the Expedition ARKTIS-XIX/4
of the research vessel POLARSTERN in 2003
reports of legs 4a and 4b

edited by Wilfried Jokat
with contributions of the participants

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1 Cruise summary

W. Jokat

The expedition ARK XIX/4 started in Tromsø at August 10th and terminated on October 13th in Bremerhaven. In the first part of the expedition the focus of the research activities was along the East Greenland coast from 77°N to 73°N. Here, the geophysical investigations were performed till middle of September. To investigate the deeper structure of the continental margin four more than 300 km long seismic refraction profiles were acquired. The northernmost line crossed the margin at 76°N to gain detailed information on the evolution of the Greenland Escarpment. The other three lines more in the south were located in the prolongation of the Ardencaple, Godthaab and Kaiser Franz Josef fjords. Here, in addition to the ocean bottom seismometers, stations were deployed onshore to have a better image on the structure of a pronounced negative magnetic anomaly. Along each profile between 25 and 35 recording stations were deployed. All instruments were successfully recovered after finishing the experiment. Furthermore, the margin was mapped by a seismic multi-channel network with a total length of 4371 km. The favourable ice conditions allowed the towing of a 3000 m long cable along the southern lines of the network. Magnetic investigations with the onboard helicopters were performed whenever the weather allowed this type of operation. Bad visibility prevented in the first part of the expedition most of the flight activities. This changed around middle of September. In total 14.500 km of magnetic data were acquired by the helicopter system in two areas, the Greenland Sea and Fram Strait. Bathymetric and gravimetric data were acquired along the entire ship's track. The sediment echo sounder Parasound was operated during the geophysical surveying and during the transits across the shelf.

Surface and near-surface sediment samples were collected to study the composition of the organic matter on the East Greenland continental margin and in the Greenland Sea. Sampling was performed with a multi corer (MUC) at 26 coring positions. To determine the specific biomarker signature of the different sources, ice floes, icebergs and land stations were systematically sampled. Altogether 13 stations on ice floes / icebergs and 16 stations on land (13 shore, 3 lakes) were conducted and sediment samples and samples from sea ice and melt water ponds were taken. In addition samples for genetic analysis were taken from the Multicorer tubes. Before sampling the tubes sediment surface temperature was measured to get information about the *in situ* living conditions of the benthic foraminiferal community. After temperature measurements, the water supernatant was taken away by a hose and preserved. A surface sediment sample was taken from 2-3 Multicorer tubes. The uppermost centimetre of each tube was taken and immediately sieved under cold seawater after sampling immediately frozen at –20°C for further processing in the labs onshore.

Water samples were taken from ice floes and lakes onshore Greenland to study the microbiological food web in environments, which are highly variable. In total 12 lakes on islands and the Greenlandic main land were probed for these investigations. In addition samples from 14 ice floes were taken.

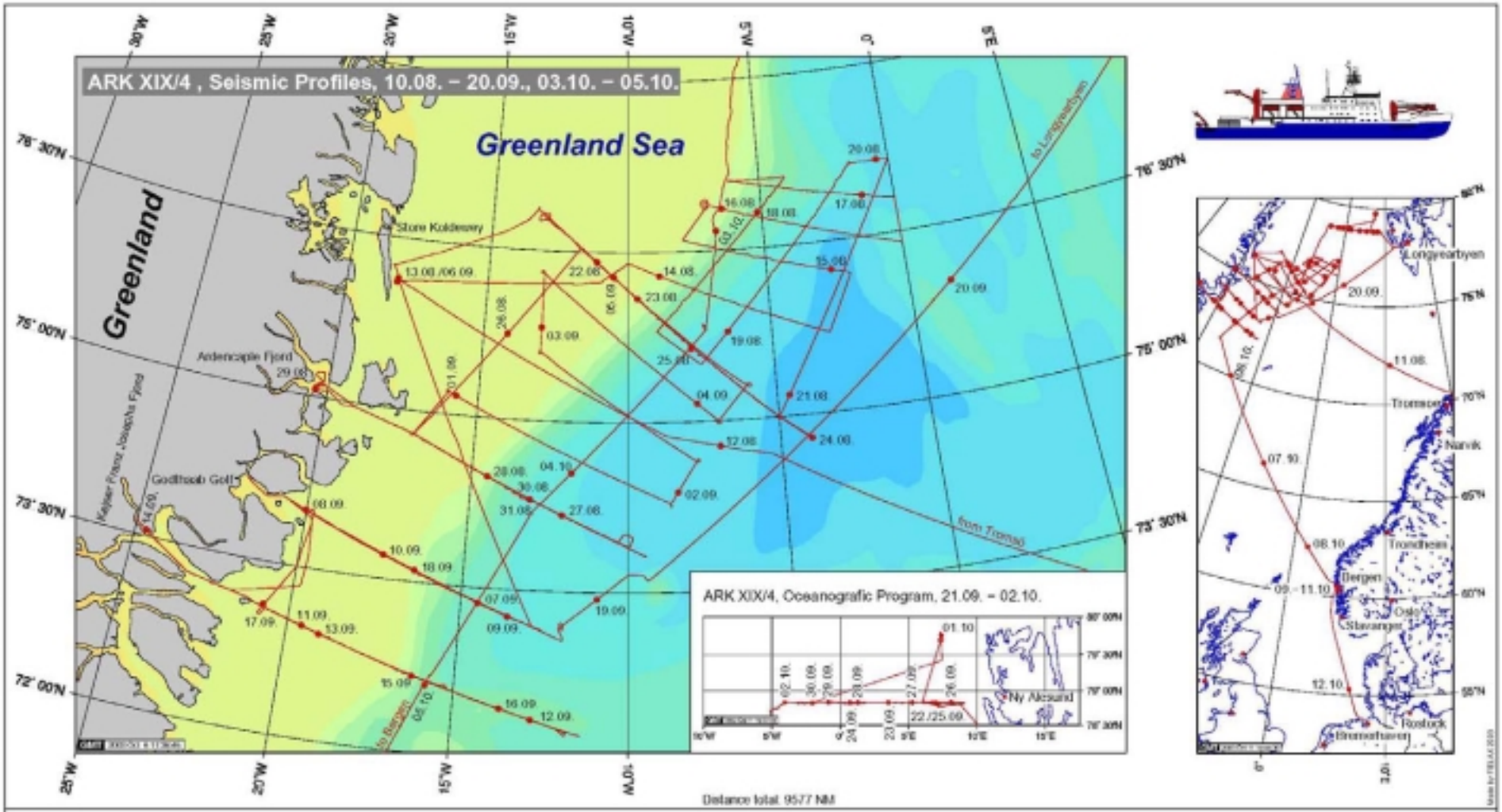
Parallel to the ship-based scientific programme a field party consisting of 7 scientists were flown out on the island of Store Koldewey. The camp was moved twice with the assistance of the onboard helicopters to allow the investigation of several lakes. In order to better understand the past environmental and climatic history of East and Northeast Greenland, extensive studies including palaeolimnological work, quaternary geological work, and the investigation of the recent existing lakes and soils were carried out on Store Koldewey and Geographical Society Ø.

E.g., to enhance the understanding of the deglaciation periods and the postglacial climatic and environmental changes c. 55 m of sediment cores were recovered from 7 lakes on Store Koldewey, and c. 20 m from a lake on the outer Geographical Society Ø, respectively.

On September 21st the harbour of Longyearbyen, Svalbard was entered to exchange scientific personal. In total 17 scientists, whose projects were finished on the first leg, left the vessel. Twelve scientists embarked on the vessel to carry out oceanographic experiments during the second part of the expedition. The aim was to measure the oceanic fluxes through Fram Strait and to determine their variability in seasonal to decadal time scales. Since 1997, year-round velocity, temperature and salinity measurements are carried out in Fram Strait with moored instruments. Hydrographic sections exist since 1980. The mooring line is maintained in close co-operation with the Norwegian Polar Institute and the University of Hamburg. The mooring recovery and deployment started at September 22nd and was finished at October, 2nd. This work was supplemented by CTD stations, which were performed during the night hours. An unexpected delay happened with the surfacing of a mooring, which was deployed end of September. After a transit of 12 hours and a search of 6 hours the mooring could be recovered and was re-deployed at its initial position. From October 3rd till October 5th multi-channel seismic investigations were carried out along the East Greenland margin to connect all existing lines with a tie line. The research programme off East Greenland was finished on October 5th 24:00.

After three days of transit the vessel arrived on October 9th (08:00) in the Hegerness Fjord. Here, measurements to determine the acoustic characteristics of the different active sonars/airguns were performed. These experiments were finished at October 11th (12:00). Afterwards the ship headed south to Bremerhaven. The cruise was terminated in Bremerhaven on October 13th (06:00).

For the entire scientific programmes and the logistical support of the land party the onboard helicopters were essential. The use of the helicopters provided a lot of flexibility and safety to all operation connected with the deployment of the onshore recording stations and the geological land party. In total 188 flight hours were necessary to support the expedition programmes.


ARK XIX/4 , Seismic Profiles, 10.08. – 20.09., 03.10. – 05.10.
Greenland Sea
Greenland
Store Koldewey
Ardencaple Fjord
Godthaab Golf
Kaiser Franz Josefs Fjord
to Longyearbyen
from Tromsø
to Bergen
ARK XIX/4, Oceanografic Program, 21.09. – 02.10.
Ny Alesund
Distance total: 9577 NM
Longyearbyen
Tromsoe
Narvik
Trondheim
Bergen
Oslo
Stavanger
Rostock
Bremerhaven
FS POLARSTERN
CRUISE ARK XIX/4
Tromsoe – Bremerhaven
August, 10th till October, 13th 2003
Stereografic Projection
Alfred-Wegener-Institut for
Polar and Marine Research
Bremerhaven

1.1 Wetterverlauf ARK XIX/4a

Bei sonnigem Wetter nahm die POLARSTERN am 10. August 2003 um 17 UTC Abschied von Tromsö und dem europäischen Supersommer und tauchte schon bald nach dem Verlassen des Tromsøfjordes unter die geschlossene Wolkendecke eines alternden und nach Osten ziehenden Tiefausläufers. Die Fahrt auf direktem Kurs zur Insel Store Koldewey vor der ostgrönländischen Küste verlief recht ruhig, dank eines sich von den Britischen Inseln bis in die Norwegische See erstreckenden Hochkeils. Sonnige Passagen waren rar, vielmehr häuften sich Abschnitte mit Nebel oder tiefem Stratus. Dennoch konnte am 12. August ein erster Testeinsatz mit dem Helikopter durchgeführt werden.

Nach Ankunft vor Store Koldewey am Morgen des 13. August stand ein umfangreiches Flugprogramm auf der Tagesordnung. Ein Langstreckenflug nach Scoresbysund (ca. 3 Stunden) war erforderlich, um einen Nautiker als Ersatz für einen erkrankten Kollegen abzuholen. Das Satellitenbild zeigte über See verbreitet Nebelfelder, die mit südlicher Strömung (um 4 Bft) nach Norden drifteten, im direkten Küstenbereich dagegen überwiegend wolkenarme Bedingungen. Tatsächlich berichtete der Pilot später von ausreichendem bis gutem Sichtflugwetter, allerdings auch von teilweise starken Turbulenzen aufgrund katabatischer Winde. Der andere Heli transportierte währenddessen Mensch und Material im Dauereinsatz zur Insel, auf der ein 3 ½ -wöchiges Geologiecamp eingerichtet wurde. Der ständige Wechsel zwischen tiefem Stratus und guten Flugbedingungen behinderte diese Arbeiten jedoch kaum.

Die folgenden Tage waren vom Zustrom feuchter Warmluft aus südlichen Richtungen geprägt, bedingt durch hohen Druck über Nordsibirien und tiefen Druck über Nordgrönland, gestützt durch nach Norden ziehende Zyklonen über Labradorsee und Baffinbai. Eine meist geschlossene Nebel- oder Hochnebeldecke ließ den Flugbetrieb meist ruhen. Nur der Küstenbereich zeigte sich immer wieder wolkenarm, bedingt durch ein lokales Hoch über dem Inlandeis und den damit verbundenen Kaltluftabfluss. Am Nachmittag des 15. August gelang eine komplette Helimag-Mission, als der Hochnebel wider Erwarten für ein paar Stunden aufriss. Am 16. und 17. wurden kurze Aufhellungen zum Sammeln von Eisproben genutzt, an anderen Tagen lief nichts. Eine signifikante Änderung wurde durch ein Baffinbaitief eingeleitet, dessen Fronten Grönland überquerten. Auf deren Rückseite entwickelte sich am 18. und 19. August ein neues kräftiges Hoch, was zu einer Strömungsumkehr über der Grönlandsee führte und die Wolkendecke am 20. August weit nach Süden zurückdrängte. Zurück blieben flache Nebelfelder und nochmals konnten Meereisproben gesammelt werden. Leider führte der Wegeplanung die POLARSTERN südwestwärts wieder unter die Wolkendecke und am 21. August stellte sich auch die Südströmung wieder ein.

Ein flaches Tief entwickelte sich am 22. August an der nordostgrönländischen Küste und zog langsam ostwärts, so dass die dortigen Nebelfelder von westlichen bis nordwestlichen Winden auf See hinausgetrieben wurden. Obwohl die Bedingungen an der Schiffsposition (76.8°N 13°W) bei Südwind von kurzen Aufheiterungen abgesehen noch meist schlecht waren, starteten beide Helikopter nach Store Koldewey, um den Umzug des Geologiecamps an einen anderen See

durchzuführen. Trotz der ungünstigen Wetterlage am Rande des sichtflugtechnisch Möglichen, konnte diese Mission bis zum Abend erfolgreich abgeschlossen werden.

Die Entwicklung eines weiteren Tiefs über Nordostgrönland machte Hoffnung auf eine durchgreifende Wetteränderung. Das Tief lag am 24. und 25.8. südlich der Framstaße fest, während sich über Nordostgrönland ein kräftiges Hoch aufbaute. Diese, auch vom numerischen Modell gut vorhergesagte Verschärfung der Luftdruckgegensätze führte zu nördlichen Winden von 6 bis 7 Bft. In der einfließenden polaren Kaltluft kam es anfangs zu Schneegrieselschauern, am 26. bei nachlassenden Winden dann zu großräumigem Aufklaren im Seegebiet vor Store Koldewey und Shannon. Ganztägig wurde bei gutem Flugwetter zu den beiden Inseln geflogen, teils zur Versorgung des „Picknick"-Teams, teils zum Ausbringen von seismischen Landstationen, teils zur biologischen See-Beprobung.

Der Arbeitsplan der Geophysik (seismische Profile mit OBS/OBH-Systemen) führte die POLARSTERN am 27.8. abermals von der Küste fort, zurück unter eine tiefhängende und fast geschlossene Wolkendecke. Eine flache Tiefdruckrinne über dem Küstenbereich führte mit südwestlichen Winden vorübergehend wieder feuchtere Luft und damit Nebelfelder vor die beiden Inseln. Helimag-Flüge mussten ausfallen, teils wegen tiefer Untergrenzen, teils wegen zu großer Entfernung von den interessierenden Gebieten.

Ein neues Grönlandhoch ließ die Wolken zumindest im Küstenbereich auflockern, als die POLARSTERN am 29.8. die Einfahrt des Ardencaple Fjord besuchte. Bei gutem Flugwetter wurden die seismischen Landstationen wieder eingeholt und die Koldeweygruppe nochmals umgesetzt. Am 30.8. gelang endlich ein längerer Helimag-Einsatz, der aber auch vor der Komplettierung wegen absinkender Untergrenzen abgebrochen werden musste. Das Hoch wanderte unter Abschwächung südostwärts in Richtung Norwegen und machte damit den Weg frei für ein Tief, das im Laufe der nächsten Tage von der Südostküste Grönlands sehr langsam nach Spitzbergen zog. Am 31.8. überquerte uns die Warmfront mit leichtem Dauerregen aus tiefer Bewölkung. Auf der Tiefrückseite nieselte es noch zwei weitere Tage im Frontbereich, und auch der Nordwest- bis Nordwind hielt sich hartnäckig bei Beaufort 5 oder 6. Am 3.9. endlich gelangte die eingeflossene Polarluft unter zunehmendem Hochdruckeinfluss und weite Teile der Grönlandsee waren erstmals wolkenlos mit ausgezeichneten Sichten.

Ein Sturmtief lag am 4.9. südwestlich von Island und begann sich aufzufüllen. Seine kompakte und hochreichende Frontbewölkung näherte sich nur sehr langsam, so dass die hervorragenden Wetterbedingungen auch am 5.9. noch fortdauerten, aber am darauf folgenden Tag war die Grönlandsee dicht. Die geplante Rückholaktion der Geologen von Store Koldewey schien fraglich. In unmittelbarer Küstennähe jedoch überwog der Einfluss des zentralgrönländischen Hochs. Katabatische Winde hielten wie schon so oft die Nebel- und Stratusfelder von der Küste fern. Nach einem gelungenen Vormittag führte unser Weg zur Vorbereitung eines neuen Messprofils wieder weit auf See hinaus in trübes Nieselwetter. In der Nacht zum 8.9. kehrte die POLARSTERN an die Küste zurück, um am Godthaab Golf seismische Landstationen auszubringen. Das grönländische Hoch verstärkte sich und damit trocknete die Luftmasse über See weiter aus, nur flache Nebelfelder vagabundierten

noch vor der Küste, fern davon aber blieb die dichte und tiefhängende Wolkendecke auch am 9.9. noch bestehen.

In den kommenden Tagen manifestierte sich, ausgehend von dem ehemaligen Hurrikan "Fabian", ein kräftiges Zentraltief südwestlich von Island, von dem sich ab dem 12.9. mehrere Randtiefs ablösten und in nordöstlicher Richtung zogen. Am 13.9. Tag befand sich die POLARSTERN auf seismischer Profilfahrt in Richtung auf den Kaiser-Franz-Josephs-Fjord. Durch das im Osten vorbeiziehende Tief nahm der Nordwind bis zum Mittag auf 7 bis 8 Bft zu, und ließ schon am Abend deutlich ab. Die nochmals an Land (Geographical Society Island) ausgesetzte Geologengruppe berichtete von 5 bis 6 Bft. Ein zweites Randtief zog am 14.9. vorbei, jedoch befand sich die POLARSTERN inzwischen bei Kaiserwetter und entsprechend hervorragenden Sichtflugbedingungen im Fjord, wo wieder einmal der katabatische Effekt dominierte.

Der Schwerpunkt des ehemaligen Islandtiefs hatte sich nun in das Seegebiet südlich Spitzbergen verlagert und zog weiter in die Barentssee. Auf seiner Rückseite war trockene und zunehmend hochreichende Polarluft eingeflossen, die nach fünf Wochen endlich ausgedehnte Helimag-Einsätze zuließ, zugleich aber über dem warmen Wasser (3 bis 4°C) labilisiert wurde. Die Bildung von kräftigen, zum Teil linienförmig angeordneten Schneeschauern war die Folge. Die Verstärkung der grönländischen Hochs sorgte am 17.9. für eine Abnahme der Schauertätigkeit und am 18.9. für hervorragendes Sichtflugwetter in einem 60 Seemeilen breiten Streifen vor der Küste.

Am 19. 9., nach Abschluss des wissenschaftlichen Arbeitsprogramms von Fahrtabschnitt 4a nahmen wir Kurs auf Spitzbergen. Zwei aufeinanderfolgende Tiefdruckentwicklungen über Südostgrönland leiteten die verstärkte Zufuhr polarer Luftmassen ins Europäische Nordmeer ein. Davon noch nicht negativ berührt lief die POLARSTERN am Morgen des 21.9. bei schönem Wetter im Longyearbyen ein.

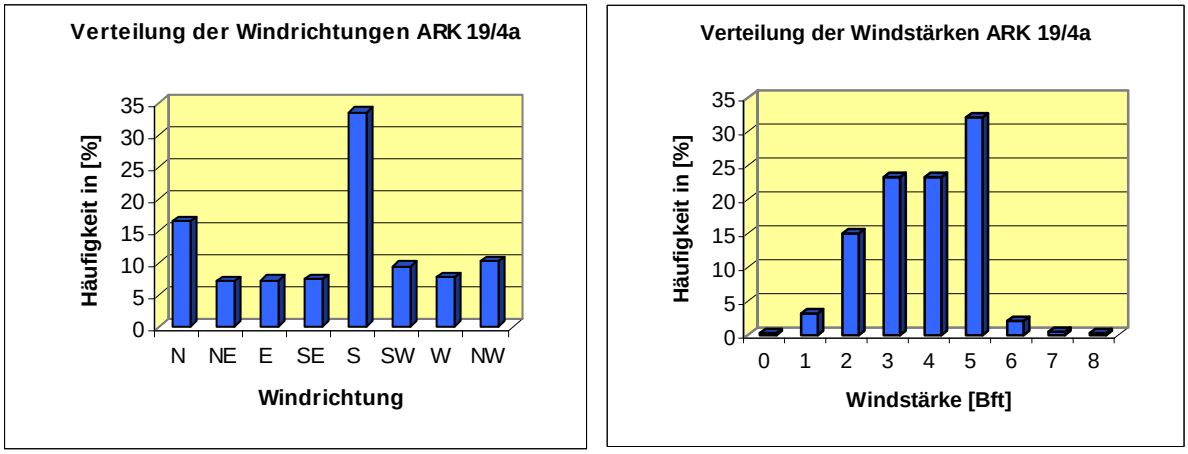


Fig. 1.1-1

Bevorzugt südliche Windrichtungen und die damit verbundene Zufuhr feucht-warmer Atlantikluft waren die Ursache häufiger Nebelbildung. Sichtweiten von weniger als 1 Kilometer wurden in 26 % der stündlichen Wetterbeobachtungen gemessen.

1. 2 Weather situation during leg ARK XIX/4b

After leaving Spitsbergen on the evening of Sept. 21st a gale centre with minimum pressure below 965 hPa moved from the Norwegian Sea towards the northern part of Norway and Bear Island. Its frontal cloud belts approached Spitsbergen in early Sept.22nd. In the operation area of RV POLARSTERN little west of Spitsbergen close to 79N the northerly wind became moderate to fresh. Some snow showers and light frost was observed. In the meantime a small low developed little northeast of Greenland which moved southeast. It caused some hours with snowfall during the night.

Weak anticyclonic influence followed on Sept.23rd with good flight weather conditions and light westerly winds in the northern part of the Fram Strait only. A trough of the low northeast of Spitsbergen approached in the late afternoon with light snowfall and increasing northerly wind. During the night and on Sept. 24th northerly gale Bft 8 with isolated storm gust and light snowfall was registered. All helicopter flights had to be cancelled. In the meantime the gale over the northern part of the Barents Sea developed and gained its minimum pressure around 960 hPa on Sept. 25th. Consequently the wind increased to Bft 9 in the northern part of the Fram Strait with a characteristic wave height of more than 5 m. Decreasing surface pressure at the east coast of Greenland and also decreasing intensity of the gale centre east of Spitsbergen caused weakening pressure gradient over the Fram Strait also. In consequence the wind decreased Bft 4 from north combined with some light snow showers. All scientific programs could be continued. On Sept. 27th winds turned south with beginning of warm air advection in the upper levels of the troposphere. But snow showers were still noticed all day long in the operation area. In the meantime the low over the eastern part of Greenland divided into two parts: the southerly one moved to Iceland while the other approached Spitsbergen on Sept.28th. On board RV POLARSTERN some hours with sleet had been observed during the night but weather conditions became better in the morning. The northerly wind increased up to Bft 6 and the temperature dropped more than 6 degrees within 4 hours. Further on the anticyclonic influence increased, the weather changed to fair and the wind became light northerly on the following day. On Sept. 30th weak pressure gradient caused also light and variable wind in the operation area. A small low developed near the eastern coast of Greenland and caused heavy warm air advection in all layers of the troposphere. So in the height of 1000 m temperature increased from –10 °C up to 0°C within a few hours. Freezing drizzle was noticed witch stopped all flight activities. On Oct 1st south-easterly wind Bft 8 with heavy snowfall for some hours near the north-western shores of Spitsbergen have be observed.

On Oct.2nd RV POLARSTERN again approached the ice-edge near 78.8 N – 00 W. The formation of new ice had increased heavily during the last few days. In the beginning wind blew strong from northwest, but decreased at daytime. The air temperature dropped below minus 10°C. This caused good flight conditions all day long. In the evening RV POLARSTERN was southbound heading towards the new operation area.

A gale supported by parts of the ex-hurricane “Juan” moved from Iceland to the Norwegian Sea. It gained its minimum pressure of around 975 hPa on Oct. 3rd. The

northerly wind increased steadily up to Bft 8. Off the southern edge of the sea ice the characteristic wave height increased to about 3 m. In the late afternoon the vessel started the seismic cross near waypoint 75.9 N – 07 W.
The gale centre decreased only little and became nearly stationary for the next 24 hours.

So during the night the north-westerly wind reached force Bft 9. This was the maximum registered during the entire leg. In this night the sea wave height exceeded 5 m from time to time. Due to these conditions in the morning of Oct. 4th all Helimag-flights had to be cancelled.

On the last day in the operation area west of Jan Mayen weak high pressure influence caused only light north-westerly winds and sunny weather. Therefore all planned helicopter flights could be carried out. The research work ended early Oct. 6th. RV POLARSTERN was bound for Bergen (Norway). The gale became adult little east of Iceland on Oct. 6th with minimum pressure close to 975 hPa and headed towards Denmark. In a distance of about 1000 km RV POLARSTERN followed this low. Due to this the wind first came only moderate from northwest to north but increased for some hours during the night to force Bft 7.

RV POLARSTERN approached Bergen –pilot station in early Oct. 9th.

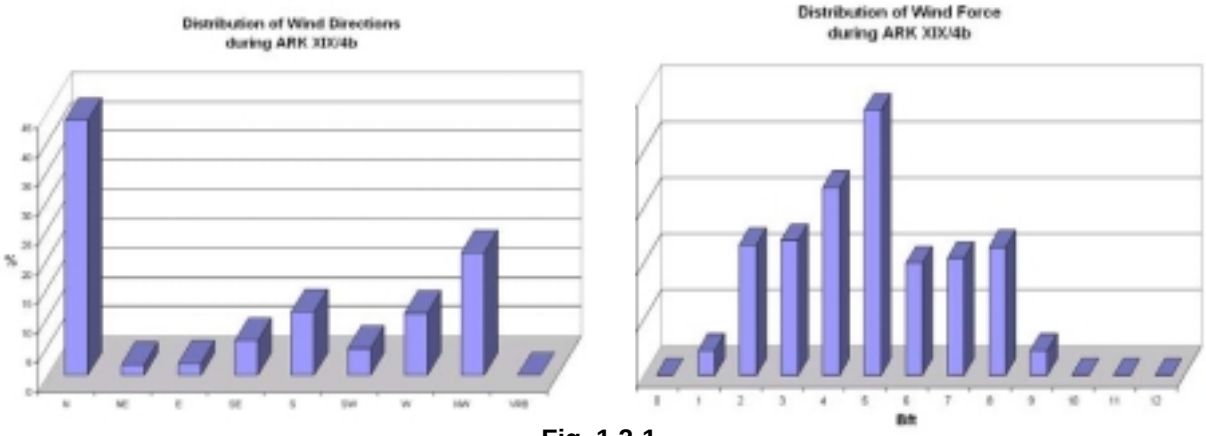


Fig. 1.2-1

2 Marine Geophysics

W. Jokat, D. Berger, H. Bohlmann, V. Helm, M. Hensch, D. Jousselin, C. Klein, N. Lensch, P. Liersch, H. Martens, A. Medow, U. Micksch, L. Rabenstein, C. Salat, M. Schmidt-Aursch, A. Schwenk

Summary–Statistics:

- Tromsoe-Bremerhaven 10th August to 13th October (4b starts in Longyearbyen on the 21st September)
- Theme: Structure of the East Greenland margin from 74° to 77°N (part of an ESF project aiming at understanding the crustal architecture and evolution of the conjugate volcanic margins off mid-Norway and East Greenland in a total rift context).
- 4 seismic refraction profiles using 126 stations (including 17 on land Reftek stations); each line is >300 km long; deployment, shooting and recovery took 85 to 116 hours.
- seismic reflection survey with a 600 m streamer (96 channels; 6.25m group spacing); 2309 km of profiles; 52068 shots; 7 WNW-ESE lines, 160 to 280 km long each, 6 SSW-NNE lines, 40 to 60 km long each.
- seismic reflection surveys with a 3000 m streamer (240 channels; 12.5 m group spacing); 2062 km of lines. 45969 shots (along refraction lines and coverage in between).
- Magnetic survey (14.500 km of lines, 100 hours of helicopter flight); in addition continuous magnetic data recording with fixed vector magnetometers on the vessel
- Continuous gravity data acquisition from Tromsø to Bremerhaven

Description of the research project

Understanding how the lithospheric plates breakup is a fundamental issue in Earth science. It is not known for instance if this key process in plate tectonics is mainly passively driven by continental collapse or if it is actively driven by plume activity. It is also important to better describe the margins crustal structure, as associated magmatism provides initial conditions for sea floor spreading and influences the thermal regime and vertical movements of the sedimentary basins.

Our project is to study the conjugate volcanic margins off mid-Norway and East Greenland by geophysical techniques; this will provide constraints on the crustal structure and on the nature and the temporal sequence of events involved in volcanic margin formation and evolution. This project is divided in 3 parts:

1) Filling existing gaps along the mid-Norwegian margin
2) Collecting geophysical information along crustal transects across the East-Greenland margin
3) Carrying out a 3D detailed geophysical survey over a small area of the East-Greenland margin.

In the latest stages of the project, all the results from East Greenland and Norway will be merged for an integrated interpretation of the entire rift system.

The cruise ARKXIX/4 is the main effort to complete the second part of this project. Although MCS and potential field data exist on most of the Greenland margin, the data density seems insufficient to well comprehend the important lateral variations in structure that can be expected, judging from mid-Nowegian margin studies, where the data density is much higher. Also, refraction lines imaging the lower crust exist only along 5 fjords, south of 76°, with limited extension on the outer margin. Still these relatively scarce data provided important results (e.g. AWI publication Nr 270/1998), including the discovery of a 6km thick underplated magmatic body above the Moho, which extension remains to be precised. These results show the interest there is in pursuing further geophysical investigations along the East-Greenland margin.

By carrying out combined MCS, refraction and magnetic surveys from 73°N to 77°N, this cruise will greatly contribute to improve our knowledge on this region. The new data should help to address crustal and uppermost mantle architecture (crustal thickness variations, rift asymetry, distribution of extrusives, intrusives, magmatic underplating); interplays of sedimentation, tectonic and magmatic activity (prior to, during and subsequent to breakup); along-strike segmentation; and structural inheritance. It will also provide a needed regional framework for the small-scale 3D geophysical survey, which should be carried out in the future.

Experimental set-up

Refraction data were collected from the shore to the oceanic crust along four lines (1476 km)(Tab. 2-2, 2-3). Seismic energy was generated with an array of 5x9L airguns and a 32L airgun and was collected by three components ocean bottom seismometers (OBS), ocean bottom hydrophones (OBH) provided by GEOMAR, and 4 more from AWI. Along in the 3 profiles. 4 to 8 Reftek stations were also deployed on shore by helicopter flights for 3 of the profiles.

- Line 2003200; 15 OBS, 10 OBH; Deployment took 21h; shooting 37h; recovery <40h; total (includes transit) 111h.
- Line 2003300: 14 OBS, 11 OBH, Deployment <30h (including Reftek); shooting 37h; recovery 30h; total 110h.
- Line 2003400: 14 OBS, 15 OBH (including 4 AWI OBH), Deployment 17h; shooting 34h; recovery 25h; total 85h
- Line 2003500: 14 OBS, 16 OBH (including 5 AWI OBH), Deployment 36h; shooting 50h; recovery 40h; total 134h.

Multi-channel seismic data (MCS) were acquired (Tab. 2-1)

- with a 600m streamer for which the seismic source was a tuned airgun cluster with a total volume of 24L along most of the lines (2309 km)
- with a 3000m long streamer for which the seismic source was the array of 5x9L airguns (2062 km)

In total 4371 km MCS data were acquired between the Greenland and Jan Mayen fracture zones. Magnetic data were acquired along WNW-ESE trending lines with the

Scintrex Helimag system attached to the POLARSTERN helicopters. Flight altitude was generally constant near 100 m. In total 14.500 km of lines were acquired in such a way. These data are complemented by those recorded by the POLARSTERN's magnetometer.

During the entire cruise a Bodenseewerke gravimeter KSS31 continuously collected gravity data. The data were stored every ten seconds on hard disc. Harbour measurements were made in Tromsø and Bremerhaven.

Profile	Date/Time Start		Date/Time Term.		Latitude (Start)	Longitude (Start)	Latitude (End)	Longitude (End)	Delay	Shots	Length (km)	Streamer (m)	Sonobuoys	Lead in (m)	Airgun	Chan	dx Chan	ffid Start	ffid End
20030100	14.08.2003	09:29:59	15.08.2003	04:17:58	76,3843	-9,7812	75,7032	-3,0292	2	4479	204	600	None	30	8x3l	96	6,25	2	4480
20030105	15.08.2003	04:29:13	15.08.2003	09:58:57	75,7126	-2,9799	76,1930	-2,0174	2	1308	60	600	None	30	8x3l	96	6,25	4524	5831
20030110	15.08.2003	10:07:57	16.08.2003	02:18:41	76,2022	-2,0422	76,5980	-7,9789	3	3851	169	600	None	30	8x3l	96	6,25	5867	9717
20030115	16.08.2003	02:31:56	16.08.2003	06:35:56	76,6140	-7,9559	76,9026	-6,9909	4	969	41	600	None	30	8x3l	96	6,25	9970	739
20030120	16.08.2003	10.32:00	17.08.2003	4.53:44	76,8953	-6,9957	76,4025	-0,0279	1	4377	191	600	None	30	8x3l	96	6,25	2	4378
20030125	17.08.2003	05:19:44	17.08.2003	09:04:29	76,4364	-0,0032	76,7985	-0,0057	1	894	41	600	None	30	8x3l	96	6,25	4481	5374
20030130	17.08.2003	09:08:29	18.08.2003	01:35:12	76,8017	-0,0281	77,1092	-6,1604	2	3920	166	600	None	30	8x3l	96	6,25	5390	9309
20030140	18.08.2003	01:40:57	18.08.2003	06:57:12	77,1043	-6,1831	77,1003	-4,0540	3	1256	54	600	None	30	8x3l	96	6,25	9332	588
20030145	18.08.2003	07:06:57	19.08.2003	02:38:56	77,0903	-4,0342	75,8021	-8,9873	4	4655	202	600	None	30	8x3l	96	6,25	627	5281
20030150	19.08.2003	02:43:55	19.08.2003	07:40:55	75,7962	-8,9830	75,5029	-7,5116	5	1181	53	600	None	30	8x3l	96	6,25	5301	6481
20030155	19.08.2003	07:46:55	20.08.2003	08:30:38	75,5051	-7,4821	77,1460	-1,5105	6	5893	246	600	None	30	8x3l	96	6,25	6505	2398
20030160	20.08.2003	09:00:00	20.08.2003	12:50:00	77,1579	-1,5260	77,1504	-0,0371	0	915	38	600	None	30	8x3l	96	6,25	2399	3313
20030165	20.08.2003	12:58:45	21.08.2003	14:04:58	77,1429	-0,0165	74,9943	-5,0121	2	5983	276	600	None	30	8x3l	96	6,25	3348	9330
																		shot Start	shot End
20030350	30.08.2003	05:20:15	01.09.2003	03:20:00	73,9082	-10,0451	74,8057	-17,0529	0	5288	235	3000	None	40	5x9l	240	12,5	2	5289
20030355	01.09.2003	04:03:00	01.09.2003	09:07:15	74,7977	-17,0015	75,1973	-16,0101	0	1218	53	3000	None	40	5x9l	240	12,5	125	1342
20030360	01.09.2003	11:00:45	02.09.2003	09:22:00	75,2013	-16,0116	74,2922	-8,7093	0	5302	239	3000	None	40	5x9l	240	12,5	1798	1549
20030365	02.09.2003	10:38:15	02.09.2003	15:17:00	74,2846	-8,6490	74,6633	-7,7437	0	1116	50	3000	None	40	5x9l	240	12,5	2	1117
20030370	02.09.2003	15:57:00	03.09.2003	08:57:30	74,6494	-7,7770	75,6052	-13,0007	0	4083	185	3000	None	40	5x9l	240	12,5	1277	5359
20030375	03.09.2003	09:30:00	03.09.2003	16:44:15	75,5945	-12,9975	76,3014	-13,0002	0	1738	79	3000	None	40	5x9l	240	12,5	18	1755
20030380	03.09.2003	17:35:45	04.09.2003	14:26:00	76,3002	-13,0031	74,9886	-6,9513	0	5002	224	3000	None	40	5x9l	240	12,5	1957	1409
20030385	04.09.2003	15:13:00	04.09.2003	19:25:00	74,9986	-7,0025	75,2997	-6,0016	0	1009	44	3000	None	40	5x9l	240	12,5	1597	2605
20030390	04.09.2003	20:24:00	05.09.2003	20:00:00	75,2926	-5,9664	76,8189	-13,0521	0	5665	258	3000	None	40	5x9l	240	12,5	2840	2955
20030550	16.09.2003	06:29:59	17.09.2003	11:10:00	72,2953	-12,0712	73,1003	-20,8054	0	6881	309	3000	None	40	5x9l	240	12,5	121	1451
20030555	17.09.2003	14:00:00	17.09.2003	18:20:00	73,0801	-20,8429	73,4337	-20,1359	0	1041	46	3000	None	40	5x9l	240	12,5	2128	3168
20030556	17.09.2003	19:20:00	18.09.2003	00:29:00	73,5025	-19,9991	73,9949	-19,7440	0	1257	56	3000	None	40	5x9l	240	12,5	3408	4644
20030560	18.09.2003	01:28:00	19.09.2003	04:00:00	73,9806	-19,8010	73,0712	-11,9597	0	6369	284	3000	None	40	5x9l	240	12,5	4691	5510
																		ffid Start	ffid End
20030585	03.10.2003	17:20:00	04.10.2003	16:56:15	75,8337	-7,3112	74,2011	-12,9942	1	5523	249	600	None	30	8x3l	96	6,25	2	2946
20030586	04.10.2003	17:05:00	05.10.2003	23:57:15	74,1889	-13,0152	71,6355	-17,1698	3	6864	319	600	None	30	8x3l	96	6,25	5589	2803

Tab. 2-1: Shot statistics of the multichannel seismic profiles

Profile	Date/Time Start		Date/Time Term.		Latitude (Start)	Longitude (Start)	Latitude (End)	Longitude (End)	Delay	Shots	Length (km)	Recording Stations	Airgun
20030200	22.08.03	22:46:00	24.08.03	11:30:00	76,7933	-12,9672	74,8027	-4,0099	0	2204	335	25xOBS/OBH	5x9+32
20030300	27.08.03	17:57:00	29.08.03	07:05:00	73,8365	-9,5802	75,0963	-19,9765	0	2228	345	25xOBS/OBH+6xReftek	5x9+32
20030400	08.09.03	04:47:00	09.09.03	15:04:00	74,1925	-21,9474	73,1691	-12,6997	0	2057	322	29xOBS/OBH+4xReftek	5x9+32
20030500	12.09.03	06:23:00	14.09.03	08:32:00	72,2374	-11,4176	73,5489	-24,6630	0	3009	474	30xOBS/OBH+7xReftek	5x9+32

Tab. 2-2: Location information for the seismic refraction profiles

Station		Typ	Extra	Lat		Long		Höhe [m]	Ausbringen [UT]	Einholen [UT]
OBS	201	MBS/3-Bein	Rutsche	75° 01,796	N	5° 07.710	W	-3607	21.08.03, 16:21	24.08.03, 14:55
OBH	202	MBS/1-Bein		75° 05,690	N	5° 24,110	W	-3587	21.08.03, 17:05	24.08.03, 17:40
OBS	203	MBS/3-Bein		75° 09,326	N	5° 39,900	W	-3576	21.08.03, 17:34	24.08.03, 19:06
OBS	204	MBS/3-Bein		75° 13,114	N	5° 55,486	W	-3552	21.08.03, 18:24	24.08.03, 20:12
OBH	205	MLS/1-Bein		75° 16,807	N	6° 11,652	W	-3533	21.08.03, 19:06	24.08.03, 22:30
OBS	206	MBS/3-Bein	Rutsche	75° 20,717	N	6° 27,245	W	-3522	21.08.03, 19:42	24.08.03, 23:30
OBH	207	MBS/1-Bein		75° 24,493	N	6° 43,174	W	-3497	21.08.03, 20:18	25.08.03, 01:27
OBS	208	MBS/3-Bein		75° 28,256	N	6° 59,734	W	-3417	21.08.03, 21:06	25.08.03, 04:06
OBS	209	MBS/3-Bein		75° 32,056	N	7° 15,901	W	-3311	21.08.03, 21:52	25.08.03, 05:54
OBH	210	MBS/1-Bein		75° 35,860	N	7° 32,818	W	-3174	21.08.03, 22:29	25.08.03, 09:10
OBS	211	MBS/3-Bein	Rutsche	75° 39,591	N	7° 48,449	W	-2903	21.08.03, 23:10	25.08.03, 10:58
OBH	212	MLS/1-Bein		75° 43,393	N	8° 04,432	W	-2325	22.08.03, 01:35	25.08.03, 13:45
OBS	213	MBS/3-Bein		75° 47,443	N	8° 21,800	W	-1993	22.08.03, 02:24	25.08.03, 15:58
OBS	214	MBS/3-Bein		75° 51,181	N	8° 38,269	W	-1734	22.08.03, 04:12	25.08.03, 17:14
OBH	215	MBS/1-Bein		75° 55,063	N	8° 54,459	W	-1454	22.08.03, 05:00	25.08.03, 19:13
OBS	216	MBS/3-Bein	Rutsche	75° 58,875	N	9° 11,556	W	-1093	22.08.03, 06:35	25.08.03, 20:46
OBH	217	MLS/1-Bein		76° 02,564	N	9° 27,399	W	-689	22.08.03, 07:26	25.08.03, 21:55
OBS	218	MBS/Walze		76° 06,226	N	9° 44,144	W	-285	22.08.03, 08:07	25.08.03, 22:58
OBS	219	MBS/Walze		76° 09,988	N	10° 00,861	W	-287	22.08.03, 09:16	26.08.03, 00:08
OBH	220	MLS/1-Bein		76° 13,737	N	10° 16,959	W	-297	22.08.03, 09:58	26.08.03, 01:13
OBS	221	MBS/Walze		76° 17,398	N	10° 34,304	W	-300	22.08.03, 10:36	26.08.03, 02:18
OBH	222	MLS/1-Bein		76° 21,168	N	10° 50,454	W	-309	22.08.03, 11:25	26.08.03, 03:26
OBS	223	MBS/Walze		76° 24,855	N	11° 07,248	W	-315	22.08.03, 11:51	26.08.03, 04:21

Station		Typ	Extra	Lat		Long		Höhe [m]	Ausbringen [UT]	Einholen [UT]
OBH	224	MBS/1-Bein		76° 28,490	N	11° 24,860	W	-325	22.08.03, 13:02	26.08.03, 05:22
OBS	225	MBS/Walze		76° 32,216	N	11° 42,167	W	-305	22.08.03, 13:49	26.08.03, 06:25
OBH	301	MBS/3-Bein		73° 56,623	N	10° 19,729	W	-3106	27.08.03, 15:39	31.08.03, 00:03
OBH	302	MBS/1-Bein		73° 58,682	N	10° 35,293	W	-3082	27.08.03, 15:06	30.08.03, 23:20
OBS	303	MBS/3-Bein	Rutsche	74° 00,876	N	10° 52,046	W	-3065	27.08.03, 14:30	30.08.03, 22:23
OBH	304	MBS/1-Bein		74° 03.060	N	11° 08,884	W	-3026	27.08.03, 13:55	30.08.03, 21:20
OBS	305	MBS/3-Bein		74° 05,311	N	11° 25.206	W	-2969	27.08.03, 13:19	30.08.08, 20:12
OBH	306	MLS/1-Bein		74° 07,415	N	11° 41,960	W	-2927	27.08.03, 12:42	30.08.03, 19:30
OBS	307	MBS/3-Bein		74° 09.548	N	11° 58,360	W	-3021	27.08.03, 12:05	30.08.03, 17:25
OBS	308	MBS/3-Bein		74° 11,636	N	12° 14,622	W	-2941	27.08.03, 11:28	30.08.03, 16:40
OBH	309	MBS/1-Bein		74° 13,847	N	12° 31,064	W	-2892	27.08.03, 11:13	30.08.03, 15:05
OBS	310	MBS/3-Bein	Rutsche	74° 15,991	N	12° 48,327	W	-2801	27.08.03, 10:15	30.08.03, 14:11
OBH	311	MBS/1-Bein		74° 18,069	N	13° 04,635	W	-2583	27.08.03, 09:38	30.08.03, 13:23
OBS	312	MBS/3-Bein		74° 20,251	N	13° 21,450	W	-2326	27.08.03, 09:02	30.08.03, 09:14
OBS	313	MBS/3-Bein		74° 22,332	N	13° 37,933	W	-1934	27.08.03, 08:25	30.08.03, 08:28
OBH	314	MLS/1-Bein		74° 24,373	N	13° 53,608	W	-1412	27.08.03, 07:43	30.08.03, 05:47
OBS	315	MBS/3-Bein	Rutsche	74° 26,409	N	14° 09,888	W	-672	27.08.03, 07:07	30.08.03, 04:21
OBH	316	MLS/1-Bein		74° 28,604	N	14° 26,621	W	-268	27.08.03, 06:28	30.08.03, 02:37
OBS	317	MBS/3-Bein	Rutsche	74° 30,75	N	14° 43,31	W	-271	27.08.03, 05:54	30.08.03, 01:49
OBS	318	MBS/Walze		74° 32,81	N	14° 59,73	W	-290	27.08.03, 05:10	30.08.03, 01:00
OBH	319	MLS/1-Bein		74° 34,95	N	15° 16,44	W	-318	27.08.03, 04:36	30.08.03, 00:10
OBS	320	MBS/Walze		74° 37,141	N	15° 33,672	W	-308	27.08.03, 03:59	29.08.03, 23:14
OBH	321	MLS/1-Bein		74° 39,305	N	15° 50,855	W	-315	27.08.03, 03:24	29.08.03, 22:21
OBS	322	MBS/Walze		74° 41,546	N	16° 07,918	W	-334	27.08.03, 02:50	29.08.03, 21:31
OBS	323	MBS/Walze		74° 43,645	N	16° 25,453	W	-369	27.08.03, 02:11	29.08.03, 20:24
OBH	324	MBS/1-Bein		74° 45,791	N	16° 42,542	W	-382	27.08.03, 01:33	29.08.03, 19:32
OBS	325	MBS/Walze		74° 47,971	N	16° 59,683	W	-347	27.08.03, 01:00	29.08.03, 18:04
Reftek	326	Reftek		74° 56.060	N	17° 38.310	W	82	26.08.03,14:13	29.08.03, 15:48
Reftek	327	Reftek		74° 59.150	N	18° 21.300	W	173	26.08.03, 15:33	29.08.03, 14:50
Reftek	328	Reftek		75° 00.050	N	18° 48.220	W	63	26.08.03, 14:07	29.08.03, 08:29
Reftek	329	Reftek		75° 08.180	N	19° 42.050	W	86	26.08.03, 15:12	29.08.03, 09:13
Reftek	330	Reftek		75° 09.310	N	19° 58.000	W	68	26.08.03, 17:57	29.08.03, 09:15
Reftek	331	Reftek		75° 17.120	N	20° 38.010	W	76	26.08.03, 18:54	29.08.03, 08:18
OBH	401	MBS/1-Bein		73° 11,163	N	12° 51,802	W	-2774	07.09.03, 08:10	09.09.03, 20:03

Station		Typ	Extra	Lat		Long		Höhe [m]	Ausbringen [UT]	Einholen [UT]
OBS	402	MBS/3-Bein	Rutsche	73° 11,164	N	13° 07,183	W	-2707	07.09.03, 08:52	09.09.03, 20:55
OBH	403	MLS/1-Bein		73° 11,165	N	13° 23,807	W	-2666	07.09.03, 09:26	09.09.03, 21:51
OBS	404	MBS/3-Bein	Rutsche	73° 11,166	N	13° 39,856	W	-2627	07.09.03, 10:01	09.09.03, 22:35
OBH	405	MBS/1-Bein		73° 11,167	N	13° 55,814	W	-2585	07.09.03, 10:36	10.09.03, 00:05
OBS	406	MBS/3-Bein		73° 11,168	N	14° 12,591	W	-2503	07.09.03, 11:13	10.09.03, 01:00
OBH	407	MLS/1-Bein		73° 11,169	N	14° 29,373	W	-2407	07.09.03, 11:48	10.09.03, 01:49
OBS	408	MBS/3-Bein	Rutsche	73° 11,170	N	14° 45,188	W	-2276	07.09.03, 12:28	10.09.03, 02:31
OBH	409	MBS/1-Bein		73° 11,171	N	15° 01,897	W	-2093	07.09.03, 13:02	10.09.03, 04:03
OBS	410	MBS/3-Bein		73° 11,172	N	15° 18,615	W	-1808	07.09.03, 13:39	10.09.03, 04:36
OBH	411	MLS/3-Bein		73° 11,173	N	15° 35,371	W	-1418	07.09.03, 14:14	10.09.03, 06:02
OBS	412	MBS/3-Bein		73° 11,174	N	15° 51,287	W	-892	07.09.03, 14:49	10.09.03, 07:00
OBH	413	MLS/1-Bein		73° 11,175	N	16° 07,211	W	-286	07.09.03, 15:24	10.09.03, 08:15
OBS	414	MBS/3-Bein		73° 11,176	N	16° 23,004	W	-281	07.09.03, 16:00	10.09.03, 08:58
OBH	415	MLS/1-Bein		73° 11,177	N	16° 39,970	W	-347	07.09.03, 16:35	10.09.03, 09:45
OBS	416	MBS/3-Bein	Rutsche	73° 11,178	N	16° 56,231	W	-293	07.09.03, 17:12	10.09.03, 10:28
OBH	417	MBS/1-Bein		73° 11,179	N	17° 13,142	W	-287	07.09.03, 17:47	10.09.03, 11:15
OBS	418	MBS/3-Bein		73° 11,180	N	17° 29,151	W	-273	07.09.03, 18:25	10.09.03, 11:57
OBH	419	MBS/1-Bein		73° 11,181	N	17° 45,836	W	-288	07.09.03, 18:59	10.09.03, 12:48
OBS	420	MBS/Walze		73° 11,182	N	18° 01,860	W	-300	07.09.03, 19:34	10.09.03, 13:46
OBH	421	MBS/1-Bein		73° 11,183	N	18° 18,834	W	-232	07.09.03, 20:09	10.09.03, 14:36
OBS	422	MBS/Walze		73° 11,184	N	18° 36,097	W	-177	07.09.03, 20:45	10.09.03, 15:21
OBH	423	MBS/1-Bein	AWI	73° 11,185	N	18° 52,646	W	-174	07.09.03, 21:18	10.09.03, 16:20
OBS	424	MBS/Walze		73° 11,186	N	19° 81,767	W	-173	07.09.03, 21:50	10.09.03, 17:07
OBH	425	MBS/1-Bein	AWI	73° 11,187	N	19° 25,465	W	-124	07.09.03, 22:25	10.09.03, 17:24
OBS	426	MBS/Walze		73° 11,188	N	19° 43,074	W	-308	07.09.03, 23:00	10.09.03, 18:45
OBH	427	MBS/1-Bein	AWI	73° 11,189	N	20° 00,089	W	-300	07.09.03, 23:37	10.09.03, 19:29
OBS	428	MBS/Walze		73° 11,190	N	20° 16,652	W	-235	08.09.03, 00:15	10.09.03, 20:20
OBH	429	MBS/1-Bein	AWI	73° 11,191	N	20° 33,054	W	-186	08.09.03, 00:51	10.09.03, 21:05
Reftek	430	Reftek		74° 03.390	N	20° 50.030	W	100	07.09.03, 18:27	10.09.03, 13:20
Reftek	431	Reftek		74° 06.090	N	21° 16.490	W	105	07.09.03, 19:00	10.09.03, 13:52
Reftek	432	Reftek		74° 09.240	N	21° 28.510	W	80	07.09.03, 20:22	10.09.03, 14:21
Reftek	433	Reftek		74° 13.930	N	21° 56.950	W	155	07.09.03, 19:06	10.09.03, 13:40
OBH	501	MBS/1-Bein		72° 18.502	N	12° 11.544	W	-2453	12.09.03, 04:22	16.09.03, 02:21
OBH	502	MBS/1-Bein		72° 21.446	N	12° 43.248	W	-2266	12.09.03, 03:19	16.09.03, 00:55

Station		Typ	Extra	Lat		Long		Höhe [m]	Ausbringen [UT]	Einholen [UT]
OBS	503	MBS/3-Bein		72° 24.434	N	13° 14.695	W	-1802	12.09.03, 02:18	15.09.03, 23:09
OBH	504	MBS/1-Bein		72° 27.325	N	13° 46.691	W	-1244	12.09.03, 01:11	15.09.03, 22:05
OBS	505	MBS/3-Bein		72° 30.293	N	14° 18.658	W	-1749	12.09.03, 00:03	15.09.03, 20:24
OBH	506	MBS/1-Bein		72° 31.778	N	14° 34.854	W	-1831	11.09.03, 23:25	15.09.03, 19:22
OBS	507	MBS/3-Bein	Rutsche	72° 33.298	N	14° 50.890	W	-1937	11.09.03, 22:52	15.09.03, 18:42
OBH	508	MLS/1-Bein		72° 34.794	N	15° 07.061	W	-2004	11.09.03, 22:17	15.09.03, 17:52
OBS	509	MBS/3-Bein	Rutsche	72° 36.242	N	15° 23.300	W	-2005	11.09.03, 21:43	15.09.03, 16:15
OBH	510	MBS/1-Bein		72° 37.681	N	15° 39.433	W	-1948	11.09.03, 21:08	15.09.03, 14:13
OBS	511	MBS/3-Bein	Rutsche	72° 39.089	N	15° 55.494	W	-1847	11.09.03, 20:35	15.09.03, 12:50
OBH	512	MBS/1-Bein		72° 40.542	N	16° 11.701	W	-1659	11.09.03, 19:58	15.09.03, 11:59
OBS	513	MBS/3-Bein	Rutsche	72° 42.015	N	16° 27.492	W	-1268	11.09.03, 19:22	15.09.03, 09:19
OBH	514	MLS/1-Bein		72° 43.442	N	16° 43.409	W	-582	11.09.03, 18:40	15.09.03, 07:49
OBS	515	MBS/3-Bein		72° 45.054	N	16° 59.598	W	-306	11.09.03, 18:05	15.09.03, 06:50
OBH	516	MLS/3-Bein		72° 46.583	N	17° 15.850	W	-314	11.09.03, 17:17	15.09.03, 06:02
OBS	517	MBS/3-Bein		72° 48.077	N	17° 31.893	W	-348	11.09.03, 16:41	15.09.03, 05:15
OBH	518	MLS/1-Bein		72° 49.644	N	17° 48.438	W	-361	11.09.03, 16:05	15.09.03, 04:24
OBS	519	MBS/3-Bein		72° 51.227	N	18° 04.733	W	-324	11.09.03, 15:29	15.09.03, 03:35
OBH	520	MLS/1-Bein		72° 52.760	N	18° 21.027	W	-309	11.09.03, 14:54	15.09.03, 02:46
OBS	521	MBS/Walze		72° 54.221	N	18° 37.140	W	-304	11.09.03, 14:16	15.09.03, 01:55
OBH	522	MBS/1-Bein	AWI	72° 55.814	N	18° 53.574	W	-287	11.09.03, 13:42	15.09.03, 01:02
OBS	523	MBS/Walze		72° 57.262	N	19° 09.838	W	-224	11.09.03, 12:51	15.09.03, 00:11
OBH	524	MBS/1-Bein	AWI	72° 58.736	N	19° 26.093	W	-202	11.09.03, 12:12	14.09.03, 23:23
OBS	525	MBS/Walze		73° 00.296	N	19° 42.565	W	-185	11.09.03, 11:34	14.09.03, 22:36
OBH	526	MBS/1-Bein	AWI	73° 01.718	N	19° 58.865	W	-194	11.09.03, 10:59	14.09.03, 21:47
OBS	527	MBS/Walze		73° 03.168	N	20° 15.065	W	-186	11.09.03, 10:25	14.09.03, 20:59
OBH	528	MBS/1-Bein	AWI	73° 04.661	N	20° 31.433	W	-153	11.09.03, 09:51	14.09.03, 20:05
OBS	529	MBS/Walze		73° 06.054	N	20° 47.922	W	-130	11.09.03, 09:07	14.09.03, 19:18
Reftek	530	Reftek		73° 07.010	N	21° 18.060	W	293	11.09.03, 06:06	14.09.03, 12:00
OBH	531	MBS/1-Bein	AWI	73° 11.529	N	21° 49.410	W	-347	11.09.03, 07:15	14.09.03, 14:14
Reftek	532	Reftek		73° 15.390	N	22° 11.280	W	81	11.09.03, 08:41	14.09.03, 12:13
Reftek	533	Reftek		73° 14.440	N	23° 15.530	W	100	11.09.03, 07:24	14.09.03, 11:40
Reftek	534	Reftek		73° 20.760	N	23° 44.030	W	55	10.09.03, 18:40	14.09.03, 09:50
Reftek	535	Reftek		73° 23.350	N	24° 13.210	W	83	11.09.03, 06:06	14.09.03, 09:22
Reftek	536	Reftek		73° 24.990	N	24° 32.320	W	197	10.09.03, 18:14	14.09.03, 10:10

Station		Typ	Extra	Lat		Long		Höhe [m]	Ausbringen [UT]	Einholen [UT]
Reftek	537	Reftek		73° 33.430	N	24° 43.850	W	100	10.09.03, 17:12	14.09.03, 09:00

