The Expedition ARKTIS XVIII/2 of RV „Polarstern" in 2002
Contributions of the Participants

Die Expedition ARKTIS XVIII/2 mit FS „Polarstern", 2002
Berichte der Fahrtteilnehmer

Edited by
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Table of contents page

I Summary 2

1 Weather Conditions during ARK-XVIII/2 5

2 Geophysical investigations 8

2.1 Data acquisition: Seismic and Gravity 8
2.2 Data acquisition: Magnetic 15
2.3 Results 27

3 Bathymetry 32

4 PARASOUND Sediment Echosounding 36

5 Biological sea-ice and under-ice studies 39

5.1 General ice conditions during the cruise 39
5.2 Introduction 40
5.3 Vertical distribution of physical, chemical and biological properties in Arctic pack ice 41
5.4 Small-scale structures and distribution patterns in the under-ice water layer 42
5.5 Experimental work on the food-web structure and energy budgets of ice and under-ice fauna 43

6 Studies on the Pelagic Ecosystem and Higher Trophic Levels in the Marginal Ice Zone of Fram Strait 49

6.1 Zooplankton studies 49
6.2 Feeding experiments with Arctic krill 50
6.3 Seabird and seal surveys 51

7 Participating Institutions 52

8 Cruise Participants 53

9 Ship's crew 54

10 Station list 55

I Summary

Tromsø – Bremerhaven (26.08.2002 – 15.10.2002)

W. Jokat

The expedition started on August 26th at 20:00 h in Tromsø, Norway. In total 30 scientists joined the cruise to conduct geophysical, bathymetric and biological sea ice research. However, the first target area was located south of Tromsø. A short geological sampling programme southeast of the Lofoten islands was the first of our activities. The programme of the two geologists started in the evening of August 27th and was finished at 06:00 h on August 28th. Due to good weather conditions the two scientists were flown to the nearby airport Bodø with one of the BO-105 helicopters. After that we headed north and started to acquire the first seismic reflection profile on August 30th. Three days later the profiling was terminated at the Northeast Greenland margin. Now the biological programmes started with a RMT trawl and the first multinet-transect towards the ice edge. From September 2nd – 3rd two ice stations were performed. For this the ship docked towards a sufficient large ice floe, so that the scientists could transport their equipment via a gangway onto the floe. The last ice station had to be evacuated after 5 hours because the large floe broke into pieces. A reconnaissance flight showed that all floes in a wider area around the ship had the same texture and it was too dangerous to test them by an ice party. Thus, it was decided first to finish the seismic work along the Wandel Sea margin. Afterwards we headed for a new research area at the northern Yermak Plateau. Here, we arrived on September 8th and started again the biological work with a multinet transect. Three ice stations were successfully performed from September 10th to 12th mainly on 1-year old ice. After few RMT trawls the extensive seismic programme along the East Greenland margin south of 80°N began. In a systematic designed regional network the structure of the continental slope and the adjacent deep-sea basins were investigated (Fig. I.1). Magnetic helicopter borne data were acquired in parallel to the seismic work. Interruptions for repairing the airguns were used to run RMT trawls at several locations. The seismic survey terminated on September 30th, followed by systematic bathymetric mapping of the western shoulder of Knipovich Ridge and the western part of Vestnesa. The last seismic profile was acquired in the Boreas Basin to resolve its basement topography and sediment distribution. Additional bathymetric measurements were performed at the end of the cruise to investigate the northern part of the Knipovich Ridge.

From the geophysical perspective the cruise was extremely successful. Favoured by light ice conditions systematic seismic, gravimetric and magnetic profile networks were acquired. Although most of the lines were collected in 6-9/10 of pack ice, this caused no problems to the seismic data acquisition. In most cases the ice floes were not under pressed conditions so that an easy passage was possible. South of 78° N the ice coverage was well below 4/10 or ice-free. The source energy was strong enough to penetrate the sediments down to their base. In total 24 sonobuoy-recordings provided signals up to 20 km, which is sufficient to determine the sediment velocities down to the top of

the basement. The dense-spaced magnetic profiles provided the first magnetic spreading anomalies in Boreas Basin and in the Greenland-Spitsbergen Sill at all. In contrast to earlier surveys a spacing of 5-10 km and a low flight level was chosen for the survey. The new magnetic data will for the first time allow a solid dating of the opening of the Greenland Sea.

Bathymetric data were acquired during the entire cruise with the Hydrosweep swath system. The excellent data coverage across the continental margin of East Greenland was supplemented by detailed surveys across the Vestnesa and the northern Knipovich Ridge. No major slump area was found along the Greenland slope, which might indicate a large mass waste during the geological history of the margin. Supplemented by high resolution Parasound data a solid interpretation of the margin morphology will be possible. Furthermore, both data sets indicate the presence of large, continuous iceberg scours on the northern Yermak Plateau. So far, as we know, such features had only been reported from the southern Yermak Plateau. This indicates that icebergs with drafts of more than 700 m travelled from the high Arctic southwards.

The biological sea ice programme suffered from the ice conditions that favoured the geophysical investigations. In total 5 ice stations with the ship docked at the floe and 8 ice stations with helicopters were performed. The problem was that only at some locations stable multiyear ice floes with a sufficient size were found. Even at 82°N mainly 1-year old ice floes were found with only several tenths of meters in diameter. They were not large enough to perform a safe ice station. Two multinet-transects (14 locations) and 8 RMT stations as well as seal counting flights completed the biological programme.

All scientists enjoyed their stay onboard "Polarstern" and would like to thank Captain Uwe Pahl and all crew members for their excellent support of our scientific programmes. We thank as well the helicopter crew for their professional service.

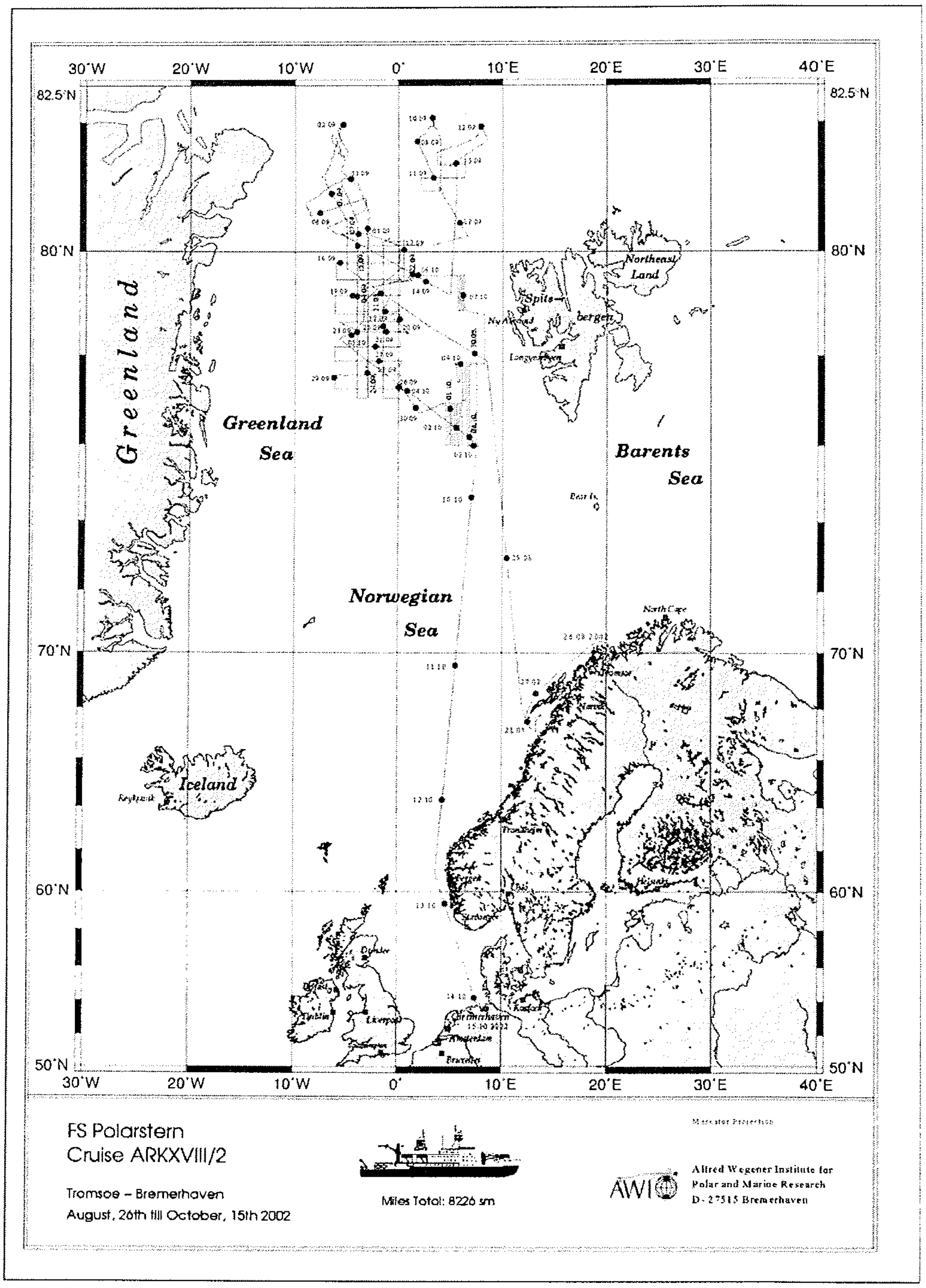


Fig. I.1: Cruise track during leg ARK-XVIII/2

1 Weather Conditions during ARK-XVIII/2

K. Dittmers, H. Sonnabend

At the beginning of the voyage the polar front extended from southern Greenland towards the northern Barents Sea. Due to the development of a low-pressure system over the Norwegian Sea the south-westerly winds increased to Bft 6 and 7 near the Lofotes. In the evening of August 28 the winds abated, when "Polarstern" headed for the Fram Strait.

The sea-ice boundary was extremely far in the north at the end of this summer and the ice coverage was relatively small.

West of Svalbard "Polarstern" encountered light and variable winds.

On September 01 a storm centre developed near Iceland. On its track towards the Barents Sea until September 03 the intensity of this system decreased. The position of "Polarstern" was far enough to the north and the winds in the rear of this low didn't exceed Bft 6 at the ships position.

On the next day a high-pressure system developed over northern Greenland. It remained nearly stationary for some days. In connection with low pressure over the North Polar Sea arctic fronts associated with snow crossed the Fram Strait.

On September 07 winds were light and variable under high-pressure influence, but foggy weather-periods occurred as well. On September 08 a depression crossed the southern Greenland Sea from west to east. North of 80° N some snow showers were observed over the open water, and very low clouds over the ice area were a problem for helicopter flights. A new intermediate high-pressure period with light winds and fogpatches caused the lowest temperatures (-10.6° C) on September 09, at that time the minimum temperature in the whole North Polar Area.

Until the next day a low approached from the coast of Northgreenland and in front of this system south-easterly wind of Bft 6 to 7 occurred with snow, which passed over to freezing rain at -1° C for a time. In the vicinity of the low centre the wind decreased rapidly, but fog came up for a longer time.

Until September 13 the Greenland anticyclone with different weather conditions influenced the Fram Strait, covering all types from fog with snow grains to sunny spells and good visibility.

On September 14 another low developed off the coast of Northeastgreenland, which moved to the Barents Sea during the next couple of days. Strong southerly winds with rain or drizzle and temperatures up to +4° C was the weather type in front of the depression, in the rear due to strong northerly winds temperatures dropped to –5° C associated with snow showers.

From September 17 to 19 the investigation area was on the edge of a Greenland high, before a new depression developed in the lee of Northeastgreenland. This development continued until September 22. Strong winds occurred in front and in the rear, in the centre it was calm. This low moved to the White Sea with a minimum pressure of 989 hPa. To the end of September the anticyclone over Greenland intensified, forming a bridge to a high over the Beaufort Sea. The low-pressure systems approaching from southwest affected only the southern Greenland Sea. Winds were northerly of Bft 5 and 6 and the temperatures dropped to −10° C in the ice area. Over the open and relative warm water west of Svalbard the flight conditions were often still acceptable, isolated showers in form of snow or snow grains could be flown round. Further to the west however, the temperature inversion was lower and low clouds or fogpatches occurred often. On September 30 and October 01, "Polarstern" was in the rear of a storm centre over the Barents Sea, but highest wind speed at the ships position was only 6 Bft. Over the open water, which had a temperature of up to 5° C, some heavy snow showers developed. After a short period of high pressure influence associated with light and variable winds a first warmfront crossed the investigation area and a longer period of southerly winds began. These winds were strong at times, but helicopter flights were possible, since it seldom rained and the ceiling was relative high. Another front, an occlusion, coming from the south, became stationary east of Svalbard and dissipated. Within the air mass behind the front dense fog formed in the ice area. On October 06 a low had developed off Northgreenland, which moved northerly. Minimum pressure was below 980 hPa for a time. The maximum wind force in the Fram Strait was Bft 7 to 8 in the afternoon. Even with this high wind speed very low clouds and fog formed in the ice area.

The distribution of wind shows the most frequent direction north (Fig. 1.1). The distribution of wind speed shows Bft 5 as the most frequent wind force. Frequency of strong winds was less than 10 per cent until October 06 (Fig. 1.2). Due to this fact helicopter flight were possible for longer periods, at least in the open water region. Nevertheless about 37 per cent of the time the ceiling was lower than 500 ft with periods, in which flights with magnetic measurements were not possible (Fig. 1.3).

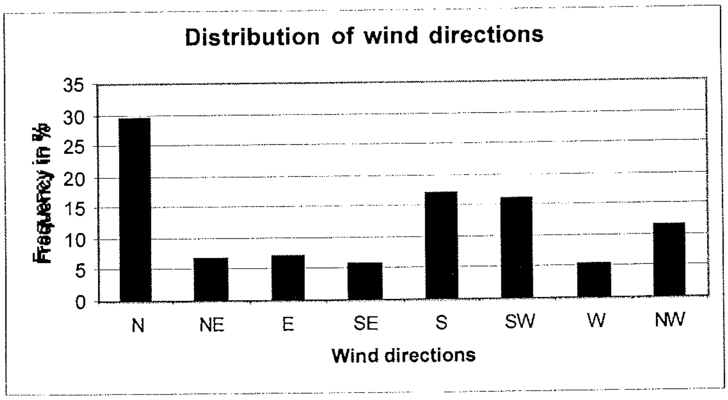


Fig. 1.1

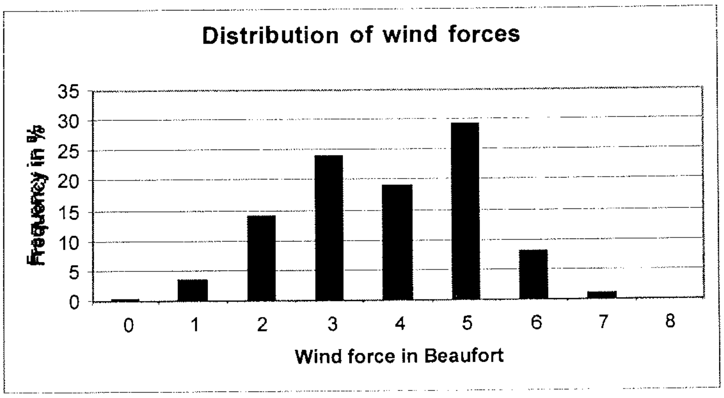


Fig. 1.2

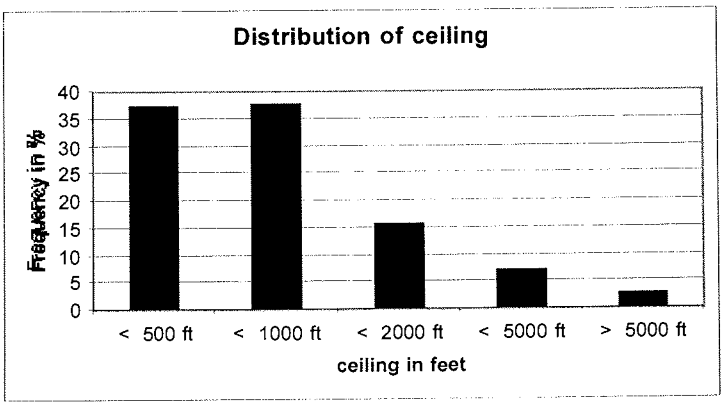


Fig. 1.3

2 Geophysical investigations

W. Jokat, D. Berger, V. Helm, B. Kunsch, N. Lensch, H. Martens, J. Rogenhagen, C. Salat, M. Schmidt-Aursch, B. Schubert, B. Traub, K. Wollny

A full understanding of the opening of the northern Norwegian-Greenland Sea and the Fram Strait is one of the outstanding geodynamic problems of the North Atlantic. Well-defined magnetic spreading anomalies describe the formation of the Norwegian-Greenland Sea. Initial break-up between Greenland and Scandinavia happened around 55-60 Ma. Extensive academic and industrial investigations off the Norwegian margin have created a vast amount of geophysical and geological data describing in great detail the geological structures formed during and after this event. This is also true for the more northern Barents Sea and Svalbard shelves. The weak points in all of the reconstruction are the missing magnetic spreading anomalies north of the Greenland Fracture Zone and the lack of any geophysical data along the conjugate margin of north-east Greenland. Especially the non-symmetric location of the present-day spreading centres in these areas, like the Knipovich Ridge, raised speculations on the existence of a distinct spreading axis in the Boreas Basin. The objective of the geophysical programme was to gather a wide variety of geophysical data as far north as the pack ice allowed. The experimental set-up included the acquisition of multichannel seismic data, gravity and magnetic data. The magnetic data were acquired with a helicopter system (Helimag, Scintrex). This allowed the acquisition of magnetic data over a wider region than possible with the ship in the given time frame.

2.1 Data acquisition: Seismic and Gravity

For the seismic data acquisition an 800-m long streamer was used. The group spacing was 6.25 and the number of hydrophone channels was 96. This resulted in a fold of 50-60. The acoustic source was a 24 l VLF airgun cluster towed 10 m behind the ship. This set-up allowed a data acquisition up to 9/10 of sea ice cover. Almost 60% of the survey north of 78° N has been shot in 5/10 to 8/10 of pack ice. The ice, however, was only in a few locations multi-year ice. Thus, the vessel could break through the floe without large problems allowing simultaneously the acquisition of seismic data. The northernmost lines were acquired along the Wandel Sea margin up to 81°N. Most of the lines were acquired with a speed of 5 ktns, even in ice. A systematic survey of the entire margin between 81°N and 77°N were conducted (Fig. 2.1). South of 78° N only on few locations large pack ice fields were hit. Most of the survey was performed in ice-free waters. Parallel to the mutlichannel seismic data acquisition in total 24 sonobuoys were deployed to better determine the velocity structure of the sedimentary column. They recorded useful signals between 10 and 20 km offset. The seismic recording and processing parameters as far as performed are summarised in the tables (Tab. 1.1 – 1.3).

Seismische Profile 300 - 700

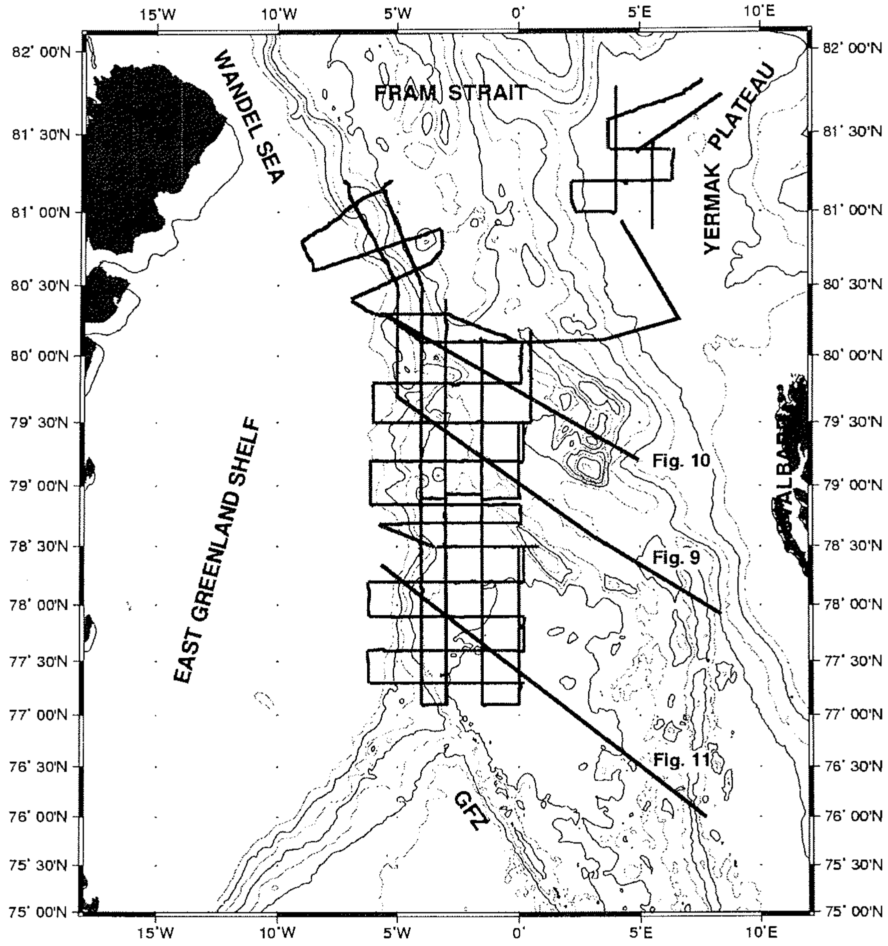


Fig. 2.1: Location of the multichannel seismic network in the Greenland Sea. Along all profiles gravimetric and magnetic data were acquired with ship-mounted systems. GFZ: Greenland Fracture Zone.

