German Research Vessel "Meteor"

Cruise Leg M50/3

St. John's (Canada) to Reykjavik (Island)

June 21. to July 15. 2001

Chief Scientist: Dr. J. Holfort

Introduction

The cruise leg M50/3 was a continuation of the work done in the EC- project VEINS (Variability of exchanges in the Northern Seas), where eighteen countries contributed to field work and modeling of the transport fluctuations through the major ocean passages between the Arctic Ocean and the Northern North Atlantic. This cruise focussed on the fluxes and the changes in the properties of water masses in the area from the Denmark Strait to the southern tip of Greenland. It is a repeat of the Meteor-cruise M39/5 in 1997, the Valdivia-cruise 173 in 1998, the Meteor cruise M45/4 in 1999 and the Poseidon cruise 263 in 2000.

Participants

Name	***Speciality***	***Institute***
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Research program

The ideas about the composition of the Denmark Strait Overflow Water (DSOW) have changed considerably within the last couple of years. This changing view did also arise due to the long term measurements within the VEINS program. Some of these measurements were also done on previous cruises with FS Meteor. Actually the overflow is related to the waters of the western boundary currents of the Nordic Seas. This results in arctic, polar and atlantic contributions to the Denmark Strait Overflow. The present concept consists of equal contributions of Arctic Intermediate Waters, Arctic Ocean Deep Waters and recirculated Atlantic Water in the composition of overflow waters.

Of course this composition can change with time. On longer temporal scales the atmospheric forcing changes, and the formation of water masses depends also on this forcing. The predominant signal of this changes is the North Atlantic Oscillation. The exact nature of the relations between changes in atmospheric forcing and changes in the composition and strength of the overflow is still unclear and a subject of our investigations. But recently a coherence was found between inter-annual temperature changes of the DSOW at 64°N, changes in the temperature in the Greenland Sea and also with changes in the Atlantic Waters in the Westspitsbergen Current.

For several years now hydrographic sections were taken regularly along the East Greenland continental slope south of Denmark Strait. Several moorings are deployed along one of this sections at about 64°N. This mooring line consists of 6 moorings with current meters, two inverted echo sounders and one bottom mounted ADCP. This field word is a cooperative effort of institutions from Germany, Iceland, Finland and Great Britain.

The Meteor cruise 50/3 aims at repeating those six standard sections, with the difference that the southernmost section will be extended till the Mid-Atlantic Ridge (see Figure 1). For a better characterization of water masses, CFC's and SF6 measurements will be taken on these sections. The moorings will be re-covered and then deployed again. A new kind of mooring was deployed on the shelf last year with FS Poseidon. This mooring consists of a tube, about 50m long, with 2 integrated temperature and salinity sensors (microcats). The goal of the tube itself is to protect the sensor from being destroyed by ice. This mooring will also be recovered and two such moorings will be deployed.

Short Cruise Report

The RV Meteor left St. John's on June 21 and headed to 58°47,8 N 030°49,8 W, a point above the Mid-Atlantic-Ridge, arriving on June 25. From there a hydrographic section was taken towards the southern tip of Greenland. This section was a repeat of the western part of WOCE section A1E, the eastern part was occupied at the same time by RV Commander Jack. Regretfully, due to problems with the CTD cable on RV Commander Jack, the ships didn't meet and there is a time gap of 5 days between both parts.

This first section, the westernmost stations compromising also VEINS section 6, was finished on June 28. The hydrographic work continued with VEINS section 5, a section perpendicular to the continental shelf north of the first section. The CTD system worked very well and also showed no problems during the rest of the cruise. Station positions and section numbering are given in table 1 and shown in figure 1.

The survey of the next two sections was interrupted by mooring work. While CTD work can also be done during night and not so good weather, we needed daylight and fine weather for the mooring work. We recovered one and deployed two tube moorings at the western end of section 4. The tube could only be recovered in two pieces, but no instrument was lost. The deployment of the tubes, with a length of about 45m quite bulky, was much easier as expected. The weather was also very fine during deployment and we had a fantastic view of the Greenland coast. Along section 3 a total of eight moorings were successfully recovered and deployed.

After the mooring work we continued the hydrographic work with 3 sections perpendicular to the continental rise, connected with stations along a water depth of about 2000m. As the weather had been quite reasonable during the whole cruise, we had enough time to increase the spatial resolution of this last sections up to about 5 nautical miles between stations. Due to ice section 1 could not started as far north on the shelf as planned.

Along the CTD sections, although not at every station, water was sampled at 10 to 20 levels for analysis of CFC's. At some selected stations water samples were taken for the analysis of SF6 in the overflow water, at other stations some samples were taken for the analysis of alkenones.

Continuos measurements were taken with up to two vessel mounted ADCP's. The pCO_2 in air and surface waters were analyzed, surface waters were filtered for the determination of alkenons and meteorological measurements were done on a routinely basis. The acquisition computer (an old 286) of the 150 Hz ADCP broke done on july 8 and could not be repaired. Also many of the data was also lost, because the hard disk couldn't be read from another computer. But the second ADCP with 75 Hz showed no problems during the whole cruise.

RV Meteor arrived in the port of Reykjavik on July 15.

Preliminary results

Hydrography

The hydrographic measurements were done with a Seabird CTD, the same instrument as the legs before. The pressure offset in air of 0.0 to 0.2 dbar and was neglected, a comparison with the reversing thermometers showed that no in situ calibration of temperature and pressure were necessary. Bottle salinities were determined with an AUTOSAL salinometer, which was calibrated using standard seawater. The conductivity showed a constant offset of 0.0018 mS/cm, after calibration the accuracy for conductivity (respective salinity) is better then 0.003 (see Figure 2)

Samples for oxygen were taken and analyzed regularly. This values were used to calibrate the oxygen sensor on the CTD.

At section 1 (see Figure 3) the Denmark Strait Overflow water can be clearly seen as a layer of low salinity and temperature sitting on the Greenland slope. This layer can be traced till the southernmost section 6, although with increasing temperature and salinity due to mixing with ambient water. The core of the overflow, located at about 1500m to 2000m depth, is connected with the also dense, cold, low salinity waters on the shelf. The water on the shelf is only slightly less dense ($sigma_2$~37.10 kg/m^3) then the overflow ($sigma_2$~37.20 kg/m^3). So

there is the possibility that part of the waters denominated overflow does not originate from the Denmark Strait sill but comes from the shelf.

In comparison with previous cruises and historic data (see Figure 4) it can be noted: Compared to last year (2000) the salinity (and temperature) of the overflow increased slightly, but did not reach the high salinity values of 1996 and are comparable to the values in the years 1994 and 1995.

Moorings

The current and temperature data from the recovered Aandera meters was available short after recovery. Data from the inverted echo sounders needs more processing and is still not available.

The recovered tube moorings had fallen apart in two pieces. It did not broke, but split into two pieces because of loosened screws. From the pressure record (see Figure 5) it can be deduced that it happened in the end of january 2001. After this the two parts were connected just with an rope of 45m length. The new tubes that were deployed have another connection between the individual elements, that should be more durable. The whole mooring tilted quite strongly, resulting in depth excursion of more then 100m. Because it also happened after the tube went apart it is not ice but most probably the effect of strong currents. The drag on the tube is to strong compared to its buoyancy, the new tubes have a smaller diameter and should therefore have a better drag/buoyancy relation. The dominant signals in the pressure signal (and therefore also in the velocity, although no current meter was attached to the mooring) are the tides. There is no peak at the inertial frequency.

Tracer measurements

The discussion of the measurements of this leg are given in the chapter for leg 4 (still not on the web).

Alkenones

(Anja Kirch)

Alkenones are methyl and ethyl ketones consisting of chains of 37-40 carbon atoms with two double bonds up to four. These compounds are produced, probably as membrane lipids, by various Haptophycae algae. In marine environments the coccolithophorid specie *Emiliania huxleyi* is dominant and is well-known for its large blooms in the euphotic zone of the oceans.

The biosynthesis of alkenones in marine systems depends on the ambient water temperature. For example, in low temperature regimes, the amount of higher unsaturated ketones is increasing with temperature. The degree of unsaturation of C_{37} alkenones (only methyl ketones) is usually expressed in terms of U^{K}_{37} and $U^{K'}_{37}$ indices. Since the U^{K}_{37} and $U^{K'}_{37}$ indices (the compositions of the alkenons) remain unchanged when released after the end of coccolithophorid blooms, they can be traced from the the euphotic zone down to the sediment. Successful temperature calibrations in field and laboratory experiments, allows the use of U^{K}_{37} and $U^{K'}_{37}$ indices for the reconstructions of sea surface paleotemperatures.

The estimate of paleo-pCO_2 by measuring the Delta^{13}C values of the alkenones, might add a valuable new aspect to the application of alkenons as biomarkers. Atmospheric CO_2

exchanges across the atmosphere-ocean interface. Dissolved CO_2 is transformed into organic carbon, for example during the biosynthesis of the alkenones, resulting in a characteristic isotopic signature. However, the isotopic signature may also influenced by environmental and growth conditions, such as the availability of light and nutrients, which makes the reconstruction of the pCO_2 doubtful

The aim of our study is the determination of the ^{13}C isotopic signature of long-chain unsaturated methyl ketones (C_{37} alkenones) during coccolithophorid blooms in the North Atlantic Ocean. The ^{13}C signal will be observed from the formation of alkenones during the bloom until the burial in the sediment.

During the cruise METEOR 50-3 samples were taken for the analysis of the alkenones in the euphotic zone (from the surface down to the chlorophyll maximum). Additionally, complementary samples for the determination of particulate organic carbon (POC), suspended particulate material (SPM), chlorophyll and nutrients were taken. pCO_2 was measured almost continuously.

A comprehensive list of the samples taken during the cruise is given in Table 2.

Weather and ice conditions during M50/3

When the METEOR left St. John's, NF, Canada, on June 21, 2001, a gale center of 990 hPa had just entered the Labrador Sea, moving east and filling slowly. Northwesterly winds of 6 to 7 Bft were felt on the ship's position while she headed northeast for the starting position of the first of several hydrographic sections in waters off Southeastern Greenland. On June 23, a trough encircling the slowly filling gale center caused a temporary intensification from 1000 hPa to 995 hPa at 53 North 25 West. At the same time, a flat low just east of Southeastern Greenland had intensified to 1000 hPa, and between those two lows the METEOR experienced southwesterly winds of 5 Bft on June 25 when hydrographic work was about to begin. Filling of the low over the Irminger Sea reduced wind velocity to 4 Bft and direction to back east so that work was unhampered. When the research vessel reached Walloe, southeastern Greenland, on June 28, northeasterly winds were up to 6 Bft just because of the coast's proximity. This was shown when the ship went out into the Irminger Sea, heading for the starting position for the next hydrographic section on June 29 when wind force was down to 4 Bft again. Meanwhile the wedge of high pressure that extended from central to southern Greenland over the Inland Ice had weakened so that winds remained northerly 4 Bft on June 30 when the ship reached mooring arrays at 63 North so close to the coast that it showed clearly and in bright sunshine. The air masses originated from over the Inland Ice indeed because an air temperature of 2°C was the chilliest one recorded during the cruise.

At the same time a low migrating east from Newfoundland had reached the area southeast of Greenland, central pressure being 992 hPa. As it turned northeast during July 1, northeasterly winds increased to 7 Bft on the METEOR's probing position. As the low started to fill winds were slow to abate to North 5 Bft on July 2, but by July 3 conditions were light and variable, and the opportunity was being taken to recover and deploy again a new type of mooring consisting of a tube 50 m long with built-in CTD instruments.

However, a gale center that had been tracked from southwest of the Great Lakes to the northern rim of Hudson Bay, then swinging east, had reached the Labrador Sea by July 3, filling there but inducing a new low on the east coast of southern Greenland that quickly intensified into a gale center 1003 hPa by July 4 when the METEOR experienced North to

Northwest 7 Bft. These gales were short-lived because the gale center quickly moved away to Iceland. During the next two days winds were light and variable. However, meanwhile the gale center from the Labrador Sea was following the track taken by the low it had induced, central pressure in the Irminger Sea being 1000 hPa by July 7 when the METEOR observed strong northwesterly to northerly winds of 6 Bft. The low then filled further swinging southeast and eventually merging with the next of it's kind.

In June, a prominent feature of the average North Atlantic weather chart had been absent: the Azores High. If it was there, it had been weaker than normal, or the subtropical high could be found near to its winter position at Bermuda. Now it established itself just west of the Azores with a central pressure of over 1030 hPa. Opposing a low, albeit a weak one, in the vicinity of Iceland, the scene is set for quick developments starting in the greater Newfoundland area. There was no long wait: during July 8, a low of 1003 hPa passed Goose Bay, Labrador, Canada, heading east and developing into a gale center by noon of the same day at 55 North 43 West. By July 9, central pressure was 993 hPa at 57 North 20 West, and by July 11, central pressure was 997 hPa at the Scottish eastern coast. The storm center then turned northeast to lie so the south of the Lofot islands, Norway, in the evening of July 12, central pressure being 991 hPa. During July 9, a vital part of the cold air masses involved in the circulation of the gale center passed Denmark Strait, and METEOR, working to the west of that passage, observed northeasterly gales of 7 to 8 Bft. So she was not being hard hit.

When the ship reached the area south of Ammassalik, eastern Greenland, winds were down to light and variable, and as a low to the leeward side of the high mountains in that area was forming there was an exceptional view from afar including a fantastic Fata Morgana that emphasized the rim of the ice that barred access to the coast, not to mention hills being shown upside down in a considerable height above the ground.

During the last few days of the voyage there were light to moderate westerly winds that backed to moderate easterlies when our research vessel headed for Reykjavik, Iceland, calling there on July 15.

Ice charts were closely monitored as they were issued by the Danish Meteorological Institute, being sent to the ship by the Institut für Meereskunde, University of Kiel, or by the Bundesamt für Seeschiffahrt und Hydrographie, Hamburg. When the ship was still on her way to Greenland, accessibility of mooring positions near the coast was in question, but when this question became vital, new ice charts reassured free access to the positions.Icebergs were seen but a few.