Tab. 2-3: Locations of the ocean bottom and land stations

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
15.08.2003	1	13:38:36	13:38:43	28	76.30 N	3.59 W	76.38 N	4.34 W	S3081513.T53	S3081513.B38	0308151.raw
		13:53:41	14:13:45	29						S3081513.B53	
		14:13:45	15:00:44	3082						S3081514.B13	
		15:00:44	15:27:54	3083						S3081514.B00	
		15:27:54	15:28:14	5971						S3081515.B27	
		15:28:14	15:32:29	5972						S3081515.B28	
		15:32:29	15:42:12	6517						S3081515.B32	
28.08.2003	1	12:05:54	12:26:42	5	79.18 N	1.14 W	79.22 N	1.32 W	S2083109.T49	S3082812.B05	0208311.raw
		12:26:42	12:59:05	6						S3082812.B26	
		12:59:05	12:59:12	2200						S3082812.B59	
		12:59:12	12:59:15	2208						S3082812.B5J	
30.08.2003	1	08:48:45	09:04:26	941	74.38 N	13.65 W	74.46 N	13.49 W	S3083008.T48	S3083008.B48	0308301.raw
		09:04:26	09:07:53	1147						S3083009.B04	
		09:07:53	09:07:55	1148						S3083009.B07	
		09:07:55	09:20:08	1880						S3083009.B0H	
		09:20:08	09:34:37	2748						S3083009.B20	
		09:34:37	09:52:30	3820						S3083009.B34	
		09:55:33	09:55:37	4	74.40 N	13.54 W	74.32 N	13.43 W	S3083009.T55	S3083009.B55	0308302.raw
		09:55:37	09:55:40	6						S3083009.B5F	
		09:55:40	10:08:43	788						S3083009.B5W	
		10:08:43	10:27:02	1886						S3083010.B08	
	2	11:15:24	11:15:27	3	74.29 N	13.37 W	74.28 N	13.00 W	S3083011.T15	S3083011.B15	0308303.raw
		11:15:27	11:15:32	7						S3083011.B1F	
		11:15:32	11:15:41	16						S3083011.B1W	
		11:15:50	11:16:00	27						S3083011.B1H	
		11:16:00	11:16:33	58						S3083011.B16	
		11:16:38	11:16:42	62						S3083011.B1G	
		11:16:50	11:41:11	1523						S3083011.B1Y	
		11:41:11	11:41:14	1525						S3083011.B41	
		11:41:14	11:41:16	1526						S3083011.B4B	
		11:41:16	12:08:43	3172						S3083011.B4S	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		12:08:43	12:15:00	3548						S3083012.B08	
08.09.2003	1	11:56:38	12:11:41	903	74.00 N	19.94 W	74.18 N	20.09 W	S3090811.T51	S3090811.B56	0309081.raw
		12:11:41	12:11:44	905						S3090812.B11	
		12:11:44	12:11:46	906						S3090812.B1B	
		12:11:46	12:14:09	1048						S3090812.B1S	
		12:14:09	12:38:47	2525						S3090812.B14	
		12:38:47	12:39:44	2581						S3090812.B38	
		12:39:44	13:04:12	4048						S3090812.B39	
		13:04:12	13:04:52	4088						S3090813.B04	
		13:04:52	13:05:21	4115						S3090813.B0E	
		13:05:21	13:05:51	4144						S3090813.B05	
		13:05:51	13:28:49	5522						S3090813.B0F	
		13:31:13	14:10:14	2341	74.22 N	20.09 W	73.95 N	19.29 W	S3090813.T30	S3090813.B31	0308092.raw
	2	14:43:27	14:43:32	5	73.90 N	19.27 W	73.91 N	19.17 W	S3090814.T43	S3090814.B43	03080906.raw
		14:43:32	14:43:37	9						S3090814.B4D	
		14:43:37	14:56:11	762						S3090814.B4U	
		14:56:11	14:57:00	810						S3090814.B56	
		14:57:00	14:57:02	811						S3090814.B57	
		14:57:02	15:07:13	1421						S3090814.B5H	
11.09.2003	1	12:48:22	12:55:36	434	72.95 N	19.16 W	72.96 N	19.09 W	S3091112.T40	S3091112.B48	0309111.raw
		12:55:36	12:55:36	1623						S3091112.B55	
12.09.2003	1	10:43:02	10:44:02	60	72.34 N	12.51 W	72.34 N	12.47 W	S3091210.T36	S3091210.B43	0309121.raw
		10:46:05	11:31:28	1	72.33 N	12.56 W	72.38 N	12.95 W	S3091210.T45	S3091210.B46	0309122.raw
		11:31:28	11:31:46	2724						S3091211.B31	
		11:31:46	11:35:31	2741						S3091211.B3B	
		11:35:31	12:48:41	2965						S3091211.B35	
14.09.2003	1	16:28:50	17:25:56	3426	73.20 N	22.18 W	73.17 N	21.59 W	S3091416.T28	S3091416.B28	0309141.raw
		17:26:07	18:27:48	7127						S3091417.B26	
15.09.2003	1	08:43:18	09:10:13	1615	72.71 N	16.61 W	72.71 N	16.48 W	S3091508.T37	S3091508.B4w	0309151.raw
		09:10:13	09:43:08	3589						S3091509.B10	
	2	12:18:24	12:28:04	580	72.77 N	16.85 W	72.76 N	16.24 W	S3091512.T16	S3091512.B1Z	0309152.raw
		12:28:04	12:28:07	582						S3091512.B28	
		12:28:07	12:28:08	583						S3091512.B2I	
		12:28:08	12:39:26	1259						S3091512.B2Z	
		12:39:26	12:39:28	1260						S3091512.B39	
		12:39:28	12:39:30	1261						S3091512.B3J	
		12:41:04	13:22:40	2496	72.78 N	16.24 W	72.64 N	15.60 W	S3091512.T40	S3091512.B41	0309153.raw
		13:22:40	14:29:42	6517						S3091513.B22	
	3	15:30:53	15:31:00	7	72.63 N	15.79 W	72.55 N	15.12 W	S3091515.T30	S3091515.B30	0309154.raw
		15:31:00	15:31:05	11						S3091515.B31	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		15:31:05	15:31:10	15						S3091515.B3B	
		15:31:10	15:31:15	19						S3091515.B3S	
		15:31:15	16:23:09	3132						S3091515.B3d	
		16:23:09	17:36:52	7554						S3091516.B23	
		17:36:52	17:49:45	8326						S3091517.B36	
16.09.2003	1	08:40:55	08:40:59	4	72.36N	12.81 W	72.88 N	16.55 W	S3091608.T40	S3091608.B40	0309161.raw
		08:40:59	08:41:02	6						S3091608.B41	
		08:41:02	08:41:05	8						S3091608.B4B	
		08:41:05	08:41:07	9						S3091608.B4S	
		08:41:07	08:41:13	14						S3091608.B4d	
		08:41:13	09:45:55	3895						S3091608.B4u	
		09:45:55	09:45:57	3896						S3091609.B45	
		09:45:57	09:45:59	3897						S3091609.B4F	
		09:45:59	09:52:32	4289						S3091609.B46	
		09:52:47	10:46:14	3207	72.88 N	16.50 W	72.42 N	13.27 W	S3091609.T52	S3091609.B52	0309162.raw
		10:46:14	10:46:19	3211						S3091610.B46	
		10:46:19	11:00:31	4062						S3091610.B4G	
	2	11:21:25	11:59:15	2270	72.35 N	12.93 W	72.47 N	14.16 W	S3091611.T20	S3091611.B2B	0309163.raw
		11:59:38	12:30:13	4105						S3091611.B59	
		12:30:13	13:15:31	6822						S3091612.B30	
	3	13:26:20	14:26:55	3635	72.48 N	14.22 W	72.55 N	14.73 W	S3091613.T25	S3091613.B26	0309164.raw
		14:26:55	15:20:17	6836						S3091614.B26	
17.09.2003	1	09:03:12	09:03:17	5	73.05 N	20.09 W	73.08 N	20.83 W	S3091709.T02	S3091709.B03	0309171.raw
		09:03:17	09:03:20	7						S3091709.B0D	
		09:03:20	09:03:25	11						S3091709.B0U	
		09:03:25	09:19:52	997						S3091709.B0f	
		09:19:52	09:57:33	3257						S3091709.B19	
		09:57:33	10:23:36	4820						S3091709.B57	
		10:23:36	10:23:42	4824						S3091710.B23	
		10:23:42	10:23:47	4828						S3091710.B2D	
		10:23:47	10:35:28	5528						S3091710.B2U	
		10:35:28	11:12:23	7742						S3091710.B35	
	2	11:25:07	11:37:57	770	73.11 N	20.87 W	73.02 N	20.84 W	S3091711.T24	S3091711.B25	0309172.raw
		11:37:57	11:38:00	772						S3091711.B37	
		11:38:00	11:38:04	775						S3091711.B38	
		11:38:04	11:38:08	778						S3091711.B3I	
		11:38:08	12:08:58	2627						S3091711.B3Z	
		12:08:58	13:03:46	5914						S3091712.B08	
		13:03:46	13:03:51	5918						S3091713.B03	
		13:03:51	13:03:54	5920						S3091713.B0D	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		13:03:54	13:38:04	7969						S3091713.B0U	
	3	13:54:47	13:54:51	4	73.09 N	20.85 W	73.29 N	20.73 W	S3091713.T54	S3091713.B54	0309173.raw
		13:54:51	13:54:58	10						S3091713.B5E	
		13:54:58	13:55:00	11						S3091713.B5V	
		13:55:00	13:55:01	12						S3091713.B55	
		13:55:01	13:55:06	15						S3091713.B5F	
		13:55:06	13:55:08	16						S3091713.B5W	
		13:55:08	13:55:11	18						S3091713.B5h	
		13:55:11	14:16:25	1291						S3091713.B5y	
		14:16:25	15:13:27	4712						S3091714.B16	
		15:13:27	15:13:30	4714						S3091715.B13	
		15:13:30	15:13:33	4717						S3091715.B1D	
		15:13:33	16:02:12	7634						S3091715.B1U	
	4	16:15:52	17:13:09	3437	73.29 N	20.59 W	73.42 N	20.30 W	S3091716.T14	S3091716.B15	0309174.raw
		17:13:09	18:17:52	7319						S3091717.B13	
18.09.2003	1	07:58:24	08:13:28	904	73.74 N	17.69 W	73.94 N	18.35 W	S3091807.T55	S3091807.B58	0309181.raw
		08:13:28	08:31:43	1998						S3091808.B13	
		08:31:43	08:49:53	3087						S3091808.B31	
		08:49:53	08:54:40	3373						S3091808.B49	
		08:55:04	09:08:33	809	73.94 N	18.32 W	73.69 N	16.96 W	S3091808.T54	S3091808.B55	0309182.raw
		09:08:33	09:29:19	2054						S3091809.B08	
		09:29:19	10:07:45	4359						S3091809.B29	
	2	10:20:15	10:20:24	9	73.67 N	16.96 W	73.56 N	16.17 W	S3091810.T20	S3091810.B20	0309183.raw
		10:20:24	10:20:26	10						S3091810.B2A	
		10:20:26	10:20:29	12						S3091810.B2R	
		10:20:29	10:20:33	15						S3091810.B2c	
		10:20:33	10:20:35	16						S3091810.B2t	
		10:20:35	10:33:49	809						S3091810.B2U	
		10:33:49	11:00:14	2393						S3091810.B33	
		11:00:14	11:22:10	3708						S3091811.B00	
		11:22:10	11:45:37	5114						S3091811.B22	
		11:45:37	12:07:38	6434						S3091811.B45	
		12:07:38	12:07:42	6437						S3091812.B07	
		12:07:42	12:07:45	6439						S3091812.B0H	
		12:07:45	12:07:47	6440						S3091812.B0Y	
		12:07:47	12:35:21	8093						S3091812.B0j	
	3	12:47:03	12:47:12	9	73.58 N	16.32 W	73.56 N	15.91 W	S3091812.T46	S3091812.B4A	0309184.raw
		12:47:12	12:47:16	12						S3091812.B4j	
		12:47:16	12:47:18	13						S3091812.B4B	
		12:47:18	12:47:20	14						S3091812.B4D	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		12:47:20	12:47:23	16						S3091812.B4i	
		12:47:23	13:26:41	2373						S3091812.B4C	
		13:26:41	13:52:00	3891						S3091813.B26	
		13:52:00	14:19:36	5546						S3091813.B52	
		14:19:36	14:44:50	7059						S3091814.B19	
		14:44:50	14:53:12	7560						S3091814.B44	
	4	15:09:04	15:47:33	2309	73.49 N	15.71 W	73.49 N	15.30 W	S3091815.T08	S3091815.B09	0309185.raw
		15:47:33	15:50:09	2464						S3091815.B47	
		15:50:09	15:50:11	2465						S3091815.B50	
		15:50:11	16:38:40	5373						S3091815.B5A	
		16:38:40	16:47:16	5888						S3091816.B38	
		16:47:16	16:56:00	6411						S3091816.B47	
		16:56:00	17:00:01	6652						S3091816.B56	
		17:00:01	17:00:04	6653						S3091817.B00	
		17:00:04	17:00:06	6654						S3091817.B0A	
		17:00:06	17:00:07	6655						S3091817.B0R	
		17:00:07	17:13:19	7445						S3091817.B0c	
22.09.2003	1	08:44:51	09:01:41	1010	78.84 N	7.96 E	78.86 N	7.73 E	S3092208.T39	S3092208.B44	0309221.raw
		09:02:47	09:34:03	2886						S2092808.B2F	
		09:34:03	09:56:31	4233						S3092209.B34	
		09:56:31	10:35:11	6552						S3092209.B56	
		10:35:11	11:06:19	8419						S3092210.B35	
	2	12:00:15	12:06:29	374	78.86 N	7.01 E	78.85 N	6.00 E	S3092211.T58	S3092212.B00	0309222.raw
		12:06:29	12:06:33	377						S3092212.B06	
		12:06:33	12:06:36	379						S3092212.B0G	
		12:06:36	12:07:42	444						S3092212.B0X	
		12:07:42	13:02:53	3754						S3092212.B07	
		13:02:53	13:02:56	3756						S3092213.B02	
		13:02:56	13:02:59	3758						S3092213.B0C	
		13:02:59	13:58:31	7089						S3092213.B03	
		13:58:31	13:58:33	7090						S3092213.B58	
		13:58:33	13:58:35	7091						S3092213.B5I	
		13:58:35	14:10:12	7787						S3092213.B5Z	
	3	14:23:55	14:23:59	4	78.87 N	6.89 E	78.82 N	6.06 E	S3092214.T23	S3092214.B23	0309223.raw
		14:23:59	14:24:01	5						S3092214.B24	
		14:24:01	14:24:05	8						S3092214.B2E	
		14:24:05	15:31:45	4067						S3092214.B2V	
		15:31:45	16:22:56	7137						S3092215.B31	
		16:22:56	16:30:44	7604						S3092216.B22	
		16:30:44	16:40:05	8164						S3092216.B30	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
23.09.2003	1	08:10:39	08:10:42	3	78.87 N	4.94 E	78.88 N	4.27 E	S3092308.T10	S3092308.B10	0309231.raw
		08:10:42	08:10:46	6						S3092308.B1A	
		08:10:46	08:10:50	9						S3092308.B1R	
		08:10:50	08:28:28	1066						S3092308.B1c	
		08:28:28	08:28:32	1069						S3092308.B28	
		08:28:32	08:28:34	1070						S3092308.B2I	
		08:28:34	09:25:30	4485						S3092308.B2Z	
		09:25:30	10:17:16	7590						S3092309.B25	
	2	10:30:14	10:30:17	3	78.86 N	4.03 E	78.90 N	2.94 E	S3092310.T29	S3092310.B3R	0309232.raw
		10:30:17	11:04:22	2047						S3092310.B3c	
		11:04:22	11:04:23	2048						S3092311.B04	
		11:04:23	11:04:25	2049						S3092311.B0E	
		11:04:25	11:04:30	2052						S3092311.B0V	
		11:04:30	11:04:32	2053						S3092311.B0g	
		11:11:32	11:04:36	2054						S3092311.B0x	
		11:11:36	11:39:07	2057						S3092311.B0š	
		11:39:07	12:04:37	4127						S3092311.B39	
		12:04:37	12:04:39	5656						S3092312.B04	
		12:04:39	12:04:42	5657						S3092312.B0E	
		12:04:42	12:04:44	5659						S3092312.B0V	
		12:04:44	12:04:46	5660						S3092312.B0G	
		12:04:46	12:04:48	5661						S3092312.B0X	
		12:04:48	12:04:51	5662						S3092312.B01	
		12:04:51	12:04:54	5664						S3092312.B02	
		12:04:54	12:37:32	5666						S3092312.B03	
	3	12:57:58	13:14:11	973	78.96 N	2.45 E	78.91 N	2.05 E	S3092312.T55	S3092312.B57	0309233.raw
		13:18:21	13:27:03	1495						S3092313.B18	
		13:27:19	13:40:14	2270						S3092313.B27	
		13:40:14	14:11:11	4126						S3092313.B40	
		14:11:11	14:42:02	5976						S3092314.B11	
		14:42:02	15:08:37	7570						S3092314.B42	
26.09.2003	1	08:41:46	09:05:32	1426	78.82 N	8.70 E	78.81 N	8.23 E	S3092608.T41	S3092608.B41	0309261.raw
		09:05:32	09:41:28	3581						S3092609.B05	
		09:41:28	10:20:27	5919						S3092609.B41	
		10:20:27	10:20:30	5921						S3092610.B20	
		10:20:30	10:20:32	5922						S3092610.B2A	
		10:20:32	10:21:06	5955						S3092610.B2R	
		10:21:06	10:21:10	5958						S3092610.B21	
		10:21:10	10:46:03	7450						S3092610.B2B	
		10:46:03	10:46:08	7454						S3092610.B46	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		10:46:08	10:46:10	7455						S3092610.B4G	
		10:46:10	10:46:13	7457						S3092610.B4X	
		10:46:13	10:46:15	7458						S3092610.B4i	
		10:46:15	10:46:17	7459						S3092610.B4z	
		10:46:17	10:46:19	7460						S3092610.B4B	
		10:46:19	11:06:40	8680						S3092610.B4A	
		11:06:42	11:07:08	8706						S3092611.B06	
		11:07:09	11:07:16	8713						S3092611.B07	
	2	11:28:28	11:28:32	4	78.88 N	8.25 E	78.85 N	7.87 E	S3092611.T27	S3092611.B28	0309262.raw
		11:28:32	11:28:34	5						S3092611.B2I	
		11:28:34	11:28:36	6						S3092611.B2Z	
		11:28:36	12:08:59	2428						S3092611.B2k	
		12:08:59	13:09:05	6033						S3092612.B09	
		13:09:05	13:09:21	6048						S3092613.B09	
		13:09:21	13:10:00	6086						S3092613.B0J	
		13:10:00	13:36:04	7649						S3092613.B10	
	3	13:49:20	14:18:52	1772	78.84 N	7.59 E	78.83 N	7.01 E	S3092613.T48	S3092613.B49	0309263.raw
		14:18:52	14:37:37	2896						S3092614.B18	
		14:37:37	15:37:47	6505						S3092614.B37	
27.09.2003	1	08:14:46	08:14:49	3	78.85 N	4.43 E	78.82 N	4.62 E	S3092708.T14	S3092708.B14	0309271.raw
		08:14:49	08:14:51	4						S3092708.B1E	
		08:14:51	08:14:53	5						S3092708.B1V	
		08:14:53	08:14:55	6						S3092708.B1g	
		08:14:55	08:14:57	7						S3092708.B1x	
		08:14:57	09:14:28	3577						S3092708.B1U	
		09:14:28	09:16:19	3687						S3092709.B14	
		09:16:19	09:25:05	4212						S3092709.B16	
		09:25:05	10:23:42	7728						S3092709.B25	
		10:23:42	10:23:44	7729						S3092710.B23	
		10:23:44	10:23:46	7730						S3092710.B2D	
		10:23:46	10:43:35	8918						S3092710.B2U	
	2	11:02:37	11:42:41	2404	78.83 N	5.09 E	78.85 N	5.65 E	S3092711.T01	S3092711.B02	0309272.raw
		11:42:41	11:42:46	2408						S3092711.B42	
		11:42:46	13:07:12	7473						S3092711.B4C	
28.09.2003	1	09:00:44	09:00:49	6	79.47 N	2.02 E	78.83 N	1.62 E	S309289.T00	S3092809.B0h	0309281.raw
		09:00:49	09:00:53	9						S3092809.B0i	
		09:00:53	09:00:58	12						S3092809.B0j	
		09:00:58	09:01:03	16						S3092809.B0k	
		09:01:03	09:01:06	18						S3092809.B01	
		09:01:06	09:27:15	1586						S3092809.B0B	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		09:27:15	09:27:17	1587						S3092809.B27	
		09:27:17	09:27:20	1589						S3092809.B2H	
		09:27:20	09:47:24	2792						S3092809.B2Y	
		09:47:24	09:47:26	2793						S3092809.B47	
		09:47:26	09:47:28	2794						S3092809.B4H	
		09:47:28	09:47:39	2804						S3092809.B4Y	
		09:47:45	10:13:00	4321						S3092809.B4n	
		10:13:00	10:48:41	6461						S3092810.B13	
	2	11:04:55	11:05:02	8	78.85 N	1.62 E	78.89 N	0.64 E	S3092811.T04	S3092811.B04	0309282.raw
		11:05:02	11:40:22	2126						S3092811.B05	
		11:40:22	11:40:24	2127						S3092811.B40	
		11:40:24	12:05:42	3644						S3092811.B4A	
		12:05:42	12:05:45	3646						S3092812.B05	
		12:05:45	12:05:48	3648						S3092812.B0F	
		12:05:48	12:26:57	4916						S3092812.B0W	
		12:26:57	12:27:00	4918						S3092812.B26	
		12:27:00	12:54:53	6590						S3092812.B27	
		12:54:53	13:23:24	8300						S3092812.B54	
	3	13:37:07	13:52:46	939	78.83 N	0.31 E	78.99 N	1.53 E	S3092813.T37	S3092813.B37	0309283.raw
		13:53:02	13:54:24	1021						S3092813.B53	
		13:54:38	14:22:11	1653	79.00 N	1.54 E	78.87 N	1.19 E	S3092813.T54	S3092813.B54	0309284.raw
		14:22:11	14:22:13	1654						S3092814.B22	
		14:22:13	14:52:46	3486						S3092814.B2C	
		14:52:46	15:14:13	4772						S3092814.B52	
		15:14:13	15:14:15	4773						S3092815.B14	
		15:14:15	15:39:27	6284						S3092815.B1E	
		15:39:27	16:01:22	7598						S3092815.B39	
29.09.2003	1	07:59:10	08:30:51	1901	78.83 N	0.39 E	78.84 N	0.16 W	S3092907.T48	S3092907.B5J	0309291.raw
		08:30:51	08:30:54	1903						S3092908.B30	
		08:30:54	08:30:56	1904						S3092908.B3A	
		08:30:56	09:15:50	4597						S3092908.B3R	
		09:15:50	09:15:52	4598						S3092909.B15	
		09:15:52	10:27:22	8887						S3092909.B1F	
	2	10:51:10	11:58:51	4061	78.91 N	0.41 W	78.85 N	0.57 W	S3092910.T50	S3092910.B51	0309292.raw
		11:58:51	13:16:38	7827						S3092911.B58	
		13:16:39	13:16:45	8733						S3092913.B16	
	3	13:30:39	13:30:42	3	78.85 N	0.80 W	78.96 N	0.46 W	S3092913.T30	S3092913.B30	0309293.raw
		13:30:42	13:30:47	7						S3092913.B3A	
		13:30:47	14:18:16	2855						S3092913.B3R	
		14:18:16	14:18:21	2859						S3092914.B18	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		14:18:21	14:18:27	2864						S3092914.B1I	
		14:18:27	14:18:34	2870						S3092914.B1Z	
		14:18:34	14:37:45	4020						S3092914.B1k	
		14:37:45	14:50:55	4809						S3092914.B1k	
		14:50:55	14:51:02	4815						S3092914.B50	
		14:51:02	14:51:11	4823						S3092914.B51	
		14:51:11	15:03:55	5586						S3092914.B5B	
		15:03:55	15:49:24	8314						S3092915.B03	
30.09.2003	1	08:02:03	08:02:07	4	78.86 N	2.94 W	78.87 N	2.08 W	S3093008.T01	S3093008.B02	0309301.raw
		08:02:07	08:02:11	7						S3093008.B0C	
		08:02:11	08:02:13	8						S3093008.B0T	
		08:02:13	08:02:18	12						S3093008.B0e	
		08:02:18	08:02:20	13						S3093008.B0v	
		08:02:20	08:02:22	14						S3093008.B0a	
		08:02:24	08:02:26	16						S3093008.B0i	
		08:02:26	08:02:28	17						S3093008.B0d	
		08:02:28	08:02:31	20						S3093008.B0h	
		08:02:31	08:02:35	22						S3093008.B0f	
		08:02:35	08:42:16	2402						S3093008.B0g	
		08:42:16	08:42:18	2403						S3093008.B42	
		08:42:18	08:42:21	2405						S3093008.B4C	
		08:42:21	08:58:02	3345						S3093008.B4T	
		08:58:02	08:58:04	3346						S3093008.B58	
		08:58:04	09:13:41	4282						S3093008.B5I	
		09:13:41	10:01:06	7126						S3093009.B13	
		10:01:06	10:01:08	7127						S3093010.B01	
		10:01:08	10:32:21	8999						S3093010.B0B	
	2	10:46:25	11:21:31	2106	78.86 N	1.87 W	78.86 N	1.96W	S3093010.T45	S3093010.B46	0309302.raw
		11:21:31	12:24:55	5909						S3093011.B21	
		12:24:55	12:32:34	6367						S3093012.B24	
		12:32:34	12:32:36	6368						S3093012.B32	
		12:32:36	13:07:29	8461						S3093012.B3C	
02.10.2003	1	07:57:57	08:39:25	2488	78.84 N	2.75 W	78.87 N	3.67 W	S3100207.T48	S3100207.B57	0310021.raw
		08:39:25	09:27:30	5372						S3100208.B39	
		09:27:30	10:22:42	8683						S3100209.B27	
	2	10:35:46	10:35:48	2	78.85 N	4.03 W	78.77 N	4.79 W	S3100210.T35	S3100210.B35	0310022.raw
		10:35:48	10:35:51	4						S3100210.B3F	
		10:35:51	10:35:54	6						S3100210.B3W	
		10:35:54	10:35:56	7						S3100210.B3h	
		10:35:56	10:35:58	9						S3100210.B3y	

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		10:35:58	10:36:01	10						S3100210.B36	
		10:36:01	10:36:04	12						S3100210.B3G	
		10:36:04	10:36:06	13						S3100210.B3X	
		10:36:06	10:36:09	15						S3100210.B3i	
		10:36:09	11:16:41	2446						S3100210.B3z	
		11:16:41	11:17:00	2464						S3100211.B16	
		11:17:00	11:17:02	2465						S3100211.B17	
		11:17:02	12:04:33	5315						S3100211.B1H	
		12:04:33	12:30:46	6887						S3100212.B04	
		12:30:46	13:15:53	9593						S3100212.B30	
	3	13:34:50	13:35:15	25	78.89N	4.12 W	78.54 N	4.61 W	S3100213.T34	S3100213.B34	0310023.raw
		13:35:17	13:35:22	30						S3100213.B35	
		13:35:25	13:35:34	39						S3100213.B3F	
		13:35:55	13:35:59	43						S3100213.B3W	
		13:35:59	13:36:02	46						S3100213.B36	
		13:36:02	13:36:06	48						S3100213.B3G	
		13:36:06	13:36:10	51						S3100213.B3X	
		13:36:10	13:36:14	54						S3100213.B3i	
		13:36:14	13:36:17	56						S3100213.B3z	
		13:36:17	13:36:22	60						S3100213.B3a	
		13:36:22	13:36:25	62						S3100213.B3n	
		13:36:25	13:36:27	64						S3100213.B3b	
		13:36:27	13:36:31	66						S3100213.B3c	
		13:36:31	13:36:34	68						S3100213.B3d	
		13:36:34	13:36:37	70						S3100213.B3e	
		13:37:00	13:37:08	78						S3100213.B31	
		13:37:08	13:37:11	80						S3100213.B32	
		13:37:11	13:37:13	81						S3100213.B33	
		13:37:13	14:32:57	3424						S3100213.B3m	
		14:32:57	14:33:00	3426						S3100214.B32	
		14:33:00	14:33:03	3428						S3100214.B33	
		14:33:03	15:55:25	8369						S3100214.B3D	
05.10.2003	1	08:01:19	08:01:22	3	72.91 N	15.26 W	72.73 N	15.61 W	S3100508.T01	S3100508.B01	0310051.raw
		08:01:22	08:01:25	5						S3100508.B0B	
		08:01:25	08:36:34	2113						S3100508.B0S	
		08:36:34	09:48:02	6401						S3100508.B36	
		09:48:02	10:35:00	9217						S3100509.B48	
		10:35:01	10:35:24	9240						S3100510.B35	
		10:35:25	10:35:34	9249						S3100510.B3F	
	2	12:05:30	12:30:18	1488	72.63 N	15.87 W	72.50 N	16.08 W	S3100512.T05	S3100512.B05	0310052.raw

Date	Flight	Start Time	End Time	No of Fid	Start Coordinates		End Coordinates		Text File	Binary File	Data File
		12:30:18	12:30:22	1491						S3100512.B30	
		12:30:22	12:30:25	1493						S3100512.B3A	
		12:30:25	13:11:08	3935						S3100512.B3R	
		13:11:08	13:39:54	5660						S3100513.B11	
		13:39:54	13:39:59	5665						S3100513.B39	
		13:39:59	13:40:05	5669						S3100513.B40	
		13:40:05	13:40:11	5674						S3100513.B4A	
		13:40:11	13:40:16	5678						S3100513.B4R	
		13:40:16	13:40:22	5683						S3100513.B4c	
		13:40:22	13:40:29	5889						S3100513.B4t	
		13:40:29	14:19:30	8029						S3100513.B4U	
	3	14:37:29	15:28:05	3036	72.41 N	16.13 W	72.27 N	16.38 W	S3100514.T37	S3100514.B37	0310053.raw
		15:28:05	16:47:11	7781						S3100515.B28	

Tab. 2-4: Information on the helicopter borne magnetic survey

Nr.	Date	Lon	Lat	Type
1	11.08.2003	18° 49.8' E	70° 33.2' N	1 circle cw
2	23.08.2003	18° 10.5' W	76° 07.1' N	1 circle cw, 1 circle ccw
3	19.09.2003	11° 59.0' W	73° 11.7' N	1 circle cw, 1 circle ccw
4	21.09.2003	11° 59.0' E	78° 02.7' N	1 circle cw, 1 circle ccw
5	06.10.2003	17° 12.5' W	71° 35.0' N	1 circle cw, 1 circle ccw

Tab. 2-5: Calibration circles

Preliminary results

Along profile 200 and 300 (Fig. 2-1), part of the instruments were not released until getting on site, to insure good recovery within ice fields. As extremely good ice conditions were encountered (ice cover always well below 30%, often below 10%), instruments were recovered without any major time delay. The first quality check of the data were performed on the vessel and showed that the data quality is quite variable. In the oceanic part of the profiles the signal range is large enough that mantle arrivals can be identified. On the shelf, the northernmost profile has the worst quality in terms of signal range. This partly due to a reduced air gun volume of 45 l since some technical problems prevented the operation of the large volume Bolt air gun. The maximum signal range of 40 km at maximum might also be due to a high attenuation/scattering of the shelf sediments. This explanation is supported by the signal ranges in the oceanic part, which are similar to the more southern profiles. The profile off Shannon Island is the first one, which crossed the pronounced negative magnetic anomaly along the East Greenland margin. Here, the seismic energy is strongly scattered/attenuated. In some OBS recordings no signals are visible across this complex geological structure. In total 6 RefTek recording instruments were placed on Shannon Island and on the mainland. They provide signal ranges up to 150 km, and show a clear onset of the mantle phase around 100 km. An example of a land station recording is shown in Fig. 2-2. The first arrivals show strong undulations (Fig. 2-2; 50 km offset), which indicate the presence of large sediment basins east of Shannon Island. Similar results are observed on the two southern profiles 20030400 and 20030500. A summary of the observed signal range for each recording station is provided in table 2-3.

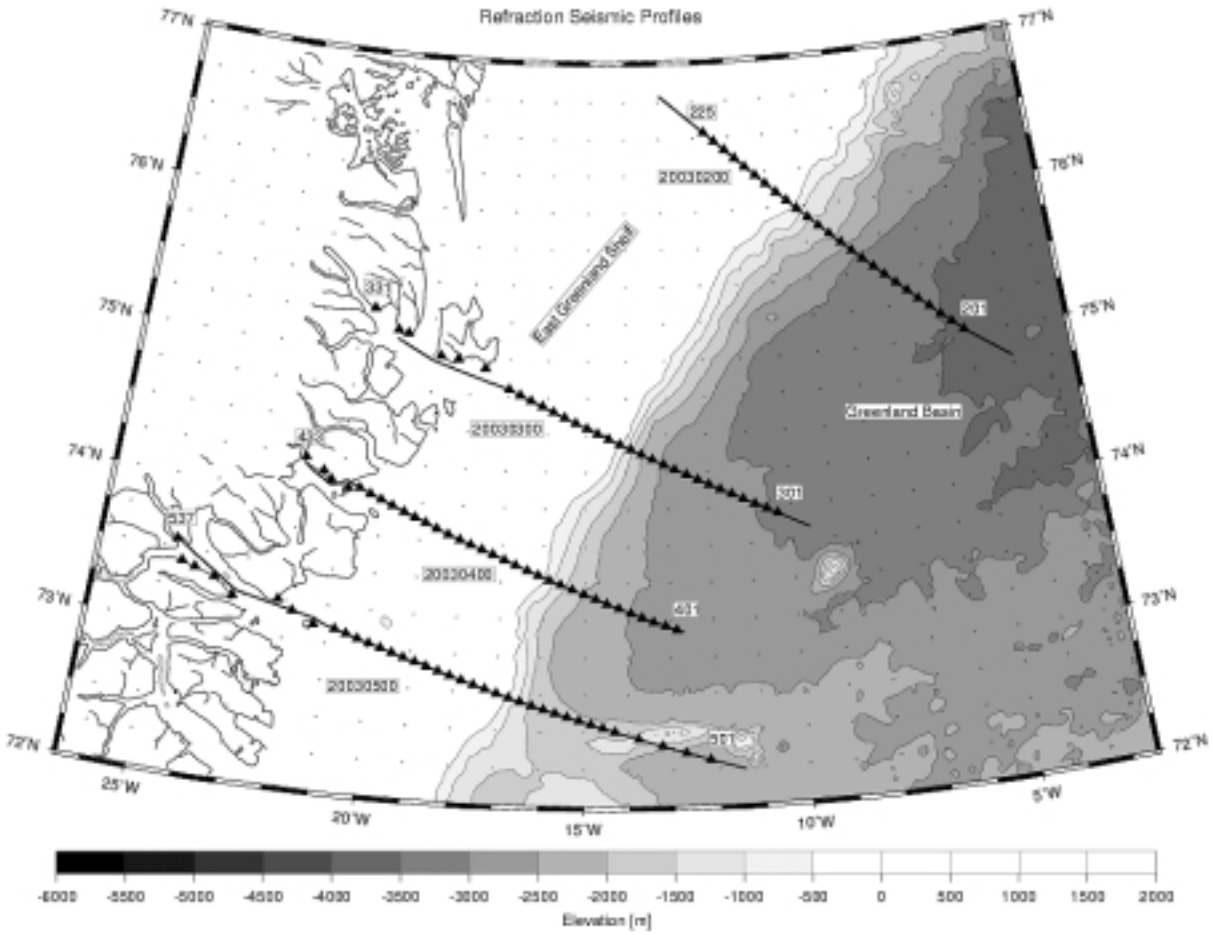


Fig. 2-1: Location of the deep seismic sounding profiles. The triangles mark the position of the OBH/OBS and RefTek stations. All lines together have a length of almost 1500 km.

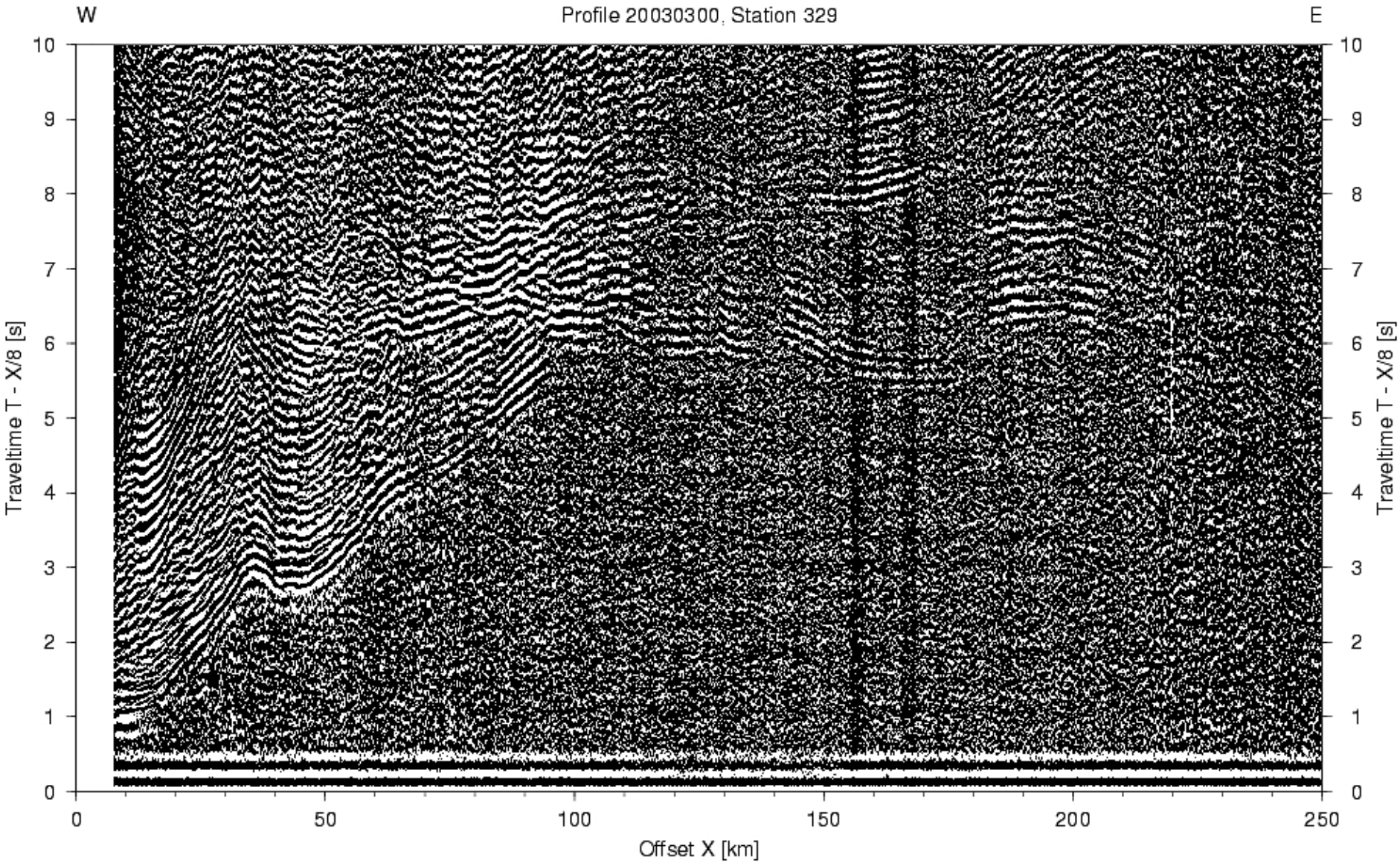


Fig. 2-2: Examples of a land station recording at the East Greenland coast

In addition to the deep seismic lines a regional network of multi-channel seismic data were acquired (Fig. 2-3). Details on the acquisition parameters please see table 2-1. According to the ice conditions two types of streamers were used. A 3000 m long cable in the southern part were the ice coverage was less than 30%, and a shorter 600 m long cable in the northern part up to the Greenland Fracture zone with an ice coverage up to 80%. The lines with the shorter cable terminate more or less at the shelf break, since the streamer length does not allow an effective removal of the multiple energy on the shelf. The situation is different with the 3000 m cable. Here, the lines were extended to the shelf in order to map the deeper structure in the supposed continent-ocean transition zone. Not very much above the deeper fabric can be said at the current stage of data processing. North of 75°N the extension of the Greenland Escarpment was mapped to the junction of the Greenland Fracture Zone with the shelf. South of 75°N along no seismic line the pronounced basement high is visible anymore. Here, it might be more in the west buried by thick sediments or completely vanished.

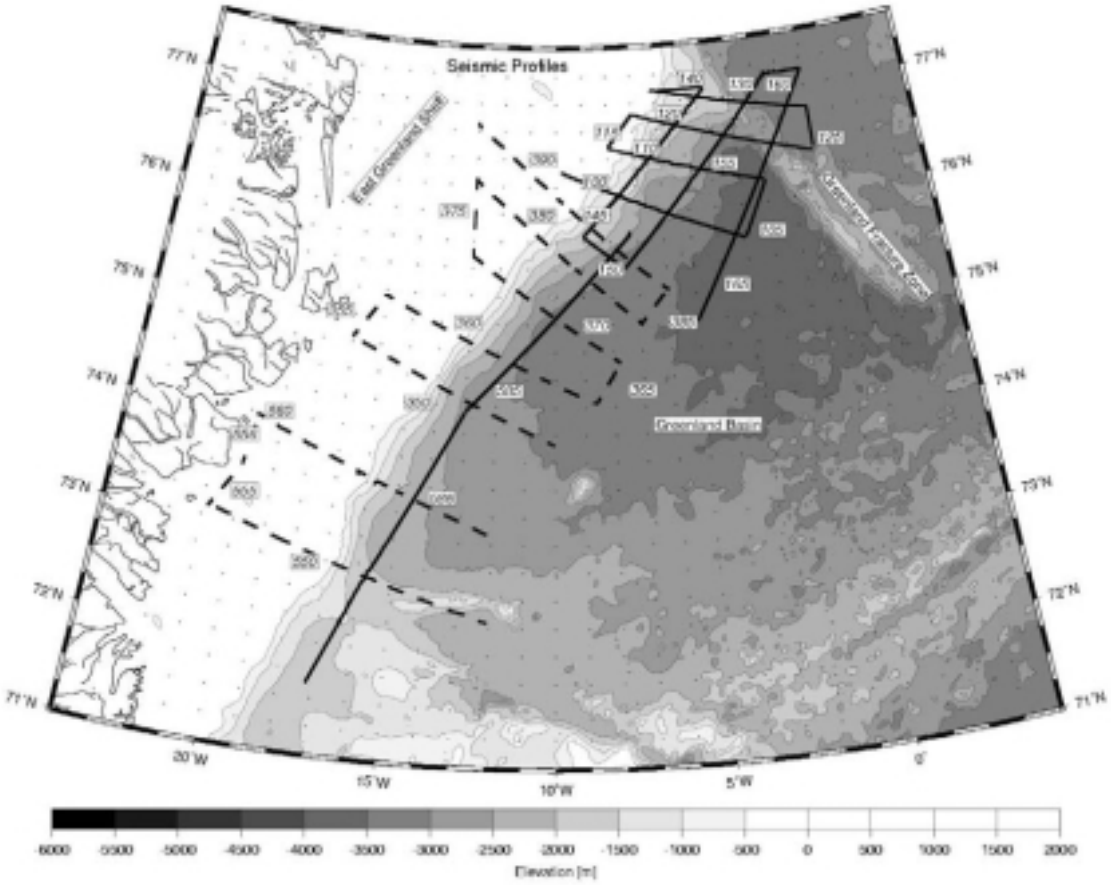


Fig. 2-3: Location map of the multi-channel seismic lines acquired along the East Greenland margin. The bold lines were shot with a 600 m cable, the dashed ones with a 3000 m streamer.

To better interpret the seismic structure along the 2D-profiles it was planned to acquire in parallel to the seismic data acquisition a magnetic grid with a line spacing of 5 km. A helicopter borne system (Helimag) was used to perform these

measurements (Tab. 2-4). In the first part of the expedition these activities were very much reduced due to the constant bad weather conditions (Fig. 2-4).

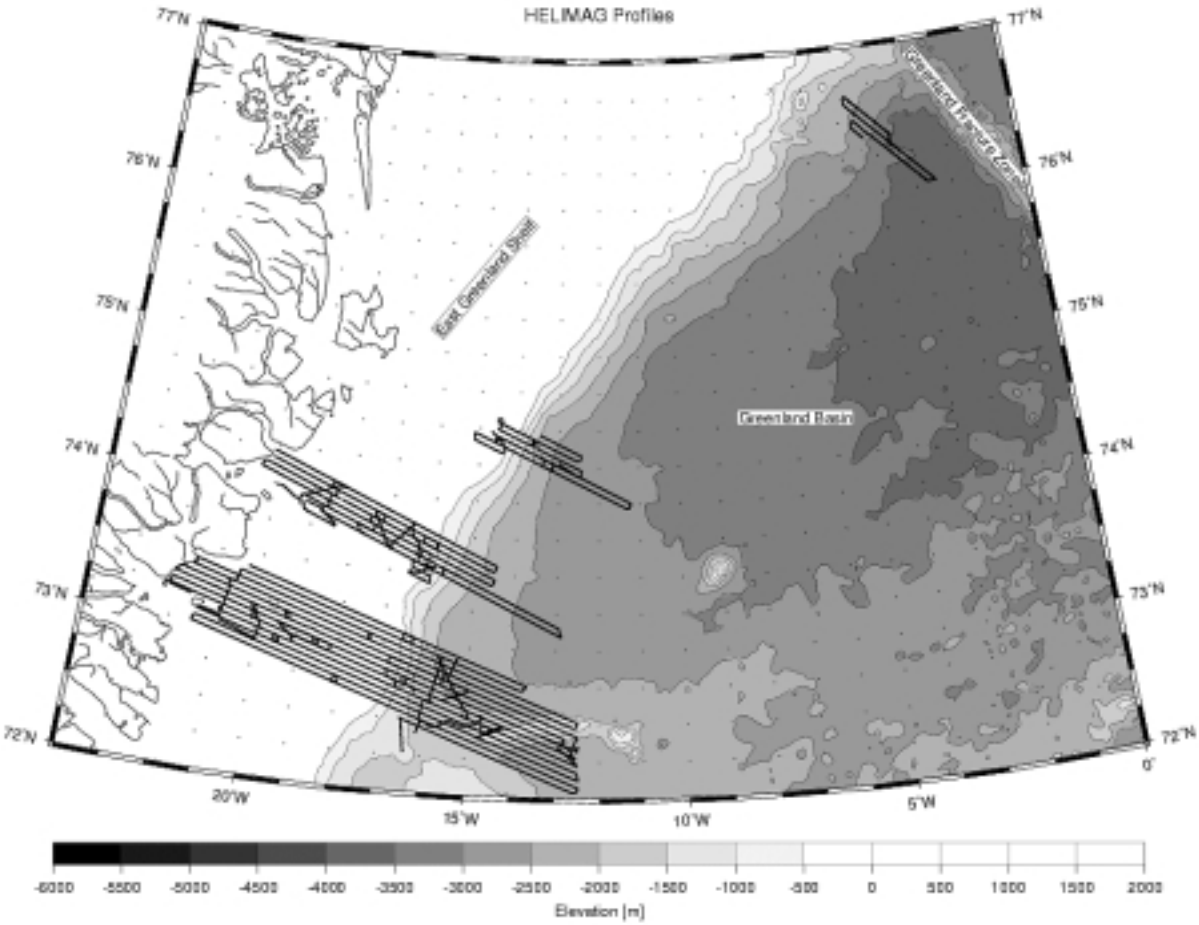


Fig. 2-4: Locations of magnetic lines acquired in the Greenland See. The spacing is 10 km.

The weather conditions changed only from middle of September onwards (Fig. 2-5). Thus, only a corridor along the two southernmost lines 20030400/500 was acquired. An interesting result was discovered along several lines across the pronounced negative magnetic anomaly along the East Greenland coast. The high resolution magnetic data indicate high-frequent variations of the anomaly. These signals might be caused by shallow dikes, which have penetrated the crust at different depth levels. From September 22nd, s second research area was regionally surveyed (Fig. 2-6) along the oceanographic transect. Here, a magnetic survey started in 2002 was supplemented. The entire region between the Spitsbergen and Molloy Fracture zones is covered by magnetic lines with a spacing of 5 km.

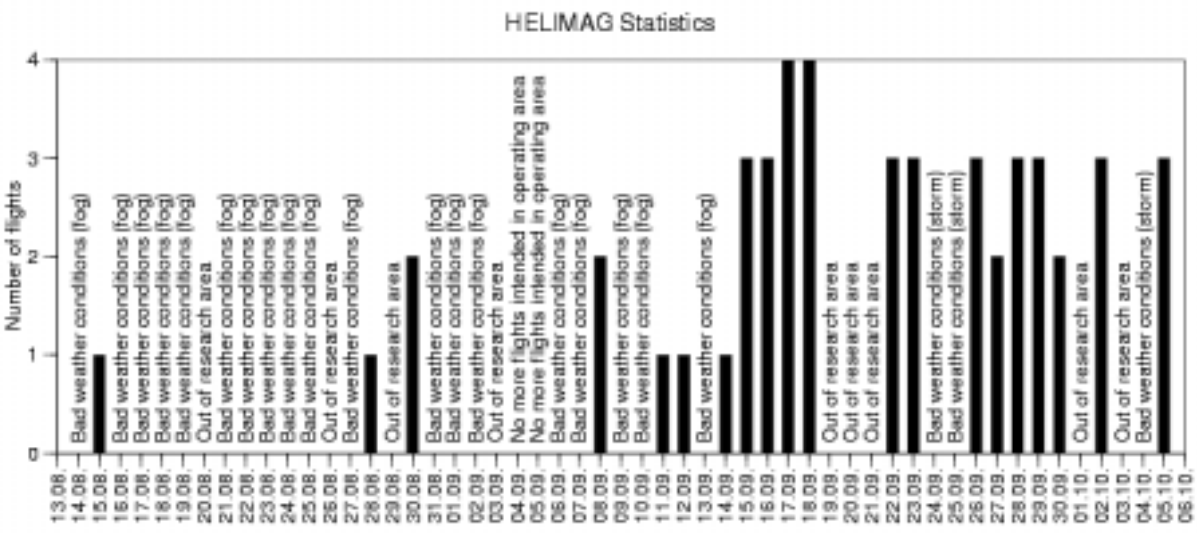


Fig. 2-5: Flight statistics for the duration of the expedition

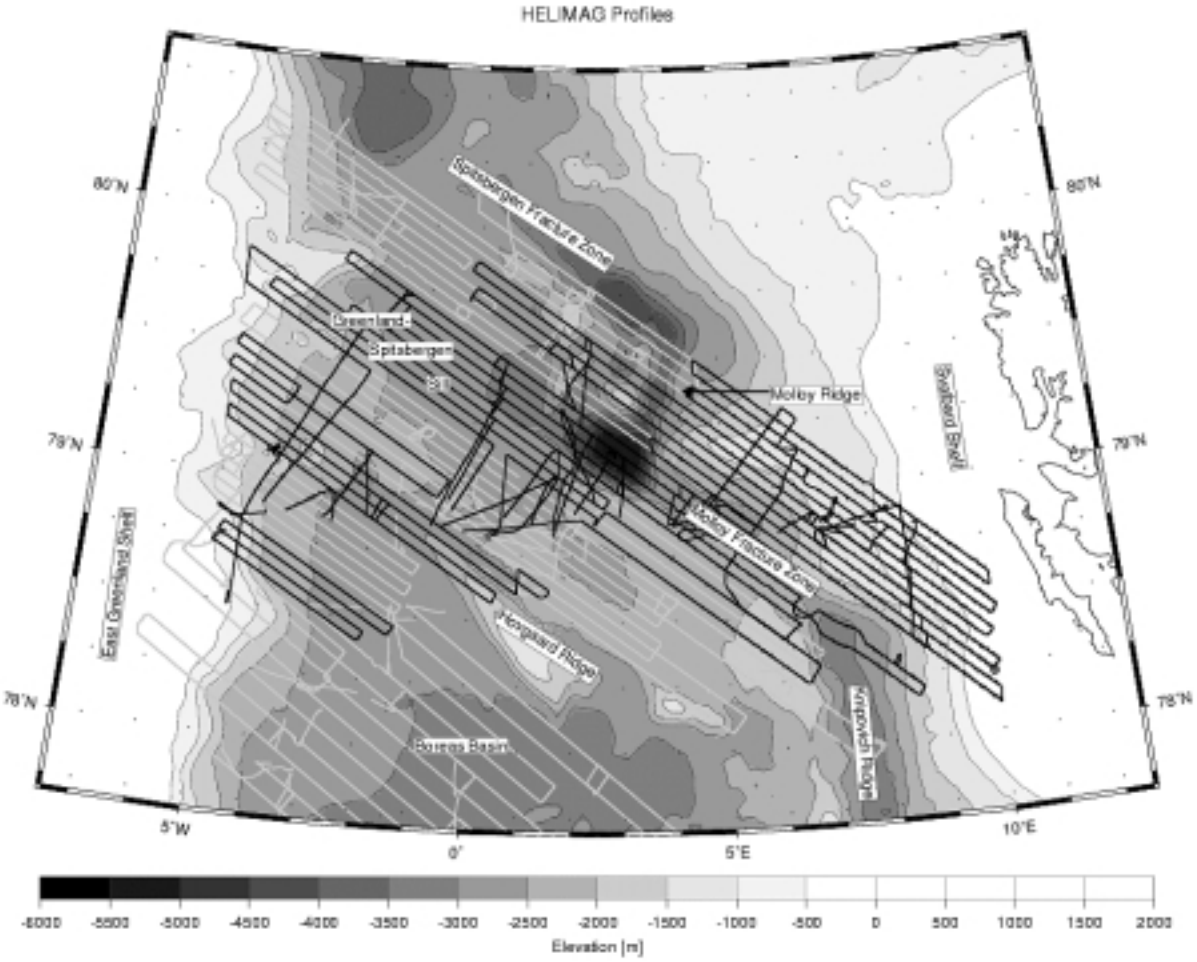


Fig. 2-6: Location of magnetic lines acquired around 79°N. The spacing is 5 km. The light grey lines indicate the profiles acquired in 2002; the black ones are collected during this season.

3 Bathymetry

S. Gauger, B. Reese, A. Winkler

During the expedition ARK-XIX/4 the bathymetry working group performed 58 days of Hydrosweep DS2 (HYDROgraphic multibeam SWEEPing survey echosounder - Deep Sea 2) measurement. The main characteristics of the multibeam sonar system are the 90°/120° coverage angle in which the seafloor is depicted with 59 specific values for water depths across the ship's long axis. The accuracy of this measurement is ~0.5% of the water depth. For the slant range correction of the sonar beams the automatic self calibration process was used. The observed depths are between several decadic meters in the coastal regions of Greenland and up to 5500 meters in the Molloy deep.

The survey was performed mainly during seismic measurements in the Greenland Sea (72°N - 77°N and 0° - 25°W), which were carried out by the geophysical working group. The seismic profiles along and across the East Greenland shelf edge led us to the three fjords Ardencaple Fjord, Godthaab Golf and Kejser Franz Josephs Fjord.

Especially a bathymetric profile in the Ardencaple Fjord continued a measurement from the Polarstern expedition ARK-X/1 in 1994. The profile took five hours of measurement time with a coverage angle of 120°. The figure 3-1 shows the surveyed area and gives a good overview of the rough fjord topography.

The collected data within the region 73°40'N to 75°10'N and 3°W to 15°W were taken into account particularly. They will be used to extend the existing data base of the ARKTIEF project. The data for this project have been collected while former Polarstern expeditions to investigate the Ardencaple Channel System.

Additionally an important work during the cruise was the producing of cleaned navigation files with the associated depth values in a five seconds interval for the geophysical working group daily. These data will be used by the geophysicists to process the gravity values measured by the ships gravimeter. The needed data values were extracted from the PODAS database. Then they were edited using the Caris HIPS software and given to the geophysical working group after reformatting to the so called Nak-format.

Furthermore during the second part of the expedition the survey went on along the oceanographic profile at 78°50'N in the Fram Strait between 8°E and 4°W.

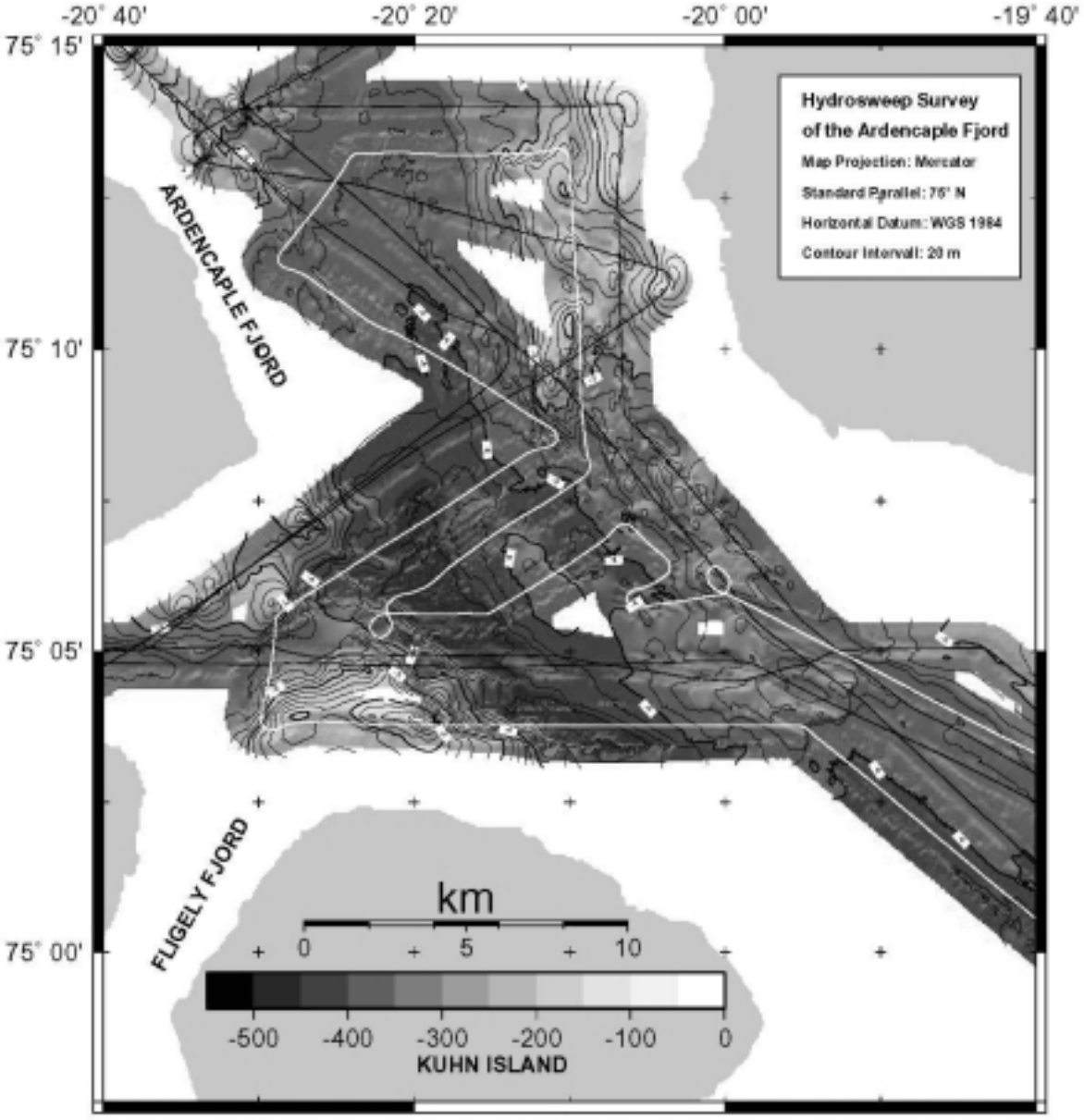


Fig. 3-1: Seafloor topography of Ardencaple Fjord, compiled from bathymetric measurements in 1994 and 2003

Altogether the Hydrosweep system worked very reliable and the recorded bathymetry data are of a high quality. Some disturbances in the data could not be avoided during the survey. Especially during ice-breaking and stormy weather conditions the effect of the hydro acoustic disturbances on the data quality increases. The table below gives an idea about the strong relation of the data quality and these external influences. These erroneous depth values were edited using the Caris HIPS software as well.

weather conditions	erroneous data [%]
calm sea	~2 %
strong wind (8 Bft, waves: 4 - 5 m)	~10 %
ice breaking	~15 %
storm (9 - 10 Bft, waves: 6 m)	~30 %

For the preparation of quick-look maps the software CONTOUR was used, which creates multibeam swath plots in correct planimetric position. Further presentations of the sea bottom topography were made by using the Generic Mapping Tool (GMT) software. With GMT grids were calculated out of the edited bathymetric data. Based on the grid, contour line maps with colour coded depth ranges were produced, which give a vivid display of the oceanic topography.