Tab. 2.1: Acquisition parameters of all seismic lines acquired along the North Greenland and Svalbard margins

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
20020300	30/8/02	9:10:03	31/8/02	20:34:54	77,9197	8,3417	79,6984	-4,9902	2	8235	353	600	None	30	8x3l	96	6,25
20020310	31/8/02	20:38:30	1/9/02	5:45:00	79,7041	-5,0141	80,5039	-5,0167	0	2172	90	600	None	30	8x3l	96	6,25
20020320	1/9/02	5:45:15	1/9/02	15:00:00	80,5040	-5,0168	81,2035	-7,2312	4	2196	91	600	None	30	8x3l	96	6,25
20020330	3/9/02	13:42:00	3/9/02	21:18:00	81,1427	-5,5122	80,5067	-3,9843	0	1815	77	600	None	30	8x3l	96	6,25
20020340	3/9/02	21:26:30	4/9/02	14:50:30	80,4957	-3,9589	78,9025	-4,0013	1	4153	180	600	SB0201	30	8x3l	96	6,25
20020345	4/9/02	15:02:00	4/9/02	17:09:48	78,8988	-3,9515	78,9000	-3,0083	2	506	20	600	None	30	8x3l	96	6,25
20020350	4/9/02	17:12:30	5/9/02	12:00:06	78,9033	-3,0028	80,4061	-2,9990	2	4481	170	600	SB0202	30	8x3l	96	6,25
20020355	5/9/02	22:46:30	6/9/02	7:21:15	81,1990	-5,2463	80,8057	-8,9628	0	2048	82	600	None	30	8x3l	96	6,25
20020360	6/9/02	7:22:00	6/9/02	10:14:15	80,8049	-8,9696	80,6034	-8,5070	1	560	25	600	None	30	8x3l	96	6,25
20020365	6/9/02	10:18:15	6/9/02	20:02:00	80,6020	-8,4738	80,8886	-3,2140	1	2322	101	600	None	30	8x3l	96	6,25
20020370	6/9/02	20:10:00	6/9/02	21:32:00	80,8819	-3,1684	80,7471	-3,1579	1	327	15	600	None	30	8x3l	96	6,25
20020375	6/9/02	21:37:00	7/9/02	5:20:00	80,7397	-3,1799	80,4059	-6,9228	2	1842	80	600	None	30	8x3l	96	6,25
20020380	7/9/02	5:30:00	7/9/02	7:30:45	80,3909	-6,9213	80,3018	-6,0147	2	481	20	600	None	30	8x3l	96	6,25
20020385	7/9/02	7:38:00	7/9/02	13:46:30	80,3006	-5,9614	80,2997	-2,8808	2	1466	59	600	None	30	8x3l	96	6,25
20020386	7/9/02	13:46:45	7/9/02	19:45:30	80,2996	-2,8781	80,1013	0,0047	3	1408	60	600	None	30	8x3l	96	6,25
20020387	7/9/02	19:45:45	8/9/02	2:23:15	80,1013	0,0068	80,1166	3,4878	3	1582	68	600	None	30	8x3l	96	6,25
20020388	8/9/02	2:23:30	8/9/02	8:46:00	80,1166	3,4902	80,2673	6,6365	4	1522	62	600	None	30	8x3l	96	6,25
20020390	8/9/02	9:11:00	8/9/02	18:12:45	80,2601	6,5966	80,9948	3,9993	4	2154	95	600	None	30	8x3l	96	6,25
20020400	10/9/02	19:26:00	11/9/02	4:26:30	81,7852	3,9866	80,9950	3,9987	0	2692	89	600	SB0203/04	30	8x3l	96	6,25
20020405	11/9/02	4:34:12	11/9/02	7:31:24	80,9874	3,9646	81,0001	2,3455	1	883	29	600	None	30	8x3l	96	6,25
20020410	11/9/02	7:37:00	11/9/02	9:50:12	81,0048	2,3152	81,1968	2,1506	1	664	22	600	None	30	8x3l	96	6,25
20020415	11/9/02	9:55:00	11/9/02	17:28:00	81,2005	2,1804	81,2003	6,3209	1	2037	72	600	None	30	8x3l	96	6,25
20020420	11/9/02	17:33:24	11/9/02	19:47:24	81,2055	6,3492	81,4047	6,4025	2	668	23	600	None	30	8x3l	96	6,25
20020425	11/9/02	20:10:00	12/9/02	0:17:24	81,3981	6,2301	81,3999	3,7368	2	1232	42	600	SB0205	30	8x3l	96	6,25
20020430	12/9/02	0:25:00	12/9/02	2:18:00	81,4079	3,6952	81,5760	3,6769	2	563	19	600	None	30	8x3l	96	6,25
20020435	12/9/02	2:22:00	12/9/02	9:36:00	81,5816	3,6825	81,8247	7,5625	2	2161	71	600	None	30	8x3l	96	6,25
20020440	12/9/02	22:53:00	13/9/02	6:00:00	81,7362	8,3719	81,3814	4,8645	0	2126	71	600	SB0206/07/08	30	8x3l	96	6,25
20020445	13/9/02	11:32:00	13/9/02	18:00:00	81,4435	5,5549	80,8839	5,5026	1	1914	63	600	SB0209	30	8x3l	96	6,25
20020500	14/9/02	6:33:00	15/9/02	7:28:00	79,2084	4,9253	80,3024	-5,5917	1	5946	243	600	SB0210/11	30	8x3l	96	6,25
20020501	15/9/02	7:53:45	15/9/02	11:30:00	80,2828	-5,4665	80,1163	-4,0648	2	859	34	600	None	30	8x3l	96	6,25
20020505	15/9/02	11:50:45	15/9/02	20:22:30	80,0963	-3,9649	80,1003	0,1114	2	2036	81	600	None	30	8x3l	96	6,25
20020510	15/9/02	20:29:15	15/9/02	23:54:00	80,0942	0,1488	79,7997	0,0992	3	815	34	600	None	30	8x3l	96	6,25
20020515	15/9/02	0:00:00	16/9/02	12:33:00	79,7952	0,0698	79,8001	-6,0117	4	2995	123	600	SB 0212	30	8x3l	96	6,25
20020520	16/9/02	12:50:00	16/9/02	16:15:30	79,7866	-6,0419	79,4961	-5,9920	4	819	33	600	None	30	8x3l	96	6,25
20020525	16/9/02	16:28:00	17/9/02	5:54:30	79,4974	-5,9112	79,4998	0,5253	5	3208	133	600	SB 0213	30	8x3l	96	6,25
20020530	17/9/02	5:59:00	17/9/02	14:00:00	79,5040	0,5456	80,1823	0,4907	5	1771	76	600	None	30	8x3l	96	6,25

20020540	17/9/02	20:36:00	18/9/02	11:11:14	80,1341	-1,5642	78,9029	-1,5031	1	3482	140	600	None	30	8x3l	96	6,25
20020545	18/9/02	11:27:59	18/9/02	14:49:59	78,8890	-1,4832	78,9000	0,0009	1	710	32	600	None	30	8x3l	96	6,25
20020550	18/9/02	14:56:30	18/9/02	21:35:15	78,9004	0,0504	79,5049	-0,0002	2	1587	68	600	None	30	8x3l	96	6,25
20020560	18/9/02	22:05:00	19/9/02	1:26:15	79,5037	0,2074	79,2000	0,2002	2	801	34	600	None	30	8x3l	96	6,25
20020565	19/9/02	1:33:05	19/9/02	15:30:15	79,1901	0,1867	79,2000	-6,0890	3	3325	134	600	SB 0214	30	8x3l	96	6,25
20020570	19/9/02	15:31:00	19/9/02	19:27:45	79,1999	-6,0956	78,8465	-6,1155	4	941	40	600	None	30	8x3l	96	6,25
20020575	19/9/02	19:33:00	20/9/02	10:18:45	78,8413	-6,0926	78,8499	0,0690	4	3520	139	600	SB 0215	30	8x3l	96	6,25
20020580	20/9/02	10:23:30	20/9/02	12:20:00	78,8461	0,0881	78,6994	0,0996	5	464	18	600	None	30	8x3l	96	6,25
20020585	20/9/02	12:25:00	20/9/02	1:23:15	78,6918	0,0995	78,6894	-5,7367	5	3095	130	600	None	30	8x3l	96	6,25
20020590	20/9/02	1:34:15	21/9/02	6:36:15	78,6796	-5,7384	78,4975	-3,4787	6	1202	54	600	None	30	8x3l	96	6,25
20020595	21/9/02	6:54:00	21/9/02	17:00:00	78,5002	-3,3483	78,4988	0,8443	7	2408	100	600	None	30	8x3l	96	6,25
20020600	23/9/02	6:33:15	24/9/02	2:51.00	78,9655	-4,0400	77,0999	-4,0003	1	4842	212	600	SB 0216	30	8x3l	96	6,25
20020605	24/9/02	3:03.00	24/9/02	5:29:00	77,0886	-3,9727	77,1002	-2,9762	2	582	25	600	None	30	8x3l	96	6,25
20020610	24/9/02	5:34:00	25/9/02	4:52:30	77,1036	-2,9546	78,9399	-2,9976	3	5012	207	600	SB 0217	30	8x3l	96	6,25
20020615	25/9/02	5:05:00	25/9/02	8:22:00	78,9399	-2,9262	78,9303	-1,4623	3	784	32	600	None	30	8x3l	96	6,25
20020620	25/9/02	8:38:15	26/9/02	4:33:00	78,9107	-1,4848	77,0944	-1,5021	5	4751	204	600	SB 0218/19	30	8x3l	96	6,25
20020625	26/9/02	4:39:15	26/9/02	8:22:00	77,0898	-1,4775	77,0997	0,0394	5	887	38	600	None	30	8x3l	96	6,25
20020630	26/9/02	8:50:00	27/9/02	1:38:15	77,0988	0,0056	78,4959	-0,0005	6	3843	160	600	None	30	8x3l	96	6,25
20020640	27/9/02	2:12:00	27/9/02	5:32:15	78,5021	0,1995	78,1947	0,1981	7	797	34	600	None	30	8x3l	96	6,25
20020645	27/9/02	5:36:45	27/9/02	21:55:15	78,1900	0,1805	78,2003	-6,2072	7	3433	148	600	SB 0220	30	8x3l	96	6,25
20020650	27/9/02	22:00:00	27/9/02	1:28:30	78,1973	-6,2362	77,9049	-6,2000	8	831	33	600	None	30	8x3l	96	6,25
20020655	28/9/02	1:46:00	28/9/02	16:30:00	77,8977	-6,1352	77,9021	0,2177	9	3515	150	600	SB 0221	30	8x3l	96	6,25
20020660	28/9/02	16:38:00	28/9/02	19:55:00	77,8955	0,2425	77,5946	0,1996	10	784	34	600	None	30	8x3l	96	6,25
20020665	28/9/02	20:03:00	29/9/02	11:07:00	77,5911	0,1668	77,6000	-6,2325	10	3596	155	600	None	30	8x3l	96	6,25
20020670	29/9/02	11:11:30	29/9/02	14:26:30	77,5972	-6,2527	77,3027	-6,2012	11	776	33	600	None	30	8x3l	96	6,25
20020675	29/9/02	14:43:00	30/9/02	6:07:00	77,2986	-6,1314	77,3001	0,2232	12	3674	157	600	None	30	8x3l	96	6,25
20020700	3/10/02	13:41:02	5/10/02	7:29:59	76,0001	7,6979	78,3444	-5,6486	2	9966	424	600	SB 0222/3/4	30	8x3l	96	6,25
								total	142,267		5847						

Tab. 2.2: Overview on the seismic data processing performed during the cruise with a SGI origin 2000 computer

Profile	Exper. Typ	Field Tapes F	# of Tapes	Demultiplext 2002-	Demux-Tapes C	Geometry	Sorting	CDP-Tapes
20020300	Marine	04510 -04568	59	01.09.2002	17630 – 17695			
20020310	Marine	04569 - 04584	16	02.09.	17696 – 17705			
20020320	Marine	04585 - 04600	16	02.09.	17706 – 17715			
20020330	Marine	04601 - 04611	11	04.09.	17716 – 17722			
20020340	Marine	04612 - 04636	25	04.09.	17723 – 17738			
20020345	Marine	04636 - 04639	4	05.09.	17739 – 17741			
20020350	Marine	04640 - 04666	27	05.-06.09.	17742 – 17758			
20020355	Marine	04667 - 04679	13	06.09.	17759 – 17767			
20020360	Marine	04679 - 04683	5	06.09.	17768 – 17771			
20020365	Marine	04684 - 04696	13	07.09.	17772 – 17780			
20020370	Marine	04696 - 04698	3	07.09.	17781 – 17782			
20020375	Marine	04698 - 04709	12	07.09.	17783 – 17790			
20020380	Marine	04709 - 04712	4	08.09.	17791 – 17793			
20020385	Marine	04712 - 04721	10	08.09.	17794 – 17800			
20020386	Marine	04721 - 04730	10	08.09.	17801 – 17807			
20020387	Marine	04730 - 04739	10	08.09.	17808 – 17814			
20020388	Marine	04739 - 04748	10	09.09.	17815 – 17821			
20020390	Marine	04749 - 04761	13	09.09.	17822 – 17830			
20020400	Marine	04762 - 04774	13	11.09.	17831 – 17839			
20020405	Marine	04775 - 04779	5	11.09.	17840 – 17843			
20020410	Marine	04779 - 04782	4	11.09.	17844 – 17846			
20020415	Marine	04782 - 04793	12	12.09.	17847- 17855			
20020420	Marine	04793 - 04796	4	13.09.	17856 – 17858			
20020425	Marine	04797 - 04803	7	13.09.	17859 – 17863			
20020430	Marine	04803 - 04806	4	13.09.	17864 – 17866			
20020435	Marine	04806 - 04816	11	13.09.	17867 – 17873			
20020440	Marine	04817 - 04827	11	14.09.	17874 – 17880			
20020445	Marine	04828 - 04837	10	14.09.	17881 – 17886			
20020500	Marine	04838 - 04873	36	15.09.	17887 – 17909			
20020501	Marine	04874 - 04879	5	16.09.	17910 – 17913			
20020505	Marine	04879 - 04891	13	16.09.	17914 – 17922			
20020510	Marine	04891 - 04896	6	16.09.	17923 – 17926			
20020515	Marine	04896 - 04914	19	16.09.	17927 – 17938			

Profile	Exper. Typ	Field Tapes F	# of Tapes	Demultiplext 2002-	Demux-Tapes C	Geometry	Sorting	CDP-Tapes
20020520	Marine	04914 - 04919	6	17.09.	17939 – 17942			
20020525	Marine	04920 - 04939	20	17.09.	17943 – 17955			
20020530	Marine	04939 - 04950	12	18.09.	17956 – 17963			
20020540	Marine	04951- 04971	21	18.09.	17964 – 17977			
20020545	Marine	04972 - 04976	5	18.09.	17978 – 17981			
20020550	Marine	04977 - 04986	10	19.09.	17982 – 17988			
20020560	Marine	04987 - 04992	6	19.09.	17989 – 17992			
20020565	Marine	04992 - 05012	21	19.09.	17993 – 18006			
20020570	Marine	05012 - 05017	6	30.09.	18007 - 18010			
20020575	Marine	05017 - 05038	22	20.09.	18011 – 18024			
20020580	Marine	05038 - 05041	4	20.09.	18025 – 18027			
20020585	Marine	05041 - 05059	19	21.09.	18028 – 18039			
20020590	Marine	0560 - 05067	8	21.09.	18040 – 18045			
20020595	Marine	05067 - 05082	16	23.09.	18046 – 18055			
20020600	Marine	05083 - 05111	29	24.09.	18056 – 18074			
20020605	Marine	05112 - 05115	4	24.09.	18075 – 18077			
20020610	Marine	05115 - 05145	31	25.09.	18078 – 18097			
20020615	Marine	05145 - 05150	6	25.09.	18098 – 18101			
20020620	Marine	05150 - 05179	30	26.09.	18102 - 18120			
20020625	Marine	05179 - 05184	6	26.09.	18121 – 18124			
20020630	Marine	05185 - 05208	24	27.09.	18125 – 18140			
20020640	Marine	05209 - 05214	6	27.09.	18141 - 18144			
20020645	Marine	05214 - 05237	24	28.09.	18145 – 18160			
20020650	Marine	05238 - 05242	5	28.09.	18161 – 18164			
20020655	Marine	05243 - 05264	22	28.09.	18165 – 18178			
20020660	Marine	05264 - 05269	6	29.09.	18179 – 18182			
20020665	Marine	05270 - 05290	21	29.09.	18183 – 18196			
20020670	Marine	05291 - 05295	5	29.09.	18197 – 20470			
20020675	Marine	05296 - 05317	22	30.09.	20471 – 20477			
20020700	Marine	05318 - 05389	72	06.10.	20478 – 20498			

Tab. 2.3: Overview on the sonobuoys deployed during this leg.

Profile no.	Start Date	Start Time	End Date	End Time		Streamer (active length) (m)	Sonobuoys		No. of shots	Length (km)	Start Latitude	Start Longitude
20020340	04.09.2002	3:29	04.09.2002	4:15	VLF	600	SB 0201	30 L	100 - 336		70°57	4°00 W
20020350	05.09.2002	23:53	05.09.2002	1:10	VLF	600	SB 0202	10 L	91 – 381		79°26	3°00 W
20020400	10.09.2002	20:24	10.09.2002	21:40	VLF	600	SB 0293	30 L	291 - 670		81°41 N	3°59 E
20020400	11.09.2002	0:00	11.09.2002	2:20	VLF	600	SB 0204	10 L	1367 - 2175		8°22 N	4°.00 E
20020425	11.09.2002	20:17	11.09.2002	21:25	VLF	600	SB 0205	30 L	208 - 144		81°24 N	6°18 E
20020440	12.09.2002	23:12	12.09.2002	23:27	VLF	600	SB 0206	30 L	102 - 182		81°43 N	8°11 E
20020440	13.09.2002	0:09	12.09.2002	1:45	VLF	600	SB 0207	10 L	381 - 900		81°04 N	7°42 E
20020440	13.09.2002	0:46	13.09.2002	1:45	VLF	600	SB 0208	30 L	567 - 900		81°38 N	7°25 E
20020445	13.09.2002	15:45	13.09.2002	17:17	VLF	600	SB 0209	10 L	1259 - 1701		81°04 N	5°30 E
20020500	14.09.2002	20:26	14.09.2002	20:58	VLF	600	SB 0210	30 L	3317 - 3435		79°50 N	0°59 W
20020500	15.09.2002	21:00	16.09.2002	0:05	VLF	600	SB 0211	30 L	4208 - 4425		80°04 N	2°36 W
20020515	16.09.2002	0:24	16.09.2002	1:20	VLF	600	SB 0212	10 L	247 - 485		79°48 N	0°08 W
20020525	16.09.2002	21:01	16.09.2002	21:40	VLF	600	SB 0213	30 L	4902 - 5047		79°29 N	3°37 W
20020565	19.09.2002	3:28	19.09.2002	5:32	VLF	600	SB 0214	10 L	491 - 1045		79°12 N	0°45 W
20020575	19.09.2002	23:54	20.09.2002	1:04	VLF	600	SB 0215	30 L	1154 - 1560		78°50	4°14 W
20020600	23.09.2002	19:33	23.09.2002	22:15	VLF	600	SB 0216	30 L	3105 - 3780		77°47 N	4°00 W
20020610	24.09.2002	19:00	24.09.2002	8:52	VLF	600	SB 0217	30 L	2783 - 3550		78°05	2°59 W
20020620	25.09.2002	20:40	25.09.2002	21:15	VLF	600	SB 0218	10 L	3026 - 3101		77°48	1°30 W
20020620	25.09.2002	21:35	25.09.2002	23:31	VLF	600	SB 0219	30 L	3245 - 3820		77°43 N	1°30 W
20020645	27.09.2002	15:16	27.09.2002	16:20	VLF	600	SB 0220	10 L	2437 - 2705		78°12 N	3°21 W
20020655	28.09.2002	18:54	28.09.2002	15:00	VFL	600	SB 0221	10 L	2967 - 3200		77°53 N	0°57 W
20020700	04.10.2002	1:28	04.10.2002	2:22	VFL	600	SB 0222	10 L	2811 - 3070		76°40 N	4°07 W
20020700	04.10.2002	14:58	04.10.2002	16:29	VFL	600	SB 0223	10 L	6028 - 6355		77°26 N	0°12 W
20020700	05.10.2002	2:43	05.10.2002	4:00	VFL	600	SB 0224	10 L	8828 - 9060		78°06 N	4°08 W

A fixed mounted gravimeter KSS31 acquired data during the entire cruise without any problems. There was no failure of the instrument.

2.2 Data acquisition: Magnetic

During this cruise two types of magnetic measurements were conducted. Three fixed-mounted magnetic sensors onboard of „Polarstern" collected continuously data along the ship's track. In addition, a helicopter-borne system was used to map large areas with dense line spacing parallel to the seismic profiling. The main goal of the aeromagnetic survey was to refine existing data and to identify sea floor spreading anomalies in the three research areas. The first area included the northern part of the Greenland-Spitsbergen Sill between the Spitsbergen Fracture Zone, the active Molloy Ridge and the Molloy Fracture Zone (Fig. 2.3). The southern part of the Greenland-Spitsbergen Sill, the second area of interest, is bounded by the Molloy Fracture Zone, the mid-ocean Knipovich Ridge and the Hovgaard Ridge microcontinent. The third and largest survey area was the Boreas Basin between the Hovgaard Ridge, the Knipovich Ridge and the Greenland Fracture Zone. The profiles were chosen to run parallel to the assumed spreading direction. In contrast to the existing regional surveys, which did not show a systematic pattern of spreading anomalies, we hoped to get more consistent results with a dense lines spacing.

- Magnetic measurements onboard -
Onboard of „Polarstern" two digital fluxgate vector magnetometers (MAGSON, Berlin) are fixed-mounted on the platform of the crow's nest. The magnetic data is forwarded to the PODAS data system where it is directly available together with the navigation data. For testing purposes a Cesium optical-pump magnetometer (GEOMETRICS, USA) was also installed there. It uses an own portable PC for registration. To make a later merging of magnetic and navigation data possible, the internal PC clock was synchronised with the PODAS system time several times per second.

Tab. 2.4: Type and location of the calibration loops

Calibration Loops					
Date	**Start Time**	**End Time**	**Location**		**Remarks**
28.08.2002	4:47	6:37	67.75 N	13.8 E	2 circles starboard turning
08.09.2002	18:42	19:46	80.03 N	4.00 E	1 circle starboard turning
21.09.2002	17:38	19:19	78.48 N	0.83 E	1 circle starboard turning
					1 circle portside turning
30.09.2002	6:43	8:49	77.28 N	0.37 E	2 circles starboard turning
09.10.2002	16:52	17:46	77.83 N	5.47 E	1 circle portside turning

During the cruise, five calibration loops had been carried out to determine permanent and induced magnetic fields of the ship (Tab. 2.4). As the software for calculating the calibration coefficients was not available onboard, only a rough sighting of the raw data was performed.

