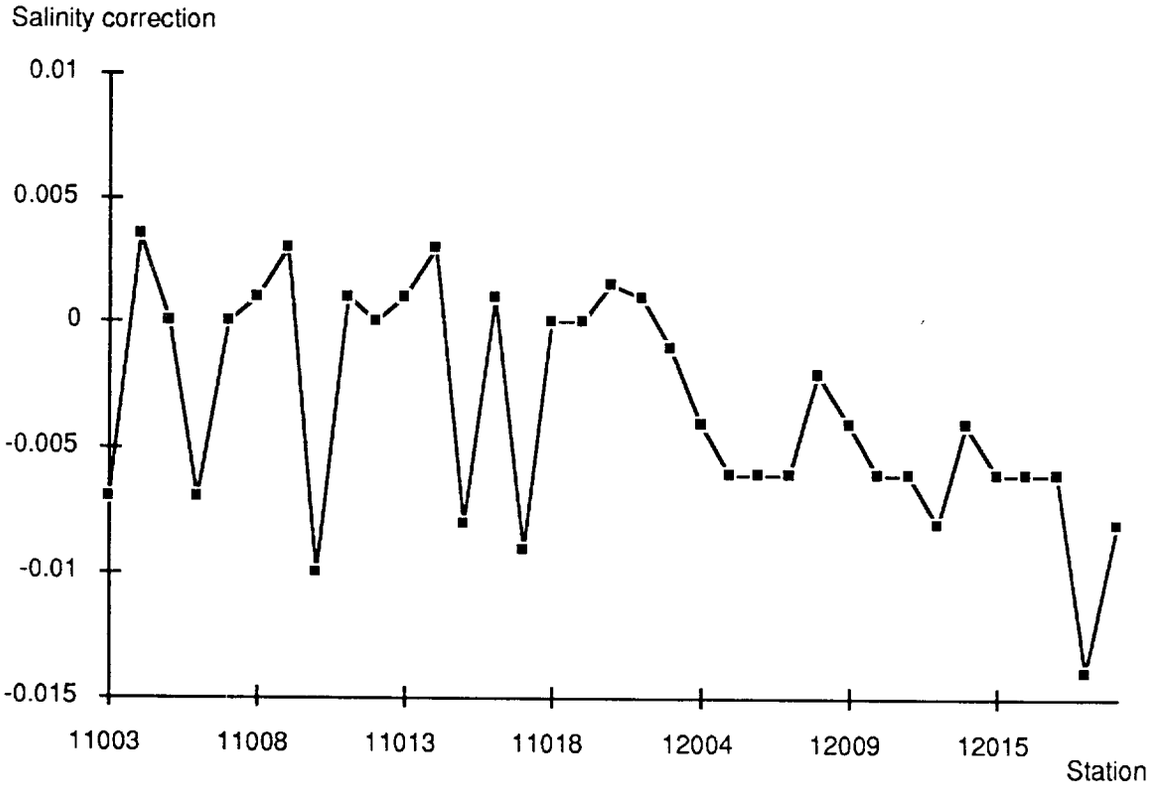

Figure 5 CTD salinity correction as applied to each station

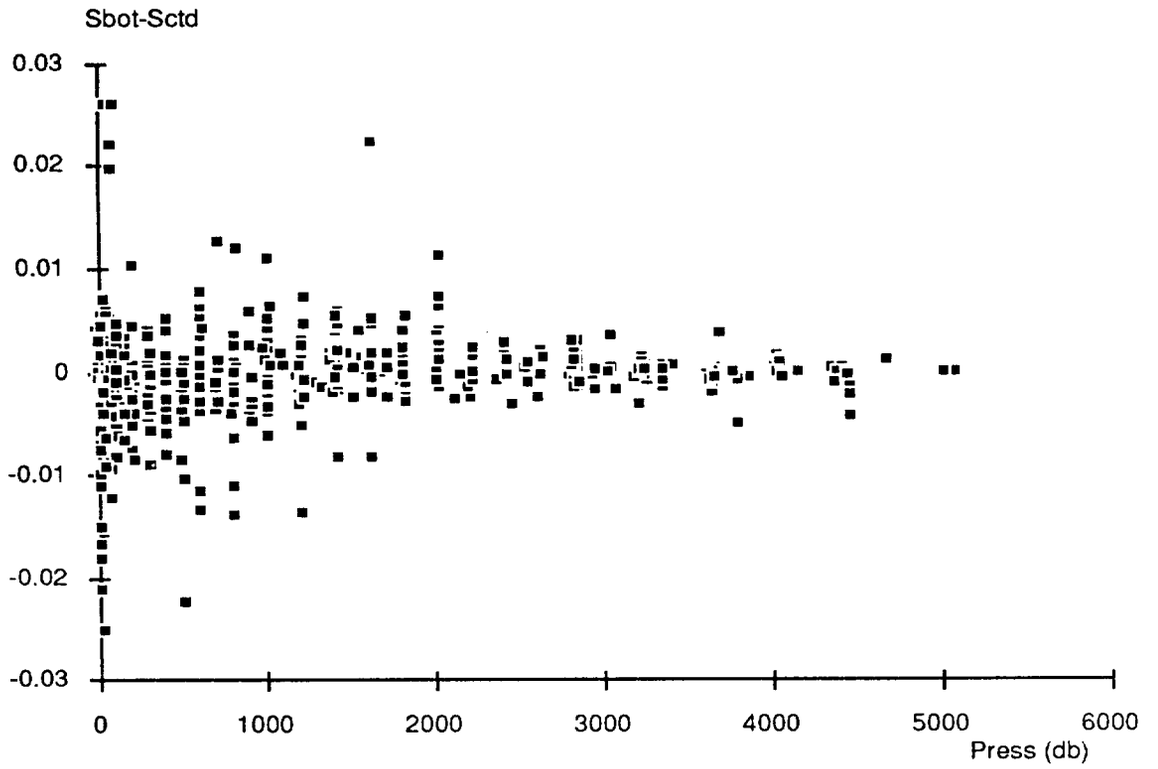

Figure 6 Salinity difference Sbot-Sctd against pressure

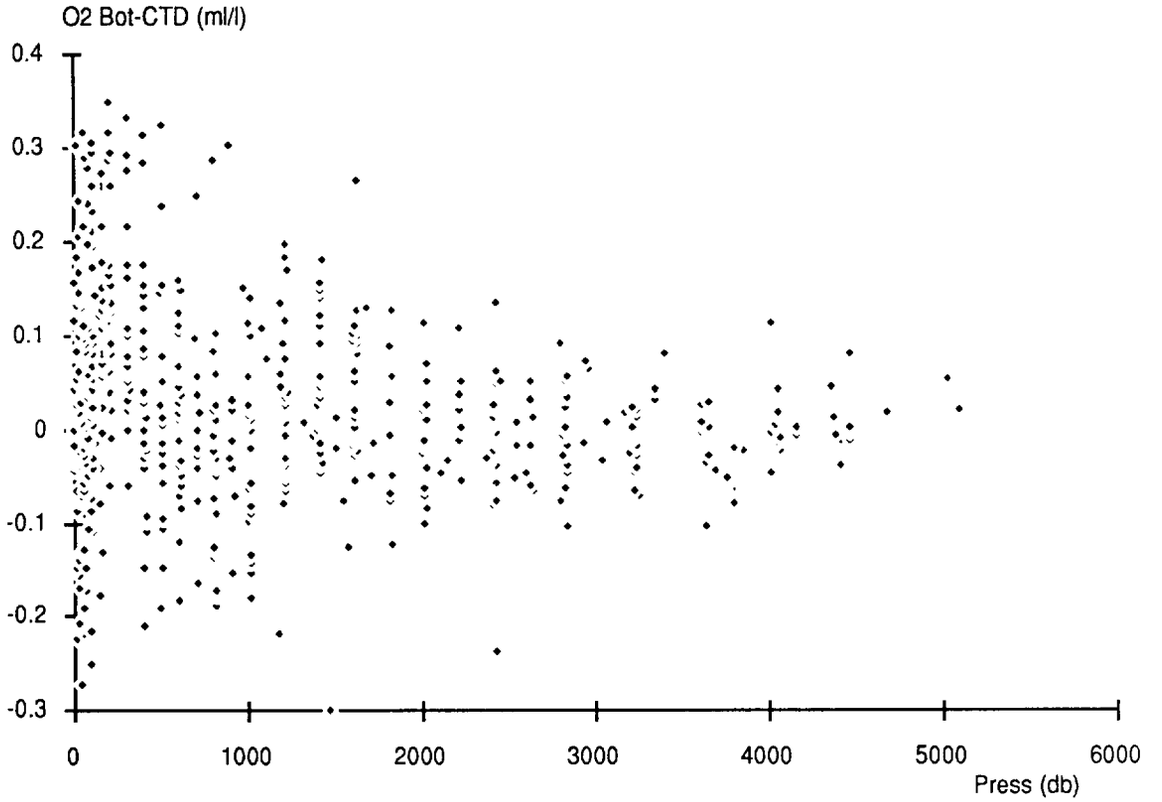

Figure 7 Oxygen difference Obot-Octd against pressure

station	sample	press	temp	salbot	oxybot	silicate	nitrate	phsphate
number	number	dbar	degc	psu	ml/l	umol/l	umol/l	umol/l
********	********	********	********	********	********	********	********	********
11003.	25.	4689.0	2.511	34.900	5.45	44.9	23.0	1.50
11003.	26.	4076.1	2.509	34.906	5.47	45.1	22.8	1.42
11003.	27.	4076.1	2.509	34.905	5.48	44.9	22.8	1.39
11003.	28.	3257.7	2.675	34.927	5.52	39.7	22.1	1.33
11003.	29.	2845.3	2.873	34.946	5.60	39.0	21.5	1.27
11003.	30.	2845.3	2.873	34.946	5.60	43.0	21.5	1.26
11003.	31.	2436.0	3.188	-999.000	-999.00	-999.0	-999.0	-999.00
11003.	32.	2436.0	3.189	34.961	5.75	33.4	20.3	1.15
11003.	33.	2032.7	3.631	34.958	5.97	20.9	18.9	1.04
11003.	34.	1826.5	3.722	34.929	6.12	16.8	18.5	1.00
11003.	35.	1624.1	4.011	34.943	6.01	16.1	18.8	1.03
11003.	36.	1428.6	4.647	35.008	5.69	16.1	19.2	1.04
11003.	37.	1226.1	6.437	35.250	4.97	16.3	19.5	1.04
11003.	38.	1021.8	8.585	35.522	4.46	15.2	18.9	0.97
11003.	39.	820.1	9.085	35.398	4.54	13.7	18.4	0.94
11003.	40.	616.2	10.307	35.448	5.26	8.4	14.1	0.67
11003.	41.	414.7	10.997	35.565	5.72	5.8	11.0	0.49
11003.	42.	315.5	11.151	35.575	5.64	-999.0	-999.0	-999.00
11003.	43.	214.7	11.539	35.648	5.91	3.9	8.4	0.33
11003.	44.	164.9	11.572	35.652	5.95	3.9	8.0	0.32
11003.	45.	113.6	11.574	35.654	5.98	3.9	7.8	0.30
11003.	46.	64.1	11.564	35.649	6.02	4.2	7.9	0.30
11003.	47.	24.0	11.558	35.648	6.03	4.3	7.9	0.30
11003.	48.	2.0	11.553	35.648	6.03	4.4	7.9	0.31
11004.	49.	2778.5	2.918	34.974	5.81	28.3	19.9	1.31
11004.	50.	2022.4	3.663	34.973	6.02	18.8	18.5	1.17
11004.	51.	2022.4	3.663	34.973	6.02	19.1	18.5	1.18
11004.	52.	1621.7	4.545	35.041	5.83	15.4	18.5	1.18
11004.	53.	1621.7	4.545	35.041	5.83	15.5	18.5	1.17
11004.	54.	1621.9	4.544	35.041	5.82	15.5	18.6	1.17
11004.	55.	1419.0	5.719	-999.000	-999.00	-999.0	-999.0	-999.00
11004.	56.	1213.6	8.234	35.592	4.68	14.0	18.1	1.09
11004.	57.	1008.8	9.626	35.750	4.35	12.5	17.5	1.03
11004.	58.	1008.9	9.626	35.751	4.35	12.6	17.6	1.04
11004.	59.	807.4	10.487	35.758	4.32	11.0	16.7	0.96
11004.	60.	607.1	10.523	35.533	4.76	8.7	15.5	0.89
11004.	61.	405.7	11.163	35.574	5.44	5.6	11.4	0.65
11004.	62.	305.9	11.418	35.618	5.68	4.9	10.3	0.58
11004.	63.	204.9	11.654	35.659	5.89	3.7	8.3	0.47
11004.	64.	155.6	11.715	35.669	5.85	3.8	8.5	0.48
11004.	65.	105.0	11.893	35.700	5.99	3.1	7.3	0.41
11004.	66.	54.7	12.044	35.723	6.10	2.7	6.1	0.36
11004.	67.	14.8	12.120	35.716	6.23	2.7	5.3	0.30
11004.	68.	3.0	12.121	35.712	6.29	2.6	4.9	0.29
11004.	69.	84.2	11.982	35.717	6.06	2.9	6.4	0.35
11004.	70.	65.5	12.042	35.724	6.10	2.9	6.1	0.34
11004.	71.	36.0	12.058	35.723	6.16	2.8	5.8	0.32
11004.	72.	10.9	12.123	35.712	6.29	2.8	5.0	0.27
11005.	73.	5091.7	2.532	34.896	5.57	43.6	23.1	-999.00
11005.	74.	4475.0	2.495	-999.000	5.56	42.8	22.9	-999.00
11005.	75.	4063.0	2.495	34.908	5.57	42.3	22.6	-999.00
11005.	76.	3653.0	2.612	-999.000	5.59	38.6	22.1	-999.00
11005.	77.	3243.0	2.749	34.937	5.62	35.2	21.9	-999.00
11005.	78.	2833.0	2.749	-999.000	5.68	30.8	21.0	-999.00
11005.	79.	2431.4	3.376	-999.000	-999.00	-999.0	-999.0	-999.00
11005.	80.	2431.8	3.384	-999.000	5.78	23.5	20.0	-999.00
11005.	81.	2026.3	4.266	35.085	5.74	15.9	19.0	-999.00
11005.	82.	1824.7	5.144	-999.000	5.55	13.3	18.8	-999.00
11005.	83.	1623.0	5.757	35.288	5.41	12.3	18.6	-999.00
11005.	84.	1623.0	5.757	-999.000	5.41	12.0	18.4	-999.00
11005.	85.	1419.7	8.273	35.724	4.76	10.7	17.6	-999.00
11005.	86.	1217.4	10.203	-999.000	4.33	9.4	16.5	-999.00
11005.	87.	1011.3	11.061	36.092	4.16	8.4	16.1	-999.00
11005.	88.	809.5	11.087	-999.000	4.21	7.6	16.2	-999.00
11005.	89.	606.2	10.880	35.625	5.25	3.4	11.1	-999.00
11005.	90.	606.2	10.880	-999.000	5.25	3.4	11.0	-999.00
11005.	91.	304.9	12.091	35.708	5.67	2.3	8.2	-999.00
11005.	92.	204.7	12.698	-999.000	5.80	1.8	6.1	-999.00
11005.	93.	155.4	12.770	35.831	5.86	1.8	5.0	-999.00
11005.	94.	104.3	12.841	-999.000	5.96	1.7	4.2	-999.00
11005.	95.	54.9	13.088	35.857	5.81	1.6	3.9	-999.00
11005.	96.	15.2	13.128	-999.000	6.15	1.3	2.8	-999.00
11006.	97.	5025.8	2.535	34.897	5.58	44.5	22.8	1.47
11006.	98.	4417.2	2.494	-999.000	5.59	43.8	22.5	1.60