4 Marine Geology

4.1 Sediment echosounding

J. Rogenhagen, C. Kierdorf, C. Schäfer, D. Winkelmann

One of the fixed sensor installations onboard the “Polarstern” is the sediment echosounder PARASOUND (Krupp Atlas Electronics, Bremen). The system provides digital, high resolution information on the sediment coverage and the internal structure of the sediments. For this purpose the echosounder uses the so-called parametric effect: PARASOUND radiates two primary frequencies in the kilohertz range that generate a secondary pulse of lower frequency, which provides the signal. The secondary frequency can be chosen between 2.5 kHz and 5.5 kHz and is adjusted by varying the variable primary frequency from 20.5 - 23.5 kHz while the other frequency is fixed to 18 kHz. Due to its low secondary frequency and a small emitting angle of 4 degrees PARASOUND achieves high resolution of the sediment structures and penetrating depths of around 100 meters.

The reflected signals of the sub bottom sediments are displayed on a digital thermal printer (Atlas DESO 25). Furthermore, two printers are installed with the system, to give a tabular printout of the recording parameters and a coloured online profile. Data recording is done by a PC-based Software (PARADIGMA) that digitises and processes the signal. Finally, data is stored on hard disks and transferred to CD-ROMs for further processing.

The secondary frequency of the sediment echosounder during the cruise has been 4 kHz with a recording length of mostly 266 ms (that corresponds to a depth range of 200 m assuming sound velocity of water). Mainly good weather conditions with calm seas and a ship speed of around 5 kn provided excellent measuring conditions for the echosounder.

The PARASOUND system has been in use constantly in all working areas (East Greenland Sea, East Greenland Shelf and inside the Fjords) in parallel to the reflection and refraction seismic profiling of the geophysical working group. In addition, some profiles were measured while transferring between working areas.

In total, the PARASOUND system operated for about 480 hours and approx. 18Gbyte of data were recorded, processed and stored on storage devices. The data will provide important preconditions for the three dimensional correlation of profiles and the sediment cores that are taken on that profiles. Besides a general charting of sediment characteristics, the PARASOUND data will give information on the classification and interpretation of sediment types and their relation to the shelf slope dynamics of the East Greenland Continental Shelf. Also, the data is used for a pre-evaluation of coring stations for forthcoming expeditions to the East Greenland Shelf.

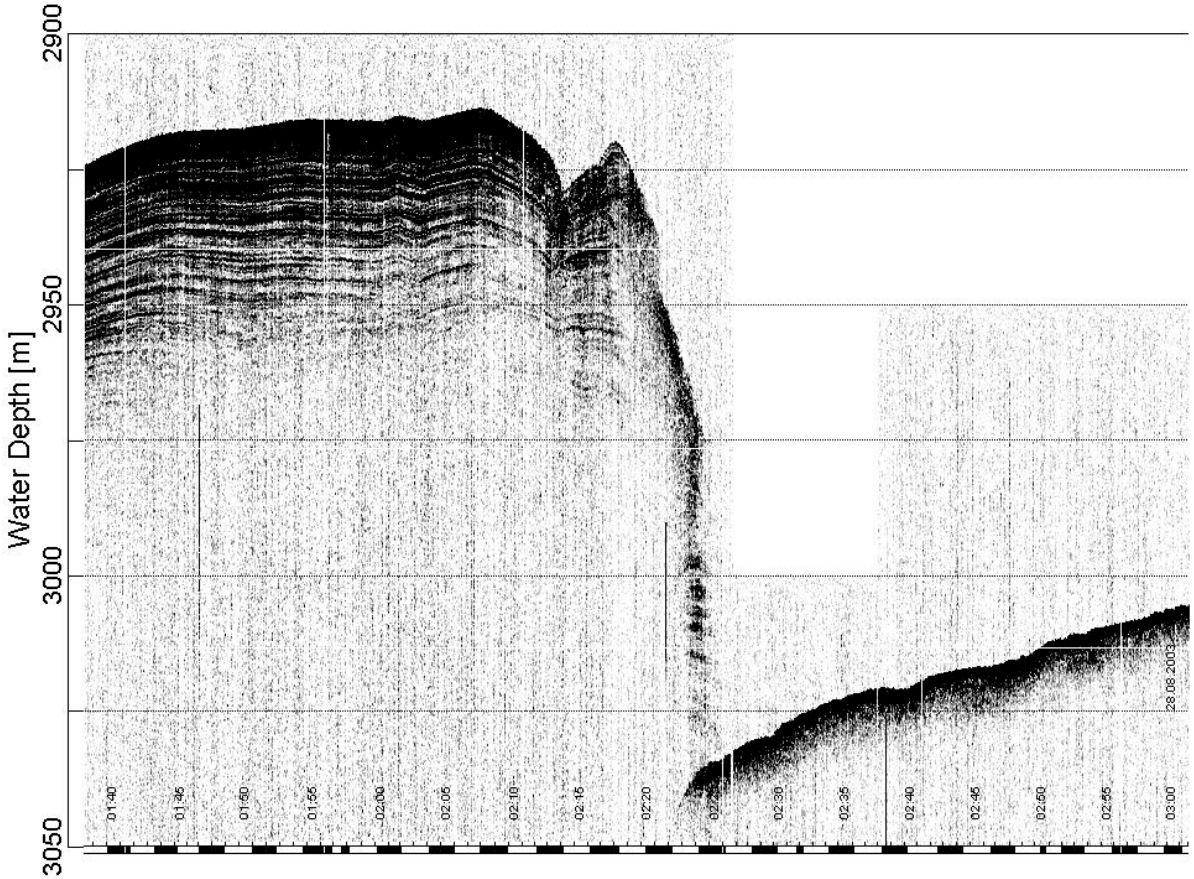


Fig. 4.1-1: Example of PARASOUND at Position 74° 06´ N, 11° 35´ W in the East Greenland Sea. The figure presents 2 hours of recording, which is approx. 10 nm.
Water depth is around 2900 m with a maximum penetration into the sediment of 50 m. The structure is part of the Ardencaple Channel System, a major channel system that drains from the Ardencaple Fjord into the deep sea.

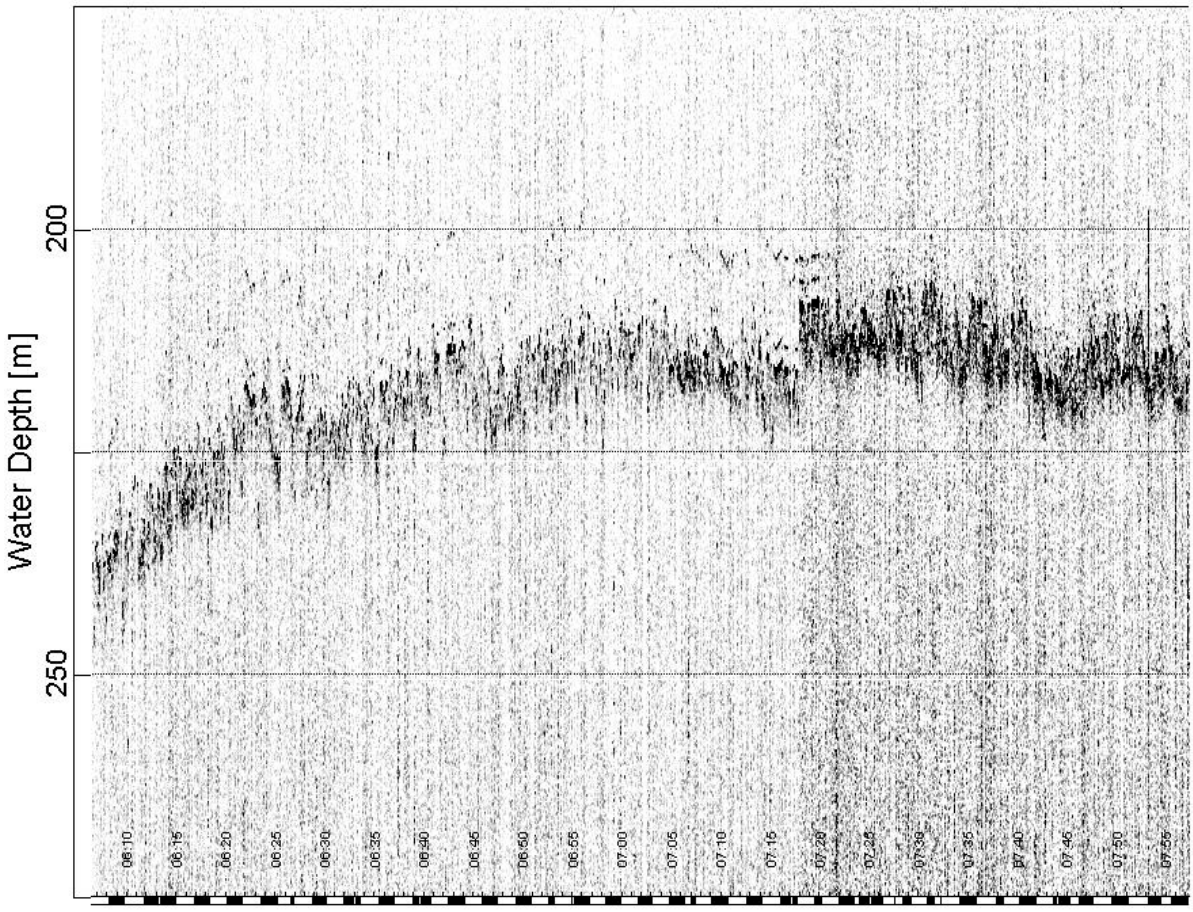


Figure 4.1-2: Example of PARASOUND at Position 75° 25´ N, 12° 01´ W on the East Greenland Shelf. The figure presents 10 nm of profile. The sediments are very consolidated which might be due to glacial overprint. Small channels with depths of around 5 m to 15 m represent ice berg ploughs.

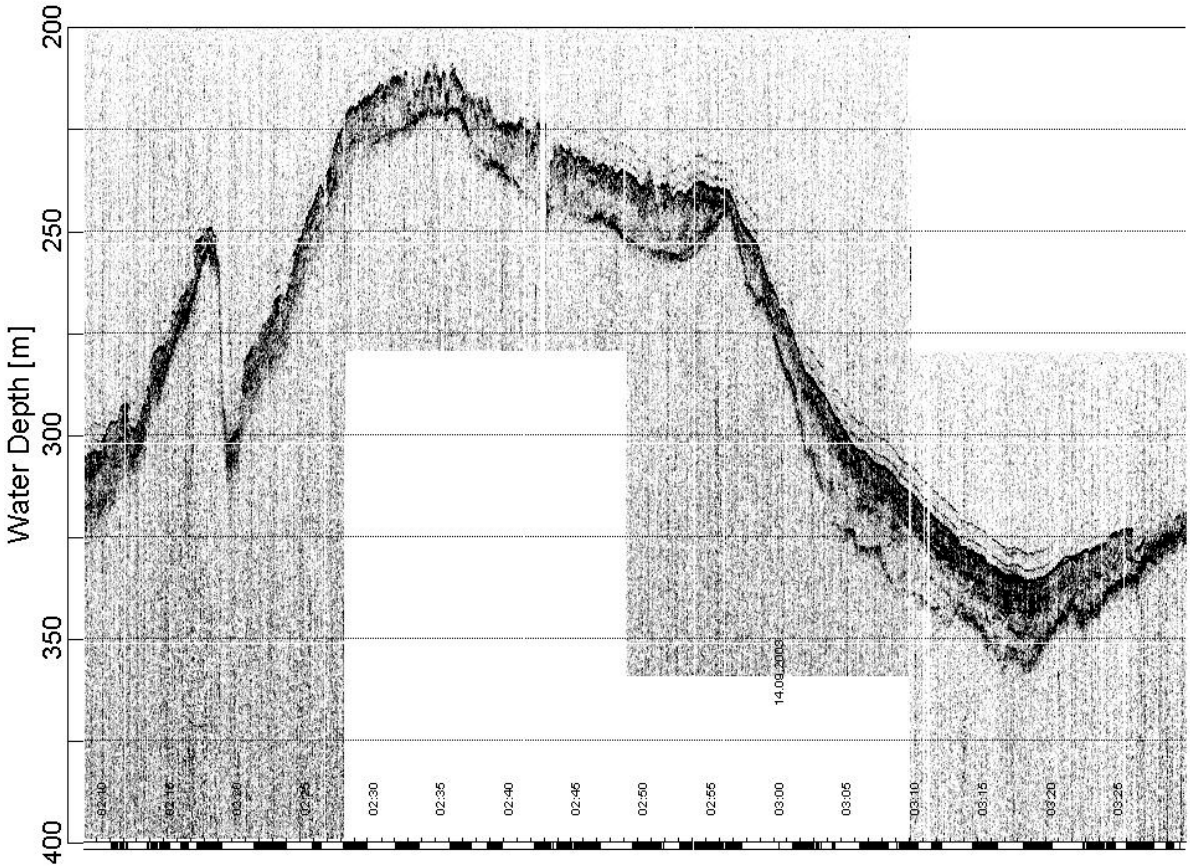


Figure 4.1-3: Example of PARASOUND at Position 73° 18´ N, 23° 22´ W on the East Greenland Coast. The figure presents 10 nm of profile in the Kejser-Franz-Josef-Fjord. Water depth is around 200 m.

4.2 Sedimentation in the Greenland Sea

C. Kierdorf, C. Schäfer, D. Winkelmann

During the expedition ARK-XIX/4a surface and near-surface sediment samples were colleted to study the composition of the organic matter on the East Greenland continental margin and in the Greenland Sea (see Fig. 4.2-1). In order to get undisturbed surface and near-surface sediments, the multi corer (MUC) with a tube diameter of 10 cm was used. All 26 coring positions were selected based on Parasound profiling (see Chapter 4.1).

Organic geochemical bulk parameters (TOC and carbonate content; C/N- and HI/OI-ratio) and different biomarkers (*n*-alkanes, *n*-alkanols, fatty acids, sterols, alkenones) will be determined to evaluate the importance of terrestrial and aquatic organic matter in marine sediments. Important sources for organic matter in marine sediments of the East Greenland continental margin and the Greenland Sea are (1) planktic and benthic organisms, (2) organisms living in sea ice and meltwater ponds on sea ice, and (3) sediments transported from coastal areas to the deep sea by sea ice or currents. To determine the specific biomarker signature of the different sources, ice floes, icebergs and land stations were systematically sampled (see Fig.

4.2-1). Altogether 13 stations on ice floes / icebergs and 16 stations on land (13 shore, 3 lakes) were conducted and sediment samples and samples from sea ice and meltwater ponds were taken (see Tab. 4.2-1). The water and ice samples were filtered through GF/C Whatman filters. All samples were stored deep-frozen (-30°C) in amber glass bottles.

Additional samples were collected for studies concerning the sediment source areas and the influence of vertical and lateral transport processes on pelagic sedimentation. The samples will be investigated relating to grain size, clay mineralogy, bulk mineralogy, magnetic susceptibility, radionuclides (^{7}Be, ^{234}Th, ^{137}Cs, ^{210}Pb, ^{226}Ra, ^{239}Pu, ^{240}Pu) and micropaleontology. All samples were stored at +4°C in plastic packs.

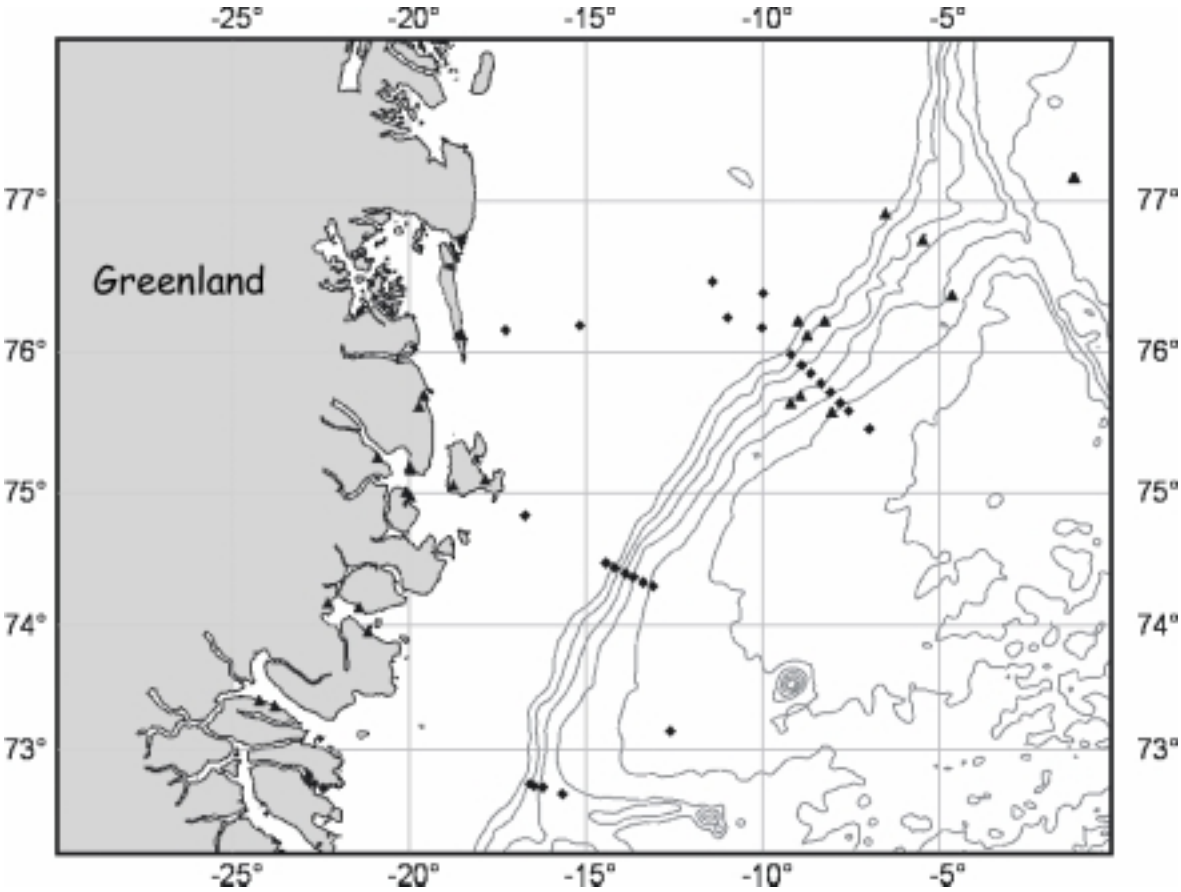


Fig. 4.2-1: Geological sampling stations during the expedition ARK-XIX/4a (triangle = ice floes, icebergs, land stations; rhombus = bottom samples).

Station	Latitude	Longitude	Date	Location
PS64 HELI 01-1	76°07.61'N	18°36.10'W	13.08.03	Store Koldewey – Melles Lake
PS64 HELI 01-2	76°06.82'N	18°30.51'W	13.08.2003	Store Koldewey – Shore
PS64 HELI 02-1	76°22.95'N	04°38.32'W	15.08.2003	Ice floe
PS64 HELI 02-2	76°22.80'N	04°39.26'W	15.08.2003	Ice floe
PS64 HELI 03-1	76°55.07'N	06°31.73'W	16.08.2003	Ice floe
PS64 HELI 04-1	76°44.99'N	05°28.80'W	16.08.2003	Ice floe
PS64 HELI 04-2	76°44.80'N	05°27.52'W	16.08.2003	Ice floe
PS64 HELI 05-1	77°09.01'N	01°10.30'W	20.08.2003	Ice floe
PS64 HELI 06-1	77°08.98'N	01°12.06'W	20.08.2003	Ice floe
PS64 HELI 07-1	75°35.14'N	08°02.86'W	25.08.2003	Ice floe
PS64 HELI 08-1	75°03.48'N	18°45.86'W	26.08.2003	Shannon Island – Potsdam Sø
PS64 HELI 08-2	75°05.97'N	17°51.86'W	26.08.2003	Shannon Island – Frosnebugt, Shore
PS64 HELI 09-1	74°58.54'N	19°58.71'W	29.08.2003	Kuhn Ø – Shore
PS64 HELI 09-2	75°00.75'N	20°06.08'W	29.08.2003	Kuhn Ø – Shore
PS64 HELI 09-3	75°10.26'N	19°58.96'W	29.08.2003	Hochstetter Forland – Shore
PS64 HELI 09-4	75°11.49'N	19°59.85'W	29.08.2003	Hochstetter Forland – Karls Pynt, Shore
PS64 HELI 10-1	75°38.67'N	09°12.81'W	04.09.2003	Ice floe
PS64 HELI 10-2	75°41.85'N	08°55.79'W	04.09.2003	Ice floe
PS64 HELI 11-1	76°06.88'N	08°44.67'W	05.09.2003	Ice floe
PS64 HELI 11-2	76°13.00'N	08°14.72'W	05.09.2003	Ice floe
PS64 HELI 11-3	76°12.97'N	08°59.94'W	05.09.2003	Iceberg
PS64 HELI 12-1	75°42.23'N	19°36.13'W	06.09.2003	Hochstetter Forland – Roseneathbugt, Shore
PS64 HELI 12-2	75°37.31'N	19°44.12'W	06.09.2003	Hochstetter Forland – Lake
PS64 HELI 12-3	75°15.66'N	20°54.28'W	06.09.2003	C.H. Ostenfelds Land – Kildedalen, Shore
PS64 HELI 13-1	74°08.29'N	21°25.80'W	08.09.2003	Clavering Ø – Granatdal, Shore
PS64 HELI 13-2	74°10.19'N	22°19.57'W	08.09.2003	Hansen Havn – Wordies Gletscher
PS64 HELI 13-3	73°57.02'N	21°10.51'W	08.09.2003	Hold With Hope – Stensiö Bjerg, Shore
PS64 HELI 14-1	73°23.99'N	24°15.39'W	14.09.2003	Ymers Ø – Zoologdalen, Shore
PS64 HELI 14-2	73°21.42'N	23°49.05'W	14.09.2003	Ymers Ø – Gunnar Anderssons Land, Shore

Tab.4.2-1: List of geological stations on ice floes / icebergs and on land during the expedition ARK-XIX/4a.

4.3 Molecular Biology of Benthic Foraminifera ARK XIX/4a

Martina Blümel

Sampling

Samples for genetic analysis were taken by a Multicorer equipped with 8 plastic tubes of 10 cm inner diameter. An overview over the samples taken for genetic analysis is given in tab.4.3-1.

Before sampling the tubes sediment surface temperature was measured to get information about the *in situ* living conditions of the benthic foraminiferal community. After temperature measurements, the water supernatant was taken away by a hose and preserved.

A surface sediment sample was taken from 2-3 Multicorer tubes. The uppermost centimeter of each tube was taken and immediately sieved under cold seawater after sampling. 5 fractions were gained: >2mm, >500µm, >200µm, >112µm and >63µm. Samples were put in 100 ml Kautex bottles, filled with the supernatant water of the Multicorer tube and immediately frozen at –20°C until further processing.

Methodology

For further treatment, the sample was thawed and a sub sample was examined using a stereomicroscope with a Nikon Coolpix 995 digital camera. Samples were sorted in a Petri dish containing water using a brush. Specimens considered as „alive hat the moment of sampling“ were picked out and subjected to further treatments. Characters for the physiological state of the organisms are: intact state of the test/ mechanical damage, first chamber empty, other chambers filled, extended pseudopodia (not observed), attachment to stones or other organisms, colour and state of the first chamber (agglutinated specimens), also see figures 4.3-1 and -2 for details. Specimens were determined using classical morphological methods and Robert Wynn Jones´ „The Challenger Foraminifera”. Additionally specimens were documented by the Nikon Coolpix 995 camera before further treatments.

DNA-Extraction

After sorting and documentation each single specimen was put into an 1.5 ml Eppendorf-cup and 40 µl DOC-solution were added. For DNA-extraction, the cells were crushed by mini-pistils and the samples were incubated for 1h at 60°C. After incubation, samples were frozen at –20°C until further processing. As a whole, 376 specimens were extracted and treated by PCR.

PCR

PCR (**P**olymerase **C**hain **R**eaction) is a cyclic process to amplify a selected DNA-fragment between two primers (Primer: short DNA fragments used as start and end point in conservative DNA regions). For phylogenetic analysis of relationships among eukaryotes, the gene encoding the **s**mall **s**ub**u**nit of the ribosomes (18S rDNA, ***SSU*** rDNA) is commonly used. Primers used here were specifically designed for analysis of the foraminiferal 18S rDNA. PCR was conducted using two different primer pairs, Cibi fwd/Cibi rev for rotaliid foraminifera and F4/R1b for *Astrorhizidae* and *Textulariidae*. PCR was performed using puRE Taq Ready-to-Go PCR Beads from Amersham Biosciences and a Techne Progene thermocycler with the following protocol:

Initial Denaturing: 94°C	for 2 min
Primer Annealing: 55°C	for 40 sec
Elongation: 72°C	for 1 min 20 sec
Denaturing: 91°C	for 40 sec
Final Elongation: 72°C	for 5 min
Cooling:	4°C

After PCR was finished, samples were stored at –20°C until further examinations (sequencing, cloning experiments and phylogenetic analysis) in the home laboratory.

Fig.4.3-1: *Veleroninoides sp.,*

Astrorhizidae, living specimen
first chamber shows lighter colour than the other chambers
ARK-XIX/4a, PS64/511-1, >500µm

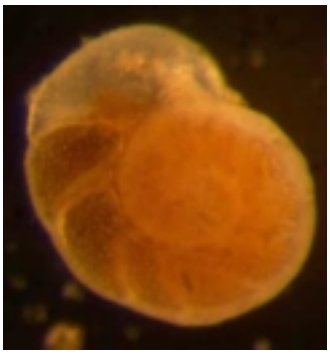


Fig.4.3-2: *Cibicides refulgens*

Rotaliidae, living specimen
first chamber is empty, other chambers are filled with protoplast
ARK-XIX/4a, PS64/511-1, >500µm

Station	Position	Gear	Depth (m)	Recovery (number of tubes)		Sediment surface *in situ* T (°C)	Date
				Total	Genetics		
PS64/487-1	76°8,939 N 17°16,975 W	MUC	236	7	3	2.7	13.08.03
PS64/488-1	76°10,966 N 15°10,858 W	MUC	306	8	3	-	13.08.03
PS64/489-1	76°14,138 N 11°00,106 W	MUC	302	8	3	1.6	14.08.03
PS64/490-1	76°23,822 N 09°59,437 W	MUC	253	8	3	1.7	14.08.03
PS64/504-1	75°43,242 N 08°05,400 W	MUC	2284	8	3	0.6	22.08.03
PS64/506-1	75°51,158 N 08°38,838 W	MUC	1700	8	3	0.6	22.08.03
PS64/508-1	75°58,902 N 09°11,849 W	MUC	1062	7	3	1.8	22.08.03
PS64/511-1	76°09,955 N 10°06,943 W	MUC	276	8	3	1.8	22.08.03
PS64/516-1	76°28,488 N 11°24,863 W	MUC	313	7	2	1.6	22.08.03
PS64/526-1	75°27,824 N 06°59,073 W	MUC	3374	8	3	1.9	25.08.03
PS64/528-1	75°35,368 N 07°34,591 W	MUC	3134	8	3	0.2	25.08.03
PS64/529-1	75°38,693 N 07°48,121 W	MUC	2958	8	3	1.6	25.08.03
PS64/531-1	75°46,901 N 08°20,833 W	MUC	1982	8	3	0.0	25.08.03
PS64/533-1	75°54,584 N 08°54,525 W	MUC	1443	0	0	-	25.08.03
PS64/573-1	74°45,900 N 16°43,913 W	MUC	377	8	2	1.7	29.08.03
PS64/581-2	74°28,605 N 14°26,346 W	MUC	259	5	2	1.8	30.08.03

PS64/582-1	74°26,527 N 14°11,670 W	MUC	561	7	2	1.4	30.08.03
PS64/583-2	74°23,864 N 13°53,619 W	MUC	1399	8	3	0.6	30.08.03
PS64/584-1	74°22,157 N 13°39,596 W	MUC	1850	5	3	1.4	30.08.03
PS64/585-2	74°19,718 N 13°23,607 W	MUC	2245	7	3	0.1	30.08.03
PS64/586-1	74°18,086 N 13°06,959 W	MUC	2492	7	3	0.4	30.08.03
PS64/628-2	73°08,852 N 12°36,684 W	MUC	2702	7	3	-0.2	09.09.03
PS64/706-1	72°42,618N 16°36,141 W	MUC	910	7	3	0.3	15.09.03
PS64/707-2	72°41,501 N 16°28,599 W	MUC	1223	8	3	0.1	15.09.03
PS64/708-1	72°40,614 N 16°13,579 W	MUC	1600	8	3	1.6	15.09.03
PS64/710-2	72°37,476 N 15°40,268 W	MUC	1892	8	5	-0.2	15.09.03

Tab 4.3-1: Overview over the samples taken during ARK XIX/4a for genetic analysis

5 Mikrobielles Nahrungsgewebe in arktischen Gewässern

B. Auer, K. Stumm, T. Burgmer

5.1 Pelagial

B. Auer

Das mikrobiellen Nahrungsgewebe ist gerade in Gewässer mit stark wechselnden Umweltbedingungen von entscheidender Bedeutung, weil die Bestehensdauer für die Entwicklung von umfangreichen Populationen mehrzelliger Organismen oft nicht ausreicht. Inlandseen auf Grönland weisen eine Eisbedeckung von bis zu zehn Monaten auf und damit nur eine kurze Entwicklungszeit für eine algenbasierte Nahrungskette. Im Frühjahr ist neben der Zunahme der Sonneneinstrahlung und dem Anstieg der Temperatur der Eintrag von Nährstoffen aus den Schmelzwasserbächen von entscheidender Bedeutung für die Populationsentwicklung des Zooplankton. Welche Rolle der erhöhte Trübstoffgehalt dabei spielt, der verbesserte Lebensbedingungen für eine Vielzahl von Mikroorganismen liefert, ist noch weitgehend ungeklärt. Um einen Einblick in die Auswirkung der Partikelkonzentration zu bekommen, wurden einerseits mehrere Seen mit unterschiedlicher Trübe untersucht und andererseits in Laborexperimenten die Entwicklung der mikrobiellen Gemeinschaft bei künstlicher Trübstoffzugabe verfolgt.

Die Entwicklung der Besiedelung von Schmelzwassertümpel auf Meereisschollen ist ebenfalls stark von den Umgebungsparametern abhängig. Hier sollte untersucht werden, inwieweit Salzgehalt, Anbindung an das offene Meer sowie Trübstoffgehalt der Tümpel die mikrobielle Besiedlung beeinflussen. Bisher ist nur wenig über die Zusammensetzung und die Struktur solcher Extremstandorte bekannt.

Potsdam Lake (Shannon Island)

Schmelzwassertümpel

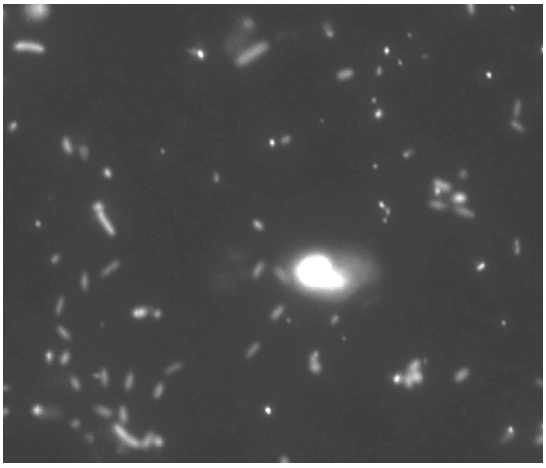
Probennahme

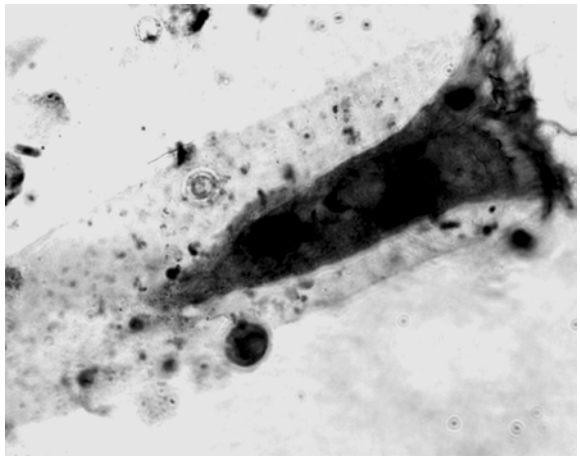
Es wurden insgesamt 22 Gewässer beprobt: 8 Seen auf Grönland bzw. vorgelagerten Inseln, 13 Schmelzwassertümpel auf Eisschollen bzw. Eisberg und 1 Schmelzwasserbach (Tab. 5.-1).

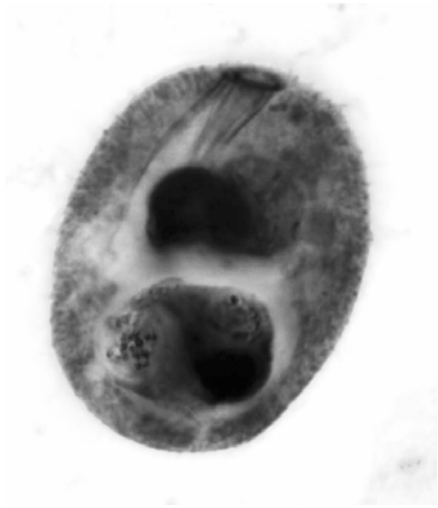
Zur Charakterisierung der Gewässer wurden folgende Parameter gemessen: Temperatur, Salzgehalt, pH-Wert, Trübstoffgehalt, Nährstoffgehalt (Nitrit, Nitrat, Phosphat) und organischer Kohlenstoff (über CHN-Analyse). Für die Messung der drei letztgenannten Parameter im Freiwasser wurden Wasserproben auf Glasfaserfilter konzentriert und für die Bestimmung im Heimatlabor eingefroren.

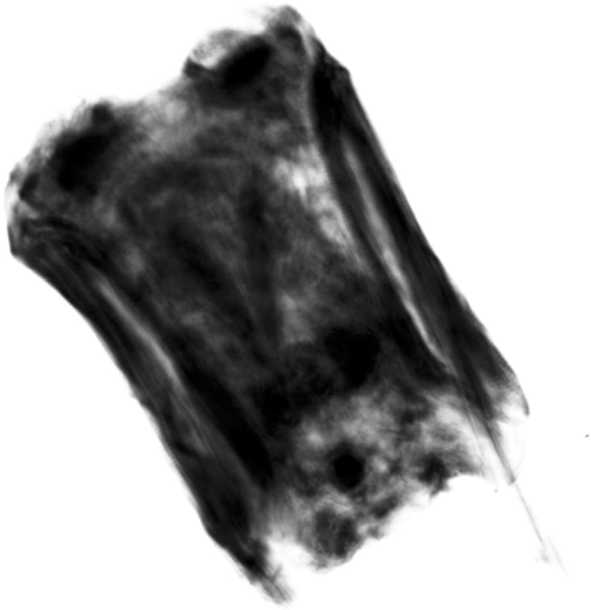
Von allen untersuchten Standorten wurden Proben für die Erfassung des Bestandes fixiert (Glutaraldehyd für Bakterien und Flagellaten bzw. Bouin'sche Lösung für Ciliaten). Die Bestimmung der Abundanzen von Bakterien und Flagellaten erfolgt nach DAPI-Färbung mittels Epifluoreszenzmikroskopie. Für die Erfassung der Ciliaten wurden QPS-Präparate hergestellt, die sowohl eine genaue Quantifizierung als auch eine genaue taxonomische Zuordnung bis auf Artniveau erlauben.

An ausgewählten Standorten wurden Wachstums- und Fraßexperimente durchgeführt. Für Wachstumsexperimente wurden Nährstoffe und/oder Trübstoffe in unterschiedlichen Konzentrationen zugegeben. Die Inkubation der Versuchsgefäße erfolgte über 8 bis 16 Tage an einem Planktonrad, um eine gleichmäßige Durchmischung zu gewährleisten. In regelmäßigen Abständen von zwei bis vier Tagen wurden Unterproben für die Abundanzbestimmung von Bakterien, Flagellaten und Ciliaten entnommen und wie oben beschrieben ausgewertet. Für die Ermittlung von Fraßraten wurden fluoreszenzmarkierten Bakterien zugegeben, deren Abnahme über 8 – 24 Stunden verfolgt wurde.









DAPI-Färbung: Bakterien und Flagellat
QPS-Färbung: *Nassula* sp.
QPS-Färbung: Tinntinopsis
QPS-Färbung: Polyarthra (Rotatoria)

Ergebnisse

Es konnte nur ein Teil der Proben bereits während der Fahrt ausgewertet werden, daher haben die vorgestellten Ergebnisse vorläufigen Charakter. Die Experimente in den Seen zeigten, dass die Zugabe von Trübstoffen alleine einen tendenziell negativen Effekt auf die Populationsentwicklung von Bakterien und Flagellaten hatte. Wird diese Zugabe jedoch mit einer Nährstoffanreicherung kombiniert, steigen die Abundanzen deutlich an und liegen teilweise sogar über den Werten bei alleiniger Nährstoffzugabe. Im Vergleich der Seenstandorte nahm die Flagellatendichten überraschenderweise mit zunehmender Bakteriendichte ab. Ob hier unterschiedliche Nährstoff- oder Trübstoffgehalte für diese Beziehung verantwortlich sind, kann erst im Heimatlabor untersucht werden. Die Dichten lagen zwischen 0,4 x 10^6 und 3,6 x 10^6 Bakterien/ml bzw. 100 und 1800 Flagellaten/ml.

In den Schmelzwassertümpeln konnte ein solcher Zusammenhang nicht festgestellt werden. Hier schwankten die Dichten zwischen 1,0 x 10^5 und 6,9 x 10^5 Bakterien/ml bzw. 350 und 5000 Flagellaten/ml. Der Salzgehalt des Wasser, der unter anderem den Grad der Anbindung an das Meerwasser angibt, war signifikant positiv mit der Bakteriendichten korreliert. Ein deutlicher mariner Einfluss war auch bei der Ciliatengemeinschaft festzustellen. Die Zusammensetzung und Abundanz wies große Unterschiede zwischen isolierten und meerangebundenen Schmelzwassertümpeln auf. Obwohl noch keine Daten über den Trübstoffgehalt zur Verfügung stehen, kann in einer ersten Abschätzung von einem positiven Zusammenhang zwischen mikrobieller Besiedelung und Trübstoffgehalt ausgegangen werden.

5.2 Benthos

K. Stumm

Im pelagischen mikrobiellen Nahrungsnetz spielen Protisten eine wichtige Rolle im Nährstoffkreislauf, unter anderem als Bindeglied zwischen mikrobiellem und klassischem Nahrungsnetz. Über die Funktion von Protisten in benthischen Nahrungsnetz ist bisher nur wenig bekannt. Es wird vermutet, dass sie auch in benthischen Habitaten von großer Bedeutung sind. Bisher ist das mikrobielle Nahrungsnetz grönländischer Seesedimente weitgehend unerforscht.

Die hier gewonnenen Daten sollen mit Untersuchungen aus der Nordsee und deutschen Seen verglichen werden, um den Einfluss der extremen Bedingungen (kurze, eisfreie Sommer mit hoher UV Belastung, lange, kalte, dunkle Winter und damit nur eine kurze Vegetationsperiode, extrem nährstoffarme Bedingungen) in arktischen Gewässern auf die mikrobielle Gemeinschaft zu untersuchen.

Probennahme

Das Oberflächensediment (wenige mm, oxische Schicht) wurde mit Hilfe einer Schaufel aus dem ufernahen Bereich der untersuchten Standorte entnommen und in PE Flaschen ins Labor an Bord der FS Polarstern gebracht. Abiotische Faktoren wie Temperatur der Luft, des Wassers und im obersten Zentimeter des Sediments, sowie die Salinität (mittels eines Handrefraktometers) wurden am Probenstandort gemessen. Zur Bestimmung der Korngrößenverteilung, organischen Kohlenstoffgehalt, Gehalt an Stickstoff und Chlorophyll a, wurde Sediment tiefgefroren. Diese Parameter werden erst in Bremerhaven bearbeitet.

Zur Ermittlung der Abundanzen von Bakterien, Cyanobakterien, Diatomeen und Flagellaten (phototroph und heterotroph) wurden Unterproben mit Glutardialdehyd (Endkonzentration 2%) fixiert und mit Hilfe eines Epifluoreszenzmikroskops und DAPI – Färbung ausgezählt. Da die Zählung nach einer DAPI – Färbung die Unterteilung der Flagellaten nur nach Größe und Lebensweise (phototroph und heterotroph) erlaubt, wurden weitere Proben für eine molekulare Analyse der Gemeinschaft genommen. Dazu wurde Sediment ausgewaschen und der Überstand fraktioniert abfiltriert (20µm; 10µm, 5µm; 0,2µm). Die Filter wurden anschließend mit einem Puffer (TRIS, EDTA, SDS) benetzt, für 30min bei 60°C erhitzt und anschließend tiefgefroren. Mit dieser Methode kann man noch nach einigen Monaten die DNS aus

den Proben extrahieren und nach Arten auftrennen. Es wird so ein Diversitätsvergleich zwischen den beprobten Standorten in Grönland und den untersuchten Standorten in Deutschland möglich.

Die Untersuchung der Ciliaten- und Meiofaunagemeinschaft erfolgte nach Fixieren mit Glutardialdehyd (Endkonzentration 2%) und einer Protargolfärbung am Lichtmikroskop. Weitere Proben wurden mit Bouinscher Lösung (Endkonzentration 4%) fixiert, um eventuell Vergleichszählungen durchführen zu können.

Experimente

Die Nahrungsbeziehungen innerhalb des mikrobiellen Nahrungsnetzes wurden mit Hilfe von Experimenten mit Nahrungstracern durchgeführt. Hierfür wurde zu natürlichem Sediment 20-25% der natürlich vorkommenden Anzahl an Bakterien bzw. Algen (Diatomeen) als fluoreszenzmarkierte, abgetötete Bakterien (FLB = fluorescently labelled bacteria) bzw. Algen (FLA = fluorescently labelled algae) aus Kulturen zugegeben. Diese Ansätze wurden dann für 12-48h bei Dauerlicht und 4°C im Kühlraum inkubiert. Anschließend wurde der Verlust an FLBs bzw. FLAs ausgezählt. Auf diese Weise kann man den Fraß am Bestand der Bakterien (Algen) verfolgen.

Des weiteren wurde eine Untersuchung der Interaktionen zwischen Protozoen und Makrozoobenthos über die trophische Kaskade durchgeführt. Dazu wurden Makrograzer (Chironomidenlarven aus dem Standortssediment) zu natürlichem Sediment zugeben bzw. eine parallele Behandlung ohne Makrograzer angesetzt. Nach 5 Tagen wurde ein Experiment mit FLBs durchgeführt, um festzustellen, ob sich durch die Anwesenheit der Makrograzer einerseits die Zusammensetzung der mikrobiellen Gemeinschaft und verändert hat und andererseits, ob sich der Fraßdruck und damit die trophische Kaskade verändert hat.

Ergebnisse

Bei allen Standorten wurden Proben für den Bestand an Bakterien, Cyanobakterien, Diatomeen, Flagellaten, Ciliaten und Meiofauna genommen. Der Bakterienbestand lag bei den untersuchen Seen zwischen 9×10^7 und 2×10^9 Zellen /ml Sediment. Der Bakterienbestand in den marinen Standorten schwankt zwischen 1,6 x 107^7 und 3,4 x 10^9 Zellen /ml, wobei die höchsten Anzahlen im Schelfsediment gefunden wurden. Auf den Eisschollen findet man um die 4.7×10^9 Zellen /ml. Experimente mit FLBs und FLAs wurden in vier Seen, auf einer Eisscholle und an zwei marinen Standorten durchgeführt (s. Tab.5-1). Zurzeit liegen noch keine detaillierten Ergebnisse vor. Alle weiteren Zählungen und Auswertungen werden in Bremerhaven stattfinden.

See	Datum	Pos. Lat	Pos. Long	Temp. [°C]	Sal. ‰	Tiefe [cm]	max. Tiefe [m]	Trübe	Plankton Bestand	Exp.	Benthos Bestand	Exp.
Melles Lake (Koldewey 1)	13.8.03	76°07.40'N	18°37.57'W	9	3	30	71	+	+	+	+	FLB+FLA
Duck Lake (Koldewey 2)	22.8.03	76°25.15'N	18°45.00'W	10	0	20	6	-	+		+	FLB
Fox Lake (Koldewey 3)	6.9.03	76°15.06'N	18°31.32'W	3,2	0	20	55	-	+		+	
Potsdam Lake	26.8.03	75°03.48'N	18°45.86'W	7,4	3	40	1,5	+	+	+	+	FLB+Grazer
Hochstätter See	6.9.03	75°37.31'N	19°44.12'W	5,7	4	20	1	+	+	+	+	
Basalt Lake	8.9.03	72°43.48'N	22°27.60'W	8,8	5	20	70	+	+	+	+	FLB
Noa Lake	11.9.03	73°19.48'N	25°08.24'W	6,6	5	30	120	+++	+	+	+	FLB
Lune Lake (Geogr. Soc. O)	11.9.03	72°15.06'N	22°08.22'W				11		+	+	+	
Hochstätter Fluss	6.9.03	75°42.23'N	19°36.13'W	2	0	10	0,5	+++	+		+	
Ardencaple Fjord	6.9.03	75°15.66'N	20°54.28'W	5,4	5	10	0,5				+	
Store Koldewey 2 Strand	13.8.03	76°06.82'N	18°30.51'W		36	20					+	FLB
Shannon Island Strand	26.8.03	75°05.97'N	17°51.86'W	4,5	36	20					+	
Shelf Multicorer	22.8.03	76°28.49'N	11°24.86'W	1,8	36	324 m					+	FLB
Scholle1	16.8.03	76°44.80'N	05°27.52'W	-0,7	25	30		-	+	+		
Scholle 2A	20.8.03	77°09.01'N	01°10.30'W	0,8	8	40		++	+		+	
Scholle 2B	20.8.03	77°09.01'N	01°10.30'W	0,8	8	30		-	+	+	+	
Scholle 3A	20.8.03	77°08.98'N	01°12.06'W	0,2	5	30		-	+			
Scholle 3B	20.8.03	77°08.98'N	01°12.06'W	-0,9	20	-		-	+			
Scholle 4	25.8.03	75°35.14'N	08°02.86'W	0,6	5	30		+	+		+	FLB+FLA
Scholle 5A	4.9.03	75°38.67'N	09°12.81'W	0,3	15	20		-	+			
Scholle 5B	4.9.03	75°38.67'N	09°12.81'W	-1,3	33	30		-	+			
Scholle 5C	4.9.03	75°38.67'N	09°12.81'W	0,3	5	30		-	+			
Scholle 7A	5.9.03	76°06.88'N	08°44.67'W	0,1	6	30		++	+		+	
Scholle 7B	5.9.03	76°06.88'N	08°44.67'W	-1	25	20		+	+		+	
Scholle 8A	5.9.03	76°13.00'N	08°14.72'W	1,5	36	20		+	+			
Scholle 8B	5.9.03	76°13.00'N	08°14.72'W	1,3	19	40		+	+			

Tab 5-1: Liste der beprobten Standorte. FLA… Experimente mit fluoreszenzmarkierten Algen, FLB… Experimente mit fluoreszenzmarkierten Bakterien, Grazer… Experimente mit Zugabe von Makrograzern (Chironomidenlarven)

6 Quaternary geological and biological studies on Store Koldewey and on Geographical Society Ø

Ole Bennike, Holger Cremer, Lena Håkansson, Nadja Hultzsch, Martin Klug, Svenja Kobabe, Bernd Wagner

Only a few studies were carried out so far to reconstruct the Late Quaternary and Holocene environmental history of north eastern Greenland. Therefore, the extent and the thickness of the ice shield and the outlet glaciers during the Last Glacial Maximum (LGM) are still under discussion. According to the past investigations, the deglaciation from the shelves started in eastern and north eastern Greenland somewhen between 16 and 14 ka BP (Funder 1989, 1998). The ice retreat was interrupted by several standstills or readvances and reached the present outer coast at c. 9-11 ka BP. This was indicated by marine-sedimentological studies, geomorphological investigations, the findings of fossils, and the study of lake sediments. All lake sediment records from the outer coast of East Greenland, for example, are younger than 10 ka BP (Wagner et al. 2000, Wagner & Melles 2001, Bennike & Björck 2002, Wagner & Melles 2002), and no older lacustrine sediment sequences have been recovered so far from this part of Greenland. However, it was also suggested that parts of the outer coast have been ice free during the LGM. This was traced back to the findings of pre-Holocene shells, for example on Store Koldewey in Northeast Greenland (Hjort 1981) or on the north eastern Geographical Society Ø in central East Greenland (Funder & Hjort 1973, Hjort 1981).

In order to better understand the past environmental and climatic history of East and Northeast Greenland, extensive studies including palaeolimnological work, Quaternary geological work, and the investigation of the recent existing lakes and soils were carried out on Store Koldewey and Geographical Society Ø during the expedition ARK XIX/4.

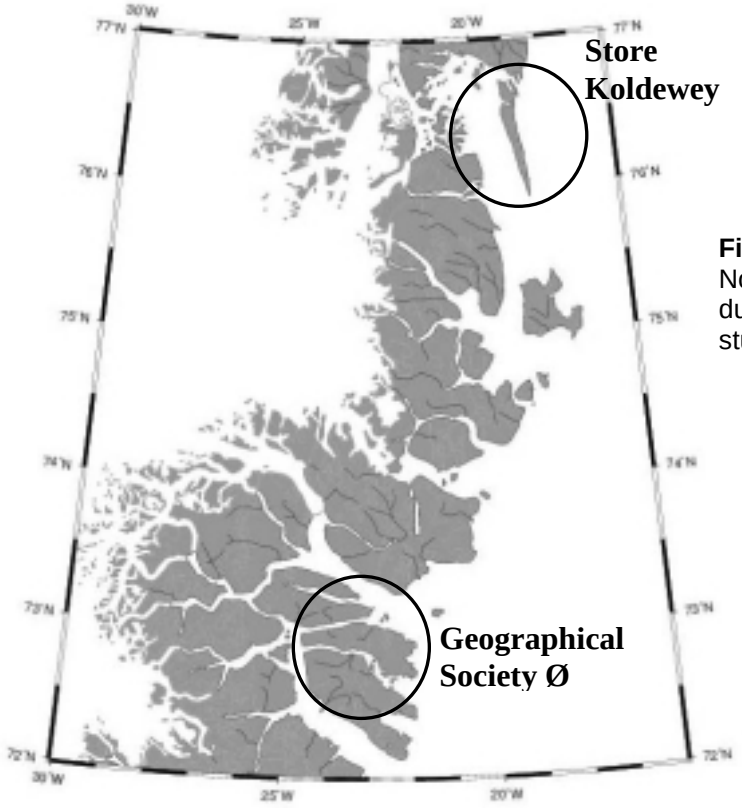


Fig. 6-1: Map of East and Northeast Greenland. The during the field season 2003 studied islands are encircled.

Store Koldewey

Store Koldewey is an elongated island off Northeast Greenland at 75°55'-76°45' N and 018°27'-019°10' W (Fig. 6-1). The island is c. 80 km long and has a maximum width of 10.5 km. Store Koldewey is separated from the mainland by the Dove Bugt in the west and adjoins the Grønlandshavet in the east. Because of its location off north eastern Greenland, it may have formed a natural barrier for the ice masses coming down from the mainland in the past. Therefore, parts of the island may have been unglaciated during the LGM or, relatively early deglaciated during the period of ice retreat.

Located in the East Greenland Caledonian fold belt most parts of Store Koldewey are composed of Precambrian methamorphic bedrocks (mainly gneisses) older than 1800 Ma. Additionally, fossil (e.g., bivalves and ammonites) bearing Jurassic and Cretaceous marine sediments are exposed at the eastern shoreline. Quaternary glacial deposits are widespread on Store Koldewey. Particularly, on the southernmost tip of the island the bedrock is completely concealed by Quaternary sediments.

The morphology on Store Koldewey is dominated by a flat-toped mountain range with an elevation up to 900 m a.s.l. (Fig. 6-1). The west coast is characterized by steep slopes close to the shoreline, whereas the eastern coast is dominated by extended plains with a maximum elevation of 150 m a.s.l. The mountain range is repeatedly interrupted by several U-shaped and west to east oriented valleys, which are partially filled up by freshwater reservoirs of various depths. The lakes are exclusively fed by melt water. Many smaller lakes and ponds exist on the eastern plain in morphological depressions.

The climate in the north eastern part of Greenland is characterized by low precipitation (c. 150 mm/a) and low temperatures between -24°C and 4°C (Born & Böcher 2001). The vegetation cover on Store Koldewey is only sparse and dominated by *Salix arctica*, *Dryas octopetala*, *Cassiope tetragona*, *Eriophorum*, and different lichens and mosses. The local fauna is represented by various birds and a few mammals, e.g., arctic fox, arctic hare, lemmings and polar bears.

Geographical Society Ø

Geographical Society Ø is located off East Greenland at 72°40'-73°04' N and 021°52'-24°35' W (Fig. 6-1). The island is bordered by the Sofia Sund and the Foster Bugt in the north, the Vega Sund in the south, and the Cambridge Bugt in the east. Studies in the past have revealed that major parts of the island were glaciated during the LGM and that the ice retreat in the Vega Sund occurred after c. 11-10 ka BP (Wagner et al. 2000). Findings of pre-Holocene shell materials on the north eastern part of the island (Funder & Hjort 1973, Hjort 1981) suggest that this part was not or not heavily glaciated during the LGM. However, glacial reworking and redeposition cannot be excluded.

The western part of Geographical Society Ø is composed of Upper Paleozoic sediments while the eastern part is built up by Mesozoic sediments. Tertiary volcanic

units are widespread in the sediments. Patches of unconsolidated marine Cenozoic sediments occur on the low-altitude regions of the island. In the southern and eastern parts the landscape is characterized by a hilly topography, whilst the mountains in the western part of the island have a maximum altitude of 1700 m a.s.l. The climatic conditions differ from those on Store Koldewey not much. The precipitation increases to c. 300 mm/a (Reeh 1989), and little warmer temperatures enable, for example, the growth of *Betula nana* on the Geographical Society Ø. Musk oxes are relatively common on Geographical Society Ø.

6.1 Lake Hydrology

Bernd Wagner

During the field season a total of 12 lakes and ponds on Store Koldewey and Geographical Society Ø was investigated in order to characterize their hydrological properties (Fig. 6.1-1).

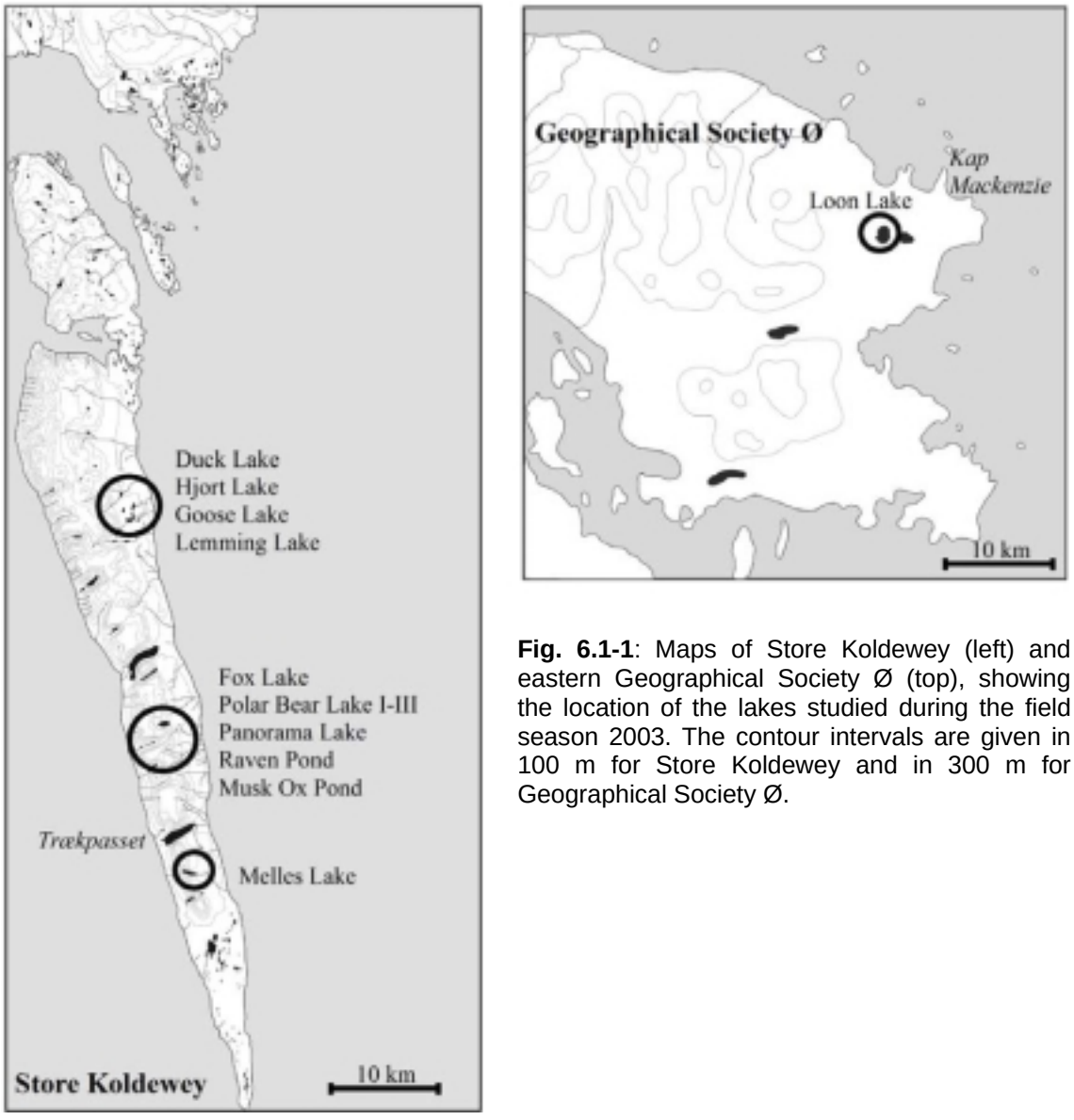


Fig. 6.1-1: Maps of Store Koldewey (left) and eastern Geographical Society Ø (top), showing the location of the lakes studied during the field season 2003. The contour intervals are given in 100 m for Store Koldewey and in 300 m for Geographical Society Ø.