- Helicopter based measurements -

For the airborne magnetic survey the commercial available HELIMAG system (SCINTREX, Canada) was used. It consists out of a Cesium optical-pump magnetometer towed 30 m beneath a helicopter. The registration unit was coupled with the aircrafts radar altimeter to get reliable altitude information. An internal GPS receiver provided navigation data. No major technical problems occurred. During 22 days of flying approx. 86 hours of new magnetic data could be acquired. This corresponds to 12740 km (6880 nm) total profile length assuming a mean flight velocity of 148 km/h (80 knots). Fig. 2.3 shows a map of all flown lines. The line spacing amounts to 4.6 km (2.5 nm) or 9.3 km (5.0 nm). See Tab. 5 for further details. Bad weather conditions during several days prevented the completion of the surveys in the northern area of the Greenland-Spitsbergen Sill near the Molloy Ridge and at the western margin of the Boreas Basin (Fig. 2.2). Editing and subtracting the IGRF-field was carried out during the cruise. Correction of the daily variations and levelling of the flight lines will be done later when the continuous registration of the Svalbard observatory will be available. The quality of the IGRF-corrected data is very good including anomalies up to 1000 nT. Figure 2.4 shows an example from the eastern Boreas Basin near the Knipovich Ridge. Further interpretation will also include the seismic data, as the determination of the basement roughness can give additional constraints on spreading velocities and crustal ages.

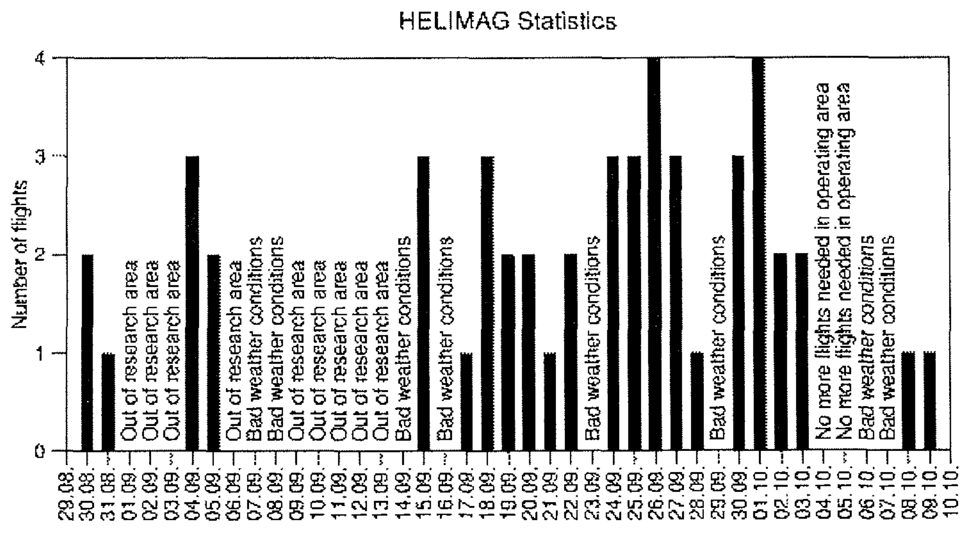


Fig. 2.2: HELIMAG flight statistics. Black bars mark the numbers of flights per day. Days with bad weather conditions or POLARSTERN operating out of the areas of interest are annotated.

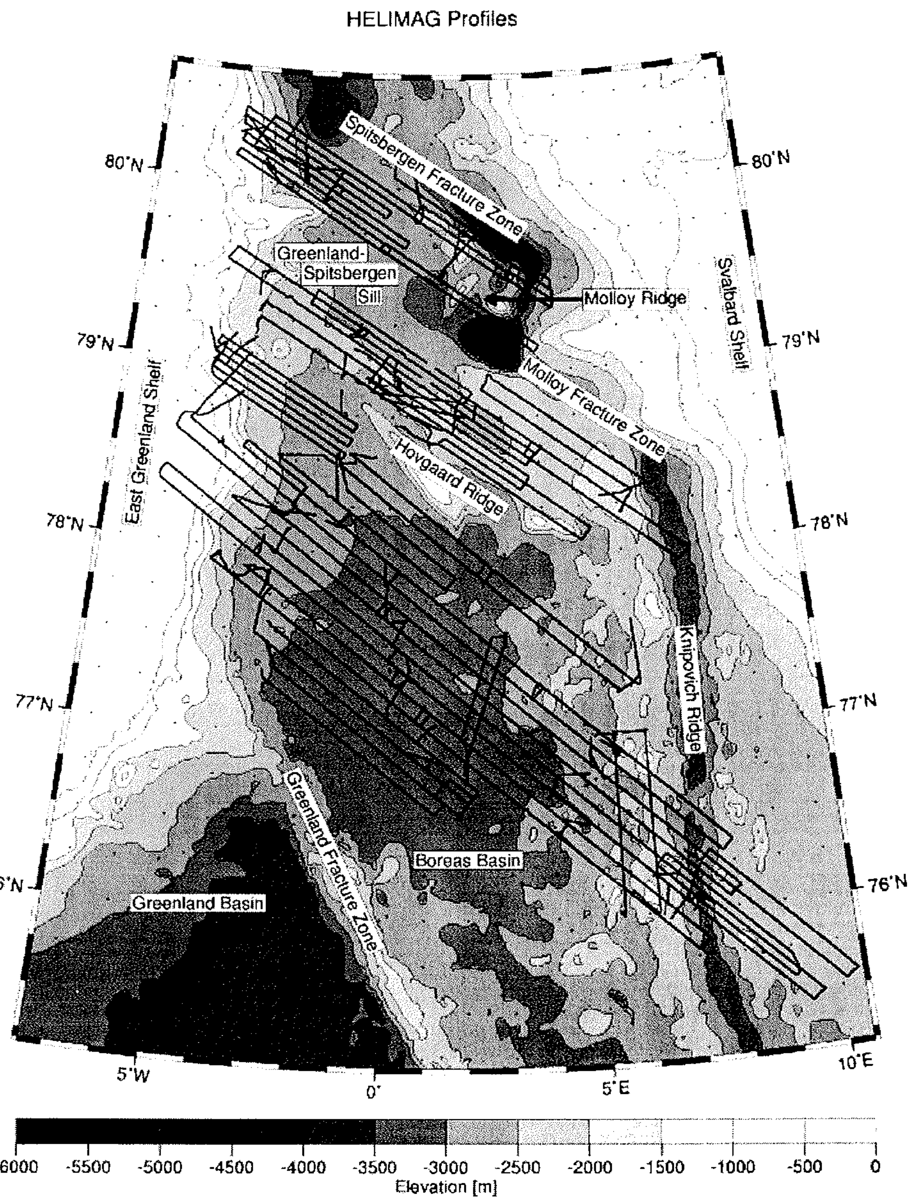


Fig. 2.3: HELIMAG profiles across the Boreas Basin and the Greenland-Spitsbergen Sill. The grayshade and contour lines (500 m interval) show bathymetric depths taken from IBCAO. Black lines mark the flight paths. Main tectonic features are indicated

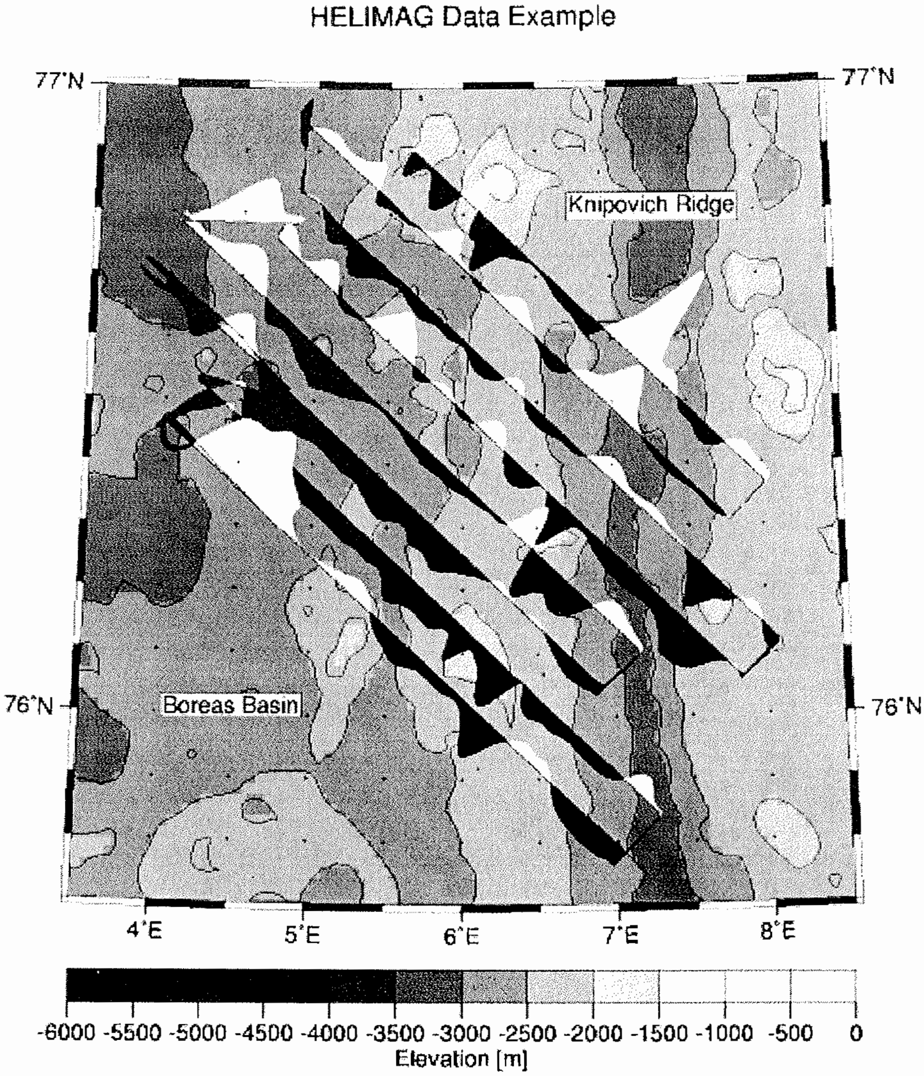


Fig. 2.4: HELIMAG data example of the eastern Boreas Basin near the Knipovich Ridge. The grayshade and contour line (500 m interval) show bathymetric depths taken from IBCAO. Black wiggles mark negative anomalies of the raw data, white ones positive values.

Tab. 2.5: List of all acquired magnetic profiles with the helicopter system

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
30.08.2002	1	10:40:44	10:41:12	28	77.98 N	7.73 E	78.05 N	7.31 E	S2083010.T39	S2083010.B40	0208301.raw
		10:41:12	10:41:14	29						S2083010.B41	
		10:41:14	11:32:08	3082						S2083010.B4B	
		11:32:08	11:32:10	3083						S2083011.B32	
		11:32:10	12:20:19	5971						S2083011.B3C	
		12:20:19	12:20:21	5972						S2083012.B20	
		12:20:21	12:29:27	6517						S2083012.B2A	
	2	15:05:25	16:00:29	3304	78.21 N	6.08 E	78.30 N	5.52 E	S2083015.T02	S2083015.B05	0208302.raw
		16:00:29	16:00:32	3306						S2083016.B00	
		16:00:32	17:05:19	7192						S2083016.B0A	
31.08.2002	1	9:49:43	9:49:49	5	79.18 N	1.14 W	79.22 N	1.32 W	S2083109.T49	S2083109.B49	0208311.raw
		9:49:49	9:49:51	6						S2083109.B4J	
		9:50:00	10:26:34	2200						S2083109.B50	
		10:26:34	10:26:43	2208						S2083110.B26	
		10:26:43	11:15:06	5110						S2083110.B2G	
04.09.2002	1	8:34:00	9:09:33	2119	79.48 N	3.92 W	79.38 N	4.00 W	S2090408.T33	S2090409.B09	0209041.raw
		9:09:33	9:49:05	4490						S2090409.B0J	
		9:49:05	9:49:10	4494						S2090409.B49	
		9:49:10	10:14:19	6002						S2090409.B4J	
	2	10:37:15	11:15:47	2312	79.29 N	3.97 W	79.18 N	3.97 W	S2090408.T34	S2090410.B37	0209042.raw
		11:15:47	11:15:49	2313						S2090411.B15	
		11:15:49	11:59:43	4946						S2090411.B1F	
	3	13:13:52	13:14:02	10	79.06 N	4.05 W	78.85 N	4.18 W	S2090413.T12	S2090413.B13	0209043.raw
		13:14:02	13:14:07	15						S2090413.B14	
		13:14:07	13:28:50	896						S2090413.B1E	
		13:28:50	13:31:00	1025						S2090413.B28	
		13:31:08	14:05:55	3112						S2090413.B31	
		14:05:55	14:06:22	3138						S2090414.B05	
		14:06:22	14:16:35	3750						S2090414.B06	
		14:16:35	14:16:39	3753						S2090414.B16	
		14:16:39	15:12:38	7111						S2090414.B1G	
05.09.2002	1	8:42:42	8:42:47	5	80.12 N	3.12 W	79.96 N	1.92 W	S2090508.T41	S2090508.B42	0209051.raw
		8:42:47	8:42:49	6						S2090508.B4C	
		8:42:49	9:15:13	1950						S2090508.B4T	
		9:15:13	9:45:25	3760						S2090509.B15	
		9:45:25	9:45:38	3772						S2090509.B45	
		9:45:38	9:46:28	3821						S2090509.B4F	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
	2	10:30:59	11:05:40	2081	80.25 N	3.02 W	80.38 N	3.18 W	S2090510.T29	S2090510.B3c	0209052.raw
		11:05:40	11:31:06	3606						S2090511.B05	
		11:31:06	12:06:52	5751						S2090511.B31	
		12:06:52	12:26:09	6907						S2090512.B06	
15.09.2002	1	8:31:10	9:21:10	3000	80.27 N	5.09 W	79.99 N	1.85 W	S2091508.T30	S2091508.B3B	0209151.raw
		9:21:10	9:35:47	3876						S2091509.B21	
		9:35:47	9:35:56	3884						S2091509.B35	
		9:37:56	9:38:03	7	79.94 N	2.10 W	80.12 N	4.30 W	S2091509.T37	S2091509.B37	0209152.raw
		9:38:03	9:38:08	11						S2091509.B38	
		9:38:08	10:04:00	1562						S2091509.B3l	
		10:04:00	10:25:50	2871						S2091510.B04	
		10:25:52	10:26:06	2885						S2091510.B25	
	2	10:48:00	11:53:27	3867	80.13 N	4.22 W	80.12 N	3.65 W	S2091510.T47	S2091511.B29	0209153.raw
		11:53:27	11:53:29	3868						S2091511.B53	
		11:53:29	11:53:32	3870						S2091511.B5D	
		11:53:32	11:53:35	3872						S2091511.B5U	
		11:53:35	11:53:37	3873						S2091511.B5f	
		11:53:37	12:49:29	7224						S2091511.B5w	
	3	13:14:25	13:46:13	1908	80.10 N	2.71 W	80.10 N	2.52 W	S2091513.T14	S2091513.B1E	0209154.raw
		13:46:13	15:01:48	6442						S2091513.B46	
17.09.2002	1	13:17:13	13:54:28	2235	80.11 N	0.47 W	80.15 N	0.09 W	S2091713.T14	S2091713.B17	02019171.raw
		13:54:28	14:25:09	4075						S2091713.B54	
		14:25:09	14:25:11	4077						S2091714.B25	
		14:25:11	14:25:19	4083						S2091714.B2F	
		14:25:19	14:25:23	4086						S2091714.B2W	
		14:25:23	14:43:39	5181						S2091714.B2h	
		14:43:39	14:43:44	5185						S2091714.B43	
		14:43:44	14:43:46	5186						S2091714.B4D	
		14:43:46	15:14:30	7029						S2091714.B4U	
18.09.2002	1	8:36:53	8:48:13	680	79.12 N	1.18 W	78.94 N	1.09 W	S2091808.T35	S2091808.B36	0209181.raw
		8:48:13	8:48:16	682						S2091808.B48	
		8:48:16	8:50:57	842						S2091808.B4l	
		8:50:57	8:50:59	843						S2091808.B50	
		8:50:59	9:29:58	3181						S2091808.B51	
		9:29:58	9:30:00	3182						S2091809.B29	
		9:30:00	10:29:12	6733						S2091809.B30	
	2	10:51:27	10:51:46	19	78.95 N	1.49 W	78.89 N	0.66 W	S2091810.T50	S2091810.B51	0209182.raw
		10:51:46	10:51:53	25						S2091810.B5B	
		10:51:53	10:51:55	26						S2091810.B5S	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
		10:51:55	10:51:58	28						S2091810.B5d	
		10:51:58	11:16:22	1491						S2091810.B5u	
		11:16:22	11:56:12	3880						S2091811.B16	
		11:56:12	11:56:18	3885						S2091811.B56	
		11:56:18	12:45:45	6851						S2091811.B5G	
	3	13:12:14	13:30:21	1088	78.93 N	0.71 W	78.97 N	0.79 E	S2091813.T09	S2091813.B10	0209183.raw
		13:31:02	13:39:32	510	78.94 N	1.04 E	79.02 N	1.61 E	S2091813.T30	S2091813.B31	0209184.raw
		13:39:32	13:39:44	521						S2091813.B39	
		13:39:44	13:58:47	2090						S2091813.B3J	
		13:59:52	14:00:00	8	79.05 N	0.92 E	78.95 N	0.00 W	S2091813.T59	S2091813.B59	0209185.raw
		14:00:00	14:36:14	2182						S2091814.B00	
		14:36:14	14:37:02	2228						S2091814.B36	
		14:37:02	15:07:55	4080						S2091814.B37	
19.09.2002	1	9:56:55	10:50:49	3255	79.15 N	3.95 W	79.16 N	4.54 W	S2091909.T54	S2091909.B5a	0209191.raw
		10:50:49	11:40:26	6231						S2091910.B50	
	2	12:21:02	13:08:21	2839	79.12 N	4.78 W	79.18 N	5.35 W	S2091912.T17	S2091912.B2S	0209192.raw
		13:08:21	14:07:13	6370						S2091913.B08	
20.09.2002	1	8:44:40	8:46:27	107	78.86 N	0.37 W	78.87 N	0.11 W	S2092008.T43	S2092008.B44	0209201.raw
		8:46:27	8:46:31	110						S2092008.B46	
		8:46:31	8:46:37	115						S2092008.B4G	
		8:46:37	8:46:39	116						S2092008.B4X	
		8:46:39	8:46:41	117						S2092008.B4i	
		8:46:41	8:46:43	118						S2092008.B4z	
		8:46:43	8:46:47	121						S2092008.B4œ	
		8:46:47	8:46:51	124						S2092008.B4_	
		8:46:51	8:46:53	125						S2092008.B4_	
		8:46:53	8:46:56	127						S2092008.B4ï	
		8:46:56	8:46:58	128						S2092008.B4à	
		8:46:58	8:47:00	129						S2092008.B4ñ	
		8:47:00	8:47:02	130						S2092008.B47	
		8:47:02	8:47:04	131						S2092008.B4H	
		8:47:04	9:24:28	2374						S2092008.B4Y	
		9:24:28	9:24:30	2375						S2092009.B24	
		9:24:30	9:52:29	4053						S2092009.B2E	
		9:52:29	9:52:32	4055						S2092009.B52	
		9:52:32	9:52:34	4056						S2092009.B5C	
		9:52:34	9:52:36	4057						S2092009.B5T	
		9:52:36	9:52:38	4059						S2092009.B5e	
		9:52:38	10:34:44	6583						S2092009.B5v	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
	2	11:01:41	11:53:39	3118	78.77 N	0.36 E	78.70 N	0.07 E	S2092011.T01	S2092011.B01	0209202.raw
		11:53:39	11:53:44	3122						S2092011.B53	
		11:53:44	12:55:01	6798						S2092011.B5D	
		12:55:02	12:55:14	6810						S2092012.B55	
21.09.2002	1	12:30:17	13:21:37	3080	78.49 N	0.97 W	78.53 N	0.41 W	S2092112.T30	S2092112.B30	0209211.raw
		13:21:37	13:21:42	3084						S2092113.B21	
		13:21:42	14:23:20	6781						S2092113.B2B	
22.09.2002	1	8:29:58	9:04:57	2099	79.53 N	1.29 E	79.61 N	1.67 E	S2092208.T29	S2092208.B29	0209221.raw
		9:04:57	9:05:09	2110						S2092209.B04	
		9:05:09	9:05:16	2117						S2092209.B05	
		9:05:16	9:24:33	3272						S2092209.B0F	
		9:24:33	9:37:05	4023						S2092209.B24	
		9:37:05	9:37:09	4026						S2092209.B37	
		9:37:09	9:37:13	4029						S2092209.B3H	
		9:37:13	10:13:38	6213						S2092209.B3Y	
	2	10:40:23	11:01:03	1240	79.55 N	1.44 E	79.53 N	1.28 E	S2092210.T39	S2092210.B40	0209222.raw
		11:01:03	11:44:42	3858						S2092211.B01	
		11:44:42	12:23:45	6200						S2092211.B44	
24.09.2002	1	8:27:52	8:33:19	327	77.34 N	3.04 W	77.25 N	2.72 W	S2092408.T27	S2092408.B27	0209241.raw
		8:37:26	8:51:26	840	77.24 N	2.65 W	77.5 N	2.97 W	S2092408.T36	S2092408.B37	0209242.raw
		8:51:26	8:52:04	878						S2092408.B51	
		8:52:04	9:21:21	2633						S2092408.B52	
		9:21:21	9:21:24	2635						S2092409.B21	
		9:21:24	10:34:08	6998						S2092409.B2B	
	2	12:05:45	12:54:15	2910	77.6 N	2.99 W	77.74 N	3.19 W	S2092412.T04	S2092412.B05	0209243.raw
		12:54:15	12:54:17	2911						S2092412.B54	
		12:54:17	14:09:19	7412						S2092412.B5E	
	3	14:28:15	14:28:33	18	77.81 N	3.14 W	77.81 N	3.09 W	S2092414.T27	S2092414.B28	0209244.raw
		14:28:33	14:28:38	22						S2092414.B2I	
		14:28:38	14:28:44	27						S2092414.B2Z	
		14:28:44	14:28:50	32						S2092414.B2k	
		14:29:16	14:29:22	38						S2092414.B29	
		14:30:00	15:23:03	3221						S2092414.B30	
		15:23:03	15:23:14	3231						S2092415.B23	
		15:23:14	16:22:36	6792						S2092415.B2D	
25.09.2002	1	8:31:50	8:31:55	5	78.89 N	1.47 W	78.76 N	1.36 W	S2092508.T30	S2092508.B31	0209251.raw
		8:31:55	8:31:59	8						S2092508.B3B	
		8:31:59	8:32:06	14						S2092508.B3S	
		8:32:06	8:32:11	18						S2092508.B32	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
		8:32:11	8:32:15	21						S2092508.B3C	
		8:32:15	8:32:20	25						S2092508.B3T	
		8:32:20	8:32:24	28						S2092508.B3e	
		8:32:24	8:43:19	682						S2092508.B3v	
		8:43:19	9:21:50	2992						S2092508.B43	
		9:21:50	10:09:48	5869						S2092509.B21	
	2	10:40:12	11:31:03	3051	78.54 N	1.49 W	78.54 N	1.47 W	S2092510.T39	S2092510.B40	0209252.raw
		11:31:03	11:31:05	3052						S2092511.B31	
		11:31:05	12:12:25	3053						S2092511.B3B	
		12:12:26	12:12:31	5532						S2092512.B12	
		12:12:32	12:12:35	5539						S2092512.B1C	
	3	12:37:44	13:22:47	2703	78.52 N	1.5 W	78.49 N	1.55 W	S2092512.T36	S2092512.B37	02092533.raw
26.09.2002	1	8:25:43	9:29:32	3830	77.11 N	0.08 E	77.29 N	0.10 E	S2092608.T25	S2092608.B25	0209261.raw
		9:29:32	9:29:39	3835						S2092609.B29	
		9:29:39	10:15:54	6609						S2092609.B2J	
		10:15:54	10:15:59	6614						S2092610.B15	
		10:15:59	10:25:59	7212						S2092610.B16	
	2	10:52:11	11:39:02	2811	77.30 N	0.40 E	77.40 N	0.16 E	S2092610.T52	S2092610.B52	0209262.raw
		11:39:02	11:39:04	2812						S2092611.B39	
		11:39:04	12:00:37	4104						S2092611.B3J	
		12:00:37	12:00:54	4120						S2092612.B00	
		12:00:54	12:35:47	6212						S2092612.B0A	
		12:35:47	12:35:52	6216						S2092612.B35	
		12:35:52	12:51:00	7124						S2092612.B3F	
	3	13:17:49	14:15:59	3490	77.50 N	0.14 E	77.00 N	3.95 E	S2092613.T15	S2092613.B17	0209263.raw
		14:18:00	14:18:47	48	76.96 N	3.79 E	76.96 N	3.72 E	S2092614.T17	S2092614.B18	0209264.raw
		14:20:50	15:02:37	2507	77.00 N	3.56 E	77.63 N	0.05 E	S2092614.T20	S2092614.B20	0209265.raw
		15:02:37	15:02:46	2515						S2092615.B02	
		15:02:46	15:09:38	2926						S2092615.B0C	
		15:09:38	15:10:56	3003						S2092615.B09	
		15:10:56	15:18:17	3443						S2092615.B10	
	4	15:37:06	15:37:10	4	77.64 N	0.01 E	77.83 N	0.06 W	S2092615.T36	S2092615.B37	0209266.raw
		15:37:10	15:37:12	5						S2092615.B3H	
		15:37:12	16:37:42	3634						S2092615.B3Y	
		16:37:42	16:37:46	3637						S2092616.B37	
		16:37:46	17:33:33	6983						S2092616.B3H	
27.09.2002	1	8:29:05	8:53:54	1438	78.22 N	1.11 W	78.18 N	1.70 W	S2092708.T29	S2092708.B29	0209271.raw
		8:53:54	8:53:56	1439						S2092708.B53	
		8:53:56	9:26:14	3376						S2092708.B5D	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
		9:26:14	9:26:18	3379						S2092709.B26	
		9:26:18	9:26:20	3380						S2092709.B2G	
		9:26:20	9:50:50	4849						S2092709.B2X	
		9:50:50	10:29:10	7148						S2092709.B50	
	2	10:46:09	10:46:12	3	78.20 N	1.97 W	78.19 N	2.69 W	S2092710.T45	S2092710.B46	0209272.raw
		10:46:12	10:46:16	6						S2092710.B4G	
		10:46:16	10:46:19	8						S2092710.B4X	
		10:46:19	10:46:22	10						S2092710.B4i	
		10:46:22	11:35:03	2930						S2092710.B4z	
		11:35:03	11:35:06	2933						S2092711.B35	
		11:35:06	12:40:48	6873						S2092711.B3F	
	3	13:00:16	13:00:17	2	78.12 N	2.61 W	78.07 N	3.26 W	S2092713.T00	S2092713.B00	0209273.raw
		13:00:17	13:00:21	4						S2092713.B0A	
		13:00:21	13:43:33	2595						S2092713.B0R	
		13:43:33	13:43:35	2596						S2092713.B43	
		13:43:35	14:22:08	4908						S2092713.B4D	
28.09.2002	1	8:25:42	8:25:45	3	77.9 N	3.41 W	77.89 N	3.02 W	S2092808.T25	S2092808.B25	0209281.raw
		8:25:45	8:25:47	4						S2092808.B2F	
		8:25:47	8:37:21	697						S2092808.B2W	
		8:37:21	8:37:23	698						S2092808.B37	
		8:37:23	8:59:20	2014						S2092808.B3H	
		8:59:20	8:59:22	2015						S2092808.B59	
		8:59:22	8:59:22	3354						S2092808.B5J	
30.09.2002	1	8:31:15	9:22:56	3101	77.29 N	0.29 E	77.15 N	0.97 E	S2093008.T31	S2093008.B31	0209301.raw
		9:22:56	9:23:02	3106						S2093009.B22	
		9:23:02	10:17:28	6371						S2093009.B23	
	2	10:38:06	10:38:09	3	77.05 N	1.19 E	76.85 N	1.56 E	S2093010.T37	S2093010.B38	0209302.raw
		10:38:09	10:38:11	4						S2093010.B3I	
		10:38:11	11:04:20	1572						S2093010.B3Z	
		11:04:20	11:04:23	1574						S2093011.B04	
		11:04:23	11:04:25	1575						S2093011.B0E	
		11:04:25	11:04:27	1576						S2093011.B0V	
		11:04:27	11:04:30	1578						S2093011.B0g	
		11:04:30	11:04:32	1579						S2093011.B0x	
		11:04:32	11:11:44	2010						S2093011.B0_	
		11:11:44	11:11:46	2011						S2093011.B11	
		11:11:46	11:21:46	2610						S2093011.B1B	
		11:21:46	11:21:48	2612						S2093011.B21	
		11:21:48	11:33:30	3312						S2093011.B2B	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
		11:33:30	11:42:50	3871						S2093011.B33	
		11:42:50	12:09:46	5486						S2093011.B42	
	3	12:27:51	13:30:04	3733	76.80 N	1.93 E	76.75 N	1.99 E	S2093012.T27	S2093012.B27	0209303.raw
		13:30:04	13:42:49	4497						S2093013.B30	
01.10.2002	1	8:26:06	8:51:52	1566	76.72 N	4.75 E	76.94 N	5.17 E	S2100108.T25	S2100108.B2G	0210011.raw
		8:51:55	9:09:11	2603						S2100108.B5B	
		9:09:14	9:42:38	4608						S2100109.B0J	
		9:42:41	10:19:54	6842						S2100109.B4C	
		10:19:55	10:20:09	6856						S2100110.B19	
		10:20:10	10:20:20	6866						S2100110.B20	
	2	10:39:06	11:20:53	2508	76.98 N	4.95 E	76.78 N	4.77 E	S2100110.T38	S2100110.B39	0210012.raw
		11:20:53	11:21:02	2515						S2100111.B20	
		11:21:02	12:21:45	6157						S2100111.B21	
	3	12:43:38	13:30:02	2784	76.78 N	4.88 E	76.52 N	4.84 E	S2100112.T43	S2100112.B43	0210013.raw
		13:30:11	13:30:02	7269						S2100113.B30	
	4	15:00:56	15:44:07	2596	76.50 N	4.74 E	76.29 N	4.79 E	S2100114.T59	S2100115.B00	0210014.raw
		15:44:07	15:44:11	2599						S2100115.B44	
		15:44:11	16:49:09	6496						S2100115.B4E	
02.10.2002	1	8:30:00	10:23:41	6821	76.02 N	5.35 E	76.13 N	5.67 E	S2100208.T29	S2100208.B30	0210021.raw
	2	13:53:01	14:31:59	2338	76.86 N	5.5 E	76.92 N	5.03 E	S2100213.T51	S2100213.B5D	0210022.raw
		14:31:59	14:32:03	2341						S2100214.B32	
		15:17:45	15:23:46	361	76.98 N	5.04 E	76.99 N	5.58 E	S2100215.T17	S2100215.B17	0210023.raw
		15:23:47	15:23:51	365						S2100215.B23	
03.10.2002	1	8:24:57	9:24:58	3601	76.20 N	6.14 E	76.03 N	6.40 E	S2100308.T24	S2100308.B24	0210031.raw
		9:24:58	9:25:05	3607						S2100309.B24	
		9:25:05	10:18:30	6811						S2100309.B25	
	2	10:37:46	10:37:50	4	75.96 N	6.43 E	76.02 N	7.52 E	S2100310.T37	S2100310.B37	0210032.raw
		10:37:50	11:24:21	2794						S2100310.B3H	
		11:24:21	11:24:23	2795						S2100311.B24	
		11:24:23	12:02:01	5052						S2100311.B2E	
		12:02:01	12:02:03	5053						S2100312.B02	
		12:02:03	12:25:27	6456						S2100312.B0C	
08.10.2002	1	10:45:51	10:45:58	7	76.34 N	6.89 E	76.05 N	6.86 E	S2100810.T45	S2100810.B45	0210081.raw
		10:45:58	10:46:00	8						S2100810.B4F	
		10:46:00	10:46:02	9						S2100810.B46	
		10:46:02	10:46:05	11						S2100810.B4G	
		10:46:05	10:46:07	12						S2100810.B4X	
		10:46:07	10:46:09	13						S2100810.B4i	
		10:46:09	11:40:29	3272						S2100810.B4z	