pH15	ALK	Cinorg	pCO2	F-12	F-11	F-113	sample	station
	uMol/kg	umol/kg	ppm	pMol/l	pMol/l	pMol/l	number	number
8.009	2343.702	2190.0	614.0	-999.000	-999.000	-999.000	25.	11003.
8.008	2339.230	2187.0	614.6	-999.000	-999.000	-999.000	26.	11003.
8.008	2341.245	2188.0	614.5	-999.000	-999.000	-999.000	27.	11003.
8.008	2326.899	2175.0	610.5	-999.000	-999.000	-999.000	28.	11003.
8.012	2325.079	2171.0	604.9	-999.000	-999.000	-999.000	29.	11003.
8.016	2327.012	2171.0	598.1	-999.000	-999.000	-999.000	30.	11003.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	31.	11003.
8.012	2312.314	2159.0	601.0	-999.000	-999.000	-999.000	32.	11003.
8.013	2304.427	2151.0	596.9	-999.000	-999.000	-999.000	33.	11003.
8.010	2293.238	2142.0	599.6	-999.000	-999.000	-999.000	34.	11003.
8.005	2295.697	2146.0	607.6	-999.000	-999.000	-999.000	35.	11003.
8.004	2302.019	2152.0	611.1	-999.000	-999.000	-999.000	36.	11003.
8.012	2311.960	2157.0	598.9	-999.000	-999.000	-999.000	37.	11003.
8.034	2327.131	2161.0	568.4	-999.000	-999.000	-999.000	38.	11003.
8.047	2319.580	2149.0	547.8	-999.000	-999.000	-999.000	39.	11003.
8.099	2324.894	2130.0	478.2	-999.000	-999.000	-999.000	40.	11003.
8.141	2336.894	2121.0	430.1	-999.000	-999.000	-999.000	41.	11003.
8.143	2330.826	2114.0	426.7	-999.000	-999.000	-999.000	42.	11003.
8.164	2340.240	2112.0	403.9	-999.000	-999.000	-999.000	43.	11003.
8.171	2344.160	2112.0	397.3	-999.000	-999.000	-999.000	44.	11003.
8.171	2344.895	2113.0	397.3	-999.000	-999.000	-999.000	45.	11003.
8.174	2337.066	2104.0	393.1	-999.000	-999.000	-999.000	46.	11003.
8.176	2346.412	2112.0	392.4	-999.000	-999.000	-999.000	47.	11003.
8.177	2330.595	2096.0	388.4	-999.000	-999.000	-999.000	48.	11003.
8.013	2322.220	2168.0	602.6	-999.000	-999.000	-999.000	49.	11004.
8.014	2308.915	2155.0	596.1	-999.000	-999.000	-999.000	50.	11004.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	51.	11004.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	52.	11004.
8.013	2307.021	2153.0	597.2	-999.000	-999.000	-999.000	53.	11004.
-999.000	-999.000	-999.0	-999.0	0.454	1.395	0.005	54.	11004.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	55.	11004.
8.046	2345.709	2173.0	555.3	0.332	-999.000	0.013	56.	11004.
8.056	2353.760	2175.0	541.7	0.421	1.166	0.013	57.	11004.
8.056	2353.886	2175.0	541.7	-999.000	-999.000	-999.000	58.	11004.
8.070	2351.471	2167.0	522.0	0.548	1.358	0.029	59.	11004.
8.089	2332.163	2141.0	492.6	-999.000	-999.000	-999.000	60.	11004.
8.132	2334.596	2123.0	439.4	1.379	3.570	0.166	61.	11004.
8.148	2332.930	2113.0	421.0	1.440	4.096	0.199	62.	11004.
8.161	2334.914	2108.0	406.7	1.264	3.745	0.230	63.	11004.
8.165	2338.221	2110.0	403.2	1.508	4.192	0.218	64.	11004.
8.177	2340.607	2106.0	390.6	1.617	-999.000	0.219	65.	11004.
8.190	2339.431	2097.0	376.2	1.625	4.198	0.252	66.	11004.
8.201	2342.320	2095.0	366.0	-999.000	-999.000	-999.000	67.	11004.
8.198	2340.810	2094.0	368.2	-999.000	-999.000	-999.000	68.	11004.
8.181	2338.141	2101.0	385.8	-999.000	-999.000	-999.000	69.	11004.
8.189	2339.339	2098.0	377.4	1.535	3.960	0.249	70.	11004.
8.192	2339.537	2096.0	373.9	1.554	4.220	0.259	71.	11004.
8.194	2336.909	2093.0	371.6	1.589	4.066	0.241	72.	11004.
8.005	2350.712	2199.0	622.6	0.041	0.119	0.019	73.	11005.
8.006	2351.801	2200.0	622.1	-999.000	-999.000	-999.000	74.	11005.
8.003	2345.892	2195.0	624.6	0.016	0.086	0.008	75.	11005.
8.006	2342.229	2190.0	619.2	-999.000	-999.000	-999.000	76.	11005.
8.007	2338.526	2186.0	616.0	0.032	0.227	0.008	77.	11005.
8.013	2329.932	2175.0	604.4	-999.000	-999.000	-999.000	78.	11005.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	79.	11005.
8.012	2322.602	2168.0	602.8	0.067	0.085	0.026	80.	11005.
8.017	2320.552	2164.0	594.0	0.148	0.216	0.021	81.	11005.
8.023	2325.631	2166.0	586.3	-999.000	-999.000	-999.000	82.	11005.
-999.000	-999.000	-999.0	-999.0	0.303	0.611	0.009	83.	11005.
8.025	2329.536	2168.0	584.2	0.317	0.632	0.014	84.	11005.
8.052	2359.615	2183.0	548.8	0.325	0.712	0.025	85.	11005.
8.073	2379.903	2191.0	521.7	0.378	0.831	0.025	86.	11005.
8.078	2383.247	2191.0	515.3	-999.000	-999.000	-999.000	87.	11005.
8.077	2360.885	2171.0	512.6	0.575	-999.000	0.047	88.	11005.
8.120	2334.929	2128.0	453.4	-999.000	-999.000	-999.000	89.	11005.
8.116	2334.127	2130.0	458.3	1.245	-999.000	0.156	90.	11005.
8.162	2337.575	2110.0	405.3	-999.000	-999.000	-999.000	91.	11005.
8.179	2344.538	2107.0	388.6	1.463	3.581	0.205	92.	11005.
8.190	2347.259	2104.0	376.7	-999.000	-999.000	-999.000	93.	11005.
8.201	2348.110	2099.0	365.7	1.447	3.445	0.246	94.	11005.
8.207	2347.173	2095.0	359.8	-999.000	-999.000	-999.000	95.	11005.
8.219	2345.113	2087.0	348.4	1.472	-999.000	0.246	96.	11005.
8.011	2365.461	2211.0	617.1	0.000	0.000	0.007	97.	11006.
8.009	2350.124	2197.0	616.0	-999.000	-999.000	-999.000	98.	11006.

station number	sample number	press dbar	temp degc	salbot psu	oxybot ml/l	silicate umol/l	nitrate umol/l	phsphate umol/l
11006.	99.	4014.6	2.519	34.909	5.59	42.2	22.5	1.58
11006.	100.	3615.9	2.577	-999.000	5.61	40.2	22.3	1.55
11006.	101.	3218.0	2.692	34.933	5.66	36.5	21.7	1.49
11006.	102.	3218.0	2.692	-999.000	5.66	36.5	21.8	1.51
11006.	103.	2822.4	2.910	-999.000	-999.00	-999.0	-999.0	-999.00
11006.	104.	2822.4	2.911	-999.000	5.75	30.9	20.9	1.43
11006.	105.	2425.8	3.258	34.977	5.84	24.3	20.0	1.31
11006.	106.	1827.2	4.055	-999.000	5.94	16.4	18.9	1.22
11006.	107.	1627.2	5.052	35.160	5.67	12.4	18.6	1.18
11006.	108.	1426.3	6.086	-999.000	5.34	11.6	18.6	1.15
11006.	109.	1426.3	6.086	35.298	5.33	11.6	18.6	1.15
11006.	110.	1220.1	8.267	-999.000	4.69	10.7	18.1	1.10
11006.	111.	1018.1	9.882	35.849	4.31	9.6	17.6	1.03
11006.	112.	814.7	10.389	-999.000	4.30	8.9	17.2	1.03
11006.	113.	611.8	10.612	35.530	4.83	7.1	15.3	0.90
11006.	114.	411.8	11.243	-999.000	5.32	4.9	12.1	0.68
11006.	115.	213.4	11.902	35.699	5.86	3.3	8.5	0.45
11006.	116.	213.4	11.902	-999.000	5.85	2.8	7.9	0.43
11006.	117.	163.5	12.005	35.710	5.96	2.1	6.8	0.35
11006.	118.	113.4	12.165	-999.000	5.99	2.0	6.3	0.34
11006.	119.	63.9	12.344	35.749	6.10	1.9	5.5	0.32
11006.	120.	24.1	12.875	-999.000	6.62	1.4	2.2	0.14
11007.	121.	4367.5	2.569	34.909	5.56	43.2	22.8	1.52
11007.	122.	4063.1	2.592	-999.000	5.59	40.8	22.3	1.51
11007.	123.	3658.2	2.630	34.923	5.65	37.8	21.9	1.50
11007.	124.	3249.6	2.783	-999.000	5.76	32.2	21.2	1.43
11007.	125.	3249.6	2.783	34.939	5.76	32.1	21.5	1.44
11007.	126.	2433.5	3.441	-999.000	5.88	25.3	20.2	1.34
11007.	127.	2029.5	3.735	-999.000	-999.00	-999.0	-999.0	-999.00
11007.	128.	2029.6	3.735	-999.000	6.23	11.9	18.1	1.17
11007.	129.	2029.6	3.735	34.947	6.23	11.9	18.1	1.18
11007.	130.	1625.2	4.521	-999.000	6.14	11.0	18.2	1.17
11007.	131.	1419.6	5.907	35.225	5.36	10.8	18.6	1.21
11007.	132.	1213.9	7.971	-999.000	4.73	10.2	18.5	1.17
11007.	133.	1213.9	7.971	35.513	4.74	10.2	18.6	1.16
11007.	134.	1010.8	9.674	-999.000	4.35	9.0	17.7	1.11
11007.	135.	814.2	10.091	35.531	4.61	7.3	16.6	1.05
11007.	136.	612.5	10.739	-999.000	5.37	4.6	13.0	0.82
11007.	137.	511.8	11.210	35.578	5.66	3.6	10.6	0.67
11007.	138.	410.9	11.366	-999.000	5.74	3.4	10.1	0.64
11007.	139.	311.4	11.626	35.654	5.76	2.8	9.2	0.62
11007.	140.	210.9	11.781	-999.000	5.90	2.3	8.0	0.53
11007.	141.	161.0	11.849	35.689	5.94	2.0	7.4	0.51
11007.	142.	111.2	12.047	-999.000	6.06	1.7	6.4	0.46
11007.	143.	61.2	12.173	35.726	6.13	1.7	6.1	0.43
11007.	144.	21.5	12.399	-999.000	6.36	1.5	5.1	0.36
11008.	145.	4414.2	2.550	34.906	5.59	43.8	22.5	1.55
11008.	146.	4013.3	2.569	-999.000	5.63	42.3	22.4	1.67
11008.	147.	3622.6	2.646	34.925	5.69	38.8	21.8	1.62
11008.	148.	3214.0	2.805	-999.000	5.79	33.7	20.9	1.49
11008.	149.	2805.9	3.068	34.957	5.93	26.4	19.7	1.31
11008.	150.	2411.3	3.479	-999.000	6.08	18.0	18.5	1.21
11008.	151.	2411.3	3.479	-999.000	-999.00	-999.0	-999.0	-999.00
11008.	152.	2412.6	3.480	-999.000	6.09	18.1	18.5	1.24
11008.	153.	2015.9	3.645	34.924	6.31	11.5	17.9	1.19
11008.	154.	1816.3	3.814	-999.000	6.25	11.5	17.9	-999.00
11008.	155.	1405.8	5.156	35.067	5.62	11.7	18.6	-999.00
11008.	156.	1405.8	5.156	-999.000	5.61	11.7	18.6	1.20
11008.	157.	1200.6	7.059	35.314	4.93	11.5	18.4	1.17
11008.	158.	1000.5	8.312	-999.000	4.65	10.0	18.0	1.09
11008.	159.	814.5	9.254	35.349	4.95	8.7	16.7	0.99
11008.	160.	620.5	10.416	-999.000	5.93	4.2	10.6	0.64
11008.	161.	418.9	10.943	35.557	5.95	4.2	10.5	0.58
11008.	162.	318.7	10.954	-999.000	5.92	4.1	10.6	0.63
11008.	163.	219.0	11.189	35.569	5.95	3.9	10.2	0.54
11008.	164.	169.4	11.309	-999.000	5.94	3.8	10.0	0.59
11008.	165.	119.3	11.433	35.610	6.01	3.7	9.5	0.60
11008.	166.	69.2	11.568	-999.000	6.09	3.5	8.8	0.56
11008.	167.	29.5	11.885	35.642	6.24	3.4	8.0	0.48
11008.	168.	1.5	12.090	-999.000	6.33	3.4	7.7	0.53
11009.	169.	4386.4	2.536	34.905	5.59	43.6	22.6	1.51
11009.	170.	4054.3	2.539	-999.000	5.62	42.3	22.3	1.48
11009.	171.	4054.3	2.539	34.910	5.63	42.0	22.4	1.48
11009.	172.	3641.2	2.573	-999.000	5.67	39.3	21.8	1.43

pH15	ALK	Cinorg	pCO2	F-12	F-11	F-113	sample	station
	uMol/kg	umol/kg	ppm	pMol/l	pMol/l	pMol/l	number	number
8.009	2350.580	2197.0	616.4	0.052	0.000	0.000	99.	11006.
8.008	2343.292	2191.0	616.5	-999.000	-999.000	-999.000	100.	11006.
8.011	2338.615	2185.0	609.9	0.037	0.196	0.007	101.	11006.
8.014	2340.043	2185.0	605.7	-999.000	-999.000	-999.000	102.	11006.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	103.	11006.
8.014	2331.312	2176.0	603.4	0.044	0.110	0.018	104.	11006.
8.016	2323.912	2168.0	598.0	0.041	0.141	0.009	105.	11006.
8.018	2315.196	2159.0	591.4	-999.000	-999.000	-999.000	106.	11006.
8.021	2319.377	2161.0	587.5	0.333	0.733	0.014	107.	11006.
8.026	2326.839	2165.0	581.8	0.400	0.859	0.026	108.	11006.
8.026	2331.341	2169.0	582.0	-999.000	-999.000	-999.000	109.	11006.
8.044	2350.195	2178.0	558.4	0.384	0.836	0.032	110.	11006.
8.062	2360.331	2178.0	534.4	0.404	0.923	0.036	111.	11006.
8.064	2348.395	2167.0	529.0	0.572	1.311	0.041	112.	11006.
8.084	2332.084	2143.0	498.7	-999.000	-999.000	-999.000	113.	11006.
8.122	2331.730	2125.0	451.2	1.584	3.826	0.152	114.	11006.
8.163	2335.793	2108.0	404.1	-999.000	-999.000	-999.000	115.	11006.
8.167	2335.793	2106.0	400.4	1.476	-999.000	0.248	116.	11006.
8.179	2336.061	2100.0	386.9	-999.000	-999.000	-999.000	117.	11006.
8.182	2338.450	2100.0	384.0	1.518	3.609	0.271	118.	11006.
8.194	2338.192	2094.0	371.9	-999.000	-999.000	-999.000	119.	11006.
8.235	2344.298	2078.0	333.5	1.531	-999.000	0.289	120.	11006.
8.008	2348.692	2196.0	617.5	-999.000	-999.000	-999.000	121.	11007.
8.007	2343.941	2192.0	617.6	0.000	0.152	0.000	122.	11007.
8.008	2339.398	2187.0	615.2	-999.000	-999.000	-999.000	123.	11007.
8.010	2332.732	2179.0	609.1	-999.000	-999.000	-999.000	124.	11007.
8.012	2334.550	2180.0	607.0	0.060	0.387	0.000	125.	11007.
8.018	2324.077	2168.0	594.7	0.066	0.228	0.035	126.	11007.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	127.	11007.
8.016	2302.170	2148.0	592.2	-999.000	-999.000	-999.000	128.	11007.
8.009	2302.622	2151.0	603.0	0.392	1.270	0.056	129.	11007.
8.010	2303.324	2151.0	601.7	-999.000	-999.000	-999.000	130.	11007.
8.018	2319.202	2162.0	591.8	0.472	2.119	0.036	131.	11007.
8.033	2339.329	2173.0	573.1	-999.000	-999.000	-999.000	132.	11007.
-999.000	-999.000	-999.0	-999.0	0.469	2.097	0.039	133.	11007.
8.055	2349.687	2172.0	542.9	0.507	1.329	0.049	134.	11007.
8.067	2334.202	2153.0	522.2	-999.000	-999.000	-999.000	135.	11007.
8.113	2327.890	2126.0	461.9	1.270	3.392	0.157	136.	11007.
8.136	2330.029	2117.0	434.5	1.436	-999.000	0.201	137.	11007.
8.144	2333.625	2116.0	425.6	1.720	-999.000	0.201	138.	11007.
8.154	2333.469	2111.0	414.2	1.413	-999.000	0.244	139.	11007.
8.175	2337.458	2103.0	391.6	-999.000	-999.000	-999.000	140.	11007.
8.170	2340.538	2109.0	397.8	1.504	3.707	0.264	141.	11007.
8.182	2336.394	2099.0	383.7	1.574	4.578	0.281	142.	11007.
8.191	2339.270	2097.0	375.6	-999.000	-999.000	-999.000	143.	11007.
8.208	2338.332	2087.0	358.3	1.548	-999.000	0.300	144.	11007.
8.004	2347.716	2196.0	623.2	-999.000	-999.000	-999.000	145.	11008.
8.009	2344.561	2191.0	614.8	-999.000	-999.000	-999.000	146.	11008.
8.009	2338.397	2185.0	613.0	-999.000	-999.000	-999.000	147.	11008.
8.010	2332.081	2179.0	609.0	0.083	0.078	0.009	148.	11008.
8.014	2320.961	2166.0	600.2	-999.000	-999.000	-999.000	149.	11008.
8.017	2310.065	2155.0	592.8	-999.000	-999.000	-999.000	150.	11008.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	151.	11008.
8.016	2311.718	2157.0	595.0	0.212	0.361	0.018	152.	11008.
8.010	2299.606	2148.0	601.4	-999.000	-999.000	-999.000	153.	11008.
8.009	2299.434	2148.0	602.9	0.671	1.498	0.052	154.	11008.
8.003	2307.841	2158.0	613.1	-999.000	-999.000	-999.000	155.	11008.
8.006	2309.440	2158.0	608.8	0.657	1.466	0.051	156.	11008.
8.021	2326.113	2167.0	589.1	-999.000	-999.000	-999.000	157.	11008.
8.036	2329.307	2163.0	566.9	0.688	1.501	0.068	158.	11008.
8.060	2322.262	2146.0	530.6	0.932	2.145	0.112	159.	11008.
8.141	2330.179	2115.0	428.9	1.585	3.603	0.253	160.	11008.
8.141	2330.409	2115.0	428.1	1.581	3.866	0.258	161.	11008.
8.143	2328.070	2112.0	425.9	1.422	3.535	0.240	162.	11008.
8.152	2331.037	2110.0	416.5	1.421	3.511	0.243	163.	11008.
8.156	2332.520	2109.0	411.8	-999.000	-999.000	-999.000	164.	11008.
8.162	2332.236	2106.0	405.4	1.496	3.597	0.248	165.	11008.
8.169	2334.655	2104.0	397.4	-999.000	-999.000	-999.000	166.	11008.
8.183	2334.381	2097.0	383.5	-999.000	-999.000	-999.000	167.	11008.
8.188	2336.977	2097.0	378.5	1.489	3.609	0.274	168.	11008.
8.014	2347.030	2192.0	607.9	0.050	0.342	0.015	169.	11009.
8.011	2343.868	2190.0	611.1	-999.000	-999.000	-999.000	170.	11009.
8.013	2345.534	2191.0	608.7	0.048	0.129	0.008	171.	11009.
8.013	2343.582	2189.0	607.5	-999.000	-999.000	-999.000	172.	11009.