In the shallow ponds the hydrological measurements were carried out at one surface sample from the central part. The locations for the hydrological measurements in the deeper lakes were determined with a hand echo sounder along several profiles across the lakes, which revealed the maximum water depths of the lake basins. At locations, where the maximum water depth was measured, samples were taken from different depths using a water sampler (UWITEC Corp., Austria). The water sampler is released by a short uplift in a certain depth and contains 5 l of water. Once at the surface about 1 l was immediately used to measure temperature, O_2-saturation and content, conductivity, and pH value. On selected horizons water samples were taken in order to determine the anion and cation contents and the contents of methane and dissolved organic carbon (DOC) throughout the water column. For the analyses of the DOC, anion, and cation contents three samples of 30 ml were filled into Nalgene bottles, the latter ones after filtering the water through a 0.45 µm filter. The samples for cation analyses were additionally fixed by adding 200 ml of NaOH. For the measurements of the methane content, water was filled into glass bottles, which contained NaCl in order to release the gas from the water. Finally, the visibility of the lakes was determined using a Secchi disc.

In general, the lakes on Store Koldewey and Geographical Society Ø belong to high arctic lakes, and are characterized by relatively low temperatures, high oxygen content and saturation, low conductivity and low nutrient contents, reflected in a relatively high visibility (Tab. 6.1-1). During the field period from mid August to mid September 2003 the lakes were not covered by ice, although a lateral formation of a thin ice cover was observed at some lakes during cloudless and calm nights.

lake	latitude	longitude	alt. (m asl)	mwd[1] (m)	temp. (°C)	O_2-sat. (%)	O_2-cont. (mg/l)	conduct. (µS/cm)	pH	vis.[2] (m)
Store Koldewey										
Melles Lake	N76°07’40’’	W018°37’57’’	166	72.0	4.0-6.8	102-112	11.8-14.0	37.0-38.0	7.9-8.1	5.4
Duck Lake	N76°25’15’’	W018°45’00’’	118	6.4	6.7-7.2	126-130	14.9-15.5	11.0-11.9	8.6-9.0	5.8
Hjort Lake	N76°25’59’’	W018°45’41’’	122	6.1	5.3-5.4	115-128	14.9-15.4	15.7-16.3	9.1-9.3	
Goose Lake	N76°26’36’’	W018°48’14’’	115	7.4	4.4-4.9	118-122	14.5-15.3	11.0-12.2	8.9-9.1	4.8
Lemming Lake	N76°25’42’’	W018°47’44’’	121	2.0	5.8	125	15.3	23.7	8.3	
Fox Lake	N76°15’06’’	W018°41’32’’	302	57.7	4.7-4.8	111-116	13.6-14.5	8.7-9.3	7.5-8.4	8.1
Raven Pond	N76°16’34’’	W018°36’18’’	104	0.4	2.4	126	16	21.0	8.2	
Polar Bear Lake 1	N76°14’10’’	W018°43’48’’	175	15.9	3.3	121-125	15.2-15.7	30.8-35.1	8.2-8.5	7.3
Polar Bear Lake 3	N76°14’01’’	W018°46’12’’	129	12.3	3.4-3.5	123-126	15.5-16.0	41.3–41.5	8.3-8.4	3.3
Musk Ox Pond	N76°13’57’’	W018°35’55’’	115	0.2	2.6	120	15.9	26.9	8.4	
Panorama Lake	N76°14’51’’	W018°45’34’’	602	c. 5.0	0.8	120	15.9	8.0	8.5	
Geographical Society Ø										
Loon Lake	N72°53’16’’	W022°08’22’’	8	11.7	7.4-7.8	120-122	14.2-14.6	23.2-23.4	7.6-8.0	3.0

[1]mwd = maximum water depth [2]visibility measured by Secchi disc

Tab. 6.1-1: Hydrology of lakes and ponds on Store Koldewey and Geographical Society Ø

As indicated in Tab. 6.1-1, all lakes studied during the field period were completely oxygen saturated down to their bottom waters, and a distinct thermocline or chemocline was missing. The weak increase of the temperature, shown for example in Melles Lake (Fig. 6.1-2), likely derives from a series of sunny and calm days, which warmed up the surface waters of the lake, and caused a small decrease of the O_2-content. The general high oxygen content throughout the water column originates from the complete mixing of the water column and the low bio production within the lake. The low bio productivity leads to only little sedimentation of organic matter, and, consecutively, to little bacterial activity and O_2-depletion at the sediment surface, which is typical for oligotrophic to ultra-oligotrophic lakes in the arctic and alpine regions. Similar trends were measured in the other investigated lakes and ponds. The low bio production of the lakes can be traced back to the low temperatures within the water bodies and the short ice free season of only a few weeks during summer. Additionally, there is only a sparse allochtonous input of nutrients into the lakes due to only patchy dispersed vegetation in the catchments. A relatively common input of nutrients into the lakes seemed to derive from bird (mainly goose) excrements, which were frequently and in a big number observed along the shallower and sandy parts of the lake shores.

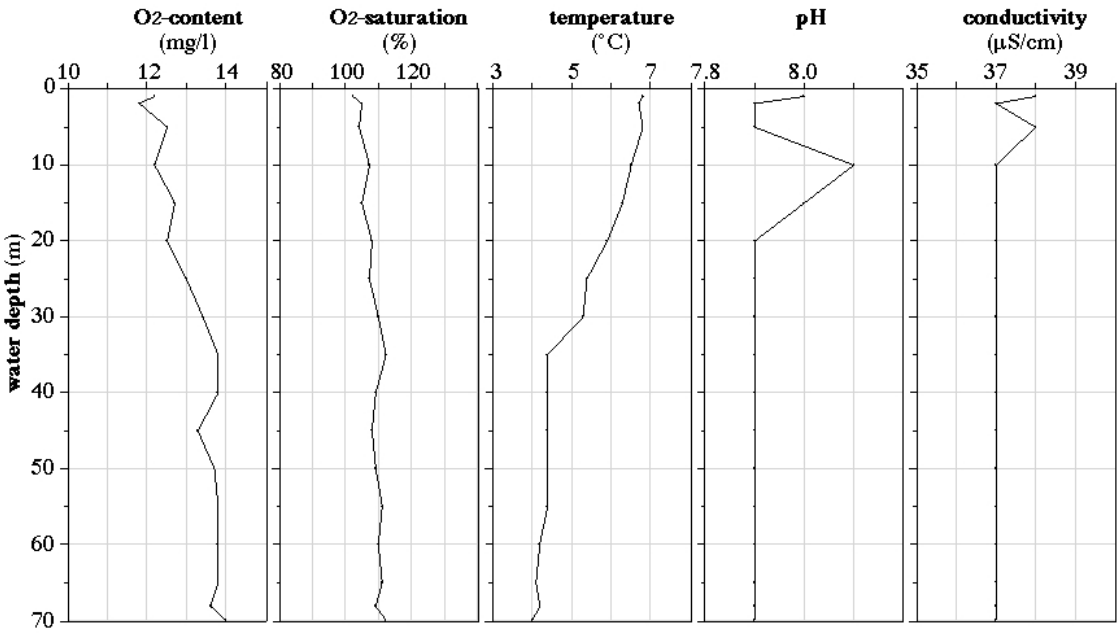


Fig. 6.1-2: Hydrological profile from the centre of Melles Lake, where the maximum water depth was measured.

The pH values in the studied lakes reflect the influence of the catchments areas, mainly dominated by Precambrian metamorphic bedrocks on Store Koldewey and by Mesozoic sediments with Tertiary volcanic units on Geographical Society Ø. However, the relatively high pH values of the lakes, concentrating between 8.0 and 8.5, are astonishing, because all of the investigated lakes are mainly fed by relatively acid melt water during spring and summer. This was indicated, for example, at Fox Lake. There, the snow in the catchments area had a pH value of 5.6, whilst the main inflow had, despite a short travel distance, a pH value of 8.6.

The low amounts of solubles in the water column are documented in the low values of the conductivity, ranging in all investigated lakes below 50 µS/cm (Tab. 6.1-1). These extremely low amounts can be traced back to the inflow of solubles depleted melt water in during spring and summer. However, it also indicates that the influence of spray, also in lakes located at low altitudes, as for example in Loon Lake on Geographical Society Ø, is restricted.

The low amounts of solubles and, particularly, the lack of fine suspended clastic and organic matter in the water column leads to a relatively high visibility, ranging in the studied lakes on Store Koldewey and Geographical Society Ø between 3.0 and 8.1 m (Tab. 6.1-1). Thus it confirms the oligotrophic to ultra-oligotrophic state of the lakes.

6.2 Palaeolimnological work

Bernd Wagner

The study of lake sediments is a common tool to reconstruct the regional environmental and climatic history. In East and Northeast Greenland, lake sediments were used for palaeolimnological work for the last two and a half decades (e.g., Funder 1978, Björck & Persson 1981, Björck et al. 1994a, Bennike & Funder 1997). At the beginning of these studies, pollen were most important for the reconstruction of the palaeoenvironments. However, a delay due to the long immigration paths of plants to East and Northeast Greenland and dating problems caused several uncertainties in reconstructing the onset and the duration of environmental changes (Björck et al. 1994b). During the past decade, the dating techniques, particularly in radiocarbon dating, became more precise, and studies on lake sediments became more and more multi-proxy studies, including sedimentological, geochemical, and biological methods (e.g., Cremer et al. 2001a, Wagner & Melles 2001). Thus, a better knowledge about regional environmental history meanwhile exists. Nevertheless, compared to other, more accessible regions, the data basis for the high arctic regions is still poor, and much work needs to be done to better understand the period of deglaciation and the postglacial climatic and environmental changes.

For this purpose c. 55 m of sediment cores were recovered from 7 lakes on Store Koldewey, and c. 20 m from a lake on the outer Geographical Society Ø, respectively. A complete list of the sediment cores is given in Tab. 6.2-1. The sediment cores will be investigated with chronological (radiocarbon dating), sedimentological (grain-size analyses, XRD), biological (diatoms, pollen, macrofossils, chironomids, bacterial activity and bacteria assemblages), and biogeochemical (carbon, nitrogen, sulphur, biogenic opal, methane) methods.

The sediment cores were recovered using three different coring systems from a small and a bigger floating platform. A gravity corer (UWITEC Corp., Austria) was used to obtain undisturbed surface sediments of up to c. 85 cm length. The corer is equipped with a PVC liner of 60 or 120 cm in length and 6 cm in diameter. The penetration depth can be controlled by the falling distance during the coring process and the number of weights used. A successful coring process is indicated by horizontally laying surface sediments in the liner and by undisturbed water super standing on top of them.

The second coring system used was a piston corer (UWITEC Corp., Austria). This system is handled via a tripod on the floating platform and allows obtaining deeper sediments up to c. 20 m depth. The piston corer consists of a 3.3 m long metal tube, which is loaded with a 3 m long PVC liner of 6 cm diameter. Thus, the maximum penetration of the corer into the sediment is 3 m at each coring process. Because the release of the piston in the water or sediment column can be controlled, longer sediment records can be obtained by overlapping of several 3 m segments. The penetration of the corer tube will be hampered, for example, by massive sand layers, too coarse, or very consolidated sediments. An over consolidated diamicton, which often forms the basis of lacustrine sediments in polar regions, will stop the coring process in general. The maximum core length obtained during the field period in 2003 was more than 10 m.

The third coring system used during the field season was a Russian peat corer, which was employed on the shallower lakes of up to 10 m water depth. This corer enables to recover sediment sequences of 1 m length at each coring process. Longer sequences are obtained by a new coring process in the deeper sediments. The maximum penetration depends on the water depth and the consistency of the sediments. During the field period in 2003 on Store Koldewey, the maximum core length obtained with the Russian peat corer was 2.8 m. Additionally to the above described coring systems, two short sediment cores were taken by hand from the sediment surface in shallow water (Tab. 6.2-1).

The basis of the sediment sequences was reached on all lakes investigated during the field season 2003, and the complete history of their basins since the onset of limnic or marine sedimentation likely was recovered. Marine sediments likely were deposited in earlier times in Loon Lake on north eastern Geographical Society Ø. Today, the lake is located at c. 8 m a.s.l. Raised marine beaches of early to mid Holocene age occur, however, up to an altitude of c. 50 m a.s.l. in this part of the island. Thus, the lake likely forms a former marine basin.

lake	core no.	latitude	longitude	water depth	type	penetration
Store Koldewey						
Melles Lake	Lz1100-1	N 76°07’40’’	W 018°37’57’’	68.0 m	gravity corer	0-43 cm
Melles Lake	Lz1101-1	N 76°07’35’’	W 018°36’39’’	6.7 m	gravity corer	0-52.5 cm
Melles Lake	Lz1101-2	N 76°07’35’’	W 018°36’39’’	6.7 m	gravity corer	0-72 cm
Melles Lake	Lz1101-3	N 76°07’35’’	W 018°36’39’’	6.7 m	gravity corer	0-64 cm
Melles Lake	Lz1101-4	N 76°07’35’’	W 018°36’39’’	6.7 m	gravity corer	0-72.5 cm
Melles Lake	Lz1101-5	N 76°07’35’’	W 018°36’39’’	6.7 m	piston corer	0-218 cm
Melles Lake	Lz1101-6	N 76°07’35’’	W 018°36’39’’	6.7 m	piston corer	0-244 cm
Melles Lake	Lz1101-7	N 76°07’35’’	W 018°36’39’’	6.7 m	piston corer	221-440 cm
Melles Lake	Lz1101-8	N 76°07’35’’	W 018°36’39’’	6.7 m	piston corer	240-452 cm
Melles Lake	Lz1102-1	N 76°07’42’’	W 018°37’52’’	71.6 m	gravity corer	0-45.5 cm
Melles Lake	Lz1102-2	N 76°07’42’’	W 018°37’52’’	71.6 m	gravity corer	0-47.5 cm
Melles Lake	Lz1102-3	N 76°07’42’’	W 018°37’52’’	71.6 m	gravity corer	0-40 cm
Melles Lake	Lz1102-4	N 76°07’42’’	W 018°37’52’’	71.6 m	piston corer	60-250 cm
Melles Lake	Lz1102-5	N 76°07’42’’	W 018°37’52’’	71.6 m	gravity corer	0-84 cm
Melles Lake	Lz1102-6	N 76°07’42’’	W 018°37’52’’	71.6 m	gravity corer	0-86 cm
Melles Lake	Lz1102-7	N 76°07’42’’	W 018°37’52’’	71.6 m	piston corer	10-288 cm
Melles Lake	Lz1102-8	N 76°07’42’’	W 018°37’52’’	71.6 m	piston corer	214.5-508 cm
Duck Lake	Lz1103-1	N 76°25’15’’	W 018°45’00’’	6.4 m	gravity corer	0-67 cm
Duck Lake	Lz1103-2	N 76°25’15’’	W 018°45’00’’	6.4 m	gravity corer	0-65 cm

lake	core no.	latitude	longitude	water depth	type	penetration
Duck Lake	Lz1103-3	N 76°25’15’’	W 018°45’00’’	6.4 m	gravity corer	0-48 cm
Duck Lake	Lz1103-4	N 76°25’15’’	W 018°45’00’’	6.4 m	gravity corer	0-40 cm
Duck Lake	Lz1103-5	N 76°25’15’’	W 018°45’00’’	6.4 m	piston corer	5-280 cm
Duck Lake	Lz1103-6	N 76°25’15’’	W 018°45’00’’	6.4 m	piston corer	5-294 cm
Duck Lake	Lz1103-7	N 76°25’15’’	W 018°45’00’’	6.4 m	piston corer	50-331 cm
Hjort Lake	Lz1104-1	N 76°25’59’’	W 018°45’41’’	6.1 m	gravity corer	0-70 cm
Hjort Lake	Lz1104-2	N 76°25’59’’	W 018°45’41’’	6.1 m	gravity corer	0-53.5 cm
Hjort Lake	Lz1104-3	N 76°25’59’’	W 018°45’41’’	6.1 m	gravity corer	0-43 cm
Hjort Lake	Lz1104-4	N 76°25’59’’	W 018°45’41’’	6.1 m	gravity corer	0-45 cm
Hjort Lake	Lz1104-5	N 76°25’59’’	W 018°45’41’’	6.1 m	russian corer	0-240 cm
Hjort Lake	Lz1104-6	N 76°25’59’’	W 018°45’41’’	6.1 m	russian corer	0-240 cm
Goose Lake	Lz1105-1	N 76°26’36’’	W 018°48’14’’	7.4 m	gravity corer	0-69 cm
Goose Lake	Lz1105-2	N 76°26’36’’	W 018°48’14’’	7.4 m	gravity corer	0-68 cm
Goose Lake	Lz1105-3	N 76°26’36’’	W 018°48’14’’	7.4 m	gravity corer	0-49 cm
Goose Lake	Lz1105-4	N 76°26’36’’	W 018°48’14’’	7.4 m	russian corer	0-180 cm
Goose Lake	Lz1105-5	N 76°26’36’’	W 018°48’14’’	7.4 m	russian corer	0-180 cm
Fox Lake	Lz1106-1	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-51.5 cm
Fox Lake	Lz1106-2	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-57 cm
Fox Lake	Lz1106-3	N 76°15’06’’	W 018°41’32’’	54.8 m	piston corer	2-64 cm
Fox Lake	Lz1106-4	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-54 cm
Fox Lake	Lz1106-5	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-59 cm
Fox Lake	Lz1106-6	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-47 cm
Fox Lake	Lz1106-7	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-60 cm
Fox Lake	Lz1106-8	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-72 cm
Fox Lake	Lz1106-9	N 76°15’06’’	W 018°41’32’’	54.8 m	gravity corer	0-54 cm
Fox Lake	Lz1107-1	N 76°15’10’’	W 018°40’58’’	14.0 m	gravity corer	0-58 cm
Fox Lake	Lz1107-2	N 76°15’10’’	W 018°40’58’’	14.0 m	gravity corer	0-35 cm
Fox Lake	Lz1108-1	N 76°15’02’’	W 018°40’58’’	10.0 m	gravity corer	0-2 cm
Fox Lake	Lz1109-1	N 76°15’04’’	W 018°41’10’’	19.5 m	gravity corer	0-2 cm
Fox Lake	Lz1110-1	N 76°15’07’’	W 018°41’09’’	30.0 m	gravity corer	0-2 cm
Fox Lake	Lz1111-1	N 76°15’08’’	W 018°41’13’’	40.0 m	gravity corer	0-2 cm
Fox Lake	Lz1112-1	N 76°15’09’’	W 018°41’20’’	49.5 m	gravity corer	0-2 cm
Fox Lake	Lz1115-1	N 76°15’06’’	W 018°42’45’’	0.4 m	hand	0-18 cm
Fox Lake	Lz1115-2	N 76°15’06’’	W 018°42’45’’	0.4 m	hand	0-19 cm
Polar Bear Lake 1	Lz1113-1	N 76°14’10’’	W 018°43’48’’	14.4 m	gravity corer	0-47.5 cm
Polar Bear Lake 1	Lz1113-2	N 76°14’10’’	W 018°43’48’’	14.4 m	gravity corer	0-48 cm
Polar Bear Lake 1	Lz1113-3	N 76°14’10’’	W 018°43’48’’	14.4 m	gravity corer	0-50 cm
Polar Bear Lake 1	Lz1113-4	N 76°14’10’’	W 018°43’48’’	14.4 m	russian corer	0-70 cm
Polar Bear Lake 1	Lz1113-5	N 76°14’10’’	W 018°43’48’’	14.4 m	russian corer	0-100 cm
Polar Bear Lake 3	Lz1114-1	N 76°14’01’’	W 018°46’12’’	12.3 m	gravity corer	0-22 cm
Geographical Society Ø						
Loon Lake	Lz1116-1	N 72°53’16’’	W 022°08’22’’	11.7 m	gravity corer	0-81 cm
Loon Lake	Lz1116-2	N 72°53’16’’	W 022°08’22’’	11.7 m	gravity corer	0-84.5 cm
Loon Lake	Lz1116-3	N 72°53’16’’	W 022°08’22’’	11.7 m	gravity corer	0-49 cm
Loon Lake	Lz1116-4	N 72°53’16’’	W 022°08’22’’	11.7 m	gravity corer	0-45 cm
Loon Lake	Lz1116-5	N 72°53’16’’	W 022°08’22’’	11.7 m	piston corer	0-286 cm
Loon Lake	Lz1116-6	N 72°53’16’’	W 022°08’22’’	11.7 m	piston corer	0-285 cm
Loon Lake	Lz1116-7	N 72°53’16’’	W 022°08’22’’	11.7 m	piston corer	225-526 cm
Loon Lake	Lz1116-8	N 72°53’16’’	W 022°08’22’’	11.7 m	piston corer	475-777 cm
Loon Lake	Lz1116-9	N 72°53’16’’	W 022°08’22’’	11.7 m	piston corer	725-1014 cm
Loon Lake	Lz1116-10	N 72°53’16’’	W 022°08’22’’	11.7 m	piston corer	225-528 cm

Tab. 6.2-1: Sediment cores from lakes on Store Koldewey and Geographical Society Ø.

The sediment basis was formed in most lakes by a stiffy diamicton or by massive sand layers. Topwards, particularly in the deeper parts of Melles and Fox Lake, the sediments were mainly composed of clastic matter with little contents of organic matter. In the shallower lakes, and also in the shallower parts of Melles and Fox Lake, a higher content of organic matter and partially interspersed moss and algae layers were observed. Nevertheless, the proportion of fine clastic matter remained dominating in these sediments.

Surface sediment cores from some of the studied lakes were immediately opened

Fig. 6.2-1: Surface sediment core from Duck Lake. The dark horizons are formed by 1-2 cm thick moss layers.

and described after their recovery (Fig. 6.2-1). A lamination of the sediments occurred partially, but not throughout the entire opened sediment sequences. A sharp boundary between brownish sediments at the top, likely representing aerob conditions, and greyish sediments below, likely representing anaerob conditions, was observed between c. 1 and 5 cm in most opened cores. At cores Lz1107 and Lz1108 from Fox Lake, however, this transition occurred in a sediment depth of c. 40 cm. Probably, the sediment contains only very small amounts of organic matter or the water column is completely oxygen saturated over a longer period at these locations.

Fossil fauna remains were macroscopically not seen in the sediment cores, although white particles, probably shell remains, were observed in a sediment depth of c. 520 cm at core Lz1116-7 from Loon Lake. The occurrence of these shell remains has to be confirmed after the core opening later in the laboratory. Living chironomid larvae were common at the sediment surface in a few lakes.

For the transport, the cores were split, if necessary, into segments of up to 1 m length and kept at +4°C. Sediment cores, which were intended to analyse the bacterial activity and the bacteria assemblages, were frozen to –18°C onboard of RV “Polarstern”.

6.3 Diatom phytoplankton and phytobenthos analyses

Holger Cremer

Diatoms or Bacillariophyceae are single-celled algae that produce a pill-box like skeleton composed of biogenic opal (Fig. 6.3-1). These microalgae are very common in all kinds of aquatic environments, freshwater and marine, including extreme habitats like hot sulphur springs and the sea-ice. Diatoms use a wide range of habitats for growth, e.g., the water column, rocks, sand, submerse plants and fish.

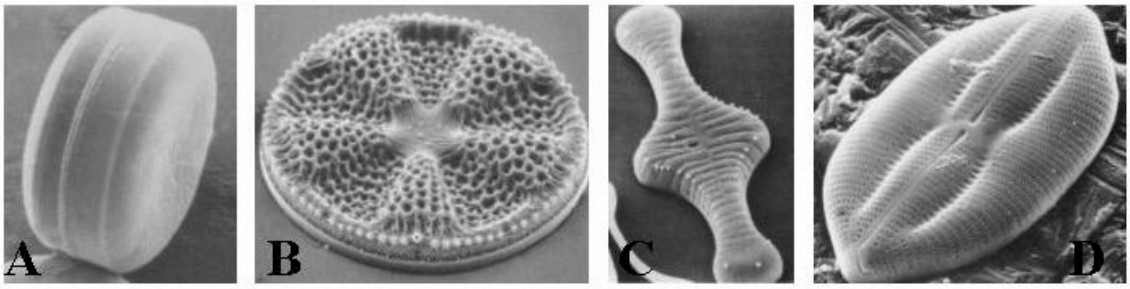


Fig. 6.3-1: Selection of diatom valves taken with a scanning electron microscope illustrating the morphological variability within the diatoms. A. Complete frustule in girdle view of the genus *Coscinodiscus*. B-D. Face view of valves of the genera *Actinoptychus* (B), *Tabellaria* (C) and *Lyrella* (D). Photos taken from Round et al. (1990).

Diatoms are since long time used in biological and palaeolimnological applications for both the characterization of the ecological state of freshwater habitats and the reconstruction of the climatic and environmental evolution of lakes, respectively (Stoermer & Smol 1999). Arctic environments are characterized by extremes in temperature, radiation, nutrient and habitat availability and ice coverage and do react very sensitively on environmental changes. Consequently, biotas living in these regions, among them the shell-bearing diatoms as the main phytoplankton group have the potential to be a valuable recorder of environmental changes through time (Douglas & Smol 1999).

Diatom research in Greenland

The diatoms of Greenland and their potential for palaeoenvironmental analyses are insufficiently investigated. While there is a relatively good knowledge of the diatom floras in freshwater environments of West Greenland, the data base in rather poor for East Greenland (see Cremer et al. 2001b, for an extended review of diatom research in Greenland). Even fewer descriptions of diatom floras are available from Northeast Greenland (e.g., Foged 1955, 1989) and are mainly restricted to the description of the taxonomic composition of diatom floras, and offer little palaeoecological information. The same lack of information exists for long sedimentary sequences covering the entire Holocene. The only so far published investigation of a diatom-based Holocene history of East Greenland was carried out in lakes of the Scoresby Sund region and on Geographical Society Ø (Cremer et al. 2001a, 2001b).

Working program

Sampling of diatom phytoplankton and phytobenthos was carried out in 11 lakes and ponds on Store Koldewey and in one lake on Geographical Society Ø. The taxonomic analyses of the collected diatom floras will give an overview on the taxonomic composition and diversity of epiphytic, epipsammic and epilithic diatom communities in dependence of the hydrology. Phytoplankton communities will be characterized from filtered water samples (Fig. 6.3-2). The physico-chemical characteristics of the water bodies are summarized in the chapter 'Lake hydrology'.

Field results

A first check of the phytoplankton filter samples revealed that the diversity of pelagic diatom communities in deeper lakes is generally low. The only centric, planktonic diatom genus found on selected filters is *Cyclotella* which, however, is present in relatively low cell numbers. This is supported by observations of Cremer et al. (2001b), who found *Cyclotella* as the only present planktonic diatom genus in a long sedimentary sequence from Raffles Sø (Scoresby Sund region, East Greenland) covering the entire Holocene. However, further analyses have to confirm this preliminary observation.

Fig. 6.3-2: Typical lake margin environment on Store Koldewey. The lake was partly covered by thin ice. Benthic diatoms are attached to rock and stone surfaces, the soft sediment between the rocks and submerged algae.

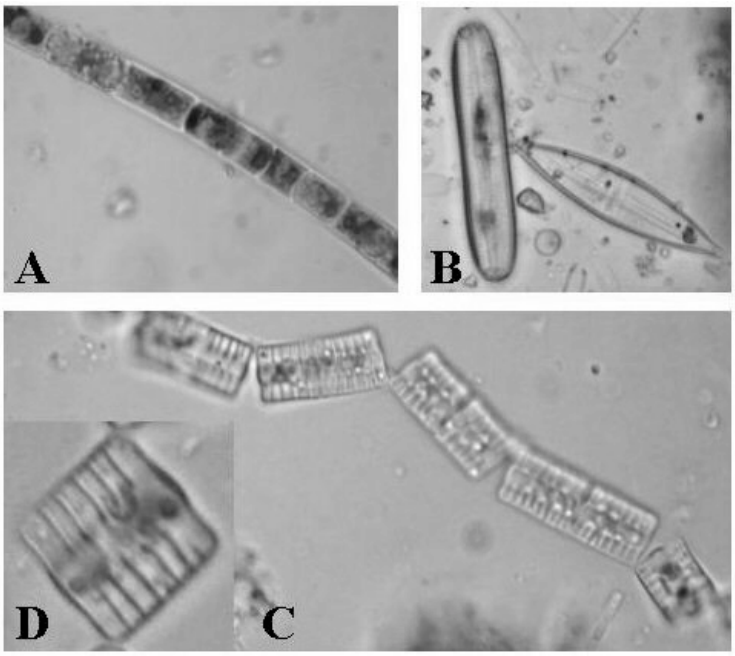


Fig. 6.3-3: Examples of living benthic diatoms from various substrats from lakes on Store Koldewey. A. Chain of *Melosira* from the submerged moss *Drepanocladus*. B. *Pinnularia* sp. (left) and *Stauroneis* sp. (right) from a soft sediment surface. C, D. Long zig-zag chain of *Tabellaria* sp. washed from *Drepanocladus*.

Generally, all sampled benthic substrates (surface sediment, rocks, stones, submerged vegetation) show a relatively high diversity of benthic diatoms compared to lakes for example in Northwest Greenland (Blake et al. 1992). The seemingly most abundant diatom genera are *Pinnularia, Tabellaria* and *Navicula* (Fig. 6.3-3). Again, these findings have to be confirmed by detailed taxonomical analyses which will also reveal differences in the species composition and diversity of diatom communities in dependence of specific lake water characteristics.

6.4 Measurement of trace gas emissions from soils and lakes

Svenja Kobabe, Nadja Hultzsch

The exchange of the climate relevant trace gases methane (CH_4) and carbon dioxide (CO_2) in northern terrestrial environments has attracted much attention in recent years. One reason for this is, that about 14% of the global soil carbon are stored in the soils of arctic and sub arctic regions. These regions constitute a substantial part of the global natural wetlands and form the largest single source of atmospheric methane (e.g., Fung et al. 1991, Christensen et al. 1996). Trace gas fluxes have been studied in some detail in northern temperate/boreal (e.g., Silvola et al. 1996, Moosavi & Crill 1997), sub arctic (Whalen & Reeburgh 1990, Svensson et al. 1999) and low arctic systems (Whalen & Reeburgh 1990, Christensen 1993, Wagner et al. 2003), but about the high arctic just a few data exist (Christensen et al. 2000), probably most because of its inaccessibility. One aim of our study is to receive more information about trace gas fluxes in this region.

The emitted methane is the result of two main processes: 1.) the production by micro organisms as the final step in the anaerobic decomposition of organic material. 2.) The oxidation of methane to CO_2 by another group of micro organisms. To

understand these processes a more detailed knowledge about the activity and composition of the bacteria community is important. The main scientific objectives are:

- Determination of CO_2 and CH_4 fluxes at different sites (soils and lakes) of Store Koldewey and Geographical Society Ø
- Investigation of pedogenic and microbial parameters, which control the emission rates of trace gases at different sites
- Analysis of the microbial community structure in the different soils and sediments

The investigations include field measurements of methane and carbon dioxide emissions at several sites. Additional to the emission measurements, the soils and sediments were described and samples for the analysis of the main soil properties and the microbial process studies were taken.

Field work and methods

Soils:
Methane emission measurements and soil sampling were done on 5 different sites on the islands Store Koldewey and Geographical Society Ø. At every investigation site first the methane emissions were measured for several days in succession. At the same time soil temperature at different depth (surface, 1, 2, 5, 10 cm) was measured.

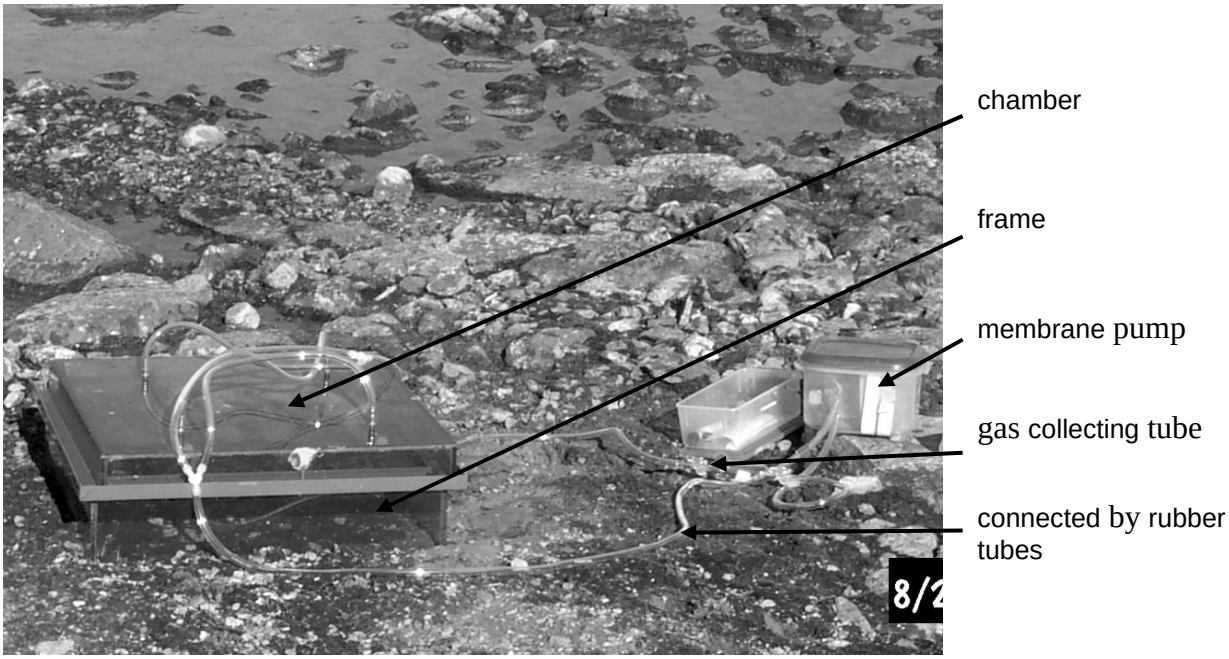


Fig. 6.4-1: Principle of the closed chamber method.

For the measurement of the methane emission the static chamber method was used (Fig. 6.4.-1). The chambers and frames were built out of PVC. The frames with a U-

shaped profile at the top were inserted into the soil. To start the measurements the profile was filled with water and the PVC chamber was put on top of the frame. The chamber, having a size of 50x50x15 cm was connected with a gas collecting tube and a small membrane pump by rubber tubes. The membrane pump was used to create a constant gas flux through the system. After 30 minutes closing time aliquots of the headspace gas were removed with a gas tight syringe. The gas was transferred into gas-tight serum-bottles filled with NaCl-saturated solution. The concentrations of CH_4 and CO_2 were measured with a gas chromatograph (Agilent 6980) equipped with flame ionisation detector for the determination of the methane concentrations and a methanizer for the CO_2 concentrations, respectively.

sample ID	date	lake	latitude	longitude	type	depth	sample amount	planned analyses*
Store Koldewey								
G 03-45	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	0-1 cm	0,5 kg	PC, B
G 03-46	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	3-6 cm	0,5 kg	PC, B
G 03-47	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	6-12 cm	0,5 kg	PC, B
G 03-48	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	12+ cm	0,5 kg	PC, B
G 03-49 a-c	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	3-6 cm	~ 5g	M
G 03-50 a-c	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	6-12 cm	~ 5g	M
G 03-51 a-c	21. aug.	Melles	N 76°07'33.5"	W 018°36'17.2"	soil, site 1	12+ cm	~ 5g	M
G 03-78	27. aug.	Duck	N 76°25'14.6"	W 018°44'39.7"	soil, site 2	0-2 cm	~ 0,5 kg	PC, B, M
G 03-79	27. aug.	Duck	N 76°25'14.6"	W 018°44'39.7"	soil, site 2	2-4 cm	~ 0,5 kg	PC, B, M
G 03-80	27. aug.	Duck	N 76°25'14.6"	W 018°44'39.7"	soil, site 2	4-6 cm	~ 0,5 kg	PC, B, M
G 03-81	27. aug.	Duck	N 76°25'14.6"	W 018°44'39.7"	soil, site 2	6-29 cm	~ 0,5 kg	PC, B
G 03-82	27. aug.	Duck	N 76°25'14.6"	W 018°44'39.7"	soil, site 2	29+ cm	~ 0,5 kg	PC, B
G 03-83	27. aug.	Duck	N 76°35'14.8"	W 018°44'16.3"	soil, site 3	0-4 cm	~ 0,5 kg	PC, B, M
G 03-84	27. aug.	Duck	N 76°35'14.8"	W 018°44'16.3"	soil, site 3	4-35 cm	~ 0,5 kg	PC, B, M
G 03-85	27. aug.	Duck	N 76°35'14.8"	W 018°44'16.3"	soil, site 3	35-44 cm	~ 0,5 kg	PC, B, M
G 03-86	27. aug.	Duck	N 76°35'14.8"	W 018°44'16.3"	soil, site 3	44+ cm	~ 0,5 kg	PC, B, M
Geographical Society Ø								
G 03-112	13. sep.	Loon	N 72°52'49.8"	W 022°08´54.9"	soil, site 5	0-2 cm	0,5 kg	PC, B
G 03-113	13. sep.	Loon	N 72°52'49.8"	W 022°08´54.9"	soil, site 5	2-4 cm	0,5 kg	PC, B
G 03-114	13. sep.	Loon	N 72°52'49.8"	W 022°08´54.9"	soil, site 5	4-6 cm	0,5 kg	PC, B

sample ID	date	lake	latitude	longitude	type	depth	sample amount	planned analyses*
G 03-115	13. sep.	Loon	N 72°52'49.8"	W 022°08´54.9"	soil, site 5	6-9 cm	0,5 kg	PC, B
G 03-116	13. sep.	Loon	N 72°52'49.8"	W 022°08´54.9"	soil, site 5	9-22 cm	0,5 kg	PC, B
G 03-117	13. sep.	Loon	N 72°52'48.2"	W 022°08'58.0"	soil, site 4	0-2 cm	0,5 kg	PC, B
G 03-118	13. sep.	Loon	N 72°52'48.2"	W 022°08'58.0"	soil, site 4	2-9 cm	0,5 kg	PC, B
G 03-119	13. sep.	Loon	N 72°52'48.2"	W 022°08'58.0"	soil, site 4	9-16 cm	0,5 kg	PC, B

* PC = physical and chemical soil analyses; B = micro- an molecularbiological analyses; M = CH_4-content

Tab. 6.4-1: List of soil samples taken during the field work on Store Koldewey and Geographical Society Ø.

After the period of emission measurements soils were described and sampled. Beside the German classification (KA4), the soils were described using the 8th edition of the US Soil Taxonomy (ST). From each horizon samples were taken for analysing several soil parameters, which influence the methane emission (C/N-ratio, C_{org}-content, DOC-content). These samples were stored and transported at +4°C. The samples that were taken for the micro- and molecularbiological analyses were stored and transported at –18°C. Methane emission measurements and soil sampling were done at five different sites (Tab. 3). Four of them were Gleys, situated near the shores of the investigated lakes. A detailed description is given for three of the measuring sites in Tab. 4-6.

depth (cm)	horizon (KA4 / ST)*	description	sample-ID
0-1	Ah / Ajj	very strong rooted, very dark grey (10YR 3/1) loamy sand, high content of organic material, pebbles on the surface	G03-45
1-6	Go1 / B 1	sparse rooted, dark greyish brown (10YR 4/2) loamy sand, very low content of organic material, 1-3 cm layer of pebbles	G03-46
6-12	Go2 / B 2	very sparse rooted, brown (10YR 4/3) loamy sand, no organic material	G03-47
12-40+	Gr / Bg	non rooted, greyish brown (2,5 Y 5/2) sandy silty loam, no organic material	G03-48

Tab. 6.4-2: Gley (site 1)
location: Store Koldewey; N 76°07'33.5'' W 018°36'17.2''
landform / elevation: end of a flat slope at the shore of Lake Melles, 166 m a.s.l.
vegetation: mosses, lichens; vegetation cover: 20 – 30 %
water table: 13 cm
parent material: moraine material
KA4: Gley Soil Taxonomy: Cryaquept

depth (cm)	horizon (KA4 / ST)	description	sample-ID
0-2	Ah / A	extreme strong rooted, black (10YR 2/1) sand, very high content of organic material	G03-78
2-6	Go1 / Bo	very strong rooted, very dark greyish brown (10 YR 3/2) sand, medium content of organic material, 2-4 cm: layer of dark brown (7,5YR 3/3) iron oxide	G03-79 (2-4 cm) G03-80 (4-6 cm)
6-29	Gr 1 / Bg 1	sparse rooted, dark grey (2,5 Y 4/1) sand, very low content of organic material, with very dark grey (10YR 3/1) spots of organic material, 10-20 % pebbles	G03-81
29-50+	Gr 2 / Bg 2	non rooted, olive brown (2,5 Y 4/3) sand, no organic material, layer of dark grey (10YR 4/4) iron oxide in the upper 1-2cm	G03-82

Tab. 6.4-3: Gley (site 2)
location: Store Koldewey; N 76°25'14.6'' W 018°44'39.7''
landform / elevation: end of a slope at the shore of Duck Lake, 118 m a.s.l.
vegetation: mosses, lichens, willows (*Salix arctica*), cotton grass; vegetation cover: 80 %
water table: 20 cm
parent material: moraine material; boulders overlain by sandy material, transported by melt water
KA4: Gley Soil Taxonomy: Cryaquept

depth (cm)	horizon (KA4 / ST)	description	sample-ID
0-4	Ah / A	sparse rooted, dark grey (10YR 4/1) silty sand, low content of organic material, 30 % pebbles	G03-83
4-35	ilC1 / C	very sparse rooted, dark greyish brown (10YR 4/2) silty sand, no organic material, from 21 cm to the bottom of the horizon high moisture content	G03-46
35-44	ilC2 / 2 C	non-rooted, dark greyish brown (2,5Y 4/2) sandy clay, no organic material, 20 % pebbles (2-3 cm)	G03-47
44-60+	ilC3 / 3 Cdx	non-rooted, dark grey (2,5 Y 4/1) loamy clay, no organic material, extreme high density	G03-48

Tab. 6.4-4: Regosol (site 3)
location: Store Koldewey; N 76°35'14.3'' W 018°44'16.3''
landform / elevation: plane on top of hill, near Duck Lake, 176 m a.s.l.
vegetation: mosses, lichens; vegetation cover: 10 %
water table: -
parent material: sand, deposited by glacier or melt water, underlain by sandy clay deposited by glacier, underlain by extreme dense clay (probably overconsolidated by glacier weight)
KA4: Regosol Soil Taxonomy: Cryofluvent

Fig. 6.4-2: Methane emission measurement site 2, at Duck Lake (see Tab. 6.4-3).

In general, the dry conditions in northeastern Greenland characterize the soil and vegetation. The landscape of the investigated areas is dominated by polar desert soils. The vegetation cover is scarce, leading to a low content of humus in a thin upper layer of the soil. However, along streams and near the lakes there were also areas with water saturated soils and a better-developed vegetation cover. The analyses carried out later in the laboratory will indicate, if these conditions are suitable for some methane producing microorganisms.

Lakes:
The amount of methane emission from aquatic ecosystems is the result of microbial production and consumption by oxidation. Microbial production of methane is one of the major pathways of degradation of organic matter in the anaerobic sediment horizons. The produced methane can be oxidised in the upper, oxygen rich surface sediments or in the water column.

The measurement of methane emissions from the sediment and water column was performed at Melles, Duck and Fox Lake near the shore (c. 10 to 15 m distance) at sites relatively close to the sites, where the soil investigations were carried out at the lake shores. The system used for measuring the gas emission of the lakes was the same which was used for the soil (Fig. 6.4-1). The chamber was placed directly on the water surface. It was kept horizontally floating by eight floating bodies, sinking about 6 cm into the water. The minimum time to collect the emitted gas at each spot was half an hour.

In addition to the measurements of the methane emissions from the lakes, also the methane concentrations in the water columns and the sediments were examined. For a better understanding of the variables that potentially affect the methane emission from a lake, the water depth, sediment and water temperature, pH-value was

measured in the field, and the carbon content of the sediment will be analysed later in the laboratory. The methanogenic association in the sediments will be determined via fluorescence-in-situ-hybridization at cores collected at the sites, where the measurements of methane emission were performed. These sediment cores provide also material for additional micro- and molecular biological investigations, as for example the measurement of the methane production and oxidation capacity.

6.5 Surface exposure dating

Lena Håkansson

In 1976 a Swedish-Danish party visited Hochstetter Forland and Shannon Island. Their field season also included a one-day helicopter trip to Store Koldewey. The results from the fieldwork were published by Hjort (1981). He suggested that only the southern lowland of Store Koldewey was overridden by Weichselian glaciers, meaning that both the plateau mountains and the area east thereof were ice free during this period. Also a glacial chronology for northern East Greenland was presented, which identifies three stadials with glacial advances of successively smaller extent. It was suggested that the earliest of these, the Kap Mackenzie stadial, is of early Weichselian age or older. During this period the ice reached onto the continental shelf, covering more or less the whole investigated area. The Muschelbjerg and Nanok stadials represent younger periods with more restricted glacial advances. However, this chronology was re-evaluated by Hjort & Björck (1984) based on pollen data, ^{14}C dates and amino acid ratios in mollusc shells from Hochstetter Forland and Shannon Island. The re-evaluated chronology suggests that the Weichselian glacial maximum occurred around 15 000 BP during the Nanok stadial. Contrary to the earlier interpretation it is suggested that the Muschelbjerg and Kap Mackenzie stadials have a Saalian or pre-Saalian age.

More recent work on the shelf south from the working area has questioned the extent of the Weichselian extent of Hjorts chronology. In contradiction they point out that the ice during this period reached onto the continental shelf. In order to solve these contradictions geomorphological investigations and sampling for surface exposure dating (SED) have been conducted. These investigations will shed light on the glacial history of northern East Greenland through absolute dating and further knowledge about the geomorphology of Store Koldewey.

Fieldwork

During the fieldwork on Store Koldewey eleven rock samples were collected both from the top of the plateau mountains and from the lowland east and south from the mountain range. Additionally, three rock samples were collected on north eastern Geographical Society Ø. In most cases boulders were sampled, however, two localities are represented by bedrock samples (Tab. 6.5-1). They are all collected using a hammer and chisel (Fig. 6.5-1).

Additionally the orientation of glacial striae were measured and moraine ridges were mapped.

Fig. 6.5-1: Rock sampling on Geographical Society Ø.

Methods

Cosmic ray particles entering the earth's atmosphere produce a shower of secondary particles (e. g. neutrons, protons and muons). Those particles that reach the terrestrial surface can produce terrestrial cosmogenic nuclides (TCN) in the uppermost tens of cm in a rock. Here TCN is referred to the six nuclides that are most commonly used in geological applications (^{3}He, ^{10}Be, ^{14}C, ^{21}Ne, ^{26}Al and ^{36}Cl). The production takes place in-situ in minerals, from which quartz is most commonly used for analyses. Its simple chemical composition (SiO_2), resistance to erosional processes and its abundance in many different lithologies makes it an ideal target mineral for the production of TCN. The concentration of these nuclides in a rock is time dependent and can therefore be used to measure the time interval of exposure to cosmic radiation. If assumed that the sampled surface of a rock is related to a geological process, surface exposure dating yield an absolute timing of the event. Depending on the nuclide analysed the method has a time range from millions of years down to a few thousand years.

sample no.	latitude	longitude	alt. (m a.s.l.)	size
Store Koldewey				
001	N76°06'37.0''	W018°34'34.0''	630	0.7 x 1 x 1
002	N76°06'17.0''	W018°35'00.3''	214	1 x 2 x 3
003	N76°04'02.8''	W018°35'21.7''	51	0.7x 2 x 1.5
004	N76°05'07.7''	W018°38'30.9''	93	0.6 x 1 x 0.5
005	N76°10'32.6''	W018°40'37.5''	617	1.5 x 2 x 3
006	N76°07'43.7''	W018°39'35.5''	198	bedrock
007	N76°23'01.9''	W018°57'07.4''	686	bedrock
008	N76°23'20.9''	W018°51'20.6''	568	1 x 3 x 4
009			569	1.2 x 2 x 3
010	N76°15'14.4''	W018°45'08.8''	704	bedrock
011	N76°15'35.4''	W018°44'52.4''	652	0.5 x 1.5 x 2
Geographical Society Ø				
012	N72°45'07.3''	W021°54'45.6''		
013	N72°53'26.7''	W021°54'25.3''	108	0.12 x 0.3 x 0.5
014	N72°53'10.6''	W021°54'46.1''	127	small

Tab. 6.5-1: Rock samples from Store Koldewey and Geographical Society Ø

Summary of results

The summit plateaus of the mountain range on Store Koldewey is covered by rocks dominantly of local material weathered to different degrees. On all the summits erratic material is occurring as smaller boulders from which no one was large enough to sample for SED. The erratic material is represented by white, red and purple quartzites. On the edges of the plateau scattered outcrops of bedrock occur. In the U-shaped valleys which intersect the plateau mountains glacial striae were observed, with a direction of c. 70°. On the ice scoured northern part of the island glacial striae have a direction of 96° and 104°.

Both the area east of the plateau mountains and the southern lowland are covered by a ground moraine containing of the local gneisses and quartzite boulders. On the ground surface stone rings and other freeze-and-thaw features were observed. On the west coast of the island a series of accentuated moraine ridges were observed an a height of c. 100 m a.s.l. The freshness of these ridges suggests a Holocene age.

6.6 Onshore marine deposits

O. Bennike

In connection with the lake coring programme carried out during the ARK XIX/4 expedition, the opportunity arose to do some work on the raised marine and littoral deposits in the areas visited. Pre-Holocene deposits were found on Store Koldewey in 1907, but have not been revisited since then, and no Holocene marine deposits had been located on this island. Northeastern Geographical Society Ø was visited by Quaternary geologists more than 30 years ago, but few details from this investigation have been published (Funder & Hjort 1973, Hjort 1979, 1981).

Pliocene (?) sediments on Store Koldewey

Already in 1907 during the Danmark Ekspedition, shell bearing deposits were found above the Jurassic sediments on Store Koldewey. A few years later the shell fauna was described by the Danish zoologists Adolf Jensen. Eight species could be identified, and the fauna could be characterized as a high arctic fauna similar to that living in the region at the present. All species are extant, and Jensen considered the fauna of Quaternary age. However, the deposit was found at around 120 m a.s.l., much higher than any other shell bearing Quaternary deposit known from East Greenland at that time.

In the 1970's some of the shells were submitted for radiocarbon dating, yielding a non-finite age (>40 000 years BP, Lu-930, Hjort 1981). The Store Koldewey fauna shows some similarity to that from the Pliocene Kap København Formation in North Greenland. However, it was not until 2003 that the chance arose to revisit the Store Koldewey deposits.

During the summer it was found that the Pliocene (?) sediments could be followed for about 30 km along the east coast of Store Koldewey. The deposits are everywhere

located above the Mesozoic sediments (Jurassic and Cretaceous), at elevations of 110-130 m a.s.l. The sequence may either have been lifted up by glacio-isostatic rebound, or by tectonic uplift. In this connection it may be mentioned that seven samples of bedrock were collected from Store Koldewey. These samples will be analysed for fission tracks, which may show if the island has been subject to anomalously high uplift rates in the Neogene. The sediments are overlain by till.

The Pliocene (?) sediments consists of silt and fine sand with some pebble layers. Water escape structures and other penecontemporaneous deformation structures were seen, these point to a high sedimentation rate. The lack of trace fossils such as burrows in the sediments may be interpreted along the same line. The deposits are often disturbed by solifluction and slumping, and most exposures are only a few meters high, but at one site a higher section could be logged.

Shells were collected at a number of sites, but the faunas are remarkably uniform, and similar to the fauna described by Jensen. Among the molluscs, Hiatella arctica and Mya truncata are the dominating species, but the fauna also includes Astarte borealis, Astarte montagui, Portlandia arctica, Portlandia sp., Cyrtodaria kurriana, Macoma calcarea, Macoma baltica, Serripes groenlandica, Clinocardium cilliatum, Nucula sp., Trophon sp., Natica sp. and Buccinum sp.. Surprisingly, the fauna also includes remains of a brachipod, probably an un-described extinct species of Terebratula. What appears to be the same species also occurs in the Kap København Formation and in Pliocene sediments from Ile de France in Northeast Greenland, and this is the main reason for currently suggesting that the sediments on Store Koldewey are of Pliocene age. The brachiopod material from Store Koldewey is much better preserved than earlier collected material from Greenland, and will probably allow us to erect a new species.

Overall, the fauna indicates that the sediments were deposited on the inner shelf, at water depths of maybe 10-20 m. Some influence of fresh water is indicated by the occurrence of Cyrtodaria kurrinana. Most of the mollusk species currently live in Northeast Greenland, but at least one of the un-identified species probably represents a southern extra-limital species, pointing to higher sea water temperatures than at present.

For dating the sediments, 40 orientated sediment samples have been collected for palaeomagnetic analyses, and bivalve shells have been collected for analyses of Strontium isotopes and aminoacid racemization ratios. Furthermore, samples have been collected for microfossil analyses, and hopefully the results from analyses of foraminifers, dinoflagellate cysts and other microfossils can help to constrain the age of the sediments. In addition, the microfossil results will throw light on palaeoenvironments, such as depositional environments, palaeo-oceanography, palaeotemperatures and former sea-ice cover.

At one site poorly preserved small wood pieces were found, and at three sites thin layers rich in washed together plant remains were discovered. From the latter sites we collected samples, which are expected to provide data on the former vegetation and flora of this part of Greenland.

Pre-Holocene shell material

Pre-Holocene, late Quaternary shell material was observed near Kap Mackenzie on the northeastern part of Geographical Society Ø, at an elevation of 122 m a.s.l. (Fig. 2). This occurrence was described by Funder & Hjort (1973) and Hjort (1981). The shell material occurs scattered on the sediment surface, and consisted of small fragments. The fragmented nature of the shells could be a result of glacial reworking.

Holocene raised marine deposits

Holocene raised marine and littoral deposits were found to be rather widespread on both Store Koldewey and on northeastern Geographical Society Ø. On southern Store Koldewey the highest raised beaches were found at an altitude of 54 m a.s.l., which compares very well with Hjort's number (53 m a.s.l.). On the northern part of Store Koldewey the highest raised beach ridges were found at 47 m a.s.l. The highest shells were found at 37 m a.s.l.

Only faunas of low species diversity were found on Store Koldewey, and Holocene shells were only found in eastern Trækpasset and on northern Store Koldewey. The fauna comprises Hiatella arctica, Mya truncata, Astarte borealis and borings of the polychate Polydora sp. In addition, two samples of drift wood and one sample of a small whale were collected. Radiocarbon dating of this material will give a minimum date for the last deglaciation of the lowlands of Store Koldewey, and information about the emergence history.

On northeastern Geographical Society Ø, the highest raised beach ridges were found at 53 m a.s.l., and the highest raised delta at a locality further vest at 46 m a.s.l. These features are of early Holocene age. Species diverse faunas were found in the area, with Hiatella arctica, Mya truncata, Astarte borealis, Macoma calcarea, Serripes groenlandica, Clinocardium ciliatum, Axinopsida orbicularis, Mytilus edulis, Chlamys islandica, Natica sp., Buccinum sp., Oenopota sp. and Cylichna sp. Noteworthy is the presense of Mytilus edulis and Chlamys islandica, the former is now extinct in Northeast Greenland and the latter confined to a small area. Both were fairly widespread in Northeast Greenland during the early to mid-Holocene temperature optimum. The highest Holocene shells in the area were located at 42 m a.s.l. Fossil driftwood was rather common at some sites in the area, but only a few pieces were found in situ. Furthermore, at three sites layers rich in macroscopical remains of land plants and marine macroalgae were found in the raised near-shore marine deposits. In combination with data from the cored isolation basin, dated samples can give information about the deglaciation chronology and the following land emergence. In this context it should be noted that no indication of a mid-Holocene transgression was observed.

6.7 Observations of birds and mammals on Store Koldewey (SK) and around Kap Mackenzie (KM) on northeastern Geographical Society Ø, 13th August to 14th September 2003

Ole Bennike

Redthroated diver:	4 birds in two lakes on the northern part of SK
Great northern diver:	About 10 birds in large lake west of KM
Barnacle goose:	Flocks totaling at least 500 birds roosted on SK and around KM some few hundreds were seen Last birds on SK seen on the 27th August
Ringer plover:	A total of around 20 birds seen on SK, 2 near KM
Turnstone:	5 birds seen on SK and 3 near KM
Sanderling:	Around 10-15 seen on SK, and 10 recorded near KM
Dunlin:	Two records of single birds on SK
Arctic Tern:	6 birds on SK
Longtailed skua:	2 birds on SK
Glacous gull:	10-15 birds on SK, with a flock of 5 birds in the eastern part of Trækpasset. 6 birds in the KM area
Gyrfalcon:	1 near KM
Ptarmigan:	Two flocks of 8 and 9 birds on SK
Raven:	3 on SK, 2 near KM
Snow bunting:	Rather large flocks of young birds on SK, with a total of a few hundred. Around 50 birds seen in the KM area
Arctic redpoll:	Fairly frequent on SK, with a large flock of 30 birds recorded
Arctic hare:	About 15 seen on SK
Arctic fox:	5-10 seen on SK
Polar bear:	One sleeping bear seen on SK. Frequent old tracks
Collared lemming:	One seen on SK
Musk ox:	Only bones seen on SK, fresh tracks near KM
Reindeer:	Bones and antlers fairly frequent on SK, a few also found near KM

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7 Flow through Fram Strait

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Background

Exchanges between the North Atlantic and the Arctic Ocean result in the most dramatic water mass conversions in the World Ocean: warm and saline Atlantic waters, flowing through the Nordic Seas into the Arctic Ocean, are modified by cooling, freezing and melting to become shallow fresh waters, ice and saline deep waters. The outflow from the Nordic Seas to the south provides the initial driving of the global thermohaline circulation cell. Knowledge of these fluxes and understanding of the modification processes is a major prerequisite for the quantification of the rate of overturning within the large circulation cells of the Arctic and the Atlantic Oceans, and is also a basic requirement for understanding the role of these ocean areas in climate variability on interannual to decadal time scales.

The Fram Strait represents the only deep connection between the Arctic Ocean and the Nordic Seas. Just as the freshwater transport from the Arctic Ocean is of major influence on convection in the Nordic Seas and further south, the transport of warm and saline Atlantic water affects the water mass characteristics in the Arctic Ocean which has consequences for the internal circulation and possibly influences also ice and atmosphere.

The complicated topographic structure of the Fram Strait leads to a splitting of the West Spitsbergen Current carrying Atlantic Water northward into at least three branches. One current branch follows the shelf edge and enters the Arctic Ocean north of Svalbard. This part has to cross the Yermak Plateau which poses a sill for the flow with a depth of approximately 700 m. A second branch flows northward along the north-western slope of the Yermak Plateau and the third one recirculates immediately in Fram Strait at about 79°N. Evidently, the size and strength of the different branches largely determine the input of oceanic heat to the inner Arctic Ocean. The East Greenland Current, carrying water from the Arctic Ocean southwards has a concentrated core above the continental slope.