Date	Flight	Start Time	End Time	No. of Fid	Start Coordinate		End Coordinate		Test File	Binary File	Data File
		11:40:29	11:40:31	3274						S2100811.B40	
		11:40:31	12:45:26	7167						S2100811.B4A	
		12:45:27	12:45:29	7169						S2100812.B45	
09.10.2002	1	8:27:19	8:29:16	117	77.34 N	6.17 E	77.62 N	6.10 E	S2100908.T27	S2100908.B27	0210091.raw
		8:29:16	8:37:43	623						S2100908.B29	
		8:37:43	9:22:04	3283						S2100908.B37	
		9:22:04	9:22:08	3286						S2100909.B22	
		9:22:08	10:24:42	7040						S2100909.B2C	

2.3 Results

- Wandel Sea margin -
The margin has been investigated by several seismic lines perpendicular and parallel to the margin. In parallel the bathymetric database was extended. Characteristic features are basement highs at water depths around 2000 m. From the data it is not clear, if this is a consequence of the oblique spreading in the Lena Trough or if we have mapped the prolongation of the Spitsbergen Fracture Zone. This question will be solved after the final processing and mapping of the data. The northernmost line was acquired at 81°N along the margin.

- Yermak Plateau -
Here, the northernmost lines at 82°N were acquired (Fig. 2.1). A small ice free area allowed to investigate the plateau to 8°E. While the western part of the plateau is covered by thick sediments numerous basement features occur east of 5°E. The basement highs are almost not covered by sediments. Such features have been reported by other investigators to be present more in the south. Sonobuoy recordings provide velocities over 5 km/s for the acoustic basement. Thus, it is very likely that these features represent the old basement of the Yermak Plateau, which has been faulted during the separation of the plateau from Greenland. East of 5°E the basement is more stretched and shows a different depositional character. In a first interpretation this feature might represent a major tectonic boundary within the Yermak Plateau. The eastern part of the Yermak Plateau might have been more strongly affected by tectonic processes during the break-up than its western part. Existing ODP drill holes have been passed and linked to the profiles in the north.

- Basin between the Spitsbergen and Molloy Fracture Zones -
A small mid-ocean segment, the Molloy Ridge, has formed this basin. Its age is rather unclear. Previous surveys had not discovered any continuous sea floor spreading anomalies. The survey was designed to acquire one long profile along the entire basin. The rest of the profiles are concentrated on the Greenland part to map the sedimentary and basement structures. Profile 20020500 crosses the entire basin from south-east to north-west (Fig. 2.5). The line is 243 km long. Close to the active spreading centre elevated oceanic basement is observed. The top of the basement decreases towards the north-west according to general subsidence curves for oceanic crust. The sediment became thicker up to 1 s TWT close to the Greenland margin. From the seismic signals it is obvious that mainly coarse material has been deposited here. The finer component is most likely transported to the south. Although the region is seismically active no indications for any large-scale slumps were found along the margin. The magnetic data provide astonishing results. Contrary to the current scientific knowledge well-defined magnetic spreading anomalies were found. The basin has been investigated by 10 magnetic profiles with a spacing of 5 km. Even in the vicinity of the Molloy Deep spreading anomalies are present. This indicates that still enough basalts are erupted in this slow spreading environment to provide a low but detectable magnetic signal.

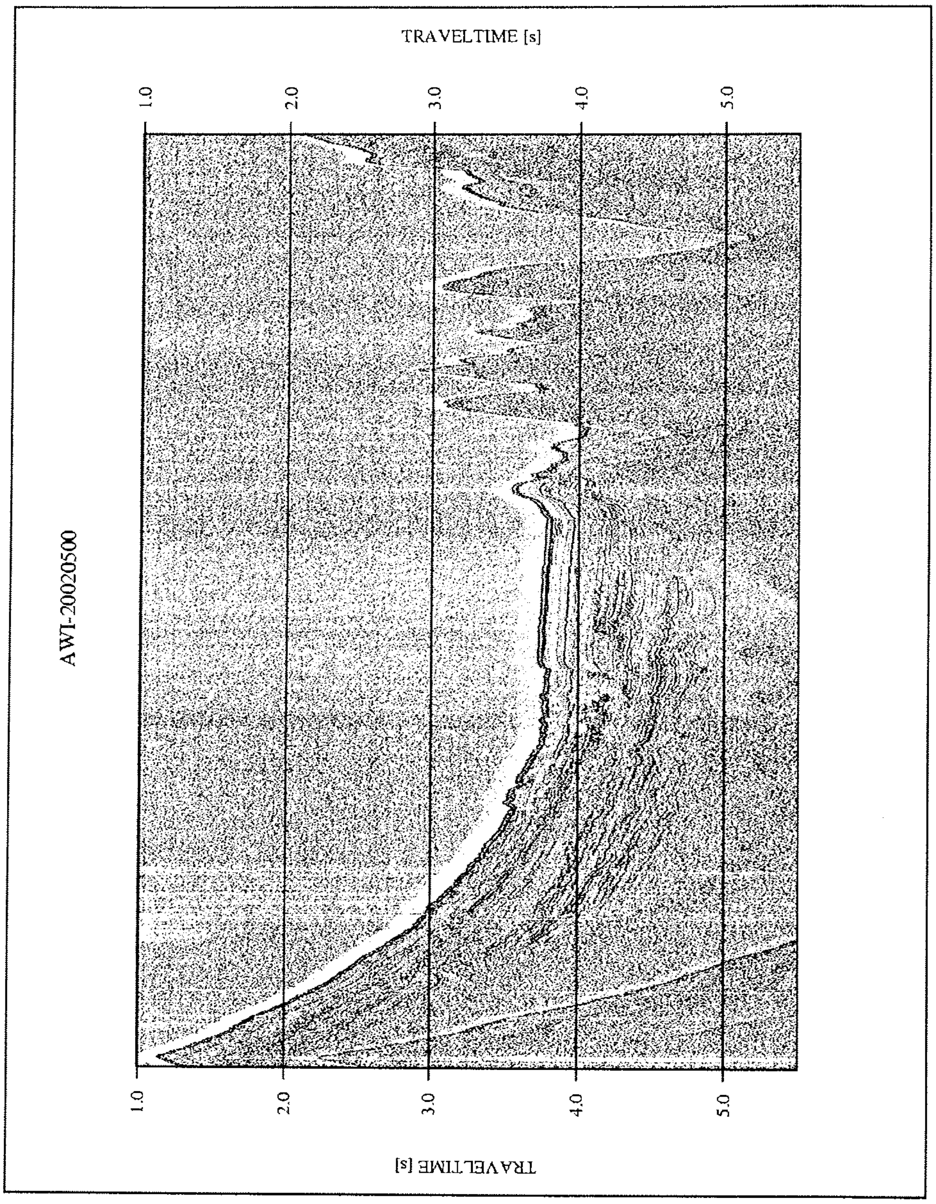


Fig. 2.5: Seismic profile 20020500 from the Molloy Ridge to the Wandel Sea margin. Only one channel is displayed. An AGC of 500 ms has been applied. For the location of the line see Fig. 2.1

- Svalbard Greenland Sill -

In this area the scientific objectives are identical to the previous research area. Again the joint acquisition of seismic and potential field data were designed to reveal the general basin structure and the spreading velocities. The seismic structures along the long basin transect are similar to those in the north (Fig. 2.6). Close to the Knipovich Ridge the basement is elevated as might be expected. Towards the north-west the sediment thickness increases fast. The existing ODP drill hole with a penetration of 1000 m has been crossed to allow an extrapolation to the units towards the Greenland margin. A distinct change in the characteristic is marked by a basement ridge close to Greenland. East of the ridge fine layering units are found, while towards Greenland more coarser material is present. This change of signal characteristic can also be observed along profiles perpendicular to the margin. This might indicate that the currents from the Arctic have a quite small influence on the depositional style of the deep-sea margin. More in the centre typical hemipelagic sedimentation is present.

The magnetic field in this basin is extremely smooth. Only a few anomalies are visible in the raw data. However, most of them can be correlated across the entire margin. Long wave length anomalies became visible towards the Knipovich Ridge, but are difficult to interpret. Like for the other data sets a careful processing is needed including diurnal variations corrections. Especially a cross line analysis and correction might help enhance the picture.

- Boreas Basin -

This is largest basin, which has been formed after the break-up of Greenland from the Barents Sea margin. Its formation is believed to have started close to 40 Ma. According to the current models it is initially formed as a sheared margin. Few seismic profiles existed prior to this survey covering the Hovgaard Ridge and part of the eastern basin. The present day active mid-ocean ridge is the Knipovich Ridge at 8°E. The strike lines along the margin are at the current stage difficult to interpret. There is strong evidence for massive slumping over a significant period of time along the entire margin. It is interesting to note that no evidences for any drift bodies as reported from other glaciated margin have been found. It seems that glaciation deposition of the Greenland ice shelves north of 77°N happened more constantly along the entire ice front, rather than along ice streams. The last profile acquired in this basin started at the present day spreading axis at 76°N and terminated on the continental shelf of East Greenland at 78°24'N 006°W (Fig. 2.7). The sediment thickness east of 0°W is not more than 1 s TWT. The basement is also very rough. A distinct change in depositional character occurs west of 0°W. More coarser material has been deposited and the sedimentary units became thicker. Closer to the Greenland margin the continuity of the seismic reflectors disappear. This might be due to repeated slump processes from the margin or is caused by strong currents carrying away the finer material. Still the top of the oceanic basement is very rough.

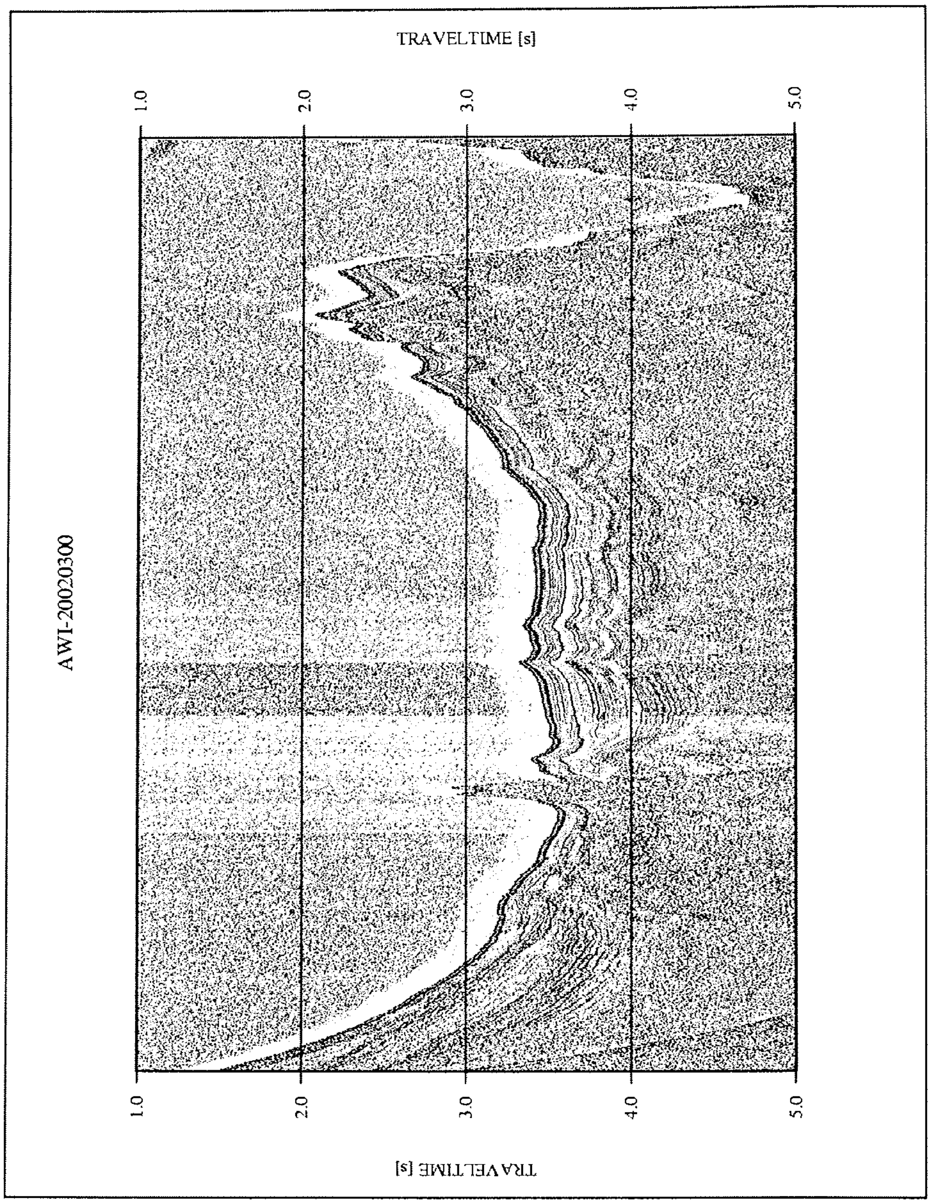


Fig. 2.6: Seismic line 20020300 from the northern Knipovich Ridge to the Wandel Sea margin. Please note that this is now single channel data (chan. 16). Only an AGC of 500 ms has been applied. For the location of the profile see Fig. 2.1.