Acknowledgment

Sincere thanks goes to the crew of the RV Meteor for highly professional assistance, and to the authorities of Greenland and Island for the research permission.

Figures

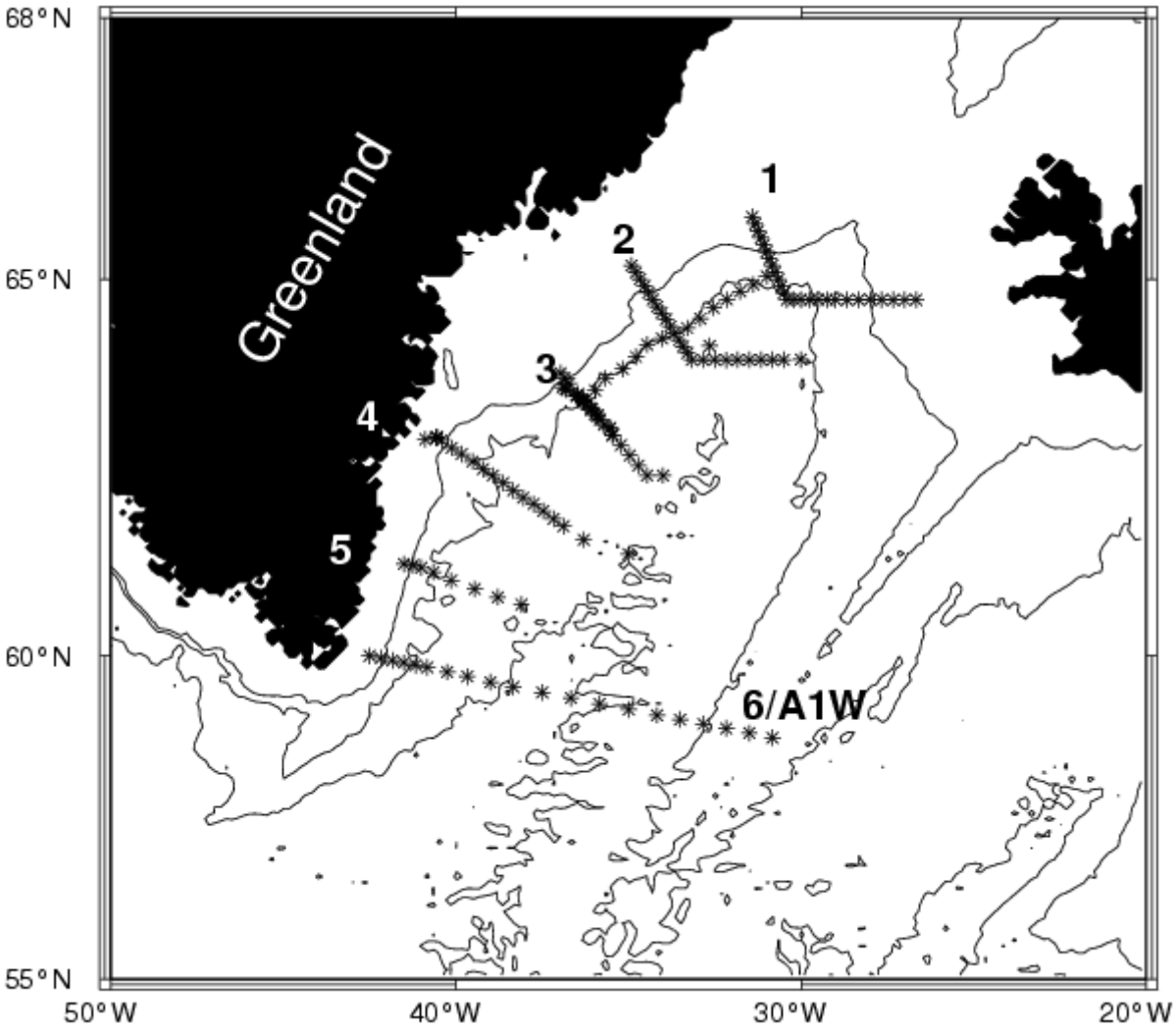
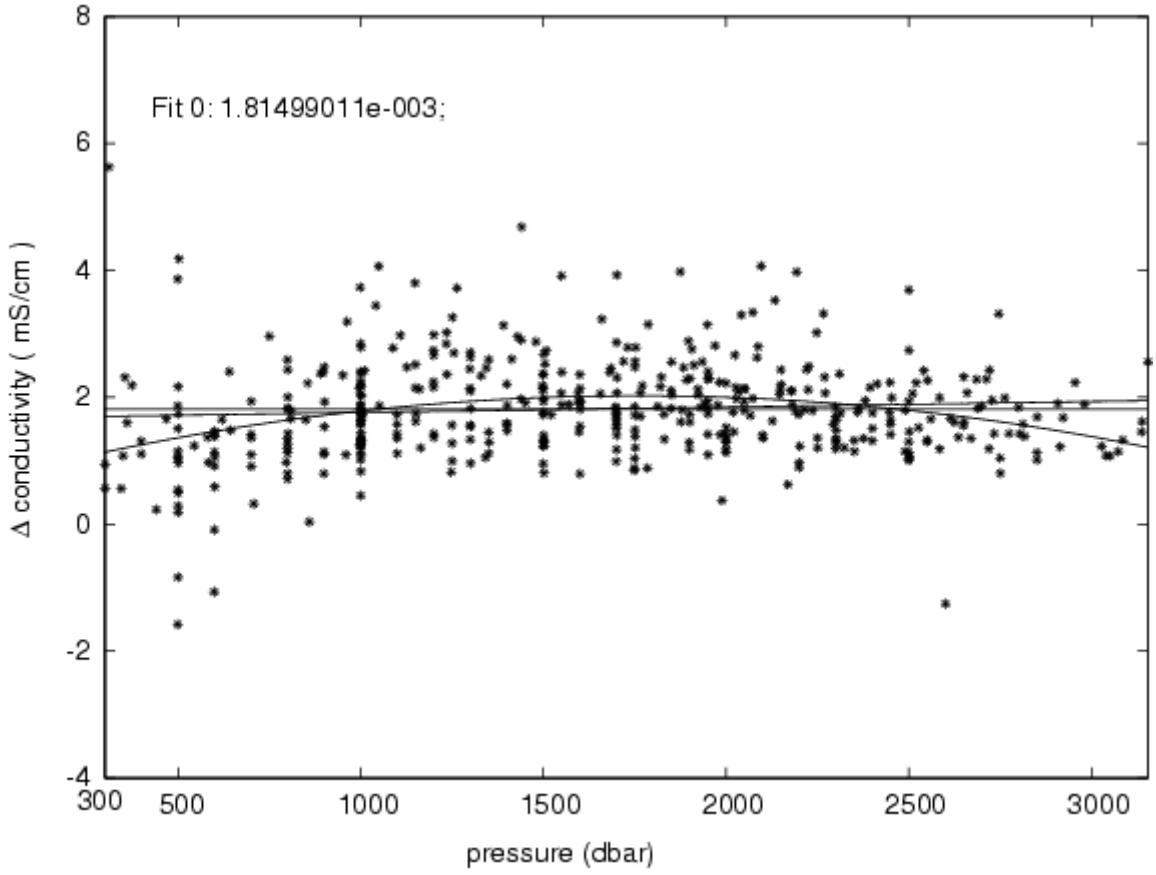


Figure 1: Positions of the stations made during M50/3 and numbers of the VEINS hydrographic sections. The mooring array is located along section 3, the tube moorings are located on the shelf at the western end of section 4. The spacing of depth isolines is 1000m.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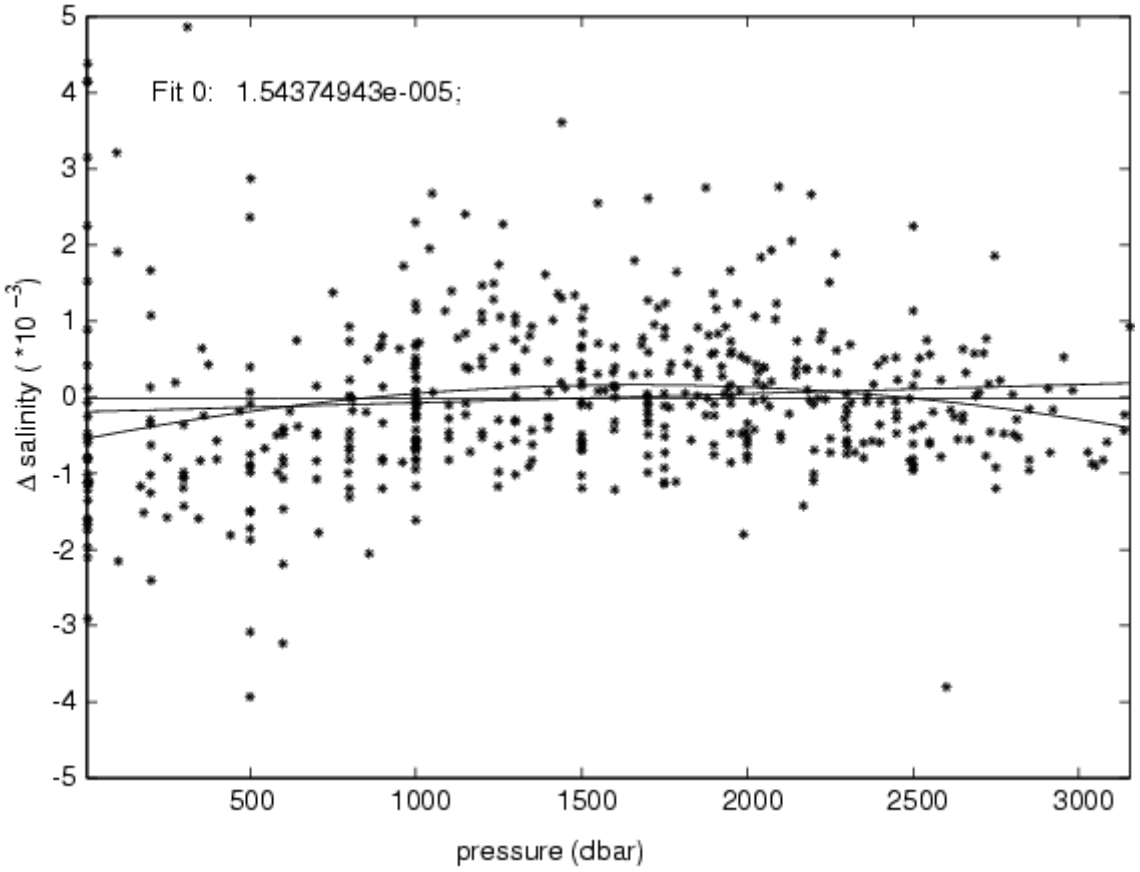
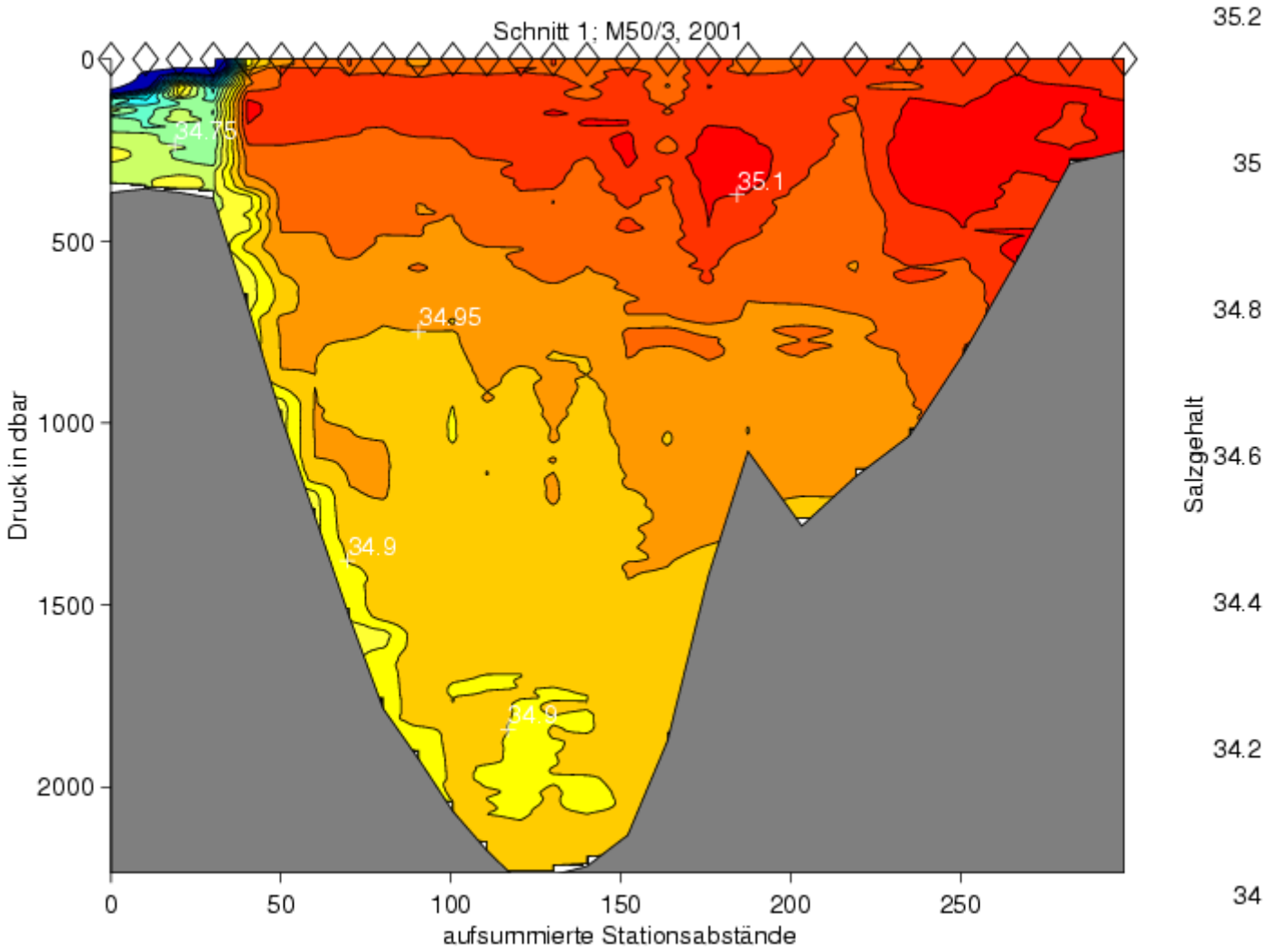