It is our aim to measure the oceanic fluxes through Fram Strait and to determine their variability in seasonal to decadal time scales. Since 1997, year-round velocity, temperature and salinity measurements are carried out in Fram Strait with moored instruments. Hydrographic sections exist since 1980. Through a combination of both data sets estimates of mass, heat and salt fluxes through the strait are provided. Fluxes of nutrients and tracers like the oxygen isotope O^{18} could only be obtained occasionally. From 1997 to 2000 intensive fieldwork occurred in the framework of the European Union project "VEINS" (Variability of Exchanges in Northern Seas). After the end of VEINS it was maintained under national programmes. Since 2003, the work is carried out as part of the international Programme “ASOF” (Arctic-Sub arctic Ocean Flux Study) and is partly funded in the ASOF-N project by the European Union “Energy, Environment and Sustainable Development” Programme as Proposal

No EVK2-2001-00215 (ASOF-N). The mooring line is maintained in close co-operation with the Norwegian Polar Institute and the University of Hamburg. The results of the measurements will be used in combination with regional models, to investigate the nature and origin of the transport fluctuations on seasonal to decadal time scales.

Work at Sea

The work at sea during ARKXIX/4b consisted of two parts: the recovery and redeployment of moorings and the measurements of CTD (Conductivity, Temperature, Depth) profiles on a transect from Spitsbergen to the East Greenland continental slope.

The mooring array covers the deep part of the Fram Strait from the eastern to the western shelf edge and was extended in 2003 on the East Greenland shelf. Five Norwegian moorings and two from the University of Hamburg were deployed by RV LANCE in September 2003 between 3° and 12°30'W. Three of the five moorings deployed in 2002 were recovered. The positions of deployed moorings are:

F19: pipe:	78°49.821'N	12°29.876'W
F17: ADCP	78°49.818'N	08°59.251'W
F18:	78°49.953'N	08°54.146'W
F14-6:	78°48.996'N	06°26.915'W
F13-6:	78°50.728'N	05°00.994'W
F12-6:	78°49.770'N	04°02.868'W
F11-6:	78°49.921'N	03°16.077'W

POLARSTERN recovered 12 moorings east of 3°W which had been deployed in summer 2002 during ARKXVIII/1 along 78° 50'N (Fig. 7-1). Each mooring carried 3 to 7 instruments including rotor and acoustic current meters from Aanderaa Instruments and Falmouth Scientific Inc. (FSI), acoustic current profilers from RD Instruments, temperature and salinity probes from Sea-Bird Electronics Inc. (Sea-Bird) and two bottom pressure recorders from Sea-Bird. An Upward Looking Sonar for ice thickness measurements from the Applied Physics Laboratory of the University of Washington was recovered but not redeployed. The recovery occurred mostly under favourable weather conditions and in ice free waters. The use of the Posidonia system for those moorings which were equipped with Posidonia capable releases was of a great help and assured a safe recovery. Whereas the mooring recovery rate was 100%, the obtained data rate ranges only by about 70%. Altogether 66 instruments were deployed and 48 of them complete data sets. This was caused by malfunctioning of 10 from 18 FSI instruments, and leakage, damage, rotor or complete loss of 7 from 31 Aanderaa instruments and 1 from 15 Sea-Bird instruments. The recovered instruments and the obtained data are summarized in Tab. 7-1. The distribution of the instruments in the moorings is displayed in Fig. 7-2.

The positions of the deployed moorings were kept as closely as possible. The instrumentation agrees in general to the one of the recovered moorings (Tab. 7-2, Fig. 7-3). Some additional instruments were added in 2003 in order to obtain better vertical resolution and additional information by new sensor types. Each mooring

carries 3 to 8 instruments. Four moorings are equipped with bottom pressure recorders from Sea-Bird Electronics to obtain changes of the sea level inclination indicative of barotropic velocity changes. For the first time, three pressure inverted echo sounders (PIES Model 6.1E) from the University of Rhode Island were deployed on the transect. They allow determining changes in the density structure of the water column by associated changes in sound velocity. They will be used to estimate the baroclinic flow and the heat transport. Also for the first time, five so-called pop-up floats from Denkmanufaktur, Großenkneten were built in the moorings. After a predefined time, the instruments which contain a data memory and a satellite transmitter will be released from the mooring and ascend to the surface. Then they will transmit the data which were downloaded from the instrument to which they were connected via satellite (Iridium) to land. This technology which is still in an experimental stage will enable early data access and thus secure data coverage in order to approach to a near real-time availability of data from moored instruments. All moorings were equipped with satellite transponders at the top flotation.

The mooring deployment with anchor-first method went well under favourable conditions with one serious exception. Mooring F5-6 at 78°50’N 06°00’W was back at the surface shortly after deployment. Since this was only noticed when POLARSTERN was at the western end of the CTD transect, the mooring had drifted 106 km to the north of the deployment position until POLARSTERN could return to the east. Upon arrival at 79°45’N 07°23’E the weather conditions turned rather bad with winds of 8 Bft and poor visibility. In spite of the unfavourable conditions the mooring was located by use of the helicopter and could be recovered. It appeared that the mooring cable has been broken just above the deepest flotation. This resulted in the loss of one current meter and two releasers. The pop-up float had released and was lost. After the recovery, we steamed back to the planned mooring position and redeployed the mooring under similar unfavourable conditions. During the deployment the mooring wire broke twice in situations when no particular stress was on the wire. Fortunately it happened when the cable was over the side of the ship and the deeper part of the mooring was still secured, that no injuries and further losses of instruments occurred. However, two current meters were seriously damaged and eight floats were lost. Finally the mooring could be redeployed at the planned position. This mooring is of particular importance since it contains a sound source of the Laboratoire d'Oceanographie Dynamique et de Climatologie LODYC of the Pierre et Marie Curie University (UPMC) based in Paris.

The CTD measurements occurred mostly during the nights between mooring work. Therefore the sequence of stations is rather irregular. Altogether 53 CTD profiles were taken at 51 stations (Fig. 7-1, Tab. 7-3). Two CTD systems from Sea-Bird Electronics Inc SBE911+ were used. Mainly SN 561 with duplicate T and C sensors (temperature sensors SBE3, SN 2685 and 2678, conductivity sensors SBE4, SN 2325 and 2618 and pressure sensor Digiquartz 410K-105 SN 75659) was in service. For the control of the temperature sensors a SBE35 RT digital reversing thermometer, SN 27 was applied. The CTD was connected to a SBE32 Carousel Water Sampler, SN 273 (24 12-liter bottles). For 3 CTD-Stations (726-3, 727-1, 728-1) the Sea-Bird 911+ probe SN 485 was used with temperature sensor SBE3 SN 2460, conductivity sensor SBE4 SN 2054, pressure sensor Digiquartz 410K SN 68997 and the SBE32 Carousel Water Sampler SN 202. Additionally Benthos

Altimeters Model 2110-2, SN 189 and SN 208 and Wetlabs C-Star Transmissiometers SN 403 and SN 267 were mounted on the carousels. During the cruise a total number of 184 water samples were analysed with a Guildline Autosal 8400B salinometer, and IAPSO standard seawater batch number P141, K=0.99993. 20 salinity samples were brought back to AWI for analysis there. The CTD sensors were calibrated before and after the cruise by Sea-Bird Electronics. 138 water samples were taken at 10 stations from 7 levels (10, 30, 50, 70, 100, 150 and 200 m) to measure the concentration of the oxygen isotope $\iota^{18}O$.

Underway measurements with a ship-borne narrow band 150 kHz ADCP from RD Instruments and a Sea-Bird SBE45 thermo-salinograph measurements were conducted along the transect to supply temperature, salinity and current data at a much higher spatial resolution than given through the moorings. Two thermo-salinographs were in use, one in 6 m depth in the bow thrusters tunnel and one in 11 m depth in the keel. Both instruments are controlled by taking water samples which are measured on board.

Preliminary Results

The data from the moored instruments were read out from the memories but need to be carefully processed in Bremerhaven. Therefore no results can be given here.

The evaluation of the hydrographic data occurred on the basis of preliminary data available on board. The post-cruise calibration might result in minor changes.

The temperature and salinity sections across the Fram Strait are shown in Fig. 7-4. The main core of northward flowing warm and saline Atlantic Water is found at the eastern side of the transect in the shallow to intermediate layers. The West Spitsbergen Current is visible at the eastern slope by downward sloping isolines. The Atlantic Water reaches significantly further to the west than during previous years. On the western side the cold and low saline Polar Waters of the East Greenland Current can be seen. However, due to missing time it could not be measured on the shelf. In the deep layers a slight cooling is to be seen in the east and a decrease of salinity.

To identify the longer term variability, time series of mean temperatures and salinities for typical water masses were derived for two depth intervals ($5 \div 30$ m and $50 \div 500$ m) (Fig. 7-5). Three characteristic areas were distinguished in relation to the main flows: the West Spitsbergen Current (WSC) between the shelf edge and 5°E, the Return Atlantic Current (RAC) between 3°W and 5°E, and Polar Water in the East Greenland Current (EGC) between 3°W and the Greenland Shelf. The temperature of the near surface layer in the West Spitsbergen Current showed a slight decrease since last year which might be affected by seasonal variability. However, the temperature stays high in comparison to the late 80ties. The temperature of the water of the Return Atlantic Current increased further since last year. Mean salinities observed in the West Spitsbergen Current were close to those measured last year while those of Return Atlantic Current increased further. The strong decrease of the mean salinities in the East Greenland Current which was observed in 2002 is fully compensated indicating rather high interannual variability or aliasing of the seasonal signal but no clear longer period trend. The mean temperature in the EGC decreased

in the surface layer and increased in the intermediate layer. However, since the data were collected in different seasons from spring to autumn, they are affected by the annual cycle which is most pronounced in the upper layers. In summary the surface layers show a rather heterogeneous picture most likely due to the seasonal transition in late fall which could be noticed as well to the rather stormy weather. The conditions in intermediate layers tended further to warmer and more saline values.

Mooring	Latitude Longitude	Water depth (m)	Date and time of first record	Instrument type	Serial number	Instr. depth (m)	Record length (days)
F1-5	78° 49.96‘ N	242	02.08.2002	ACM Coast	1557a	57	412
	08° 39.90‘ E		12:00	SBE	212	59	1)
				AVTCP	8048	230	412
F2-6	78° 50.02‘ N	776	02.08.2002	ACM Coast	1562a	50	415
	08° 19.78‘ E		12:00	SBE37	217	52	415
				AVTCP	9402	233	415
				SBE37	221	764	415
				ACM	1504	769	4)
				SBE26	258	775	421
F3-5	78° 50.01‘ N	1010	02.08.2002	ACM Coast	1564	57	1)
	07° 59.72‘ E		00:00	SBE37	246	59	416
				AVTP	8417	230	416
				ACM	1317	998	1)
F4-5	78° 49.95‘ N	1436	04.08.2002	SBE37	437	55	411
	07° 00.03‘ E		18:00	ADCP	1368	81	417
				AVTCP	8050	198	413
				ACM	1404	699	1)
				ACM/CTD	1453	1424	1)
F5-5	78° 49.96‘ N	2418	05.08.2002	ACM	1506a	52	413
	06° 00.16‘ E		00:00	SBE37	436	54	413
				AVTCP	10492	215	413
				AVTCP	11613	716	413
				AVT	9187	1473	413
				ACM	1403	2406	1)
F6-6	78° 50.03‘ N	2641	06.08.2002	ACM	1411	51	412
	05° 00.52‘ E		18:00	SBE37	438	53	412
				AVCTP	8403	244	412
				AVTP	9997	751	412 2)
				ACM	1409	2629	412
F7-4	78° 50.00‘ N	2289	07.08.2002	ACM/CTD	1507	60	412
	04° 00.01‘ E		00:00	SBE37	439	62	412
				AVTCP	9195	203	3)
				AVT	9782	709	412
				3D ACM	1454	2277	1)
F8-5	78° 50.00‘ N	2435	10.08.2002	ACM/CTD	1402	54	1)
	02° 48.15‘ E		00:00	SBE37	440	55	409
				AVTP	10872	116	409
				AVTP	11888	223	409
				AVTP	12329	724	3)
				AVTP	9786	1462	409
				ACM	1400	2423	1)
F15-1	78° 49.96‘ N	2493	12.08.2002	AVTCP	9207	72	409
	01° 36.72‘ E		00:00	SBE37	442	73	409
				AVTP	9213	215	409 5)
				AVTP	12333	736	86 5)

Mooring	Latitude Longitude	Water depth (m)	Date and time of first record	Instrument type	Serial number	Instr. depth (m)	Record length (days)
				AVT	3517	1484	409
				AVT	10531	2481	409
F16-1	78° 50.10‘ N	2526	12.08.2002	AVTCP	10002	45	411
	00° 23.99‘ E		12:00	SBE37	248	46	411
				AVT	9403	237	411
				AVTP	12332	739	411 [5)]
				AVT	9185	1486	411
				AVT	10530	2514	411
F9-4	78° 50.03‘ N	2604	13.08.2002	ACM	1391	57	[1)]
	00° 48.13‘ W		00:00	SBE37	444	59	412
				AVTCP	9192	251	412
				AVT	5377	852	[6)]
				AVTP	9212	1610	412
				AVT	6856	2598	412
				SBE26	259	2603	417
F10-5	78° 49.89‘ N	2658	14.08.2002	ACM	1505	55	412
	01° 59.94‘ W		00:00	SBE37	441	57	412
				ADCP-UP	825	208	412
				AVTPC	9206	456	412
				AVTPC	9219	1478	412
				ACM/CTD	1455	2646	412

Tab. 7-1: Moorings recovery during ARK-XIX/4b

Abbreviations:

ADCP	RDI Inc. self contained acoustic doppler current profiler
ACM/CTD	Falmouth Scientific Inc. 3-dimensional acoustic current meter with CTD head (CTD=Conductivity, Temperature, Depth)
ACM	Falmouth Scientific Inc. 3-dimensional acoustic current meter
AVTCP	Aanderaa current meter with temperature, conductivity and pressure sensor
AVTP	Aanderaa current meter with temperature and pressure sensor
AVT	Aanderaa current meter with temperature sensor
RCM 11	Aanderaa Doppler current meter with temperature sensor
SBE 16	Seabird Electronics SBE16 recording temperature, conductivity, and pressure
SBE 26	Seabird Electronics SBE26 bottom pressure recorder
SBE 37	Seabird Electronics SBE37 recording temperature and conductivity (optionally pressure SBE 37 P)
PIES	Pressure Inverted Echosounder (optionally with current meter C-PIES)

Remarks:

[1)] Instrument failure, no data recorded.
[2)] Current speed only 333 days from start.
[3)] Instrument lost during recovery.
[4)] Memory download failed, has to be done by manufacturer.
[5)] No current speed.
[6)] Instrument flooded, data lost.

Mooring	Latitude Longitude	Water depth (m)	Date and time of first record	Instrument type	Serial number	Instr. depth (m)
F1-6	78° 49.93' N	244	22.09.2003 20:00	AVTP	11890	60
	08° 39.90' E		23.09.2003 16:00	SBE 37	226	61
			22.09.2003 20:00	AVTCP	9998	232
F2-7	78° 50.14' N	779	22.09.2003 20:00	AVTP	10925	69
	08° 19.87' E		23.09.2003 16:00	SBE 37	447	70
			23.09.2003 12:00	ACM Coast	1563	156
			22.09.2003 20:00	AVTP	10929	263
			23.09.2003 12:00	ACM	1386	465
			23.09.2003 16:00	SBE 37	1233	767
			22.09.2003 20:00	AVT	9186	773
			24.09.2003 06:00	SBE 16 [1]	630	778
PIES E	78° 50.30' N	793	26.09.2003 11:00	PIES	70	793
	08° 19.78' E					
F3-6	78° 50.06' N	1011	22.09.2003 20:00	AVTP	9193	76
	07° 59.65' E		23.09.2003 16:00	SBE 37	216	77
			22.09.2003 20:00	ACM Coast	1566	163
			22.09.2003 20:00	AVTP	10928	270
			22.09.2003 20:00	ACM	1388	772
			22.09.2003 20:00	AVT	6854	999
F4-6	78° 49.96' N	1431	23.09.2003 16:00	SBE 37 P [2]	1230	75
	07° 00.02' E		24.09.2003 12:00	ADCP	951	106
			22.09.2003 20:00	AVTCP	9214	264
			22.09.2003 20:00	AVT	9391	770
			23.09.2003 12:00	ACM	1392	1272
			22.09.2003 20:00	AVT	9180	1419
F5-6	78° 49.95' N	2417	01.10.2003 14:30	SBE 37	241	85
	06° 00.13' E		22.09.2003 20:00	AVTP	9204	95
			22.09.2003 20:00	ACM Coast	1568	288
				LODYC SQ		530
			22.09.2003 20:00	AVTCP	12330	783
			22.09.2003 20:00	ACM/CTD	1471	1285
			22.09.2003 20:00	ACM/CTD	1448	2027
			22.09.2003 20:00	AVT	9188	2405
F6-7	78° 49.81' N	2645	22.09.2003 20:00	AVTP	10005	56
	05° 01.24' E		23.09.2003 16:00	SBE 37 P	227	57
			22.09.2003 20:00	AVTP	10927	264
			22.09.2003 20:00	AVTCP	12325	770
			23.09.2003 14:00	RCM 11 [3]	20	2639
			24.09.2003 06:00	SBE 16 [4]	631	2644
PIES C	78° 49.93' N	2712	27.09.2003 11:10	C-PIES	74	2712
	05° 00.87' E					
F7-5	78° 49.89' N	2292	24.09.2003 22:00	AVTP	10003	93
	04° 00.05' E		24.09.2003 06:00	SBE16	1167	94
			24.09.2003 22:00	AVTCP	12326	285
			24.09.2003 22:00	AVT	9769	792
			24.09.2003 22:00	AVT	9770	2280
F8-6	78° 50.04' N	2441	24.09.2003 22:00	AVTP	9763	75
	02° 48.11' E		24.09.2003 06:00	SBE 16	1975	76
			24.09.2003 22:00	AVTCP	12324	278
			24.09.2003 22:00	AVT	11937	779
			24.09.2003 22:00	AVT	9767	1527
			25.09.2003 16:00	RCM 11	212	2435
			23.09.2003 20:00	SBE 26	227	2440
PIES W	78° 49.87' N	2505	28.09.2003 08:00	PIES	58	2505
	02° 47.59' E					

Mooring	Latitude Longitude	Water depth (m)	Date and time of first record	Instrument type	Serial number	Instr. depth (m)
F15-2	78° 49.99' N	2497	24.09.2003 22:00	AVTP	10541	47
	01° 36.64' E		23.09.2003 16:00	SBE 37 P	1607	48
			24.09.2003 22:00	AVTP	10926	260
			24.09.2003 22:00	AVTP	8037	761
			24.09.2003 22:00	AVT	10496	1509
			25.09.2003 16:00	RCM 11	214	2486
F16-2	78° 50.10' N	2531	24.09.2003 22:00	AVTP	10539	65
	00° 24.03' E		23.09.2003 16:00	SBE 37 P	242	66
			24.09.2003 22:00	AVTP	7727	263
			24.09.2003 22:00	AVT	9182	764
			24.09.2003 22:00	AVT	10497	1511
			25.09.2003 16:00	RCM 11	215	2519
F9-5	78° 50.30' N	2610	24.09.2003 22:00	AVTCP	9200	14
	00° 48.69' W		23.09.2003 16:00	SBE 37 P	243	15
			24.09.2003 22:00	AVTCP	9785	267
			24.09.2003 22:00	AVT	10532	769
			25.09.2003 16:00	RCM 11	216	1516
			25.09.2003 16:00	RCM 11	26	2604
			23.09.2003 09:51	SBE 26	228	2609
F10-6	78° 49.89' N	2664	23.09.2003 12:00	ACM	1385	62
	02° 00.04' W		23.09.2003 16:00	SBE 37 P	244	67
			28.09.2003 14:00	ADCP-UP	1561	240
			24.09.2003 22:00	AVTCP	9211	784
			25.09.2003 16:00	RCM11	219	1541
			25.09.2003 16:00	RCM11	25	2648

Tab. 7-2: Mooring deployment during ARK-XIX/4b

Remarks :
[1)] POP-UP # 5 release date 06.12.2003
[2)] POP-UP # 7 no release
[3)] POP-UP #8 release date 01.07.2004
[4)] POP-UP #6 release date 06.12.2003

Running No.	CTD-Station No.	Cast No.	Date	Time (UTC)	Latitude	Longitude	Waterdepth corrected [m]
1	726	1	22 09 2003	18:19	78° 50.11' N	6° 10.44' E	2322
2	726	2	22 09 2003	21:13	78° 50.19' N	6° 10.02' E	2315
3	726	3	22 09 2003	23:53	78° 50.10' N	6° 10.14' E	2307
4	727	1	23 09 2003	02:05	78° 49.98' N	5° 50.35' E	2478
5	728	1	23 09 2003	04:22	78° 49.95' N	5° 40.05' E	2521
6	733	1	23 09 2003	16:58	78° 50.05' N	1° 34.86' E	2491
7	734	1	23 09 2003	19:10	78° 49.86' N	1° 17.33' E	2476
8	735	1	23 09 2003	21:17	78° 49.92' N	0° 57.93' E	2374
9	736	1	23 09 2003	23:03	78° 49.94' N	0° 38.90' E	2479
10	737	1	24 09 2003	01:15	78° 49.91' N	0° 16.90' E	2527
11	738	1	24 09 2003	03:37	78° 49.94' N	0° 04.23' E	2683
12	739	1	24 09 2003	05:49	78° 50.16' N	0° 15.41' W	2603
13	740	1	24 09 2003	07:54	78° 50.05' N	0° 30.43' W	2635

Running No.	CTD-Station No.	Cast No.	Date	Time (UTC)	Latitude	Longitude	Waterdepth corrected [m]
14	741	1	25 09 2003	15:00	78° 50.10' N	6° 01.04' E	2415
15	742	1	25 09 2003	17:43	78° 50.07' N	6° 30.65' E	1940
16	743	1	25 09 2003	19:50	78° 49.93' N	6° 49.29' E	1612
17	744	1	25 09 2003	21:24	78° 50.07' N	7° 00.21' E	1428
18	745	1	25 09 2003	22:45	78° 50.11' N	7° 10.18' E	1319
19	746	1	26 09 2003	00:12	78° 50.02' N	7° 30.30' E	1142
20	747	1	26 09 2003	01:32	78° 50.02' N	7° 49.85' E	1057
21	748	1	26 09 2003	02:48	78° 50.04' N	8° 09.93' E	918
22	749	1	26 09 2003	03:55	78° 49.97' N	8° 20.10' E	778
23	750	1	26 09 2003	04:52	78° 49.98' N	8° 30.34' E	562
24	751	1	26 09 2003	05:40	78° 49.99' N	8° 39.67' E	249
25	752	1	26 09 2003	06:20	78° 50.11' N	8° 49.93' E	225
26	753	1	26 09 2003	07:00	78° 50.05' N	8° 59.70' E	211
27	758	1	26 09 2003	18:05	78° 50.00' N	5° 20.16' E	2575
28	759	1	26 09 2003	20:22	78° 49.99' N	5° 02.79' E	2632
29	760	1	26 09 2003	22:25	78° 49.97' N	4° 40.56' E	2502
30	761	1	27 09 2003	00:35	78° 49.97' N	4° 20.73' E	2396
31	762	1	27 09 2003	02:30	78° 50.00' N	4° 00.40' E	2293
32	763	1	27 09 2003	04:33	78° 50.06' N	3° 39.98' E	2243
33	767	1	27 09 2003	19:48	78° 49.95' N	3° 24.50' E	2318
34	768	1	27 09 2003	21:38	78° 50.04' N	3° 05.27' E	2399
35	769	1	27 09 2003	23:33	78° 50.04' N	2° 48.05' E	2441
36	770	1	28 09 2003	01:25	78° 50.03' N	2° 33.74' E	2470
37	771	1	28 09 2003	03:21	78° 49.93' N	2° 14.35' E	2488
38	775	1	28 09 2003	17:26	78° 50.03' N	1° 55.63' E	2505
39	776	1	28 09 2003	22:46	78° 49.98' N	1° 10.05' W	2622
40	777	1	29 09 2003	00:59	78° 50.01' N	1° 24.98' W	2632
41	778	1	29 09 2003	02:58	78° 50.01' N	1° 39.96' W	2660
42	781	1	29 09 2003	12:46	78° 50.00' N	0° 49.90' W	2608
43	783	1	29 09 2003	18:47	78° 49.95' N	2° 20.40' W	2619
44	784	1	29 09 2003	21:16	78° 49.83' N	2° 40.84' W	2565
45	785	1	30 09 2003	00:04	78° 49.70' N	3° 00.17' W	2490
46	786	1	30 09 2003	02:59	78° 49.96' N	3° 19.72' W	2353
47	787	1	30 09 2003	05:19	78° 50.35' N	3° 39.46' W	2152
48	789	1	30 09 2003	12:06	78° 49.86' N	1° 59.96' W	2664
49	793	1	02 10 2003	11:03	78° 51.27' N	4° 02.82' W	1868
50	794	1	02 10 2003	13:22	78° 48.40' N	4° 22.89' W	1563
51	795	1	02 10 2003	16:54	78° 45.51' N	4° 39.45' W	1236
52	796	1	02 10 2003	18:44	78° 43.81' N	5° 00.30' W	820
53	797	1	02 10 2003	19:55	78° 43.41' N	5° 06.36' W	698

Tab 7-3: CTD stations carried out during ARK-XIX/4b

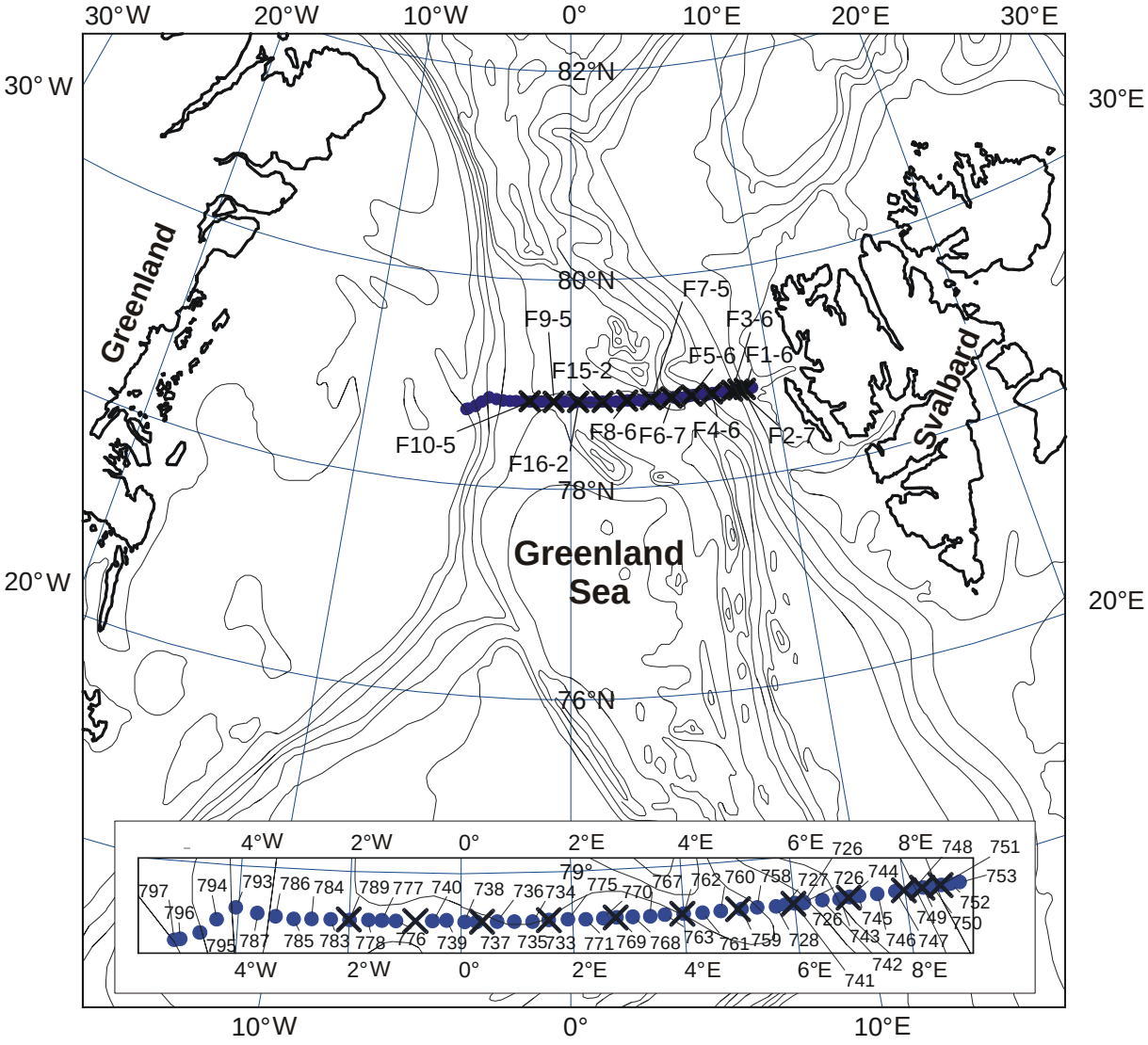

Fig. 7-1: Map with the position of moorings(crosses) and CTD stations (dots) taken during ARKXIX/4b.

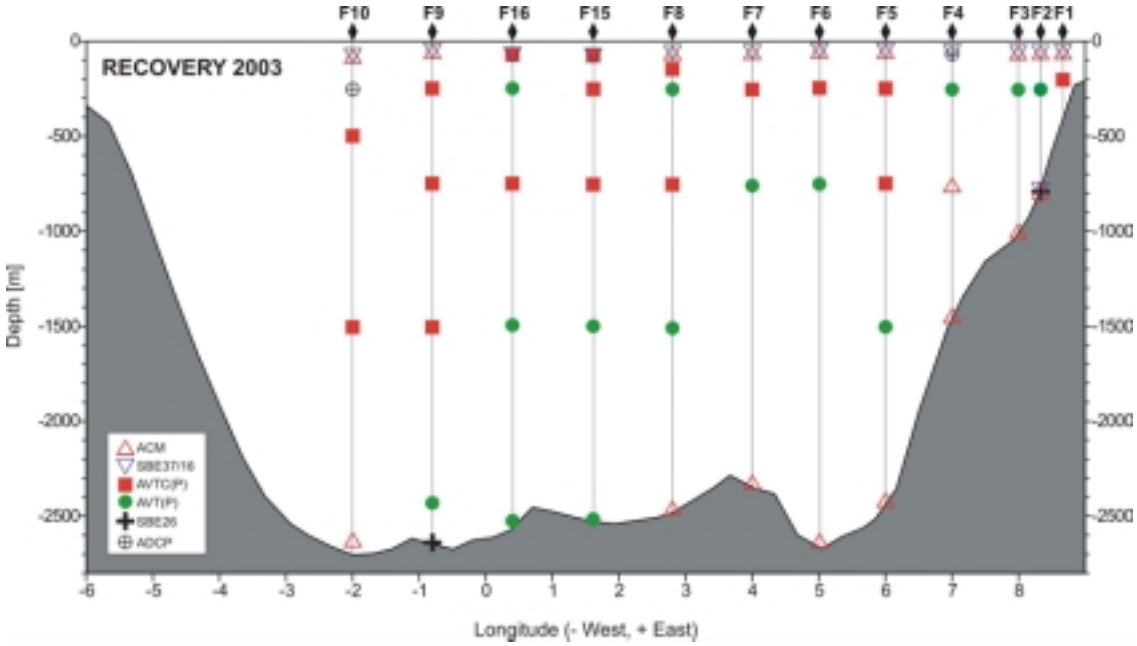

Fig. 7-2: Transect across Fram Strait with the moored instruments recovered during ARXIX/4b.

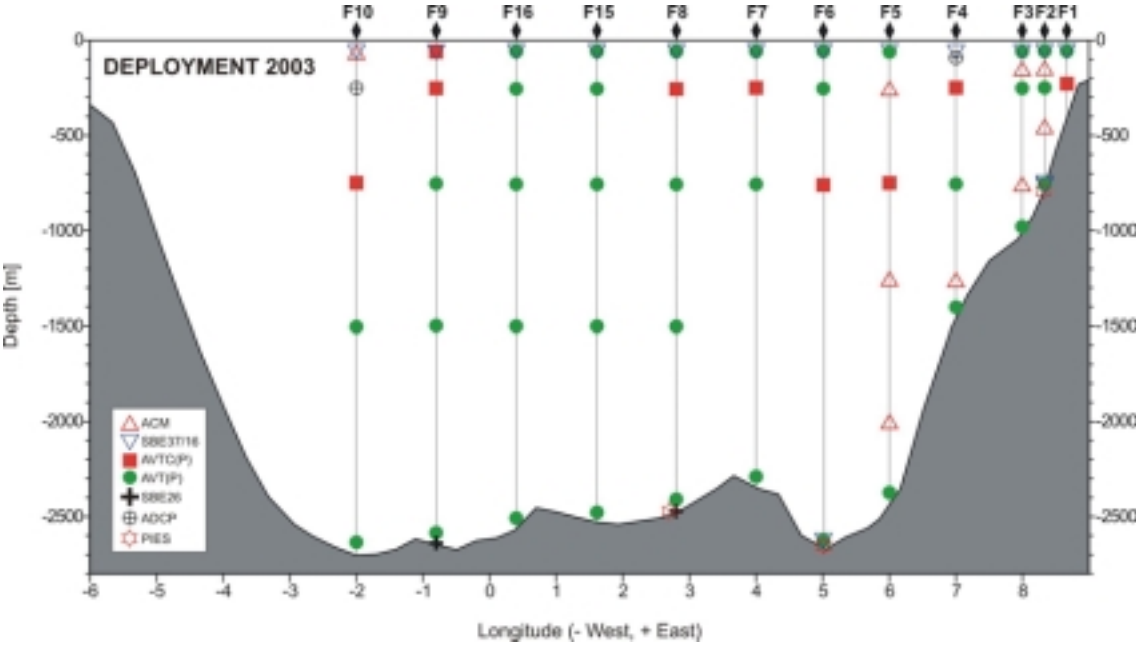

Fig. 7-3: Transect across Fram Strait with the moored instruments deployed during ARXIX/4b.

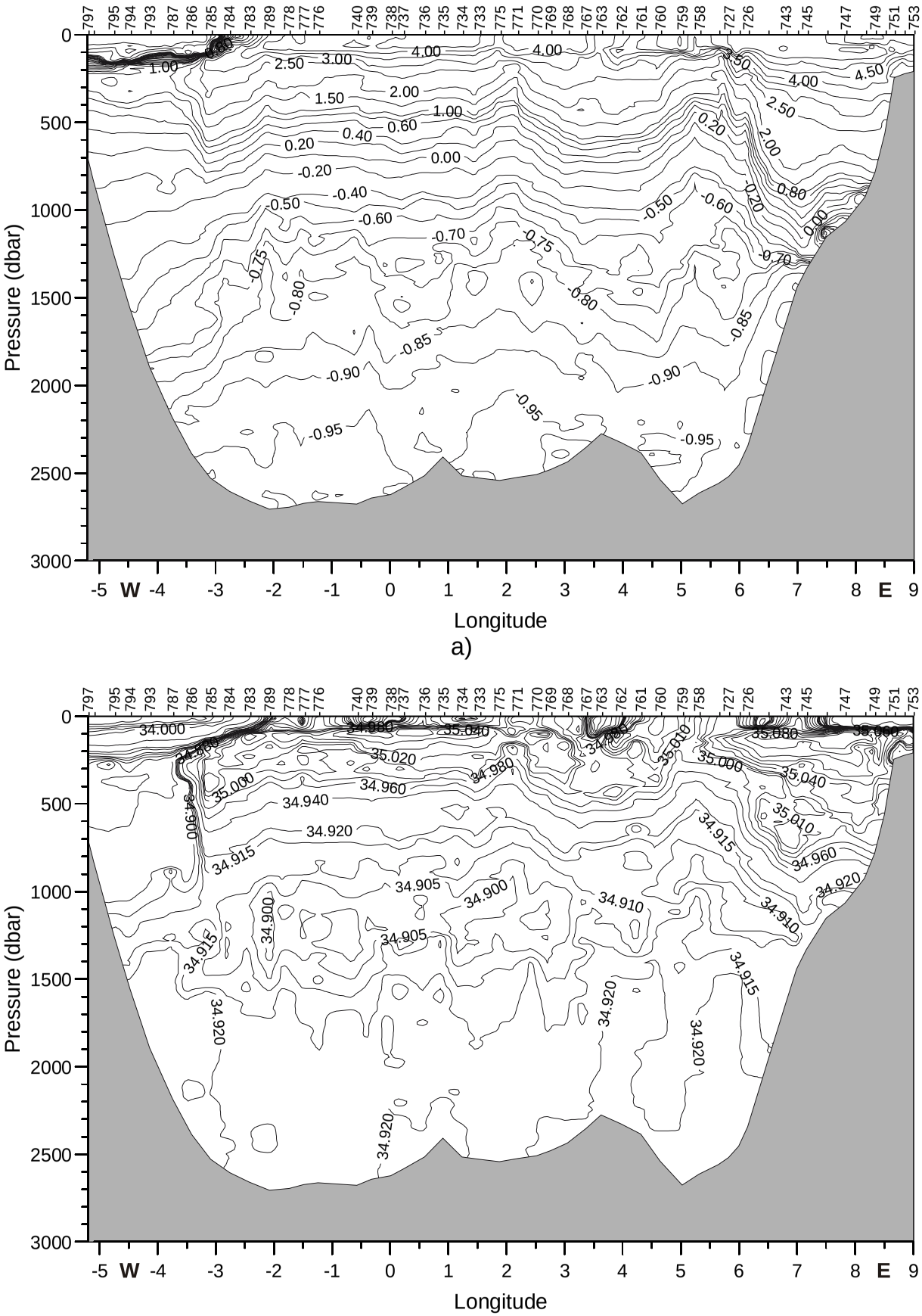

Fig. 7-4: Vertical transects of potential temperature (a) and salinity (b)across the Fram Strait measured during ARKXIX/4b

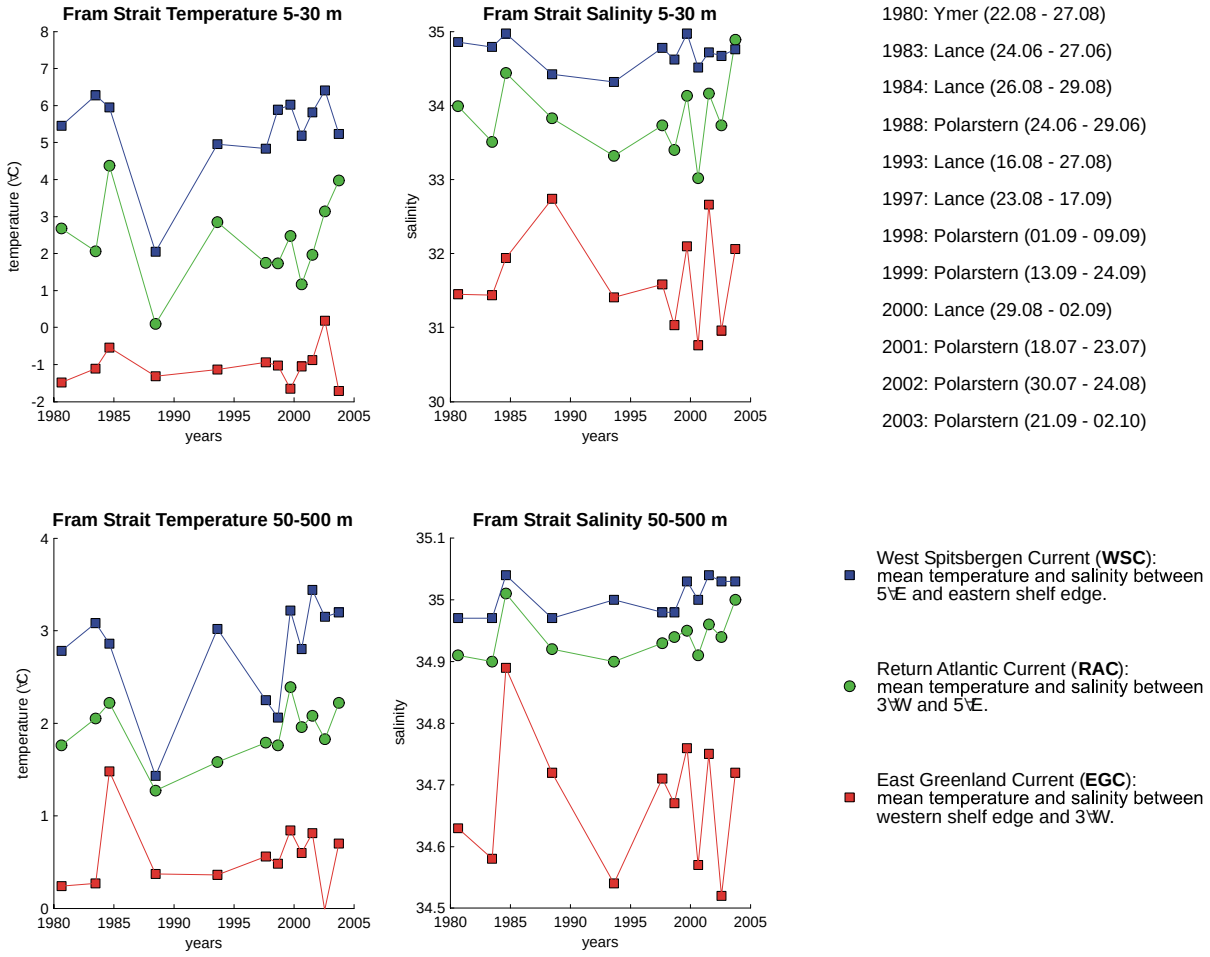

Fig. 7-5: The variations of the mean temperatures and salinities in the Fram Strait in the West Spitsbergen Current (WSC), Return Atlantic Current (RAW) and East Greenland Current (EGC). The values for the last years were calculated by A. Wisotzki, U. Schauer and H. Rohr. Earlier values supplied by M. Marnela and B. Rudels from the FIRM. Additional data obtained from the ICES Data Centre in Copenhagen.

8 Bericht zur akustischen Vermessungen bei Heggernes/(Bergen, Norwegen)

S. El Naggar, H.-W. Schenke, O. Boebel, F. Niessen, C. Kopsch, B. Werner, S. Schäl

Die aktiven Sonarsysteme auf FS Polarstern dienen der wissenschaftlichen Forschung auf dem Gebieten der Geologie, Geophysik, Bathymetrie, Ozeanographie und der Biologie. Diese Systeme arbeiten mit unterschiedlichen Frequenzen und akustischer Sendeleistungen. Bedingt durch die Einbaubedingungen und Modifikationen an den akustischen Wandlern können die technischen Spezifikationen der Sonarsysteme von den Herstellerangaben abweichen. Die tatsächlichen Eigenschaften können nur unter realen Messbedingungen experimentell ermittelt werden.

Die WTD-71 (GF 340) verfügt in Heggernes/Bergen über akustische Messeinrichtungen, die diese experimentellen Vermessungen erlauben. In Zusammenarbeit zwischen AWI und der WTD-71 wurden diese Vermessungen vorbereitet und in der Zeit vom 09.10.03 bis 11.10.03 durchgeführt.
Ziele der akustischen Vermessungen waren:

I. Bestimmung der realen Sendefrequenzen der einzelnen Anlagen
II. Bestimmung der abgestrahlten akustischen Sendeleistungen
III. Ermittlung der Richtcharakteristik der abgestrahlten akustischen Leistungen

Folgende Systeme wurden erfolgreich vermessen:

1. Geräuschpegel der FS Polarstern ohne aktive Sonarsysteme
2. Die Air-Guns der Seismik (3 l, 9 l, 24 l, 32 l, 45 l, 60 l, 92 l)
3. Das Fächersonarsystem HYDROSWEEP ATLAS DS II
4. Das parametrische Sedimentecholot ATLAS PARASOUND
5. Das Fischereilot SIMRAD EK 60 (38 kHz, 70 kHz)
6. Das Tiefseelot SIMRAD EA 500 DWS (12 kHz)
7. Das Unterwassernavigationslot POSIDONIA 6000, Oceano
8. Die akustischen Auslöser Oceano/Mors TT301 und Benthos DS 7000
9. Doppler-Log ATLAS –DO22

Die Messdaten werden durch die WTD-71 ausgewertet und in einem ausführlichen Bericht zusammengefasst.

Das AWI möchte sich bei der WTD-71 für die gute Organisation und Ausführung der Vermessung herzlich bedanken. Unser Dank gilt auch der Besatzung der Polarstern für die präzise Führung des Schiffes über die Messstrecke und für die sehr effektive Zusammenarbeit.

Appendix

Quality control sheets

Quality control sheet - Profile 20030200										
OBS No.	**quality control for channel**				**Comments**	**Skew in ms**	**No. Of Recorder**	**No. Of Hydro-phone**	**No. Of Seismo-meter**	
	1	**2**	**3**	**4**						
	Hydro-phone	Seismo -meter								
201	ok	ok	ok	ok	-	-1	20505	OAS 32	LG 03	
202	ok	-	-	-	-	9	20508	HTI 35	-	
203	ok	ok	ok	ok	-	no skew	980907	OAS 50	Owen ohne Nr.	
204	ok	ok	ok	ok	-	26	980901	OAS 45	Owen ?	A
205	ok	-	-	-	MLS	6	991241	OAS 41	-	
206	ok	ok	ok	ok	-	-2	20501	OAS 35	LG 10	A
207	ok	-	-	-	-	3	991292	HTI 23	-	
208	ok	not ok	not ok	not ok	s. Ausdruck	7	20503	OAS 09	Owen ?	A
209	ok	ok	ok	ok	3, 4 verrauscht	-13	971202	OAS 44	Owen 2	
210	ok	-	-	-	-	-16	980401	HTI 31	-	
211	not ok	ok	ok	ok	Hydrophon tot	-5	990901	OAS 26	LG 08	A
212	ok	-	-	-	MLS	12	10404	HTI 34	-	
213	ok	ok	ok	ok	2,4 verrauscht	-16	991202	OAS 75	Owen 07	
214	ok	ok	ok	ok	4 verrauscht	-14	980402	OAS 28	Owen 22	
215	ok	-	-	-	-	2	20507	HTI 39	-	
216	ok	ok	ok	ok	2 verrauscht	7	20509	OAS 11	LG 04	
217	ok	-	-	-	MLS	-7	991252	HTI 38	-	
218	ok	ok	ok	ok	-	-9	10703	OAS 37	Owen 21	
219	ok	ok	ok	not ok	kein Signal auf Kanal 4	6	980903	OAS 12	Owen 06	A
220	ok	-	-	-	MLS	-1	20801	HTI 40	-	
221	ok	ok	ok	ok	siehe Protokoll	-229	10701	OAS 75	Owen 04	A
222	ok	-	-	-	MLS	14	20601	HTI 24	-	
223	ok	ok	ok	ok	-	10	980906	OAS 25	Owen 03	
224	ok	-	-	-	-	-17	971201	OAS 31	-	
225	ok	not ok	not ok	not ok	siehe Ausdruck	9	980902	HTI 37	Owen 00	A
A - Ausdruck										

Quality control sheet - Profile 20030300

OBS No.	quality control for channel				Comments	Skew in ms	No. Of Recorder	No. Of Hydro-phone	No. Of Seismo-meter	
	1	2	3	4						
	Hydro-phone	Seismo-meter								
301	-	-	-	-	keine Daten	keine Daten	20505	OAS 32	-	
302	not ok	-	-	-	kein Signal	10	20508	HTI 35	-	A
303	ok	ok	ok	ok	2 stark verrauscht	1	980907	OAS 50	LG 03	
304	ok	-	-	-	-	14	980401	OAS 41	-	
305	ok	ok	ok	ok		28	980901	OAS 09	Owen 09	
306	ok	-	-	-	MLS	7	991241	HTI 34	-	
307	ok	ok	ok	ok	-	0	20501	OAS 44	Owen 02	
308	ok	ok	ok	ok	-	3	991292	OAS 75	Owen 07	
309	ok	-	-	-	-	8	20503	HTI 23	-	
310	not ok	not ok	ok	ok	1 kein Signal, 2 verrauscht	-5	990901	HTI 26	LG 10	A
311	ok	-	-	-	-	-11	971202	HTI 31	-	
312	ok	ok	ok	ok	2 etwas verrauscht	7	20509	OAS 28	Owen 22	
313	ok	ok	ok	ok	2 schwach	2	20507	HTI 45	Owen 01	
314	ok	-	-	-	MLS	-7	991252	HTI 39	-	
315	ok	ok	ok	ok	2 verrauscht	-12	980402	OAS 11	LG 04	
316	-	-	-	-	MLS, no record	no skew	20601	HTI 38	-	
317	ok	-	-	-	-	-15	997202	OAS 35	LG 08	
318	ok	ok	ok	ok	-	-7	10703	OAS 25	Owen 03	
319	ok	-	-	-	MLS	9	10404	HTI 40	-	
320	ok	ok	ok	ok	1 verrauscht	4	980903	OAS 12	Owen 06	
321	ok	-	-	-	MLS	-1	20801	HTI 24	-	
322	ok	ok	ok	ok	Batteriekabel gerissen	no skew	10701	HTI 37	Owen 00	A
323	ok	ok	ok	ok	-	8	980906	OAS 37	Owen 21	
324	ok	-	-	-	-	-12	971201	OAS 31	-	
325	ok	ok	ok	ok	-	7	980902	OAS 07	Owen 04	
A - Ausdruck										

Quality control sheet - Profile 20030400										
OBS No.	**quality control for channel**				**Comments**	**Skew in ms**	**No. Of Recorder**	**No. Of Hydro-phone**	**No. Of Seismo-meter**	
	1	**2**	**3**	**4**						
	Hydro-phone	Seismo-meter								
401	ok	-	-	-	-	9	20508	HTI 38	-	
402	ok	ok	ok	ok	-	0	20505	OAS 11	LG04	A
403	not ok	-	-	-	MLS	5	991241	HTI 40	-	A
404	ok	ok	ok	ok	3,4 verrauscht	0	20501	OAS 35	LG08	A
405	ok	-	-	-	-	-10	980401	HTI 24	-	
406	ok	ok	ok	ok	2-4 schwach	22	980901	OAS 9	Owen 9	
407	ok	not ok	not ok	not ok	2-4 kein Signal, MLS	10	20601	OAS 31	-	A
408	ok	ok	ok	ok	3: teilweise verrauscht	3	991292	OAS 21	LG10	
409	ok	-	-	-	-	-13	971201	HTI 34	-	
410	ok	not ok	not ok	not ok	out of sequence?	6	20503	OAS 44	Owen 2	A
411	ok	-	-	-	MLS	9	10404	OAS 32	-	
412	ok	ok	ok	ok	-	-12	980402	OAS 75	Owen 7	
413	ok	-	-	-	MLS	-7	991252	HTI 35	-	
414	ok	ok	ok	ok	-	0	20507	OAS 50	Owen 1	
415	ok	-	-	-	MLS	0	20801	HTI 23	-	
416	ok	not ok	not ok	not ok	2-4 rauschen, Signal einseitig Ch2	-9	971202	HTI 45	LG03	A
417	ok	-	-	-		-5	990901	HTI 31	-	
418	ok	ok	ok	ok		7	20509	HTI 28	Owen 22	
419	ok	-	-	-		-18	991202	HTI 39	-	
420	ok	ok	ok	ok		6	920902	OAS 37	Owen 21	
421	ok	-	-	-		-8	10703	OAS 41	-	
422	ok	ok	ok	ok	2-4: schwach und kurz	9	980906	OAS 7	Owen 4	
423	ok	-	-	-		-13	1008	OAS AWI	-	
424	ok	ok	ok	ok		3	980903	OAS 25	Owen 3	
425	ok	-	-	-	Signal da, aber sehr verrauscht	-7	609	OAS 4AWI	-	
426	ok	not ok	not ok	not ok		-13	10701	OAS 12	Owen 6	A
427	ok	-	-	-		-26	10706	OAS AWI7	-	
428	ok	ok	ok	ok	2-4: schwach auf'er Brust	1	980907	HTI 37	LG00	
429	ok	-	-	-		12	20510	OAS 5	-	

Quality control sheet - Profile 20030500

OBS No.	quality control for channel				Comments	Skews in ms	No. Of Recorder	No. Of Hydro-phone	No. Of Seismo-meter	
	1	2	3	4						
	Hydro-phone	Seismo-meter								
501	ok	-	-	-		12	20510	OAS 5	-	
502	ok	ok	ok	ok		-2	980907	HTI 37	Owen 00	
503	ok	ok	ok	ok		5	991292	OAS 28	Owen 22	
504	ok	-	-	-		379	10703	HTI 24	-	
505	ok	ok	ok	ok		32	980901	OAS 50	Owen ohne.No.	
506	ok	-	-	-		-15	980401	OAS 31	-	
507	ok	ok	ok	ok		1	20501	OAS 45	LG 03	
508	ok	not ok	not ok	not ok	MLS, als OBS programmiert	15	20601	HTI 34	-	
509	ok	ok	ok	ok		3	20505	OAS 11	LG 04	A
510	ok	-	-	-		11	20508	OAS AWI	-	
511	ok	ok	ok	ok		-6	990901	OAS 21	LG 10	
512	ok	-	-	-		-18	971201	HTI 23	-	
513	ok	ok	ok	ok	4, Signal mit offset?	9	20509	OAS 35	LG 08	
514	ok	-	-	-	MLS	8	991241	31	-	
515	ok	ok	ok	ok		0	20507	OAS 09	Owen 9	
516	ok	-	-	-	MLS	-8	991252	OAS 32	-	
517	ok	ok	ok	ok		-16	980402	OAS 44	Owen 2	
518	ok	-	-	-	MLS	1	20801	HTI 39	-	
519	ok	ok	ok	ok		-22	991202	HTI 75	Owen 7	
520	not ok	-	-	-	MLS	12	10404	HTI 41	-	A
521	ok	ok	ok	ok	2, 3 schwach	-8	971202	HTI 37	Owen 21	A
522	ok	-	-	-		-29	10706	HTI ?	-	
523	ok	ok	ok	ok		9	980902	HTI 07	Owen 4	
524	ok	-	-	-	1 verrauscht	-15	1008	OAS 4	-	A
525	ok	ok	ok	ok	3, 4 schwach	8	980906	OAS 25	Owen 3	
526	not ok	-	-	-	siehe Ausdruck	16	10709	OAS 7	-	A
527	ok	ok	ok	ok		-15	10701	OAS 12	Owen 6	
528	ok	-	-	-		-7	609	OAS 17	-	
529	ok	-	-	-		10	20503	HTI 40	-	A
531	ok	not ok	not ok	not ok	als OBS programmiert	5	980903	HTI 38	-	

Whale Watch List

date	whale-watch	number	type	Lat	Long	Remarks
15.08.2003	no					
28.08.2003	no					
30.08.2003	no					
08.09.2003	no					
11.09.2003	no					
12.03.2003	no					
13.09.2003	no					
14.09.2003	no					
15.09.2003	no					
16.09.2003	no					
17.09.2003	no					
18.09.2003	no					
22.09.2003	no					
23.09.2003	no					
26.09.2003	no					
27.09.2003	no					
28.09.2003	no					
29.09.2003	no					
30.09.2003	yes	5		78°40 N	3°42 W	grau, weisser Rücken klein
02.10.2003	yes	1	Mink	78°50 N	4°47 W	
		7		78°35 N	3°50 W	grau, weiss gefleckt dunkel
		2		78°42 N	4°50 W	
		3	Mink	79°30 N	2°50 W	
		10		79°08 N	3°44 W	
		1		78°58 N	4°18 W	

Station List

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/487-1	13.08.03	18:43	76° 8.96' N	17° 17.05' W	233.4	S 7	184.6	0.3	Multi corer	MUC	surface	
PS64/487-1	13.08.03	18:51	76° 8.94' N	17° 16.98' W	233.8	S 7	100.0	0.1	Multi corer	MUC	at sea bottom	GE 52.2 auf 268m ausgesteckt
PS64/487-1	13.08.03	19:02	76° 8.97' N	17° 16.94' W	222.0	S 7	5.0	0.3	Multi corer	MUC	on deck	
PS64/488-1	13.08.03	22:03	76° 11.03' N	15° 10.86' W	320.2	S 9	183.7	0.2	Multi corer	MUC	surface	
PS64/488-1	13.08.03	22:10	76° 10.97' N	15° 10.86' W	319.8	SSW 9	187.0	0.2	Multi corer	MUC	at sea bottom	313m
PS64/488-1	13.08.03	22:11	76° 10.96' N	15° 10.86' W	319.9	SSW 9	176.1	0.0	Multi corer	MUC	on deck	
PS64/489-1	14.08.03	05:50	76° 14.10' N	11° 0.18' W	313.7	S 6	347.1	0.9	Multi corer	MUC	surface	
PS64/489-1	14.08.03	06:00	76° 14.14' N	11° 0.10' W	315.2	S 7	9.6	0.2	Multi corer	MUC	at sea bottom	GE 52.2 auf 308m ausgesteckt
PS64/489-1	14.08.03	06:10	76° 14.19' N	11° 0.09' W	314.6	S 6	341.3	0.3	Multi corer	MUC	on deck	
PS64/490-1	14.08.03	08:21	76° 23.88' N	9° 59.48' W	265.9	SSW 9	180.0	1.1	Multi corer	MUC	surface	
PS64/490-1	14.08.03	08:29	76° 23.82' N	9° 59.48' W	264.1	SSW 9	19.3	0.5	Multi corer	MUC	at sea bottom	
PS64/490-1	14.08.03	08:34	76° 23.82' N	9° 59.48' W	265.5	SSW 8	11.3	0.5	Multi corer	MUC	on deck	
PS64/491-1	14.08.03	08:56	76° 23.81' N	9° 58.26' W	257.3	SSW 7	102.8	3.7	Seismic reflection profile	SEISREFL	Streamer into water	
PS64/491-1	16.08.03	02:22	76° 36.06' N	7° 59.70' W	332.9	SSW 4	346.0	5.8	Seismic reflection profile	SEISREFL	alter course	037°
PS64/491-1	16.08.03	06:38	76° 54.27' N	6° 59.08' W	253.0	SSW 4	33.6	4.1	Seismic reflection profile	SEISREFL	array on deck	
PS64/491-1	16.08.03	10:14	76° 53.34' N	7° 4.73' W	306.5	S 5	34.2	1.6	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/491-1	16.08.03	10:29	76° 53.75' N	7° 0.82' W	286.5	S 6	91.8	5.0	Seismic reflection profile	SEISREFL	alter course	
PS64/491-1	16.08.03	10:30	76° 53.75' N	7° 0.45' W	277.0	S 7	94.2	4.9	Seismic reflection profile	SEISREFL	profile start	
PS64/491-1	17.08.03	04:53	76° 24.17' N	0° 1.95' W	3253.0	S 8	107.0	5.7	Seismic reflection profile	SEISREFL	alter course	
PS64/491-1	17.08.03	08:54	76° 46.82' N	0° 0.18' W	3266.0	S 8	4.8	6.3	Seismic reflection profile	SEISREFL	alter course	
PS64/491-1	18.08.03	01:37	77° 6.54' N	6° 10.40' W	286.0	SE 8	250.0	5.5	Seismic	SEISREFL	alter course	090°