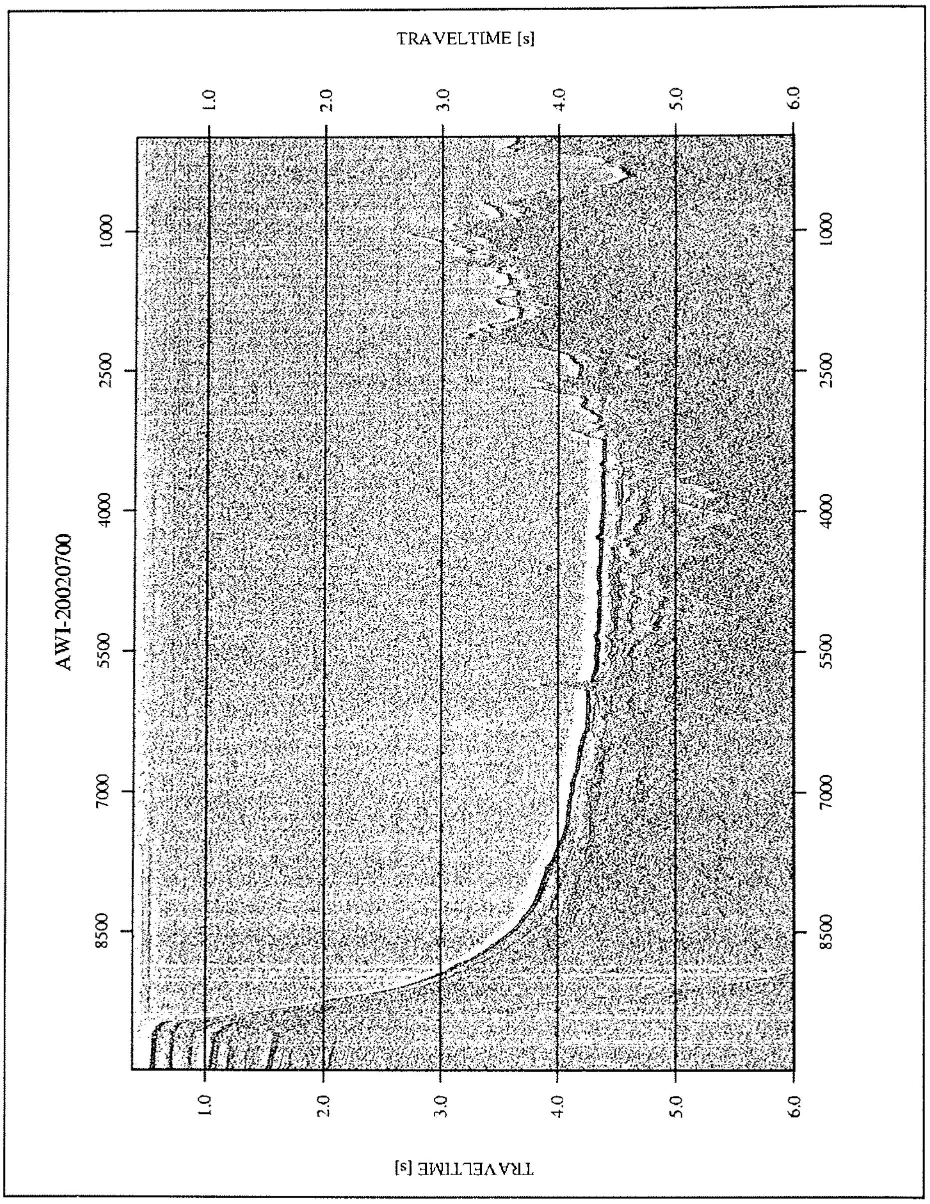


Fig. 2.7: Seismic line 20020700 across the Boreas Basin. Its location is parallel to the magnetic profile, which shows the best identified spreading anomalies The date are not processed (chan. 16 + AGC only). For the location of the line see Fig. 2.1.

Again the magnetic data provided surprising results. With a flight track spacing of 10 km the central part of the basin has been magnetically investigated. The processing of the magnetic was not finished on the ship due to the lack of base station data from Svalbard. Close to the East Greenland margin strong magnetic anomalies related to the initial break-up are visible. They are continuous over 50-70 km. Towards the north close to the Hovgaard Ridge they disappear. The anomaly pattern becomes gradually more and more disorganised the shorter the distance to the current rift valley is. Two flights at the eastern flank of the rift valley indicate that the continuity of the anomalies completely disappears. Finally, a corridor only 20-30 km wide will allow the dating of the basin. At first and preliminary interpretation of the anomalies indicates that the basin might have opened between 38 and 35 Myr. The spreading was as slow as 0.8 cm/yr halfrate on average for the entire basin.

In summary, the geophysical programme succeeded to gather regional seismic and potential field data along the entire East Greenland margin between 81°N and 77°N. The new data close an important gap of knowledge in our understanding of the North Atlantic opening during Cenozoic times. The magnetic data already provided surprising results, which will allow developing a more detailed opening model for the Greenland Sea and the Fram Strait. Integration of the data with the extensive geophysical data along the Barents Sea margin will allow to discuss rift models including the conjugate margins.

3 Bathymetry

T. Hartmann, S. Gütz, M. Pokórna

During the expedition ARK XVIII/2 the bathymetry working group performed a Hydrosweep DS2 multibeam sonar survey from the 29th of August 2002 until the 10th of October 2002 in the Fram Strait, the East Greenland margin and the Wandel Sea margin at its transition to the Lena Trough, ranging from 75°30'N up to 82°N. A large part of the East Greenland margin was investigated parallel to seismic profiles, which were carried out by the geophysical working group. The margin was surveyed in a regional sense. Furthermore, existing information was supplemented whenever possible. Despite continuous efforts of various institutions during the past decades, the bathymetry of the Greenland Sea is poorly known. The sparse depth information has recently been compiled in the IBCAO bathymetric grid. The knowledge of the seafloor topography, however, is essential for interpreting geoscientific data. For better understanding of recent sedimentary transport processes or the tectonic history of the Greenland Sea, accurate topographic maps are of great importance. Especially along the East Greenland margin the new data provides first reliable information on the shape of this glacially influenced margin. E.g. surprisingly no large scale slumps were identified in the data between 81°N and 76°N. Even in well accessible areas like the Knipovich Ridge the new data differs by several hundreds meters from the published IBCAO grid. To optimise the location of the seismic lines and for specific bathymetric surveys, all available swath data acquired by "Polarstern" in the last years were considered. Whenever possible the profiles were chosen to supplement existing bathymetric data. Thus, several unknown basement highs and seamounts were discovered close to the foot of the East Greenland and Wandel Sea margins (Fig. 3.1).

Several facts about the cruise:

Swath width:	by a depth of –3000m, the swath width is 6000m
Accuracy:	0.5% of water depth
Min. depth:	-54 m (on the Greenland shelf)
Max. depth:	-4086 m (close to Molloy Deep)
Average depth:	-3000 m
No. of usable observations:	16.600.000 single beams
Total length of track:	approx. 6150 sm
Operational time:	1040 hours

Despite the ice coverage of 6-9/10 the system worked very reliable and provided high quality data. Some disturbances in the data could not be avoided during the survey due to ice contact during ice breaking. These wrong depth values were edited using the Caris HDCS software. The edited data are the base for an enhanced terrain model, which has also been calculated during the survey. Among the collected data from this expedition we performed a systematic survey of an area westward from Svalbard, ranging from 76° N until 77° N and from 4°30' E until 6° E. Within this area we measured nine profiles with a length of 60 nautical miles each. The accuracy of the sea bottom map, resulting from those observations has significantly improved, which as can be seen in Fig. 3.2. The left figure shows the newly acquired data and the right one the existing IBCAO-map.

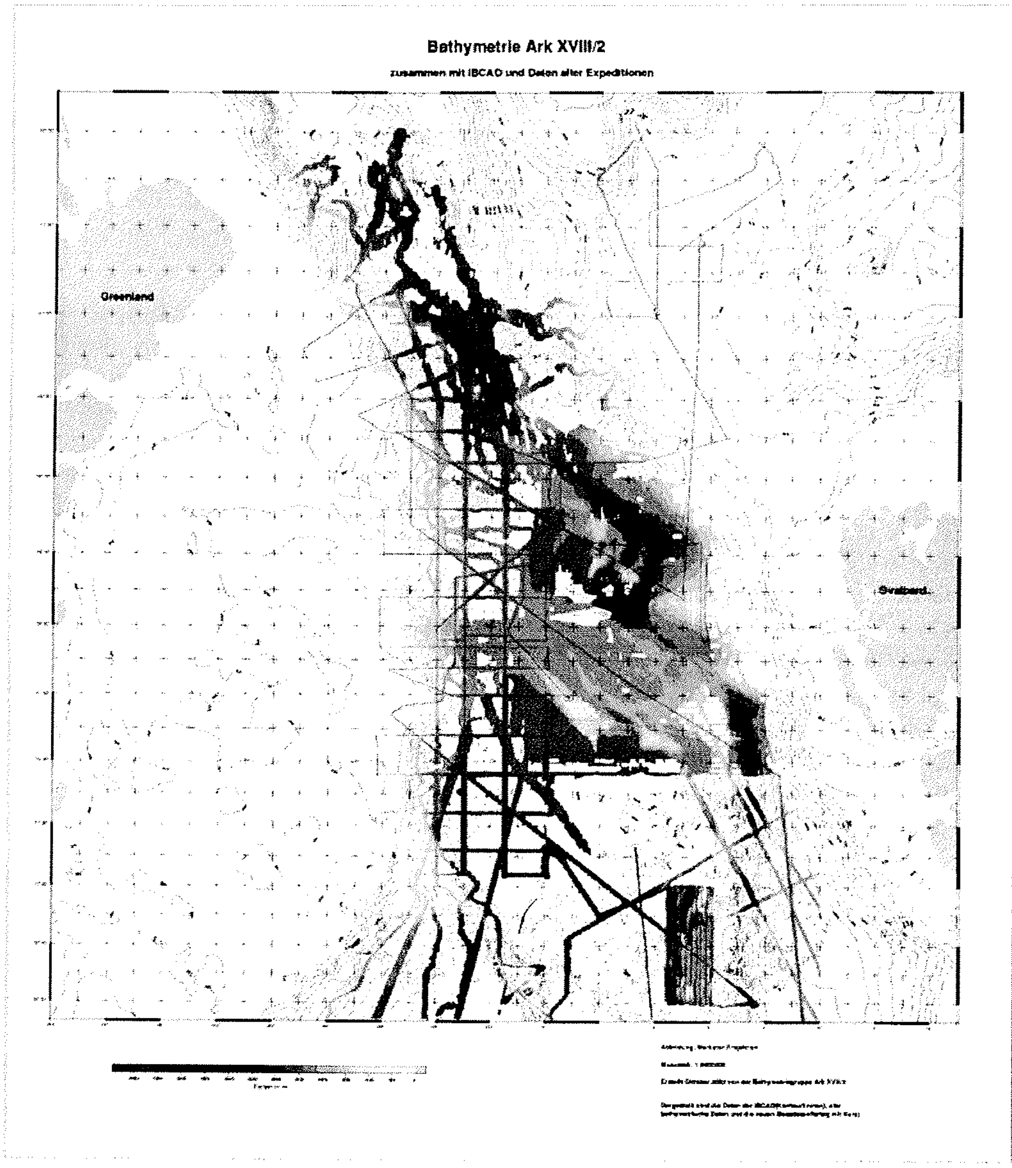


Fig. 3.1: Overview on existing swatch bathymetrie data in the Fram Strait and Greenland Sea. The figure combines the previous and newly acquired data.

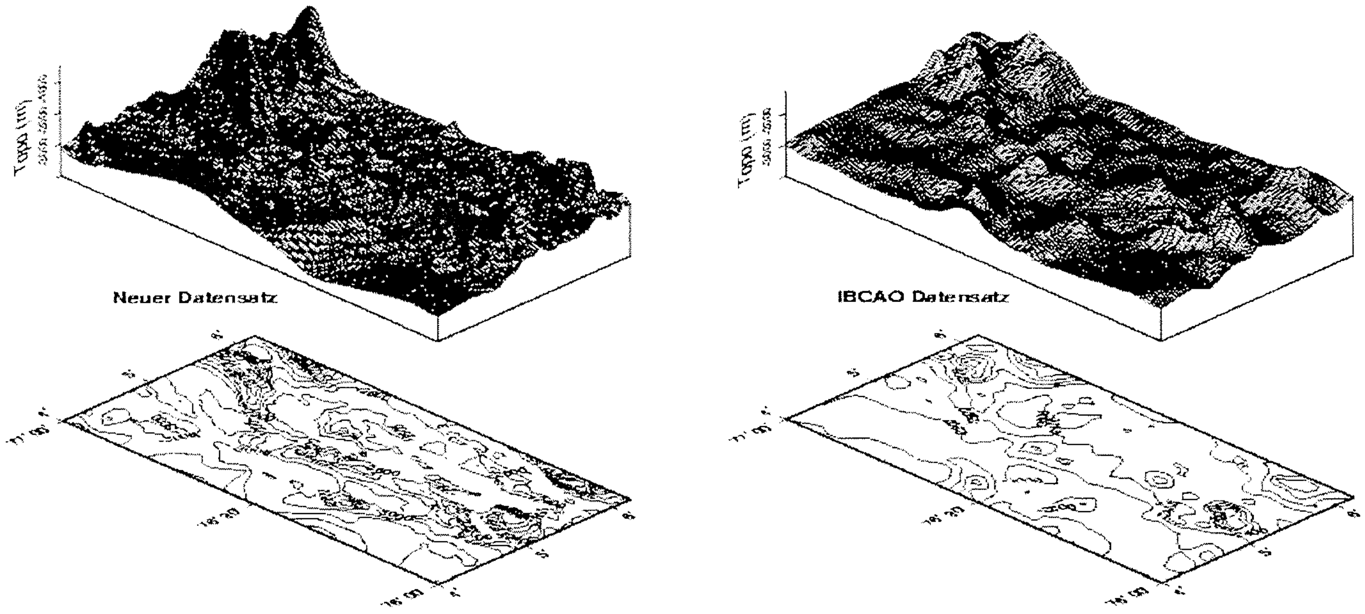


Fig. 3.2: Data example from the western flang of the northern Knipovich Ridge. The difference between the new swath data (lefft) nd the IBCAO grid (right) is obvious

4 PARASOUND Sediment Echosounding

J. Rogenhagen

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 and 5.5 kHz and is adjusted by varying the variable primary frequency from 20.5-23.5 kHz, while the other 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 subbottom sediments are displayed on an analogue thermal printer (Atlas DESO 25). Data recording is done by PC-based Software (PARADIGMA) that digitises and processes the signal. Finally, data is stored on hard disks for further processing.

Furthermore, two printers are installed with the system, to give an online printout of the recording parameters and a coloured profile. Due to malfunctioning, these printers were not in use during that cruise, but all relevant parameters e.g. UTC time, geographical position and recording parameters were recorded with the digital data.

The secondary frequency of the sediment echosounder during the cruise has been 4 kHz with a recording length of mostly 133 ms (that corresponds to a depth range of 100-m assuming sound velocity of water). Mainly good weather conditions and ship speed of around 5 kn with calm seas provided excellent measuring conditions. At the beginning of the cruise the data recording and processing software PARADIGMA crashed quite often. The mean time between failure was around 4 hours. After some testing the problematic part of the software was identified and disabled. The recording continued without any further malfunction. The echosounding system itself worked properly and without any failures.

The PARASOUND system has been in use constantly in all working areas (East Greenland Shelf, East Greenland Continental Margin and neighbouring deep-sea areas, Yermak-Plateau) in parallel to the reflection seismic profiling of the geophysical working group. In addition, some profiles were measured while transferring between working areas. On some occasions no reflected signals could be achieved due to rough topography, especially when crossing fracture zones and ridges.

In total, the PARASOUND system operated for about 700 hours and approx. 15 Gbyte of data were recorded, processed and stored on storage devices. More than 4000 nm of profiles were mapped with the sediment echosounder. Data examples are shown in figures 4.1 – 4.4.

The echosounding data of cruise ARK18/2 is mainly to densify the number of profiles that were achieved during previous expeditions.

The data will provide important preconditions for the three dimensional correlation of profiles and the sediment cores that are taken on that profiles. Beside an general charting of sediment characteristic, 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.

Furthermore, the data is used for a pre-evaluation of coring stations for forthcoming expeditions to the region of the Yermak Plateau and the East Greenland Shelf.

The sediment echosounding of cruise Ark18/2 has been performed for the AWI geophysics working group and the AWI marine geology working group (F. Niessen, J. Matthiessen).

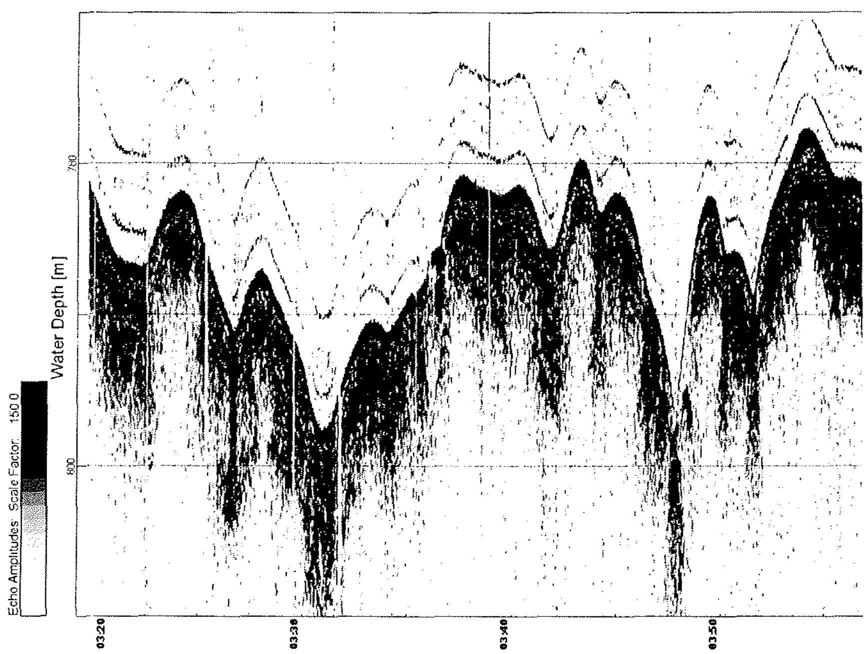


Fig. 4.1: Example of PARASOUND profile 20020435 at Position 81.62 °N, 4.32° E on the Yermak Plateau. The figure presents 6 km of profile. Water Depth is around 780 m with a maximum penetration into the sediment <10 m. The sediments are very consolidated which might be due to glacial overprint. Small channels with depths of around 5 m to 15 m might represent iceberg ploughs.

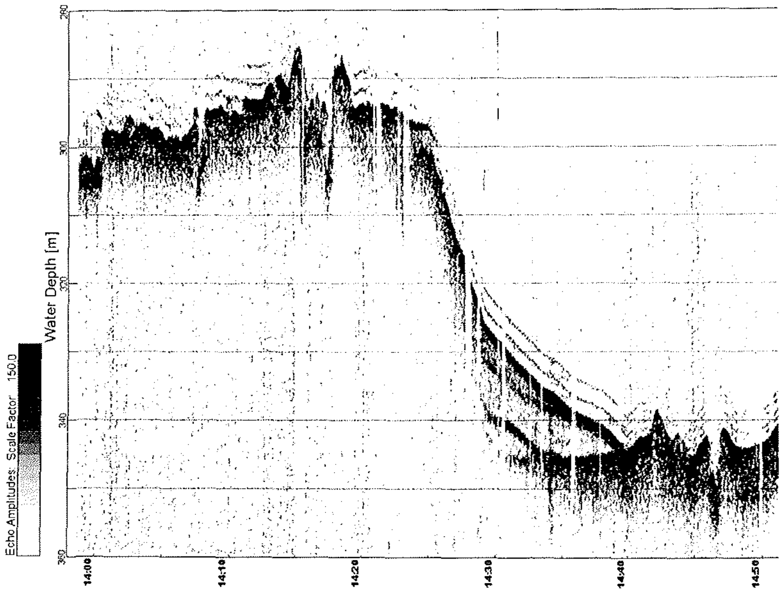


Fig. 4.2: Example of PARASOUND profile 20020520 at Position 79.63° N, 6°.0' W on the East Greenland Shelf. The figure presents 9 km of profile. The shelf area is characterised by acoustic dense reflectors and non-transparent layers that are built up by glaciomarine sediments.

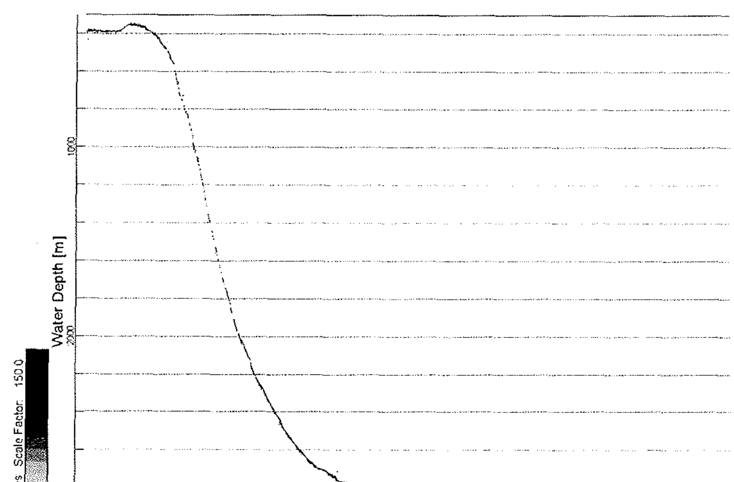


Fig. 4.3: Overall view of PARASOUND profile 20020655 that crosses the East Greenland Shelf and Slope from position 77.89°N, 6.13°W to 77.89°N, 0.24°E. Water depth is from 380 m to 3200 m. Total length of the profile is 150 km. The slope is characterised by low sediment coverage and acoustic dense reflectors. The outermost right part is highlighted in figure 4.4

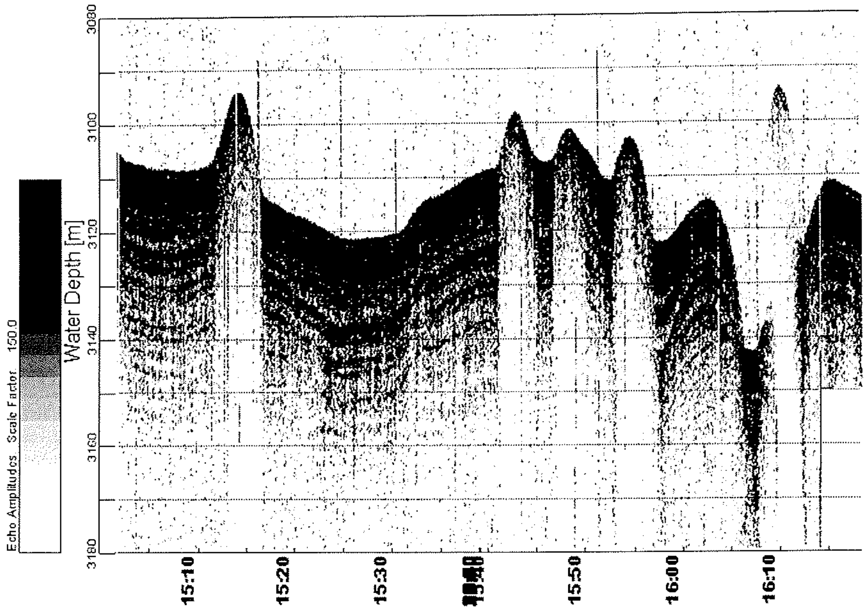


Fig. 4.4: Example of PARASOUND profile 20020655 from position 77.58°N, 6.25°W to 77.29°N, 6.19°E. Water depth are 3100 m. The figure presents 10-km profile. Foot of the slope of the East Greenland Shelf. Penetration is around 50 to 60 m; thick layered sediments are seen, subdivided by basement outcrops mostly of volcanic origin.