station number	sample number	press dbar	temp degc	salbot psu	oxybot ml/l	silicate umol/l	nitrate umol/l	phsphate umol/l
11009.	173.	3233.5	2.713	34.936	5.81	33.0	20.6	1.34
11009.	174.	2828.4	2.958	-999.000	6.01	25.1	19.3	1.33
11009.	175.	2424.7	3.290	-999.000	-999.00	-999.0	-999.0	-999.00
11009.	176.	2424.7	3.290	-999.000	6.40	11.5	17.3	1.31
11009.	177.	2022.2	3.506	34.922	6.41	11.2	17.4	1.09
11009.	178.	1821.2	3.562	-999.000	6.45	10.5	17.4	1.10
11009.	179.	1622.8	3.660	34.904	6.44	9.8	17.5	1.09
11009.	180.	1421.6	3.897	-999.000	6.28	9.8	17.7	1.09
11009.	181.	1216.8	4.499	34.975	5.93	10.0	18.2	1.19
11009.	182.	1013.7	5.451	-999.000	5.48	10.0	18.6	1.22
11009.	183.	812.3	7.413	35.217	4.90	10.1	18.6	1.15
11009.	184.	610.4	8.521	-999.000	5.27	8.5	16.7	1.10
11009.	185.	410.5	10.517	35.466	5.81	4.5	11.8	0.73
11009.	186.	311.8	10.500	-999.000	5.88	4.2	11.5	0.71
11009.	187.	211.8	10.710	35.456	5.96	3.9	10.9	0.66
11009.	188.	162.2	10.845	-999.000	5.97	3.7	10.7	0.66
11009.	189.	112.3	11.155	35.532	5.76	3.7	10.8	0.63
11009.	190.	62.3	11.515	-999.000	6.15	1.8	8.5	0.52
11009.	191.	22.5	11.967	-999.000	-999.00	-999.0	-999.0	-999.00
11009.	192.	0.9	12.352	-999.000	6.41	1.1	6.7	0.38
11010.	193.	4375.8	2.587	34.910	5.57	42.6	22.8	1.57
11010.	194.	4061.1	2.591	34.914	5.61	41.0	22.7	1.57
11010.	195.	4061.1	2.591	34.914	5.60	41.0	22.7	1.56
11010.	196.	3233.7	2.859	34.945	5.89	28.1	20.3	1.34
11010.	197.	2821.7	3.212	34.960	6.02	21.5	19.1	1.27
11010.	198.	2416.0	3.479	34.939	6.27	14.4	17.9	1.21
11010.	199.	1994.6	3.611	34.905	6.40	12.0	17.9	1.17
11010.	200.	1994.6	3.611	34.904	6.40	12.0	18.0	1.17
11010.	201.	1607.5	4.228	34.953	6.06	11.9	18.5	1.21
11010.	202.	1607.5	4.228	34.953	6.07	11.8	18.5	1.20
11010.	203.	1214.3	6.682	35.229	5.02	11.9	19.3	1.24
11010.	204.	1214.3	6.682	35.229	5.04	12.2	19.3	1.21
11010.	205.	1012.4	8.674	34.910	6.38	12.2	18.0	1.33
11010.	206.	813.2	9.966	35.368	5.14	7.7	15.6	0.86
11010.	207.	612.7	11.264	35.575	5.77	4.8	11.0	0.63
11010.	208.	414.1	11.491	35.608	5.78	4.5	10.4	0.60
11010.	209.	314.3	11.661	35.629	5.78	4.2	10.1	0.59
11010.	210.	214.1	12.022	35.681	5.88	3.8	9.1	0.51
11010.	211.	164.3	12.146	35.701	5.96	3.7	8.7	0.50
11010.	212.	114.3	12.187	35.710	5.97	3.6	8.7	0.53
11010.	213.	94.7	12.198	35.713	5.97	3.6	8.4	0.49
11010.	214.	64.9	12.201	35.711	6.01	3.5	8.2	0.50
11010.	215.	35.1	12.282	35.712	6.12	3.4	7.7	0.44
11010.	216.	25.5	12.404	35.713	6.21	3.3	7.2	0.39
11011.	217.	2841.3	2.922	34.950	5.82	28.1	19.8	1.14
11011.	218.	2841.3	2.922	34.950	5.82	28.0	19.8	1.22
11011.	219.	2841.3	2.922	34.950	5.81	28.1	19.9	1.16
11011.	220.	2638.3	3.086	34.959	5.88	25.0	19.5	1.11
11011.	221.	2230.1	3.544	34.977	5.98	18.0	18.8	1.06
11011.	222.	2025.9	3.737	34.980	6.02	16.0	18.4	1.01
11011.	223.	2025.9	3.737	34.980	6.02	16.2	18.4	1.01
11011.	224.	1820.2	4.097	35.008	5.97	14.6	18.6	1.07
11011.	225.	1422.0	5.777	35.252	5.38	13.4	18.5	1.09
11011.	226.	1422.0	5.777	35.251	5.39	13.6	18.6	1.10
11011.	227.	1017.7	9.471	35.728	4.31	12.0	18.1	1.03
11011.	228.	1017.7	9.471	35.729	4.31	12.1	18.0	1.03
11011.	229.	814.6	9.893	35.592	4.28	11.1	18.0	1.00
11011.	230.	611.9	10.392	35.425	5.06	7.7	14.9	0.83
11011.	231.	509.1	11.016	35.507	5.25	5.8	13.2	0.75
11011.	232.	407.4	11.578	35.602	5.44	4.8	11.3	0.61
11011.	233.	308.0	11.999	35.676	5.57	4.0	9.8	0.56
11011.	234.	207.8	12.281	35.724	5.73	3.5	8.6	0.46
11011.	235.	158.3	12.323	35.720	5.56	3.7	9.1	0.52
11011.	236.	108.8	12.652	35.761	5.51	3.7	9.1	0.51
11011.	237.	89.0	12.909	35.805	5.62	2.9	7.5	0.35
11011.	238.	59.1	13.290	35.871	5.73	2.5	6.2	0.27
11011.	239.	29.2	13.661	35.893	5.95	2.0	4.4	0.25
11011.	240.	18.9	13.780	35.899	6.09	1.4	3.1	0.13
11012.	241.	4471.6	2.535	34.903	5.55	43.3	22.3	1.50
11012.	242.	4059.4	2.554	34.910	5.55	41.8	22.2	1.65
11012.	243.	3649.9	2.601	34.919	5.58	39.2	21.8	1.44
11012.	244.	2837.5	2.946	34.952	5.81	27.4	20.0	1.51
11012.	245.	2426.3	3.361	34.984	5.88	21.2	19.2	1.24
11012.	246.	2426.3	3.361	34.984	5.87	21.2	19.2	1.24

pH15	ALK	Cinorg	pCO2	F-12	F-11	F-113	sample	station
	uMol/kg	umol/kg	ppm	pMol/l	pMol/l	pMol/l	number	number
8.014	2331.423	2177.0	603.7	-999.000	-999.000	-999.000	173.	11009.
8.019	2318.815	2162.0	591.7	0.179	0.338	0.011	174.	11009.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	175.	11009.
8.019	2297.948	2142.0	586.1	-999.000	-999.000	-999.000	176.	11009.
8.019	2299.216	2144.0	586.5	0.548	1.267	0.041	177.	11009.
8.016	2296.887	2143.0	590.4	-999.000	-999.000	-999.000	178.	11009.
8.013	2295.913	2143.0	594.7	0.817	1.872	0.069	179.	11009.
8.009	2297.156	2146.0	601.7	-999.000	-999.000	-999.000	180.	11009.
8.006	2300.713	2150.0	606.7	0.872	1.923	0.080	181.	11009.
8.007	2307.740	2156.0	606.7	0.797	1.802	0.099	182.	11009.
8.018	2315.936	2159.0	591.6	0.784	1.755	0.095	183.	11009.
8.055	2312.391	2139.0	535.4	1.154	2.662	0.161	184.	11009.
8.129	2322.971	2114.0	441.4	1.461	3.301	0.234	185.	11009.
8.134	2322.862	2112.0	435.4	1.458	3.502	0.250	186.	11009.
8.146	2323.263	2106.0	422.1	-999.000	-999.000	-999.000	187.	11009.
8.150	2325.269	2106.0	417.5	1.427	-999.000	0.259	188.	11009.
8.149	2325.816	2107.0	418.7	-999.000	-999.000	-999.000	189.	11009.
8.176	2332.802	2099.0	389.8	-999.000	-999.000	-999.000	190.	11009.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	191.	11009.
8.205	2332.365	2083.0	360.1	1.491	3.458	0.272	192.	11009.
8.012	2347.416	2193.0	610.9	-999.000	-999.000	-999.000	193.	11010.
8.014	2346.401	2191.0	607.5	-999.000	-999.000	-999.000	194.	11010.
8.013	2344.405	2190.0	608.4	0.303	0.202	0.029	195.	11010.
8.016	2326.281	2171.0	598.1	-999.000	-999.000	-999.000	196.	11010.
8.021	2315.159	2158.0	587.4	-999.000	-999.000	-999.000	197.	11010.
8.024	2300.321	2143.0	579.7	-999.000	-999.000	-999.000	198.	11010.
8.017	2297.354	2143.0	589.0	-999.000	-999.000	-999.000	199.	11010.
8.017	2299.460	2145.0	589.8	-999.000	-999.000	-999.000	200.	11010.
8.010	2301.494	2149.0	600.9	0.748	1.537	0.062	201.	11010.
8.009	2299.392	2148.0	602.4	-999.000	-999.000	-999.000	202.	11010.
8.016	2321.469	2164.0	594.9	0.631	1.217	0.056	203.	11010.
8.017	2321.463	2164.0	593.5	-999.000	-999.000	-999.000	204.	11010.
8.020	2302.267	2146.0	586.0	0.522	1.186	0.046	205.	11010.
8.093	2322.852	2132.0	486.7	0.951	2.164	0.130	206.	11010.
8.151	2331.595	2111.0	417.7	1.236	2.747	0.193	207.	11010.
8.159	2335.294	2110.0	408.6	1.216	2.732	0.199	208.	11010.
8.164	2333.863	2106.0	402.8	1.224	2.715	0.191	209.	11010.
8.179	2334.766	2099.0	387.1	1.132	0.000	0.183	210.	11010.
8.184	2335.642	2097.0	381.7	-999.000	-999.000	-999.000	211.	11010.
8.188	2338.650	2098.0	378.3	1.101	2.483	0.178	212.	11010.
8.189	2337.199	2096.0	377.4	1.082	2.647	0.187	213.	11010.
8.190	2337.978	2096.0	376.1	-999.000	-999.000	-999.000	214.	11010.
8.198	2339.683	2093.0	368.0	-999.000	-999.000	-999.000	215.	11010.
8.204	2337.353	2088.0	362.4	1.100	2.592	0.192	216.	11010.
8.014	2323.042	2168.0	600.6	0.126	0.164	0.027	217.	11011.
8.012	2324.869	2171.0	605.0	-999.000	-999.000	-999.000	218.	11011.
8.012	2327.259	2173.0	605.5	-999.000	-999.000	-999.000	219.	11011.
8.015	2321.947	2167.0	598.9	0.173	0.184	0.035	220.	11011.
8.018	2310.550	2155.0	591.3	-999.000	-999.000	-999.000	221.	11011.
8.018	2306.096	2150.0	589.6	-999.000	-999.000	-999.000	222.	11011.
8.017	2306.834	2151.0	591.2	0.301	0.433	0.042	223.	11011.
8.016	2306.102	2151.0	592.9	-999.000	-999.000	-999.000	224.	11011.
8.023	2325.598	2166.0	586.0	0.466	0.869	0.049	225.	11011.
8.022	2325.860	2166.0	587.8	-999.000	-999.000	-999.000	226.	11011.
8.049	2352.699	2177.0	551.3	0.450	0.782	0.076	227.	11011.
8.053	2360.170	2183.0	547.3	0.456	0.850	0.066	228.	11011.
8.053	2343.106	2167.0	544.5	0.597	1.138	0.095	229.	11011.
8.088	2324.467	2135.0	492.8	1.189	2.663	0.213	230.	11011.
8.113	2323.665	2122.0	460.8	1.336	3.024	0.232	231.	11011.
8.138	2328.721	2114.0	431.6	1.419	3.158	0.000	232.	11011.
8.157	2333.174	2109.0	410.6	1.447	3.306	0.218	233.	11011.
8.174	2337.151	2103.0	392.1	-999.000	-999.000	-999.000	234.	11011.
8.170	2334.667	2103.0	396.7	1.480	3.257	0.235	235.	11011.
8.176	2337.727	2103.0	390.6	-999.000	-999.000	-999.000	236.	11011.
8.189	2341.569	2099.0	377.2	1.470	3.237	0.229	237.	11011.
8.201	2344.649	2095.0	365.0	-999.000	-999.000	-999.000	238.	11011.
8.226	2347.525	2085.0	341.8	-999.000	-999.000	-999.000	239.	11011.
8.244	2349.914	2077.0	325.7	1.545	3.315	0.000	240.	11011.
8.006	2344.956	2193.0	619.2	-999.000	-999.000	-999.000	241.	11012.
8.004	2348.388	2197.0	624.2	-999.000	-999.000	-999.000	242.	11012.
8.005	2344.211	2193.0	621.4	0.000	0.057	0.012	243.	11012.
8.011	2329.227	2175.0	606.5	-999.000	-999.000	-999.000	244.	11012.
8.017	2311.021	2155.0	592.8	-999.000	-999.000	-999.000	245.	11012.
8.017	2311.021	2155.0	592.4	-999.000	-999.000	-999.000	246.	11012.