Figure 2: Difference between CTD and bottle data in conductivity before calibration (a) and in salinity after calibration (b).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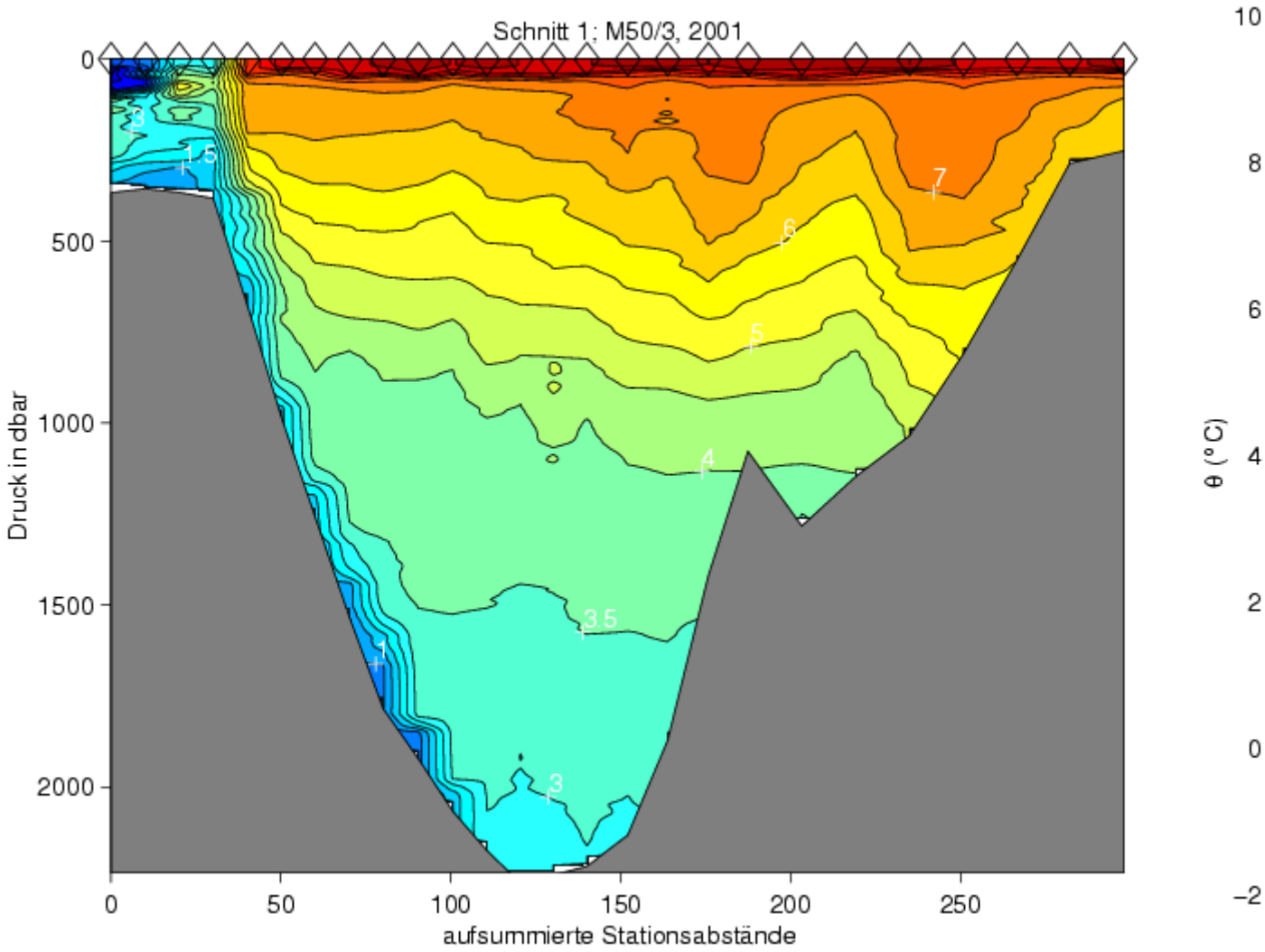
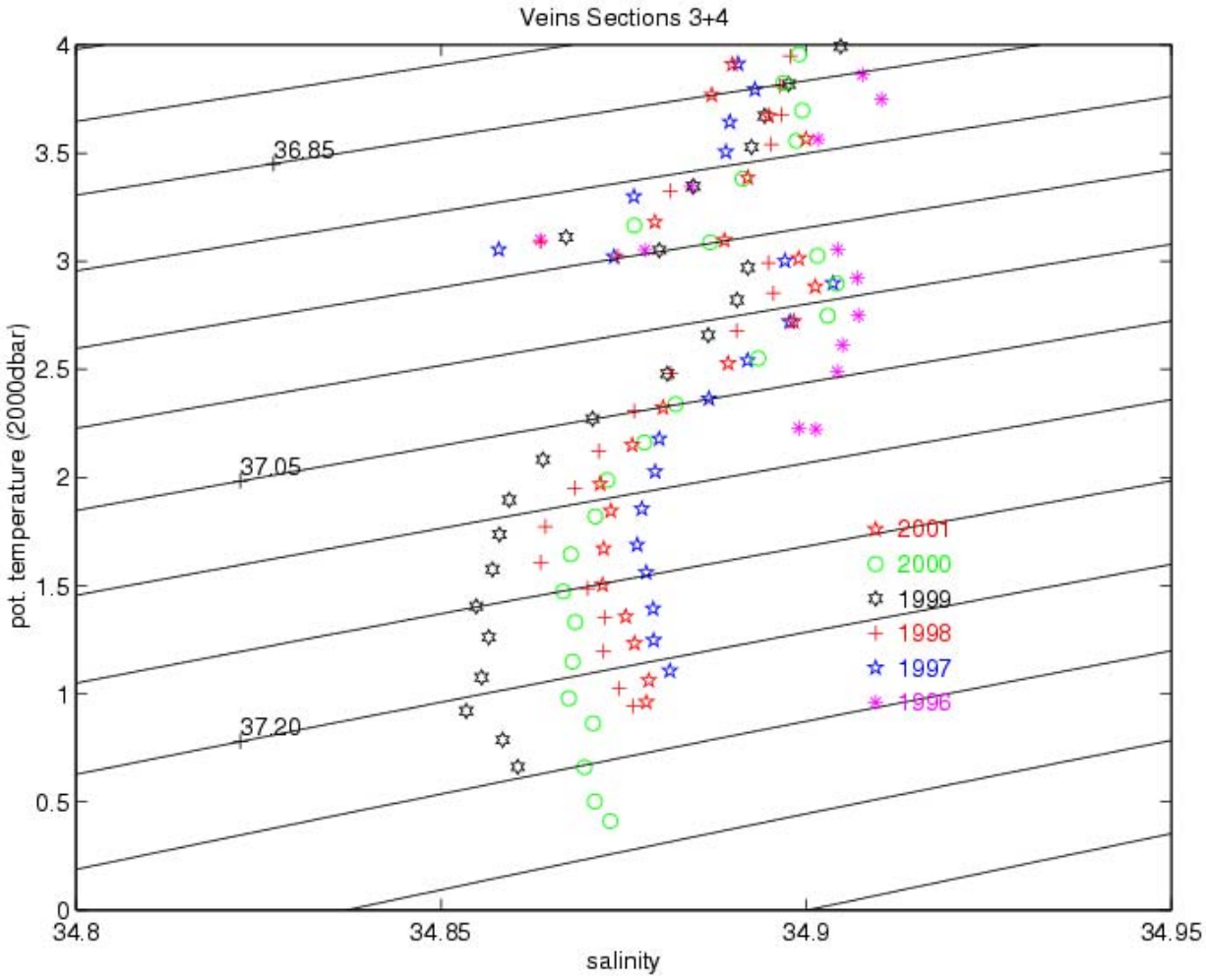


Figure 3: Salinity (a) and potential temperature (b) along section 1.



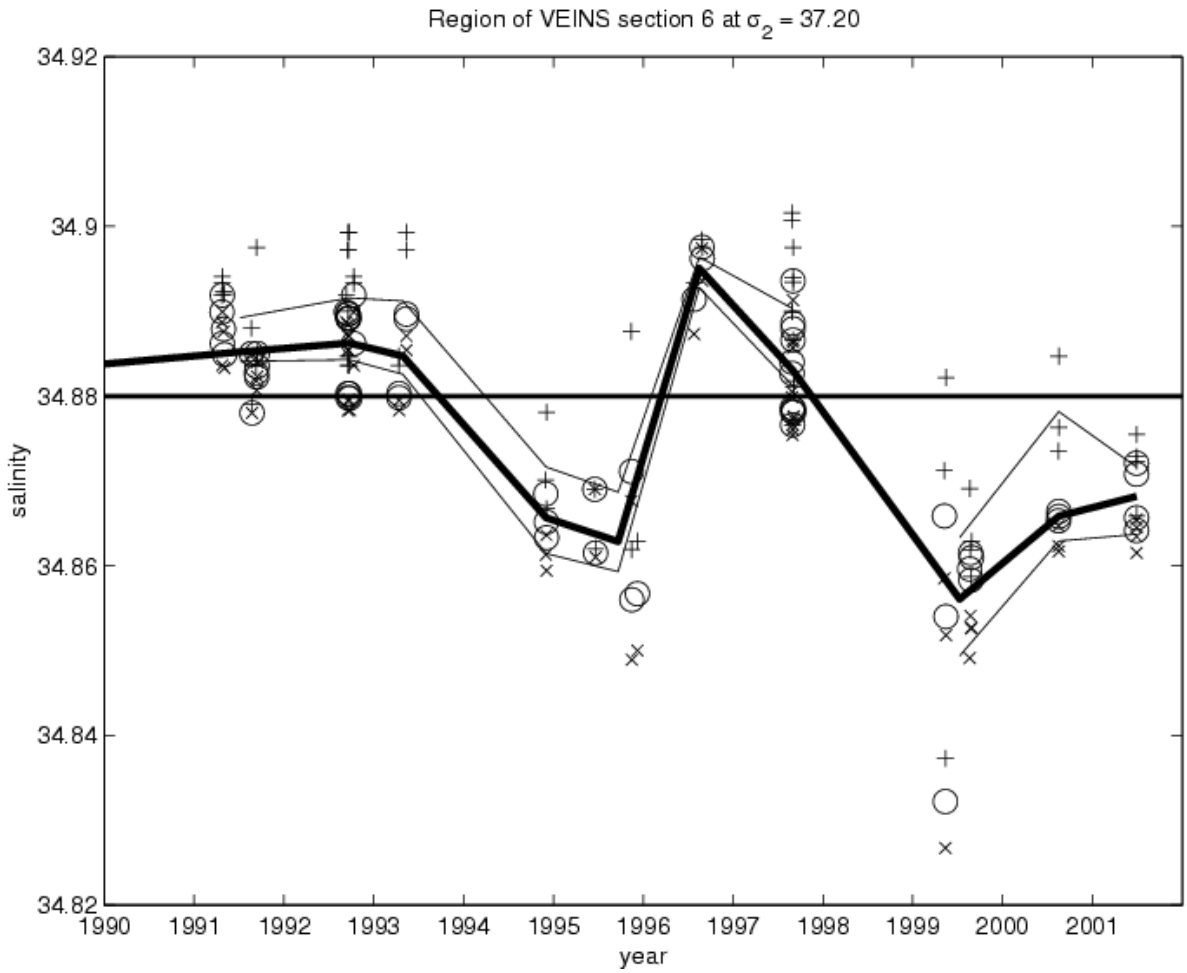
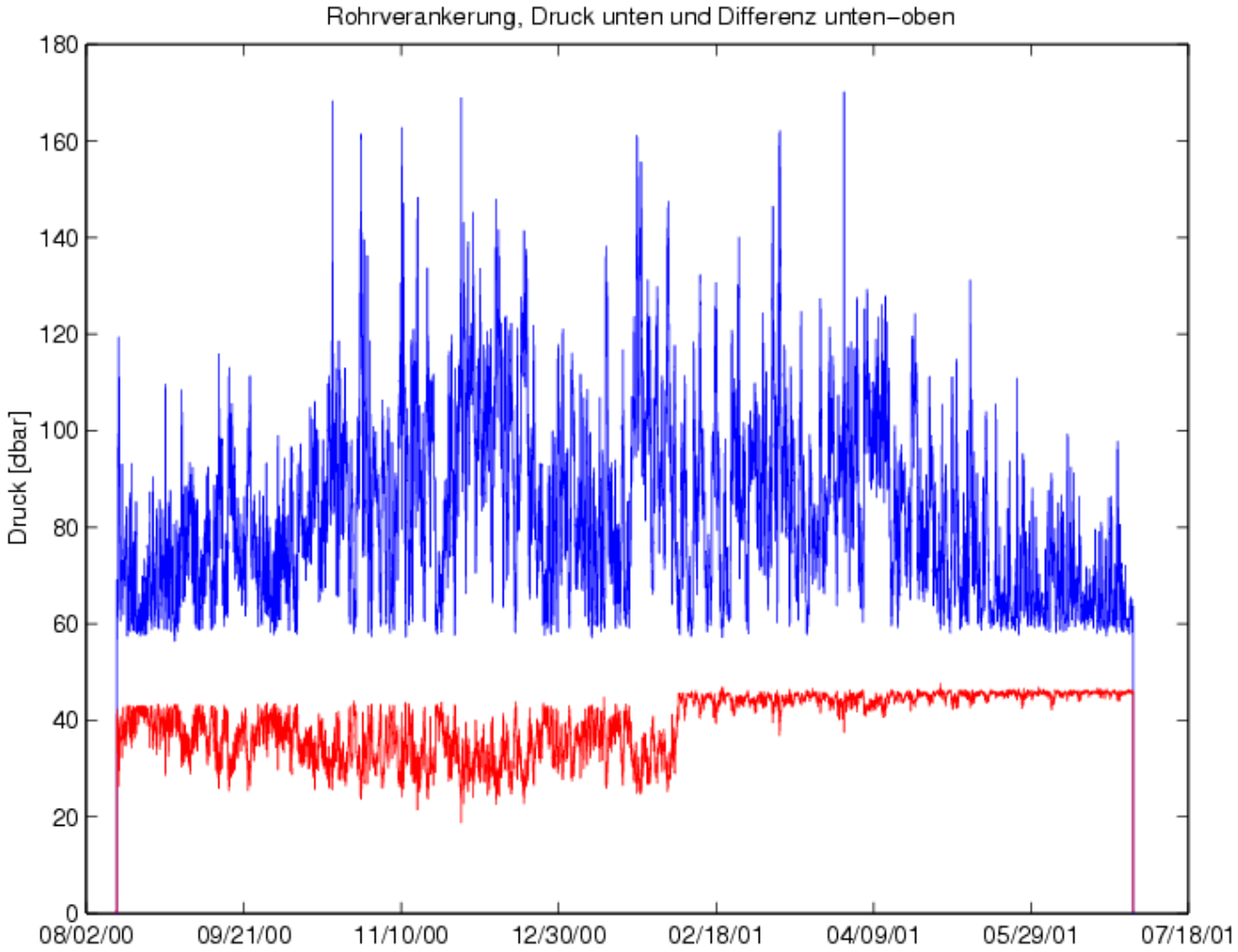