5 Biological sea-ice and under-ice studies

J. He, K. Karell, A. Scheltz, H. Schünemann, I. Werner

5.1 General ice conditions during the cruise

Ice observations were done in cooperation with colleagues from the Marine Zoology, University of Bremen, from the ship´s bridge every 2 hours during transit through ice-covered waters (31.8. – 29.9.2002). The northern ice edge was very far north in Fram Strait during this cruise (between about 80 and 81.30´ °N, Fig. 5.1), so that all ship-based ice stations were situated north of 81 °N, either west or east of the visible ice tongue which consisted mainly of open pack ice. Ice cover varied between 0 and 10/10, but was less than 6/10 most of the time (Fig. 5.2). Floe sizes were usually small (< 100 m), only on the 2.9.2002 considerably larger floes (> 1000 m) were encountered. Ice thickness estimated from the ship varied between 1 and 3 m, but was mostly about 1.5 – 2.0 m. New ice (grease ice, nilas or pancake ice) was observed now and then from the beginning of September, with maximum coverage of 9/10 pancake ice (17.9.). Meltponds were numerous on the floes, but already refrozen. Snow cover on the ice was thin (2 – 10 cm). Many ridges were observed, but sea-ice sediments were scarce. Quite a lot of icebergs were sighted.

5.2 Introduction

Sea ice is a constantly variable environment and an important factor in structuring adjacent polar marine ecosystems. The brine-channel system in the interior of the ice as well as the ice-water interface and the under-ice water layer are special habitats for a diverse and well-adapted sympagic (=ice-associated) community comprising viruses, bacteria, protists (unicellular algae, auto- and heterotrophic flagellates, ciliates) and metazoans (meio- and macrofauna). During this expedition we studied physical, chemical and biological properties on 5 ship-based ice stations (Table 5.1) on Arctic pack ice floes to characterise the environmental conditions in the transition period between late summer and autumn. Special emphasis of our studies included the relationship between physical/chemical factors and the distribution of organisms as well as exchange processes between the ice and the under-ice water layer. Besides our field sampling, we collected live material from the ice and the under-ice water in order to conduct experiments on the food-web structure and energy budgets in and below the ice, which are only poorly understood as yet.

Tab. 5.1: Ice stations during ARK XVIII/2. Station numbers = days of the year (2.9. –12.9.02)

Station No.	244	245	251	252	254
Ship station PS 62/	300-1	302-1	312-1/2	313-1	315-1
Floe size [m]	> 1000	> 1000*	< 100	< 100	< 100
Ice thickness [m]	1.5 – 2.2	2.1 – 2.8	1.5 – 2.8	2.5 – 3.4	2.6 – 3.1
Ice cover [1/10]	7–10	7–8	8	9	8
Air Temperature [°C]	-1.2	-3.2	-7.2	-0.5	-2.8
Snow cover [cm]	3.5	2.7	1.0	10.0	6.6
Snow temperature [°C]	-1.0	-3.1	-7.9	-0.5	-1.3

* broken into small (< 100 m) pieces after 3 h

The following parameters were measured or sampled in vertical gradients of entire ice cores:

- ice temperature
- ice bulk salinity
- brine volume
- inorganic nutrients (phosphate, silicate, ammonia)
- dissolved organic carbon (DOC)
- algal biomass (chlorophyll *a*, pheopigments)
- organisms abundance (viruses, bacteria, protists, meiofauna > 20 µm)

A total of 82 ice cores were drilled during the 5 ship-based ice stations and during 8 additional helicopter-based ice stations, at which only live material for experiments was collected.

In the under-ice water layer (0-5 m depth) we measured or sampled the following parameters in vertical gradients:

- water temperature
- water salinty
- anorganic nutrients (phosphate, silicate, ammonia)
- algal biomass (chlorophyll *a*, pheopigments)
- seston and organic matter (particulate organic carbon and particulate organic nitrogen)
- organisms abundance (meiofauna, micro- and mesozooplankton, all > 50 µm).

Additionally, an under-ice video system was deployed in order to describe the morphology of the ice underside and to determine abundance of under-ice amphipods.

Samples from 3 meltponds on different ice floes were taken for determination of organisms abundance. At 3 additional stations newly formed pancake ice (3 – 10 cm thick) was sampled from the ship, which will be analysed for the same parameters mentioned above for the ice cores.

5.3 Vertical distribution of physical, chemical and biological properties in Arctic pack ice

All ice cores were taken with a Kovacs ice corer (9-cm inner diameter). Ice temperatures were measured every 5 to 15 cm with a digital thermometer inside the first core immediately after drilling. The same core was then cut into 1 to 20 cm segments and, after melting in a dark room at 4 °C, analysed for salinity, chlorophyll *a* and phaeopigment concentrations. A second core was drilled, cut and melted in the same way for inorganic nutrients. Subsamples from the nutrient core (30-ml) were filtered through 0.2 µm filters and frozen for further DOC analyses.

All temperature measurements showed similar profiles with highest temperatures near 0 °C at the upper part of the cores and lowest values down to approximately –2.0 °C at the lower surface (Fig. 5.3). These temperature profiles are typical for the summer situation within the Arctic sea ice. Inorganic nutrients showed erratic profiles in the ice, with concentrations being generally higher than in the water column below (PO_4: 0.8 – 14.1 µmol l^{-1}, SiO_4: 0.9 – 12.3 µmol l^{-1}, NH_4: < 0.1 – 18.3 µmol l^{-1}). Highest algal biomass was always measured in the bottom parts of the ice floes with maximum values of 67 µg l^{-1} (St. 244, Fig.

5.4) indicating bottom communities of ice algae. However, chlorophyll *a* values were relatively low compared to data from previous Arctic cruises in summer.

For investigations on species diversity, abundance and biomass of sea ice biota, 3-5 cores were drilled at the same site and cut into 1 to 20 cm segments. These segments were melted in an excess of 0.2 µm-filtered seawater to avoid osmotic stress to the organisms. After complete melting, samples to examine protists under an inverted microscopy (200 ml) were fixed with 5% acid Lugol's solution. Materials for heterotrophic and autotrophic species were taken from the same core than for these organisms. Samples were fixed with 25% gluteraldehyde and stained with proflavine. Fixed and stained samples (25 ml) were filtered through Whatman® Nucleopore 0.2 µm porosity filters. Filters will be examined with epifluorescense microscopy for heterotrophy/autotrophy ratio. In order to determine abundance and vertical distribution of viruses within the pack ice and their relationship with bacteria and nanoflagellates, about 80 subsamples (30 ml) from one organism core were collected and filtered on 0.2 µm black Nucleopore filters after staining with DAPI, and deep-frozen for further bacteria and nanoflagellate abundance and biomass analyses. 83 subsamples (1 ml) were collected from the nutrient core and filtered on 0.02 µm Anodisc Waterman filters, stained with SYBR Green I, and deep-frozen for further analysis of viral abundance. Melted samples for meiofauna investigations were concentrated over a 20 µm sieve and fixed with Bouin's solution (4% final concentration). In order to know the pico-biota (<2 µm) within the ice and the water column, 200 samples (50 melted ice samples from the 5 ice stations and 150 surface water samples in the pack-ice zone and open-water area, 4-10 ml each) were collected, fixed with gluteraldehyde (final concentration of 0.1%) and frozen for further pico-biota analysis with a flow cytometer. All these samples will be analysed in the home laboratories.

5.4 Small-scale structures and distribution patterns in the under-ice water layer

The under-ice habitat was studied and under-ice fauna was sampled at all 5 ice stations. The morphology of the ice underside was recorded by a video camera lowered down through a core hole in the ice. All floes recorded had a strongly structured underside, with bulges and depressions, cracks and holes visible. This undulating surface is typical for a late summer situation and due to intense melting at the ice underside. Recordings of the ice undersides will also deliver abundance estimations of under-ice amphipods. Individuals of the species *Apherusa glacialis* and *Gammarus wilkitzkii* were seen on the tapes from several stations, but overall numbers appear to be low. Temperature and salinity profiles were taken in-situ throughout the under-ice water layer (0-5 m depth). Temperature at the ice-water interface was mostly close to the freezing point (-1.6 – -1.8 °C, S = 30.5 – 32.5), a stratification due to meltwater below the ice was not observed at any station (Figs. 5.5 a, b). Water samples for the analysis of inorganic nutrients (phosphate, silicate, ammonia), algal pigments (chlorophyll *a* and pheopigments) and particulate organic matter (POC, PON) were collected from 6 depths (0, 1, 2, 3, 4, 5 m below the ice) by means of a flexible tube lowered down through a core hole. Nutrients in the under-ice water, in particular silicate, were already depleted (PO_4: 0.4 – 1.1 µmol l^{-1}, SiO_4: < 0.1 – 3.4 µmol l^{-1}, NH_4: 1.4 – 4.3 µmol l^{-1}). Algal biomass was comparatively low (0.09 – 1.42, mean: 0.32 µg l^{-1}). Again with these parameters, no stratification in the 5 m under-ice water layer was visible (Figs. 5.5 a, b). A pumping system equipped with a water meter and a 50 µm mesh net delivered samples of the under-ice fauna from the same 6 depths mentioned before. These samples were fixed in Borax buffered formaline (4%) and will be analysed for species diversity, abundance, biomass and life-stage composition in the home laboratory. During previous Arctic cruises in summer, a pronounced stratification of abiotic variables and under-ice fauna has been observed, which will probably not occur during this autumn sampling. A microscopic inspection of a qualitative sample taken at station 245 indicated that only few large mesozooplankton species (e.g. *Calanus* spp., *Themisto libellula*) were present in low numbers in the under-ice water layer. The sub-ice community sampled during this cruise will clearly be dominated by small copepods from either the water column (e.g. *Pseudocalanus* spp., *Oithona similis*) or from the sea ice (e.g. *Halectinsoma* sp., *Cyclopina schneiderii*). Altogether, the under-ice ecosystem appeared to be already in the state of biological autumn or even early winter.

5.5 Experimental work on the food-web structure and energy budgets of ice and under-ice fauna

A serial dilution experiment was carried out in order to determine the growth rates of bacteria and algae and grazing rates of meiofauna (<200 µm) on them. Live material for this experiment was retrieved from 2-5 bottom pieces of ice cores (2 cm) from 9 ice stations (including helicopter stations) and melted in 0.2 µm filtered seawater at 4°C to avoid osmotic stress. Melted ice samples were filtered through a 200-µm mesh to remove larger predators. Triplicate 30 ml samples were taken at the beginning of each experiment for initial counting. The incubation series consisted of 100, 50, 20 and 10 % melted water prepared in 250-ml polycarbonate bottles in triplicate. Samples were cultured 4 days in an incubator with simulated *in situ* situations (-1.5 – -2.0°C, 17h light + 7h dark). After incubation 20-100 ml subsamples of each bottle were taken and fixed with formaldehyde (1- % final concentration) and filtered on black 0.2 µm Nucleopore filters after DAPI staining. A total of 135 subsamples were collected and frozen for further analyses of community structure.

In order to improve the general knowledge of sympagic organisms and the food web existing within the ice, feeding experiments with rotifers were conducted. These organisms represent one of the main metazoan taxa within the sympagic community. At all ship stations and additionally at 8 helicopter stations bottom segments of two to three ice cores were taken and melted under the same conditions as described for the cores used for investigations on sea ice biota. After melting the meiofauna was concentrated over a 20 µm sieve and rotifers were sorted alive under a dissection microscope. In order to get information about the ingestion rates of sympagic rotifers, fluorescently labelled bacteria (FLB) and bacterium-size particles (Fluoresbrites) were added to the sorted rotifers, and the short-term uptake of both kinds of particles was measured as time-course experiments. Subsamples were taken after 30, 60, 90, 120, 240, 480 and 960 minutes and fixed with Bouin's solution (1% final concentration). The increase of particles ingested by the rotifers was determined by counting their gut contents under an epifluorescence microscope. This experimental work will also be continued in the home laboratories. In order to estimate the bacterial concentration in the beginning of the experiments additional subsamples were taken and stained with DAPI. All subsamples were filtered on polycarbonate filters and frozen at –30 °C.

Live material for experimental work with under-ice amphipods was retrieved from either the under-ice pump or the multinet- and RMT-haules carried out by our colleagues from the Marine Zoology (University of Bremen). Specimens of the species *Apherusa glacialis, Onisimus glacialis*, *O. nanseni* and *Gammarus wilkitzkii* were reared in cooling containers at ambient temperature (0 °C ± 1 °C) and salinity (30-34). After an acclimation period of some days, these amphipods were incubated in closed-bottle approaches to measure respiration and excretion rates, important variables to calculate an overall energy budget of the organisms. Test animals of different size classes were deep frozen (-80 °C) after the measurements for later determination of dry weight and analysis of lipds. These experimental studies were carried out in co-operation with H. Auel (University of Bremen) in order to compare the results for the under-ice amphipods with those from the pelagic amphipod species *Themisto libellula.*

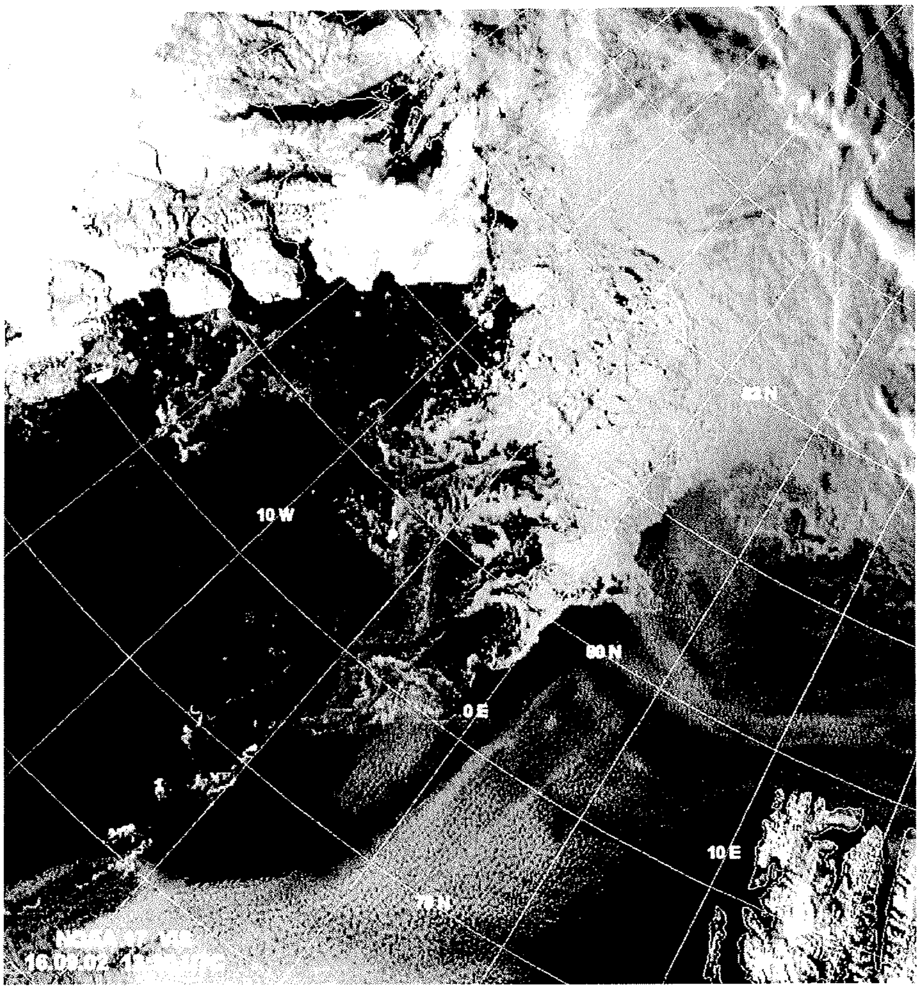


Fig. 5.1: Satellite image of northern Fram Strait (16.09.2002) showing distribution of sea ice and location of the northern ice edge.

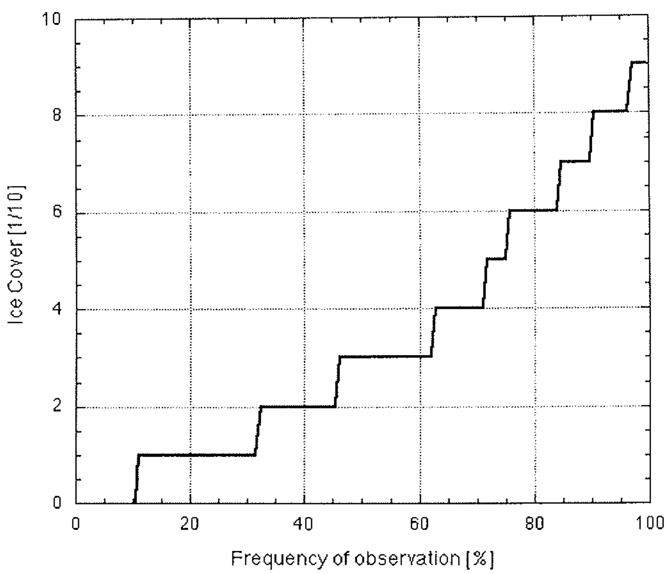


Fig. 5.2: Freuency distribution of observed ice coverage [1/10] during transit trough ice-covered waters during ARK-XVIII/2

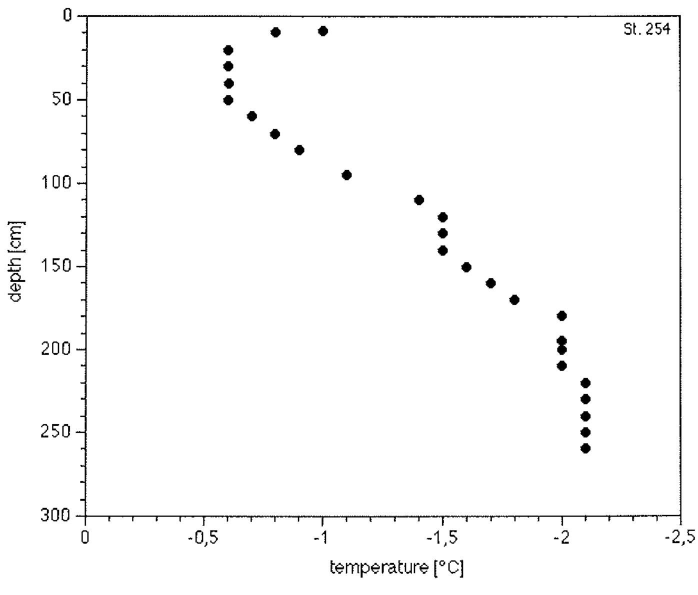


Fig. 5.3: Vertical profile of sea-ice temperature at station 254

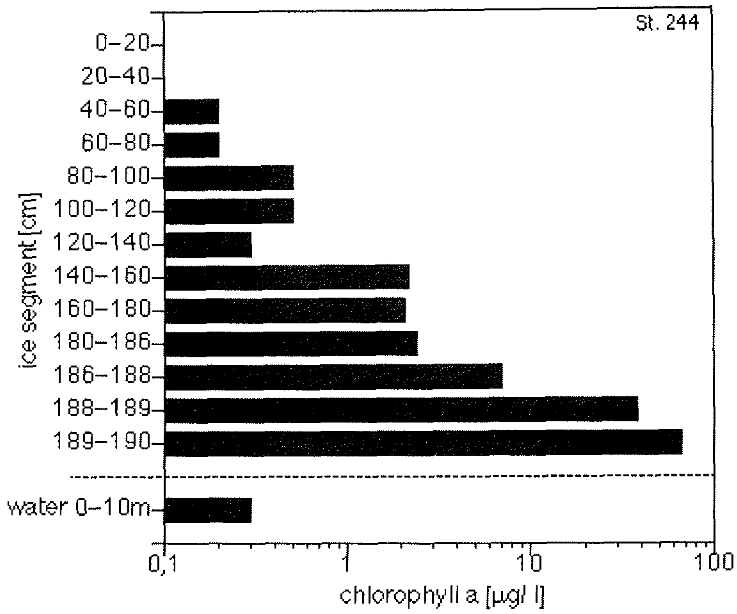
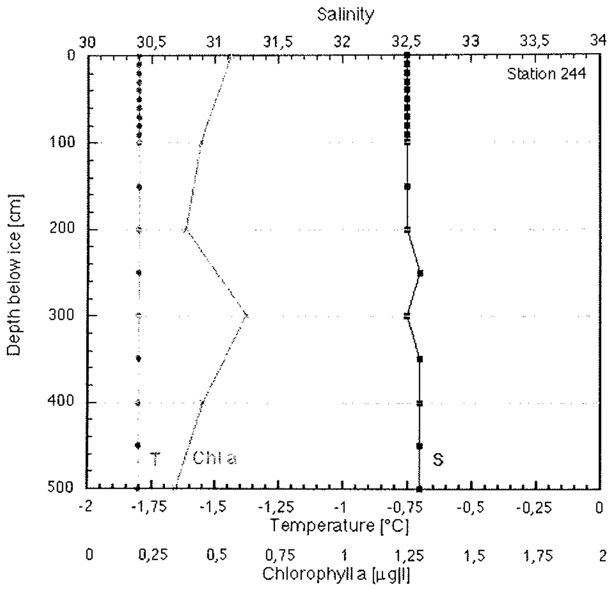


Fig. 5.4: Vertical profile of algal biomass [chlorophyll a] in the sea-ice and underlying water column (integrated value for 0 – 10 m) at station 244. Note logarithmic scale of x-axis.