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									reflection profile			
PS64/491-1	18.08.03	06:57	77° 6.02' N	4° 3.31' W	1775.0	SSE 8	90.3	5.8	Seismic reflection profile	SEISREFL	alter course	
PS64/491-1	19.08.03	02:40	75° 48.04' N	8° 59.41' W	1697.0	SSW 6	195.6	5.3	Seismic reflection profile	SEISREFL	alter course	129°
PS64/491-1	19.08.03	07:42	75° 30.13' N	7° 30.32' W	3310.0	S 6	109.5	5.5	Seismic reflection profile	SEISREFL	alter course	
PS64/491-1	20.08.03	08:33	77° 8.87' N	1° 30.48' W	3215.0	NE 2	348.9	2.7	Seismic reflection profile	SEISREFL	array on deck	
PS64/491-1	20.08.03	08:49	77° 9.87' N	1° 30.05' W	3211.0	NE 2	329.9	2.7	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/491-1	20.08.03	09:00	77° 9.47' N	1° 31.56' W	3416.0	NNE 2	130.4	5.5	Seismic reflection profile	SEISREFL	profile start	
PS64/491-1	20.08.03	09:01	77° 9.41' N	1° 31.21' W	3211.0	NNE 2	123.9	6.0	Seismic reflection profile	SEISREFL	alter course	
PS64/491-1	20.08.03	12:50	77° 9.02' N	0° 2.17' W	3250.0	N 1	92.6	6.6	Seismic reflection profile	SEISREFL	alter course	209°
PS64/491-1	21.08.03	14:05	74° 59.65' N	5° 0.74' W	3618.0	WSW 2	211.4	5.8	Seismic reflection profile	SEISREFL	end of profile	
PS64/491-1	21.08.03	14:19	74° 58.96' N	5° 0.62' W	3617.0	WSW 3	157.7	2.9	Seismic reflection profile	SEISREFL	streamer on deck	
PS64/491-1	21.08.03	14:24	74° 58.80' N	4° 59.87' W	3618.0	WSW 3	113.2	3.3	Seismic reflection profile	SEISREFL	array on deck	
PS64/492-1	21.08.03	14:56	74° 59.69' N	4° 57.79' W	3619.0	SW 2	325.8	2.4	Seismic reflection profile	SEISREFL	airguns in the water	Dicke Berta
PS64/492-1	21.08.03	15:04	74° 59.92' N	4° 58.54' W	3618.0	N 0	324.9	2.1	Seismic reflection profile	SEISREFL	array on deck	bläst ab
PS64/492-1	21.08.03	15:50	75° 0.78' N	5° 1.19' W	3614.0	WSW 7	304.8	7.7	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/493-1	21.08.03	16:21	75° 1.79' N	5° 7.70' W	3607.0	WSW 5	351.9	0.5	Ocean bottom seismometer	OBS	surface	OBS -201
PS64/492-1	21.08.03	16:25	75° 1.81' N	5° 7.72' W	3608.0	W 4	337.5	0.5	Seismic	SEISREFL	array on	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									reflection profile		deck	
PS64/494-1	21.08.03	17:05	75° 5.69' N	5° 24.10' W	3585.0	WSW 4	261.1	0.4	Ocean bottom seismometer	OBS	surface	OBS 202
PS64/495-1	21.08.03	17:43	75° 9.33' N	5° 39.96' W	3574.0	SW 3	119.5	0.7	Ocean bottom seismometer	OBS	surface	
PS64/496-1	21.08.03	18:23	75° 13.12' N	5° 55.49' W	3556.0	SW 3	191.2	0.5	Ocean bottom seismometer	OBS	surface	
PS64/497-1	21.08.03	19:02	75° 16.82' N	6° 11.46' W	3533.0	SSW 3	215.2	0.8	Ocean bottom seismometer	OBS	surface	OBS 205
PS64/498-1	21.08.03	19:42	75° 20.71' N	6° 27.25' W	3526.0	S 4	222.2	0.5	Ocean bottom seismometer	OBS	surface	OBS 206
PS64/499-1	21.08.03	20:18	75° 24.49' N	6° 43.16' W	3499.0	S 5	245.7	1.0	Ocean bottom seismometer	OBS	surface	OBS 207
PS64/500-1	21.08.03	21:06	75° 28.26' N	6° 59.73' W	3411.0	SSW 6	185.4	0.2	Ocean bottom seismometer	OBS	surface	OBS 208
PS64/501-1	21.08.03	21:52	75° 32.05' N	7° 15.91' W	3311.0	SSW 6	86.5	0.2	Ocean bottom seismometer	OBS	surface	OBS 209
PS64/502-1	21.08.03	22:27	75° 35.68' N	7° 32.76' W	3174.0	SSW 4	295.4	0.8	Ocean bottom seismometer	OBS	surface	OBS 210
PS64/503-1	21.08.03	23:11	75° 39.59' N	7° 48.42' W	2982.0	SSW 3	310.9	0.4	Ocean bottom seismometer	OBS	surface	OBS 211
PS64/504-1	22.08.03	00:19	75° 43.41' N	8° 4.31' W	2325.0	S 4	230.4	0.5	Multi corer	MUC	surface	
PS64/504-1	22.08.03	00:49	75° 43.25' N	8° 5.29' W	2324.0	S 6	1.3	0.1	Multi corer	MUC	at sea bottom	
PS64/504-1	22.08.03	01:22	75° 43.24' N	8° 6.03' W	2321.0	S 7	281.4	0.9	Multi corer	MUC	on deck	
PS64/504-2	22.08.03	01:35	75° 43.39' N	8° 4.43' W	2326.0	S 6	227.1	0.3	Ocean bottom seismometer	OBS	surface	
PS64/505-1	22.08.03	02:23	75° 47.43' N	8° 21.76' W	1993.0	S 6	332.0	1.3	Ocean bottom seismometer	OBS	surface	
PS64/506-1	22.08.03	03:12	75° 51.12' N	8° 38.22' W	1737.0	S 7	244.3	0.4	Multi corer	MUC	surface	
PS64/506-1	22.08.03	03:34	75° 51.16' N	8° 38.84' W	1734.0	NNW 6	304.1	0.2	Multi corer	MUC	at sea bottom	
PS64/506-1	22.08.03	03:59	75° 51.17' N	8° 39.27' W	1728.0	S 6	276.7	0.4	Multi corer	MUC	on deck	
PS64/506-2	22.08.03	04:12	75° 51.18' N	8° 38.26' W	1734.0	SSE 6	332.0	0.3	Ocean bottom seismometer	OBS	surface	OBS 214
PS64/507-1	22.08.03	04:59	75° 55.07' N	8° 54.46' W	1454.0	ENE 6	3.5	1.7	Ocean bottom seismometer	OBS	surface	OBS 215
PS64/508-1	22.08.03	05:55	75° 58.87' N	9° 11.63' W	1092.0	ESE 8	316.5	0.3	Multi corer	MUC	surface	
PS64/508-1	22.08.03	06:12	75° 58.90' N	9° 11.85' W	1087.0	S 8	218.3	0.2	Multi corer	MUC	at sea bottom	GE 52.2 auf 1060m ausgesteckt
PS64/508-1	22.08.03	06:28	75° 58.92' N	9° 11.89' W	1085.0	SW 8	120.1	0.3	Multi corer	MUC	on deck	
PS64/508-2	22.08.03	06:36	75° 58.87' N	9° 11.52' W	1093.0	SW 8	284.7	0.4	Ocean bottom seismometer	OBS	surface	OBS 216
PS64/509-1	22.08.03	07:25	76° 2.57' N	9° 27.37' W	688.4	S 6	296.1	0.2	Ocean bottom	OBS	surface	OBS 217

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									seismometer			
PS64/510-1	22.08.03	08:07	76° 6.23' N	9° 44.14' W	285.3	S 6	316.8	0.1	Ocean bottom seismometer	OBS	surface	OBS 218
PS64/511-1	22.08.03	08:55	76° 9.94' N	10° 0.69' W	292.3	NNW 6	302.9	0.7	Multi corer	MUC	surface	
PS64/511-1	22.08.03	08:57	76° 9.95' N	10° 0.76' W	288.4	NW 5	282.6	0.7	Multi corer	MUC	at sea bottom	GE 522 - 283m
PS64/511-1	22.08.03	09:03	76° 9.96' N	10° 0.94' W	286.4	SE 6	15.4	0.6	Multi corer	MUC	on deck	
PS64/511-2	22.08.03	09:16	76° 9.99' N	10° 0.86' W	286.7	W 5	51.0	0.4	Ocean bottom seismometer	OBS	surface	OBS 219
PS64/512-1	22.08.03	09:57	76° 13.73' N	10° 16.96' W	297.4	SSE 7	353.9	0.6	Ocean bottom seismometer	OBS	surface	OBS 220
PS64/513-1	22.08.03	10:35	76° 17.39' N	10° 34.28' W	299.6	SSE 7	300.0	0.3	Ocean bottom seismometer	OBS	surface	OBS 221
PS64/514-1	22.08.03	11:13	76° 21.16' N	10° 50.45' W	314.4	SSE 7	346.5	0.9	Ocean bottom seismometer	OBS	surface	OBS 222
PS64/515-1	22.08.03	11:51	76° 24.85' N	11° 7.25' W	315.2	SSW 7	13.9	1.1	Ocean bottom seismometer	OBS	surface	OBS 223
PS64/516-1	22.08.03	12:35	76° 28.50' N	11° 24.84' W	324.8	SSE 8	157.5	0.6	Multi corer	MUC	surface	
PS64/516-1	22.08.03	12:43	76° 28.49' N	11° 24.86' W	313.5	SSW 8	330.1	0.1	Multi corer	MUC	at sea bottom	
PS64/516-1	22.08.03	12:52	76° 28.49' N	11° 24.88' W	324.8	S 8	258.9	0.2	Multi corer	MUC	on deck	
PS64/516-2	22.08.03	13:01	76° 28.49' N	11° 24.87' W	324.9	S 9	4.9	0.4	Ocean bottom seismometer	OBS	surface	OBS 224
PS64/517-1	22.08.03	13:48	76° 32.22' N	11° 42.13' W	304.7	SSE 7	287.8	0.5	Ocean bottom seismometer	OBS	surface	OBS 225
PS64/518-1	22.08.03	22:40	76° 47.92' N	12° 59.64' W	209.7	WSW 5	156.9	4.7	Seismic refraction profile	SEISREFR	start profile	
PS64/518-1	24.08.03	11:31	74° 48.06' N	4° 0.07' W	3650.0	SSW 8	127.1	4.9	Seismic refraction profile	SEISREFR	end profile	
PS64/519-1	24.08.03	13:49	75° 1.82' N	5° 7.63' W	3600.0	SSW 7	1.2	0.6	Ocean bottom seismometer	OBS	released	
PS64/519-1	24.08.03	14:55	75° 1.84' N	5° 6.67' W	3581.7	SSW 7	303.3	1.7	Ocean bottom seismometer	OBS	at surface	
PS64/519-1	24.08.03	15:08	75° 2.16' N	5° 7.64' W	3603.0	SSW 6	94.0	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/520-1	24.08.03	15:48	75° 5.58' N	5° 24.00' W	3584.0	SSW 6	132.0	0.1	Ocean bottom seismometer	OBS	released	
PS64/520-1	24.08.03	17:40	75° 5.58' N	5° 24.27' W	3588.0	SW 5	21.6	5.6	Ocean bottom seismometer	OBS	at surface	
PS64/520-1	24.08.03	18:24	75° 5.59' N	5° 25.46' W	3585.0	SSW 5	15.2	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/521-1	24.08.03	18:27	75° 5.60' N	5° 25.44' W	3584.0	SSW 5	46.1	0.2	Ocean bottom seismometer	OBS	released	
PS64/521-1	24.08.03	19:07	75° 9.44' N	5° 40.13' W	3571.0	WNW 2	324.8	2.2	Ocean bottom seismometer	OBS	at surface	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/521-1	24.08.03	19:31	75° 9.13' N	5° 40.95' W	3551.3	WNW 2	308.2	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/522-1	24.08.03	19:36	75° 9.14' N	5° 41.04' W	3550.8	WNW 2	129.5	0.2	Ocean bottom seismometer	OBS	released	
PS64/522-2	24.08.03	20:15	75° 13.05' N	5° 55.40' W	3555.0	WNW 3	288.3	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/522-2	24.08.03	20:32	75° 13.19' N	5° 56.27' W	3556.0	WNW 3	338.1	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/523-1	24.08.03	20:39	75° 13.21' N	5° 56.24' W	3556.0	WNW 3	179.9	0.2	Ocean bottom seismometer	OBS	released	
PS64/523-1	24.08.03	22:31	75° 16.82' N	6° 11.39' W	3541.0	NW 6	103.6	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/523-1	24.08.03	22:45	75° 16.72' N	6° 11.86' W	3538.0	NW 7	125.3	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/524-1	24.08.03	22:51	75° 16.68' N	6° 11.71' W	3539.0	NW 7	127.8	0.6	Ocean bottom seismometer	OBS	released	
PS64/524-1	24.08.03	23:35	75° 20.61' N	6° 26.47' W	3528.0	NW 10	5.9	1.6	Ocean bottom seismometer	OBS	at surface	
PS64/524-1	24.08.03	23:49	75° 20.32' N	6° 27.03' W	3525.0	NW 9	137.6	1.3	Ocean bottom seismometer	OBS	on deck	
PS64/525-1	25.08.03	00:41	75° 24.41' N	6° 43.17' W	3501.0	WNW 9	161.1	1.1	Ocean bottom seismometer	OBS	released	OBH 207
PS64/525-1	25.08.03	01:29	75° 24.34' N	6° 42.96' W	3497.0	NW 10	153.2	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/525-1	25.08.03	01:40	75° 24.26' N	6° 42.26' W	3497.0	NW 10	162.0	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/526-1	25.08.03	02:28	75° 27.78' N	6° 59.13' W	3428.0	NW 10	278.0	0.1	Multi corer	MUC	surface	
PS64/526-1	25.08.03	02:33	75° 27.79' N	6° 59.19' W	3429.0	NW 11	195.0	0.3	Multi corer	MUC	information	mit CTD
PS64/526-1	25.08.03	03:13	75° 27.82' N	6° 59.07' W	3427.0	NW 11	10.6	0.2	Multi corer	MUC	at sea bottom	
PS64/526-2	25.08.03	03:40	75° 27.93' N	6° 59.36' W	3422.0	NW 10	299.6	0.2	Ocean bottom seismometer	OBS	released	
PS64/526-2	25.08.03	04:06	75° 28.05' N	6° 59.38' W	3420.0	WNW 9	8.6	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/526-1	25.08.03	04:15	75° 28.00' N	6° 59.37' W	3420.0	WNW 10	173.3	0.8	Multi corer	MUC	on deck	
PS64/526-2	25.08.03	04:42	75° 27.85' N	6° 59.67' W	3424.0	WNW 8	210.2	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/527-1	25.08.03	05:27	75° 31.99' N	7° 15.67' W	3312.0	WNW 7	109.1	0.5	Ocean bottom seismometer	OBS	released	
PS64/527-1	25.08.03	05:54	75° 31.93' N	7° 15.99' W	3312.0	WNW 8	17.4	0.1	Ocean bottom seismometer	OBS	at surface	
PS64/527-1	25.08.03	06:19	75° 32.13' N	7° 15.10' W	3308.0	W 8	153.8	1.2	Ocean bottom seismometer	OBS	on deck	
PS64/528-1	25.08.03	07:10	75° 35.35' N	7° 34.73' W	3189.0	WNW 8	250.0	0.0	Multi corer	MUC	surface	
PS64/528-1	25.08.03	07:50	75° 35.37' N	7° 34.59' W	3187.0	NW 8	177.0	0.2	Multi corer	MUC	at sea	GE 52.2 auf 3122m

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
											bottom	ausgesteckt
PS64/528-2	25.08.03	08:26	75° 35.20' N	7° 34.50' W	3189.0	NW 10	155.8	0.4	Ocean bottom seismometer	OBS	released	
PS64/528-1	25.08.03	08:33	75° 35.15' N	7° 34.56' W	3192.0	NW 9	216.1	0.8	Multi corer	MUC	on deck	
PS64/528-2	25.08.03	09:10	75° 35.48' N	7° 33.42' W	3187.0	WNW 9	135.8	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/528-2	25.08.03	09:27	75° 35.73' N	7° 33.03' W	3178.0	WNW 9	163.6	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/529-1	25.08.03	10:22	75° 39.07' N	7° 47.16' W	2995.0	NW 10	183.7	0.6	Multi corer	MUC	surface	
PS64/529-2	25.08.03	10:24	75° 39.05' N	7° 47.21' W	2998.0	NW 10	227.1	0.7	Ocean bottom seismometer	OBS	released	
PS64/529-2	25.08.03	10:58	75° 38.70' N	7° 48.09' W	3008.0	NW 11	221.8	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/529-1	25.08.03	10:59	75° 38.70' N	7° 48.11' W	3010.0	NW 10	218.4	0.4	Multi corer	MUC	at sea bottom	GE 522 - 2974
PS64/529-1	25.08.03	11:40	75° 38.35' N	7° 49.13' W	3023.0	NW 11	210.1	0.7	Multi corer	MUC	on deck	
PS64/529-2	25.08.03	12:04	75° 38.48' N	7° 48.90' W	3020.0	NW 10	189.1	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/530-1	25.08.03	13:09	75° 43.21' N	8° 4.55' W	2333.0	NNW 11	169.9	1.2	Ocean bottom seismometer	OBS	released	
PS64/530-1	25.08.03	13:44	75° 43.13' N	8° 4.43' W	2344.0	NW 11	122.4	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/530-1	25.08.03	13:58	75° 42.93' N	8° 5.76' W	2343.0	NNW 12	185.9	1.3	Ocean bottom seismometer	OBS	on deck	
PS64/531-1	25.08.03	14:49	75° 47.01' N	8° 20.43' W	2020.0	NNW 13	194.1	0.7	Multi corer	MUC	surface	
PS64/531-1	25.08.03	15:13	75° 46.90' N	8° 20.83' W	2023.0	NNW 15	14.3	0.0	Multi corer	MUC	at sea bottom	
PS64/531-2	25.08.03	15:33	75° 46.90' N	8° 21.09' W	2022.0	NNW 13	299.9	0.5	Ocean bottom seismometer	OBS	released	
PS64/531-1	25.08.03	15:46	75° 46.90' N	8° 21.38' W	2019.0	NNW 14	264.3	0.4	Multi corer	MUC	on deck	
PS64/531-2	25.08.03	15:55	75° 47.39' N	8° 21.67' W	1997.0	NNW 16	319.9	5.1	Ocean bottom seismometer	OBS	at surface	
PS64/531-2	25.08.03	16:09	75° 47.00' N	8° 22.54' W	2007.0	NNW 15	188.2	1.6	Ocean bottom seismometer	OBS	on deck	
PS64/532-1	25.08.03	17:00	75° 51.07' N	8° 38.46' W	1738.0	NNW 15	241.0	1.0	Ocean bottom seismometer	OBS	released	
PS64/532-1	25.08.03	17:20	75° 50.98' N	8° 39.52' W	1737.0	NNW 13	323.5	2.6	Ocean bottom seismometer	OBS	at surface	
PS64/532-1	25.08.03	17:30	75° 50.91' N	8° 39.83' W	1733.0	NNW 14	210.6	1.3	Ocean bottom seismometer	OBS	on deck	
PS64/533-1	25.08.03	18:14	75° 54.62' N	8° 53.56' W	1484.0	N 15	260.5	1.3	Multi corer	MUC	surface	
PS64/533-1	25.08.03	18:35	75° 54.58' N	8° 54.51' W	1476.0	NNW 13	276.4	0.5	Multi corer	MUC	at sea bottom	GE 52.2 auf 1445m ausgesteckt
PS64/533-2	25.08.03	18:51	75° 54.54' N	8° 55.07' W	1470.0	NNW 12	275.9	0.6	Ocean bottom seismometer	OBS	released	
PS64/533-1	25.08.03	18:56	75° 54.53' N	8° 55.25' W	1467.0	NNW 13	267.0	0.5	Multi corer	MUC	on deck	
PS64/533-2	25.08.03	19:14	75° 54.76' N	8° 56.36' W	1447.0	N 13	233.9	1.4	Ocean bottom	OBS	at surface	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									seismometer			
PS64/533-2	25.08.03	19:30	75° 54.89' N	8° 55.92' W	1446.0	NNW 13	238.0	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/534-1	25.08.03	20:29	75° 58.67' N	9° 12.34' W	1095.0	N 11	234.7	1.3	Ocean bottom seismometer	OBS	released	
PS64/534-1	25.08.03	20:39	75° 58.59' N	9° 13.00' W	1093.0	N 10	249.3	1.8	Ocean bottom seismometer	OBS	at surface	
PS64/534-1	25.08.03	21:00	75° 58.76' N	9° 13.21' W	1082.0	N 10	215.0	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/535-1	25.08.03	21:48	76° 2.52' N	9° 27.00' W	706.7	NNE 11	208.8	0.4	Ocean bottom seismometer	OBS	released	
PS64/535-1	25.08.03	21:54	76° 2.51' N	9° 27.01' W	698.1	N 10	267.8	0.1	Ocean bottom seismometer	OBS	at surface	
PS64/535-1	25.08.03	22:10	76° 2.62' N	9° 27.61' W	683.7	N 11	246.2	0.1	Ocean bottom seismometer	OBS	on deck	
PS64/536-1	25.08.03	22:54	76° 6.27' N	9° 44.11' W	282.7	N 9	162.9	0.3	Ocean bottom seismometer	OBS	released	
PS64/536-1	25.08.03	22:54	76° 6.27' N	9° 44.11' W	282.7	N 9	162.9	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/536-1	25.08.03	23:15	76° 6.29' N	9° 44.01' W	282.5	NNW 10	136.8	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/537-1	26.08.03	00:04	76° 9.84' N	10° 0.71' W	285.5	N 9	160.4	0.5	Ocean bottom seismometer	OBS	released	
PS64/537-1	26.08.03	00:09	76° 9.82' N	10° 0.62' W	287.4	N 10	151.5	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/537-1	26.08.03	00:26	76° 9.89' N	10° 0.62' W	290.2	NNW 10	134.1	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/538-1	26.08.03	01:09	76° 13.69' N	10° 17.08' W	290.4	N 11	258.7	1.0	Ocean bottom seismometer	OBS	released	
PS64/538-1	26.08.03	01:15	76° 13.63' N	10° 17.21' W	288.0	N 9	204.3	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/538-1	26.08.03	01:26	76° 13.70' N	10° 16.76' W	290.4	N 9	138.0	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/539-1	26.08.03	02:11	76° 17.40' N	10° 34.07' W	300.6	N 8	269.3	0.4	Ocean bottom seismometer	OBS	released	
PS64/539-1	26.08.03	02:21	76° 17.36' N	10° 34.52' W	301.9	N 8	296.0	1.6	Ocean bottom seismometer	OBS	at surface	
PS64/539-1	26.08.03	02:34	76° 17.37' N	10° 34.53' W	302.3	N 10	236.9	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/540-1	26.08.03	03:19	76° 21.04' N	10° 50.63' W	312.4	NNE 9	246.4	0.4	Ocean bottom seismometer	OBS	released	
PS64/540-1	26.08.03	03:23	76° 21.02' N	10° 50.67' W	314.6	N 9	180.5	0.2	Ocean bottom seismometer	OBS	at surface	
PS64/540-1	26.08.03	03:37	76° 21.19' N	10° 50.17' W	302.5	NNW 8	73.9	1.2	Ocean bottom seismometer	OBS	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/541-1	26.08.03	04:17	76° 24.69' N	11° 8.07' W	315.7	N 8	296.5	0.5	Ocean bottom seismometer	OBS	released	
PS64/541-1	26.08.03	04:19	76° 24.70' N	11° 8.10' W	313.7	N 7	12.2	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/541-1	26.08.03	04:36	76° 24.91' N	11° 7.33' W	318.2	NNW 8	295.9	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/542-1	26.08.03	05:17	76° 28.52' N	11° 24.77' W	324.8	N 6	21.3	0.6	Ocean bottom seismometer	OBS	released	
PS64/542-1	26.08.03	05:23	76° 28.49' N	11° 24.72' W	327.0	N 6	171.3	1.5	Ocean bottom seismometer	OBS	at surface	
PS64/542-1	26.08.03	05:34	76° 28.45' N	11° 25.00' W	324.3	N 5	24.1	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/543-1	26.08.03	06:16	76° 32.17' N	11° 42.37' W	310.4	N 5	106.9	0.2	Ocean bottom seismometer	OBS	released	
PS64/543-1	26.08.03	06:26	76° 32.12' N	11° 42.35' W	298.8	N 5	344.7	0.6	Ocean bottom seismometer	OBS	at surface	
PS64/543-1	26.08.03	06:33	76° 32.16' N	11° 42.22' W	308.0	NNW 6	178.2	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/544-1	26.08.03	14:08	75° 24.63' N	15° 12.39' W	186.9	NNW 7	213.8	3.4	Seismic reflection profile	SEISREFL	Streamer into water	Digi-Streamer-Test
PS64/544-1	26.08.03	16:27	75° 17.54' N	15° 33.31' W	154.8	N 5	224.1	3.5	Seismic reflection profile	SEISREFL	Remark	Streamer auf 1300m ausgebracht Beginn Test
PS64/544-1	26.08.03	20:44	75° 4.86' N	16° 11.00' W	253.7	W 1	218.0	4.5	Seismic reflection profile	SEISREFL	Remark	Ende Test, Streamer wird eingeholt, Länge 3000m
PS64/544-1	26.08.03	22:48	75° 1.51' N	16° 20.53' W	297.9	SSW 2	212.3	2.2	Seismic reflection profile	SEISREFL	streamer on deck	
PS64/545-1	27.08.03	00:51	74° 47.97' N	16° 59.71' W	346.5	SSE 5	101.6	0.6	Ocean bottom seismometer	OBS	surface	OBS 325
PS64/546-1	27.08.03	01:32	74° 45.79' N	16° 42.55' W	382.1	S 5	137.3	0.4	Ocean bottom seismometer	OBS	surface	OBS 324
PS64/547-1	27.08.03	02:10	74° 43.65' N	16° 25.46' W	368.9	S 5	113.1	0.0	Ocean bottom seismometer	OBS	surface	OBS 323
PS64/548-1	27.08.03	02:49	74° 41.54' N	16° 7.93' W	334.7	S 5	34.5	0.4	Ocean bottom seismometer	OBS	surface	OBS 322
PS64/549-1	27.08.03	03:23	74° 39.31' N	15° 50.86' W	315.8	SSW 4	150.6	0.2	Ocean bottom seismometer	OBS	surface	OBS 321
PS64/550-1	27.08.03	03:59	74° 37.14' N	15° 33.67' W	308.6	S 4	172.0	0.3	Ocean bottom seismometer	OBS	surface	OBS 320
PS64/551-1	27.08.03	04:35	74° 34.95' N	15° 16.45' W	317.8	SSW 5	101.3	0.3	Ocean bottom seismometer	OBS	surface	OBS 319
PS64/552-1	27.08.03	05:10	74° 32.81' N	14° 59.73' W	290.2	S 4	156.6	0.3	Ocean bottom seismometer	OBS	surface	OBS 318
PS64/553-1	27.08.03	05:55	74° 30.75' N	14° 43.31' W	271.3	S 4	86.8	0.7	Ocean bottom	OBS	surface	OBS 317

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									seismometer			
PS64/554-1	27.08.03	06:28	74° 28.61' N	14° 26.62' W	267.8	SSW 4	165.8	0.5	Ocean bottom seismometer	OBS	surface	OBS 316
PS64/555-1	27.08.03	07:05	74° 26.44' N	14° 9.89' W	670.3	S 4	135.1	1.7	Ocean bottom seismometer	OBS	surface	OBS 315
PS64/556-1	27.08.03	07:42	74° 24.36' N	13° 53.65' W	1408.0	S 4	53.7	1.2	Ocean bottom seismometer	OBS	surface	OBS 314
PS64/557-1	27.08.03	08:25	74° 22.33' N	13° 37.92' W	1934.0	SSE 5	25.6	0.0	Ocean bottom seismometer	OBS	surface	OBS 313
PS64/558-1	27.08.03	09:01	74° 20.26' N	13° 21.45' W	2354.0	S 5	174.7	0.6	Ocean bottom seismometer	OBS	surface	OBS 312
PS64/559-1	27.08.03	09:38	74° 18.07' N	13° 4.62' W	2584.0	S 5	217.9	0.3	Ocean bottom seismometer	OBS	surface	OBS 311
PS64/560-1	27.08.03	10:14	74° 15.99' N	12° 48.32' W	2803.0	SSW 5	101.0	0.0	Ocean bottom seismometer	OBS	surface	OBS 310
PS64/561-1	27.08.03	10:50	74° 13.85' N	12° 31.06' W	2891.0	SSW 5	57.4	0.4	Ocean bottom seismometer	OBS	surface	OBS 309
PS64/562-1	27.08.03	11:29	74° 11.64' N	12° 14.62' W	2940.0	SSW 5	31.9	0.4	Ocean bottom seismometer	OBS	surface	OBS 308
PS64/563-1	27.08.03	12:05	74° 9.54' N	11° 58.37' W	3016.0	SSW 6	60.3	0.3	Ocean bottom seismometer	OBS	surface	OBS 307
PS64/564-1	27.08.03	12:40	74° 7.42' N	11° 41.94' W	2930.0	N 0	64.5	1.0	Ocean bottom seismometer	OBS	surface	OBS 306
PS64/565-1	27.08.03	13:19	74° 5.33' N	11° 25.19' W	2970.0	SW 6	173.3	1.0	Ocean bottom seismometer	OBS	surface	OBS 305
PS64/566-1	27.08.03	13:55	74° 3.06' N	11° 8.91' W	3025.0	SW 6	103.1	1.3	Ocean bottom seismometer	OBS	surface	OBS 304
PS64/567-1	27.08.03	14:30	74° 0.88' N	10° 52.09' W	3065.0	SW 6	87.7	0.4	Ocean bottom seismometer	OBS	surface	OBS 303
PS64/568-1	27.08.03	15:06	73° 58.69' N	10° 35.33' W	3079.0	SW 6	114.9	1.5	Ocean bottom seismometer	OBS	surface	OBS 302
PS64/569-1	27.08.03	15:38	73° 56.63' N	10° 19.84' W	3104.0	SW 6	101.3	1.3	Ocean bottom seismometer	OBS	surface	OBS 301
PS64/570-1	27.08.03	17:08	73° 49.43' N	9° 29.54' W	3191.0	WSW 6	117.8	3.5	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/570-1	27.08.03	17:58	73° 50.22' N	9° 35.10' W	3152.0	SSW 6	285.2	5.0	Seismic reflection profile	SEISREFL	profile start	
PS64/570-1	29.08.03	07:10	75° 5.90' N	19° 59.46' W	363.6	ESE 3	294.9	3.0	Seismic reflection profile	SEISREFL	end of profile	
PS64/570-1	29.08.03	07:21	75° 6.23' N	20° 1.15' W	332.2	ESE 4	353.1	3.0	Seismic reflection profile	SEISREFL	array on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/571-1	29.08.03	07:31	75° 6.28' N	19° 59.91' W	327.8	ESE 3	135.4	5.8	HydroSweep/ ParaSound profile	HS_PS	start track	
PS64/571-1	29.08.03	07:43	75° 5.74' N	20° 5.21' W	386.3	ESE 3	259.0	9.6	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	07:51	75° 6.22' N	20° 4.06' W	393.5	SE 3	56.5	8.9	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	08:00	75° 7.11' N	20° 6.65' W	389.6	ESE 4	256.0	8.4	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	08:16	75° 5.70' N	20° 14.77' W	439.7	E 4	239.4	9.5	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	08:27	75° 5.64' N	20° 21.50' W	424.2	ESE 3	266.8	9.3	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	09:03	75° 7.87' N	20° 9.19' W	398.6	SE 4	55.7	9.2	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	09:36	75° 12.96' N	20° 10.00' W	221.5	SSE 4	356.2	9.5	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	09:59	75° 13.24' N	20° 22.84' W	370.0	SE 4	269.6	9.4	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	10:13	75° 11.74' N	20° 28.16' W	355.1	SE 4	217.6	9.0	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	10:51	75° 8.70' N	20° 11.18' W	355.1	ESE 4	122.5	9.1	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	11:26	75° 5.75' N	20° 28.06' W	302.5	E 3	237.9	9.5	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	11:38	75° 4.01' N	20° 29.77' W	334.7	ENE 3	189.3	9.4	HydroSweep/ ParaSound profile	HS_PS	alter course	
PS64/571-1	29.08.03	12:38	75° 3.74' N	19° 54.83' W	358.8	ESE 1	118.5	8.5	HydroSweep/ ParaSound profile	HS_PS	alter course	130°
PS64/571-1	29.08.03	13:31	74° 58.45' N	19° 30.23' W	406.2	SE 5	130.9	9.6	HydroSweep/ ParaSound profile	HS_PS	profile end	
PS64/572-1	29.08.03	17:56	74° 47.98' N	16° 59.82' W	344.4	SSE 6	99.4	0.6	Ocean bottom seismometer	OBS	released	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/572-1	29.08.03	18:04	74° 47.97' N	16° 59.51' W	348.3	SSE 6	122.6	0.8	Ocean bottom seismometer	OBS	at surface	
PS64/572-1	29.08.03	18:12	74° 47.91' N	16° 59.24' W	348.6	SSE 6	110.0	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/573-1	29.08.03	18:48	74° 45.95' N	16° 43.89' W	386.1	S 5	138.9	1.0	Multi corer	MUC	surface	
PS64/573-1	29.08.03	19:00	74° 45.90' N	16° 43.91' W	387.5	S 5	165.6	0.0	Multi corer	MUC	at sea bottom	GE 52.2 auf 376m ausgesteckt
PS64/573-2	29.08.03	19:09	74° 45.90' N	16° 43.94' W	387.8	S 6	165.9	0.0	Ocean bottom seismometer	OBS	released	
PS64/573-1	29.08.03	19:09	74° 45.90' N	16° 43.94' W	387.8	S 6	165.9	0.0	Multi corer	MUC	on deck	
PS64/573-2	29.08.03	19:30	74° 45.74' N	16° 42.52' W	383.1	S 6	165.2	0.6	Ocean bottom seismometer	OBS	at surface	
PS64/573-2	29.08.03	19:37	74° 45.67' N	16° 42.41' W	382.5	S 6	136.6	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/574-1	29.08.03	20:20	74° 43.65' N	16° 25.51' W	367.7	SSW 6	144.9	0.5	Ocean bottom seismometer	OBS	released	
PS64/574-1	29.08.03	20:24	74° 43.62' N	16° 25.36' W	367.3	SSW 6	127.8	0.9	Ocean bottom seismometer	OBS	at surface	
PS64/574-1	29.08.03	20:35	74° 43.56' N	16° 25.19' W	367.2	SSW 5	234.4	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/575-1	29.08.03	21:12	74° 41.55' N	16° 8.32' W	335.1	SSW 4	181.7	0.0	Ocean bottom seismometer	OBS	released	
PS64/575-1	29.08.03	21:31	74° 41.56' N	16° 7.77' W	334.0	SSW 4	28.4	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/575-1	29.08.03	21:40	74° 41.62' N	16° 7.87' W	329.2	SSW 4	350.0	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/576-1	29.08.03	22:19	74° 39.37' N	15° 51.46' W	311.5	SSW 4	335.8	0.3	Ocean bottom seismometer	OBS	released	
PS64/576-1	29.08.03	22:21	74° 39.37' N	15° 51.44' W	312.4	SSW 4	131.8	1.2	Ocean bottom seismometer	OBS	at surface	
PS64/576-1	29.08.03	22:29	74° 39.39' N	15° 50.96' W	312.2	SSW 4	36.7	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/577-1	29.08.03	23:12	74° 37.27' N	15° 34.18' W	325.7	S 4	336.0	0.8	Ocean bottom seismometer	OBS	released	
PS64/577-1	29.08.03	23:14	74° 37.29' N	15° 34.19' W	305.7	S 4	331.9	0.8	Ocean bottom seismometer	OBS	at surface	
PS64/577-1	29.08.03	23:28	74° 37.25' N	15° 33.60' W	306.0	SSW 5	46.4	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/578-1	30.08.03	00:04	74° 34.98' N	15° 16.47' W	317.0	SSW 5	40.3	0.5	Ocean bottom seismometer	OBS	released	OBS319
PS64/578-1	30.08.03	00:10	74° 35.04' N	15° 16.51' W	321.4	SSW 5	318.7	0.9	Ocean bottom seismometer	OBS	at surface	
PS64/578-1	30.08.03	00:18	74° 35.11' N	15° 16.75' W	317.2	SSW 5	292.8	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/579-1	30.08.03	00:56	74° 32.85' N	14° 59.87' W	292.9	SSW 5	2.0	0.5	Ocean bottom	OBS	released	OBS 318

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									seismometer			
PS64/579-1	30.08.03	01:00	74° 32.89' N	14° 59.87' W	293.8	SSW 4	339.6	0.6	Ocean bottom seismometer	OBS	at surface	
PS64/579-1	30.08.03	01:09	74° 32.91' N	15° 0.06' W	294.6	SSW 5	252.5	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/580-1	30.08.03	01:46	74° 30.78' N	14° 43.38' W	276.5	SSW 5	27.0	0.3	Ocean bottom seismometer	OBS	released	OBS-317
PS64/580-1	30.08.03	01:49	74° 30.80' N	14° 43.35' W	274.5	SSW 5	340.2	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/580-1	30.08.03	01:56	74° 30.82' N	14° 43.39' W	269.5	SSW 5	287.1	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/581-1	30.08.03	02:32	74° 28.63' N	14° 26.69' W	269.6	SW 5	331.7	0.3	Ocean bottom seismometer	OBS	released	OBH-316
PS64/581-1	30.08.03	02:36	74° 28.65' N	14° 26.74' W	269.8	SW 5	316.7	0.2	Ocean bottom seismometer	OBS	at surface	
PS64/581-1	30.08.03	02:44	74° 28.66' N	14° 26.62' W	268.6	SW 5	111.3	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/581-2	30.08.03	02:58	74° 28.61' N	14° 26.44' W	269.3	SSW 6	125.5	0.0	Multi corer	MUC	surface	
PS64/581-2	30.08.03	03:04	74° 28.61' N	14° 26.38' W	270.2	SSW 6	127.9	0.3	Multi corer	MUC	at sea bottom	
PS64/581-2	30.08.03	03:12	74° 28.60' N	14° 26.26' W	269.4	SSW 6	291.9	0.3	Multi corer	MUC	on deck	
PS64/582-1	30.08.03	03:46	74° 26.66' N	14° 11.71' W	575.2	SW 5	211.1	0.6	Multi corer	MUC	surface	mit CTD bei 50m
PS64/582-1	30.08.03	03:59	74° 26.54' N	14° 11.69' W	588.5	SW 6	167.7	0.5	Multi corer	MUC	at sea bottom	GE 52.2 auf 565m ausgesetzt
PS64/582-1	30.08.03	04:10	74° 26.45' N	14° 11.62' W	597.0	SW 6	179.3	0.4	Multi corer	MUC	on deck	
PS64/582-2	30.08.03	04:12	74° 26.43' N	14° 11.63' W	599.3	SW 6	173.6	0.5	Ocean bottom seismometer	OBS	released	
PS64/582-2	30.08.03	04:23	74° 26.38' N	14° 9.14' W	702.6	SW 6	114.5	6.1	Ocean bottom seismometer	OBS	at surface	
PS64/582-2	30.08.03	04:40	74° 26.05' N	14° 9.60' W	712.2	SW 5	153.5	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/583-1	30.08.03	05:20	74° 24.40' N	13° 54.13' W	1391.0	SW 7	174.1	2.6	Ocean bottom seismometer	OBS	released	
PS64/583-1	30.08.03	05:49	74° 24.12' N	13° 54.23' W	1402.0	SW 7	70.9	4.0	Ocean bottom seismometer	OBS	at surface	
PS64/583-1	30.08.03	05:59	74° 24.06' N	13° 53.84' W	1420.0	SW 8	173.5	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/583-2	30.08.03	06:06	74° 23.96' N	13° 53.87' W	1425.0	SW 8	146.7	0.6	Multi corer	MUC	surface	
PS64/583-2	30.08.03	06:27	74° 23.86' N	13° 53.62' W	1442.0	SW 9	126.2	0.4	Multi corer	MUC	at sea bottom	GE 52.2. auf 1402 m ausgesteckt
PS64/583-2	30.08.03	06:46	74° 23.75' N	13° 53.42' W	1452.0	SW 8	196.0	0.3	Multi corer	MUC	on deck	
PS64/584-1	30.08.03	07:19	74° 22.40' N	13° 39.53' W	1897.0	SW 8	181.3	1.1	Multi corer	MUC	surface	
PS64/584-1	30.08.03	07:46	74° 22.16' N	13° 39.60' W	1900.0	WSW 7	178.9	0.4	Multi corer	MUC	at sea bottom	GE 52.2 auf 1856m ausgesteckt
PS64/584-2	30.08.03	08:03	74° 22.06' N	13° 39.52' W	1903.0	SW 7	144.2	0.4	Ocean bottom seismometer	OBS	released	
PS64/584-1	30.08.03	08:08	74° 22.03' N	13° 39.55' W	1905.0	SW 7	206.6	0.4	Multi corer	MUC	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/584-2	30.08.03	08:23	74° 21.71' N	13° 39.54' W	1908.0	WSW 6	106.1	1.4	Ocean bottom seismometer	OBS	at surface	
PS64/584-2	30.08.03	08:41	74° 21.80' N	13° 38.50' W	1932.0	SW 6	197.4	1.1	Ocean bottom seismometer	OBS	on deck	
PS64/585-1	30.08.03	08:42	74° 21.79' N	13° 38.52' W	1931.0	SW 6	193.6	1.1	Ocean bottom seismometer	OBS	released	
PS64/585-1	30.08.03	09:02	74° 20.94' N	13° 34.93' W	2036.0	WSW 7	103.0	10.7	Ocean bottom seismometer	OBS	at surface	
PS64/585-1	30.08.03	09:38	74° 19.64' N	13° 22.72' W	2309.0	WSW 6	251.7	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/585-2	30.08.03	09:59	74° 20.01' N	13° 22.46' W	2305.0	WSW 7	226.1	1.9	Multi corer	MUC	surface	
PS64/585-2	30.08.03	10:27	74° 19.72' N	13° 23.61' W	2296.0	WSW 7	206.9	0.6	Multi corer	MUC	at sea bottom	GE 522 - 2255
PS64/585-2	30.08.03	10:58	74° 19.37' N	13° 24.64' W	2298.0	WSW 7	188.7	0.7	Multi corer	MUC	on deck	
PS64/586-1	30.08.03	11:55	74° 18.22' N	13° 6.45' W	2554.0	W 6	224.9	0.1	Multi corer	MUC	surface	
PS64/586-1	30.08.03	11:58	74° 18.22' N	13° 6.45' W	2553.0	W 6	43.7	0.2	Multi corer	MUC	information	plus CTD bei 50m
PS64/586-1	30.08.03	12:28	74° 18.08' N	13° 6.98' W	2548.0	WSW 6	243.2	0.5	Multi corer	MUC	at sea bottom	2497m
PS64/586-2	30.08.03	12:45	74° 18.05' N	13° 7.48' W	2543.0	WSW 6	278.2	0.9	Ocean bottom seismometer	OBS	released	OBS-311
PS64/586-1	30.08.03	13:05	74° 18.07' N	13° 8.02' W	2534.0	WSW 5	291.6	0.7	Multi corer	MUC	on deck	
PS64/586-2	30.08.03	13:24	74° 18.02' N	13° 5.12' W	2577.0	W 6	143.7	0.2	Ocean bottom seismometer	OBS	at surface	
PS64/586-2	30.08.03	13:33	74° 17.96' N	13° 5.17' W	2578.0	WSW 5	162.0	1.0	Ocean bottom seismometer	OBS	on deck	
PS64/587-1	30.08.03	13:37	74° 17.90' N	13° 5.18' W	2577.0	WSW 5	186.5	1.0	Ocean bottom seismometer	OBS	released	OBS-310
PS64/587-1	30.08.03	14:11	74° 15.96' N	12° 48.99' W	2798.0	W 5	138.3	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/587-1	30.08.03	14:23	74° 15.81' N	12° 48.94' W	2798.0	WSW 6	103.8	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/588-1	30.08.03	14:27	74° 15.79' N	12° 48.91' W	2799.0	WSW 6	163.2	0.7	Ocean bottom seismometer	OBS	released	OBH-309
PS64/588-1	30.08.03	15:04	74° 13.95' N	12° 31.32' W	2893.0	W 6	86.8	1.4	Ocean bottom seismometer	OBS	at surface	
PS64/588-1	30.08.03	15:16	74° 14.01' N	12° 31.35' W	2888.0	WSW 5	20.0	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/589-1	30.08.03	15:19	74° 14.01' N	12° 31.31' W	2893.0	WSW 5	107.9	0.3	Ocean bottom seismometer	OBS	released	
PS64/589-1	30.08.03	16:40	74° 11.56' N	12° 14.50' W	2941.0	W 4	262.1	1.5	Ocean bottom seismometer	OBS	at surface	
PS64/589-1	30.08.03	16:46	74° 11.52' N	12° 14.66' W	2940.0	W 4	67.8	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/590-1	30.08.03	16:51	74° 11.52' N	12° 14.56' W	2941.0	W 4	96.7	0.4	Ocean bottom seismometer	OBS	released	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/590-1	30.08.03	17:25	74° 9.65' N	11° 58.98' W	3017.0	W 5	100.1	5.8	Ocean bottom seismometer	OBS	at surface	
PS64/590-1	30.08.03	17:39	74° 9.45' N	11° 58.33' W	3020.0	W 4	89.0	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/591-1	30.08.03	17:42	74° 9.44' N	11° 58.24' W	3020.0	W 4	119.7	0.7	Ocean bottom seismometer	OBS	released	
PS64/591-1	30.08.03	19:32	74° 7.53' N	11° 42.13' W	2925.0	WSW 2	280.1	0.8	Ocean bottom seismometer	OBS	at surface	
PS64/591-1	30.08.03	19:39	74° 7.56' N	11° 42.38' W	2923.0	WSW 2	288.0	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/592-1	30.08.03	19:46	74° 7.56' N	11° 42.74' W	2923.0	WSW 2	253.4	0.6	Ocean bottom seismometer	OBS	released	
PS64/592-1	30.08.03	20:12	74° 5.85' N	11° 29.16' W	2963.0	W 3	115.9	11.2	Ocean bottom seismometer	OBS	at surface	
PS64/592-1	30.08.03	20:35	74° 5.45' N	11° 24.73' W	2969.0	WSW 2	34.8	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/593-1	30.08.03	20:41	74° 5.48' N	11° 24.78' W	2966.0	SW 2	323.8	0.4	Ocean bottom seismometer	OBS	released	
PS64/593-1	30.08.03	21:20	74° 3.17' N	11° 9.24' W	3025.0	SW 2	52.1	0.2	Ocean bottom seismometer	OBS	at surface	
PS64/593-1	30.08.03	21:31	74° 3.17' N	11° 8.70' W	3023.0	SW 2	114.1	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/594-1	30.08.03	21:38	74° 3.16' N	11° 8.60' W	3023.0	SW 2	0.5	0.3	Ocean bottom seismometer	OBS	released	
PS64/594-1	30.08.03	22:23	74° 1.00' N	10° 52.50' W	3063.0	SW 2	306.6	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/594-1	30.08.03	22:35	74° 0.93' N	10° 51.92' W	3064.0	SW 2	254.2	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/595-1	30.08.03	22:42	74° 0.91' N	10° 51.96' W	3064.0	SW 2	250.4	0.5	Ocean bottom seismometer	OBS	released	
PS64/595-1	30.08.03	23:20	73° 58.92' N	10° 35.11' W	3084.0	SW 3	73.7	1.7	Ocean bottom seismometer	OBS	at surface	
PS64/595-1	30.08.03	23:27	73° 58.80' N	10° 34.69' W	3082.0	SW 3	147.9	1.0	Ocean bottom seismometer	OBS	on deck	
PS64/596-1	30.08.03	23:33	73° 58.79' N	10° 34.66' W	3083.0	SSW 3	310.5	0.3	Ocean bottom seismometer	OBS	released	
PS64/596-1	31.08.03	00:03	73° 56.86' N	10° 21.43' W	3098.0	SW 4	115.8	9.0	Ocean bottom seismometer	OBS	at surface	
PS64/596-1	31.08.03	00:19	73° 56.76' N	10° 19.07' W	3106.0	SW 3	91.0	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/597-1	31.08.03	00:48	73° 57.09' N	10° 17.57' W	3103.0	SW 4	44.1	5.2	Seismic reflection profile	SEISREFL	Streamer into water	
PS64/597-1	31.08.03	03:56	73° 59.42' N	9° 51.59' W	3157.0	SSW 5	111.0	2.8	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/597-1	31.08.03	06:16	73° 56.89' N	10° 19.49' W	3103.0	S 7	297.2	5.6	Seismic	SEISREFL	profile start	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									reflection profile			
PS64/597-1	01.09.03	03:22	74° 48.36' N	17° 3.21' W	336.1	NNE 7	295.5	5.9	Seismic reflection profile	SEISREFL	alter course	Schweineohr über Bb. mit r=0,6sm auf neuen Kurs von 033°
PS64/597-1	01.09.03	09:14	75° 12.08' N	15° 59.95' W	200.7	N 9	31.5	2.8	Seismic reflection profile	SEISREFL	alter course	
PS64/597-1	01.09.03	11:01	75° 12.06' N	16° 0.64' W	208.1	N 11	114.3	5.4	Seismic reflection profile	SEISREFL	profile start	
PS64/597-1	02.09.03	09:25	74° 17.39' N	8° 41.53' W	3318.0	WNW 10	117.2	6.1	Seismic reflection profile	SEISREFL	Remark	Profil unterbrochen, Kanonen Überarbeitung
PS64/597-1	02.09.03	09:46	74° 16.60' N	8° 38.79' W	3313.0	WNW 11	144.1	2.6	Seismic reflection profile	SEISREFL	array on deck	
PS64/597-1	02.09.03	10:26	74° 16.32' N	8° 37.97' W	3332.0	WNW 11	276.3	3.1	Seismic reflection profile	SEISREFL	alter course	
PS64/597-1	02.09.03	10:28	74° 16.32' N	8° 38.47' W	3321.0	WNW 11	273.7	4.8	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/597-1	02.09.03	10:37	74° 16.96' N	8° 39.19' W	3317.0	W 11	33.4	6.8	Seismic reflection profile	SEISREFL	profile start	
PS64/597-1	02.09.03	15:17	74° 39.80' N	7° 44.57' W	3430.0	WNW 11	34.9	5.8	Seismic reflection profile	SEISREFL	alter course	über Stb. mit Schweineohr auf 305°
PS64/597-1	03.09.03	08:57	75° 36.31' N	12° 59.88' W	241.8	NW 9	291.4	6.2	Seismic reflection profile	SEISREFL	alter course	
PS64/597-1	03.09.03	16:47	76° 18.38' N	12° 59.97' W	220.2	NW 10	0.6	6.3	Seismic reflection profile	SEISREFL	alter course	
PS64/597-1	04.09.03	14:26	74° 59.30' N	6° 57.07' W	3479.0	NW 5	127.2	5.8	Seismic reflection profile	SEISREFL	alter course	auf 041° mit Schweineohr über Stb.
PS64/597-1	04.09.03	20:23	75° 17.50' N	5° 57.62' W	3557.0	N 4	307.5	6.4	Seismic reflection profile	SEISREFL	alter course	
PS64/597-1	05.09.03	19:48	76° 48.14' N	13° 0.43' W	217.4	SSE 5	328.4	5.8	Seismic reflection profile	SEISREFL	end of profile	
PS64/597-1	05.09.03	20:04	76° 49.45' N	13° 3.95' W	224.1	SE 5	325.1	4.3	Seismic	SEISREFL	streamer on	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/597-1	05.09.03	22:21	76° 52.57' N	13° 20.25' W	206.0	SE 4	39.4	2.4	reflection profile Seismic reflection profile	SEISREFL	deck array on deck	
PS64/598-1	07.09.03	08:09	73° 11.17' N	12° 51.78' W	2773.0	NE 4	223.7	0.6	Ocean bottom seismometer	OBS	surface	OBS - 401
PS64/599-1	07.09.03	08:51	73° 12.85' N	13° 7.17' W	2707.0	NE 4	286.9	0.4	Ocean bottom seismometer	OBS	surface	OBS - 402
PS64/600-1	07.09.03	09:26	73° 14.49' N	13° 23.80' W	2667.0	NNE 4	304.9	0.4	Ocean bottom seismometer	OBS	surface	OBS - 403
PS64/601-1	07.09.03	10:01	73° 16.24' N	13° 39.87' W	2627.0	ENE 5	279.5	0.0	Ocean bottom seismometer	OBS	surface	OBS - 404
PS64/602-1	07.09.03	10:36	73° 18.13' N	13° 55.80' W	2584.0	N 5	276.3	0.9	Ocean bottom seismometer	OBS	surface	OBS - 405
PS64/603-1	07.09.03	11:13	73° 20.15' N	14° 12.60' W	2503.0	NNE 4	203.7	0.6	Ocean bottom seismometer	OBS	surface	OBS - 406
PS64/604-1	07.09.03	11:47	73° 21.95' N	14° 29.33' W	2407.0	NNE 3	267.4	1.5	Ocean bottom seismometer	OBS	surface	OBS - 407
PS64/605-1	07.09.03	12:28	73° 23.87' N	14° 45.19' W	2276.0	NNE 3	205.8	0.3	Ocean bottom seismometer	OBS	surface	OBS 408
PS64/606-1	07.09.03	13:02	73° 25.78' N	15° 1.88' W	2092.0	NNE 4	274.0	0.8	Ocean bottom seismometer	OBS	surface	OBH-409
PS64/607-1	07.09.03	13:38	73° 27.65' N	15° 18.58' W	1808.0	NNE 4	221.6	0.5	Ocean bottom seismometer	OBS	surface	OBS-410
PS64/608-1	07.09.03	14:14	73° 29.59' N	15° 35.33' W	1420.0	NNE 5	272.3	1.1	Ocean bottom seismometer	OBS	surface	OBH-411
PS64/609-1	07.09.03	14:49	73° 31.33' N	15° 51.22' W	892.4	NNE 4	240.9	0.8	Ocean bottom seismometer	OBS	surface	OBS-412
PS64/610-1	07.09.03	15:24	73° 33.17' N	16° 7.13' W	285.5	NE 4	269.4	1.5	Ocean bottom seismometer	OBS	surface	OBH-413
PS64/611-1	07.09.03	15:59	73° 35.05' N	16° 23.00' W	282.2	ENE 3	197.2	0.6	Ocean bottom seismometer	OBS	surface	OBS-414
PS64/612-1	07.09.03	16:35	73° 37.00' N	16° 39.97' W	347.9	E 2	275.9	0.4	Ocean bottom seismometer	OBS	surface	OBS 415
PS64/613-1	07.09.03	17:11	73° 38.98' N	16° 56.17' W	293.9	ENE 2	302.7	1.4	Ocean bottom seismometer	OBS	surface	OBS 416
PS64/614-1	07.09.03	17:47	73° 40.96' N	17° 13.09' W	285.8	E 1	265.3	0.9	Ocean bottom seismometer	OBS	surface	obs 417
PS64/615-1	07.09.03	18:24	73° 42.70' N	17° 29.16' W	272.6	SE 1	8.7	0.0	Ocean bottom seismometer	OBS	surface	OBS 418
PS64/616-1	07.09.03	18:58	73° 44.49' N	17° 45.81' W	286.9	SSE 3	286.7	1.0	Ocean bottom seismometer	OBS	surface	OBS 419
PS64/617-1	07.09.03	19:32	73° 46.21' N	18° 1.83' W	302.8	S 3	264.1	0.5	Ocean bottom seismometer	OBS	surface	OBS 420
PS64/618-1	07.09.03	20:09	73° 48.08' N	18° 18.80' W	231.2	S 3	300.0	1.1	Ocean bottom seismometer	OBS	surface	OBS -421