Figure 4: A) Mean Theta-/S (averaged along isopycnals) diagrams for sections 3 and 4 of cruise M50/3 compared to previous cruises. B) Salinities of stations in the region of VEINS section 6 for a density layer around $sigma_2$=37.20 kg/m^3. Circles are the median values of each profile in the density range +- 0.07, crosses and stars the minimum, respective maximum salinities in the density range +- 0.10. The median values of each year are connected with lines, the heavy line being the median values.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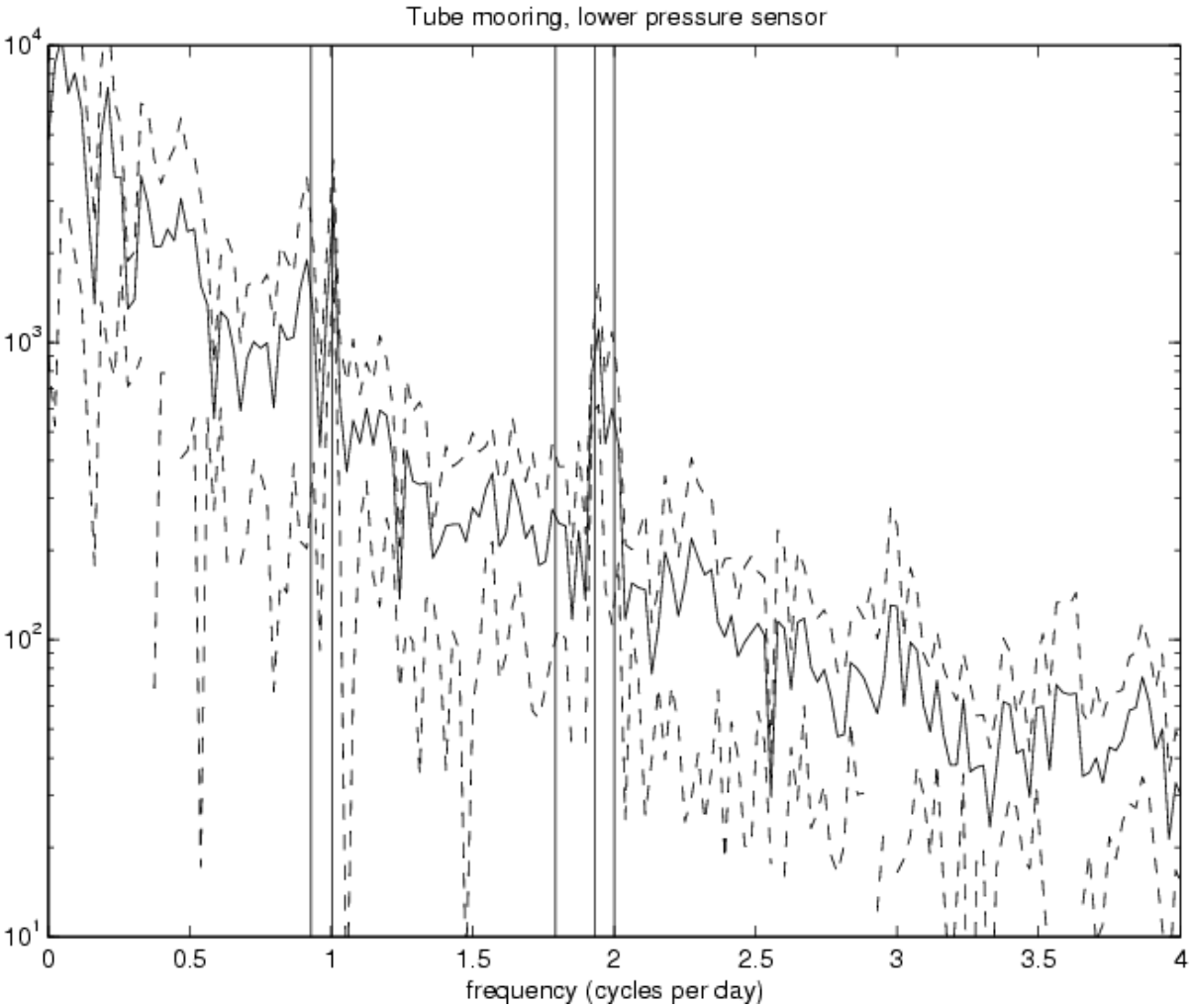

Figure 5: A) Time series of pressure at the lower instrument of the tube mooring and difference of pressures between the upper and lower instrument. B) Power spectrum of the pressure at the lower instrument. Vertical lines gives the frequencies of the M2, S2, K1 O1 tides and of the inertia frequency.

Table 1: Station list in WOCE-WHP Format

EXPO- Section Stat. Cast Cast Date Time Position Bottom Meter Max Bottom Comments
CODE Name No. No. Type mmddyy UTC Code Latitude Longitude Code depth Wheel Press. Dist.

06ME50/3 161 01 ROS/CTD 062101 1220 BE 50 18.67 N 47 48.99 W GPS 2710
06ME50/3 161 01 ROS/CTD 062101 1318 BO 50 18.62 N 47 49.23 W GPS 2714 2682 1500 Test Station
06ME50/3 161 01 ROS/CTD 062101 1411 EN 50 18.29 N 47 49.48 W GPS 2715

06ME50/3 VEINS-6 162 01 ROS/CTD 062501 1442 BE 58 47.79 N 30 49.68 W GPS 1264
06ME50/3 VEINS-6 162 01 ROS/CTD 062501 1507 BO 58 47.75 N 30 49.34 W GPS 1225 1237 14
06ME50/3 VEINS-6 162 01 ROS/CTD 062501 1545 EN 58 47.63 N 30 48.92 W GPS 1259

06ME50/3 VEINS-6 163 01 ROS/CTD 062501 1733 BE 58 52.02 N 31 30.00 W GPS 1518
06ME50/3 VEINS-6 163 01 ROS/CTD 062501 1827 BO 58 52.03 N 31 29.88 W GPS 1513 1487 1505 14
06ME50/3 VEINS-6 163 01 ROS/CTD 062501 1913 EN 58 52.02 N 31 29.91 W GPS 1516

06ME50/3 VEINS-6 164 01 ROS/CTD 062501 2145 BE 58 56.18 N 32 10.18 W GPS 1770
06ME50/3 VEINS-6 164 01 ROS/CTD 062501 2221 BO 58 56.04 N 32 09.56 W GPS 1778 1751 1770 14
06ME50/3 VEINS-6 164 01 ROS/CTD 062501 2326 EN 58 56.09 N 32 09.07 W GPS 1627

06ME50/3 VEINS-6 165 01 ROS/CTD 062601 0141 BE 59 00.28 N 32 49.54 W GPS 2157
06ME50/3 VEINS-6 165 01 ROS/CTD 062601 0223 BO 59 00.53 N 32 48.44 W GPS 2136 2126 15
06ME50/3 VEINS-6 165 01 ROS/CTD 062601 0312 EN 59 00.72 N 32 47.31 W GPS 2141

06ME50/3 VEINS-6 166 01 ROS/CTD 062601 0543 BE 59 04.04 N 33 30.06 W GPS 2315
06ME50/3 VEINS-6 166 01 ROS/CTD 062601 0621 BO 59 04.10 N 33 29.68 W GPS 2329 2295 2322 14
06ME50/3 VEINS-6 166 01 ROS/CTD 062601 0721 EN 59 04.18 N 33 29.44 W GPS 2325

06ME50/3 VEINS-6 167 01 ROS/CTD 062601 0926 BE 59 07.91 N 34 10.38 W GPS 2302
06ME50/3 VEINS-6 167 01 ROS/CTD 062601 1014 BO 59 07.82 N 34 10.38 W GPS 2298 2268 2293 14
06ME50/3 VEINS-6 167 01 ROS/CTD 062601 1117 EN 59 07.87 N 34 10.11 W GPS 2281

06ME50/3 VEINS-6 168 01 ROS/CTD 062601 1529 BE 59 13.05 N 34 59.88 W GPS 2726
06ME50/3 VEINS-6 168 01 ROS/CTD 062601 1621 BO 59 13.06 N 34 59.77 W GPS 2709 2733 15
06ME50/3 VEINS-6 168 01 ROS/CTD 062601 1724 EN 59 13.01 N 34 59.86 W GPS 2281

06ME50/3 VEINS-6 169 01 ROS/CTD 062601 1946 BE 59 18.01 N 35 50.08 W GPS 3119
06ME50/3 VEINS-6 169 01 ROS/CTD 062601 2048 BO 59 17.91 N 35 50.12 W GPS 3120 3097 3137 14
06ME50/3 VEINS-6 169 01 ROS/CTD 062601 2200 EN 59 17.82 N 35 50.24 W GPS 3120

06ME50/3 VEINS-6 170 01 ROS/CTD 062701 0025 BE 59 22.98 N 36 40.11 W GPS 3121
06ME50/3 VEINS-6 170 01 ROS/CTD 062701 0124 BO 59 23.04 N 36 39.86 W GPS 3100 3101 3139 15
06ME50/3 VEINS-6 170 01 ROS/CTD 062701 0231 EN 59 23.15 N 36 39.58 W GPS 3120

06ME50/3 VEINS-6 171 01 ROS/CTD 062701 0501 BE 59 27.99 N 37 29.99 W GPS 3139
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06ME50/3 VEINS-6 172 01 ROS/CTD 062701 1051 BO 59 33.10 N 38 20.32 W GPS 3061 3040 3072 14
06ME50/3 VEINS-6 172 01 ROS/CTD 062701 1204 EN 59 33.11 N 38 20.15 W GPS 3061

06ME50/3 VEINS-6 173 01 ROS/CTD 062701 1358 BE 59 36.98 N 38 59.98 W GPS 2946
06ME50/3 VEINS-6 173 01 ROS/CTD 062701 1455 BO 59 36.96 N 39 00.04 W GPS 2944 2954 12
06ME50/3 VEINS-6 173 01 ROS/CTD 062701 1600 EN 59 37.01 N 38 59.85 W GPS 2947

06ME50/3 VEINS-6 174 01 ROS/CTD 062701 1804 BE 59 42.06 N 39 40.11 W GPS 2795
06ME50/3 VEINS-6 174 01 ROS/CTD 062701 1900 BO 59 42.08 N 39 40.00 W GPS 2796 2764 2800 14
06ME50/3 VEINS-6 174 01 ROS/CTD 062701 2005 EN 59 42.03 N 39 40.10 W GPS 2798

06ME50/3 VEINS-6 175 01 ROS/CTD 062701 2157 BE 59 45.97 N 40 15.17 W GPS 2638
06ME50/3 VEINS-6 175 01 ROS/CTD 062701 2246 BO 59 45.87 N 40 15.34 W GPS 2636 2611 2636 14
06ME50/3 VEINS-6 175 01 ROS/CTD 062701 2345 EN 59 45.94 N 40 15.43 W GPS 2638

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06ME50/3 VEINS-6 176 01 ROS/CTD 062801 0215 BO 59 50.03 N 40 50.08 W GPS 2381 2354 2376 15
06ME50/3 VEINS-6 176 01 ROS/CTD 062801 0303 EN 59 50.11 N 40 50.35 W GPS 2375

06ME50/3 VEINS-6 177 01 ROS/CTD 062801 0409 BE 59 51.95 N 41 09.93 W GPS 2061
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06ME50/3 VEINS-6 178 01 ROS/CTD 062801 0723 BO 59 53.96 N 41 30.15 W GPS 1905 1872 1892 14
06ME50/3 VEINS-6 178 01 ROS/CTD 062801 0808 EN 59 53.98 N 41 30.07 W GPS 1906

06ME50/3 VEINS-6 179 01 ROS/CTD 062801 0912 BE 59 55.86 N 41 50.36 W GPS 1828
06ME50/3 VEINS-6 179 01 ROS/CTD 062801 0949 BO 59 55.68 N 41 50.80 W GPS 1828 1797 1812 14
06ME50/3 VEINS-6 179 01 ROS/CTD 062801 1041 EN 59 55.53 N 41 51.58 W GPS 1827