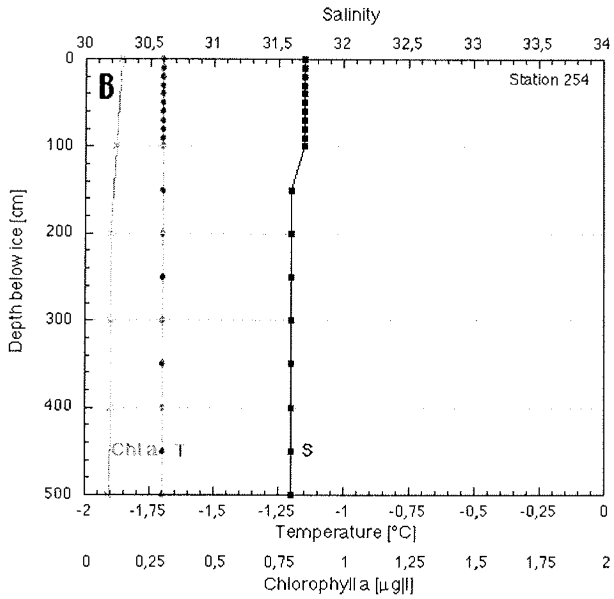


Fig. 5.5 (a+b): Vertical profiles of temperature, salinit and algal biomass (chlophyll *a*) in the under-ice water layer (0 – 5 m depth) at an ice station in western (stn. 244, a) and at an ice station in eastern (stn. 254, B, b) Fram Strait.

6 Studies on the Pelagic Ecosystem and Higher Trophic Levels in the Marginal Ice Zone of Fram Strait

H. Auel, T. Kreibich

6.1 Zooplankton studies

The vertical and horizontal distribution of mesozooplankton in the marginal ice zone of Fram Strait was studied by multiple opening/closing net hauls (Multinet, mouth opening: 0.25 m^2, mesh size: 300 µm) along two transects from the open water, across the ice edge, into areas completely covered by sea ice. The upper 100 m of the water column were sampled in high resolution with standard depth intervals of 100-75-50-25-10-0 m.

The first transect started at 81°12'N 7°29'W on the western side of Fram Strait an extended via eight stations to 82°N 5°32'W. Due to the strong influence of the polar East Greenland Current, species of polar origin dominated in this region. *Calanus hyperboreus*, a large herbivorous copepod, accounted for most of the zooplankton biomass in the surface layer. The relatively high abundance of the congener *C. glacialis*, which usually inhabits Arctic shelf seas, may indicate that water masses from the East Greenland Shelf run off the shelf and extent far offshore in this region.

A second Multinet transect was sampled on the eastern side of Fram Strait from 81°03' N 3°53'E to 81°40'N 2°03'E including six stations. In contrast to the western side, small calanoid copepods such as *Pseudocalanus* spp. and the appendicularian *Oikopleura dioica* dominated in this region. Relatively high densities of *Calanus finmarchicus* emphasise the strong Atlantic influence of the West Spitsbergen Current in eastern Fram Strait. All Multinet samples were preserved in a formaldehyde/seawater solution and will be analysed in detail with regard to abundance, biomass and species composition at the home laboratory in order to assess the influence of the sea-ice cover on the pelagic community.

In addition, Multinet samples (100 to 0 m) were collected at or very close to each ice station in order to gather information on the vertical distribution and stratification of mesozooplankton beneath the ice. These data can be used for comparison to plankton samples collected directly at the ice/water interface and very close (0 to 5m) beneath the underside of the ice sampled by an under-ice pumping system through drilled holes in the ice floes.

Macrozooplankton, especially the pelagic amphipod *Themisto libellula* and different species of krill (Euphausiacea) were sampled at eight stations by deep (maximum wire length 250 or 180 m) and/or shallow (30 m) hauls with an Rectangular Midwater Trawl with eight square meter mouth opening and 4.5 mm mesh size (RMT 8, see Table 6.1). Individuals of *T. libellula* and the carnivorous copepod *Pareuchaeta glacialis* from these hauls were used for respiration measurements, whereas krill was used for long-term feeding experiments with different taxa of algae as food. Experiments were carried out in cooling containers on board at an *in situ* temperature of 0±1°C. For the respiration measurements, individuals were kept in closed bottles filled with filtered and oxygenated seawater (0.2 µm pore size) for up to 72 hours. After the termination of the experiments, the oxygen concentration in the bottles was measured by Winkler titration and compared to animal-free controls. Respiration rates will be used to estimate the metabolic activity and energetic requirements of the different macrozooplankton species.

Tab.6.1: Data of the eight Rectangular Midwater Trawl (RMT 8) stations

Stn.	Date	Time [UTC]	Latitude	Longitude	Wire length [m]	Hauling time [min]
292	01.09.	16:14	81°12.63'N	7°28.07'W	31	20
320	17.09.	17:27/18:08	80°13.48'N	0°55.48' W	31/180	20
324	22.09.	09:20/10:13	79°32.67'N	1°34.71' E	180/250	20
326	22.09.	16:13	79°35.77'N	1°22.88' E	31	20
327	22.09.	18:55	79°42.07'N	0°07.57' E	31	20
330	30.09.	16:19	76°45.33'N	2°01.77' E	250	20
333	05.10.	16:23	78°44.35'N	3°21.38' W	31	20
337	08.10.	13:22	75°59.94'N	6°48.74' E	250	20

6.2 Feeding experiments with Arctic krill

During the expedition two euphausiid species were caught: the Arctic species *Thysanoessa inermis* occurred at the northern most stations, whereas *T. longicaudata* was most abundant in regions strongly influenced by Atlantic water masses. Krill specimens were divided into different groups and kept in separate aquarium tanks for the feeding experiments. One group was fed with the coccolithophorid *Emiliania huxleyi*, the other was offered the diatom *Chaetoceros* sp. Different algae taxa are characterised by typical fatty acid biomarkers. The objective of the study was to investigate whether the body lipids of grazing krill also reflect these differences in the fatty acid composition of the prey species. During feeding, krill accumulates algae-specific fatty acids and incorporates them in its body tissues. Samples of freshly caught krill and from the feeding experiments were deep-frozen (minus 80°C) on board. The fatty acid composition will be analyzed in the home laboratory. The samples will be also used for lipid class analysis, histological and genetical studies, in order to gain a better understanding of the life cycle and overwintering strategies of Arctic krill species, which play an important role in the Arctic marine food web.

6.3 Seabird and seal surveys

The abundance and distribution of seabirds and seals in the marginal ice zone of Fram Strait were studied by standardised strip-transect surveys of usually 15 min duration from the bridge of R/V "Polarstern". Depending on weather conditions and visibility, all birds within a strip width of 50 or 100 m on both sides of the cruise track were counted. A total of more than 100 strip-transects were sampled during the expedition including regions with different sea-ice coverage between 0/10 and 10/10. On two occasions, when the vessel travelled across the ice edge, seabird sightings were recorded continuously for several hours.

The most abundant bird species in the marginal ice zone was the little auk (*Alle alle*). A preliminary evaluation of the data set suggests that this species concentrates close to the ice edge and in frontal areas, where warmer Atlantic waters meet cold polar water masses. Occasionally other alcids, including black guillemots (*Cepphus grylle*), Brünnich's guillemots (*Uria lomvia*) and Atlantic puffins (*Fratercula arctica*), were observed. In areas of open water large numbers of northern fulmars (*Fulmarus glacialis*) followed the vessel, often associated with kittiwakes (*Larus tridactyla*) and glaucous gulls (*Larus hyperboreus*). Further north in ice-covered regions ivory gulls (*Pagophila eburnea*) were numerous and sometimes Ross's gulls (*Rhodostethia rosea*) were sighted. Among the birds that were spotted occasionally, pomarine skuas (*Stercorarius pomarinus*) and gyr falcons were seen chasing other birds.

Seals were spotted regularly during the seabird survey. In order to cover a larger survey area, several dedicated airborne seal surveys were conducted by helicopter and additional helicopter flights for Helimag measurements or ice observation were used as platform-of-opportunity for seal countings. The most abundant seal species in the marginal ice zone was the harp seal (*Phoca groenlandica*). On the western side of Fram Strait hooded seals (*Cystophora cristata*) were also abundant. Other species observed during the cruise included ringed seals (*Phoca hispida*), which seemed to be dependent on areas with dense ice-cover, and walruses.

The data collected during the research cruise ARK XVIII/2 will contribute to a better understanding of the marine ecosystem in Fram Strait and further our knowledge about the impact of the sea-ice cover on the structure of the pelagic food web and trophic pathways in the Arctic marginal ice zone.

7 Participating Institutions

<u>China</u>		
PRIC	Polar Research Institute of China 451 Jingian Road Shanghai 200129 China	1
<u>Finland</u>		
UH	University of Helsinki Viikinkaari 1, P.O. Box 65 OOO14 Helsinki Finland	1
<u>Germany</u>		
AWI	Stiftung Alfred-Wegener-Institut für Polar - und Meeresforschung Columbusstrasse D-27568 Bremerhaven	13
DPMA	Deutsches Patent- und Markenamt Zweibrückenstraße 12 D-80297 München	1
DWD	Deutscher Wetterdient Jenfelder Allee 70A D-22043 Hamburg	2
IPÖ	Institut für Polarökologie Wischhofstr. 1-3 Geb. 12 D-24148 Kiel	3
FIELAX	Fielax GmbH Schifferstr. 10-14 D-27568 Bremerhaven	5
HSW	Helikopter Service Wasserthal Flughafen Hamburg Geb. 347 D-22335 Hamburg	4
UB	Marine Zoologie (FB-2) Universität Bremen Postfach 330440 28334 Bremen	2

8 Cruise Participants

Name		Institutions
Auel	Holger	UB
Baier	Ulrich	FIELAX
Berger	Daniela	AWI
Dittmer	Klaus	DWD
Feldt	Oliver	HSW
Fröb	Martin	FIELAX
Gütz	Sonja	AWI
Hartmann	Thomas	AWI
He	Jianfeng	PRIC
Helm	Veit	AWI
Jokat	Wilfried	AWI
Karell	Kimmo	UH
Kreibich	Tobias	UB
Kunsch	Brunhilde	AWI
Lahrmann	Uwe	HSW
Lensch	Norbert	AWI
Martens	Hartmut	AWI
Muhle	Helmut	FIELAX
Piskorzynski	Andreas	FIELAX
Pokórna	Markéta	AWI
Rogenhagen	Johannes	FIELAX
Salat	Christina	AWI
Scheltz	Annette	IPÖ
Schmidt-Aursch	Mechita	AWI
Schuberth	Bernhard	AWI
Schünemann	Henrike	IPÖ
Seidler	Kai	HSW
Sonnabend	Hartmut	DWD
Traub	Bärbel	AWI
Werner	Iris	IPÖ
Wollny	Klaus	DPMA
Zepick	Burkhard	HSW

9 Ship's crew

Pahl, Uwe	Master
Grundmann, Uwe	1.Offc
Schulz, Volker	Ch.Eng
Fallei, Holger	2.Offc.
Peine, Lutz	2.Offc
Hartung, René	2.Offc
Schuster, Friedrich	Doctor
Hecht,Andreas	R.Offc
Erreth, Gyula	1.Eng.
Krohn, Günter	2.Eng
Simon, Wolfgang	2. Eng.
Holtz, Hartmut	E-Eng.
Loidl,Reiner	Boatsw
Neisner,Winfried	Carpenter
Bäcker, Andreas	A.B.
Schmidt, Uwe	A.B.
Schröder, Norbert	A.B.
Bastigkeit, Kai	A.B
Guse, Hartmut	A.B.
Hagemann, Manfred	A.B.
Winkler, Michael	A.B.
Koltzau, Knut	A.B.
Beth, Detlef	Storekeep.
Arias Iglesias,Enr.	Mot-man
Fritz, Günter	Mot-man
Krösche, Eckard	Mot-man
Dinse, Horst	Mot-man
Lamm, Gerd	Mot-man
Fischer, Matthias	Cook
Tupy,Mario	Cooksmate
Martens, Michael	Cooksmate
Dinse, Petra	1.Stwdess
Schöndorfer, Ottilie	Stwdss/KS
Streit, Christina	2.Stwdess
Schmidt,Maria	2.Stwdess
Deuß, Stefanie	2.Stwdess
Tu, Jian Min	2.Steward
Wu, Chi Lung	2.Steward
Yu, Chung Leung	Laundrym