station number	sample number	press dbar	temp degc	salbot psu	oxybot ml/l	silicate umol/l	nitrate umol/l	phsphate umol/l
11012.	247.	2024.4	4.060	35.036	5.90	14.6	18.3	1.21
11012.	248.	1822.2	4.510	35.090	5.80	13.2	18.2	1.20
11012.	249.	1214.8	8.295	35.612	4.64	10.9	17.9	1.15
11012.	250.	1214.8	8.295	35.612	4.65	10.7	17.9	1.12
11012.	251.	1012.2	9.841	35.791	4.26	9.6	17.3	1.06
11012.	252.	810.8	10.436	35.703	4.21	8.5	17.1	1.03
11012.	253.	607.0	10.920	35.526	4.66	6.0	15.1	0.87
11012.	254.	404.9	12.018	35.636	4.99	4.0	11.7	0.66
11012.	255.	305.4	12.728	35.741	4.99	3.5	10.3	0.66
11012.	256.	204.5	13.593	35.874	5.07	2.7	8.1	0.45
11012.	257.	155.6	14.441	35.858	5.11	2.8	8.3	0.46
11012.	258.	106.8	14.784	36.113	5.38	1.6	4.3	0.31
11012.	259.	56.9	15.719	36.258	5.70	0.2	0.5	0.09
11012.	260.	17.6	15.739	36.264	5.74	0.2	0.4	0.06
11012.	261.	5.0	15.734	36.264	5.74	-999.0	0.3	0.06
11012.	262.	3.8	15.732	36.265	5.72	0.0	0.3	0.10
11012.	263.	3.9	15.731	36.264	5.75	0.0	0.2	0.06
11012.	264.	4471.6	2.535	34.900	5.55	-999.0	-999.0	-999.00
11013.	265.	3657.1	2.651	34.925	5.59	40.8	21.1	1.40
11013.	266.	3657.1	2.651	34.925	5.58	40.9	21.1	1.37
11013.	267.	3248.9	2.716	34.933	5.67	36.8	20.4	1.37
11013.	268.	2847.3	2.923	34.949	5.84	28.6	19.1	1.22
11013.	269.	2440.0	3.279	34.960	6.00	20.3	18.1	1.17
11013.	270.	2235.4	3.529	34.970	6.03	17.2	18.0	1.15
11013.	271.	2029.6	3.837	34.993	6.01	15.0	17.7	1.13
11013.	272.	1824.8	4.415	35.064	5.86	13.7	17.7	1.11
11013.	273.	1619.5	4.863	35.117	5.72	12.8	17.8	1.09
11013.	274.	1418.8	5.432	35.173	5.47	12.6	18.0	1.10
11013.	275.	1218.3	7.744	35.536	4.76	12.1	17.7	1.09
11013.	276.	1018.0	8.968	35.615	4.36	11.5	17.8	1.04
11013.	277.	816.8	9.695	35.523	4.29	10.4	17.6	1.05
11013.	278.	612.6	10.792	35.483	4.82	6.7	14.5	0.84
11013.	279.	413.2	11.950	35.639	5.24	4.4	10.9	0.61
11013.	280.	312.7	12.500	35.713	5.38	3.7	9.4	0.51
11013.	281.	213.5	13.364	35.855	5.48	2.8	7.1	0.40
11013.	282.	163.8	13.691	35.922	5.39	2.4	6.2	0.33
11013.	283.	113.7	14.160	36.013	5.45	1.8	4.7	0.25
11013.	284.	94.2	14.128	35.993	5.54	1.9	4.8	0.26
11013.	285.	64.5	14.191	35.996	5.61	1.7	4.2	0.23
11013.	286.	43.9	14.893	36.000	5.87	1.7	2.5	0.17
11013.	287.	24.8	14.980	36.007	5.89	1.7	2.3	0.18
11013.	288.	2.7	15.001	36.010	5.89	1.7	2.3	0.19
11014.	289.	3651.5	2.653	34.924	-999.00	40.7	21.0	1.32
11014.	290.	3204.6	2.749	34.937	5.77	34.0	20.0	1.28
11014.	291.	2800.5	2.942	34.949	5.86	27.0	18.8	1.17
11014.	292.	2403.9	3.292	34.955	6.03	17.8	17.8	1.08
11014.	293.	2008.3	3.585	34.940	6.16	13.0	17.4	1.03
11014.	294.	1808.9	3.732	34.937	6.16	12.3	17.5	1.06
11014.	295.	1608.6	4.288	35.010	5.93	11.8	17.7	1.02
11014.	296.	1409.7	5.060	35.110	5.61	11.8	17.8	1.03
11014.	297.	1202.7	6.795	35.371	5.01	11.3	17.8	1.02
11014.	298.	1002.0	7.850	35.452	4.64	11.1	18.0	1.03
11014.	299.	806.2	8.436	35.331	4.43	10.8	18.6	1.05
11014.	300.	708.1	9.567	35.447	4.42	9.2	17.0	0.95
11014.	301.	609.1	10.015	35.428	4.68	7.7	15.8	0.85
11014.	302.	508.1	10.632	35.455	5.02	6.3	14.0	0.74
11014.	303.	409.1	11.102	35.513	5.19	5.1	12.6	0.63
11014.	304.	305.9	11.661	35.600	5.32	4.3	11.2	0.55
11014.	305.	210.9	12.183	35.694	5.53	3.4	9.3	0.42
11014.	306.	161.2	12.334	35.704	5.47	3.4	9.3	0.42
11014.	307.	112.2	12.619	35.754	5.54	2.6	8.2	0.40
11014.	308.	92.4	13.008	35.804	5.66	2.2	7.0	0.29
11014.	309.	62.6	13.446	35.861	5.90	1.2	4.5	0.15
11014.	310.	43.2	14.936	35.977	5.94	1.4	2.7	0.09
11014.	311.	23.3	15.051	35.993	5.92	1.7	2.5	0.06
11014.	312.	1.3	15.056	35.994	5.93	1.7	2.5	0.06
11015.	313.	3219.0	2.883	34.943	5.80	30.1	19.7	1.17
11015.	314.	2836.0	3.008	34.948	5.91	25.0	19.2	1.11
11015.	315.	2434.0	3.283	34.945	6.07	17.5	18.0	1.03
11015.	316.	2029.2	3.591	34.937	6.14	13.9	17.9	1.04
11015.	317.	1827.4	3.724	34.930	6.17	12.7	18.0	1.02
11015.	318.	1628.4	4.516	35.039	5.82	12.8	18.4	1.02
11015.	319.	1427.5	4.852	35.086	5.67	12.7	18.4	1.06
11015.	320.	1225.2	5.151	35.061	5.50	12.7	18.8	1.09

pH15	ALK	Cinorg	pCO2	F-12	F-11	F-113	sample	station
	uMol/kg	umol/kg	ppm	pMol/l	pMol/l	pMol/l	number	number
8.018	2310.948	2155.0	590.9	0.204	0.332	0.015	247.	11012.
8.018	2314.065	2157.0	590.8	-999.000	-999.000	-999.000	248.	11012.
8.037	2347.473	2178.0	567.6	0.449	0.886	0.031	249.	11012.
8.037	2347.304	2178.0	567.5	-999.000	-999.000	-999.000	250.	11012.
8.055	2355.258	2177.0	543.4	0.448	0.943	0.016	251.	11012.
8.059	2348.771	2170.0	536.9	0.572	1.131	0.041	252.	11012.
8.083	2327.245	2139.0	499.2	0.973	2.139	0.081	253.	11012.
8.123	2333.491	2126.0	449.9	1.264	2.879	0.121	254.	11012.
8.149	2337.639	2116.0	420.3	1.274	3.005	0.121	255.	11012.
8.174	2338.974	2104.0	392.2	1.332	2.940	0.150	256.	11012.
8.172	2333.470	2100.0	393.8	1.283	2.897	0.148	257.	11012.
8.230	2356.618	2089.0	338.2	1.339	3.106	0.210	258.	11012.
8.275	2366.195	2072.0	299.8	-999.000	-999.000	-999.000	259.	11012.
8.278	2365.886	2070.0	297.3	1.400	3.068	0.233	260.	11012.
8.276	2366.303	2071.0	298.4	1.419	3.159	0.234	261.	11012.
8.278	2367.137	2071.0	297.4	-999.000	-999.000	-999.000	262.	11012.
8.277	2367.800	2071.0	297.7	-999.000	-999.000	-999.000	263.	11012.
8.005	2347.284	2195.0	621.0	0.000	0.095	0.016	264.	11012.
8.011	2338.022	2184.0	610.2	0.000	0.121	0.000	265.	11013.
8.011	2337.443	2184.0	609.9	-999.000	-999.000	-999.000	266.	11013.
8.011	2332.993	2179.0	607.6	-999.000	-999.000	-999.000	267.	11013.
8.015	2322.052	2167.0	599.6	0.132	0.351	0.000	268.	11013.
8.021	2309.666	2153.0	586.7	-999.000	-999.000	-999.000	269.	11013.
8.021	2304.960	2148.0	585.0	-999.000	-999.000	-999.000	270.	11013.
8.021	2302.324	2145.0	584.5	-999.000	-999.000	-999.000	271.	11013.
8.022	2309.492	2152.0	584.8	0.311	0.633	0.012	272.	11013.
8.021	2312.493	2154.0	585.8	-999.000	-999.000	-999.000	273.	11013.
8.018	2314.139	2157.0	590.7	0.500	-999.000	0.036	274.	11013.
8.037	2337.786	2169.0	566.1	0.410	-999.000	0.023	275.	11013.
8.045	2344.394	2172.0	555.8	0.468	0.929	0.027	276.	11013.
8.047	2334.872	2163.0	551.2	0.590	-999.000	0.038	277.	11013.
8.088	2323.420	2134.0	492.6	1.002	2.931	0.092	278.	11013.
8.138	2331.518	2117.0	432.0	1.254	-999.000	0.153	279.	11013.
8.159	2333.864	2108.0	408.4	1.344	3.128	0.174	280.	11013.
8.193	2343.088	2098.0	373.1	1.463	3.251	0.204	281.	11013.
8.203	2345.803	2095.0	363.4	-999.000	-999.000	-999.000	282.	11013.
8.217	2352.935	2093.0	350.3	1.509	3.187	0.226	283.	11013.
8.219	2350.447	2090.0	348.0	-999.000	-999.000	-999.000	284.	11013.
8.225	2352.310	2089.0	342.8	1.457	3.166	0.240	285.	11013.
8.247	2352.184	2076.0	322.7	-999.000	-999.000	-999.000	286.	11013.
8.251	2354.217	2076.0	319.5	-999.000	-999.000	-999.000	287.	11013.
8.251	2356.819	2078.0	319.5	1.508	-999.000	0.273	288.	11013.
8.008	2336.386	2184.0	613.4	-999.000	-999.000	-999.000	289.	11014.
8.010	2327.129	2174.0	608.2	-999.000	-999.000	-999.000	290.	11014.
8.015	2316.948	2162.0	597.0	-999.000	-999.000	-999.000	291.	11014.
8.018	2309.179	2153.0	590.7	0.204	0.410	0.026	292.	11014.
8.017	2299.876	2145.0	589.4	-999.000	-999.000	-999.000	293.	11014.
8.015	2298.785	2145.0	592.9	0.599	1.109	0.037	294.	11014.
8.013	2305.987	2152.0	597.1	-999.000	-999.000	-999.000	295.	11014.
8.014	2310.922	2156.0	596.2	0.662	1.218	0.040	296.	11014.
8.026	2329.415	2167.0	582.2	-999.000	-999.000	-999.000	297.	11014.
8.028	2332.169	2169.0	579.4	0.575	1.167	0.044	298.	11014.
8.022	2341.699	2181.0	590.3	0.755	1.475	0.065	299.	11014.
8.046	2327.021	2156.0	550.9	0.861	1.697	0.068	300.	11014.
8.069	2322.948	2142.0	517.4	1.197	2.253	0.101	301.	11014.
8.096	2323.953	2131.0	482.6	1.422	2.932	0.148	302.	11014.
8.116	2325.736	2123.0	457.6	1.564	3.165	0.167	303.	11014.
8.135	2328.272	2115.0	434.5	1.634	3.405	0.200	304.	11014.
8.162	2334.182	2107.0	405.1	1.714	3.509	0.236	305.	11014.
8.163	2335.675	2108.0	403.9	-999.000	-999.000	-999.000	306.	11014.
8.176	2338.944	2104.0	390.7	1.738	3.632	0.239	307.	11014.
8.189	2340.434	2098.0	376.8	-999.000	-999.000	-999.000	308.	11014.
8.219	2349.396	2090.0	348.7	1.776	3.631	0.269	309.	11014.
8.262	2361.642	2077.0	311.0	-999.000	-999.000	-999.000	310.	11014.
8.265	2354.044	2068.0	307.0	-999.000	-999.000	-999.000	311.	11014.
8.265	2349.502	2064.0	306.4	1.788	3.512	0.286	312.	11014.
8.005	2321.500	2171.0	615.2	-999.000	-999.000	-999.000	313.	11015.
8.008	2314.180	2163.0	608.4	-999.000	-999.000	-999.000	314.	11015.
8.009	2303.751	2152.0	603.9	0.389	-999.000	0.025	315.	11015.
8.009	2299.198	2148.0	602.1	-999.000	-999.000	-999.000	316.	11015.
8.007	2296.737	2146.0	604.3	0.589	-999.000	0.041	317.	11015.
8.007	2302.213	2151.0	605.8	-999.000	-999.000	-999.000	318.	11015.
8.006	2311.647	2160.0	608.9	0.564	-999.000	0.041	319.	11015.
7.998	2308.962	2161.0	621.3	-999.000	-999.000	-999.000	320.	11015.

station	sample	press	temp	salbot	oxybot	silicate	nitrate	phsphate
number	number	dbar	degc	psu	ml/l	umol/l	umol/l	umol/l
********	********	********	********	********	********	********	********	********
11015.	321.	1022.1	6.737	35.240	4.92	12.8	18.9	1.05
11015.	322.	921.3	7.930	35.397	4.56	12.3	18.9	1.01
11015.	323.	821.0	8.676	35.449	4.42	11.9	18.5	1.02
11015.	324.	720.2	8.026	35.184	4.57	12.5	19.2	1.07
11015.	325.	618.8	8.794	35.193	4.65	11.3	18.3	1.00
11015.	326.	517.1	10.175	35.341	4.82	9.1	16.0	0.84
11015.	327.	417.2	10.755	35.430	5.22	7.3	13.5	0.67
11015.	328.	318.2	11.500	35.561	5.49	5.7	11.3	0.54
11015.	329.	218.2	12.165	35.660	5.58	4.9	10.1	0.47
11015.	330.	168.2	12.345	35.696	5.49	4.9	10.1	0.43
11015.	331.	118.2	12.751	35.766	5.66	3.5	8.5	0.35
11015.	332.	98.2	12.927	35.786	5.63	3.6	8.3	0.39
11015.	333.	68.1	13.217	35.825	5.76	3.2	7.4	0.36
11015.	334.	48.0	13.545	35.840	5.99	2.9	5.8	0.22
11015.	335.	28.9	13.969	35.858	6.03	2.7	5.3	0.17
11015.	336.	1.7	14.166	35.864	6.00	2.6	5.1	0.22
11016.	337.	4042.4	2.594	34.917	5.49	42.5	22.3	1.42
11016.	338.	3861.4	2.621	34.920	5.54	40.4	22.0	1.39
11016.	339.	3655.8	2.659	34.926	5.60	37.3	21.6	1.38
11016.	340.	3241.6	2.786	34.941	5.76	30.2	20.4	1.29
11016.	341.	2828.9	3.023	34.953	5.92	22.7	19.1	1.19
11016.	342.	2420.6	3.295	34.944	6.10	15.1	18.0	1.12
11016.	343.	2014.1	3.512	34.928	6.19	12.7	17.9	1.12
11016.	344.	1811.7	3.552	34.910	6.26	11.3	17.7	1.09
11016.	345.	1610.7	3.636	34.905	6.26	10.9	17.8	1.09
11016.	346.	1406.6	3.810	34.914	6.17	10.6	18.0	1.11
11016.	347.	1207.2	4.378	34.980	5.84	10.8	18.3	1.12
11016.	348.	1008.1	5.189	35.065	5.46	10.9	18.6	1.12
11016.	349.	809.1	5.737	35.029	5.23	11.0	19.0	1.14
11016.	350.	609.3	6.909	34.975	5.21	9.9	18.1	1.09
11016.	351.	508.6	8.043	35.066	5.32	8.9	17.0	0.98
11016.	352.	408.4	9.057	35.193	5.64	7.1	14.4	0.81
11016.	353.	308.4	9.776	35.293	5.71	6.1	13.2	0.76
11016.	354.	208.8	10.163	35.347	5.78	5.6	12.5	0.67
11016.	355.	158.9	10.510	35.407	5.81	4.8	11.5	0.61
11016.	356.	109.0	10.636	35.419	5.82	4.8	11.4	0.61
11016.	357.	59.6	11.158	35.476	6.11	0.7	7.8	0.48
11016.	358.	29.7	11.463	35.501	6.28	0.4	6.7	0.41
11016.	359.	20.2	11.633	35.522	6.54	0.4	5.6	0.28
11016.	360.	1.4	12.797	35.533	6.51	0.2	3.6	0.19
11017.	361.	2463.0	3.464	34.932	6.11	14.5	17.9	1.08
11017.	362.	2218.7	3.506	34.933	6.11	14.3	17.8	1.01
11017.	363.	2016.0	3.573	34.931	6.12	13.6	17.8	1.01
11017.	364.	1805.3	3.701	34.931	6.10	12.4	18.0	1.00
11017.	365.	1607.8	3.782	34.932	6.11	11.9	18.1	1.01
11017.	366.	1410.7	3.990	34.946	6.02	11.4	18.1	1.03
11017.	367.	1196.6	4.457	34.978	5.81	11.0	18.8	1.13
11017.	368.	1106.0	4.847	35.007	5.60	10.9	18.5	1.04
11017.	369.	1006.9	5.295	35.028	5.38	11.1	19.0	1.10
11017.	370.	911.8	5.958	35.064	5.08	11.2	19.2	1.06
11017.	371.	810.7	7.132	35.134	4.74	10.9	19.5	1.13
11017.	372.	705.1	7.843	35.173	4.64	10.3	19.2	1.07
11017.	373.	601.6	8.778	35.198	4.58	9.4	18.5	1.08
11017.	374.	502.6	10.068	35.331	4.97	7.1	15.5	0.82
11017.	375.	404.1	11.083	35.487	5.49	4.9	11.9	0.58
11017.	376.	307.3	11.715	35.590	5.53	4.1	10.8	0.54
11017.	377.	210.4	12.356	35.698	5.58	3.4	9.6	0.45
11017.	378.	160.3	12.679	35.741	5.49	3.6	9.6	0.42
11017.	379.	109.8	13.046	35.802	5.50	3.3	8.9	0.38
11017.	380.	89.9	13.202	35.825	5.52	3.2	8.8	0.44
11017.	381.	60.5	13.493	35.820	5.75	2.5	7.0	0.35
11017.	382.	30.6	14.497	35.862	5.91	2.4	5.4	0.25
11017.	383.	20.3	14.555	35.850	5.90	2.3	5.3	0.23
11017.	384.	2.9	14.590	35.837	5.90	2.2	5.2	0.23
11018.	385.	2939.8	3.121	34.948	5.89	22.5	19.8	-999.00
11018.	386.	2839.0	3.149	34.948	5.89	21.6	19.8	-999.00
11018.	387.	2434.9	3.315	34.947	6.01	17.4	19.0	1.26
11018.	388.	2029.2	3.655	34.944	6.10	12.9	18.4	1.07
11018.	389.	1827.1	3.897	34.950	6.07	11.7	18.5	1.05
11018.	390.	1625.9	4.306	34.991	5.89	11.4	19.0	1.11
11018.	391.	1422.5	5.252	35.107	5.49	11.3	19.4	1.12
11018.	392.	1219.1	6.343	35.194	5.01	11.5	19.9	1.18
11018.	393.	1014.0	7.906	35.347	4.50	11.0	20.1	1.12
11018.	394.	911.8	9.252	35.469	4.34	9.7	19.1	1.07