06ME50/3 VEINS-6 180 01 ROS/CTD 062801 1140 BE 59 58.04 N 42 10.42 W GPS 516
06ME50/3 VEINS-6 180 01 ROS/CTD 062801 1154 BO 59 57.98 N 42 10.72 W GPS 485 468 14
06ME50/3 VEINS-6 180 01 ROS/CTD 062801 1211 EN 59 57.90 N 42 10.96 W GPS 479

06ME50/3 VEINS-6 181 01 ROS/CTD 062801 1316 BE 59 59.90 N 42 30.16 W GPS 190
06ME50/3 VEINS-6 181 01 ROS/CTD 062801 1323 BO 59 59.89 N 42 30.35 W GPS 188 172 14
06ME50/3 VEINS-6 181 01 ROS/CTD 062801 1335 EN 59 59.85 N 42 30.49 W GPS 186

06ME50/3 VEINS-5 182 01 ROS/CTD 062901 0325 BE 60 44.00 N 38 06.20 W GPS 2905
06ME50/3 VEINS-5 182 01 ROS/CTD 062901 0425 BO 60 44.00 N 38 05.98 W GPS 2903 2880 2913 14
06ME50/3 VEINS-5 182 01 ROS/CTD 062901 0527 EN 60 44.01 N 38 05.99 W GPS 2902

06ME50/3 VEINS-5 183 01 ROS/CTD 062901 0728 BE 60 50.01 N 38 47.28 W GPS 2813
06ME50/3 VEINS-5 183 01 ROS/CTD 062901 0824 BO 60 50.06 N 38 47.17 W GPS 2813 2781 2817 14
06ME50/3 VEINS-5 183 01 ROS/CTD 062901 0927 EN 60 50.16 N 38 46.98 W GPS 2814

06ME50/3 VEINS-5 184 01 ROS/CTD 062901 1122 BE 60 56.92 N 39 27.07 W GPS 2580
06ME50/3 VEINS-5 184 01 ROS/CTD 062901 1213 BO 60 57.11 N 39 26.68 W GPS 2584 2551 2584 14
06ME50/3 VEINS-5 184 01 ROS/CTD 062901 1312 EN 60 57.15 N 39 26.44 W GPS 2586

06ME50/3 VEINS-5 185 01 ROS/CTD 062901 1511 BE 61 03.98 N 40 08.06 W GPS 2192
06ME50/3 VEINS-5 185 01 ROS/CTD 062901 1553 BO 61 04.02 N 40 08.08 W GPS 2188 2145 2181 14
06ME50/3 VEINS-5 185 01 ROS/CTD 062901 1643 EN 61 04.05 N 40 08.04 W GPS 2189

06ME50/3 VEINS-5 186 01 ROS/CTD 062901 1820 BE 61 10.99 N 40 39.29 W GPS 1895
06ME50/3 VEINS-5 186 01 ROS/CTD 062901 1900 BO 61 10.98 N 40 39.14 W GPS 1896 1868 1884 14
06ME50/3 VEINS-5 186 01 ROS/CTD 062901 1939 EN 61 11.05 N 40 39.12 W GPS 1894

06ME50/3 VEINS-5 187 01 ROS/CTD 062901 2051 BE 61 14.94 N 41 00.03 W GPS 1798
06ME50/3 VEINS-5 187 01 ROS/CTD 062901 2130 BO 61 14.68 N 41 00.31 W GPS 1803 1796 1790 14
06ME50/3 VEINS-5 187 01 ROS/CTD 062901 2214 EN 61 14.35 N 41 00.73 W GPS 1817

06ME50/3 VEINS-5 188 01 ROS/CTD 062901 2303 BE 61 16.87 N 41 14.58 W GPS 1423
06ME50/3 VEINS-5 188 01 ROS/CTD 062901 2334 BO 61 16.64 N 41 14.80 W GPS 1451 1429 1440 14
06ME50/3 VEINS-5 188 01 ROS/CTD 063001 0006 EN 61 16.34 N 41 15.00 W GPS 1477

06ME50/3 VEINS-5 189 01 ROS/CTD 063001 0100 BE 61 17.97 N 41 30.30 W GPS 236
06ME50/3 VEINS-5 189 01 ROS/CTD 063001 0109 BO 61 17.98 N 41 30.40 W GPS 240 219 223 14
06ME50/3 VEINS-5 189 01 ROS/CTD 063001 0121 EN 61 17.97 N 41 30.41 W GPS 240

06ME50/3 VEINS-4 190 01 MOR 063001 1106 BE 63 00.00 N 40 33.10 W GPS 300 Recovery of mooring tube
06ME50/3 VEINS-4 190 01 MOR 063001 1208 EN 63 00.60 N 40 35.30 W GPS 300

06ME50/3 VEINS-3 191 01 ROS/CTD 070101 0104 BE 63 02.00 N 35 27.15 W GPS 2656

06ME50/3 VEINS-3 191 01 ROS/CTD 070101 0149 BO 63 02.01 N 35 27.18 W GPS 2658 14
06ME50/3 VEINS-3 191 04 ROS/CTD 070101 0527 EN 63 01.97 N 35 27.14 W GPS 4 JOJO Profiles

06ME50/3 VEINS-3 192 01 MOR 070101 0658 BE 63 06.90 N 35 32.60 W GPS 2590
06ME50/3 VEINS-3 192 01 MOR 070101 0817 EN 63 07.10 N 35 32.40 W GPS Recovery of mooring G2
06ME50/3 VEINS-3 193 01 MOR 070101 0940 BE 63 16.70 N 35 54.00 W GPS 2536
06ME50/3 VEINS-3 193 01 MOR 070101 1120 EN 63 17.00 N 35 52.60 W GPS Recovery of mooring UK2

06ME50/3 VEINS-3 194 01 MOR 070101 1207 BE 63 21.40 N 36 05.30 W GPS 2200
06ME50/3 VEINS-3 194 01 MOR 070101 1322 EN 63 21.60 N 36 06.20 W GPS Recovery of mooring G1(FI)

06ME50/3 VEINS-3 195 01 MOR 070101 1415 BE 63 27.90 N 36 18.00 W GPS 1998
06ME50/3 VEINS-3 195 01 MOR 070101 1533 EN 63 28.00 N 36 19.50 W GPS Recovery of mooring UK1/IES

06ME50/3 VEINS-3 196 01 MOR 070101 1533 BE 63 28.00 N 36 19.50 W GPS 1987
06ME50/3 VEINS-3 196 01 MOR 070101 1630 EN 63 28.50 N 36 20.20 W GPS Recovery of mooring UK1

06ME50/3 VEINS-3 197 01 MOR 070101 1715 BE 63 32.70 N 36 31.00 W GPS 1780
06ME50/3 VEINS-3 197 01 MOR 070101 1816 EN 63 33.20 N 36 33.00 W GPS Recovery of mooring F2

06ME50/3 VEINS-3 198 01 MOR 070101 1912 BE 63 37.60 N 36 49.30 W GPS 1598
06ME50/3 VEINS-3 198 01 MOR 070101 2010 EN 63 38.20 N 36 49.60 W GPS Recovery of mooring F1(G)

06ME50/3 VEINS-4 199 01 ROS/CTD 070201 0900 BE 61 25.99 N 35 00.00 W GPS 2911
06ME50/3 VEINS-4 199 01 ROS/CTD 070201 0955 BO 61 26.17 N 35 44.57 W GPS 2911 2900 2921 14
06ME50/3 VEINS-4 199 01 ROS/CTD 070201 1109 EN 61 26.37 N 35 44.56 W GPS 2912

06ME50/3 VEINS-4 200 01 ROS/CTD 070201 1311 BE 61 37.91 N 36 18.01 W GPS 2800
06ME50/3 VEINS-4 200 01 ROS/CTD 070201 1405 BO 61 38.17 N 36 18.45 W GPS 2797 2768 2804 14
06ME50/3 VEINS-4 200 01 ROS/CTD 070201 1508 EN 61 38.43 N 36 18.27 W GPS 2797

06ME50/3 VEINS-4 201 01 ROS/CTD 070201 1712 BE 61 49.06 N 36 53.16 W GPS 2684
06ME50/3 VEINS-4 201 01 ROS/CTD 070201 1806 BO 61 49.09 N 36 53.15 W GPS 2687 2640 2688 15
06ME50/3 VEINS-4 201 01 ROS/CTD 070201 1910 EN 61 49.04 N 36 52.95 W GPS 2687

06ME50/3 VEINS-4 202 01 ROS/CTD 070201 2022 BE 61 54.97 N 37 09.97 W GPS 2625
06ME50/3 VEINS-4 202 01 ROS/CTD 070201 2113 BO 61 55.10 N 37 10.11 W GPS 2623 2590 2624 14
06ME50/3 VEINS-4 202 01 ROS/CTD 070201 2207 EN 61 55.23 N 37 10.69 W GPS 2621

06ME50/3 VEINS-4 203 01 ROS/CTD 070201 2310 BE 62 01.30 N 37 28.38 W GPS 2561
06ME50/3 VEINS-4 203 01 ROS/CTD 070201 2358 BO 62 01.65 N 37 29.37 W GPS 2559 2535 2560 14
06ME50/3 VEINS-4 203 01 ROS/CTD 070301 0058 EN 62 02.07 N 37 30.50 W GPS 2555

06ME50/3 VEINS-4 204 01 ROS/CTD 070301 0156 BE 62 06.90 N 37 44.98 W GPS 2526
06ME50/3 VEINS-4 204 01 ROS/CTD 070301 0245 BO 62 06.69 N 37 45.06 W GPS 2529 2496 2526 13
06ME50/3 VEINS-4 204 01 ROS/CTD 070301 0332 EN 62 06.84 N 37 45.28 W GPS 2530

06ME50/3 VEINS-4 205 01 MOR 070301 1440 BE 63 00.20 N 40 32.70 W GPS 303 Deployment Tube04

06ME50/3 VEINS-4 206 01 MOR 070301 1638 BE 62 58.60 N 40 53.30 W GPS 300 Deployment Tube03

06ME50/3 VEINS-4 207 01 ROS/CTD 070301 1745 BE 63 00.00 N 40 35.01 W GPS 403
06ME50/3 VEINS-4 207 01 ROS/CTD 070301 1800 BO 62 59.99 N 40 35.17 W GPS 409 387 392 14
06ME50/3 VEINS-4 207 01 ROS/CTD 070301 1811 EN 63 00.01 N 40 35.33 W GPS 414

06ME50/3 VEINS-4 208 01 ROS/CTD 070301 1853 BE 62 57.92 N 40 24.84 W GPS 220
06ME50/3 VEINS-4 208 01 ROS/CTD 070301 1903 BO 62 57.93 N 40 24.97 W GPS 218 205 208 14
06ME50/3 VEINS-4 208 01 ROS/CTD 070301 1912 EN 62 57.96 N 40 25.06 W GPS 218

06ME50/3 VEINS-4 209 01 ROS/CTD 070301 2018 BE 62 51.93 N 40 07.04 W GPS 1698
06ME50/3 VEINS-4 209 01 ROS/CTD 070301 2054 BO 62 52.01 N 40 07.13 W GPS 1694 1670 1684 14
06ME50/3 VEINS-4 209 01 ROS/CTD 070301 2134 EN 62 51.96 N 40 07.05 W GPS 1695

06ME50/3 VEINS-4 210 01 ROS/CTD 070301 2236 BE 62 46.95 N 39 49.95 W GPS 1931
06ME50/3 VEINS-4 210 01 ROS/CTD 070301 2313 BO 62 46.91 N 39 49.14 W GPS 1932 1906 1924 14
06ME50/3 VEINS-4 210 01 ROS/CTD 070301 2351 EN 62 46.80 N 39 49.36 W GPS 1935

06ME50/3 VEINS-4 211 01 ROS/CTD 070401 0100 BE 62 40.98 N 39 31.11 W GPS 1974
06ME50/3 VEINS-4 211 01 ROS/CTD 070401 0136 BO 62 40.95 N 39 31.10 W GPS 1974 1932 1953 14
06ME50/3 VEINS-4 211 01 ROS/CTD 070401 0217 EN 62 40.96 N 39 31.05 W GPS 1976

06ME50/3 VEINS-4 212 01 ROS/CTD 070401 0330 BE 62 35.02 N 39 13.11 W GPS 2029
06ME50/3 VEINS-4 212 01 ROS/CTD 070401 0405 BO 62 35.07 N 39 13.02 W GPS 2030 1999 2019 14
06ME50/3 VEINS-4 212 01 ROS/CTD 070401 0444 EN 62 35.08 N 39 12.95 W GPS 2032

06ME50/3 VEINS-4 213 01 ROS/CTD 070401 0550 BE 62 30.00 N 38 56.12 W GPS 2166
06ME50/3 VEINS-4 213 01 ROS/CTD 070401 0635 BO 62 30.05 N 38 56.31 W GPS 2160 2125 2150 14
06ME50/3 VEINS-4 213 01 ROS/CTD 070401 0725 EN 62 30.19 N 38 56.77 W GPS 2165

06ME50/3 VEINS-4 214 01 ROS/CTD 070401 0845 BE 62 23.98 N 38 37.97 W GPS 2280
06ME50/3 VEINS-4 214 01 ROS/CTD 070401 0930 BO 62 24.20 N 38 38.68 W GPS 2269 2250 2266 14
06ME50/3 VEINS-4 214 01 ROS/CTD 070401 1013 EN 62 24.38 N 38 38.96 W GPS

06ME50/3 VEINS-4 215 01 ROS/CTD 070401 1143 BE 62 17.90 N 38 20.53 W GPS 2368
06ME50/3 VEINS-4 215 01 ROS/CTD 070401 1228 BO 62 17.88 N 38 20.61 W GPS 2366 2334 2365 14
06ME50/3 VEINS-4 215 01 ROS/CTD 070401 1320 EN 62 17.84 N 38 20.58 W GPS 2369