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/619-1	07.09.03	20:44	73° 50.08' N	18° 36.07' W	176.1	S 4	309.1	0.8	Ocean bottom seismometer	OBS	surface	OBS - 422
PS64/620-1	07.09.03	21:18	73° 52.14' N	18° 52.61' W	172.7	S 6	306.1	1.0	Ocean bottom seismometer	OBS	surface	OBS - 423
PS64/621-1	07.09.03	21:50	73° 54.01' N	19° 8.75' W	173.4	S 6	300.2	1.2	Ocean bottom seismometer	OBS	surface	OBS - 424
PS64/622-1	07.09.03	22:24	73° 55.90' N	19° 25.45' W	124.0	S 7	303.3	0.7	Ocean bottom seismometer	OBS	surface	OBS - 425
PS64/623-1	07.09.03	23:00	73° 57.94' N	19° 43.07' W	305.0	SSW 9	323.4	0.9	Ocean bottom seismometer	OBS	surface	OBS - 426
PS64/624-1	07.09.03	23:37	74° 0.01' N	20° 0.08' W	298.3	S 5	286.1	0.9	Ocean bottom seismometer	OBS	surface	OBS - 427
PS64/625-1	08.09.03	00:14	74° 1.86' N	20° 16.64' W	478.2	SSW 2	239.2	0.5	Ocean bottom seismometer	OBS	surface	OBS-428
PS64/626-1	08.09.03	00:51	74° 3.92' N	20° 33.05' W	382.4	S 1	254.8	0.4	Ocean bottom seismometer	OBS	surface	OBH-429
PS64/627-1	08.09.03	04:27	74° 12.45' N	22° 1.58' W	236.7	SW 2	114.2	0.6	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/627-1	08.09.03	04:30	74° 12.41' N	22° 1.34' W	241.7	SW 3	119.2	3.0	Seismic reflection profile	SEISREFL	profile start	
PS64/627-1	08.09.03	09:09	74° 5.55' N	20° 46.53' W	207.0	ESE 5	86.3	4.8	Seismic reflection profile	SEISREFL	alter course	
PS64/627-1	09.09.03	14:27	73° 11.17' N	12° 51.66' W	2773.0	SSW 10	108.6	5.2	Seismic reflection profile	SEISREFL	end of profile	
PS64/627-1	09.09.03	15:33	73° 9.58' N	12° 37.06' W	2754.0	SSW 9	116.2	1.9	Seismic reflection profile	SEISREFL	array on deck	
PS64/628-1	09.09.03	16:02	73° 9.32' N	12° 38.81' W	2752.0	SSW 8	11.5	0.8	Releaser Test	REL	to Water	
PS64/628-1	09.09.03	16:36	73° 9.28' N	12° 38.44' W	2751.0	SSW 9	115.4	0.2	Releaser Test	REL	at Deep	GE 72.1 auf 2500 m ausgesteckt
PS64/628-1	09.09.03	16:40	73° 9.27' N	12° 38.38' W	2751.0	SSW 9	110.7	0.4	Releaser Test	REL	released	
PS64/628-1	09.09.03	17:53	73° 9.01' N	12° 37.46' W	2749.0	SSW 10	126.3	0.3	Releaser Test	REL	on Deck	
PS64/628-2	09.09.03	18:11	73° 8.96' N	12° 37.19' W	2750.0	SSW 10	135.4	0.4	Multi corer	MUC	surface	
PS64/628-2	09.09.03	18:47	73° 8.85' N	12° 36.68' W	2752.0	SSW 9	133.2	0.4	Multi corer	MUC	at sea bottom	GE 52.2 auf 2695m ausgesteckt
PS64/628-2	09.09.03	19:23	73° 8.73' N	12° 36.18' W	2749.0	SSW 9	133.9	0.3	Multi corer	MUC	on deck	
PS64/629-1	09.09.03	19:25	73° 8.72' N	12° 36.15' W	2749.0	SSW 9	91.5	0.4	Ocean bottom seismometer	OBS	released	
PS64/629-1	09.09.03	20:03	73° 10.77' N	12° 47.94' W	2744.0	SSW 9	289.9	10.9	Ocean bottom seismometer	OBS	at surface	
PS64/629-1	09.09.03	20:21	73° 11.25' N	12° 51.80' W	2775.0	SSW 9	17.6	0.5	Ocean bottom	OBS	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/630-1	09.09.03	20:25	73° 11.26' N	12° 51.68' W	2773.0	SSW 8	101.5	0.6	Ocean bottom seismometer	OBS	released	
PS64/630-1	09.09.03	20:55	73° 12.73' N	13° 5.74' W	2712.0	SSW 10	289.4	9.3	Ocean bottom seismometer	OBS	at surface	
PS64/630-1	09.09.03	21:07	73° 12.83' N	13° 7.21' W	2708.0	SSW 8	52.2	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/631-1	09.09.03	21:08	73° 12.84' N	13° 7.17' W	2708.0	SSW 8	76.9	0.5	Ocean bottom seismometer	OBS	released	
PS64/631-1	09.09.03	21:51	73° 14.45' N	13° 23.70' W	2667.0	SSW 8	268.2	1.4	Ocean bottom seismometer	OBS	at surface	
PS64/631-1	09.09.03	22:01	73° 14.37' N	13° 23.92' W	2666.0	SSW 7	30.9	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/632-1	09.09.03	22:04	73° 14.39' N	13° 23.85' W	2666.0	SSW 7	68.9	0.6	Ocean bottom seismometer	OBS	released	
PS64/632-1	09.09.03	22:35	73° 16.02' N	13° 37.61' W	2635.0	S 9	291.4	10.6	Ocean bottom seismometer	OBS	at surface	
PS64/632-1	09.09.03	22:49	73° 16.24' N	13° 39.81' W	2629.0	SSW 7	17.3	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/633-1	09.09.03	22:53	73° 16.26' N	13° 39.77' W	2628.0	SSW 7	62.3	0.5	Ocean bottom seismometer	OBS	released	
PS64/633-1	10.09.03	00:12	73° 18.07' N	13° 55.64' W	2588.0	SSW 7	259.3	2.4	Ocean bottom seismometer	OBS	at surface	
PS64/633-1	10.09.03	00:26	73° 18.24' N	13° 55.73' W	2588.0	SSW 7	21.7	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/634-1	10.09.03	00:29	73° 18.25' N	13° 55.68' W	2587.0	SSW 7	77.8	0.4	Ocean bottom seismometer	OBS	released	OBS-406
PS64/634-1	10.09.03	00:49	73° 19.03' N	14° 3.49' W	2554.0	SSW 9	284.9	11.1	Ocean bottom seismometer	OBS	at surface	
PS64/634-1	10.09.03	01:14	73° 19.96' N	14° 12.36' W	2506.0	SSW 8	328.9	0.1	Ocean bottom seismometer	OBS	on deck	
PS64/635-1	10.09.03	01:17	73° 19.96' N	14° 12.35' W	2506.0	SSW 7	72.9	0.2	Ocean bottom seismometer	OBS	released	
PS64/635-1	10.09.03	01:49	73° 21.63' N	14° 27.43' W	2421.0	S 7	288.4	7.2	Ocean bottom seismometer	OBS	at surface	
PS64/635-1	10.09.03	02:00	73° 21.84' N	14° 28.79' W	2410.0	SSW 6	97.2	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/636-1	10.09.03	02:03	73° 21.84' N	14° 28.73' W	2410.0	SSW 6	109.4	0.4	Ocean bottom seismometer	OBS	released	
PS64/636-1	10.09.03	02:31	73° 23.42' N	14° 41.18' W	2307.0	SSW 7	291.7	11.1	Ocean bottom seismometer	OBS	at surface	
PS64/636-1	10.09.03	02:46	73° 23.73' N	14° 45.17' W	2282.0	SSW 7	277.1	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/637-1	10.09.03	02:50	73° 23.72' N	14° 45.21' W	2283.0	SSW 7	277.3	0.0	Ocean bottom seismometer	OBS	released	
PS64/637-1	10.09.03	03:30	73° 25.73' N	15° 1.68' W	2097.0	SSW 7	291.0	0.5	Ocean bottom seismometer	OBS	released	2. Versuch

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/637-1	10.09.03	04:03	73° 25.66' N	15° 2.04' W	2094.0	S 7	198.8	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/637-1	10.09.03	04:15	73° 25.54' N	15° 2.12' W	2095.0	SSW 6	260.8	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/638-1	10.09.03	04:18	73° 25.55' N	15° 2.14' W	2096.0	SSW 6	274.1	0.2	Ocean bottom seismometer	OBS	released	
PS64/638-1	10.09.03	04:36	73° 26.42' N	15° 8.10' W	2006.0	S 7	294.6	11.4	Ocean bottom seismometer	OBS	at surface	
PS64/638-1	10.09.03	05:08	73° 27.21' N	15° 19.35' W	1803.0	SSW 7	295.6	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/639-1	10.09.03	05:49	73° 29.43' N	15° 35.72' W	1413.0	S 6	218.1	0.3	Ocean bottom seismometer	OBS	released	
PS64/639-1	10.09.03	06:02	73° 29.27' N	15° 36.18' W	1407.0	S 6	218.0	1.3	Ocean bottom seismometer	OBS	at surface	
PS64/639-1	10.09.03	06:18	73° 29.25' N	15° 35.66' W	1418.0	S 6	169.3	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/640-1	10.09.03	06:53	73° 31.29' N	15° 51.09' W	898.8	SSW 6	202.0	0.4	Ocean bottom seismometer	OBS	released	
PS64/640-1	10.09.03	07:00	73° 31.25' N	15° 51.14' W	898.5	SSW 6	179.7	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/640-1	10.09.03	07:30	73° 31.09' N	15° 52.15' W	872.2	SW 6	255.9	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/641-1	10.09.03	08:10	73° 33.11' N	16° 7.24' W	281.9	SW 5	31.7	0.3	Ocean bottom seismometer	OBS	released	
PS64/641-1	10.09.03	08:15	73° 33.11' N	16° 7.21' W	281.6	SW 4	111.0	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/641-1	10.09.03	08:20	73° 33.08' N	16° 7.17' W	283.0	SW 4	143.3	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/642-1	10.09.03	08:54	73° 34.98' N	16° 22.90' W	281.8	NW 2	260.9	0.4	Ocean bottom seismometer	OBS	released	
PS64/642-1	10.09.03	08:58	73° 34.97' N	16° 22.93' W	282.1	NW 2	204.9	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/642-1	10.09.03	09:03	73° 34.97' N	16° 23.05' W	283.9	NW 2	269.8	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/643-1	10.09.03	09:38	73° 36.94' N	16° 39.82' W	345.7	SW 3	283.3	1.6	Ocean bottom seismometer	OBS	released	
PS64/643-1	10.09.03	09:44	73° 36.95' N	16° 40.05' W	340.4	SW 3	293.5	0.0	Ocean bottom seismometer	OBS	at surface	
PS64/643-1	10.09.03	09:48	73° 36.93' N	16° 40.01' W	340.0	SW 3	186.0	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/644-1	10.09.03	10:26	73° 38.88' N	16° 56.14' W	295.2	WNW 2	223.4	0.4	Ocean bottom seismometer	OBS	released	
PS64/644-1	10.09.03	10:28	73° 38.88' N	16° 56.16' W	294.9	WNW 3	311.4	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/644-1	10.09.03	10:34	73° 38.86' N	16° 56.13' W	294.1	W 3	164.3	0.5	Ocean bottom	OBS	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/645-1	10.09.03	11:12	73° 40.86' N	17° 13.22' W	283.2	W 3	262.1	0.6	Ocean bottom seismometer	OBS	released	
PS64/645-1	10.09.03	11:15	73° 40.86' N	17° 13.20' W	283.2	WSW 4	64.8	0.6	Ocean bottom seismometer	OBS	at surface	
PS64/645-1	10.09.03	11:20	73° 40.87' N	17° 13.09' W	283.3	W 3	97.6	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/646-1	10.09.03	11:57	73° 42.61' N	17° 29.20' W	274.3	WSW 4	121.4	0.4	Ocean bottom seismometer	OBS	released	
PS64/646-1	10.09.03	11:58	73° 42.61' N	17° 29.19' W	274.5	WSW 4	150.3	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/646-1	10.09.03	12:05	73° 42.67' N	17° 29.35' W	274.3	WSW 4	332.4	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/647-1	10.09.03	12:42	73° 44.50' N	17° 46.03' W	287.5	WSW 4	315.0	1.0	Ocean bottom seismometer	OBS	released	
PS64/647-1	10.09.03	12:48	73° 44.49' N	17° 46.08' W	287.2	WSW 5	201.2	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/647-1	10.09.03	13:02	73° 44.37' N	17° 45.92' W	290.4	WSW 4	154.2	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/648-1	10.09.03	13:42	73° 46.19' N	18° 1.72' W	302.6	SW 5	105.9	0.2	Ocean bottom seismometer	OBS	released	
PS64/648-1	10.09.03	13:46	73° 46.19' N	18° 1.65' W	315.5	SW 5	68.9	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/648-1	10.09.03	13:52	73° 46.17' N	18° 1.97' W	297.5	SW 4	282.8	0.6	Ocean bottom seismometer	OBS	on deck	
PS64/649-1	10.09.03	14:32	73° 48.05' N	18° 18.91' W	229.4	SW 5	317.0	0.7	Ocean bottom seismometer	OBS	released	
PS64/649-1	10.09.03	14:36	73° 48.06' N	18° 18.94' W	228.9	SSW 6	84.5	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/649-1	10.09.03	14:40	73° 48.05' N	18° 18.86' W	231.8	SW 5	123.1	0.5	Ocean bottom seismometer	OBS	surface	
PS64/650-1	10.09.03	15:21	73° 50.00' N	18° 36.24' W	172.7	SW 5	259.7	0.2	Ocean bottom seismometer	OBS	released	
PS64/650-1	10.09.03	15:25	73° 50.00' N	18° 36.18' W	170.3	SSW 5	155.1	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/650-1	10.09.03	15:34	73° 50.08' N	18° 36.41' W	172.1	SSW 5	169.8	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/651-1	10.09.03	16:13	73° 52.14' N	18° 52.51' W	171.7	SSW 6	345.3	0.8	Ocean bottom seismometer	OBS	released	
PS64/651-1	10.09.03	16:20	73° 52.14' N	18° 52.49' W	171.6	SW 5	243.2	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/651-1	10.09.03	16:27	73° 52.12' N	18° 52.63' W	173.3	SW 5	243.8	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/652-1	10.09.03	17:04	73° 54.01' N	19° 8.56' W	173.8	SSW 5	155.8	0.1	Ocean bottom seismometer	OBS	released	
PS64/652-1	10.09.03	17:06	73° 54.01' N	19° 8.54' W	173.0	SSW 5	155.1	0.2	Ocean bottom seismometer	OBS	at surface	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/652-1	10.09.03	17:16	73° 54.02' N	19° 8.79' W	171.4	SSW 5	7.2	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/653-1	10.09.03	17:55	73° 55.88' N	19° 25.66' W	123.2	SSW 4	104.8	0.3	Ocean bottom seismometer	OBS	released	
PS64/653-1	10.09.03	17:56	73° 55.88' N	19° 25.64' W	123.6	SSW 4	101.2	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/653-1	10.09.03	18:00	73° 55.87' N	19° 25.57' W	124.2	SSW 4	129.5	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/654-1	10.09.03	18:38	73° 57.94' N	19° 42.99' W	304.7	SSW 3	258.7	0.6	Ocean bottom seismometer	OBS	released	
PS64/654-1	10.09.03	18:45	73° 57.93' N	19° 42.96' W	304.1	SSW 3	119.1	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/654-1	10.09.03	18:50	73° 57.90' N	19° 42.83' W	303.1	S 3	131.5	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/655-1	10.09.03	19:26	73° 59.95' N	20° 0.28' W	296.3	N 2	309.7	0.5	Ocean bottom seismometer	OBS	released	
PS64/655-1	10.09.03	19:30	73° 59.94' N	20° 0.30' W	294.2	N 1	196.7	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/655-1	10.09.03	19:38	73° 59.85' N	20° 0.48' W	287.0	N 1	205.8	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/656-1	10.09.03	20:13	74° 1.69' N	20° 16.72' W	505.0	SSE 0	243.7	0.8	Ocean bottom seismometer	OBS	released	
PS64/656-1	10.09.03	20:16	74° 1.69' N	20° 16.76' W	516.9	SE 0	184.8	0.2	Ocean bottom seismometer	OBS	at surface	
PS64/656-1	10.09.03	20:24	74° 1.62' N	20° 16.59' W	487.4	WNW 0	131.1	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/657-1	10.09.03	21:00	74° 3.89' N	20° 32.70' W	402.1	WNW 1	45.4	0.3	Ocean bottom seismometer	OBS	released	
PS64/657-1	10.09.03	21:03	74° 3.90' N	20° 32.70' W	403.7	NW 1	300.6	1.8	Ocean bottom seismometer	OBS	at surface	
PS64/657-1	10.09.03	21:07	74° 3.93' N	20° 32.85' W	386.4	NW 1	35.1	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/658-1	11.09.03	07:15	73° 11.53' N	21° 49.41' W	344.9	WSW 6	343.2	0.2	Ocean bottom seismometer	OBS	surface	OBS 531
PS64/659-1	11.09.03	09:07	73° 6.05' N	20° 47.92' W	129.6	WSW 8	316.3	0.1	Ocean bottom seismometer	OBS	surface	OBS - 529
PS64/660-1	11.09.03	09:50	73° 4.66' N	20° 31.45' W	155.4	W 8	90.3	0.3	Ocean bottom seismometer	OBS	surface	OBS - 528
PS64/661-1	11.09.03	10:26	73° 3.17' N	20° 15.07' W	186.2	W 9	151.1	0.2	Ocean bottom seismometer	OBS	surface	OBS - 527
PS64/662-1	11.09.03	10:59	73° 1.72' N	19° 58.89' W	195.3	SW 6	82.2	0.6	Ocean bottom seismometer	OBS	surface	OBS - 526
PS64/663-1	11.09.03	11:34	73° 0.30' N	19° 42.57' W	186.6	SW 6	64.0	0.3	Ocean bottom seismometer	OBS	surface	OBS - 525
PS64/664-1	11.09.03	12:12	72° 58.74' N	19° 26.09' W	200.8	SW 5	241.1	0.3	Ocean bottom	OBS	surface	OBS-524

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/665-1	11.09.03	12:51	72° 57.26' N	19° 9.86' W	224.6	SSW 6	78.9	0.3	Ocean bottom seismometer	OBS	surface	
PS64/666-1	11.09.03	13:41	72° 55.81' N	18° 53.56' W	287.4	SSW 6	288.0	0.5	Ocean bottom seismometer	OBS	surface	
PS64/667-1	11.09.03	14:16	72° 54.22' N	18° 37.18' W	302.6	SSW 7	353.7	0.4	Ocean bottom seismometer	OBS	surface	
PS64/668-1	11.09.03	14:53	72° 52.75' N	18° 21.04' W	308.0	SSW 7	49.2	0.3	Ocean bottom seismometer	OBS	surface	
PS64/669-1	11.09.03	15:28	72° 51.22' N	18° 4.78' W	324.3	SSW 7	41.9	0.4	Ocean bottom seismometer	OBS	surface	OBS-519
PS64/670-1	11.09.03	16:03	72° 49.63' N	17° 48.40' W	360.3	SSW 6	328.5	0.5	Ocean bottom seismometer	OBS	surface	OBS 518
PS64/671-1	11.09.03	16:40	72° 48.07' N	17° 31.90' W	348.6	SSW 7	64.5	0.4	Ocean bottom seismometer	OBS	surface	
PS64/672-1	11.09.03	17:16	72° 46.58' N	17° 15.88' W	314.1	SSW 7	109.3	1.0	Ocean bottom seismometer	OBS	surface	OBS 516
PS64/673-1	11.09.03	18:04	72° 45.06' N	16° 59.58' W	306.1	SSW 5	213.5	0.3	Ocean bottom seismometer	OBS	surface	OBS 515
PS64/674-1	11.09.03	18:41	72° 43.44' N	16° 43.41' W	580.8	S 6	70.3	0.3	Ocean bottom seismometer	OBS	surface	OBS 514
PS64/675-1	11.09.03	19:21	72° 42.04' N	16° 27.49' W	1269.0	SSW 5	131.2	1.2	Ocean bottom seismometer	OBS	surface	OBS 513
PS64/676-1	11.09.03	19:57	72° 40.55' N	16° 11.68' W	1660.0	SSW 6	241.8	0.2	Ocean bottom seismometer	OBS	surface	OBS 512
PS64/677-1	11.09.03	20:34	72° 39.09' N	15° 55.51' W	1848.0	S 6	352.4	0.1	Ocean bottom seismometer	OBS	surface	OBS - 511
PS64/678-1	11.09.03	21:08	72° 37.67' N	15° 39.45' W	1946.0	SSW 8	27.7	0.6	Ocean bottom seismometer	OBS	surface	OBS - 510
PS64/679-1	11.09.03	21:43	72° 36.24' N	15° 23.30' W	2004.0	S 7	6.0	0.3	Ocean bottom seismometer	OBS	surface	OBS - 509
PS64/680-1	11.09.03	22:17	72° 34.79' N	15° 7.08' W	2006.0	S 6	79.0	0.7	Ocean bottom seismometer	OBS	surface	OBS - 508
PS64/681-1	11.09.03	22:51	72° 33.30' N	14° 50.90' W	1937.0	S 5	72.0	0.4	Ocean bottom seismometer	OBS	surface	OBS - 507
PS64/682-1	11.09.03	23:25	72° 31.78' N	14° 34.85' W	1830.0	SSE 4	189.2	0.9	Ocean bottom seismometer	OBS	surface	OBS - 506
PS64/683-1	12.09.03	00:02	72° 30.29' N	14° 18.65' W	1749.0	S 5	320.6	0.2	Ocean bottom seismometer	OBS	surface	OBS - 505
PS64/684-1	12.09.03	01:10	72° 27.32' N	13° 46.69' W	1243.0	SSE 4	252.9	0.3	Ocean bottom seismometer	OBS	surface	OBS-504
PS64/685-1	12.09.03	02:14	72° 24.43' N	13° 14.69' W	1803.0	SE 4	196.1	0.2	Ocean bottom seismometer	OBS	surface	OBS-503
PS64/686-1	12.09.03	03:19	72° 21.45' N	12° 43.24' W	2266.0	ESE 4	23.8	0.3	Ocean bottom seismometer	OBS	surface	OBS-502
PS64/687-1	12.09.03	04:21	72° 18.50' N	12° 11.53' W	2453.0	ENE 5	138.4	0.2	Ocean bottom seismometer	OBS	surface	OBS 501

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/688-1	12.09.03	06:10	72° 14.08' N	11° 22.70' W	2186.0	E 5	299.0	2.1	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/688-1	12.09.03	06:15	72° 14.15' N	11° 23.46' W	2184.0	E 6	282.6	3.4	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/688-1	12.09.03	06:21	72° 14.24' N	11° 24.62' W	2178.0	E 5	281.2	3.8	Seismic reflection profile	SEISREFL	profile start	
PS64/688-1	14.09.03	08:32	73° 32.95' N	24° 39.78' W	132.8	WNW 10	305.0	4.7	Seismic reflection profile	SEISREFL	end of profile	
PS64/688-1	14.09.03	08:55	73° 33.32' N	24° 40.64' W	116.5	W 11	357.0	0.4	Seismic reflection profile	SEISREFL	array on deck	
PS64/689-1	14.09.03	17:11	73° 11.67' N	21° 49.27' W	361.4	SE 3	273.2	0.4	Ocean bottom seismometer	OBS	released	
PS64/689-1	14.09.03	17:15	73° 11.67' N	21° 49.37' W	362.7	SE 2	231.1	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/689-1	14.09.03	17:22	73° 11.63' N	21° 49.54' W	358.4	SE 3	196.2	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/690-1	14.09.03	19:19	73° 6.04' N	20° 47.70' W	264.1	ESE 2	181.1	0.3	Ocean bottom seismometer	OBS	released	
PS64/690-1	14.09.03	19:21	73° 6.03' N	20° 47.74' W	252.6	ESE 2	197.4	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/690-1	14.09.03	19:27	73° 5.98' N	20° 48.05' W	256.6	SE 2	201.4	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/691-1	14.09.03	20:07	73° 4.68' N	20° 31.79' W	144.8	SSW 1	137.3	1.0	Ocean bottom seismometer	OBS	released	
PS64/691-1	14.09.03	20:09	73° 4.67' N	20° 31.78' W	154.5	S 1	229.3	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/691-1	14.09.03	20:18	73° 4.60' N	20° 31.69' W	151.0	NE 1	211.0	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/692-1	14.09.03	20:56	73° 3.16' N	20° 15.09' W	185.9	SE 2	153.3	0.8	Ocean bottom seismometer	OBS	released	
PS64/692-1	14.09.03	20:58	73° 3.14' N	20° 15.09' W	185.3	SE 2	204.6	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/692-1	14.09.03	21:09	73° 3.11' N	20° 15.12' W	186.1	NNE 0	68.9	0.1	Ocean bottom seismometer	OBS	on deck	
PS64/693-1	14.09.03	21:45	73° 1.75' N	19° 59.10' W	192.4	N 2	153.4	0.6	Ocean bottom seismometer	OBS	released	
PS64/693-1	14.09.03	21:48	73° 1.73' N	19° 59.10' W	197.7	N 2	232.5	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/693-1	14.09.03	21:56	73° 1.68' N	19° 58.94' W	195.1	NNE 2	170.1	0.2	Ocean bottom seismometer	OBS	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/694-1	14.09.03	22:34	73° 0.35' N	19° 42.68' W	188.6	NE 1	119.7	0.4	Ocean bottom seismometer	OBS	released	
PS64/694-1	14.09.03	22:36	73° 0.34' N	19° 42.67' W	190.3	ENE 1	193.6	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/694-1	14.09.03	22:44	73° 0.33' N	19° 42.54' W	190.2	NNW 1	297.1	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/695-1	14.09.03	23:20	72° 58.78' N	19° 26.10' W	203.4	N 2	133.2	0.9	Ocean bottom seismometer	OBS	released	
PS64/695-1	14.09.03	23:22	72° 58.77' N	19° 26.08' W	203.4	N 1	177.8	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/695-1	14.09.03	23:28	72° 58.75' N	19° 26.17' W	202.2	N 2	319.9	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/696-1	15.09.03	00:07	72° 57.26' N	19° 9.94' W	221.6	NNW 2	303.3	1.2	Ocean bottom seismometer	OBS	released	OBS-523
PS64/696-1	15.09.03	00:11	72° 57.29' N	19° 10.10' W	220.9	N 2	321.8	0.9	Ocean bottom seismometer	OBS	at surface	
PS64/696-1	15.09.03	00:23	72° 57.25' N	19° 9.76' W	221.0	NNW 1	237.6	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/697-1	15.09.03	00:59	72° 55.81' N	18° 53.64' W	290.1	N 1	223.0	0.6	Ocean bottom seismometer	OBS	released	OBS-522
PS64/697-1	15.09.03	01:02	72° 55.79' N	18° 53.72' W	291.0	N 1	231.7	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/697-1	15.09.03	01:11	72° 55.77' N	18° 53.75' W	291.5	N 2	201.9	0.1	Ocean bottom seismometer	OBS	on deck	
PS64/698-1	15.09.03	01:52	72° 54.23' N	18° 37.38' W	306.2	NE 1	190.4	0.2	Ocean bottom seismometer	OBS	released	OBS-521
PS64/698-1	15.09.03	01:56	72° 54.21' N	18° 37.46' W	299.1	N 1	216.4	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/698-1	15.09.03	02:03	72° 54.21' N	18° 37.22' W	302.1	NNW 2	105.9	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/699-1	15.09.03	02:41	72° 52.75' N	18° 21.20' W	306.5	NW 1	288.4	0.5	Ocean bottom seismometer	OBS	released	OBH-520
PS64/699-1	15.09.03	02:46	72° 52.74' N	18° 21.27' W	307.6	NW 1	244.0	0.6	Ocean bottom seismometer	OBS	at surface	
PS64/699-1	15.09.03	02:53	72° 52.73' N	18° 21.26' W	307.0	NW 2	185.5	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/700-1	15.09.03	03:33	72° 51.22' N	18° 4.93' W	324.7	NNE 2	343.8	0.4	Ocean bottom seismometer	OBS	released	OBS-519
PS64/700-1	15.09.03	03:35	72° 51.22' N	18° 4.95' W	324.7	NNE 2	260.5	0.2	Ocean bottom seismometer	OBS	at surface	
PS64/700-1	15.09.03	03:43	72° 51.19' N	18° 4.49' W	327.0	N 3	95.3	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/701-1	15.09.03	04:19	72° 49.68' N	17° 48.51' W	361.3	N 3	194.1	1.0	Ocean bottom seismometer	OBS	released	
PS64/701-1	15.09.03	04:24	72° 49.63' N	17° 48.62' W	360.2	NNW 3	239.6	0.8	Ocean bottom seismometer	OBS	at surface	
PS64/701-1	15.09.03	04:33	72° 49.59' N	17° 48.85' W	356.2	N 3	286.1	0.3	Ocean bottom	OBS	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									seismometer			
PS64/702-1	15.09.03	05:12	72° 48.12' N	17° 31.76' W	348.0	N 5	134.1	0.7	Ocean bottom seismometer	OBS	released	
PS64/702-1	15.09.03	05:15	72° 48.08' N	17° 31.75' W	349.6	N 5	222.8	0.6	Ocean bottom seismometer	OBS	at surface	
PS64/702-1	15.09.03	05:20	72° 48.04' N	17° 31.82' W	346.7	N 5	286.6	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/703-1	15.09.03	05:58	72° 46.61' N	17° 15.99' W	312.2	NNE 4	157.3	1.2	Ocean bottom seismometer	OBS	released	
PS64/703-1	15.09.03	06:02	72° 46.55' N	17° 16.00' W	311.5	NNE 4	248.8	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/703-1	15.09.03	06:09	72° 46.45' N	17° 16.32' W	312.4	NNE 4	243.8	1.2	Ocean bottom seismometer	OBS	on deck	
PS64/704-1	15.09.03	06:47	72° 45.10' N	16° 59.75' W	307.0	NNE 3	178.7	1.1	Ocean bottom seismometer	OBS	released	
PS64/704-1	15.09.03	06:50	72° 45.07' N	16° 59.78' W	305.8	NNE 4	215.1	0.5	Ocean bottom seismometer	OBS	at surface	
PS64/704-1	15.09.03	06:56	72° 45.02' N	17° 0.00' W	305.0	N 4	255.4	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/705-1	15.09.03	07:38	72° 43.47' N	16° 43.60' W	567.6	NNW 6	162.5	0.9	Ocean bottom seismometer	OBS	released	
PS64/705-1	15.09.03	07:51	72° 43.43' N	16° 43.56' W	578.3	NNE 5	27.1	0.3	Ocean bottom seismometer	OBS	at surface	
PS64/705-1	15.09.03	07:56	72° 43.39' N	16° 43.67' W	575.4	NNE 4	186.7	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/706-1	15.09.03	08:28	72° 42.75' N	16° 35.94' W	933.8	NNE 3	178.7	0.8	Multi corer	MUC	surface	
PS64/706-1	15.09.03	08:43	72° 42.62' N	16° 36.14' W	942.9	NNW 3	208.1	0.2	Multi corer	MUC	at sea bottom	GE 522 - 922m
PS64/706-1	15.09.03	08:59	72° 42.51' N	16° 36.34' W	942.9	N 3	176.9	1.1	Multi corer	MUC	on deck	
PS64/707-1	15.09.03	09:03	72° 42.45' N	16° 36.39' W	952.9	NNW 4	206.0	1.3	Ocean bottom seismometer	OBS	released	
PS64/707-1	15.09.03	09:16	72° 42.34' N	16° 31.66' W	1109.0	N 4	105.2	10.9	Ocean bottom seismometer	OBS	at surface	
PS64/707-1	15.09.03	09:33	72° 41.73' N	16° 27.86' W	1273.0	N 2	213.3	0.8	Ocean bottom seismometer	OBS	on deck	
PS64/707-2	15.09.03	09:48	72° 41.64' N	16° 28.14' W	1270.0	NNW 3	228.6	0.7	Multi corer	MUC	surface	
PS64/707-3	15.09.03	10:00	72° 41.53' N	16° 28.39' W	1266.0	NNW 3	244.1	0.7	CTD	CTD	surface	
PS64/707-3	15.09.03	10:06	72° 41.50' N	16° 28.58' W	1263.0	NNW 3	274.7	0.7	CTD	CTD	at depth	
PS64/707-2	15.09.03	10:06	72° 41.50' N	16° 28.58' W	1263.0	NNW 3	274.7	0.7	Multi corer	MUC	at sea bottom	Ge 522 - 1233m
PS64/707-3	15.09.03	10:22	72° 41.40' N	16° 28.91' W	1258.0	NNE 3	147.8	0.5	CTD	CTD	on deck	
PS64/707-2	15.09.03	10:28	72° 41.35' N	16° 29.01' W	1254.0	NNW 2	269.9	0.6	Multi corer	MUC	on deck	
PS64/708-1	15.09.03	11:08	72° 40.71' N	16° 13.22' W	1641.0	NNW 4	292.6	0.5	Multi corer	MUC	surface	
PS64/708-1	15.09.03	11:29	72° 40.61' N	16° 13.58' W	1636.0	NW 3	217.3	0.2	Multi corer	MUC	at sea bottom	GE 52.2 - 1595

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/708-2	15.09.03	11:43	72° 40.53' N	16° 13.81' W	1632.0	NNW 4	295.3	0.5	Ocean bottom seismometer	OBS	released	
PS64/708-1	15.09.03	11:51	72° 40.49' N	16° 13.93' W	1631.0	NNW 4	194.4	0.9	Multi corer	MUC	on deck	
PS64/708-2	15.09.03	11:59	72° 40.63' N	16° 13.22' W	1640.0	N 4	134.4	4.9	Ocean bottom seismometer	OBS	at surface	
PS64/708-2	15.09.03	12:15	72° 40.33' N	16° 11.93' W	1656.0	NNE 3	265.8	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/709-1	15.09.03	12:21	72° 40.29' N	16° 12.11' W	1653.0	NNE 3	267.4	1.1	Ocean bottom seismometer	OBS	released	OBS-511
PS64/709-1	15.09.03	12:50	72° 39.42' N	15° 58.80' W	1810.0	N 5	106.6	10.9	Ocean bottom seismometer	OBS	at surface	
PS64/709-1	15.09.03	13:03	72° 38.82' N	15° 55.58' W	1839.0	NNW 4	195.5	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/710-1	15.09.03	13:09	72° 38.78' N	15° 55.73' W	1836.0	NNW 4	229.7	1.0	Ocean bottom seismometer	OBS	released	OBH-510
PS64/710-1	15.09.03	13:50	72° 37.51' N	15° 39.40' W	1944.0	NNW 4	220.8	0.7	Ocean bottom seismometer	OBS	released	2. Versuch
PS64/710-1	15.09.03	14:12	72° 37.39' N	15° 39.51' W	1942.0	N 3	185.2	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/710-1	15.09.03	14:26	72° 37.56' N	15° 39.72' W	1946.0	N 4	189.7	0.9	Ocean bottom seismometer	OBS	on deck	
PS64/710-2	15.09.03	14:41	72° 37.47' N	15° 39.89' W	1941.0	NNW 4	263.1	0.4	Multi corer	MUC	surface	
PS64/710-2	15.09.03	14:45	72° 37.45' N	15° 39.97' W	1937.0	NNW 3	248.0	0.4	Multi corer	MUC	information	CTD bei 50m
PS64/710-2	15.09.03	15:08	72° 37.48' N	15° 40.27' W	1940.0	N 2	329.1	0.5	Multi corer	MUC	at sea bottom	
PS64/710-2	15.09.03	15:36	72° 37.60' N	15° 40.62' W	1937.0	N 4	208.2	0.8	Multi corer	MUC	on deck	
PS64/711-1	15.09.03	15:39	72° 37.56' N	15° 40.68' W	1935.0	N 4	183.7	1.3	Ocean bottom seismometer	OBS	released	OBS-509
PS64/711-1	15.09.03	16:14	72° 36.44' N	15° 25.39' W	2001.0	N 4	107.5	10.1	Ocean bottom seismometer	OBS	at surface	
PS64/711-1	15.09.03	16:23	72° 36.24' N	15° 23.75' W	2003.0	NNW 3	213.2	1.1	Ocean bottom seismometer	OBS	on deck	
PS64/712-1	15.09.03	16:40	72° 36.10' N	15° 24.15' W	1997.0	NNW 4	208.9	1.1	Ocean bottom seismometer	OBS	released	
PS64/712-1	15.09.03	17:52	72° 34.77' N	15° 7.47' W	2006.0	N 3	315.8	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/712-1	15.09.03	17:53	72° 34.78' N	15° 7.50' W	2006.0	N 3	310.6	1.0	Ocean bottom seismometer	OBS	on deck	OBH 508
PS64/713-1	15.09.03	18:07	72° 34.84' N	15° 7.63' W	2007.0	NNW 4	224.2	0.2	Ocean bottom seismometer	OBS	released	
PS64/713-1	15.09.03	18:42	72° 33.53' N	14° 53.24' W	1951.0	NNW 4	105.2	10.3	Ocean bottom seismometer	OBS	at surface	
PS64/713-1	15.09.03	18:55	72° 33.30' N	14° 51.43' W	1937.0	N 3	253.5	1.3	Ocean bottom seismometer	OBS	on deck	OBS 507
PS64/714-1	15.09.03	19:00	72° 33.31' N	14° 51.74' W	1938.0	N 4	295.4	1.0	Ocean bottom seismometer	OBS	released	
PS64/714-1	15.09.03	19:22	72° 32.50' N	14° 42.11' W	1894.0	NNW 5	109.5	10.5	Ocean bottom	OBS	at surface	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									seismometer			
PS64/714-1	15.09.03	19:39	72° 31.78' N	14° 35.29' W	1830.0	NNW 4	261.9	0.8	Ocean bottom seismometer	OBS	on deck	OBS 506
PS64/715-1	15.09.03	19:45	72° 31.78' N	14° 35.46' W	1831.0	NNW 4	314.2	0.7	Ocean bottom seismometer	OBS	released	
PS64/715-1	15.09.03	20:07	72° 30.97' N	14° 25.78' W	1807.0	NNW 4	110.3	10.6	Ocean bottom seismometer	OBS	at surface	
PS64/715-1	15.09.03	20:28	72° 30.32' N	14° 19.04' W	1778.0	NNW 4	299.2	0.7	Ocean bottom seismometer	OBS	on deck	
PS64/716-1	15.09.03	21:11	72° 28.84' N	14° 2.52' W	503.9	NNW 4	86.6	0.4	Ocean bottom seismometer	OBS	released	
PS64/716-1	15.09.03	22:05	72° 27.59' N	13° 47.06' W	1134.0	N 4	352.3	0.7	Ocean bottom seismometer	OBS	at surface	
PS64/716-1	15.09.03	22:13	72° 27.39' N	13° 46.72' W	1172.0	NNW 4	114.2	0.5	Ocean bottom seismometer	OBS	on deck	
PS64/717-1	15.09.03	22:56	72° 25.60' N	13° 27.39' W	1625.0	NW 4	44.5	0.3	Ocean bottom seismometer	OBS	released	
PS64/717-1	15.09.03	23:09	72° 25.13' N	13° 23.58' W	1697.0	NNW 4	97.0	11.0	Ocean bottom seismometer	OBS	at surface	
PS64/717-1	15.09.03	23:34	72° 24.46' N	13° 14.74' W	1795.0	NNW 3	345.7	0.4	Ocean bottom seismometer	OBS	on deck	
PS64/718-1	16.09.03	00:23	72° 22.51' N	12° 53.75' W	2098.0	NNW 2	312.5	0.7	Ocean bottom seismometer	OBS	released	OBH-529
PS64/718-1	16.09.03	00:55	72° 21.44' N	12° 43.20' W	2263.0	NNW 6	291.5	0.4	Ocean bottom seismometer	OBS	at surface	
PS64/718-1	16.09.03	01:06	72° 21.47' N	12° 43.23' W	2262.0	NNW 4	292.8	0.3	Ocean bottom seismometer	OBS	on deck	
PS64/719-1	16.09.03	01:56	72° 19.56' N	12° 22.69' W	2440.0	NW 4	226.0	1.0	Ocean bottom seismometer	OBS	released	OBH-501
PS64/719-1	16.09.03	02:21	72° 18.53' N	12° 12.03' W	2453.0	NNW 4	107.9	3.5	Ocean bottom seismometer	OBS	at surface	
PS64/719-1	16.09.03	02:33	72° 18.37' N	12° 11.67' W	2452.0	N 5	79.3	0.2	Ocean bottom seismometer	OBS	on deck	
PS64/720-1	16.09.03	02:58	72° 18.15' N	12° 9.13' W	2453.0	NNW 6	99.9	2.1	Seismic reflection profile	SEISREFL	Streamer into water	
PS64/720-1	16.09.03	05:18	72° 14.40' N	11° 47.38' W	2392.0	NNE 4	202.4	2.8	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/720-1	16.09.03	05:59	72° 15.89' N	11° 56.09' W	2448.0	NNE 3	307.5	5.8	Seismic reflection profile	SEISREFL	profile start	
PS64/720-1	17.09.03	11:22	73° 6.95' N	20° 50.04' W	150.5	NNW 5	351.2	5.6	Seismic reflection profile	SEISREFL	alter course	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/720-1	17.09.03	11:35	73° 7.78' N	20° 50.07' W	199.6	NW 6	51.0	2.2	Seismic reflection profile	SEISREFL	array on deck	
PS64/720-1	17.09.03	13:13	73° 1.78' N	20° 51.48' W	156.3	N 6	254.6	5.5	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/720-1	17.09.03	14:12	73° 5.85' N	20° 48.40' W	122.8	NNE 2	31.1	6.1	Seismic reflection profile	SEISREFL	profile start	
PS64/720-1	17.09.03	18:34	73° 26.95' N	20° 6.28' W	128.3	NW 2	21.4	1.6	Seismic reflection profile	SEISREFL	array on deck	
PS64/720-1	17.09.03	19:10	73° 29.26' N	20° 0.75' W	150.4	W 4	26.0	4.9	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/720-1	18.09.03	00:27	73° 59.49' N	19° 44.71' W	321.1	NE 5	9.0	6.0	Seismic reflection profile	SEISREFL	alter course	mit Schweineohr über Bb. auf 112°
PS64/720-1	18.09.03	00:39	74° 0.25' N	19° 45.07' W	299.0	ENE 5	328.4	4.0	Seismic reflection profile	SEISREFL	array on deck	
PS64/720-1	18.09.03	01:09	73° 59.88' N	19° 52.26' W	275.7	NE 3	162.4	4.9	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/720-1	19.09.03	04:03	73° 4.23' N	11° 56.89' W	2779.0	SE 5	70.6	2.7	Seismic reflection profile	SEISREFL	end of profile	
PS64/720-1	19.09.03	04:11	73° 4.50' N	11° 56.37' W	2777.0	SE 5	25.0	1.9	Seismic reflection profile	SEISREFL	array on deck	
PS64/720-1	19.09.03	07:38	73° 10.04' N	12° 4.13' W	2786.0	ESE 6	298.0	0.8	Seismic reflection profile	SEISREFL	streamer on deck	
PS64/721-1	20.09.03	16:01	76° 32.25' N	4° 7.09' E	2954.0	NNE 5	353.3	0.3	Calibration	CAL	surface	
PS64/721-1	20.09.03	16:35	76° 32.60' N	4° 7.35' E	2955.0	NNE 6	16.7	0.6	Calibration	CAL	on deck	Versuch auf 50 m aubgebrochen
PS64/721-1	22.09.03	06:00	78° 50.43' N	8° 37.58' E	326.4	N 9	300.0	0.4	Mooring (year)	MOORY	action	Hydrophon zu Wasser
PS64/721-1	22.09.03	06:06	78° 50.39' N	8° 37.44' E	337.1	NNW 8	219.3	0.6	Mooring (year)	MOORY	action	Verankerung ausgelöst
PS64/721-1	22.09.03	06:13	78° 50.38' N	8° 37.07' E	350.3	N 8	290.3	0.5	Mooring (year)	MOORY	action	Verankerung aufgetaucht
PS64/721-1	22.09.03	06:38	78° 50.06' N	8° 39.57' E	249.5	N 7	204.2	0.4	Mooring (year)	MOORY	action	3Bentos1Multifunktionskopf5Bentos1Strömungsmesser1Seacat1Transponder an Deck

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/721-1	22.09.03	06:43	78° 50.06' N	8° 39.30' E	258.2	N 7	248.8	0.9	Mooring (year)	MOORY	on deck	6Benthos1Strömungsmesser2Releaser an Deck Verankerung F1-5 geborgen
PS64/722-1	22.09.03	07:12	78° 50.42' N	8° 18.14' E	823.0	NNE 6	349.6	0.8	Mooring (year)	MOORY	action	Hydrophon zu Wasser
PS64/722-1	22.09.03	07:19	78° 50.47' N	8° 18.25' E	815.8	NNE 6	35.1	0.6	Mooring (year)	MOORY	action	Verankerung ausgelöst
PS64/722-1	22.09.03	07:43	78° 50.20' N	8° 19.46' E	799.0	NNE 7	330.9	0.5	Mooring (year)	MOORY	action	3Benthos1Multifunktionskopf5Benthos1Strömungsmesser1Seacat1Transponder an Deck
PS64/722-1	22.09.03	07:50	78° 50.22' N	8° 19.36' E	799.2	NNE 6	207.4	0.5	Mooring (year)	MOORY	action	4Benthos1Strömungsmesser an Deck
PS64/722-1	22.09.03	08:01	78° 50.20' N	8° 19.56' E	797.7	NNE 6	111.2	0.5	Mooring (year)	MOORY	on deck	5Benthos1Seacat1Doppelauslöser1Pegel Verankerung F2-6 geborgen
PS64/723-1	22.09.03	08:55	78° 50.39' N	7° 56.39' E	1065.0	NE 6	183.8	0.8	Mooring (year)	MOORY	action	Hydrophon zu Wasser und ausgelöst
PS64/723-1	22.09.03	09:57	78° 50.28' N	8° 1.01' E	1031.0	N 5	45.3	0.4	Mooring (year)	MOORY	action	1Multifunktionskopf7Benthos1Strömungsmesser1Seacat
PS64/723-1	22.09.03	09:59	78° 50.30' N	8° 0.99' E	1032.0	NNE 5	36.0	0.3	Mooring (year)	MOORY	action	1Transponder
PS64/723-1	22.09.03	10:05	78° 50.27' N	8° 0.90' E	1031.0	NNE 6	171.6	0.7	Mooring (year)	MOORY	action	4Benthos1Srömungsmesser
PS64/723-1	22.09.03	10:15	78° 50.27' N	8° 1.14' E	1027.0	NNE 5	92.1	1.1	Mooring (year)	MOORY	on deck	5Bentohs1Strömungsmesser1Doppelteraüslöser
PS64/724-1	22.09.03	12:14	78° 49.98' N	7° 0.42' E	1466.0	N 11	147.4	0.6	Mooring (year)	MOORY	action	F4-5 ausgelöst
PS64/724-1	22.09.03	12:24	78° 49.91' N	7° 1.46' E	1454.0	NNW 12	78.7	1.4	Mooring (year)	MOORY	action	aufgetaucht
PS64/724-1	22.09.03	12:42	78° 50.06' N	7° 1.78' E	1451.0	NNW 12	129.2	0.4	Mooring (year)	MOORY	action	Topeinheit am Haken
PS64/724-1	22.09.03	12:50	78° 49.95' N	7° 2.19' E	1444.0	N 11	123.6	1.3	Mooring (year)	MOORY	action	5 Benthos & 1SM an Deck
PS64/724-1	22.09.03	13:18	78° 49.52' N	7° 5.61' E	1405.0	NNW 10	112.0	1.5	Mooring (year)	MOORY	on deck	1 implodierte Benthoskugel, sonst komplett geborgen
PS64/725-1	22.09.03	15:34	78° 49.91' N	6° 0.89' E	2473.0	N 12	163.3	1.1	Mooring	MOORY	action	Verankerung F 5-

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									(year)			5,ausgelöst
PS64/725-1	22.09.03	15:36	78° 49.88' N	6° 0.92' E	2473.0	N 10	163.4	0.9	Mooring (year)	MOORY	action	aufgetaucht
PS64/725-1	22.09.03	15:53	78° 50.07' N	6° 0.04' E	2480.0	NNW 11	63.9	0.5	Mooring (year)	MOORY	action	am Haken
PS64/725-1	22.09.03	15:57	78° 50.06' N	6° 0.04' E	2482.0	N 11	180.6	0.8	Mooring (year)	MOORY	action	Topeinheit an Deck
PS64/725-1	22.09.03	16:15	78° 49.84' N	6° 0.37' E	2477.0	NNW 10	135.4	0.7	Mooring (year)	MOORY	action	1Strömungsmesser an Deck
PS64/725-1	22.09.03	16:49	78° 49.92' N	6° 0.60' E	321.4	NNW 9	301.2	0.7	Mooring (year)	MOORY	action	5Benthos an Deck
PS64/725-1	22.09.03	17:20	78° 50.27' N	5° 59.48' E	321.4	N 10	198.1	1.5	Mooring (year)	MOORY	on deck	5Benthos1Strömungsmesser1Doppelter Auslöser an Deck Verankerung F5-5 komplett geborgen
PS64/726-1	22.09.03	18:06	78° 50.10' N	6° 10.46' E	1376.0	NW 9	15.8	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/726-1	22.09.03	19:01	78° 50.64' N	6° 9.63' E	2364.8	NNW 8	356.0	0.4	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2338m ausgesteckt
PS64/726-1	22.09.03	19:44	78° 51.08' N	6° 9.39' E	309.7	NNW 8	357.4	0.7	CTD/rosette water sampler	CTD/RO	on deck	Station wird wiederholt, CDT defekt
PS64/726-2	22.09.03	21:10	78° 50.14' N	6° 9.81' E	2376.0	NNW 7	41.3	0.9	CTD/rosette water sampler	CTD/RO	surface	
PS64/726-2	22.09.03	21:46	78° 50.61' N	6° 10.48' E	2371.0	N 8	43.3	0.4	CTD/rosette water sampler	CTD/RO	on deck	Max Tiefe 629m - Abbruch wegen technischer Probleme an der CTD
PS64/726-3	22.09.03	23:51	78° 50.08' N	6° 10.09' E	4776.0	N 10	47.4	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/726-3	23.09.03	00:38	78° 50.57' N	6° 11.33' E	4739.0	NNW 12	22.2	0.7	CTD/rosette water sampler	CTD/RO	at depth	2333m
PS64/726-3	23.09.03	01:20	78° 50.94' N	6° 11.24' E	4731.0	NNW 9	35.3	1.1	CTD/rosette water sampler	CTD/RO	on deck	
PS64/727-1	23.09.03	02:02	78° 49.95' N	5° 50.42' E	2539.0	NNW 8	342.4	0.4	CTD/rosette water sampler	CTD/RO	surface	
PS64/727-1	23.09.03	02:50	78° 50.17' N	5° 49.89' E	2544.0	NNW 7	155.4	0.3	CTD/rosette water sampler	CTD/RO	at depth	2487m
PS64/727-1	23.09.03	03:41	78° 50.15' N	5° 49.35' E	2547.0	NNW 6	324.3	0.3	CTD/rosette water sampler	CTD/RO	on deck	
PS64/728-1	23.09.03	04:18	78° 49.97' N	5° 40.18' E	2586.0	NNW 5	265.4	0.4	CTD/rosette water sampler	CTD/RO	surface	
PS64/728-1	23.09.03	05:09	78° 49.74' N	5° 40.06' E	2586.0	NNW 3	209.4	0.2	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2533m ausgesteckt
PS64/728-1	23.09.03	05:58	78° 49.82' N	5° 39.46' E	2590.0	NW 2	329.1	0.0	CTD/rosette	CTD/RO	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									water sampler			
PS64/729-1	23.09.03	06:48	78° 50.06' N	5° 0.63' E	2716.0	W 3	289.0	2.2	Mooring (year)	MOORY	action	Hydrophon zu Wasser
PS64/729-1	23.09.03	06:51	78° 50.05' N	5° 0.61' E	2718.0	WNW 2	92.0	0.2	Mooring (year)	MOORY	action	Verankerung ausgelöst
PS64/729-1	23.09.03	06:59	78° 50.09' N	5° 1.26' E	2717.0	NW 2	50.3	2.1	Mooring (year)	MOORY	action	aufgetaucht
PS64/729-1	23.09.03	07:11	78° 49.97' N	5° 0.73' E	2714.0	WSW 4	19.9	0.3	Mooring (year)	MOORY	action	Verankerung am Hacken
PS64/729-1	23.09.03	07:14	78° 49.97' N	5° 0.77' E	2715.0	WSW 3	194.9	0.7	Mooring (year)	MOORY	action	1Topkugel1Multifunktionskopf1Strömungsmesser1Seacat1Transponder an Deck
PS64/729-1	23.09.03	07:19	78° 49.91' N	5° 0.82' E	2711.0	WNW 3	160.5	0.8	Mooring (year)	MOORY	action	1Strömungsmesser4Benthos an Deck
PS64/729-1	23.09.03	07:27	78° 49.87' N	5° 1.32' E	2711.0	WNW 4	56.1	0.9	Mooring (year)	MOORY	action	4Benthos1Strömungsmesser an Deck
PS64/729-1	23.09.03	08:00	78° 49.80' N	5° 1.69' E	2706.0	W 4	132.3	1.0	Mooring (year)	MOORY	on deck	1Strömungsmesser4Benthos1Doppelterauslöser
PS64/730-1	23.09.03	09:50	78° 50.00' N	3° 59.94' E	2348.0	W 2	192.5	0.4	Mooring (year)	MOORY	action	Hydrophon zu Wasser
PS64/730-1	23.09.03	09:57	78° 49.97' N	3° 59.92' E	2349.0	WNW 3	105.3	0.6	Mooring (year)	MOORY	action	Ausgelöst
PS64/730-1	23.09.03	09:59	78° 49.96' N	4° 0.00' E	2348.0	WNW 2	90.5	0.5	Mooring (year)	MOORY	action	Aufgetaucht
PS64/730-1	23.09.03	10:43	78° 49.76' N	4° 0.11' E	2350.0	W 3	278.5	0.8	Mooring (year)	MOORY	action	3Benthos1Strömungsmesser an Deck
PS64/730-1	23.09.03	10:50	78° 49.72' N	3° 59.84' E	2348.0	SW 3	234.4	0.7	Mooring (year)	MOORY	action	1Topboye1Multifunktionskopf1Srömungsmesser1Seacat1Transponder an Deck
PS64/730-1	23.09.03	10:56	78° 49.72' N	3° 59.84' E	2348.0	SW 2	158.7	0.1	Mooring (year)	MOORY	action	4Benthos1Strömungsmesser an Deck
PS64/730-1	23.09.03	11:17	78° 49.49' N	4° 0.18' E	2349.0	SW 3	138.5	1.0	Mooring (year)	MOORY	on deck	5Bentohs1Strömungsmesser1Doppelterauslöser an Deck Verankerung geborgen
PS64/731-1	23.09.03	12:38	78° 50.01' N	2° 48.35' E	2498.0	S 1	344.7	0.5	Mooring (year)	MOORY	action	F 8-5, ausgelöst-Posidonia
PS64/731-1	23.09.03	12:48	78° 50.07' N	2° 48.82' E	2498.0	W 1	75.0	0.9	Mooring (year)	MOORY	action	augetaucht
PS64/731-1	23.09.03	13:25	78° 50.07' N	2° 47.16' E	2504.0	WNW 1	15.6	0.9	Mooring (year)	MOORY	action	am Haken

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/731-1	23.09.03	13:28	78° 50.11' N	2° 47.16' E	2506.0	NW 1	357.4	0.5	Mooring (year)	MOORY	action	Topeinheit an Deck
PS64/731-1	23.09.03	13:31	78° 50.12' N	2° 47.12' E	2504.0	NNW 2	275.1	0.5	Mooring (year)	MOORY	action	3 Benthos & 1 SM a.D.
PS64/731-1	23.09.03	13:35	78° 50.12' N	2° 46.95' E	2504.0	N 1	260.6	0.5	Mooring (year)	MOORY	action	3 Benthos & 1 SM a. D.
PS64/731-1	23.09.03	13:42	78° 50.09' N	2° 46.51' E	2505.0	N 1	233.6	0.8	Mooring (year)	MOORY	action	1 SM-Gestell a.B.
PS64/731-1	23.09.03	13:53	78° 50.00' N	2° 46.14' E	2506.0	NNW 1	187.2	0.7	Mooring (year)	MOORY	action	4 Benthos & 1 SM a. B.
PS64/731-1	23.09.03	14:10	78° 49.90' N	2° 46.23' E	2509.0	NE 2	104.4	0.7	Mooring (year)	MOORY	action	Auslösereinheit a. B. - Verankerung geborgen
PS64/732-1	23.09.03	15:36	78° 49.92' N	1° 36.76' E	2557.0	N 4	111.3	0.3	Mooring (year)	MOORY	action	F15-1 Posidonia-Auslösung
PS64/732-1	23.09.03	15:43	78° 49.93' N	1° 36.83' E	2556.0	NNW 4	345.8	0.4	Mooring (year)	MOORY	action	aufgetaucht
PS64/732-1	23.09.03	16:01	78° 50.00' N	1° 34.71' E	2556.0	NW 4	229.7	0.9	Mooring (year)	MOORY	action	1 Topboje1Multifunktionskopf 1Strömungsmesser1 Seacat1Transponder an Deck
PS64/732-1	23.09.03	16:06	78° 49.96' N	1° 34.52' E	2554.0	NNW 4	36.5	0.4	Mooring (year)	MOORY	action	4Benthos1Strömungsmesser
PS64/732-1	23.09.03	16:15	78° 49.94' N	1° 34.77' E	2557.0	N 5	94.8	0.3	Mooring (year)	MOORY	action	1Strömungsmesser an Deck
PS64/732-1	23.09.03	16:26	78° 49.94' N	1° 35.04' E	2556.0	NNW 4	87.4	0.4	Mooring (year)	MOORY	action	4Benthos1Strömungsmesser an Deck
PS64/732-1	23.09.03	16:41	78° 50.00' N	1° 35.27' E	2557.0	NNW 3	326.5	0.9	Mooring (year)	MOORY	on deck	5Benthos1Strömungsmesser1doppelter Releaser an Deck Verankerung F15-1 geborgen
PS64/733-1	23.09.03	16:55	78° 50.04' N	1° 34.96' E	2555.0	NW 3	147.0	0.6	CTD/rosette water sampler	CTD/RO	surface	
PS64/733-1	23.09.03	17:48	78° 49.98' N	1° 31.98' E	2552.0	NNE 8	241.3	0.8	CTD/rosette water sampler	CTD/RO	at depth	2508 m
PS64/733-1	23.09.03	18:37	78° 50.06' N	1° 28.50' E	2542.0	N 15	259.7	0.7	CTD/rosette water sampler	CTD/RO	on deck	
PS64/734-1	23.09.03	19:06	78° 49.86' N	1° 17.67' E	2534.0	NNE 13	267.8	0.8	CTD/rosette water sampler	CTD/RO	surface	
PS64/734-1	23.09.03	19:57	78° 49.67' N	1° 14.21' E	2540.0	NNE 16	304.1	0.8	CTD/rosette water sampler	CTD/RO	at depth	EL 31 - 2506m
PS64/734-1	23.09.03	20:42	78° 49.87' N	1° 11.17' E	2541.0	NNE 14	271.3	0.8	CTD/rosette water sampler	CTD/RO	on deck	
PS64/735-1	23.09.03	21:14	78° 49.92' N	0° 58.31' E	2477.0	N 16	268.5	1.2	CTD/rosette	CTD/RO	surface	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/735-1	23.09.03	22:01	78° 50.02' N	0° 53.34' E	2427.0	N 15	257.1	1.2	CTD/rosette water sampler	CTD/RO	at depth	EL 31 - 2454m
PS64/735-1	23.09.03	22:39	78° 50.16' N	0° 49.70' E	2417.0	N 16	287.8	1.3	CTD/rosette water sampler	CTD/RO	on deck	
PS64/736-1	23.09.03	23:01	78° 49.96' N	0° 39.18' E	2514.0	N 14	236.8	1.1	CTD/rosette water sampler	CTD/RO	surface	
PS64/736-1	23.09.03	23:50	78° 50.03' N	0° 34.36' E	2554.0	N 15	270.6	1.1	CTD/rosette water sampler	CTD/RO	at depth	EL 31 - 2541m
PS64/736-1	24.09.03	00:36	78° 50.22' N	0° 30.49' E	2582.0	N 16	240.3	0.9	CTD/rosette water sampler	CTD/RO	on deck	
PS64/737-1	24.09.03	01:15	78° 49.92' N	0° 16.73' E	2607.0	N 13	255.8	0.5	CTD - Seabird	CTD-R	surface	
PS64/737-1	24.09.03	02:07	78° 50.00' N	0° 14.84' E	2607.0	N 20	9.0	0.7	CTD - Seabird	CTD-R	at depth	2550m
PS64/737-1	24.09.03	02:56	78° 49.96' N	0° 13.04' E	2609.0	NNW 18	128.7	0.4	CTD - Seabird	CTD-R	on deck	
PS64/738-1	24.09.03	03:34	78° 49.94' N	0° 4.30' E	2639.0	N 19	228.8	0.6	CTD - Seabird	CTD-R	surface	
PS64/738-1	24.09.03	04:25	78° 49.94' N	0° 2.63' E	2646.0	NNW 18	240.4	0.3	CTD - Seabird	CTD-R	at depth	EL 31 auf 2594m ausgesteckt
PS64/738-1	24.09.03	05:10	78° 49.74' N	0° 1.88' E	2645.0	NNW 18	114.2	0.4	CTD - Seabird	CTD-R	on deck	
PS64/739-1	24.09.03	05:46	78° 50.17' N	0° 15.23' W	2654.0	NNW 19	249.4	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/739-1	24.09.03	06:38	78° 50.14' N	0° 18.88' W	2671.0	NNW 18	249.0	1.1	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2638m ausgesteckt
PS64/739-1	24.09.03	07:22	78° 50.02' N	0° 21.58' W	2683.0	N 19	247.0	1.0	CTD/rosette water sampler	CTD/RO	on deck	
PS64/740-1	24.09.03	07:51	78° 50.06' N	0° 30.28' W	2700.0	N 20	262.9	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/740-1	24.09.03	08:42	78° 50.11' N	0° 32.69' W	2700.0	NNW 20	243.3	1.2	CTD/rosette water sampler	CTD/RO	at depth	2648m
PS64/740-1	24.09.03	09:32	78° 50.20' N	0° 35.62' W	2698.0	NNW 16	260.5	0.8	CTD/rosette water sampler	CTD/RO	on deck	
PS64/741-1	25.09.03	15:00	78° 50.10' N	6° 1.04' E	2472.0	NNW 15	68.2	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/741-1	25.09.03	15:49	78° 50.25' N	6° 0.12' E	2479.0	NNW 15	119.3	1.0	CTD/rosette water sampler	CTD/RO	at depth	2107 + 300m
PS64/741-1	25.09.03	16:32	78° 50.27' N	5° 58.95' E	2489.0	NNW 14	302.3	0.4	CTD/rosette water sampler	CTD/RO	on deck	
PS64/742-1	25.09.03	17:41	78° 50.09' N	6° 30.77' E	1970.0	NNW 13	188.7	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/742-1	25.09.03	18:21	78° 50.09' N	6° 28.75' E	2011.0	NNW 12	221.7	0.7	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 1963m ausgesteckt,