pH15	ALK	Cinorg	pCO2	F-12	F-11	F-113	sample	station
	uMol/kg	umol/kg	ppm	pMol/l	pMol/l	pMol/l	number	number
8.004	2318.755	2167.0	612.9	0.629	-999.000	0.055	321.	11015.
8.017	2327.735	2169.0	594.9	0.593	-999.000	0.047	322.	11015.
8.026	2328.250	2166.0	580.7	0.620	-999.000	0.055	323.	11015.
8.014	2311.999	2157.0	597.0	0.830	-999.000	0.102	324.	11015.
8.034	2310.841	2147.0	565.9	1.035	-999.000	0.126	325.	11015.
8.072	2317.703	2136.0	513.3	1.147	-999.000	0.140	326.	11015.
8.107	2317.984	2120.0	466.8	1.187	-999.000	0.178	327.	11015.
8.142	2327.515	2111.0	426.5	1.431	-999.000	0.206	328.	11015.
8.160	2333.823	2108.0	407.3	1.493	-999.000	0.229	329.	11015.
8.164	2335.626	2107.0	403.4	-999.000	-999.000	-999.000	330.	11015.
8.181	2340.122	2102.0	385.3	1.510	-999.000	0.245	331.	11015.
8.185	2341.452	2101.0	381.7	-999.000	-999.000	-999.000	332.	11015.
8.199	2356.073	2107.0	369.6	-999.000	-999.000	-999.000	333.	11015.
8.218	2348.366	2090.0	349.9	-999.000	-999.000	-999.000	334.	11015.
8.227	2347.191	2084.0	340.4	-999.000	-999.000	-999.000	335.	11015.
8.228	2347.618	2084.0	340.0	1.630	-999.000	0.270	336.	11015.
8.005	2342.237	2191.0	621.0	-999.000	-999.000	-999.000	337.	11016.
8.005	2334.385	2183.0	618.7	-999.000	-999.000	-999.000	338.	11016.
8.004	2328.720	2178.0	617.9	-999.000	-999.000	-999.000	339.	11016.
8.006	2321.323	2170.0	612.6	0.229	0.401	0.021	340.	11016.
8.011	2310.447	2157.0	601.3	-999.000	-999.000	-999.000	341.	11016.
8.016	2295.043	2141.0	590.8	0.370	0.817	0.013	342.	11016.
8.013	2294.894	2142.0	595.6	-999.000	-999.000	-999.000	343.	11016.
8.010	2293.640	2142.0	599.8	0.661	1.537	0.045	344.	11016.
8.005	2295.572	2146.0	607.1	-999.000	-999.000	-999.000	345.	11016.
8.001	2299.830	2152.0	614.5	0.830	1.884	0.072	346.	11016.
8.000	2304.525	2156.0	617.0	-999.000	-999.000	-999.000	347.	11016.
8.001	2308.537	2159.0	615.9	0.779	1.666	0.070	348.	11016.
7.996	2307.857	2161.0	624.8	0.838	1.982	0.098	349.	11016.
8.017	2306.579	2151.0	592.1	1.202	2.799	0.175	350.	11016.
8.046	2309.040	2141.0	548.2	1.320	2.959	0.199	351.	11016.
8.085	2311.496	2125.0	494.8	1.480	-999.000	0.265	352.	11016.
8.107	2316.354	2119.0	467.3	1.547	3.730	0.277	353.	11016.
8.122	2321.025	2116.0	449.8	1.504	-999.000	0.248	354.	11016.
8.132	2324.506	2114.0	438.0	-999.000	-999.000	-999.000	355.	11016.
8.137	2324.720	2112.0	433.3	1.500	3.470	0.252	356.	11016.
8.170	2327.598	2098.0	396.4	1.558	-999.000	0.298	357.	11016.
8.194	2331.083	2089.0	371.6	-999.000	-999.000	-999.000	358.	11016.
8.216	2332.239	2079.0	350.3	-999.000	-999.000	-999.000	359.	11016.
8.253	2330.951	2057.0	316.1	1.542	3.570	0.304	360.	11016.
8.013	2304.415	2151.0	597.4	-999.000	-999.000	-999.000	361.	11017.
8.013	2303.908	2150.0	596.7	-999.000	-999.000	-999.000	362.	11017.
8.012	2301.900	2149.0	598.2	-999.000	-999.000	-999.000	363.	11017.
8.011	2301.497	2149.0	600.1	-999.000	-999.000	-999.000	364.	11017.
8.011	2299.075	2147.0	599.5	0.956	-999.000	0.190	365.	11017.
8.009	2298.544	2147.0	601.4	-999.000	-999.000	-999.000	366.	11017.
8.004	2301.215	2151.0	610.1	1.046	-999.000	0.237	367.	11017.
8.001	2303.367	2154.0	615.1	0.876	-999.000	0.241	368.	11017.
8.001	2304.513	2156.0	616.4	-999.000	-999.000	-999.000	369.	11017.
7.999	2308.101	2160.0	620.4	0.915	-999.000	0.259	370.	11017.
8.004	2312.574	2161.0	612.1	0.883	-999.000	0.222	371.	11017.
8.017	2313.463	2157.0	592.0	0.854	-999.000	0.204	372.	11017.
8.034	2313.726	2150.0	565.9	0.957	-999.000	0.227	373.	11017.
8.083	2320.278	2134.0	499.2	1.178	-999.000	0.283	374.	11017.
8.135	2326.851	2115.0	435.7	1.492	-999.000	0.424	375.	11017.
8.153	2332.580	2111.0	415.1	1.506	-999.000	0.408	376.	11017.
8.173	2335.282	2103.0	393.9	1.565	-999.000	0.368	377.	11017.
8.179	2339.423	2103.0	387.8	-999.000	-999.000	-999.000	378.	11017.
8.189	2341.932	2099.0	377.0	1.781	-999.000	0.296	379.	11017.
8.194	2343.440	2098.0	372.2	-999.000	-999.000	-999.000	380.	11017.
8.213	2343.127	2088.0	353.5	1.586	-999.000	0.312	381.	11017.
8.235	2346.629	2079.0	333.3	-999.000	-999.000	-999.000	382.	11017.
8.235	2345.071	2078.0	332.9	-999.000	-999.000	-999.000	383.	11017.
8.235	2344.300	2077.0	332.9	1.700	-999.000	0.293	384.	11017.
8.014	2315.149	2161.0	598.1	-999.000	-999.000	-999.000	385.	11018.
8.015	2314.091	2160.0	597.2	-999.000	-999.000	-999.000	386.	11018.
8.015	2309.201	2155.0	596.2	-999.000	-999.000	-999.000	387.	11018.
8.015	2297.137	2143.0	592.5	-999.000	-999.000	-999.000	388.	11018.
8.015	2301.109	2147.0	593.7	0.597	1.155	0.098	389.	11018.
8.013	2303.797	2150.0	597.3	-999.000	-999.000	-999.000	390.	11018.
8.014	2310.061	2155.0	596.2	0.627	1.676	0.116	391.	11018.
8.012	2318.393	2164.0	601.7	-999.000	-999.000	-999.000	392.	11018.
8.022	2326.408	2166.0	586.4	0.608	-999.000	0.110	393.	11018.
8.041	2331.690	2163.0	559.9	0.638	-999.000	0.115	394.	11018.

station number	sample number	press dbar	temp degc	salbot psu	oxybot ml/l	silicate umol/l	nitrate umol/l	phsphate umol/l
11018.	395.	811.6	9.793	35.403	4.46	8.7	18.3	1.05
11018.	396.	709.9	9.935	35.341	4.49	8.4	17.1	1.05
11018.	397.	606.6	11.040	35.502	4.94	5.6	14.5	0.74
11018.	398.	506.6	11.748	35.604	5.20	4.4	12.2	0.61
11018.	399.	407.1	12.254	35.693	5.41	3.6	-999.0	0.40
11018.	400.	308.8	12.612	35.731	5.25	3.5	10.1	0.56
11018.	401.	209.0	13.468	35.873	5.53	2.4	7.1	0.32
11018.	402.	159.0	13.614	35.887	5.51	2.4	7.3	0.37
11018.	403.	109.0	14.020	35.937	5.53	2.2	6.4	0.32
11018.	404.	89.4	14.238	35.972	5.62	2.2	5.7	0.28
11018.	405.	59.1	14.482	35.992	5.65	1.7	4.7	0.18
11018.	406.	39.1	15.363	36.045	5.85	2.1	2.8	0.14
11018.	407.	19.0	15.885	36.039	5.85	1.7	2.0	0.11
11018.	408.	0.7	16.828	36.025	5.71	1.3	1.4	0.11
11019.	409.	2372.1	3.286	34.952	5.99	18.2	-999.0	1.17
11019.	410.	2372.2	3.286	34.952	-999.00	18.2	19.1	1.05
11019.	411.	2026.6	3.578	34.952	6.06	14.0	18.5	0.98
11019.	412.	2026.5	3.578	34.952	-999.00	14.0	18.7	0.98
11019.	413.	1824.5	3.774	34.955	6.08	12.5	18.5	0.98
11019.	414.	1623.9	4.061	34.976	5.99	11.7	18.9	0.96
11019.	415.	1421.9	4.680	35.047	5.73	11.5	19.2	0.95
11019.	416.	1218.1	5.672	35.167	5.32	11.4	19.4	1.00
11019.	417.	1013.1	7.529	35.374	4.67	11.1	19.5	0.99
11019.	418.	809.3	9.360	35.504	4.29	9.8	19.0	0.92
11019.	419.	607.2	10.293	35.432	4.61	7.5	16.9	0.78
11019.	420.	405.4	11.628	35.585	5.13	4.8	12.8	0.48
11019.	421.	305.9	12.199	35.680	5.35	3.9	10.8	0.48
11019.	422.	206.4	13.030	35.798	5.43	3.0	8.8	0.33
11019.	423.	156.3	13.296	35.848	5.52	2.8	7.9	0.30
11019.	424.	105.9	13.477	35.870	5.50	2.7	7.7	0.29
11019.	425.	86.8	13.576	35.877	5.52	2.8	7.4	0.27
11019.	426.	86.8	13.580	35.877	-999.00	2.6	7.5	0.29
11019.	427.	57.0	14.085	35.925	5.74	2.1	5.0	0.20
11019.	428.	56.9	14.143	35.932	-999.00	2.0	4.5	0.21
11019.	429.	17.2	16.366	36.048	5.83	2.0	2.0	0.08
11019.	430.	17.1	16.357	36.058	-999.00	1.9	2.2	0.11
11019.	431.	0.7	16.973	36.077	5.72	1.8	1.6	0.11
11019.	432.	0.6	16.992	36.077	-999.00	1.8	1.8	0.06

pH15	ALK	Cinorg	pCO2	F-12	F-11	F-113	sample	station
	uMol/kg	umol/kg	ppm	pMol/l	pMol/l	pMol/l	number	number
8.050	2325.849	2153.0	544.7	0.770	1.726	0.155	395.	11018.
8.057	2318.095	2143.0	534.0	0.887	1.985	0.188	396.	11018.
8.104	2323.031	2126.0	471.7	1.123	-999.000	0.223	397.	11018.
8.136	2330.496	2117.0	433.9	1.183	3.924	0.279	398.	11018.
8.159	2335.880	2110.0	409.1	1.370	-999.000	0.299	399.	11018.
8.170	2338.280	2107.0	397.1	1.449	-999.000	0.246	400.	11018.
8.203	2343.342	2093.0	363.4	1.460	3.786	0.232	401.	11018.
8.205	2345.934	2094.0	361.5	-999.000	-999.000	-999.000	402.	11018.
8.219	2348.184	2089.0	348.4	1.494	3.804	0.221	403.	11018.
8.229	2350.403	2085.0	338.8	-999.000	-999.000	-999.000	404.	11018.
8.241	2352.361	2080.0	328.3	1.494	4.366	0.280	405.	11018.
8.269	2356.356	2067.0	303.6	-999.000	-999.000	-999.000	406.	11018.
8.273	2357.288	2066.0	300.3	-999.000	-999.000	-999.000	407.	11018.
8.274	2354.490	2063.0	299.8	1.523	3.466	0.000	408.	11018.
8.026	2304.050	2145.0	576.8	-999.000	-999.000	-999.000	409.	11019.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	410.	11019.
8.025	2300.502	2142.0	578.2	0.256	0.476	0.045	411.	11019.
8.025	2300.225	2142.0	578.1	0.257	0.468	0.043	412.	11019.
8.026	2299.349	2141.0	575.6	-999.000	-999.000	-999.000	413.	11019.
8.024	2300.661	2143.0	578.8	0.422	0.963	0.105	414.	11019.
8.023	2305.677	2148.0	582.0	-999.000	-999.000	-999.000	415.	11019.
8.021	2314.511	2156.0	586.0	0.551	1.178	0.116	416.	11019.
8.031	2328.102	2164.0	573.9	0.512	1.138	0.122	417.	11019.
8.052	2332.991	2159.0	543.4	0.550	1.181	0.082	418.	11019.
8.084	2322.745	2135.0	497.5	0.856	1.433	0.169	419.	11019.
8.140	2327.722	2113.0	429.1	1.154	2.816	0.278	420.	11019.
8.166	2334.275	2105.0	400.8	1.340	3.070	0.335	421.	11019.
8.195	2340.274	2095.0	370.7	1.368	3.082	0.332	422.	11019.
8.207	2342.706	2091.0	359.6	-999.000	-999.000	-999.000	423.	11019.
8.212	2344.784	2090.0	354.4	1.400	3.120	0.362	424.	11019.
8.214	2342.617	2087.0	352.7	-999.000	-999.000	-999.000	425.	11019.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	426.	11019.
8.241	2350.610	2079.0	328.2	1.430	3.049	0.357	427.	11019.
-999.000	-999.000	-999.0	-999.0	1.435	3.121	0.360	428.	11019.
8.279	2357.419	2062.0	295.3	-999.000	-999.000	-999.000	429.	11019.
-999.000	-999.000	-999.0	-999.0	-999.000	-999.000	-999.000	430.	11019.
8.278	2361.152	2066.0	296.6	-999.000	-999.000	-999.000	431.	11019.
-999.000	-999.000	-999.0	-999.0	1.316	2.868	0.000	432.	11019.

station	sample	press	temp	salbot	oxybot	silicate	phsphate
number	number	dbar	degc	psu	ml/l	umol/l	umol/l
********	********	********	********	********	********	********	********
12001.	433.	1787.4	4.879	35.061	5.19	13.7	1.11
12001.	434.	1677.5	4.956	35.070	4.94	13.5	1.12
12001.	435.	1571.7	5.153	35.088	4.73	13.3	1.23
12001.	436.	1471.1	5.285	35.102	4.55	13.2	1.11
12001.	437.	1374.3	5.446	35.118	4.46	13.1	1.11
12001.	438.	1277.3	5.872	35.158	4.40	13.1	1.11
12001.	439.	1183.2	6.616	35.228	4.51	12.5	1.11
12001.	440.	1085.3	7.219	35.265	4.76	12.2	1.09
12001.	441.	977.9	7.811	35.283	4.78	11.8	1.14
12001.	442.	896.5	8.316	35.303	4.87	11.3	1.11
12001.	443.	802.1	9.112	35.325	4.95	10.3	1.03
12001.	444.	705.7	9.859	35.357	5.16	9.0	0.98
12001.	445.	606.9	10.826	35.464	5.20	7.1	0.83
12001.	446.	507.5	11.508	35.555	5.26	6.2	0.75
12001.	447.	407.5	12.271	35.657	5.36	5.2	0.63
12001.	448.	307.7	13.105	35.780	5.74	4.2	0.57
12001.	449.	207.5	14.163	35.944	5.75	3.0	0.35
12001.	450.	157.9	14.387	35.982	5.69	2.8	0.32
12001.	451.	108.2	15.027	36.075	5.59	2.2	0.25
12001.	452.	79.0	15.402	36.117	-999.00	1.8	0.22
12001.	453.	48.2	16.422	36.130	-999.00	0.9	0.09
12001.	454.	27.4	17.032	36.140	-999.00	0.8	-999.00
12001.	455.	17.3	17.377	36.144	-999.00	0.8	-999.00
12001.	456.	-0.9	17.712	36.162	-999.00	0.8	-999.00
12002.	457.	2218.1	3.462	34.938	6.09	14.6	1.07
12002.	458.	2013.7	3.583	34.940	6.10	13.9	1.01
12002.	459.	1814.0	3.757	34.947	6.05	13.1	1.05
12002.	460.	1715.2	3.838	34.949	6.03	12.7	1.05
12002.	461.	1615.5	3.860	34.948	6.05	12.3	1.04
12002.	462.	1516.2	3.945	34.952	6.02	12.1	1.02
12002.	463.	1415.0	4.096	34.964	5.95	11.9	0.96
12002.	464.	1213.3	4.407	34.974	5.82	11.3	0.96
12002.	465.	1008.8	5.283	35.048	5.37	12.2	1.16
12002.	466.	909.5	6.035	35.092	5.03	12.3	1.11
12002.	467.	810.9	6.594	35.110	4.71	12.7	1.17
12002.	468.	708.0	7.545	35.154	4.52	12.1	1.13
12002.	469.	606.8	8.769	35.218	4.35	10.9	1.16
12002.	470.	506.2	9.747	35.294	4.50	9.1	0.96
12002.	471.	405.8	10.698	35.404	4.64	7.5	0.87
12002.	472.	306.4	11.714	35.565	4.92	5.6	0.92
12002.	473.	206.5	12.594	35.709	5.25	4.2	0.55
12002.	474.	156.7	12.998	35.774	5.28	3.7	0.46
12002.	475.	107.3	13.449	35.833	5.29	3.4	0.47
12002.	476.	82.5	13.851	35.897	5.38	2.6	0.39
12002.	477.	57.9	14.233	35.930	5.44	2.6	0.39
12002.	478.	28.3	15.136	35.959	5.81	2.0	0.21
12002.	479.	19.0	15.916	36.019	5.89	1.7	0.10
12002.	480.	-0.4	16.967	36.037	5.71	1.7	0.12
12003.	481.	3183.2	2.725	34.926	6.14	19.2	1.00
12003.	482.	2835.0	2.968	34.933	6.11	18.1	0.94
12003.	483.	2635.1	3.138	34.934	6.11	17.1	0.96
12003.	484.	2434.0	3.286	34.933	6.09	16.3	0.97
12003.	485.	2231.4	3.431	34.925	6.16	14.5	1.04
12003.	486.	2028.7	3.477	34.909	6.24	13.0	0.94
12003.	487.	1827.0	3.619	34.912	6.20	12.7	1.00
12003.	488.	1626.1	3.792	34.914	6.19	12.8	0.96
12003.	489.	1423.3	4.008	34.933	6.02	12.3	0.98
12003.	490.	1217.1	4.428	34.963	5.79	12.2	1.01
12003.	491.	1012.2	5.369	35.016	5.32	12.9	1.09
12003.	492.	813.4	7.396	35.119	4.68	12.6	1.09
12003.	493.	713.8	8.233	35.134	4.53	12.0	1.07
12003.	494.	612.9	9.218	35.209	4.87	9.7	0.97
12003.	495.	409.0	11.306	35.531	5.50	5.9	0.65
12003.	496.	309.0	11.838	35.612	5.49	5.3	0.64
12003.	497.	209.1	12.668	35.750	5.46	4.4	0.53
12003.	498.	159.3	12.907	35.793	5.52	4.1	0.51
12003.	499.	109.3	13.082	35.818	5.53	4.0	0.49
12003.	500.	74.7	13.191	35.830	5.58	3.8	0.48
12003.	501.	45.4	13.605	35.840	5.81	3.3	0.46
12003.	502.	31.0	13.924	35.843	5.96	2.8	0.36
12003.	503.	21.3	14.629	35.878	5.98	2.9	0.38
12003.	504.	-2.2	16.572	35.961	5.74	2.7	0.28
12004.	505.	4054.0	2.449	34.911	6.21	19.6	1.13
12004.	506.	4054.9	2.447	34.911	6.22	19.6	1.13