06ME50/3 VEINS-4 216 01 ROS/CTD 070401 1429 BE 62 12.08 N 38 03.04 W GPS 2491
06ME50/3 VEINS-4 216 01 ROS/CTD 070401 1518 BO 62 12.01 N 38 02.96 W GPS 2490 2460 2488 14
06ME50/3 VEINS-4 216 01 ROS/CTD 070401 1608 EN 62 12.02 N 38 03.02 W GPS 2490

06ME50/3 VEINS-3 217 01 ROS/CTD 070501 0205 BE 63 49.97 N 36 58.15 W GPS 357
06ME50/3 VEINS-3 217 01 ROS/CTD 070501 0215 BO 63 50.03 N 36 58.51 W GPS 356 334 335 14
06ME50/3 VEINS-3 217 01 ROS/CTD 070501 0224 EN 63 50.02 N 36 58.67 W GPS 354

06ME50/3 VEINS-3 218 01 ROS/CTD 070501 0311 BE 63 46.01 N 36 51.15 W GPS 629
06ME50/3 VEINS-3 218 01 ROS/CTD 070501 0328 BO 63 46.06 N 36 51.37 W GPS 580 568 571 14
06ME50/3 VEINS-3 218 01 ROS/CTD 070501 0340 EN 63 46.13 N 36 51.52 W GPS 550

06ME50/3 VEINS-3 219 01 ROS/CTD 070501 0425 BE 63 42.03 N 36 43.13 W GPS 1715
06ME50/3 VEINS-3 219 01 ROS/CTD 070501 0500 BO 63 42.08 N 36 43.22 W GPS 1711 1691 1696 14
06ME50/3 VEINS-3 219 01 ROS/CTD 070501 0541 EN 63 42.01 N 36 43.72 W GPS 1675

06ME50/3 VEINS-3 220 01 ROS/CTD 070501 0654 BE 63 33.89 N 36 27.91 W GPS 1800
06ME50/3 VEINS-3 220 01 ROS/CTD 070501 0733 BO 63 33.83 N 36 28.09 W GPS 1796 1766 1785 14
06ME50/3 VEINS-3 220 01 ROS/CTD 070501 0807 EN 63 33.77 N 36 28.25 W GPS 1792

06ME50/3 VEINS-3 221 01 MOR 070501 0829 BE 63 32.60 N 36 29.10 W GPS Recovery of mooring F2/ADCP
06ME50/3 VEINS-3 221 01 MOR 070501 0928 EN 63 31.90 N 36 28.60 W GPS

06ME50/3 VEINS-3 222 01 ROS/CTD 070501 1010 BE 63 29.98 N 36 20.00 W GPS 1942
06ME50/3 VEINS-3 222 01 ROS/CTD 070501 1049 BO 63 29.95 N 36 20.13 W GPS 1942 1909 1930 14
06ME50/3 VEINS-3 222 01 ROS/CTD 070501 1135 EN 63 29.96 N 36 19.79 W GPS 1949

06ME50/3 VEINS-3 223 01 MOR 070501 1157 BE 63 28.70 N 36 18.80 W GPS Deployment fo mooring UK1/IES-2001
06ME50/3 VEINS-3 223 01 MOR 070501 1245 EN 63 28.69 N 36 18.81 W GPS

06ME50/3 VEINS-3 224 01 ROS/CTD 070501 1246 BE 63 28.69 N 36 18.76 W GPS 1988 80 CO2
06ME50/3 VEINS-3 224 01 ROS/CTD 070501 1305 EN 63 28.74 N 36 18.97 W GPS 1987

06ME50/3 VEINS-3 225 01 MOR 070501 1414 BE 63 22.40 N 36 03.80 W GPS Deployment fo mooring G1-2001
06ME50/3 VEINS-3 225 01 MOR 070501 1502 EN 63 21.80 N 36 04.30 W GPS

06ME50/3 VEINS-3 226 01 MOR 070501 1547 BE 63 17.60 N 35 52.90 W GPS Deployment fo mooring UK2-2001
06ME50/3 VEINS-3 226 01 MOR 070501 1619 EN 63 17.00 N 35 53.10 W GPS

06ME50/3 VEINS-3 227 01 MOR 070501 1742 BE 63 07.50 N 35 31.50 W GPS Deployment fo mooring G2-2001

06ME50/3 VEINS-3 227 01 MOR 070501 1805 EN 63 07.00 N 35 31.90 W GPS

06ME50/3 VEINS-3 228 01 ROS/CTD 070501 2034 BE 63 25.99 N 36 13.11 W GPS 2097
06ME50/3 VEINS-3 228 01 ROS/CTD 070501 2115 BO 63 25.96 N 36 13.10 W GPS 2100 2075 2097 14
06ME50/3 VEINS-3 228 01 ROS/CTD 070501 2202 EN 63 25.93 N 36 13.53 W GPS 2096

06ME50/3 VEINS-3 229 01 ROS/CTD 070501 2248 BE 63 23.02 N 36 06.00 W GPS 2201
06ME50/3 VEINS-3 229 01 ROS/CTD 070501 2331 BO 63 21.89 N 36 06.55 W GPS 2198 2172 2194 14
06ME50/3 VEINS-3 229 01 ROS/CTD 070601 0015 EN 63 21.94 N 36 07.00 W GPS 2198

06ME50/3 VEINS-3 230 01 ROS/CTD 070601 0108 BE 63 18.09 N 35 58.13 W GPS 2306
06ME50/3 VEINS-3 230 01 ROS/CTD 070601 0154 BO 63 17.98 N 35 58.35 W GPS 2306 2298 14
06ME50/3 VEINS-3 230 01 ROS/CTD 070601 0235 EN 63 17.89 N 35 58.21 W GPS 2310

06ME50/3 VEINS-3 231 01 ROS/CTD 070601 0329 BE 63 14.03 N 35 49.65 W GPS 2415
06ME50/3 VEINS-3 231 01 ROS/CTD 070601 0414 BO 63 14.01 N 35 49.95 W GPS 2419 2384 2413 14
06ME50/3 VEINS-3 231 01 ROS/CTD 070601 0515 EN 63 14.00 N 35 50.09 W GPS 2417

06ME50/3 VEINS-3 232 01 ROS/CTD 070601 0602 BE 63 09.97 N 35 42.89 W GPS 2511
06ME50/3 VEINS-3 232 01 ROS/CTD 070601 0653 BO 63 10.00 N 35 42.95 W GPS 2511 2478 2510 14
06ME50/3 VEINS-3 232 01 ROS/CTD 070601 0742 EN 63 10.02 N 35 42.95 W GPS 2510

06ME50/3 VEINS-3 233 01 ROS/CTD 070601 0850 BE 63 02.01 N 35 27.98 W GPS 2655
06ME50/3 VEINS-3 233 01 ROS/CTD 070601 0940 BO 63 02.04 N 35 27.84 W GPS 2654 2636 2660 14
06ME50/3 VEINS-3 233 01 ROS/CTD 070601 1036 EN 63 01.93 N 35 27.99 W GPS 2654

06ME50/3 VEINS-3 234 01 ROS/CTD 070601 1233 BE 62 54.09 N 35 13.00 W GPS 2717
06ME50/3 VEINS-3 234 01 ROS/CTD 070601 1312 BO 62 54.27 N 35 12.27 W GPS 2718 2700 2720 13
06ME50/3 VEINS-3 234 01 ROS/CTD 070601 1400 EN 62 54.10 N 35 11.57 W GPS 2719

06ME50/3 VEINS-3 235 01 ROS/CTD 070601 1506 BE 62 45.98 N 34 58.07 W GPS 2764
06ME50/3 VEINS-3 235 01 ROS/CTD 070601 1559 BO 62 46.16 N 34 57.58 W GPS 2773 2745 2775 14

06ME50/3 VEINS-3 235 01 ROS/CTD 070601 1700 EN 62 46.30 N 34 57.68 W GPS 2773

06ME50/3 VEINS-3 236 01 ROS/CTD 070601 1808 BE 62 37.93 N 34 42.95 W GPS 2806
06ME50/3 VEINS-3 236 01 ROS/CTD 070601 1906 BO 62 38.16 N 34 42.67 W GPS 2806 2792 2813 14
06ME50/3 VEINS-3 236 01 ROS/CTD 070601 2002 EN 62 38.33 N 34 42.53 W GPS 2806

06ME50/3 VEINS-3 237 01 ROS/CTD 070601 2111 BE 62 29.91 N 34 28.00 W GPS 2842
06ME50/3 VEINS-3 237 01 ROS/CTD 070601 2206 BO 62 29.97 N 34 28.10 W GPS 2842 2812 2850 14
06ME50/3 VEINS-3 237 01 ROS/CTD 070601 2311 EN 62 29.97 N 34 28.21 W GPS 2841

06ME50/3 VEINS-3 238 01 ROS/CTD 070701 0033 BE 62 30.03 N 33 59.95 W GPS 2899
06ME50/3 VEINS-3 238 01 ROS/CTD 070701 0125 BO 62 30.07 N 34 00.15 W GPS 2920 2848 2907 16
06ME50/3 VEINS-3 238 01 ROS/CTD 070701 0224 EN 62 30.33 N 34 00.76 W GPS 2895

06ME50/3 239 01 ROS/CTD 070701 1030 BE 63 27.83 N 36 17.85 W GPS 2013 100 CO2
06ME50/3 239 01 ROS/CTD 070701 1048 EN 63 27.83 N 36 18.63 W GPS 2007

06ME50/3 VEINS-3 239 02 MOR 070701 1101 BE 63 28.40 N 36 17.90 W GPS Deployment fo mooring UK1-2001
06ME50/3 VEINS-3 239 02 MOR 070701 1135 EN 63 28.90 N 36 17.90 W GPS

06ME50/3 VEINS-3 240 01 MOR 070701 1221 BE 63 32.80 N 36 30.10 W GPS Deployment fo mooring F2-2001
06ME50/3 VEINS-3 240 01 MOR 070701 1413 EN 63 33.30 N 36 30.30 W GPS

06ME50/3 VEINS-3 241 01 MOR 070701 1445 BE 63 37.60 N 36 47.40 W GPS Deployment fo mooring F1-2001
06ME50/3 VEINS-3 241 01 MOR 070701 1515 EN 63 38.30 N 36 47.70 W GPS

06ME50/3 VEINS-3 242 01 MOR 070701 1551 BE 63 38.70 N 36 54.70 W GPS Deployment fo mooring O1-2001
06ME50/3 VEINS-3 242 01 MOR 070701 1611 EN 63 39.00 N 36 54.40 W GPS

06ME50/3 243 01 ROS/CTD 070701 1843 BE 63 36.53 N 35 58.27 W GPS 2040
06ME50/3 243 01 ROS/CTD 070701 1925 BO 63 36.31 N 35 58.44 W GPS 2039 2005 2024 14
06ME50/3 243 01 ROS/CTD 070701 2006 EN 63 36.34 N 35 58.74 W GPS 2031

06ME50/3 244 01 ROS/CTD 070701 2132 BE 63 45.69 N 35 39.85 W GPS
06ME50/3 244 01 ROS/CTD 070701 2219 BO 63 45.77 N 35 40.32 W GPS 2144 2125 2146 14
06ME50/3 244 01 ROS/CTD 070701 2300 EN 63 45.67 N 35 40.41 W GPS 2147

06ME50/3 245 01 ROS/CTD 070801 0020 BE 63 52.98 N 35 10.22 W GPS 2021
06ME50/3 245 01 ROS/CTD 070801 0111 BO 63 53.00 N 35 10.32 W GPS 2032 2006 2028 14
06ME50/3 245 01 ROS/CTD 070801 0147 EN 63 53.02 N 35 10.37 W GPS 2022

06ME50/3 246 01 ROS/CTD 070801 0314 BE 64 02.20 N 34 47.05 W GPS 1973
06ME50/3 246 01 ROS/CTD 070801 0354 BO 64 02.13 N 34 47.11 W GPS 1973 1983 1977 14
06ME50/3 246 01 ROS/CTD 070801 0430 EN 64 02.08 N 34 47.05 W GPS 1976

06ME50/3 247 01 ROS/CTD 070801 0551 BE 64 11.40 N 34 27.43 W GPS 1971
06ME50/3 247 01 ROS/CTD 070801 0633 BO 64 11.28 N 34 27.86 W GPS 1982 1985 1982 14
06ME50/3 247 01 ROS/CTD 070801 0715 EN 64 11.21 N 34 28.40 W GPS 1984

06ME50/3 248 01 ROS/CTD 070801 0837 BE 64 16.06 N 34 01.45 W GPS 1974
06ME50/3 248 01 ROS/CTD 070801 0918 BO 64 16.24 N 34 01.93 W GPS 1972 1975 14
06ME50/3 248 01 ROS/CTD 070801 0959 EN 64 16.56 N 34 02.34 W GPS 1963

06ME50/3 249 01 ROS/CTD 070801 1327 BE 64 10.65 N 32 38.67 W GPS 2478 100 CO2
06ME50/3 249 01 ROS/CTD 070801 1344 EN 64 10.69 N 32 38.80 W GPS 2478

06ME50/3 VEINS-2 250 01 ROS/CTD 070801 2023 BE 64 00.07 N 30 00.18 W GPS 2076
06ME50/3 VEINS-2 250 01 ROS/CTD 070801 2105 BO 64 00.40 N 30 00.39 W GPS 2038 2093 2066 14
06ME50/3 VEINS-2 250 01 ROS/CTD 070801 2150 EN 64 00.71 N 30 00.82 W GPS 2040

06ME50/3 VEINS-2 251 01 ROS/CTD 070801 2306 BE 63 59.97 N 30 30.36 W GPS 2500
06ME50/3 VEINS-2 251 01 ROS/CTD 070801 2353 BO 64 00.12 N 30 30.40 W GPS 2502 2469 2492 14
06ME50/3 VEINS-2 251 01 ROS/CTD 070901 0041 EN 64 00.17 N 30 30.42 W GPS 2499