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
												Tiefenangabe ANPHS
PS64/742-1	25.09.03	18:57	78° 49.91' N	6° 27.49' E	2043.0	NNW 11	268.3	0.6	CTD/rosette water sampler	CTD/RO	on deck	
PS64/743-1	25.09.03	19:46	78° 49.94' N	6° 49.59' E	1645.0	NNW 11	271.8	0.6	CTD/rosette water sampler	CTD/RO	surface	
PS64/743-1	25.09.03	20:20	78° 49.81' N	6° 47.61' E	1663.0	NW 11	245.5	0.5	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 1628m ausgeteckt, Tiefenangabe ANPHS
PS64/743-1	25.09.03	20:48	78° 49.77' N	6° 46.56' E	1675.0	NNW 12	68.7	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/744-1	25.09.03	21:21	78° 50.09' N	7° 0.25' E	1460.0	NNW 11	280.6	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/744-1	25.09.03	21:51	78° 50.04' N	6° 59.84' E	1470.0	NNW 11	183.5	0.8	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 1431m ausgesteckt, Tiefenangabe ANPHS
PS64/744-1	25.09.03	22:13	78° 50.07' N	6° 58.98' E	1484.0	NNW 10	274.4	0.8	CTD/rosette water sampler	CTD/RO	on deck	
PS64/745-1	25.09.03	22:42	78° 50.11' N	7° 10.22' E	1352.0	NNW 10	301.2	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/745-1	25.09.03	23:10	78° 50.06' N	7° 10.07' E	1357.0	NNW 12	250.3	0.3	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 1319m ausgesteckt, Tiefenangabe ANPHS
PS64/745-1	25.09.03	23:30	78° 50.08' N	7° 9.90' E	1361.0	NNW 10	303.8	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/746-1	26.09.03	00:08	78° 50.03' N	7° 30.29' E	1173.0	N 10	359.5	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/746-1	26.09.03	00:34	78° 50.07' N	7° 30.00' E	1173.0	NNW 8	236.1	0.1	CTD/rosette water sampler	CTD/RO	at depth	1141m
PS64/746-1	26.09.03	00:55	78° 50.08' N	7° 29.86' E	1175.0	NNW 10	312.5	0.0	CTD/rosette water sampler	CTD/RO	on deck	
PS64/747-1	26.09.03	01:33	78° 50.02' N	7° 49.84' E	1086.0	NW 8	322.4	0.0	CTD/rosette water sampler	CTD/RO	surface	
PS64/747-1	26.09.03	01:55	78° 50.04' N	7° 49.97' E	1085.0	NNW 7	329.8	0.6	CTD/rosette water sampler	CTD/RO	at depth	1053m
PS64/747-1	26.09.03	02:13	78° 50.08' N	7° 49.96' E	1087.0	NNW 8	4.0	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/748-1	26.09.03	02:50	78° 50.06' N	8° 9.84' E	942.4	NNW 10	200.6	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/748-1	26.09.03	03:10	78° 50.06' N	8° 9.89' E	942.8	NNW 11	343.7	0.0	CTD/rosette water sampler	CTD/RO	at depth	912m
PS64/748-1	26.09.03	03:27	78° 50.07' N	8° 9.93' E	944.4	NNW 9	353.1	0.4	CTD/rosette water sampler	CTD/RO	on deck	
PS64/749-1	26.09.03	03:53	78° 50.02' N	8° 19.78' E	793.4	NNW 7	310.4	0.9	CTD/rosette	CTD/RO	surface	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									water sampler			
PS64/749-1	26.09.03	04:10	78° 50.03' N	8° 19.61' E	797.7	NNW 7	229.0	0.2	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 775m ausgesteckt, Tiefensensor ANPHS
PS64/749-1	26.09.03	04:22	78° 49.97' N	8° 19.59' E	794.7	N 10	173.0	0.3	CTD/rosette water sampler	CTD/RO	on deck	
PS64/750-1	26.09.03	04:50	78° 49.98' N	8° 30.38' E	573.4	NW 9	295.7	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/750-1	26.09.03	05:03	78° 49.94' N	8° 30.40' E	574.7	NW 8	151.5	0.5	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 555m ausgesteckt, Tiefensensor ANPHS
PS64/750-1	26.09.03	05:13	78° 49.92' N	8° 30.45' E	572.8	NNW 9	163.8	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/751-1	26.09.03	05:38	78° 49.99' N	8° 39.77' E	249.1	NNW 7	310.4	1.4	CTD/rosette water sampler	CTD/RO	surface	
PS64/751-1	26.09.03	05:46	78° 49.99' N	8° 39.55' E	254.9	NNW 8	268.3	0.3	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 242m ausgesteckt, Tiefensensor ANPHS
PS64/751-1	26.09.03	05:51	78° 49.98' N	8° 39.42' E	259.4	NNW 8	240.8	0.3	CTD/rosette water sampler	CTD/RO	on deck	
PS64/752-1	26.09.03	06:17	78° 50.09' N	8° 50.14' E	237.8	NNW 7	316.5	1.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/752-1	26.09.03	06:24	78° 50.12' N	8° 49.82' E	227.1	NNW 8	283.1	0.3	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 221m ausgesteckt, Tiefensensor ANPHS
PS64/752-1	26.09.03	06:29	78° 50.11' N	8° 49.72' E	225.0	NNW 7	216.4	0.3	CTD/rosette water sampler	CTD/RO	on deck	
PS64/753-1	26.09.03	06:57	78° 50.05' N	8° 59.84' E	216.6	NW 6	302.1	0.8	CTD/rosette water sampler	CTD/RO	surface	
PS64/753-1	26.09.03	07:05	78° 50.02' N	8° 59.66' E	216.2	NNW 8	166.7	0.7	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 206m ausgesteckt, Tiefensensor ANPHS
PS64/753-1	26.09.03	07:10	78° 49.95' N	8° 59.72' E	216.9	NW 7	158.3	1.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/754-1	26.09.03	08:09	78° 49.92' N	8° 40.00' E	247.6	N 9	241.6	0.3	Mooring (year)	MOORY	surface	F1 - 6 1Ankerstein, !Doppelterauslöser
PS64/754-1	26.09.03	08:10	78° 49.92' N	8° 39.99' E	247.9	N 8	257.5	0.3	Mooring (year)	MOORY	action	%Benthos, 1Strömungsmesser zu Wasser
PS64/754-1	26.09.03	08:19	78° 49.92' N	8° 39.96' E	248.3	N 8	218.1	0.2	Mooring	MOORY	action	1 Transponder

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/754-1	26.09.03	08:25	78° 49.90' N	8° 39.88' E	250.8	N 9	215.2	0.3	Mooring (year)	MOORY	action	1Seacat zu Wasser 1 Multifunktionskopf 8Benthos
PS64/754-1	26.09.03	08:54	78° 49.93' N	8° 39.90' E	249.5	N 8	19.2	0.4	Mooring (year)	MOORY	at depth	1Strömungsmesser zu Wasser Tiefenangabe ANPHS 552
PS64/755-1	26.09.03	10:05	78° 50.04' N	8° 19.55' E	800.1	N 8	207.2	0.5	Mooring (year)	MOORY	surface	1 Ankerstein mit Bodendruckmesser 1Doppelterauslöser 1Popup
PS64/755-1	26.09.03	10:09	78° 50.05' N	8° 19.59' E	800.4	N 8	50.3	0.1	Mooring (year)	MOORY	action	6 Benthos 1Strömungsmesser zu Wasser
PS64/755-1	26.09.03	10:12	78° 50.05' N	8° 19.61' E	799.3	N 7	26.3	0.0	Mooring (year)	MOORY	action	1 Seacat zu Wasser
PS64/755-1	26.09.03	10:22	78° 50.07' N	8° 19.76' E	798.6	N 8	91.9	0.4	Mooring (year)	MOORY	action	1Strömungsmesser zu Wasser
PS64/755-1	26.09.03	10:28	78° 50.07' N	8° 19.85' E	797.5	N 8	188.9	0.1	Mooring (year)	MOORY	action	1Strömungsmesser 4Benthos
PS64/755-1	26.09.03	10:34	78° 50.10' N	8° 19.88' E	796.4	NNE 8	346.9	0.2	Mooring (year)	MOORY	action	1Strömungsmesser zu Wasser
PS64/755-1	26.09.03	10:39	78° 50.10' N	8° 19.90' E	796.1	N 8	177.9	0.3	Mooring (year)	MOORY	action	1 Transponder 1 Seacat
PS64/755-1	26.09.03	10:41	78° 50.10' N	8° 19.90' E	796.1	N 8	6.2	0.0	Mooring (year)	MOORY	action	
PS64/755-1	26.09.03	10:45	78° 50.12' N	8° 19.91' E	796.4	N 6	40.6	0.1	Mooring (year)	MOORY	action	1Srömungsmewsser 9Benthos
PS64/755-1	26.09.03	11:00	78° 50.14' N	8° 19.87' E	797.1	N 7	337.2	0.2	Mooring (year)	MOORY	at depth	1Multifunktionskopf zu Wasser ausgelöst, Tiefenangabe ANPHS 796m
PS64/755-2	26.09.03	11:09	78° 50.30' N	8° 19.78' E	793.3	N 7	348.3	2.9	Mooring (year)	MOORY	surface	Deployment PIES
PS64/756-1	26.09.03	12:10	78° 50.03' N	7° 59.81' E	1037.0	NNE 7	77.6	0.1	Mooring (year)	MOORY	surface	F3-6, Ankerstein & Doppelauslöser
PS64/756-1	26.09.03	12:13	78° 50.03' N	7° 59.81' E	1036.0	NNE 8	197.6	0.3	Mooring (year)	MOORY	action	SM & 5 Benthos
PS64/756-1	26.09.03	12:22	78° 50.04' N	7° 59.81' E	1037.0	NNE 7	357.0	0.4	Mooring (year)	MOORY	action	1SM z.W.
PS64/756-1	26.09.03	12:34	78° 50.02' N	7° 59.86' E	1035.0	NNE 6	155.5	0.5	Mooring (year)	MOORY	action	4 Benthos & 1 SM
PS64/756-1	26.09.03	12:41	78° 50.04' N	7° 59.81' E	1036.0	NNE 9	334.0	0.5	Mooring (year)	MOORY	action	1 SM
PS64/756-1	26.09.03	12:47	78° 50.06' N	7° 59.71' E	1038.0	NNE 7	280.5	0.1	Mooring (year)	MOORY	action	Transponder & Seacat

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/756-1	26.09.03	12:51	78° 50.04' N	7° 59.70' E	1038.0	NNE 7	178.6	0.2	Mooring (year)	MOORY	action	1 1SM, 9 Benthos, 1 Multifunktionskopf z. W.
PS64/756-1	26.09.03	12:56	78° 50.06' N	7° 59.65' E	1037.0	NNE 7	345.2	0.7	Mooring (year)	MOORY	at depth	abgesetzt & gesplipt
PS64/757-1	26.09.03	14:47	78° 50.02' N	7° 0.18' E	1467.0	NNE 3	23.4	0.5	Mooring (year)	MOORY	surface	Ankerstein & Dopellreleaser
PS64/757-1	26.09.03	14:49	78° 50.03' N	7° 0.17' E	1467.0	NNE 3	24.5	0.3	Mooring (year)	MOORY	action	! SM & 6 Benthos
PS64/757-1	26.09.03	14:57	78° 50.02' N	7° 0.29' E	1465.0	NE 4	107.9	0.6	Mooring (year)	MOORY	action	1 SM
PS64/757-1	26.09.03	15:06	78° 50.00' N	7° 0.09' E	1471.0	NNE 2	283.9	0.3	Mooring (year)	MOORY	action	1 SM & 3 Benthos
PS64/757-1	26.09.03	15:17	78° 49.98' N	6° 59.95' E	1474.0	N 3	321.0	0.4	Mooring (year)	MOORY	action	1 SM & 3 Benthos
PS64/757-1	26.09.03	15:26	78° 49.97' N	6° 59.98' E	1473.0	NE 2	125.9	0.6	Mooring (year)	MOORY	action	ADCP
PS64/757-1	26.09.03	15:31	78° 49.97' N	7° 0.03' E	1472.0	NNE 3	316.2	0.6	Mooring (year)	MOORY	action	Transponder
PS64/757-1	26.09.03	15:35	78° 49.98' N	6° 59.95' E	1473.0	NE 5	211.9	0.2	Mooring (year)	MOORY	surface	1 Pop, 9 Benthose, 1 Multikopf
PS64/757-1	26.09.03	15:44	78° 49.96' N	7° 0.02' E	1473.0	NNE 4	143.7	0.1	Mooring (year)	MOORY	at depth	abgesetzt & geslipt
PS64/758-1	26.09.03	18:02	78° 50.00' N	5° 20.13' E	2642.0	NE 3	322.8	0.1	CTD/rosette water sampler	CTD/RO	surface	
PS64/758-1	26.09.03	18:52	78° 49.97' N	5° 20.13' E	2640.0	ENE 3	129.5	0.2	CTD/rosette water sampler	CTD/RO	at depth	El 31 auf 2583m ausgesteckt, Tiefensensor ANPHS
PS64/758-1	26.09.03	19:47	78° 49.92' N	5° 21.19' E	2636.0	ENE 2	104.2	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/759-1	26.09.03	20:19	78° 49.99' N	5° 2.74' E	2704.0	NE 1	37.1	0.7	CTD/rosette water sampler	CTD/RO	surface	
PS64/759-1	26.09.03	21:07	78° 49.97' N	5° 3.05' E	2702.0	E 2	352.1	0.2	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2640m ausgesteckt, Tiefenangabe ANPHS
PS64/759-1	26.09.03	21:48	78° 49.91' N	5° 3.08' E	2698.0	ENE 2	354.7	0.0	CTD/rosette water sampler	CTD/RO	on deck	
PS64/760-1	26.09.03	22:22	78° 49.99' N	4° 40.64' E	2611.0	SE 1	191.7	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/760-1	26.09.03	23:08	78° 49.87' N	4° 40.64' E	2574.0	E 2	2.1	0.0	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2508m ausgesteckt, Tiefenangabe ANPHS

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/760-1	26.09.03	23:53	78° 49.87' N	4° 40.54' E	2571.0	SE 2	174.3	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/761-1	27.09.03	00:33	78° 50.00' N	4° 20.69' E	2407.0	ESE 3	12.1	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/761-1	27.09.03	01:18	78° 50.03' N	4° 20.44' E	2405.0	SE 4	192.6	0.9	CTD/rosette water sampler	CTD/RO	at depth	2353m
PS64/761-1	27.09.03	01:58	78° 50.09' N	4° 19.95' E	2408.0	SSE 6	337.2	0.4	CTD/rosette water sampler	CTD/RO	on deck	
PS64/762-1	27.09.03	02:33	78° 49.99' N	4° 0.04' E	2349.0	S 9	130.0	0.4	CTD/rosette water sampler	CTD/RO	surface	
PS64/762-1	27.09.03	03:18	78° 49.96' N	4° 0.05' E	2349.0	SSE 7	344.2	0.2	CTD/rosette water sampler	CTD/RO	at depth	2299m
PS64/762-1	27.09.03	03:58	78° 49.92' N	3° 59.90' E	2348.0	SE 6	191.7	0.9	CTD/rosette water sampler	CTD/RO	on deck	
PS64/763-1	27.09.03	04:31	78° 50.05' N	3° 39.98' E	2307.0	SSW 11	333.2	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/763-1	27.09.03	05:17	78° 50.14' N	3° 40.58' E	2302.0	S 9	357.6	0.7	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2251m ausgesteckt, Tiefensensor ANPHS
PS64/763-1	27.09.03	05:57	78° 50.22' N	3° 40.96' E	2298.0	SSW 9	30.5	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/764-1	27.09.03	06:32	78° 49.95' N	4° 0.20' E	2349.0	SSW 7	308.7	0.5	Mooring (year)	MOORY	surface	1 Ankerstein1doppelter Auslöser
PS64/764-1	27.09.03	06:35	78° 49.97' N	4° 0.08' E	2348.0	SSW 7	325.7	0.5	Mooring (year)	MOORY	surface	6Benthos,1 Strömungsmesser
PS64/764-1	27.09.03	06:55	78° 49.97' N	3° 59.96' E	2347.0	SSW 6	351.4	0.1	Mooring (year)	MOORY	surface	4Benthos,1Strömungsmesser
PS64/764-1	27.09.03	07:03	78° 49.98' N	4° 0.01' E	2348.0	SSW 7	221.4	0.4	Mooring (year)	MOORY	surface	2Benthos,1Strömungsmesser
PS64/764-1	27.09.03	07:09	78° 49.99' N	4° 0.02' E	2348.0	SSW 7	29.1	0.4	Mooring (year)	MOORY	surface	1Strömungsmesser1 Seacat1Transponder
PS64/764-1	27.09.03	07:13	78° 50.00' N	4° 0.06' E	2347.0	S 11	4.1	0.3	Mooring (year)	MOORY	surface	1Topboje,1Multifunktionskopf
PS64/764-1	27.09.03	07:28	78° 49.99' N	4° 0.05' E	2348.0	SSE 8	257.3	0.2	Mooring (year)	MOORY	action	Verankerung F7-5 ausgelöst
PS64/765-1	27.09.03	09:33	78° 49.92' N	5° 1.02' E	2712.0	S 9	71.7	0.5	Mooring (year)	MOORY	surface	1Ankerstein 1Doppelterauslöser 1Bodendruckmesser 1Popup
PS64/765-1	27.09.03	09:40	78° 49.93' N	5° 1.17' E	2713.0	S 7	126.7	0.3	Mooring (year)	MOORY	surface	6Benthos 1Strömungsmesser 1Popup
PS64/765-1	27.09.03	10:20	78° 49.88' N	5° 0.77' E	2713.0	SSW 7	221.8	0.4	Mooring (year)	MOORY	surface	4Benthos 1Strömungsmesser
PS64/765-1	27.09.03	10:32	78° 49.87' N	5° 0.95' E	2710.0	S 7	116.5	0.3	Mooring	MOORY	surface	3Benthos

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/765-1	27.09.03	10:43	78° 49.85' N	5° 1.10' E	2710.0	S 7	141.0	0.4	Mooring (year)	MOORY	surface	1Strömungsmesser 1Transponder 1Seacat
PS64/765-1	27.09.03	10:47	78° 49.83' N	5° 1.16' E	2710.0	S 8	107.8	0.4	Mooring (year)	MOORY	surface	1Strömungsmesser 1Multifunktionskopf 1Topboje
PS64/765-1	27.09.03	10:53	78° 49.81' N	5° 1.24' E	2708.0	S 8	194.0	0.4	Mooring (year)	MOORY	at depth	Verankerung F6-7 ausgelöst
PS64/765-2	27.09.03	11:19	78° 49.93' N	5° 0.87' E	2712.0	SSW 9	146.1	2.3	Mooring (year)	MOORY	surface	Deployment PIES
PS64/766-1	27.09.03	14:24	78° 50.00' N	5° 59.99' E	2479.0	SSW 10	10.2	0.5	Mooring (year)	MOORY	surface	Ankerstein &Doppelreleaser
PS64/766-1	27.09.03	14:25	78° 50.01' N	6° 0.00' E	2477.0	S 9	29.1	0.4	Mooring (year)	MOORY	surface	
PS64/766-1	27.09.03	14:26	78° 50.01' N	6° 0.04' E	2477.0	SSW 9	48.8	0.4	Mooring (year)	MOORY	surface	1 SM & 5 Benthos
PS64/766-1	27.09.03	14:40	78° 49.94' N	6° 0.14' E	2476.0	S 9	303.7	0.2	Mooring (year)	MOORY	surface	1 SM
PS64/766-1	27.09.03	14:53	78° 49.95' N	6° 0.15' E	2477.0	SSW 9	179.7	0.5	Mooring (year)	MOORY	surface	1 SM & 4 Benthos
PS64/766-1	27.09.03	15:02	78° 49.96' N	6° 0.14' E	2477.0	S 11	335.3	0.2	Mooring (year)	MOORY	surface	1 SM
PS64/766-1	27.09.03	15:17	78° 49.93' N	6° 0.19' E	2476.0	S 9	181.5	0.0	Mooring (year)	MOORY	surface	1 SM & 3 Benthos
PS64/766-1	27.09.03	15:26	78° 49.94' N	6° 0.10' E	2478.0	SSW 7	178.5	0.0	Mooring (year)	MOORY	surface	Schallquelle
PS64/766-1	27.09.03	15:40	78° 49.93' N	6° 0.11' E	2477.0	SSW 9	268.0	0.4	Mooring (year)	MOORY	surface	1 SM & 5 Benthos
PS64/766-1	27.09.03	15:47	78° 49.93' N	6° 0.14' E	2476.0	SSW 9	136.5	0.1	Mooring (year)	MOORY	surface	1 SM
PS64/766-1	27.09.03	15:55	78° 49.94' N	6° 0.13' E	2476.0	SSW 9	292.7	0.2	Mooring (year)	MOORY	surface	1 Pop-Up & 1 Transponder
PS64/766-1	27.09.03	15:58	78° 49.94' N	6° 0.08' E	2477.0	SSW 8	312.3	0.2	Mooring (year)	MOORY	surface	! SM & 9 Benthos & 1MuFu Ko
PS64/766-1	27.09.03	16:12	78° 49.95' N	6° 0.20' E	2476.0	SSW 9	357.7	0.4	Mooring (year)	MOORY	at depth	abgesetzt & gesliptVerankerung F5-6 ausgebracht
PS64/767-1	27.09.03	19:46	78° 49.97' N	3° 24.51' E	2376.0	S 6	215.0	0.1	CTD/rosette water sampler	CTD/RO	surface	
PS64/767-1	27.09.03	20:27	78° 50.00' N	3° 24.63' E	2378.0	S 8	9.9	0.1	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2323m ausgesteckt, Tiefenangabe ANPHS
PS64/767-1	27.09.03	21:06	78° 50.03' N	3° 24.70' E	2375.0	S 8	169.4	0.0	CTD/rosette water sampler	CTD/RO	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/768-1	27.09.03	21:36	78° 50.04' N	3° 5.30' E	2460.0	S 7	270.4	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/768-1	27.09.03	22:20	78° 50.02' N	3° 5.06' E	2461.0	SSE 7	102.3	0.3	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2406m ausgesteckt, Tiefenangabe ANPHS
PS64/768-1	27.09.03	23:00	78° 50.09' N	3° 5.96' E	2458.0	SSE 8	34.2	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/769-1	27.09.03	23:30	78° 50.04' N	2° 48.09' E	2502.0	SE 8	227.6	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/769-1	28.09.03	00:16	78° 50.04' N	2° 48.04' E	2505.0	S 4	220.2	0.2	CTD/rosette water sampler	CTD/RO	at depth	2448m
PS64/769-1	28.09.03	00:53	78° 50.05' N	2° 47.87' E	2503.0	W 3	8.7	0.6	CTD/rosette water sampler	CTD/RO	on deck	
PS64/770-1	28.09.03	01:25	78° 50.00' N	2° 33.82' E	2536.0	WNW 1	145.7	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/770-1	28.09.03	02:10	78° 49.96' N	2° 33.60' E	2534.0	NNW 2	181.2	0.4	CTD/rosette water sampler	CTD/RO	at depth	2482m
PS64/770-1	28.09.03	02:50	78° 49.97' N	2° 33.68' E	2534.0	NW 1	202.2	0.5	CTD/rosette water sampler	CTD/RO	on deck	
PS64/771-1	28.09.03	03:25	78° 49.97' N	2° 14.23' E	2553.0	NNE 2	302.7	0.4	CTD/rosette water sampler	CTD/RO	surface	
PS64/771-1	28.09.03	04:11	78° 50.08' N	2° 14.02' E	2551.0	N 3	6.4	0.4	CTD/rosette water sampler	CTD/RO	at depth	EL31 auf 2495 ausgesteckt, Tiefensensor ANPHS
PS64/771-1	28.09.03	04:49	78° 50.07' N	2° 13.52' E	2550.0	N 4	301.3	0.6	CTD/rosette water sampler	CTD/RO	on deck	
PS64/772-1	28.09.03	06:32	78° 50.03' N	2° 48.15' E	2500.0	N 5	202.9	1.8	Mooring (year)	MOORY	surface	1 Ankerstein, 1 doppelter Auslöser
PS64/772-1	28.09.03	06:34	78° 49.99' N	2° 48.07' E	2500.0	N 5	200.3	0.7	Mooring (year)	MOORY	surface	6Benthos, 1Strömungsmesser
PS64/772-1	28.09.03	07:04	78° 50.06' N	2° 48.08' E	2501.0	N 5	118.7	0.2	Mooring (year)	MOORY	surface	4Benthos, 1Strömungsmesser
PS64/772-1	28.09.03	07:21	78° 50.04' N	2° 48.03' E	2501.0	N 5	146.1	0.3	Mooring (year)	MOORY	surface	1Strömungsmesser
PS64/772-1	28.09.03	07:33	78° 50.05' N	2° 48.21' E	2501.0	N 6	73.1	0.2	Mooring (year)	MOORY	surface	4Benthos,1 Strömungsmesser
PS64/772-1	28.09.03	07:44	78° 50.01' N	2° 48.10' E	2501.0	N 6	19.5	0.0	Mooring (year)	MOORY	surface	1 Transponder
PS64/772-1	28.09.03	07:53	78° 50.05' N	2° 48.21' E	2500.0	N 6	1.8	0.4	Mooring (year)	MOORY	surface	1Topboke1Multifunktionskopf1Strömungsmesser1Seacat
PS64/772-1	28.09.03	08:00	78° 50.04' N	2° 48.11' E	2501.0	N 6	217.5	0.3	Mooring (year)	MOORY	action	Verankerung ausgelöst, Tiefensensor ANPHS

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/772-1	28.09.03	08:00	78° 50.04' N	2° 48.11' E	2501.0	N 6	217.5	0.3	Mooring (year)	MOORY	at depth	
PS64/772-2	28.09.03	08:10	78° 49.87' N	2° 47.59' E	2505.0	N 5	8.3	0.7	Mooring (year)	MOORY	surface	Deployment PIES
PS64/773-1	28.09.03	10:03	78° 49.93' N	1° 36.24' E	2558.0	N 10	240.2	1.0	Mooring (year)	MOORY	surface	1Ankerstein 1Doppelauslöser
PS64/773-1	28.09.03	10:06	78° 49.91' N	1° 36.01' E	2559.0	N 10	256.4	0.8	Mooring (year)	MOORY	surface	5Benthos 1Strömungsmesser
PS64/773-1	28.09.03	10:30	78° 49.98' N	1° 36.01' E	2556.0	N 10	146.8	0.1	Mooring (year)	MOORY	surface	4Benthos 1Strömungsmesser
PS64/773-1	28.09.03	10:48	78° 49.98' N	1° 36.29' E	2558.0	N 10	31.0	0.0	Mooring (year)	MOORY	surface	1Strömungsmesser
PS64/773-1	28.09.03	11:01	78° 49.99' N	1° 36.43' E	2558.0	N 11	182.2	0.2	Mooring (year)	MOORY	surface	4Benthos 1Strömungsmesser
PS64/773-1	28.09.03	11:13	78° 50.00' N	1° 36.59' E	2557.0	N 11	177.9	0.3	Mooring (year)	MOORY	surface	1Transponder 1Seacat
PS64/773-1	28.09.03	11:15	78° 50.00' N	1° 36.59' E	2559.0	N 11	187.0	0.1	Mooring (year)	MOORY	surface	1Topboje 1Multifunktionskopf 1Strömungsmesser
PS64/773-1	28.09.03	11:20	78° 49.99' N	1° 36.64' E	2557.0	N 10	111.1	0.3	Mooring (year)	MOORY	at depth	Verankerung ausgelöst, Tiefensensor ANPHS
PS64/774-1	28.09.03	13:00	78° 50.07' N	0° 24.41' E	2585.0	N 12	220.6	1.2	Mooring (year)	MOORY	action	F16-1, Posidonia Auslösung
PS64/774-1	28.09.03	13:03	78° 50.01' N	0° 24.23' E	2590.0	N 11	213.1	1.3	Mooring (year)	MOORY	action	aufgetaucht
PS64/774-1	28.09.03	13:55	78° 49.84' N	0° 21.03' E	2598.0	N 12	225.6	1.1	Mooring (year)	MOORY	action	am Haken
PS64/774-1	28.09.03	13:56	78° 49.83' N	0° 20.94' E	2600.0	N 12	241.8	1.4	Mooring (year)	MOORY	action	Topeinheit an Deck
PS64/774-1	28.09.03	14:01	78° 49.77' N	0° 20.44' E	2600.0	N 12	223.1	1.4	Mooring (year)	MOORY	action	4 Benthos & 1 SM
PS64/774-1	28.09.03	14:09	78° 49.59' N	0° 20.01' E	2598.0	N 12	198.6	1.4	Mooring (year)	MOORY	action	1 SM
PS64/774-1	28.09.03	14:22	78° 49.29' N	0° 19.24' E	2592.0	NNE 12	205.4	1.6	Mooring (year)	MOORY	action	4 Benthos & 1 SM
PS64/774-1	28.09.03	14:42	78° 48.90' N	0° 18.14' E	2585.0	NNE 12	207.5	1.3	Mooring (year)	MOORY	on deck	5 Benthos, 1 SM & Doppelauslöser - Verankerung geborgen
PS64/775-1	28.09.03	17:24	78° 50.02' N	1° 55.82' E	2569.0	N 12	290.0	0.6	CTD/rosette water sampler	CTD/RO	surface	
PS64/775-1	28.09.03	18:10	78° 50.10' N	1° 53.10' E	2569.0	N 13	284.4	0.6	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2529m ausgesteckt,

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
												Tiefensensor ANPHS
PS64/775-1	28.09.03	18:59	78° 50.21' N	1° 50.61' E	2570.0	N 13	42.2	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/776-1	28.09.03	22:43	78° 49.97' N	1° 9.95' W	2683.0	N 12	246.8	0.3	CTD/rosette water sampler	CTD/RO	surface	
PS64/776-1	28.09.03	23:31	78° 50.03' N	1° 9.95' W	2680.0	N 11	231.1	0.2	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2631m ausgesteckt, Tiefensensor ANPHS
PS64/776-1	29.09.03	00:18	78° 50.11' N	1° 10.63' W	2683.0	N 10	235.4	0.4	CTD/rosette water sampler	CTD/RO	on deck	
PS64/777-1	29.09.03	00:57	78° 50.02' N	1° 24.93' W	2694.0	N 9	183.1	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/777-1	29.09.03	01:44	78° 50.03' N	1° 24.93' W	2693.0	N 9	184.8	0.4	CTD/rosette water sampler	CTD/RO	at depth	
PS64/777-1	29.09.03	02:25	78° 50.08' N	1° 25.13' W	2696.0	N 8	97.1	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/778-1	29.09.03	02:56	78° 50.01' N	1° 39.92' W	2716.0	N 8	35.9	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/778-1	29.09.03	03:42	78° 50.00' N	1° 40.00' W	2714.0	N 8	7.2	0.0	CTD/rosette water sampler	CTD/RO	at depth	
PS64/778-1	29.09.03	04:27	78° 50.05' N	1° 39.71' W	2714.0	NNW 8	20.1	0.5	CTD/rosette water sampler	CTD/RO	on deck	
PS64/779-1	29.09.03	08:07	78° 50.07' N	0° 23.31' E	2593.0	N 7	329.5	0.5	Mooring (year)	MOORY	surface	1Ankerstein 1Doppelauslöser
PS64/779-1	29.09.03	08:10	78° 50.08' N	0° 23.28' E	2593.0	NNW 7	16.0	0.5	Mooring (year)	MOORY	surface	5Benthos 1Strömungsmesser
PS64/779-1	29.09.03	08:31	78° 50.12' N	0° 23.95' E	2591.0	NNW 7	62.6	0.2	Mooring (year)	MOORY	surface	4Benthos 1Strömungsmesser
PS64/779-1	29.09.03	08:45	78° 50.12' N	0° 24.03' E	2591.0	NNW 6	46.6	0.0	Mooring (year)	MOORY	surface	1 Strömungsmesser
PS64/779-1	29.09.03	08:56	78° 50.11' N	0° 24.05' E	2590.0	NNW 6	46.8	0.0	Mooring (year)	MOORY	surface	4Benthos 1Strömungsmesser
PS64/779-1	29.09.03	09:06	78° 50.09' N	0° 23.86' E	2591.0	NNW 6	13.0	0.2	Mooring (year)	MOORY	surface	1Transponder 1Seacat
PS64/779-1	29.09.03	09:09	78° 50.10' N	0° 23.96' E	2591.0	NNW 7	51.2	0.7	Mooring (year)	MOORY	surface	1Topboje 1Multifunktionskopf 1Strömungsmesser
PS64/779-1	29.09.03	09:15	78° 50.10' N	0° 24.03' E	2592.0	NNW 6	234.9	0.3	Mooring (year)	MOORY	at depth	Verankerung F16-2 ausgelöst, Tiefensensor ANPHS
PS64/780-1	29.09.03	10:45	78° 50.11' N	0° 48.33' W	2670.0	NNW 5	12.9	1.7	Mooring (year)	MOORY	action	ausgelöst
PS64/780-1	29.09.03	10:53	78° 50.22' N	0° 48.24' W	2670.0	NNW 5	322.4	0.3	Mooring (year)	MOORY	action	aufgetaucht

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/780-1	29.09.03	11:26	78° 50.28' N	0° 50.10' W	2669.0	NNW 4	318.8	0.3	Mooring (year)	MOORY	action	1Topboje 1Multifunktionskopf 1Strömungsmesser 1Seacat 1Transponder an Deck
PS64/780-1	29.09.03	11:35	78° 50.30' N	0° 50.50' W	2670.0	NW 4	271.4	1.0	Mooring (year)	MOORY	action	4Benthos 1Strömungsmesser an Deck
PS64/780-1	29.09.03	11:49	78° 50.34' N	0° 51.76' W	2669.0	NW 4	270.7	1.1	Mooring (year)	MOORY	action	1Strömungsmesser an Deck
PS64/780-1	29.09.03	12:05	78° 50.38' N	0° 52.93' W	2668.0	NW 4	276.3	0.5	Mooring (year)	MOORY	action	4Benthos 1Strömungsmesser an Deck
PS64/780-1	29.09.03	12:25	78° 50.38' N	0° 53.71' W	2666.0	NW 4	277.0	0.4	Mooring (year)	MOORY	on deck	4 Benthos, 1SM & 1 Doppelauslöser mit Pegel - Verankerung F9-4 geborgen
PS64/781-1	29.09.03	12:48	78° 50.02' N	0° 49.96' W	2665.0	NW 4	331.1	0.8	CTD/rosette water sampler	CTD/RO	surface	
PS64/781-1	29.09.03	13:35	78° 50.04' N	0° 50.30' W	2666.0	N 1	279.1	0.5	CTD/rosette water sampler	CTD/RO	at depth	2616m
PS64/781-1	29.09.03	14:22	78° 49.99' N	0° 50.43' W	2667.0	NNW 3	70.9	0.3	CTD/rosette water sampler	CTD/RO	on deck	
PS64/782-1	29.09.03	14:40	78° 50.06' N	0° 48.23' W	2672.0	N 2	171.2	0.5	Mooring (year)	MOORY	surface	F9-5, Ankerstein, Pegel & Doppelreleaser
PS64/782-1	29.09.03	14:44	78° 50.04' N	0° 48.29' W	2670.0	N 2	237.9	0.4	Mooring (year)	MOORY	surface	1 SM & 5 Benthos
PS64/782-1	29.09.03	15:12	78° 50.06' N	0° 48.35' W	2668.0	WNW 2	236.2	0.1	Mooring (year)	MOORY	surface	1 SM & 4 Benthos
PS64/782-1	29.09.03	15:28	78° 50.04' N	0° 48.23' W	2669.0	NW 2	281.4	0.0	Mooring (year)	MOORY	surface	1 SM
PS64/782-1	29.09.03	15:40	78° 50.05' N	0° 48.27' W	2670.0	WNW 2	277.6	0.4	Mooring (year)	MOORY	surface	1 SM & 4 Benthos
PS64/782-1	29.09.03	15:49	78° 50.03' N	0° 48.38' W	2669.0	WNW 2	162.4	0.1	Mooring (year)	MOORY	surface	1 Transponder & 1 Seacat
PS64/782-1	29.09.03	15:53	78° 50.04' N	0° 48.33' W	2670.0	NNW 2	307.3	0.6	Mooring (year)	MOORY	surface	! SM, 1 MuFuKo, Topboje
PS64/782-1	29.09.03	16:04	78° 50.04' N	0° 48.35' W	2669.0	NNW 2	157.2	0.1	Mooring (year)	MOORY	action	Veraankerung wieder gehievt, einfügen von 50m
PS64/782-1	29.09.03	16:42	78° 50.30' N	0° 48.69' W	2670.0	SSW 2	47.9	0.4	Mooring (year)	MOORY	at depth	Verankerung ist ausgelöst, Tiefensensor

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
												PODAS HS
PS64/783-1	29.09.03	18:43	78° 49.98' N	2° 20.31' W	2679.0	SSW 4	172.0	0.6	CTD/rosette water sampler	CTD/RO	surface	
PS64/783-1	29.09.03	19:34	78° 49.55' N	2° 19.81' W	2682.0	SW 4	162.8	0.6	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2633m ausgesteckt ANPHS
PS64/783-1	29.09.03	20:24	78° 49.35' N	2° 19.10' W	2684.0	SW 7	104.8	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/784-1	29.09.03	21:13	78° 49.86' N	2° 40.92' W	2619.0	SSW 5	150.0	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/784-1	29.09.03	22:01	78° 49.36' N	2° 39.95' W	2627.0	SSW 6	156.7	0.8	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 2591m ausgesteckt
PS64/784-1	29.09.03	22:45	78° 48.88' N	2° 38.75' W	2630.0	SSW 8	148.6	0.7	CTD/rosette water sampler	CTD/RO	on deck	
PS64/785-1	30.09.03	00:04	78° 49.70' N	3° 0.18' W	2540.0	SSW 6	157.8	0.5	CTD/rosette water sampler	CTD/RO	surface	
PS64/785-1	30.09.03	00:50	78° 49.44' N	2° 59.38' W	2551.0	SSW 7	36.3	0.0	CTD/rosette water sampler	CTD/RO	at depth	2508m
PS64/785-1	30.09.03	01:37	78° 48.89' N	2° 58.52' W	2562.0	SW 6	8.9	0.4	CTD/rosette water sampler	CTD/RO	on deck	
PS64/786-1	30.09.03	02:57	78° 49.96' N	3° 19.72' W	2403.0	S 6	213.2	0.2	CTD/rosette water sampler	CTD/RO	surface	
PS64/786-1	30.09.03	03:40	78° 49.75' N	3° 18.87' W	2414.0	S 5	144.3	1.1	CTD/rosette water sampler	CTD/RO	at depth	2361m
PS64/786-1	30.09.03	04:16	78° 49.63' N	3° 18.40' W	2414.0	S 6	322.4	0.0	CTD/rosette water sampler	CTD/RO	on deck	
PS64/787-1	30.09.03	05:16	78° 50.33' N	3° 39.53' W	2205.0	S 6	13.9	0.4	CTD/rosette water sampler	CTD/RO	surface	
PS64/787-1	30.09.03	05:59	78° 50.31' N	3° 39.17' W	2209.0	S 6	180.0	0.0	CTD/rosette water sampler	CTD/RO	surface	EL 31 auf 2158m ausgesteckt PODAS ANPHS
PS64/787-1	30.09.03	06:45	78° 50.21' N	3° 38.74' W	2219.0	SSW 4	180.1	0.0	CTD/rosette water sampler	CTD/RO	on deck	
PS64/788-1	30.09.03	09:28	78° 49.95' N	2° 0.26' W	2724.0	WSW 3	53.1	0.4	Mooring (year)	MOORY	action	Verankerung ausgelöst
PS64/788-1	30.09.03	09:46	78° 49.83' N	2° 0.64' W	2723.0	SW 2	204.6	1.3	Mooring (year)	MOORY	action	Verankerung aufgetaucht
PS64/788-1	30.09.03	10:30	78° 49.66' N	2° 0.02' W	2725.0	SW 2	173.7	0.6	Mooring (year)	MOORY	action	1Topboje 1Multifunktionskopf 1Strömungsmesser 1Seacat 1Transponder 1ULS an Deck
PS64/788-1	30.09.03	10:33	78° 49.65' N	2° 0.06' W	2727.0	SSW 2	348.8	0.5	Mooring (year)	MOORY	action	4Benthos an Deck
PS64/788-1	30.09.03	10:53	78° 49.86' N	1° 59.37' W	2724.0	SSW 2	255.7	0.4	Mooring (year)	MOORY	action	1ADCP-UP an Deck
PS64/788-1	30.09.03	11:00	78° 49.86' N	1° 59.71' W	2726.0	S 3	256.9	0.8	Mooring	MOORY	action	2Benthos

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									(year)			1Strömungsmesser an Deck
PS64/788-1	30.09.03	11:16	78° 49.75' N	2° 1.20' W	2721.0	S 2	234.9	1.4	Mooring (year)	MOORY	action	4Benthos
PS64/788-1	30.09.03	11:42	78° 49.38' N	2° 1.65' W	2725.0	S 2	141.5	1.3	Mooring (year)	MOORY	on deck	1Strömungsmesser 4Benthos 1Strömungsmesser 1Doppelauslöser an Deck, Verankerung geborgen
PS64/789-1	30.09.03	12:02	78° 49.88' N	2° 0.06' W	2724.0	S 2	95.9	0.6	CTD/rosette water sampler	CTD/RO	surface	
PS64/789-1	30.09.03	12:52	78° 49.70' N	2° 0.00' W	2727.0	S 1	132.8	0.3	CTD/rosette water sampler	CTD/RO	at depth	2670m
PS64/789-1	30.09.03	13:37	78° 49.55' N	1° 59.86' W	2728.0	ENE 1	252.1	0.5	CTD/rosette water sampler	CTD/RO	on deck	
PS64/790-1	30.09.03	14:01	78° 50.27' N	1° 59.84' W	2724.0	ENE 2	111.7	0.7	Mooring (year)	MOORY	surface	F19-6, Ankerstein, Doppelreleaser, 1 SM & 5 Benthos
PS64/790-1	30.09.03	14:32	78° 50.15' N	2° 0.02' W	2723.0	E 2	258.6	0.7	Mooring (year)	MOORY	surface	1 SM, 4 Benthos
PS64/790-1	30.09.03	14:48	78° 50.11' N	1° 59.98' W	2724.0	E 2	229.6	0.2	Mooring (year)	MOORY	surface	1SM & 2 Benthos
PS64/790-1	30.09.03	15:06	78° 50.04' N	1° 59.98' W	2723.0	ENE 3	178.2	0.5	Mooring (year)	MOORY	surface	1 ADCP
PS64/790-1	30.09.03	15:10	78° 50.00' N	1° 59.94' W	2726.0	ENE 3	168.7	0.5	Mooring (year)	MOORY	surface	3 Benthos
PS64/790-1	30.09.03	15:17	78° 49.93' N	2° 0.01' W	2725.0	E 2	177.9	0.6	Mooring (year)	MOORY	surface	1 Seacat & 1 Transponder
PS64/790-1	30.09.03	15:21	78° 49.91' N	1° 59.97' W	2726.0	E 3	145.3	0.5	Mooring (year)	MOORY	surface	1 SM, 1 MuFuKo & Topboje
PS64/790-1	30.09.03	15:30	78° 49.89' N	2° 0.05' W	2725.0	ESE 4	13.7	0.1	Mooring (year)	MOORY	action	wieder rauf & noch 30m einfädeln
PS64/790-1	30.09.03	15:59	78° 49.89' N	2° 0.04' W	2726.0	E 4	354.6	0.2	Mooring (year)	MOORY	at depth	abgesetzt & geslipt
PS64/791-1	01.10.03	11:29	79° 45.12' N	7° 23.68' E	811.2	SSE 16	312.4	1.2	Mooring (year)	MOORY	action	4Benthos 1Strömungsmesser an Deck
PS64/791-1	01.10.03	11:40	79° 45.29' N	7° 23.16' E	811.1	SSE 15	149.2	0.6	Mooring (year)	MOORY	action	1Strömungsmesser an Deck
PS64/791-1	01.10.03	11:49	79° 45.50' N	7° 23.33' E	810.0	SSE 17	0.3	2.6	Mooring (year)	MOORY	action	Ende an Auftrieb 5Floats an Deck, Ende gerissen
PS64/791-1	01.10.03	11:56	79° 45.70' N	7° 22.78' E	810.5	SSE 16	342.7	2.3	Mooring (year)	MOORY	action	1 Strömungsmesser
PS64/791-1	01.10.03	12:06	79° 46.10' N	7° 22.77' E	806.7	SSE 17	5.5	2.9	Mooring	MOORY	action	1 SM & 3 Benthos

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
									(year)			a.D.
PS64/791-1	01.10.03	12:13	79° 46.40' N	7° 22.92' E	804.8	SSE 15	354.6	3.4	Mooring (year)	MOORY	action	Schallquelle a.D.
PS64/791-1	01.10.03	12:21	79° 46.73' N	7° 22.75' E	803.7	SSE 15	355.0	3.2	Mooring (year)	MOORY	action	1 SM & 5 Benthos a.D.
PS64/791-1	01.10.03	12:26	79° 46.93' N	7° 22.62' E	801.1	SSE 14	351.1	2.6	Mooring (year)	MOORY	action	1 SM a.D.
PS64/791-1	01.10.03	12:32	79° 47.17' N	7° 22.44' E	799.2	SSE 16	349.7	2.8	Mooring (year)	MOORY	on deck	1 Pop up, 1 Seacat, 9 Benthos & 1 MuFuKo - Verankerungsrest fertig geborgen
PS64/792-1	01.10.03	19:30	78° 49.95' N	6° 0.29' E	2476.0	SE 16	56.3	0.4	Mooring (year)	MOORY	surface	1Ankerstein1doppelter Auslöser
PS64/792-1	01.10.03	19:40	78° 49.97' N	6° 0.25' E	2475.0	SE 16	207.9	0.3	Mooring (year)	MOORY	surface	5Benthos1Strömungsmesser
PS64/792-1	01.10.03	19:55	78° 49.93' N	6° 0.25' E	2476.0	SE 15	175.1	0.5	Mooring (year)	MOORY	surface	1SM
PS64/792-1	01.10.03	20:10	78° 49.94' N	6° 0.25' E	2477.0	SE 16	321.7	1.4	Mooring (year)	MOORY	action	Leine gebrochen
PS64/792-1	01.10.03	20:21	78° 49.92' N	6° 0.17' E	2475.0	SE 17	97.9	0.3	Mooring (year)	MOORY	surface	4Benthos
PS64/792-1	01.10.03	20:31	78° 49.94' N	6° 0.16' E	2476.0	SE 15	102.8	0.7	Mooring (year)	MOORY	surface	1Strömungsmesser
PS64/792-1	01.10.03	20:43	78° 49.95' N	6° 0.18' E	2476.0	SE 16	153.1	0.7	Mooring (year)	MOORY	action	Leien gebrochen
PS64/792-1	01.10.03	21:29	78° 49.95' N	6° 0.12' E	2476.0	SE 15	141.1	0.0	Mooring (year)	MOORY	surface	1Strömungsmesser
PS64/792-1	01.10.03	21:39	78° 49.93' N	6° 0.24' E	2473.0	SE 15	310.2	0.2	Mooring (year)	MOORY	surface	1Schallquelle
PS64/792-1	01.10.03	21:52	78° 49.94' N	6° 0.21' E	2476.0	SE 14	309.5	0.4	Mooring (year)	MOORY	surface	1Strömungsmesser
PS64/792-1	01.10.03	22:07	78° 49.95' N	6° 0.28' E	2474.0	SE 15	148.5	0.8	Mooring (year)	MOORY	surface	1Strömungsmesser
PS64/792-1	01.10.03	22:09	78° 49.94' N	6° 0.31' E	2475.0	ESE 15	281.3	0.3	Mooring (year)	MOORY	surface	1Microcat
PS64/792-1	01.10.03	22:14	78° 49.93' N	6° 0.21' E	2476.0	SE 16	83.1	0.5	Mooring (year)	MOORY	surface	1Topboje
PS64/792-1	01.10.03	22:17	78° 49.94' N	6° 0.22' E	2476.0	ESE 15	290.9	0.1	Mooring (year)	MOORY	surface	1Multifunktionskopf
PS64/792-1	01.10.03	22:25	78° 49.95' N	6° 0.13' E	2476.0	SE 15	11.0	0.5	Mooring (year)	MOORY	at depth	Verankerung F5-6, ausgelöst
PS64/793-1	02.10.03	11:00	78° 51.33' N	4° 3.01' W	1920.0	WNW 9	147.1	0.9	CTD/rosette water sampler	CTD/RO	surface	
PS64/793-1	02.10.03	11:38	78° 50.74' N	4° 2.07' W	1921.0	WNW 9	170.5	1.0	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 1915m ausgesteckt, Tiefensensor

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
												ANPHS
PS64/793-1	02.10.03	12:20	78° 50.00' N	4° 1.53' W	1909.0	WNW 10	154.8	1.4	CTD/rosette water sampler	CTD/RO	on deck	
PS64/794-1	02.10.03	13:21	78° 48.38' N	4° 22.86' W	1581.0	WNW 9	164.3	0.8	CTD/rosette water sampler	CTD/RO	surface	
PS64/794-1	02.10.03	13:53	78° 47.95' N	4° 21.99' W	1587.0	WNW 7	162.0	0.9	CTD/rosette water sampler	CTD/RO	at depth	1555m
PS64/794-1	02.10.03	14:25	78° 47.55' N	4° 21.18' W	1594.0	W 7	159.6	0.7	CTD/rosette water sampler	CTD/RO	on deck	
PS64/795-1	02.10.03	16:41	78° 45.62' N	4° 39.93' W	1260.0	WNW 8	124.6	0.6	CTD/rosette water sampler	CTD/RO	surface	
PS64/795-1	02.10.03	17:18	78° 45.35' N	4° 38.61' W	1275.0	W 8	139.8	0.4	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 1239m ausgesteckt, Tiefensensor ANPHS
PS64/795-1	02.10.03	17:47	78° 45.14' N	4° 37.90' W	1287.0	WNW 7	163.4	0.2	CTD/rosette water sampler	CTD/RO	on deck	
PS64/796-1	02.10.03	18:41	78° 43.85' N	5° 0.48' W	1687.0	W 6	186.4	0.9	CTD/rosette water sampler	CTD/RO	surface	
PS64/796-1	02.10.03	18:59	78° 43.73' N	4° 59.70' W	848.7	W 7	116.6	0.6	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 818m ausgesteckt, ANPHS
PS64/796-1	02.10.03	19:10	78° 43.68' N	4° 59.18' W	855.0	W 7	113.0	0.7	CTD/rosette water sampler	CTD/RO	on deck	
PS64/797-1	02.10.03	19:52	78° 43.45' N	5° 6.42' W	1195.0	W 8	204.9	1.0	CTD/rosette water sampler	CTD/RO	surface	
PS64/797-1	02.10.03	20:08	78° 43.33' N	5° 5.70' W	721.1	W 8	132.1	0.7	CTD/rosette water sampler	CTD/RO	at depth	EL 31 auf 697m ausgesteckt, Tiefensensor ANPHS
PS64/797-1	02.10.03	20:26	78° 43.20' N	5° 5.02' W	729.4	W 9	129.6	0.7	CTD/rosette water sampler	CTD/RO	on deck	
PS64/798-1	03.10.03	16:17	75° 48.30' N	7° 19.62' W	2637.0	N 16	325.1	4.6	Seismic reflection profile	SEISREFL	Streamer into water	
PS64/798-1	03.10.03	16:49	75° 50.55' N	7° 23.10' W	2530.0	N 18	336.7	3.8	Seismic reflection profile	SEISREFL	airguns in the water	
PS64/798-1	03.10.03	17:44	75° 48.11' N	7° 17.11' W	2667.0	N 19	222.2	5.7	Seismic reflection profile	SEISREFL	profile start	
PS64/798-1	04.10.03	16:57	74° 12.02' N	12° 59.88' W	2722.0	N 14	223.5	5.3	Seismic reflection profile	SEISREFL	alter course	
PS64/798-1	05.10.03	13:05	72° 30.10' N	15° 59.83' W	1701.0	NW 5	207.1	5.3	Seismic reflection	SEISREFL	alter course	203°

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS64/798-1	06.10.03	00:00	71° 37.89' N	17° 10.57' W	1760.0	NW 7	202.3	5.7	profile Seismic reflection profile	SEISREFL	end of profile	
PS64/798-1	06.10.03	00:12	71° 37.19' N	17° 11.39' W	1759.0	NW 8	202.9	2.2	Seismic reflection profile	SEISREFL	array on deck	
PS64/798-1	06.10.03	00:36	71° 36.03' N	17° 12.10' W	1755.0	NNW 7	194.4	3.1	Seismic reflection profile	SEISREFL	streamer on deck	
PS64/799-1	06.10.03	00:42	71° 35.35' N	17° 12.16' W	1756.0	NNW 7	183.7	8.6	Meßfahrt	M	start-magnetic turncircels	
PS64/799-1	06.10.03	02:22	71° 34.89' N	17° 12.36' W	1758.0	NW 9	184.4	6.4	Meßfahrt	M	end-magnetic turncircels	

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	Acronym	Teiln. / partp.
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Fahrtteilnehmer / Participants

Name	Vorname	Institut	ARK-XIX/4a	ARK-XIX/4b
Auer	Brigitte	AWI	X	X
Bennike	Ole	GEUS	X	
Berger	Daniela	AWI	X	X
Beszczynska-Möller	Agnieszka	AWI		X
Blümel	Martina	IFM	X	
Bohlmann	Harald	ISITEC	X	X
Brauer	Jens	HSW	X	X
Bruns	Thomas	DWD	X	
Büchner	Jürgen	HSW	X	X
Buldt	Klaus	DWD		X
Burgmer	Tanja	AWI	X	
Cremer	Holger	UU	X	X
Dinkeldein	Wolfgang	HSW	X	X
Erdmann	Hilger	DWD		X
Fahrbach	Eberhard	AWI		X
Fieg	Kerstin	AWI		X
Gauger	Steffen	FIELAX	X	X
Haase	Susann	AWI		X
Håkansson	Lena	UL	X	
Helm	Veit	AWI	X	X
Hensch	Martin	IFG	X	X
Hultzsch	Nadja	AWI	X	
Jokat	Wilfried	AWI	X	X
Jousselin	David	INPL	X	X
Kierdorf	Christoph	AWI	X	
Klein	Christina	AWI	X	X
Klug	Martin	IGG	X	X
Kobabe	Svenja	AWI	X	
Lensch	Norbert	AWI	X	X
Liersch	Petra	AWI	X	
Martens	Hartmut	AWI	X	X
Medow	Anett	AWI	X	X
Miksch	Uli	AWI	X	X
Monsees	Matthias	OPTIMARE		X
Rabenstein	Lasse	AWI	X	X
Redetzky	Jörg	HSW	X	X
Reese	Birger	AWI	X	X
Rogenhagen	Johannes	FIELAX	X	X
Rohr	Harald	OPTIMARE		X
Salat	Christina	AWI	X	X
Schäfer	Christoph	AWI	X	
Schmidt-Aursch	Mechita	AWI	X	X
Schütt	Ekkehard	AWI		X
Schwenk	Arne	KUM	X	
Sonnabend	Hartmut	DWD	X	
Sprenger	Judith Anna	AWI		X
Stumm	Karen	AWI	X	
Wagner	Bernd	IGG	X	X
Winkelmann	Daniel	AWI	X	
Winkler	Andreas	AWI	X	X
Wisotzki	Andreas	AWI		X
Witte	Timo	OPTIMARE		X

Besatzung / Crew

01.	Pahl, Uwe	Master
02.	Schwarze, Stefan	1.Offc.
03.	Schulz, Volker	Ch.Eng.
04.	Fallei, Holger	2.Offc.
05.	Grimm, Sebastian	2.Offc.
06.	Szepanski, Nico	2.Offc.
07.	Stoica, Lorant-Aliu	Doctor
08.	Hecht,Andreas	R.Offc.
09.	Erreth, Gyula	1.Eng.
10.	Richter, Frank	2.Eng.
11.	Simon, Wolfgang	2.Eng.
12.	Holtz, Hartmut	Electr.
13.	Hofmann, Jörg	Fielax-Elo
14.	Muhle, Helmut	Fielax-Elo
15.	Baier, Ulrich	Fielax-Elo
16.	Piskorzynski, Andreas	Fielax-Elo
17.	Clasen, Burkhard	Boatsw.
18.	Neisner,Winfried	Carpenter
19.	Kreis, Reinhard	A.B.
20.	Schultz, Ottomar	A.B.
21.	Burzan, G.-Ekkehard	A.B.
22.	Schröder, Norbert	A.B.
23.	Moser, Siegfried	A.B.
24.	Guse, Hartmut	A.B.
25.	Hartwig-Labahn, Andreas	A.B.
26.	Niehusen, Arne	Trainee
27.	Beth, Detlef	Storekeep.
28.	Arias Iglesias,Enr.	Mot-man
29.	Fritz, Günter	Mot-man
30.	Krösche, Eckard	Mot-man
31.	Dinse, Horst	Mot-man
32.	Scholl, Christoph	Trainee
33.	Fischer, Matthias	Cook
34.	Tupy,Mario	Cooksmate
35.	Möller, Wolfgang	Cooksmate
36.	Martens, Michael	Cooksmate
37.	Dinse, Petra	1.Stwdess
38.	Schöndorfer, Ottilie	Stwdss/KS
39.	Streit, Christina	2.Stwdess
40.	Schmidt,Maria	2.Stwdess
41.	Deuß, Stefanie	2.Stwdess
42.	Tu, Jian Min	2.Steward
43.	Wu, Chi Lung	2.Steward
44.	Yu, Chung Leung	Laundrym.