F-12	F-11	F-113	sample	station
pMol/l	pMol/l	pMol/l	number	number
********	********	********	********	********
0.425	-999.000	0.074	433.	12001.
-999.000	-999.000	-999.000	434.	12001.
-999.000	-999.000	-999.000	435.	12001.
-999.000	-999.000	-999.000	436.	12001.
0.481	-999.000	0.113	437.	12001.
-999.000	-999.000	-999.000	438.	12001.
-999.000	-999.000	-999.000	439.	12001.
-999.000	-999.000	-999.000	440.	12001.
0.550	1.648	0.098	441.	12001.
0.543	2.049	0.115	442.	12001.
0.645	-999.000	0.135	443.	12001.
0.844	-999.000	0.167	444.	12001.
1.039	-999.000	0.233	445.	12001.
1.047	-999.000	0.241	446.	12001.
1.194	-999.000	0.237	447.	12001.
1.285	-999.000	0.288	448.	12001.
1.307	-999.000	0.341	449.	12001.
-999.000	-999.000	-999.000	450.	12001.
1.352	3.362	0.371	451.	12001.
-999.000	-999.000	-999.000	452.	12001.
1.260	3.134	0.000	453.	12001.
-999.000	-999.000	-999.000	454.	12001.
-999.000	-999.000	-999.000	455.	12001.
1.328	3.372	0.449	456.	12001.
-999.000	-999.000	-999.000	457.	12002.
-999.000	-999.000	-999.000	458.	12002.
0.603	1.000	0.121	459.	12002.
-999.000	-999.000	-999.000	460.	12002.
-999.000	-999.000	-999.000	461.	12002.
-999.000	-999.000	-999.000	462.	12002.
0.753	1.377	0.159	463.	12002.
-999.000	-999.000	-999.000	464.	12002.
0.800	1.661	0.192	465.	12002.
0.671	1.548	0.190	466.	12002.
0.620	1.412	0.168	467.	12002.
-999.000	-999.000	-999.000	468.	12002.
0.717	1.623	0.167	469.	12002.
0.889	-999.000	0.218	470.	12002.
0.985	2.358	0.246	471.	12002.
1.166	2.675	0.271	472.	12002.
1.266	3.148	0.356	473.	12002.
-999.000	-999.000	-999.000	474.	12002.
1.153	2.800	0.355	475.	12002.
-999.000	-999.000	-999.000	476.	12002.
1.179	2.976	0.000	477.	12002.
-999.000	-999.000	-999.000	478.	12002.
-999.000	-999.000	-999.000	479.	12002.
1.318	3.807	0.261	480.	12002.
0.401	0.704	0.089	481.	12003.
-999.000	-999.000	-999.000	482.	12003.
-999.000	-999.000	-999.000	483.	12003.
0.432	0.800	0.087	484.	12003.
-999.000	-999.000	-999.000	485.	12003.
-999.000	-999.000	-999.000	486.	12003.
0.571	-999.000	0.169	487.	12003.
-999.000	-999.000	-999.000	488.	12003.
0.798	1.946	0.216	489.	12003.
0.899	2.057	0.232	490.	12003.
0.840	1.988	0.202	491.	12003.
-999.000	-999.000	-999.000	492.	12003.
0.846	1.913	0.192	493.	12003.
1.051	2.397	0.235	494.	12003.
1.392	3.125	0.325	495.	12003.
1.383	2.975	0.298	496.	12003.
1.373	3.758	0.286	497.	12003.
-999.000	-999.000	-999.000	498.	12003.
1.463	3.141	0.272	499.	12003.
-999.000	-999.000	-999.000	500.	12003.
1.451	3.250	-999.000	501.	12003.
-999.000	-999.000	-999.000	502.	12003.
-999.000	-999.000	-999.000	503.	12003.
1.435	3.034	-999.000	504.	12003.
-999.000	-999.000	-999.000	505.	12004.
0.232	1.125	0.046	506.	12004.

station number	sample number	press dbar	temp degc	salbot psu	oxybot ml/l	silicate umol/l	phsphate umol/l
12004.	507.	3799.6	2.492	34.910	6.21	19.6	1.12
12004.	508.	3799.6	2.492	34.914	6.15	19.4	1.13
12004.	509.	3352.0	2.704	34.926	6.17	17.9	1.08
12004.	510.	2959.7	3.014	34.935	6.21	15.6	1.09
12004.	511.	2537.8	3.310	34.934	6.14	13.7	1.03
12004.	512.	2114.1	3.497	34.917	6.21	11.9	1.03
12004.	513.	1712.1	3.611	34.904	6.26	11.1	1.04
12004.	514.	1517.2	3.747	34.911	6.19	10.8	1.00
12004.	515.	1327.6	4.037	34.935	6.02	10.7	1.08
12004.	516.	1190.8	4.303	34.954	5.89	10.7	1.08
12004.	517.	1007.4	4.998	35.016	5.48	11.0	1.04
12004.	518.	813.2	5.996	35.048	4.99	11.5	1.11
12004.	519.	712.6	6.643	35.019	4.73	11.5	1.14
12004.	520.	611.0	7.566	35.037	4.54	10.9	1.15
12004.	521.	408.7	10.600	35.373	4.64	7.3	0.95
12004.	522.	309.4	11.814	35.567	4.92	5.3	0.65
12004.	523.	210.0	13.040	35.780	5.27	3.5	0.44
12004.	524.	160.5	13.456	35.822	5.25	3.2	0.45
12004.	525.	110.9	14.016	35.893	5.14	2.7	0.29
12004.	526.	76.5	14.671	35.997	5.32	2.1	0.16
12004.	527.	47.2	15.020	35.978	5.59	1.8	0.07
12004.	528.	16.5	15.631	35.763	5.81	1.2	0.06
12005.	529.	4158.3	2.426	34.910	6.26	15.0	0.99
12005.	530.	4158.3	2.426	34.910	6.27	15.1	1.11
12005.	531.	3764.2	2.487	34.916	6.22	14.9	1.04
12005.	532.	3356.0	2.647	34.928	6.19	14.1	0.99
12005.	533.	2949.8	2.884	34.941	6.18	12.4	1.02
12005.	534.	2556.0	3.125	34.935	6.19	10.6	0.99
12005.	535.	2149.8	3.358	34.927	6.18	10.0	1.00
12005.	536.	1725.7	3.281	34.874	6.46	7.8	0.99
12005.	537.	1549.9	3.320	34.872	6.44	7.9	0.99
12005.	538.	1374.5	3.357	34.869	6.43	7.8	1.02
12005.	539.	1189.8	3.471	34.874	6.36	8.0	1.02
12005.	540.	1001.1	3.815	34.906	6.13	8.4	1.09
12005.	541.	805.3	4.021	34.911	5.99	8.5	1.06
12005.	542.	608.7	4.532	34.925	5.66	8.9	1.15
12005.	543.	508.6	4.536	34.846	5.83	8.3	1.06
12005.	544.	407.9	5.822	34.913	4.99	10.2	1.13
12005.	545.	308.9	6.368	34.872	5.28	9.2	1.08
12005.	546.	210.1	7.049	34.865	5.84	7.2	0.84
12005.	547.	159.8	7.358	34.852	5.83	6.7	0.84
12005.	548.	110.1	8.858	35.063	5.70	5.7	0.77
12005.	549.	85.0	9.924	35.263	5.55	5.4	0.77
12005.	550.	58.3	10.745	35.203	6.07	3.4	0.47
12005.	551.	29.3	10.103	34.891	6.47	2.1	0.30
12005.	552.	7.1	9.889	34.720	6.99	1.3	0.18
12006.	553.	2553.8	2.845	34.971	6.15	14.6	1.11
12006.	554.	2219.4	2.904	34.972	6.16	13.7	1.19
12006.	555.	2019.6	3.047	34.972	6.15	13.0	1.15
12006.	556.	1821.0	3.257	34.968	6.15	12.2	1.14
12006.	557.	1620.6	3.417	34.956	6.15	11.9	1.12
12006.	558.	1415.0	3.502	34.936	6.18	11.4	1.17
12006.	559.	1202.7	3.553	34.915	6.23	11.0	1.17
12006.	560.	999.6	3.674	34.904	6.19	10.8	1.17
12006.	561.	1000.9	3.674	34.904	6.20	10.7	1.17
12006.	562.	899.7	3.793	34.903	6.11	10.7	1.15
12006.	563.	798.5	3.898	34.900	6.12	10.6	1.15
12006.	564.	695.0	3.943	34.885	6.23	10.4	1.14
12006.	565.	595.2	4.036	34.874	6.33	10.1	1.10
12006.	566.	500.6	4.395	34.894	6.10	10.3	1.10
12006.	567.	406.6	4.603	34.898	6.23	9.8	1.05
12006.	568.	310.4	4.860	34.900	6.38	9.2	1.02
12006.	569.	215.2	5.163	34.914	6.46	8.9	0.99
12006.	570.	166.8	5.267	34.906	6.37	9.0	0.98
12006.	571.	116.5	5.384	34.897	6.54	8.6	0.92
12006.	572.	96.2	5.603	34.874	6.78	8.3	0.86
12006.	573.	45.8	6.067	34.830	6.97	7.6	0.75
12006.	574.	18.7	6.878	34.778	7.01	7.1	0.69
12006.	575.	9.5	6.917	34.773	7.00	7.1	0.66
12006.	576.	-0.8	6.926	34.770	7.02	7.1	0.64
12007.	577.	3040.2	2.734	34.954	5.88	26.6	1.10
12007.	578.	3040.2	2.734	34.954	5.88	26.7	1.08
12007.	579.	2835.2	2.800	34.959	5.97	22.5	1.04
12007.	580.	2632.9	2.939	34.964	6.07	18.4	0.98

F-12	F-11	F-113	sample	station
pMol/l	pMol/l	pMol/l	number	number
********	********	********	********	********
-999.000	-999.000	-999.000	507.	12004.
0.501	1.941	0.089	508.	12004.
0.454	0.668	0.062	509.	12004.
-999.000	-999.000	-999.000	510.	12004.
0.237	0.838	0.060	511.	12004.
-999.000	-999.000	-999.000	512.	12004.
0.823	-999.000	0.155	513.	12004.
-999.000	-999.000	-999.000	514.	12004.
0.800	-999.000	0.184	515.	12004.
0.807	-999.000	0.186	516.	12004.
-999.000	-999.000	-999.000	517.	12004.
0.826	-999.000	0.179	518.	12004.
0.928	-999.000	0.178	519.	12004.
0.977	-999.000	0.184	520.	12004.
1.099	-999.000	0.224	521.	12004.
-999.000	-999.000	-999.000	522.	12004.
1.402	-999.000	0.255	523.	12004.
-999.000	-999.000	-999.000	524.	12004.
-999.000	-999.000	-999.000	525.	12004.
-999.000	-999.000	-999.000	526.	12004.
-999.000	-999.000	-999.000	527.	12004.
1.471	3.205	0.221	528.	12004.
0.559	0.919	0.106	529.	12005.
0.564	0.962	0.103	530.	12005.
0.511	0.866	0.082	531.	12005.
-999.000	-999.000	-999.000	532.	12005.
0.545	0.893	0.083	533.	12005.
-999.000	-999.000	-999.000	534.	12005.
0.577	1.027	0.096	535.	12005.
-999.000	-999.000	-999.000	536.	12005.
1.025	0.651	0.154	537.	12005.
-999.000	-999.000	-999.000	538.	12005.
1.065	1.141	0.154	539.	12005.
0.967	2.303	0.147	540.	12005.
1.061	2.598	0.216	541.	12005.
-999.000	-999.000	-999.000	542.	12005.
1.247	3.083	0.305	543.	12005.
0.819	2.305	0.212	544.	12005.
1.138	2.759	0.278	545.	12005.
-999.000	-999.000	-999.000	546.	12005.
1.137	-999.000	0.203	547.	12005.
-999.000	-999.000	-999.000	548.	12005.
-999.000	-999.000	-999.000	549.	12005.
-999.000	-999.000	-999.000	550.	12005.
-999.000	-999.000	-999.000	551.	12005.
-999.000	-999.000	-999.000	552.	12005.
0.709	1.532	0.142	553.	12006.
0.700	1.604	0.142	554.	12006.
0.817	1.611	0.137	555.	12006.
0.730	1.550	0.129	556.	12006.
-999.000	-999.000	-999.000	557.	12006.
0.762	1.579	0.118	558.	12006.
0.856	1.796	0.135	559.	12006.
1.115	2.494	0.168	560.	12006.
-999.000	-999.000	-999.000	561.	12006.
-999.000	-999.000	-999.000	562.	12006.
1.310	2.862	0.234	563.	12006.
-999.000	-999.000	-999.000	564.	12006.
1.603	3.693	0.350	565.	12006.
-999.000	-999.000	-999.000	566.	12006.
1.743	3.932	0.386	567.	12006.
1.897	4.314	0.398	568.	12006.
2.011	4.438	0.407	569.	12006.
-999.000	-999.000	-999.000	570.	12006.
2.008	-999.000	0.353	571.	12006.
-999.000	-999.000	-999.000	572.	12006.
-999.000	-999.000	-999.000	573.	12006.
-999.000	-999.000	-999.000	574.	12006.
-999.000	-999.000	-999.000	575.	12006.
2.271	5.309	0.424	576.	12006.
-999.000	-999.000	-999.000	577.	12007.
0.559	1.146	0.144	578.	12007.
-999.000	-999.000	-999.000	579.	12007.
-999.000	-999.000	-999.000	580.	12007.