06ME50/3 VEINS-2 252 01 ROS/CTD 070901 0138 BE 63 59.96 N 30 50.11 W GPS 2686
06ME50/3 VEINS-2 252 01 ROS/CTD 070901 0230 BO 64 00.03 N 30 49.94 W GPS 2684 2656 2685 14
06ME50/3 VEINS-2 252 01 ROS/CTD 070901 0324 EN 64 00.08 N 30 50.21 W GPS 2686

06ME50/3 VEINS-2 253 01 ROS/CTD 070901 0421 BE 63 59.94 N 31 10.03 W GPS 2717
06ME50/3 VEINS-2 253 01 ROS/CTD 070901 0513 BO 63 59.99 N 31 10.00 W GPS 2714 2684 2720 14
06ME50/3 VEINS-2 253 01 ROS/CTD 070901 0606 EN 64 00.00 N 31 10.05 W GPS 2722

06ME50/3 VEINS-2 254 01 ROS/CTD 070901 0702 BE 63 59.95 N 31 30.23 W GPS 2744
06ME50/3 VEINS-2 254 01 ROS/CTD 070901 0756 BO 64 00.03 N 31 30.37 W GPS 2744 2708 2746 14
06ME50/3 VEINS-2 254 01 ROS/CTD 070901 0858 EN 63 59.89 N 31 30.58 W GPS 2744

06ME50/3 VEINS-2 255 01 ROS/CTD 070901 0953 BE 63 59.94 N 31 50.50 W GPS 2732
06ME50/3 VEINS-2 255 01 ROS/CTD 070901 1024 BO 64 00.09 N 31 51.09 W GPS 2730 2693 2729 14
06ME50/3 VEINS-2 255 01 ROS/CTD 070901 1136 EN 64 00.28 N 31 51.48 W GPS 2727

06ME50/3 VEINS-2 256 01 ROS/CTD 070901 1240 BE 63 59.77 N 32 10.11 W GPS 2713
06ME50/3 VEINS-2 256 01 ROS/CTD 070901 1331 BO 63 59.95 N 32 10.22 W GPS 2689 2672 2700 14
06ME50/3 VEINS-2 256 01 ROS/CTD 070901 1426 EN 64 00.20 N 32 10.53 W GPS 2687

06ME50/3 VEINS-2 257 01 ROS/CTD 070901 1543 BE 63 59.90 N 32 30.07 W GPS 2644
06ME50/3 VEINS-2 257 01 ROS/CTD 070901 1635 BO 64 00.00 N 32 30.60 W GPS 2642 2620 2650 14
06ME50/3 VEINS-2 257 01 ROS/CTD 070901 1726 EN 64 00.16 N 32 30.90 W GPS 2639

06ME50/3 VEINS-2 258 01 ROS/CTD 070901 1829 BE 63 59.96 N 32 50.22 W GPS 2542
06ME50/3 VEINS-2 258 01 ROS/CTD 070901 1921 BO 64 00.09 N 32 50.96 W GPS 2530 2518 2542 14
06ME50/3 VEINS-2 258 01 ROS/CTD 070901 2015 EN 64 00.13 N 32 51.70 W GPS 2531

06ME50/3 VEINS-2 259 01 ROS/CTD 070901 2117 BE 63 59.96 N 33 09.86 W GPS 2443
06ME50/3 VEINS-2 259 01 ROS/CTD 070901 2205 BO 64 00.14 N 33 10.54 W GPS 2437 2419 2444 14
06ME50/3 VEINS-2 259 01 ROS/CTD 070901 2251 EN 64 00.34 N 33 11.36 W GPS 2434

06ME50/3 VEINS-2 260 01 ROS/CTD 070901 2345 BE 64 05.04 N 33 17.51 W GPS 2348
06ME50/3 VEINS-2 260 01 ROS/CTD 071001 0031 BO 64 05.30 N 33 18.65 W GPS 2337 2329 2341 14
06ME50/3 VEINS-2 260 01 ROS/CTD 071001 0123 EN 64 05.66 N 33 19.50 W GPS 2325

06ME50/3 VEINS-2 261 01 ROS/CTD 071001 0208 BE 64 09.96 N 33 25.05 W GPS 2228
06ME50/3 VEINS-2 261 01 ROS/CTD 071001 0253 BO 64 10.21 N 33 25.56 W GPS 2220 2214 2225 13
06ME50/3 VEINS-2 261 01 ROS/CTD 071001 0331 EN 64 10.30 N 33 26.02 W GPS 2220

06ME50/3 VEINS-2 262 01 ROS/CTD 071001 0416 BE 64 14.95 N 33 32.42 W GPS 2085
06ME50/3 VEINS-2 262 01 ROS/CTD 071001 0455 BO 64 15.06 N 33 32.71 W GPS 2082 2067 2085 14
06ME50/3 VEINS-2 262 01 ROS/CTD 071001 0541 EN 64 15.07 N 33 32.96 W GPS 2083

06ME50/3 VEINS-2 263 01 ROS/CTD 071001 0629 BE 64 20.00 N 33 40.16 W GPS 1928
06ME50/3 VEINS-2 263 01 ROS/CTD 071001 0710 BO 64 20.01 N 33 40.37 W GPS 1929 1899 1923 14
06ME50/3 VEINS-2 263 01 ROS/CTD 071001 0753 EN 64 20.07 N 33 40.57 W GPS 1927

06ME50/3 VEINS-2 264 01 ROS/CTD 071001 0848 BE 64 25.04 N 33 47.42 W GPS 1772
06ME50/3 VEINS-2 264 01 ROS/CTD 071001 0923 BO 64 25.20 N 33 47.44 W GPS 1770 1749 1764 14
06ME50/3 VEINS-2 264 01 ROS/CTD 071001 0959 EN 64 25.23 N 33 47.28 W GPS 1769

06ME50/3 VEINS-2 265 01 ROS/CTD 071001 1111 BE 64 30.30 N 33 54.95 W GPS 1599
06ME50/3 VEINS-2 265 01 ROS/CTD 071001 1143 BO 64 30.37 N 33 54.74 W GPS 1598 1615 1593 14
06ME50/3 VEINS-2 265 01 ROS/CTD 071001 1219 EN 64 30.48 N 33 54.08 W GPS 1597

06ME50/3 VEINS-2 266 01 ROS/CTD 071001 1308 BE 64 35.03 N 34 02.45 W GPS 1424
06ME50/3 VEINS-2 266 01 ROS/CTD 071001 1338 BO 64 35.01 N 34 02.55 W GPS 1424 1401 1414 14
06ME50/3 VEINS-2 266 01 ROS/CTD 071001 1409 EN 64 35.01 N 34 02.54 W GPS 1423

06ME50/3 VEINS-2 267 01 ROS/CTD 071001 1500 BE 64 39.91 N 34 10.22 W GPS 1244
06ME50/3 VEINS-2 267 01 ROS/CTD 071001 1526 BO 64 39.82 N 34 11.09 W GPS 1247 1231 1235 15
06ME50/3 VEINS-2 267 01 ROS/CTD 071001 1550 EN 64 39.80 N 34 12.67 W GPS 1246

06ME50/3 VEINS-2 268 01 ROS/CTD 071001 1643 BE 64 45.02 N 34 17.61 W GPS 1116
06ME50/3 VEINS-2 268 01 ROS/CTD 071001 1711 BO 64 44.93 N 34 18.25 W GPS 1120 1098 1108 14
06ME50/3 VEINS-2 268 01 ROS/CTD 071001 1737 EN 64 44.82 N 34 18.94 W GPS 1124

06ME50/3 VEINS-2 269 01 ROS/CTD 071001 1833 BE 64 50.02 N 34 25.06 W GPS 1047
06ME50/3 VEINS-2 269 01 ROS/CTD 071001 1859 BO 64 50.07 N 34 25.07 W GPS 1048 1031 1041 11
06ME50/3 VEINS-2 269 01 ROS/CTD 071001 1922 EN 64 50.03 N 34 25.03 W GPS 1051

06ME50/3 VEINS-2 270 01 ROS/CTD 071001 2016 BE 64 55.10 N 34 32.46 W GPS 869
06ME50/3 VEINS-2 270 01 ROS/CTD 071001 2040 BO 64 55.15 N 34 32.72 W GPS 864 846 855 14
06ME50/3 VEINS-2 270 01 ROS/CTD 071001 2102 EN 64 55.13 N 34 33.00 W GPS 863

06ME50/3 VEINS-2 271 01 ROS/CTD 071001 2208 BE 65 00.03 N 34 40.02 W GPS 373
06ME50/3 VEINS-2 271 01 ROS/CTD 071001 2221 BO 65 00.00 N 34 40.29 W GPS 376 372 374 14
06ME50/3 VEINS-2 271 01 ROS/CTD 071001 2230 EN 64 59.96 N 34 40.49 W GPS 387

06ME50/3 VEINS-2 272 01 ROS/CTD 071001 2316 BE 65 05.08 N 34 47.48 W GPS 364
06ME50/3 VEINS-2 272 01 ROS/CTD 071001 2331 BO 65 05.01 N 34 47.54 W GPS 365 357 360 14
06ME50/3 VEINS-2 272 01 ROS/CTD 071001 2342 EN 65 05.00 N 34 47.53 W GPS 364

06ME50/3 VEINS-2 273 01 ROS/CTD 071101 0035 BE 65 09.96 N 34 54.91 W GPS 282
06ME50/3 VEINS-2 273 01 ROS/CTD 071101 0044 BO 65 10.02 N 34 54.92 W GPS 282 272 274 14
06ME50/3 VEINS-2 273 01 ROS/CTD 071101 0053 EN 65 10.00 N 34 54.81 W GPS 280

06ME50/3 274 01 ROS/CTD 071101 0616 BE 64 23.96 N 33 17.97 W GPS 1992
06ME50/3 274 01 ROS/CTD 071101 0700 BO 64 24.10 N 33 18.29 W GPS 1990 1969 1989 11
06ME50/3 274 01 ROS/CTD 071101 0740 EN 64 24.20 N 33 18.59 W GPS 1985

06ME50/3 275 01 ROS/CTD 071101 0858 BE 64 30.95 N 32 54.96 W GPS 2086
06ME50/3 275 01 ROS/CTD 071101 0938 BO 64 31.21 N 32 55.13 W GPS 2081 2058 2087 5
06ME50/3 275 01 ROS/CTD 071101 1020 EN 64 31.32 N 32 55.64 W GPS 2077

06ME50/3 276 01 ROS/CTD 071101 1137 BE 64 38.96 N 32 31.98 W GPS 2177
06ME50/3 276 01 ROS/CTD 071101 1219 BO 64 39.15 N 32 32.05 W GPS 2131 2154 2178 14
06ME50/3 276 01 ROS/CTD 071101 1257 EN 64 39.19 N 32 32.33 W GPS 2171

06ME50/3 277 01 ROS/CTD 071101 1409 BE 64 45.06 N 32 09.12 W GPS 2243
06ME50/3 277 01 ROS/CTD 071101 1454 BO 64 44.94 N 32 09.05 W GPS 2246 2224 2248 12
06ME50/3 277 01 ROS/CTD 071101 1533 EN 64 44.86 N 32 08.87 W GPS 2247

06ME50/3 278 01 ROS/CTD 071101 1648 BE 64 51.04 N 31 46.01 W GPS 2174
06ME50/3 278 01 ROS/CTD 071101 1734 BO 64 50.88 N 31 46.28 W GPS 2176 2155 2179 11
06ME50/3 278 01 ROS/CTD 071101 1818 EN 64 50.79 N 31 46.15 W GPS 2178

06ME50/3 279 01 ROS/CTD 071101 1929 BE 64 56.03 N 31 23.02 W GPS 2065
06ME50/3 279 01 ROS/CTD 071101 2013 BO 64 55.93 N 31 23.36 W GPS 2071 2047 2073 11
06ME50/3 279 01 ROS/CTD 071101 2052 EN 64 55.89 N 31 23.57 W GPS 2073

06ME50/3 280 01 ROS/CTD 071101 2203 BE 65 02.09 N 30 59.72 W GPS 1821
06ME50/3 280 01 ROS/CTD 071101 2237 BO 65 02.08 N 30 59.93 W GPS 1820 1804 1820 14
06ME50/3 280 01 ROS/CTD 071101 2317 EN 65 02.09 N 31 00.22 W GPS 1818

06ME50/3 VEINS-1 281 01 ROS/CTD 071201 0358 BE 65 45.05 N 31 25.07 W GPS 367
06ME50/3 VEINS-1 281 01 ROS/CTD 071201 0413 BO 65 45.16 N 31 25.22 W GPS 360 343 344 23
06ME50/3 VEINS-1 281 01 ROS/CTD 071201 0422 BN 65 45.20 N 31 25.30 W GPS 362

06ME50/3 VEINS-1 282 01 ROS/CTD 071201 0517 BE 65 39.90 N 31 19.99 W GPS 351
06ME50/3 VEINS-1 282 01 ROS/CTD 071201 0533 BO 65 39.87 N 31 20.27 W GPS 352 339 342 11
06ME50/3 VEINS-1 282 01 ROS/CTD 071201 0543 EN 65 39.94 N 31 20.39 W GPS 350

06ME50/3 VEINS-1 283 01 ROS/CTD 071201 0631 BE 65 34.99 N 31 15.03 W GPS 362
06ME50/3 VEINS-1 283 01 ROS/CTD 071201 0646 BO 65 35.03 N 31 15.21 W GPS 359 350 355 11
06ME50/3 VEINS-1 283 01 ROS/CTD 071201 0658 EN 65 35.02 N 31 15.41 W GPS 360

06ME50/3 VEINS-1 284 01 ROS/CTD 071201 0745 BE 65 30.00 N 31 09.93 W GPS 377
06ME50/3 VEINS-1 284 01 ROS/CTD 071201 0800 BO 65 30.11 N 31 10.11 W GPS 376 354 359 11
06ME50/3 VEINS-1 284 01 ROS/CTD 071201 0809 EN 65 30.17 N 31 10.42 W GPS 378