station number	sample number	press dbar	temp degc	salbot psu	oxybot ml/l	silicate umol/l	phsphate umol/l
12007.	581.	2429.6	3.092	34.959	6.13	15.9	0.91
12007.	582.	2228.1	3.212	34.950	6.13	14.7	0.96
12007.	583.	2024.4	3.324	34.940	6.15	13.8	0.92
12007.	584.	1823.1	3.423	34.926	6.19	13.1	0.92
12007.	585.	1622.8	3.458	34.907	6.25	12.5	0.91
12007.	586.	1420.7	3.464	34.891	6.31	12.0	0.94
12007.	587.	1218.2	3.525	34.884	6.30	11.7	0.92
12007.	588.	1012.8	3.727	34.896	6.17	12.2	0.94
12007.	589.	812.5	4.021	34.908	5.98	12.2	0.98
12007.	590.	610.3	4.559	34.928	5.69	12.4	1.00
12007.	591.	508.8	4.957	34.934	5.61	12.2	0.99
12007.	592.	408.4	5.581	34.954	5.47	11.9	0.96
12007.	593.	308.0	5.684	34.869	5.69	11.9	0.92
12007.	594.	208.6	6.380	34.884	6.13	8.9	0.82
12007.	595.	158.7	6.581	34.882	6.30	8.7	0.75
12007.	596.	108.5	6.894	34.895	6.41	8.2	0.71
12007.	597.	84.2	7.310	34.892	6.50	7.6	0.63
12007.	598.	59.1	7.742	34.900	6.64	6.8	0.56
12007.	599.	17.9	8.323	34.862	7.20	0.2	0.52
12007.	600.	7.8	8.975	34.851	7.41	0.1	0.26
12008.	601.	3691.8	2.784	34.943	5.94	28.8	1.16
12008.	602.	3409.8	2.819	34.944	6.14	28.7	1.26
12008.	602.	3024.9	3.029	34.950	-999.00	20.6	1.12
12008.	604.	2606.8	3.217	34.938	6.26	15.8	1.10
12008.	605.	2198.5	3.404	34.921	6.33	13.3	1.03
12008.	606.	1998.7	3.442	34.906	6.40	12.4	1.10
12008.	607.	1799.4	3.463	34.893	6.45	11.8	1.04
12008.	608.	1599.3	3.551	34.889	6.43	11.5	1.04
12008.	609.	1398.3	3.723	34.898	6.33	11.4	1.06
12008.	610.	1198.4	3.998	34.915	6.16	11.5	1.07
12008.	611.	1005.6	4.446	34.922	5.89	11.8	1.11
12008.	612.	808.3	5.246	34.959	5.51	12.0	1.15
12008.	613.	608.3	6.927	35.007	5.05	11.7	1.15
12008.	614.	507.2	7.846	35.039	5.20	10.4	1.10
12008.	615.	408.2	8.923	35.167	5.58	8.4	0.90
12008.	616.	306.7	9.515	35.252	5.86	6.9	0.78
12008.	617.	206.7	10.127	35.341	5.84	6.3	0.71
12008.	618.	158.2	10.412	35.385	5.69	6.3	0.72
12008.	619.	108.4	11.051	35.488	5.78	5.5	0.64
12008.	620.	74.7	11.521	35.524	6.05	1.7	0.52
12008.	621.	50.4	12.276	35.510	6.24	0.7	0.36
12008.	622.	30.5	13.037	35.495	6.25	0.6	0.34
12008.	623.	21.1	13.117	35.497	6.21	0.4	0.32
12008.	624.	-0.8	13.129	35.497	6.18	0.4	0.31
12009.	625.	3069.1	3.224	34.939	6.20	16.8	1.27
12009.	626.	2832.7	3.279	34.939	6.21	16.6	1.06
12009.	627.	2630.9	3.291	34.939	6.22	16.1	1.27
12009.	628.	2428.7	3.320	34.934	6.24	15.5	1.08
12009.	629.	2225.0	3.396	34.927	6.28	14.2	1.12
12009.	630.	2019.6	3.468	34.916	6.32	13.0	1.08
12009.	631.	1815.0	3.547	34.905	6.36	12.1	1.06
12009.	632.	1620.3	3.642	34.904	6.34	11.7	1.10
12009.	633.	1420.4	3.878	34.922	6.21	13.1	1.05
12009.	634.	1219.1	4.325	34.962	5.96	11.7	1.21
12009.	635.	1016.5	5.313	35.062	5.46	12.0	1.14
12009.	636.	814.2	5.958	35.027	5.20	12.1	1.19
12009.	637.	713.0	6.358	34.964	5.24	11.8	1.19
12009.	638.	611.8	7.739	35.080	4.71	11.7	1.21
12009.	639.	510.2	8.928	35.176	4.97	9.6	1.05
12009.	640.	409.1	10.036	35.330	5.60	7.0	0.81
12009.	641.	309.0	11.231	35.517	5.55	5.8	0.70
12009.	642.	209.8	11.768	35.602	5.55	5.2	0.64
12009.	643.	160.1	12.424	35.699	5.54	4.3	0.53
12009.	644.	109.6	12.972	35.792	5.61	4.0	0.48
12009.	645.	85.1	12.912	35.767	5.56	3.8	0.50
12009.	646.	60.8	13.090	35.757	5.79	2.8	0.42
12009.	647.	28.6	13.791	35.787	6.11	2.3	0.35
12009.	648.	21.0	14.287	35.785	6.17	2.1	0.28
12010.	649.	4063.8	2.601	34.916	5.61	43.5	1.51
12010.	650.	3655.8	2.657	34.926	5.70	38.6	1.46
12010.	651.	3247.1	2.803	34.942	5.90	29.4	1.36
12010.	652.	2837.6	3.022	34.951	6.07	21.6	1.26
12010.	653.	2429.6	3.304	34.944	6.25	15.4	1.19
12010.	654.	2223.1	3.430	34.937	6.32	13.8	1.17

F-12 pMol/l	F-11 pMol/l	F-113 pMol/l	sample number	station number
0.660	1.376	0.155	581.	12007.
-999.000	-999.000	-999.000	582.	12007.
0.627	1.232	0.127	583.	12007.
0.508	1.259	0.140	584.	12007.
0.678	-999.000	0.205	585.	12007.
0.786	2.258	0.279	586.	12007.
0.793	2.756	0.348	587.	12007.
0.840	2.764	0.359	588.	12007.
1.126	3.420	0.381	589.	12007.
-999.000	-999.000	-999.000	590.	12007.
1.170	-999.000	0.456	591.	12007.
1.067	3.530	0.382	592.	12007.
1.251	4.194	0.447	593.	12007.
-999.000	-999.000	-999.000	594.	12007.
-999.000	-999.000	-999.000	595.	12007.
1.777	-999.000	-999.000	596.	12007.
-999.000	-999.000	-999.000	597.	12007.
-999.000	-999.000	-999.000	598.	12007.
-999.000	-999.000	-999.000	599.	12007.
1.750	4.937	-999.000	600.	12007.
-999.000	-999.000	-999.000	601.	12008.
0.493	0.917	0.057	602.	12008.
0.456	0.733	0.030	602.	12008.
0.618	1.228	0.060	604.	12008.
-999.000	-999.000	-999.000	605.	12008.
0.886	-999.000	0.105	606.	12008.
-999.000	-999.000	-999.000	607.	12008.
0.965	2.813	0.149	608.	12008.
-999.000	-999.000	-999.000	609.	12008.
1.159	2.938	0.177	610.	12008.
-999.000	-999.000	-999.000	611.	12008.
1.070	-999.000	0.171	612.	12008.
-999.000	-999.000	-999.000	613.	12008.
1.447	-999.000	0.250	614.	12008.
1.593	3.974	0.301	615.	12008.
1.594	-999.000	0.293	616.	12008.
-999.000	-999.000	-999.000	617.	12008.
-999.000	-999.000	-999.000	618.	12008.
1.664	-999.000	0.280	619.	12008.
-999.000	-999.000	-999.000	620.	12008.
-999.000	-999.000	-999.000	621.	12008.
-999.000	-999.000	-999.000	622.	12008.
-999.000	-999.000	-999.000	623.	12008.
1.692	-999.000	0.292	624.	12008.
0.465	0.738	0.056	625.	12009.
0.484	0.904	0.057	626.	12009.
0.423	0.824	0.076	627.	12009.
-999.000	-999.000	-999.000	628.	12009.
0.517	1.031	0.083	629.	12009.
-999.000	-999.000	-999.000	630.	12009.
0.712	1.547	0.134	631.	12009.
-999.000	-999.000	-999.000	632.	12009.
0.737	1.793	0.148	633.	12009.
-999.000	-999.000	-999.000	634.	12009.
0.698	1.639	0.131	635.	12009.
0.729	1.985	0.188	636.	12009.
-999.000	-999.000	-999.000	637.	12009.
0.815	1.989	0.190	638.	12009.
-999.000	-999.000	-999.000	639.	12009.
1.350	-999.000	0.311	640.	12009.
1.282	3.074	0.307	641.	12009.
1.478	3.087	0.331	642.	12009.
-999.000	-999.000	-999.000	643.	12009.
-999.000	-999.000	-999.000	644.	12009.
-999.000	-999.000	-999.000	645.	12009.
-999.000	-999.000	-999.000	646.	12009.
-999.000	-999.000	-999.000	647.	12009.
-999.000	-999.000	-999.000	648.	12009.
-999.000	-999.000	-999.000	649.	12010.
-999.000	-999.000	-999.000	650.	12010.
0.156	-999.000	0.033	651.	12010.
-999.000	-999.000	-999.000	652.	12010.
0.276	-999.000	0.033	653.	12010.
-999.000	-999.000	-999.000	654.	12010.

station	sample	press	temp	salbot	oxybot	silicate	phsphate
number	number	dbar	degc	psu	ml/l	umol/l	umol/l
********	********	********	********	********	********	********	********
12010.	655.	2018.1	3.513	34.923	6.33	12.7	1.18
12010.	656.	1818.1	3.605	34.914	6.33	11.9	1.16
12010.	657.	1617.8	3.775	34.920	6.28	11.6	1.20
12010.	658.	1418.1	3.987	34.936	6.27	13.8	1.18
12010.	659.	1216.1	4.557	34.997	5.91	11.6	1.20
12010.	660.	1010.9	4.749	34.962	5.74	11.6	1.23
12010.	661.	811.2	5.804	34.999	5.33	11.8	1.26
12010.	662.	608.7	7.215	35.001	5.28	10.5	1.18
12010.	663.	508.4	8.572	35.129	5.44	8.7	1.07
12010.	664.	409.1	9.468	35.257	5.38	7.7	1.00
12010.	665.	309.3	10.181	35.364	5.94	5.4	0.79
12010.	666.	208.9	10.659	35.442	5.74	5.3	0.76
12010.	667.	158.7	10.809	35.459	5.84	4.6	0.73
12010.	668.	109.1	11.317	35.539	5.87	3.6	0.67
12010.	669.	84.3	11.558	35.584	5.86	3.3	0.64
12010.	670.	59.8	11.774	35.584	6.12	0.9	0.54
12010.	671.	35.2	12.334	35.577	6.41	0.0	0.41
12010.	672.	4063.8	2.601	34.917	5.62	44.8	1.47
12011.	673.	4012.6	2.605	34.917	5.64	-999.0	-999.00
12011.	674.	3638.2	2.743	34.937	5.65	-999.0	-999.00
12011.	675.	3221.0	2.794	34.945	5.82	-999.0	-999.00
12011.	676.	2823.5	2.996	34.952	5.99	-999.0	-999.00
12011.	677.	2425.7	3.239	34.942	6.18	-999.0	-999.00
12011.	678.	2223.1	3.337	34.933	6.30	-999.0	-999.00
12011.	679.	2020.5	3.411	34.922	6.33	-999.0	-999.00
12011.	680.	1820.2	3.392	34.896	6.41	-999.0	-999.00
12011.	681.	1619.3	3.397	34.883	6.47	-999.0	-999.00
12011.	682.	1416.7	3.476	34.884	6.47	-999.0	-999.00
12011.	683.	1213.6	3.619	34.890	6.49	-999.0	-999.00
12011.	684.	1011.4	3.880	34.901	6.37	-999.0	-999.00
12011.	685.	810.3	4.313	34.927	6.18	-999.0	-999.00
12011.	686.	610.2	5.115	34.943	5.93	-999.0	-999.00
12011.	687.	509.4	5.519	35.923	5.64	-999.0	-999.00
12011.	688.	408.9	6.245	34.911	5.80	-999.0	-999.00
12011.	689.	307.3	7.241	34.977	5.42	-999.0	-999.00
12011.	690.	205.8	7.835	35.005	-999.00	-999.0	-999.00
12011.	691.	156.2	8.113	35.037	6.19	-999.0	-999.00
12011.	692.	106.9	8.333	35.069	6.30	-999.0	-999.00
12011.	693.	82.2	8.517	35.092	6.26	-999.0	-999.00
12011.	694.	57.9	8.841	35.107	6.23	-999.0	-999.00
12011.	695.	33.5	9.687	35.101	6.36	-999.0	-999.00
12011.	696.	19.3	12.192	35.133	6.60	-999.0	-999.00
12013.	721.	3349.1	2.717	34.940	5.88	27.6	1.25
12013.	722.	3349.1	2.717	34.941	5.88	27.3	1.26
12013.	723.	3044.8	2.801	34.951	6.06	21.6	1.16
12013.	724.	2841.9	2.881	34.953	6.11	19.2	1.15
12013.	725.	2638.7	3.008	34.953	6.17	16.2	1.13
12013.	726.	2435.0	3.129	34.950	6.22	14.2	1.11
12013.	727.	2232.1	3.254	34.944	6.24	12.8	1.09
12013.	728.	2030.2	3.332	34.944	6.24	12.7	1.06
12013.	729.	1827.2	3.405	-999.000	-999.00	-999.0	-999.00
12013.	730.	1626.2	3.457	34.907	6.38	10.5	1.08
12013.	731.	1424.0	3.516	34.895	6.40	10.0	1.06
12013.	732.	1219.8	3.667	34.902	6.32	10.0	1.07
12013.	733.	1015.6	3.777	34.903	6.25	9.8	1.08
12013.	734.	813.2	4.249	34.940	5.95	10.2	1.12
12013.	735.	610.5	4.487	34.928	5.86	9.9	1.12
12013.	736.	508.9	4.801	34.917	5.74	10.0	1.14
12013.	737.	407.9	5.482	34.936	5.72	9.5	1.14
12013.	738.	308.4	5.489	34.826	5.98	8.7	1.10
12013.	739.	208.2	6.377	34.883	6.31	7.6	0.97
12013.	740.	158.3	6.852	34.903	6.25	7.2	0.94
12013.	741.	108.3	6.912	34.879	6.51	6.8	0.89
12013.	742.	83.7	7.177	34.894	6.51	6.7	0.90
12013.	743.	59.0	7.859	34.920	6.61	5.1	0.88
12013.	744.	33.9	8.909	34.972	6.77	1.4	0.60
12014.	745.	2433.2	3.022	34.948	5.94	22.9	1.26
12014.	746.	2433.2	3.022	34.948	5.93	23.0	1.30
12014.	747.	2230.9	3.259	34.947	6.16	15.4	1.21
12014.	748.	2027.8	3.388	34.937	6.26	12.9	1.22
12014.	749.	1825.4	3.539	34.925	6.27	12.5	1.18
12014.	750.	1623.3	3.637	34.914	6.31	11.8	1.23
12014.	751.	1421.0	3.843	34.919	6.22	11.5	1.21
12014.	752.	1217.8	4.381	34.963	5.91	11.6	1.27

F-12	F-11	F-113	sample	station
pMol/l	pMol/l	pMol/l	number	number
********	********	********	********	********
-999.000	-999.000	-999.000	655.	12010.
0.656	-999.000	0.074	656.	12010.
-999.000	-999.000	-999.000	657.	12010.
0.433	-999.000	0.044	658.	12010.
-999.000	-999.000	-999.000	659.	12010.
1.256	-999.000	0.263	660.	12010.
-999.000	-999.000	-999.000	661.	12010.
1.219	-999.000	0.297	662.	12010.
1.373	-999.000	0.323	663.	12010.
1.418	-999.000	0.336	664.	12010.
1.699	-999.000	0.417	665.	12010.
1.572	-999.000	0.384	666.	12010.
-999.000	-999.000	-999.000	667.	12010.
1.655	-999.000	0.393	668.	12010.
-999.000	-999.000	-999.000	669.	12010.
1.747	-999.000	-999.000	670.	12010.
-999.000	-999.000	-999.000	671.	12010.
0.126	-999.000	0.021	672.	12010.
0.160	0.187	0.038	673.	12011.
-999.000	-999.000	-999.000	674.	12011.
0.224	0.420	0.047	675.	12011.
-999.000	-999.000	-999.000	676.	12011.
0.455	0.830	0.095	677.	12011.
-999.000	-999.000	-999.000	678.	12011.
-999.000	-999.000	-999.000	679.	12011.
0.688	1.401	0.124	680.	12011.
-999.000	-999.000	-999.000	681.	12011.
0.920	2.086	0.184	682.	12011.
-999.000	-999.000	-999.000	683.	12011.
1.052	2.511	0.263	684.	12011.
1.048	2.449	0.229	685.	12011.
1.061	2.574	0.251	686.	12011.
1.072	2.647	0.269	687.	12011.
1.429	3.350	0.343	688.	12011.
1.289	2.970	0.303	689.	12011.
-999.000	-999.000	-999.000	690.	12011.
1.689	-999.000	0.447	691.	12011.
2.218	4.269	0.453	692.	12011.
-999.000	-999.000	-999.000	693.	12011.
-999.000	-999.000	-999.000	694.	12011.
-999.000	-999.000	-999.000	695.	12011.
-999.000	4.127	0.339	696.	12011.
0.310	0.557	0.050	721.	12013.
-999.000	-999.000	-999.000	722.	12013.
0.362	0.793	0.068	723.	12013.
-999.000	-999.000	-999.000	724.	12013.
0.399	0.890	0.070	725.	12013.
-999.000	-999.000	-999.000	726.	12013.
-999.000	-999.000	-999.000	727.	12013.
0.349	0.967	0.078	728.	12013.
-999.000	-999.000	-999.000	729.	12013.
0.559	1.405	0.120	730.	12013.
-999.000	-999.000	-999.000	731.	12013.
0.739	1.943	0.137	732.	12013.
0.925	2.069	0.166	733.	12013.
0.894	2.064	0.147	734.	12013.
1.161	2.697	0.219	735.	12013.
1.196	2.839	0.235	736.	12013.
1.319	3.166	0.271	737.	12013.
1.683	4.235	0.380	738.	12013.
-999.000	-999.000	-999.000	739.	12013.
1.697	3.999	0.339	740.	12013.
-999.000	-999.000	-999.000	741.	12013.
-999.000	-999.000	-999.000	742.	12013.
-999.000	-999.000	-999.000	743.	12013.
1.625	4.191	0.283	744.	12013.
0.299	0.772	0.048	745.	12014.
0.331	0.577	0.051	746.	12014.
-999.000	-999.000	-999.000	747.	12014.
0.500	1.054	0.072	748.	12014.
-999.000	-999.000	-999.000	749.	12014.
0.703	1.759	0.138	750.	12014.
-999.000	-999.000	-999.000	751.	12014.
0.837	2.068	0.168	752.	12014.

station	sample	press	temp	salbot	oxybot	silicate	phsphate
number	number	dbar	degc	psu	ml/l	umol/l	umol/l
********	********	********	********	********	********	********	********
12014.	753.	1014.2	5.201	35.025	5.54	11.8	1.30
12014.	754.	913.4	5.638	35.049	5.38	11.6	1.36
12014.	755.	812.4	6.333	35.080	5.23	11.4	1.30
12014.	756.	711.0	6.873	35.091	5.19	10.9	1.31
12014.	757.	609.8	7.893	35.165	5.30	9.6	1.21
12014.	758.	508.7	8.897	35.265	5.62	7.9	1.06
12014.	759.	408.6	9.141	35.306	5.95	6.8	1.04
12014.	760.	307.7	9.322	35.314	6.11	6.4	0.94
12014.	761.	206.0	9.415	35.320	6.08	6.0	0.92
12014.	762.	156.0	9.569	35.335	6.08	5.7	0.89
12014.	763.	105.9	9.459	35.310	-999.00	5.5	0.89
12014.	764.	80.9	9.427	35.290	6.08	5.5	0.90
12014.	765.	56.4	9.519	35.269	6.06	5.8	0.91
12014.	766.	36.5	10.282	35.308	6.20	3.9	0.78
12014.	767.	26.8	10.838	35.341	6.36	2.2	0.61
12014.	768.	17.0	11.145	35.334	6.46	1.6	0.53
12015.	769.	4466.8	2.545	34.905	5.62	49.7	1.52
12015.	770.	4055.5	2.538	34.912	5.59	48.2	1.62
12015.	771.	3645.6	2.635	34.924	5.67	42.7	1.47
12015.	772.	3235.8	2.802	34.944	5.83	32.1	1.33
12015.	773.	2826.8	3.059	34.952	6.08	22.3	1.30
12015.	774.	2405.6	3.330	34.942	6.23	15.8	1.17
12015.	775.	2008.1	3.519	34.918	6.31	13.6	1.17
12015.	776.	1814.5	3.564	34.904	6.35	12.7	1.16
12015.	777.	1426.7	3.944	34.927	6.29	12.4	1.18
12015.	778.	1426.7	3.944	34.927	6.12	12.5	1.19
12015.	779.	1226.2	4.432	34.972	5.85	12.6	1.22
12015.	780.	1023.3	5.211	35.032	5.42	12.8	1.21
12015.	781.	818.2	6.275	35.083	5.09	12.6	1.25
12015.	782.	616.0	8.078	35.178	4.85	11.3	1.19
12015.	783.	516.4	8.540	35.143	5.46	9.5	1.06
12015.	784.	418.3	9.343	35.234	5.70	7.9	0.92
12015.	785.	319.3	10.324	35.391	5.67	6.9	0.91
12015.	786.	219.2	10.738	35.456	5.92	5.6	0.74
12015.	787.	168.9	10.942	35.482	5.70	5.4	0.74
12015.	788.	119.3	11.520	35.589	5.83	4.3	0.65
12015.	789.	94.6	11.532	35.578	5.73	4.0	0.69
12015.	790.	69.9	11.718	35.606	5.75	3.5	0.66
12015.	791.	44.9	12.124	35.655	6.01	1.3	0.64
12015.	792.	31.0	12.860	35.662	6.43	0.4	0.38
12018.	841.	4039.3	2.552	34.911	5.54	-999.0	-999.00
12018.	842.	4039.3	2.552	34.911	5.53	-999.0	-999.00
12018.	843.	3623.7	2.599	34.921	5.61	-999.0	-999.00
12018.	844.	3220.0	2.776	34.940	5.80	-999.0	-999.00
12018.	845.	2810.4	3.035	34.953	5.98	-999.0	-999.00
12018.	846.	2410.1	3.345	34.946	6.18	-999.0	-999.00
12018.	847.	2013.3	3.510	-999.000	6.29	-999.0	-999.00
12018.	848.	1816.2	3.525	34.899	6.38	-999.0	-999.00
12018.	849.	1613.8	3.677	-999.000	6.31	-999.0	-999.00
12018.	850.	1411.1	3.932	-999.000	6.16	-999.0	-999.00
12018.	851.	1209.1	4.483	34.983	5.85	-999.0	-999.00
12018.	852.	1008.1	5.888	-999.000	5.23	-999.0	-999.00
12018.	853.	807.9	6.984	-999.000	4.90	-999.0	-999.00
12018.	854.	605.8	8.515	35.219	4.84	-999.0	-999.00
12018.	855.	505.1	9.422	-999.000	5.19	-999.0	-999.00
12018.	856.	405.5	10.025	-999.000	-999.00	-999.0	-999.00
12018.	857.	304.7	10.338	35.395	5.78	-999.0	-999.00
12018.	858.	204.9	10.708	-999.000	5.86	-999.0	-999.00
12018.	859.	154.7	10.961	-999.000	5.83	-999.0	-999.00
12018.	860.	105.0	11.134	35.534	5.93	-999.0	-999.00
12018.	861.	80.2	11.243	-999.000	5.89	-999.0	-999.00
12018.	862.	55.4	11.372	-999.000	5.91	-999.0	-999.00
12018.	863.	30.6	12.089	-999.000	6.49	-999.0	-999.00
12018.	864.	15.9	14.395	35.583	6.44	-999.0	-999.00
12019.	865.	4464.3	2.564	34.907	5.52	-999.0	-999.00
12019.	866.	4464.3	2.564	34.908	5.53	-999.0	-999.00
12019.	867.	4060.5	2.582	34.914	5.56	-999.0	-999.00
12019.	868.	3635.6	2.659	34.926	5.61	-999.0	-999.00
12019.	869.	3217.2	2.849	34.944	5.72	-999.0	-999.00
12019.	870.	2818.8	3.150	34.959	5.90	-999.0	-999.00
12019.	871.	2421.7	3.529	34.958	6.05	-999.0	-999.00
12019.	872.	2021.9	3.712	34.923	6.24	-999.0	-999.00
12019.	873.	1624.3	4.256	34.957	5.98	-999.0	-999.00
12019.	874.	1423.9	5.443	35.092	5.44	-999.0	-999.00

F-12	F-11	F-113	sample	station
pMol/l	pMol/l	pMol/l	number	number
********	********	********	********	********
0.884	1.961	0.166	753.	12014.
-999.000	-999.000	-999.000	754.	12014.
0.974	2.260	0.207	755.	12014.
-999.000	-999.000	-999.000	756.	12014.
1.177	2.783	0.276	757.	12014.
1.277	3.158	0.340	758.	12014.
1.538	3.778	0.396	759.	12014.
1.582	3.804	0.416	760.	12014.
1.743	4.255	0.413	761.	12014.
-999.000	-999.000	-999.000	762.	12014.
-999.000	-999.000	-999.000	763.	12014.
1.782	3.810	0.366	764.	12014.
-999.000	-999.000	-999.000	765.	12014.
-999.000	-999.000	-999.000	766.	12014.
-999.000	-999.000	-999.000	767.	12014.
2.145	4.474	0.379	768.	12014.
0.468	0.508	0.059	769.	12015.
-999.000	-999.000	-999.000	770.	12015.
-999.000	-999.000	-999.000	771.	12015.
0.158	0.270	0.018	772.	12015.
0.278	0.955	0.042	773.	12015.
0.363	0.812	0.052	774.	12015.
0.728	1.640	0.097	775.	12015.
-999.000	-999.000	-999.000	776.	12015.
0.735	1.690	0.112	777.	12015.
-999.000	-999.000	-999.000	778.	12015.
0.732	1.720	0.118	779.	12015.
1.089	2.282	0.109	780.	12015.
0.811	2.064	0.112	781.	12015.
-999.000	-999.000	-999.000	782.	12015.
1.426	3.136	0.154	783.	12015.
1.492	3.461	0.333	784.	12015.
1.441	3.353	0.319	785.	12015.
-999.000	-999.000	-999.000	786.	12015.
1.543	3.346	0.326	787.	12015.
-999.000	-999.000	-999.000	788.	12015.
-999.000	-999.000	-999.000	789.	12015.
-999.000	-999.000	-999.000	790.	12015.
-999.000	-999.000	-999.000	791.	12015.
1.373	3.251	0.363	792.	12015.
-999.000	-999.000	-999.000	841.	12018.
-999.000	-999.000	-999.000	842.	12018.
0.347	0.710	0.029	843.	12018.
-999.000	-999.000	-999.000	844.	12018.
-999.000	-999.000	-999.000	845.	12018.
0.858	1.882	0.102	846.	12018.
-999.000	-999.000	-999.000	847.	12018.
0.882	1.962	0.122	848.	12018.
-999.000	-999.000	-999.000	849.	12018.
0.877	1.485	0.085	850.	12018.
-999.000	-999.000	-999.000	851.	12018.
0.685	1.837	0.120	852.	12018.
0.872	2.141	0.157	853.	12018.
1.265	3.018	0.256	854.	12018.
-999.000	-999.000	-999.000	855.	12018.
1.445	3.400	0.316	856.	12018.
1.490	3.366	0.265	857.	12018.
1.474	3.491	0.323	858.	12018.
-999.000	-999.000	-999.000	859.	12018.
1.541	3.479	0.358	860.	12018.
-999.000	-999.000	-999.000	861.	12018.
1.541	3.479	0.358	862.	12018.
-999.000	-999.000	-999.000	863.	12018.
1.538	3.434	0.360	864.	12018.
0.006	0.063	0.011	865.	12019.
-999.000	-999.000	-999.000	866.	12019.
-999.000	-999.000	-999.000	867.	12019.
0.768	0.172	0.017	868.	12019.
-999.000	-999.000	-999.000	869.	12019.
-999.000	-999.000	-999.000	870.	12019.
0.221	0.389	0.030	871.	12019.
0.544	1.188	0.062	872.	12019.
-999.000	-999.000	-999.000	873.	12019.
0.659	1.417	0.087	874.	12019.

station	sample	press	temp	salbot	oxybot	silicate	phsphate
number	number	dbar	degc	psu	ml/l	umol/l	umol/l
********	********	********	********	********	********	********	********
12019.	875.	1220.1	6.980	35.273	4.90	-999.0	-999.00
12019.	876.	1017.3	8.706	35.409	4.58	-999.0	-999.00
12019.	877.	813.1	9.640	35.351	5.33	-999.0	-999.00
12019.	878.	606.3	10.636	35.502	5.79	-999.0	-999.00
12019.	879.	503.4	10.841	35.532	5.81	-999.0	-999.00
12019.	880.	409.1	10.993	35.546	5.82	-999.0	-999.00
12019.	881.	311.0	11.188	35.561	5.77	-999.0	-999.00
12019.	882.	210.8	11.384	35.599	5.82	-999.0	-999.00
12019.	883.	160.7	11.469	35.606	5.82	-999.0	-999.00
12019.	884.	111.0	11.599	35.626	5.85	-999.0	-999.00
12019.	885.	86.2	11.632	35.625	5.85	-999.0	-999.00
12019.	886.	61.4	11.765	35.637	5.84	-999.0	-999.00
12019.	887.	36.2	11.949	35.650	6.01	-999.0	-999.00
12019.	888.	21.4	12.920	35.651	6.45	-999.0	-999.00
12020.	889.	4448.6	2.517	34.902	-999.00	-999.0	-999.00
12020.	890.	4063.6	2.513	34.906	-999.00	-999.0	-999.00
12020.	891.	3655.0	2.555	34.915	-999.00	-999.0	-999.00
12020.	892.	3245.9	2.692	34.932	-999.00	-999.0	-999.00
12020.	893.	2831.3	2.927	34.949	-999.00	-999.0	-999.00
12020.	894.	2425.9	3.278	34.951	-999.00	-999.0	-999.00
12020.	895.	2024.3	3.550	-999.000	-999.00	-999.0	-999.00
12020.	896.	1814.0	3.590	34.904	-999.00	-999.0	-999.00
12020.	897.	1606.0	3.825	-999.000	-999.00	-999.0	-999.00
12020.	898.	1388.5	4.325	-999.000	-999.00	-999.0	-999.00
12020.	899.	1201.8	5.288	35.052	-999.00	-999.0	-999.00
12020.	900.	1010.8	7.685	-999.000	-999.00	-999.0	-999.00
12020.	901.	808.6	8.810	-999.000	-999.00	-999.0	-999.00
12020.	902.	607.5	9.465	35.321	-999.00	-999.0	-999.00
12020.	903.	507.1	10.184	-999.000	-999.00	-999.0	-999.00
12020.	904.	406.1	10.477	-999.000	-999.00	-999.0	-999.00
12020.	905.	304.3	10.779	35.532	-999.00	-999.0	-999.00
12020.	906.	207.0	10.672	-999.000	-999.00	-999.0	-999.00
12020.	907.	157.0	11.011	-999.000	-999.00	-999.0	-999.00
12020.	908.	106.8	11.133	35.548	-999.00	-999.0	-999.00
12020.	909.	81.6	11.374	-999.000	-999.00	-999.0	-999.00
12020.	910.	55.2	11.600	-999.000	-999.00	-999.0	-999.00
12020.	911.	30.4	12.002	-999.000	-999.00	-999.0	-999.00
12020.	912.	4448.6	2.517	34.902	-999.00	-999.0	-999.00
12021.	913.	2862.4	2.656	34.929	5.62	-999.0	-999.00
12021.	914.	2625.0	3.050	34.949	5.90	-999.0	-999.00
12021.	915.	2422.5	3.317	34.948	6.08	-999.0	-999.00
12021.	916.	2221.5	3.495	34.942	6.15	-999.0	-999.00
12021.	917.	2016.8	3.648	34.932	6.19	-999.0	-999.00
12021.	918.	1816.1	3.668	34.906	6.30	-999.0	-999.00
12021.	919.	1618.4	3.923	34.923	6.16	-999.0	-999.00
12021.	920.	1416.3	4.439	34.961	5.84	-999.0	-999.00
12021.	921.	1204.6	5.313	-999.000	-999.00	-999.0	-999.00
12021.	922.	1004.0	6.799	35.135	5.10	-999.0	-999.00
12021.	923.	904.6	7.461	35.163	4.96	-999.0	-999.00
12021.	924.	808.2	8.332	35.228	5.11	-999.0	-999.00
12021.	925.	705.6	9.306	35.251	5.22	-999.0	-999.00
12021.	926.	609.6	9.190	35.280	5.89	-999.0	-999.00
12021.	927.	507.9	9.771	35.369	5.73	-999.0	-999.00
12021.	928.	407.9	10.183	35.434	5.79	-999.0	-999.00
12021.	929.	306.9	10.290	35.438	5.94	-999.0	-999.00
12021.	930.	204.9	10.509	35.476	5.98	-999.0	-999.00
12021.	931.	157.8	10.451	35.460	5.99	-999.0	-999.00
12021.	932.	107.5	10.324	35.422	5.97	-999.0	-999.00
12021.	933.	77.8	10.405	35.430	6.02	-999.0	-999.00
12021.	934.	58.1	10.651	35.455	6.07	-999.0	-999.00
12021.	935.	33.7	10.859	35.461	6.20	-999.0	-999.00
12021.	936.	18.6	12.490	35.442	6.38	-999.0	-999.00

F-12	F-11	F-113	sample	station
pMol/l	pMol/l	pMol/l	number	number
********	********	********	********	********
-999.000	-999.000	-999.000	875.	12019.
0.748	1.500	0.086	876.	12019.
1.273	-999.000	0.242	877.	12019.
1.580	-999.000	0.299	878.	12019.
-999.000	-999.000	-999.000	879.	12019.
1.436	-999.000	0.312	880.	12019.
-999.000	-999.000	-999.000	881.	12019.
1.470	-999.000	0.311	882.	12019.
-999.000	-999.000	-999.000	883.	12019.
1.445	-999.000	0.281	884.	12019.
-999.000	-999.000	-999.000	885.	12019.
1.526	-999.000	0.356	886.	12019.
-999.000	-999.000	-999.000	887.	12019.
1.428	-999.000	0.259	888.	12019.
-999.000	-999.000	-999.000	889.	12020.
-999.000	-999.000	-999.000	890.	12020.
-999.000	-999.000	-999.000	891.	12020.
-999.000	-999.000	-999.000	892.	12020.
-999.000	-999.000	-999.000	893.	12020.
-999.000	-999.000	-999.000	894.	12020.
-999.000	-999.000	-999.000	895.	12020.
-999.000	-999.000	-999.000	896.	12020.
-999.000	-999.000	-999.000	897.	12020.
-999.000	-999.000	-999.000	898.	12020.
-999.000	-999.000	-999.000	899.	12020.
-999.000	-999.000	-999.000	900.	12020.
-999.000	-999.000	-999.000	901.	12020.
-999.000	-999.000	-999.000	902.	12020.
-999.000	-999.000	-999.000	903.	12020.
-999.000	-999.000	-999.000	904.	12020.
-999.000	-999.000	-999.000	905.	12020.
-999.000	-999.000	-999.000	906.	12020.
-999.000	-999.000	-999.000	907.	12020.
-999.000	-999.000	-999.000	908.	12020.
-999.000	-999.000	-999.000	909.	12020.
-999.000	-999.000	-999.000	910.	12020.
-999.000	-999.000	-999.000	911.	12020.
-999.000	-999.000	-999.000	912.	12020.
0.091	1.227	0.041	913.	12021.
-999.000	-999.000	-999.000	914.	12021.
-999.000	-999.000	-999.000	915.	12021.
0.458	0.912	0.053	916.	12021.
-999.000	-999.000	-999.000	917.	12021.
-999.000	-999.000	-999.000	918.	12021.
1.001	1.819	0.094	919.	12021.
0.873	1.860	0.104	920.	12021.
-999.000	-999.000	-999.000	921.	12021.
0.907	1.979	0.117	922.	12021.
-999.000	-999.000	-999.000	923.	12021.
1.182	2.469	0.154	924.	12021.
-999.000	-999.000	-999.000	925.	12021.
1.694	3.482	0.251	926.	12021.
1.716	-999.000	0.253	927.	12021.
1.651	3.505	0.246	928.	12021.
1.800	-999.000	0.270	929.	12021.
1.799	3.776	0.288	930.	12021.
-999.000	-999.000	-999.000	931.	12021.
1.806	-999.000	0.301	932.	12021.
-999.000	-999.000	-999.000	933.	12021.
1.735	-999.000	0.344	934.	12021.
-999.000	-999.000	-999.000	935.	12021.
1.819	4.166	0.356	936.	12021.