06ME50/3 VEINS-1 285 01 ROS/CTD 071201 0856 BE 65 25.00 N 31 04.78 W GPS 670
06ME50/3 VEINS-1 285 01 ROS/CTD 071201 0914 BO 65 25.33 N 31 04.55 W GPS 644 657 640 14
06ME50/3 VEINS-1 285 01 ROS/CTD 071201 0930 EN 65 25.56 N 31 04.51 W GPS 628

06ME50/3 VEINS-1 286 01 ROS/CTD 071201 1027 BE 65 19.98 N 30 59.95 W GPS 973
06ME50/3 VEINS-1 286 01 ROS/CTD 071201 1047 BO 65 20.06 N 30 59.82 W GPS 968 960 965 14
06ME50/3 VEINS-1 286 01 ROS/CTD 071201 1111 EN 65 20.20 N 30 59.81 W GPS 961

06ME50/3 VEINS-1 287 01 ROS/CTD 071201 1203 BE 65 15.05 N 30 55.11 W GPS 1240
06ME50/3 VEINS-1 287 01 ROS/CTD 071201 1229 BO 65 15.05 N 30 55.13 W GPS 1240 1228 1234 14
06ME50/3 VEINS-1 287 01 ROS/CTD 071201 1258 EN 65 15.00 N 30 55.16 W GPS 1243

06ME50/3 VEINS-1 288 01 ROS/CTD 071201 1346 BE 65 10.00 N 30 50.02 W GPS 1512
06ME50/3 VEINS-1 288 01 ROS/CTD 071201 1417 BO 65 09.94 N 30 49.78 W GPS 1515 1506 1508 13
06ME50/3 VEINS-1 288 01 ROS/CTD 071201 1449 EN 65 09.87 N 30 49.48 W GPS 1516

06ME50/3 VEINS-1 289 01 ROS/CTD 071201 1535 BE 65 05.08 N 30 44.98 W GPS 1759
06ME50/3 VEINS-1 289 01 ROS/CTD 071201 1612 BO 65 05.03 N 30 45.34 W GPS 1757 1739 1753 13
06ME50/3 VEINS-1 289 01 ROS/CTD 071201 1651 EN 65 04.81 N 30 45.44 W GPS 1763

06ME50/3 VEINS-1 290 01 ROS/CTD 071201 1736 BE 64 59.88 N 30 39.97 W GPS 1894
06ME50/3 VEINS-1 290 01 ROS/CTD 071201 1817 BO 64 59.76 N 30 40.79 W GPS 1901 1882 1898 11
06ME50/3 VEINS-1 290 01 ROS/CTD 071201 1855 EN 64 59.74 N 30 41.19 W GPS 1899

06ME50/3 VEINS-1 291 01 ROS/CTD 071201 1940 BE 64 54.88 N 30 34.82 W GPS 2035
06ME50/3 VEINS-1 291 01 ROS/CTD 071201 2024 BO 64 54.69 N 30 35.03 W GPS 2020 2041 2041 11
06ME50/3 VEINS-1 291 01 ROS/CTD 071201 2112 EN 64 54.46 N 30 35.02 W GPS 2046

06ME50/3 VEINS-1 292 01 ROS/CTD 071201 2156 BE 64 49.86 N 30 29.93 W GPS 2143
06ME50/3 VEINS-1 292 01 ROS/CTD 071201 2236 BO 64 49.87 N 30 30.05 W GPS 2144 2127 2147 14
06ME50/3 VEINS-1 292 01 ROS/CTD 071201 2320 EN 64 49.79 N 30 30.29 W GPS 2144

06ME50/3 VEINS-1 293 01 ROS/CTD 071301 0010 BE 64 44.94 N 30 24.93 W GPS 2230
06ME50/3 VEINS-1 293 01 ROS/CTD 071301 0055 BO 64 44.94 N 30 24.79 W GPS 2228 2236 2236 14
06ME50/3 VEINS-1 293 01 ROS/CTD 071301 0133 EN 64 45.00 N 30 24.66 W GPS 2227

06ME50/3 VEINS-1 294 01 ROS/CTD 071301 0221 BE 64 45.08 N 30 12.66 W GPS 2208
06ME50/3 VEINS-1 294 01 ROS/CTD 071301 0303 BO 64 44.95 N 30 12.53 W GPS 2208 2186 2214 13
06ME50/3 VEINS-1 294 01 ROS/CTD 071301 0350 EN 64 44.99 N 30 12.64 W GPS 2207

06ME50/3 VEINS-1 295 01 ROS/CTD 071301 0438 BE 64 44.98 N 30 00.15 W GPS 2184
06ME50/3 VEINS-1 295 01 ROS/CTD 071301 0523 BO 64 44.98 N 30 00.07 W GPS 2183 2162 2189 11
06ME50/3 VEINS-1 295 01 ROS/CTD 071301 0610 EN 64 45.00 N 30 00.09 W GPS 2180

06ME50/3 VEINS-1 296 01 ROS/CTD 071301 0704 BE 64 44.94 N 29 44.94 W GPS 2100
06ME50/3 VEINS-1 296 01 ROS/CTD 071301 0749 BO 64 45.01 N 29 45.09 W GPS 2114 2107 2133 18
06ME50/3 VEINS-1 296 01 ROS/CTD 071301 0834 EN 64 45.09 N 29 45.10 W GPS 2114

06ME50/3 VEINS-1 297 01 ROS/CTD 071301 0934 BE 64 44.98 N 29 30.13 W GPS 1843
06ME50/3 VEINS-1 297 01 ROS/CTD 071301 1011 BO 64 45.00 N 29 30.36 W GPS 1843 1830 1851 14
06ME50/3 VEINS-1 297 01 ROS/CTD 071301 1045 EN 64 45.08 N 29 30.52 W GPS 1847

06ME50/3 VEINS-1 298 01 ROS/CTD 071301 1152 BE 64 44.96 N 29 14.89 W GPS 1405
06ME50/3 VEINS-1 298 01 ROS/CTD 071301 1220 BO 64 45.00 N 29 15.03 W GPS 1384 1416 1429 14
06ME50/3 VEINS-1 298 01 ROS/CTD 071301 1253 EN 64 45.03 N 29 15.02 W GPS 1383

06ME50/3 VEINS-1 299 01 ROS/CTD 071301 1348 BE 64 44.93 N 29 00.13 W GPS 1064
06ME50/3 VEINS-1 299 01 ROS/CTD 071301 1413 BO 64 44.76 N 29 00.10 W GPS 1066 1079 1088 12
06ME50/3 VEINS-1 299 01 ROS/CTD 071301 1438 EN 64 44.65 N 29 00.19 W GPS 1062

06ME50/3 VEINS-1 300 01 ROS/CTD 071301 1548 BE 64 44.93 N 28 40.09 W GPS 1266
06ME50/3 VEINS-1 300 01 ROS/CTD 071301 1617 BO 64 44.84 N 28 40.18 W GPS 1266 1249 1269 13
06ME50/3 VEINS-1 300 01 ROS/CTD 071301 1644 EN 64 44.81 N 28 40.08 W GPS 1270

06ME50/3 VEINS-1 301 01 ROS/CTD 071301 1753 BE 64 44.99 N 28 19.97 W GPS 1133
06ME50/3 VEINS-1 301 01 ROS/CTD 071301 1829 BO 64 45.02 N 28 20.08 W GPS 1136 1115 1127 11
06ME50/3 VEINS-1 301 01 ROS/CTD 071301 1843 EN 64 45.01 N 28 19.96 W GPS 1130

06ME50/3 VEINS-1 302 01 ROS/CTD 071301 1953 BE 64 45.02 N 27 59.97 W GPS 1022
06ME50/3 VEINS-1 302 01 ROS/CTD 071301 2017 BO 64 45.02 N 28 00.00 W GPS 1023 1010 1017 11
06ME50/3 VEINS-1 302 01 ROS/CTD 071301 2040 EN 64 45.03 N 27 59.93 W GPS 1021

06ME50/3 VEINS-1 303 01 ROS/CTD 071301 2147 BE 64 44.95 N 27 39.87 W GPS 800
06ME50/3 VEINS-1 303 01 ROS/CTD 071301 2206 BO 64 44.95 N 27 39.96 W GPS 804 768 795 14
06ME50/3 VEINS-1 303 01 ROS/CTD 071301 2220 EN 64 44.98 N 27 39.88 W GPS 799

06ME50/3 VEINS-1 304 01 ROS/CTD 071301 2330 BE 64 44.86 N 27 19.84 W GPS 545
06ME50/3 VEINS-1 304 01 ROS/CTD 071301 2346 BO 64 44.76 N 27 19.95 W GPS 546 539 540 14
06ME50/3 VEINS-1 304 01 ROS/CTD 071301 2356 EN 64 44.73 N 27 19.96 W GPS 547

06ME50/3 VEINS-1 305 01 ROS/CTD 071401 0109 BE 64 44.93 N 27 00.24 W GPS 283
06ME50/3 VEINS-1 305 01 ROS/CTD 071401 0120 BO 64 44.87 N 27 00.13 W GPS 281 273 275 12
06ME50/3 VEINS-1 305 01 ROS/CTD 071401 0126 EN 64 44.88 N 27 00.04 W GPS 281

06ME50/3 VEINS-1 306 01 ROS/CTD 071401 0231 BE 64 44.88 N 26 39.99 W GPS 249
06ME50/3 VEINS-1 306 01 ROS/CTD 071401 0242 BO 64 44.76 N 26 40.13 W GPS 249 240 240 14
06ME50/3 VEINS-1 306 01 ROS/CTD 071401 0248 EN 64 44.75 N 26 40.20 W GPS 248

Table 2: List of the alkenon samples and associated filter probes for chlorophyll, particulate organic carbon, SPM and nutrient samples. Water source was a seawater pump or CTD bottles.

Number	Date	Source	Chlorophyll	POC	SPM	Nutrients
1	22.06.2001	pump	x	x	x	x
2	22.06.2001	pump	x	x	x	-
3	23.06.2001	pump	x	x	x	-
4	23.06.2001	pump	x	x	x	-
5	23.06.2001	pump	x	x	x	-
6	24.05.2001	pump	x	x	x	-
7	24.05.2001	pump	x	x	x	-
8	24.05.2001	pump	x	x	x	x
9	24.05.2001	pump	-	-	-	-
10	24.05.2001	pump	x	x	x	-
11	25.05.2001	pump	x	x	x	-
12	25.05.2001	pump	x	x	x	-
13	25.05.2001	pump	-	-	-	-
14	25.05.2001	pump	x	x	x	-
15	25.05.2001	pump	x	x	x	-
16	26.06.2001	pump	x	x	x	-
17	26.06.2001	pump	x	x	x	-
18	26.06.2001	pump	-	-	-	-
19	27.06.2001	pump	x	x	x	x
20	27.06.2001	pump	x	x	x	-
21	28.06.2001	pump	x	x	x	-
22	28.06.2001	pump	-	-	-	-
23	29.06.2001	pump	x	x	x	x
24	29.06.2001	pump	-	-	-	-
25	30.06.2001	pump	x	x	x	x
26	30.06.2001	pump	-	-	-	-
27	30.06.2001	pump	-	-	-	-
28	01.07.2001	pump	x	x	x	x
29	01.07.2001	pump	-	-	-	-
30	01.07.2001	pump	x	x	x	-
31	01.07.2001	pump	x	x	x	x
32	02.07.2001	pump	-	-	-	-
33	02.07.2001	pump	x	x	x	-

Number	Date	Source	Chlorophyll	POC	SPM	Nutrients
34	02.07.2001	pump	-	-	-	-
35	03.07.2001	pump	x	x	x	x
36	03.07.2001	pump	-	-	-	-
37	03.07.2001	pump	x	x	x	-
38	04.04.2001	pump	-	-	-	-
39	04.04.2001	pump	x	x	x	x
40	04.04.2001	pump	-	-	-	-
41	05.07.2001	pump	x	x	x	x
42	05.07.2001	CTD	x	x	x	x
43	05.07.2001	CTD	x	x	x	x
44	05.07.2001	CTD	x	x	x	x
45	05.07.2001	pump	-	-	-	-
46	06.07.2001	pump	x	x	x	x
47	06.07.2001	pump	-	-	-	-
48	07.07.2001	pump	x	x	x	x
49	07.07.2001	CTD	x	x	x	x
50	07.07.2001	CTD	x	x	x	x
51	07.07.2001	CTD	x	x	x	x
52	07.07.2001	pump	-	-	-	-
53	08.07.2001	pump	x	x	x	x
54	08.07.2001	pump	-	-	-	-
55	08.07.2001	CTD	x	x	x	x
56	08.07.2001	CTD	x	x	x	x
57	08.07.2001	CTD	x	x	x	x
58	08.07.2001	pump	-	-	-	-
59	09.07.2001	pump	-	-	-	-
60	09.07.2001	pump	-	-	-	-
61	10.07.2001	pump	x	x	x	x
62	10.07.2001	pump	-	-	-	-
63	10.07.2001	pump	-	-	-	-
64	11.07.2001	pump	x	x	x	x
65	11.07.2001	pump	x	x	x	x
66	12.07.2001	CTD	x	x	x	x
67	12.07.2001	pump	-	-	-	-
68	zu AF66	pump	-	-	-	-
69	12.07.2001	pump	x	x	x	x
70	12.07.2001	pump	-	-	-	-

Number	Date	Source	Chlorophyll	POC	SPM	Nutrients
71	12.07.2001	pump	-	-	-	-
72	12.07.2001	pump	-	-	-	-
73	12.07.2001	pump	x	x	x	x
74	12.07.2001	pump	-	-	-	-
75	13.07.2001	pump	-	-	-	-
76	13.07.2001	pump	-	-	-	-
77	13.07.2001	pump	x	x	x	x
78	13.07.2001	pump	-	-	-	-
79	13.07.2001	pump	-	-	-	-
80	13.07.2001	pump	-	-	-	-
81	13.07.2001	pump	-	-	-	-
82	13.07.2001	pump	-	-	-	-