10 Station list

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/285-1	27.08.02	18:02	67° 15,11' N	12° 45,01' E	266,0	SSW 13	110,4	0,8	Gravity corer	GC	surface	
PS62/285-1	27.08.02	18:10	67° 15,10' N	12° 45,03' E	266,0	SSW 12	54,5	0,6	Gravity corer	GC	at sea bottom	272 m
PS62/285-1	27.08.02	18:28	67° 15,13' N	12° 45,15' E	263,0	SSW 13	305,3	0,5	Gravity corer	GC	on deck	
PS62/286-1	27.08.02	18:45	67° 14,52' N	12° 44,30' E	295,0	SSW 13	157,8	0,7	Test	TEST	surface	Walhydrophone
PS62/286-1	27.08.02	19:01	67° 14,55' N	12° 44,53' E	293,0	SW 12	97,4	0,7	Test	TEST	on deck	Walhydrophone
PS62/286-2	27.08.02	19:23	67° 14,48' N	12° 44,76' E	291,0	SW 9	264,6	0,3	Gravity corer	GC	surface	
PS62/286-2	27.08.02	19:30	67° 14,48' N	12° 44,85' E	291,0	WSW 10	40,0	0,2	Gravity corer	GC	at sea bottom	304 m
PS62/286-2	27.08.02	19:41	67° 14,53' N	12° 44,87' E	293,0	SW 9	47,6	1,2	Gravity corer	GC	on deck	
PS62/286-3	27.08.02	20:14	67° 14,57' N	12° 44,84' E	292,0	WSW 9	241,7	0,0	Gravity corer	GC	surface	
PS62/286-3	27.08.02	20:20	67° 14,58' N	12° 44,86' E	291,0	WSW 10	67,1	0,5	Gravity corer	GC	at sea bottom	304 m
PS62/286-3	27.08.02	20:30	67° 14,58' N	12° 44,87' E	291,0	WSW 9	222,8	0,4	Gravity corer	GC	on deck	
PS62/287-1	27.08.02	22:30	67° 7,37' N	13° 20,65' E	236,0	SW 16	353,1	0,2	Gravity corer	GC	surface	
PS62/287-1	27.08.02	22:36	67° 7,37' N	13° 20,61' E	237,0	SW 14	183,9	0,4	Gravity corer	GC	at sea bottom	
PS62/287-1	27.08.02	22:46	67° 7,34' N	13° 20,64' E	227,0	SW 13	269,1	0,5	Gravity corer	GC	on deck	
PS62/288-1	28.08.02	01:42	67° 32,28' N	13° 20,21' E	261,0	SW 14	266,3	0,6	Gravity corer	GC	surface	
PS62/288-1	28.08.02	01:47	67° 32,27' N	13° 20,18' E	259,0	SW 13	22,0	0,4	Gravity corer	GC	at sea bottom	
PS62/288-1	28.08.02	01:55	67° 32,30' N	13° 20,18' E	260,0	SW 12	65,9	0,1	Gravity corer	GC	on deck	
PS62/289-1	28.08.02	04:00	67° 45,65' N	13° 48,19' E	249,0	SW 12	127,9	0,7	Gravity corer	GC	surface	
PS62/289-1	28.08.02	04:05	67° 45,61' N	13° 48,31' E	249,0	SW 13	112,0	0,6	Gravity corer	GC	at sea bottom	264 m Draht ausgesteckt
PS62/289-1	28.08.02	04:14	67° 45,57' N	13° 48,52' E	249,0	WSW 16	100,3	0,9	Gravity corer	GC	on deck	
PS62/290-1	28.08.02	04:47	67° 45,04' N	13° 48,77' E	253,0	SW 8	201,9	7,1	Calibration	CAL	start	2 Magnetikdrehkreise
PS62/290-1	28.08.02	06:37	67° 44,18' N	13° 48,26' E	252,0	WSW 14	241,0	4,4	Calibration	CAL	End	2. Drehkreis
PS62/291-1	30.08.02	08:09	77° 53,68' N	8° 31,97' E	1568,0	SSE 1	34,6	2,3	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/291-1	30.08.02	08:25	77° 53,80' N	8° 31,34' E	1574,0	SSE 1	299,6	2,5	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/291-1	30.08.02	08:54	77° 54,52' N	8° 25,82' E	1628,0	ESE 1	300,9	4,7	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/291-1	30.08.02	09:07	77° 55,00' N	8° 21,49' E	1773,0	ESE 2	313,2	5,5	Seismic reflection profile	SEISREFL	profile start	
PS62/291-1	30.08.02	22:45	78° 35,17' N	3° 3,77' E	2580,0	ENE 2	304,5	5,6	Seismic reflection profile	SEISREFL	alter course	auf 306 °
PS62/291-1	31.08.02	11:19	79° 15,96' N	1° 45,83' W	2607,0	NE 1	307,0	5,3	Seismic reflection profile	SEISREFL	alter course	Drehen für Helilandung
PS62/291-1	31.08.02	12:08	79° 15,97' N	1° 46,21' W	2606,0	NNE 1	287,3	4,6	Seismic reflection profile	SEISREFL	alter course	Back on the track
PS62/291-1	31.08.02	20:35	79° 41,96' N	4° 59,90' W	1126,0	SSE 4	305,8	7,0	Seismic reflection profile	SEISREFL	alter course	auf Nordkurs
PS62/291-1	01.09.02	05:45	80° 30,22' N	5° 0,97' W	2115,0	S 5	342,3	5,0	Seismic reflection profile	SEISREFL	alter course	
PS62/291-1	01.09.02	15:00	81° 12,21' N	7° 13,86' W	1615,0	SSW 7	330,4	5,8	Seismic reflection profile	SEISREFL	end of profile	
PS62/291-1	01.09.02	15:35	81° 13,64' N	7° 22,97' W	1546,0	SSW 8	322,0	3,7	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/291-1	01.09.02	15:40	81° 13,71' N	7° 24,70' W	1535,0	SW 8	207,9	4,3	Seismic reflection profile	SEISREFL	array on deck	
PS62/292-1	01.09.02	16:10	81° 12,78' N	7° 27,58' W	1526,0	SW 7	202,6	2,5	Rectangular midwater trawl	RMT	surface	
PS62/292-1	01.09.02	16:14	81° 12,63' N	7° 28,07' W	1523,0	SW 7	204,2	2,4	Rectangular midwater trawl	RMT	action	
PS62/292-1	01.09.02	16:30	81° 11,97' N	7° 29,46' W	1532,0	SSW 8	197,3	2,7	Rectangular midwater trawl	RMT	End of Trawl	
PS62/292-1	01.09.02	16:32	81° 11,89' N	7° 29,61' W	1535,0	SSW 7	195,9	2,4	Rectangular midwater trawl	RMT	on deck	
PS62/292-2	01.09.02	16:57	81° 11,72' N	7° 29,39' W	1547,0	SSW 10	181,1	0,4	Multiple net	MN	surface	
PS62/292-2	01.09.02	17:02	81° 11,72' N	7° 29,34' W	1548,0	SSW 9	23,3	0,4	Multiple net	MN	Error - Restart	
PS62/292-2	01.09.02	17:04	81° 11,73' N	7° 29,30' W	1546,0	SSW 8	11,0	0,6	Multiple net	MN	surface	
PS62/292-2	01.09.02	17:09	81° 11,73' N	7° 29,30' W	1547,0	SSW 10	41,7	0,1	Multiple net	MN	at depth	100 m Draht ausgesteckt
PS62/292-2	01.09.02	17:10	81° 11,73' N	7° 29,29' W	1547,0	SW 9	5,4	0,3	Multiple net	MN	Hoisting	
PS62/292-2	01.09.02	17:17	81° 11,69' N	7° 29,51' W	1547,0	SW 8	214,6	0,7	Multiple net	MN	on deck	
PS62/293-1	01.09.02	19:01	81° 21,02' N	6° 50,77' W	2665,0	S 10	150,1	0,9	Multiple net	MN	surface	
PS62/293-1	01.09.02	19:05	81° 20,99' N	6° 50,60' W	2665,0	S 10	118,2	0,6	Multiple net	MN	at depth	100 m Draht ausgesteckt
PS62/293-1	01.09.02	19:06	81° 20,98' N	6° 50,56' W	2666,0	S 9	115,8	0,5	Multiple net	MN	Hoisting	
PS62/293-1	01.09.02	19:13	81° 20,97' N	6° 50,29' W	2666,0	S 9	71,9	0,4	Multiple net	MN	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/294-1	01.09.02	20:56	81° 30,89' N	6° 25,20' W	3278,8	SSW 9	139,1	0,7	Multiple net	MN	surface	
PS62/294-1	01.09.02	21:01	81° 30,85' N	6° 25,06' W	3274,4	SSW 10	139,9	0,5	Multiple net	MN	at depth	EL 30 100m
PS62/294-1	01.09.02	21:08	81° 30,78' N	6° 24,90' W	3270,4	SSW 11	150,7	0,6	Multiple net	MN	on deck	
PS62/295-1	01.09.02	23:32	81° 41,02' N	6° 6,42' W	3380,0	SSW 12	188,3	0,5	Multiple net	MN	surface	
PS62/295-1	01.09.02	23:35	81° 41,01' N	6° 6,43' W	3382,0	SSW 10	168,2	0,3	Multiple net	MN	at depth	100m
PS62/295-1	01.09.02	23:42	81° 41,02' N	6° 6,15' W	3370,0	SSW 11	53,3	0,6	Multiple net	MN	on deck	
PS62/296-1	02.09.02	01:22	81° 47,28' N	5° 47,49' W	2886,0	SSW 11	166,1	0,3	Multiple net	MN	surface	
PS62/296-1	02.09.02	01:28	81° 47,26' N	5° 47,19' W	2891,0	SSW 12	99,4	0,4	Multiple net	MN	at depth	
PS62/296-1	02.09.02	01:35	81° 47,32' N	5° 46,81' W	2896,0	SSW 12	25,4	1,2	Multiple net	MN	on deck	
PS62/297-1	02.09.02	02:13	81° 50,06' N	5° 47,88' W	2713,0	SSW 12	71,6	0,6	Multiple net	MN	surface	
PS62/297-1	02.09.02	02:17	81° 50,07' N	5° 47,60' W	2708,0	SSW 12	75,3	0,4	Multiple net	MN	at depth	
PS62/297-1	02.09.02	02:26	81° 50,06' N	5° 47,15' W	2692,0	SSW 12	85,9	0,4	Multiple net	MN	on deck	
PS62/298-1	02.09.02	04:11	81° 55,20' N	5° 37,82' W	2965,0	SSW 10	65,8	0,7	Multiple net	MN	surface	
PS62/298-1	02.09.02	04:16	81° 55,19' N	5° 37,65' W	2969,0	SSW 10	105,6	0,3	Multiple net	MN	at depth	100m Draht gesteckt
PS62/298-1	02.09.02	04:16	81° 55,19' N	5° 37,65' W	2969,0	SSW 10	105,6	0,3	Multiple net	MN	Hoisting	
PS62/298-1	02.09.02	04:22	81° 55,19' N	5° 37,72' W	2973,0	SSW 10	203,6	0,0	Multiple net	MN	on deck	
PS62/299-1	02.09.02	05:33	82° 0,10' N	5° 32,48' W	3127,0	SW 10	109,6	0,3	Multiple net	MN	surface	
PS62/299-1	02.09.02	05:37	82° 0,09' N	5° 32,38' W	3131,0	SW 10	67,9	0,4	Multiple net	MN	at depth	100 m Draht gesteckt
PS62/299-1	02.09.02	05:38	82° 0,09' N	5° 32,34' W	3133,0	SW 9	70,9	0,5	Multiple net	MN	Hoisting	
PS62/299-1	02.09.02	05:45	82° 0,08' N	5° 32,31' W	3143,0	SW 9	200,0	0,0	Multiple net	MN	on deck	
PS62/300-1	02.09.02	07:25	81° 59,13' N	5° 25,11' W	3196,0	SW 10	98,1	0,5	Ice Station alongside Floe	ICEST	Alongside Floe	
PS62/300-1	02.09.02	07:36	81° 59,09' N	5° 24,61' W	3195,0	SW 9	131,6	0,4	Ice Station alongside Floe	ICEST	Ice Gangway on the ice	
PS62/300-1	02.09.02	08:06	81° 59,01' N	5° 23,14' W	3189,2	SW 8	122,9	0,5	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/300-1	02.09.02	13:14	81° 58,62' N	5° 20,73' W	3274,4	N 12	185,6	0,2	Ice Station alongside Floe	ICEST	Scientists on board	
PS62/300-1	02.09.02	13:15	81° 58,61' N	5° 20,74' W	3272,0	N 12	189,5	0,4	Ice Station alongside Floe	ICEST	Ice Gangway on board	
PS62/300-1	02.09.02	13:17	81° 58,60' N	5° 20,79' W	3269,2	N 12	210,8	0,7	Ice Station alongside Floe	ICEST	Departure from floe	
PS62/301-1	02.09.02	13:28	81° 58,46' N	5° 20,92' W	3289,0	N 10	165,6	5,3	HydroSweep/ParaSound profile	HS_PS	start track	
PS62/301-1	02.09.02	17:19	81° 35,67' N	4° 55,86' W	3980,0	NNW 11	150,6	2,8	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/301-1	02.09.02	22:26	81° 50,11' N	6° 29,20' W	3413,0	N 8	228,9	4,6	HydroSweep/ParaSound profile	HS_PS	alter course	Drehen nach Eislage auf sw-liche Kurse
PS62/301-1	02.09.02	23:07	81° 45,65' N	6° 32,17' W	3454,0	NNW 7	175,9	9,1	HydroSweep/ParaSound profile	HS_PS	alter course	SE-liche Kurse nach Eislage
PS62/301-1	03.09.02	05:18	81° 10,11' N	4° 43,62' W	3503,0	NNW 6	236,6	7,6	HydroSweep/ParaSound profile	HS_PS	profile end	
PS62/302-1	03.09.02	06:02	81° 11,16' N	4° 35,78' W	3597,0	NW 7	129,8	0,2	Ice Station alongside Floe	ICEST	Alongside Floe	
PS62/302-1	03.09.02	06:15	81° 11,15' N	4° 35,70' W	3596,0	NNW 6	94,9	0,0	Ice Station alongside Floe	ICEST	Ice Gangway on the ice	
PS62/302-1	03.09.02	07:55	81° 11,02' N	4° 35,00' W	3590,4	NNW 5	87,5	0,0	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/302-1	03.09.02	11:01	81° 11,19' N	4° 32,08' W	3591,5	WSW 3	86,7	0,0	Ice Station alongside Floe	ICEST	Scientists on board	Abbruch der Station wegen Zerbrechen der Scholle
PS62/302-1	03.09.02	11:04	81° 11,20' N	4° 32,02' W	3591,6	WSW 3	86,4	0,0	Ice Station alongside Floe	ICEST	Ice Gangway on board	
PS62/302-1	03.09.02	11:04	81° 11,20' N	4° 32,02' W	3591,6	WSW 3	86,4	0,0	Ice Station alongside Floe	ICEST	Departure from floe	
PS62/303-1	03.09.02	11:12	81° 11,28' N	4° 31,56' W	3591,6	WSW 3	66,0	2,0	Multiple net	MN	surface	
PS62/303-1	03.09.02	11:17	81° 11,39' N	4° 30,09' W	3583,6	WSW 4	62,6	3,3	Multiple net	MN	at depth	100 m
PS62/303-1	03.09.02	11:24	81° 11,39' N	4° 30,00' W	3591,6	SW 3	73,3	0,9	Multiple net	MN	on deck	
PS62/304-1	03.09.02	13:17	81° 10,30' N	5° 29,46' W	3143,0	SW 4	174,0	3,3	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/304-1	03.09.02	13:33	81° 9,35' N	5° 29,54' W	2883,0	SW 4	179,9	2,9	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/304-1	03.09.02	13:40	81° 8,72' N	5° 30,40' W	2761,0	SW 4	200,6	5,0	Seismic reflection profile	SEISREFL	profile start	
PS62/304-1	03.09.02	14:10	81° 6,09' N	5° 29,95' W	2382,0	SW 4	180,6	5,7	Seismic reflection profile	SEISREFL	alter course	158°
PS62/304-1	03.09.02	21:18	80° 30,41' N	3° 59,07' W	3007,0	SW 6	131,7	5,3	Seismic reflection profile	SEISREFL	alter course	auf Suedkurs
PS62/304-1	04.09.02	14:52	78° 54,00' N	4° 0,06' W	2004,0	SSW 4	171,3	5,8	Seismic reflection profile	SEISREFL	alter course	090°
PS62/304-1	04.09.02	17:07	78° 53,94' N	3° 1,77' W	2508,0	SW 5	88,6	5,7	Seismic reflection profile	SEISREFL	alter course	neuer Kurs 360°
PS62/304-1	04.09.02	23:53	79° 26,36' N	3° 0,06' W	2377,0	N 4	2,2	4,5	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/304-1	05.09.02	12:00	80° 24,37' N	2° 59,94' W	3383,0	W 5	358,6	5,1	Seismic reflection profile	SEISREFL	end of profile	
PS62/304-1	05.09.02	12:19	80° 25,28' N	3° 0,90' W	3373,0	W 5	330,0	2,9	Seismic reflection profile	SEISREFL	streamer on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/304-1	05.09.02	12:24	80° 25,51' N	3° 1,71' W	3392,0	W 5	330,5	3,0	Seismic reflection profile	SEISREFL	array on deck	
PS62/305-1	05.09.02	22:30	81° 11,50' N	5° 9,72' W	3078,0	WNW 4	284,6	3,2	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/305-1	05.09.02	22:40	81° 11,74' N	5° 12,38' W	3085,0	WNW 4	303,2	3,6	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/305-1	05.09.02	22:45	81° 11,88' N	5° 14,06' W	3087,0	WNW 5	294,2	5,7	Seismic reflection profile	SEISREFL	profile start	1. Schuß
PS62/305-1	06.09.02	07:21	80° 48,36' N	8° 57,63' W	119,9	NNE 6	232,8	6,1	Seismic reflection profile	SEISREFL	alter course	
PS62/305-1	06.09.02	09:21	80° 40,18' N	8° 35,04' W	57,1	N 5	125,8	5,8	Seismic reflection profile	SEISREFL	array on deck	Reparatur Blase & kanone
PS62/305-1	06.09.02	09:53	80° 38,18' N	8° 31,59' W	49,1	N 4	181,7	5,3	Seismic reflection profile	SEISREFL	airguns in the water	Fortsetzung Profil
PS62/305-1	06.09.02	10:14	80° 36,23' N	8° 30,50' W	210,0	N 5	154,1	5,9	Seismic reflection profile	SEISREFL	alter course	auf ENE-liche Kurse
PS62/305-1	06.09.02	20:05	80° 53,36' N	3° 11,18' W	3802,0	NNW 9	106,7	5,8	Seismic reflection profile	SEISREFL	alter course	Drehen wegen Eislage 2,3 sm vor WP auf Südkurs
PS62/305-1	06.09.02	21:36	80° 44,46' N	3° 10,39' W	3510,0	N 9	217,2	6,0	Seismic reflection profile	SEISREFL	alter course	Drehen auf 220° wegen Eislage
PS62/305-1	06.09.02	22:41	80° 39,43' N	3° 36,41' W	3150,0	NNW 6	222,0	6,2	Seismic reflection profile	SEISREFL	alter course	Back on the JokatTrack 245°
PS62/305-1	07.09.02	05:20	80° 24,35' N	6° 55,35' W	250,8	NNE 4	240,1	5,7	Seismic reflection profile	SEISREFL	alter course	
PS62/305-1	07.09.02	07:30	80° 18,14' N	6° 1,22' W	371,8	NNE 1	122,1	5,2	Seismic reflection profile	SEISREFL	alter course	
PS62/305-1	07.09.02	13:46	80° 17,99' N	2° 53,18' W	3277,0	SW 2	95,8	6,5	Seismic reflection profile	SEISREFL	alter course	111°
PS62/305-1	07.09.02	19:45	80° 6,08' N	6° 0,02' E	2817,0	SW 4	92,6	5,0	Seismic reflection profile	SEISREFL	alter course	
PS62/305-1	08.09.02	02:23	80° 7,00' N	3° 29,12' E	1942,0	SW 2	90,0	5,5	Seismic reflection profile	SEISREFL	alter course	074°
PS62/305-1	08.09.02	08:40	80° 15,85' N	6° 35,17' E	579,4	E 5	75,2	5,3	Seismic reflection profile	SEISREFL	alter course	Schweinohr 1km
PS62/305-1	08.09.02	09:15	80° 15,94' N	6° 34,95' E	582,9	E 5	330,8	4,8	Seismic reflection profile	SEISREFL	alter course	auf Kurs 330°
PS62/305-1	08.09.02	18:14	80° 59,78' N	3° 59,54' E	722,7	E 8	324,2	5,9	Seismic reflection profile	SEISREFL	end of profile	
PS62/305-1	08.09.02	18:32	81° 0,70' N	3° 55,71' E	736,9	E 7	326,6	3,3	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/305-1	08.09.02	18:37	81° 0,92' N	3° 54,77' E	726,0	E 7	327,4	3,2	Seismic reflection profile	SEISREFL	array on deck	
PS62/306-1	08.09.02	18:42	81° 1,26' N	3° 53,82' E	729,0	E 9	345,8	7,3	Calibration	CAL	start	1 Magnetik Drehkreis
PS62/306-1	08.09.02	19:46	81° 1,30' N	3° 53,44' E	731,1	E 7	343,4	6,8	Calibration	CAL	End	1 Magnetik-Drehkreis
PS62/306-2	08.09.02	20:03	81° 2,56' N	3° 52,76' E	729,1	ENE 7	328,6	0,9	Multiple net	MN	surface	
PS62/306-2	08.09.02	20:08	81° 2,62' N	3° 52,62' E	729,5	ENE 7	355,0	0,9	Multiple net	MN	at depth	100 m
PS62/306-2	08.09.02	20:16	81° 2,68' N	3° 52,66' E	729,4	ENE 7	347,1	0,6	Multiple net	MN	on deck	
PS62/307-1	08.09.02	21:19	81° 8,98' N	3° 32,99' E	756,7	E 6	330,1	0,5	Multiple net	MN	surface	
PS62/307-1	08.09.02	21:24	81° 9,00' N	3° 32,96' E	755,9	E 6	11,5	0,5	Multiple net	MN	at depth	100 m
PS62/307-1	08.09.02	21:31	81° 9,04' N	3° 32,86' E	757,3	E 6	316,6	0,4	Multiple net	MN	on deck	
PS62/308-1	08.09.02	22:41	81° 18,05' N	3° 8,07' E	822,2	E 5	207,6	0,4	Multiple net	MN	surface	
PS62/308-1	08.09.02	22:45	81° 18,04' N	3° 7,99' E	824,2	E 5	229,6	0,3	Multiple net	MN	at depth	100 m
PS62/308-1	08.09.02	22:53	81° 18,01' N	3° 7,71' E	825,5	ENE 4	225,9	0,6	Multiple net	MN	on deck	
PS62/309-1	09.09.02	00:45	81° 27,04' N	2° 40,86' E	1048,0	ESE 5	247,2	0,6	Multiple net	MN	surface	
PS62/309-1	09.09.02	00:49	81° 27,03' N	2° 40,68' E	1046,0	ESE 4	308,4	0,3	Multiple net	MN	at depth	
PS62/309-1	09.09.02	00:55	81° 27,04' N	2° 40,45' E	1046,0	ESE 5	332,9	0,3	Multiple net	MN	on deck	
PS62/310-1	09.09.02	02:49	81° 31,69' N	2° 28,93' E	1165,0	E 5	8,0	0,4	Multiple net	MN	surface	
PS62/310-1	09.09.02	02:52	81° 31,70' N	2° 28,91' E	1164,0	E 6	358,4	0,3	Multiple net	MN	at depth	
PS62/310-1	09.09.02	02:59	81° 31,72' N	2° 28,85' E	1163,0	E 5	328,9	0,2	Multiple net	MN	on deck	
PS62/311-1	09.09.02	06:16	81° 40,15' N	2° 2,50' E	1677,0	ESE 1	29,3	0,3	Multiple net	MN	surface	
PS62/311-1	09.09.02	06:20	81° 40,15' N	2° 2,55' E	1678,0	ENE 1	33,9	0,2	Multiple net	MN	at depth	113m Draht ausgesteckt
PS62/311-1	09.09.02	06:21	81° 40,15' N	2° 2,56' E	1679,0	E 1	26,7	0,0	Multiple net	MN	Hoisting	
PS62/311-1	09.09.02	06:27	81° 40,15' N	2° 2,61' E	1675,0	E 1	132,6	0,1	Multiple net	MN	on deck	
PS62/312-1	09.09.02	09:23	81° 44,35' N	1° 47,41' E	0,0	E 4	347,2	0,0	Ice Station alongside Floe	ICEST	Scientists on the ice	per Helicopter
PS62/312-1	09.09.02	11:17	81° 44,18' N	1° 47,96' E	2103,6	ESE 3	347,9	0,0	Ice Station alongside Floe	ICEST	Scientists on board	per Helikopter
PS62/312-2	09.09.02	12:18	0° 0,00' N	0° 0,00' E	0,0	N 0	0,0	0,0	Ice Station alongside Floe	ICEST	Ice Gangway on the ice	
PS62/312-2	09.09.02	12:26	81° 44,20' N	1° 48,10' E	2102,0	ESE 5	76,0	0,2	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/312-2	09.09.02	15:52	81° 44,67' N	1° 48,19' E	2125,6	SE 5	2,6	0,4	Ice Station alongside Floe	ICEST	Scientists on board	
PS62/312-2	09.09.02	16:03	81° 44,72' N	1° 48,18' E	2128,8	SE 6	358,2	0,3	Ice Station alongside Floe	ICEST	Ice Gangway on board	
PS62/312-3	09.09.02	17:05	81° 45,01' N	1° 48,13' E	2150,0	SE 6	0,1	0,4	Multiple net	MN	surface	
PS62/312-3	09.09.02	17:09	81° 45,03' N	1° 48,14' E	2152,0	SE 6	4,9	0,4	Multiple net	MN	at depth	112m Draht ausgesteckt
PS62/312-3	09.09.02	17:10	81° 45,03' N	1° 48,14' E	2150,0	SE 6	4,9	0,4	Multiple net	MN	Hoisting	
PS62/312-3	09.09.02	17:16	81° 45,06' N	1° 48,14' E	2153,0	SE 6	0,2	0,3	Multiple net	MN	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/313-1	10.09.02	07:13	82° 3,37' N	3° 14,91' E	1343,6	SE 13	4,6	0,4	Ice Station alongside Floe	ICEST	Alongside Floe	
PS62/313-1	10.09.02	07:18	82° 3,41' N	3° 14,86' E	1358,8	SE 11	1,1	0,4	Ice Station alongside Floe	ICEST	Ice Gangway on the ice	
PS62/313-1	10.09.02	08:03	82° 3,72' N	3° 14,68' E	1415,6	SE 10	358,8	0,3	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/313-1	10.09.02	09:30	82° 4,09' N	3° 14,65' E	1454,4	SE 7	359,2	0,2	Ice Station alongside Floe	ICEST	Scientists on board	Unterbrechen wegen Nebel
PS62/313-2	10.09.02	09:46	82° 4,13' N	3° 14,67' E	1460,8	SE 6	332,6	0,0	Multiple net	MN	surface	
PS62/313-2	10.09.02	09:50	82° 4,14' N	3° 14,67' E	1463,6	SE 6	330,0	0,2	Multiple net	MN	at depth	104 m
PS62/313-2	10.09.02	09:55	82° 4,15' N	3° 14,67' E	1466,0	SE 6	333,5	0,2	Multiple net	MN	on deck	
PS62/313-1	10.09.02	12:54	0° 0,00' N	0° 0,00' E	0,0	N 0	0,0	0,0	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/313-1	10.09.02	13:03	0° 0,00' N	0° 0,00' E	0,0	N 0	0,0	0,0	Ice Station alongside Floe	ICEST	Scientists on board	
PS62/313-1	10.09.02	13:40	82° 3,78' N	3° 14,89' E	1415,6	NE 2	216,9	0,2	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/313-1	10.09.02	13:51	82° 3,76' N	3° 14,77' E	1414,4	NNE 2	253,3	0,1	Ice Station alongside Floe	ICEST	Scientists on board	
PS62/313-1	10.09.02	14:33	82° 3,66' N	3° 14,36' E	1407,2	N 4	201,7	0,2	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/313-1	10.09.02	16:00	82° 3,57' N	3° 12,94' E	1406,0	ENE 4	304,8	0,2	Ice Station alongside Floe	ICEST	Scientists on board	
PS62/313-1	10.09.02	16:09	82° 3,56' N	3° 12,79' E	1409,2	ENE 4	270,2	0,1	Ice Station alongside Floe	ICEST	Ice Gangway on board	
PS62/313-1	10.09.02	16:13	82° 3,56' N	3° 12,72' E	1412,0	ENE 3	251,0	0,1	Ice Station alongside Floe	ICEST	Departure from floe	
PS62/314-1	10.09.02	19:03	81° 48,73' N	3° 57,91' E	881,5	N 4	166,9	4,0	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/314-1	10.09.02	19:18	81° 47,78' N	3° 59,14' E	853,2	N 5	172,6	3,8	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/314-1	10.09.02	19:21	81° 47,54' N	3° 59,20' E	847,9	N 5	181,0	5,5	Seismic reflection profile	SEISREFL	profile start	1. Schuss
PS62/314-1	10.09.02	20:24	81° 41,75' N	3° 59,97' E	755,2	NNW 6	186,6	4,3	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/314-1	11.09.02	00:00	81° 22,22' N	3° 59,98' E	754,6	NW 8	172,9	5,3	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/314-1	11.09.02	04:27	80° 59,67' N	3° 59,92' E	724,9	NW 8	179,0	4,9	Seismic reflection profile	SEISREFL	alter course	
PS62/314-1	11.09.02	07:32	81° 0,00' N	2° 20,44' E	1105,0	NNW 6	271,1	5,1	Seismic reflection profile	SEISREFL	alter course	frühzeitige Kursänderung wegen Eisgrenze
PS62/314-1	11.09.02	08:38	81° 5,15' N	2° 10,00' E	1157,0	WNW 6	7,9	5,9	Seismic reflection profile	SEISREFL	alter course	auf 360° warten auf weitere Anweisung vom Fahrtleiter
PS62/314-1	11.09.02	09:59	81° 12,00' N	2° 13,33' E	1104,0	WNW 5	90,0	5,9	Seismic reflection profile	SEISREFL	alter course	nach Osten gedreht
PS62/314-1	11.09.02	17:29	81° 12,01' N	6° 19,76' E	715,6	N 2	86,7	5,2	Seismic reflection profile	SEISREFL	alter course	
PS62/314-1	11.09.02	19:47	81° 24,24' N	6° 24,16' E	813,9	WNW 0	358,3	6,1	Seismic reflection profile	SEISREFL	alter course	
PS62/314-1	11.09.02	20:17	81° 23,78' N	6° 9,74' E	810,2	N 1	276,0	5,9	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/314-1	12.09.02	00:24	81° 24,39' N	3° 41,76' E	768,2	N 4	352,0	4,7	Seismic reflection profile	SEISREFL	alter course	Nordkurs entlang Eiskante
PS62/314-1	12.09.02	02:22	81° 34,89' N	3° 40,93' E	787,9	N 5	28,9	5,6	Seismic reflection profile	SEISREFL	alter course	072°
PS62/314-1	12.09.02	09:36	81° 49,48' N	7° 33,74' E	811,9	NNE 5	29,9	5,0	Seismic reflection profile	SEISREFL	end of profile	
PS62/314-1	12.09.02	10:23	81° 51,50' N	7° 33,63' E	834,5	NE 5	311,0	1,5	Seismic reflection profile	SEISREFL	array on deck	
PS62/315-1	12.09.02	12:10	81° 57,23' N	7° 53,02' E	1594,0	NE 7	225,1	0,2	Ice Station alongside Floe	ICEST	Alongside Floe	
PS62/315-1	12.09.02	12:20	81° 57,21' N	7° 52,72' E	810,4	NE 6	233,7	0,2	Ice Station alongside Floe	ICEST	Ice Gangway on the ice	
PS62/315-1	12.09.02	12:37	81° 57,20' N	7° 52,19' E	809,6	NE 5	244,4	0,2	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/315-1	12.09.02	16:50	81° 57,05' N	7° 46,08' E	808,0	NNE 5	286,2	0,2	Ice Station alongside Floe	ICEST	Scientists on board	Pause
PS62/315-1	12.09.02	17:20	81° 57,07' N	7° 45,39' E	807,2	NNE 5	288,9	0,2	Ice Station alongside Floe	ICEST	Scientists on the ice	
PS62/315-1	12.09.02	18:35	81° 57,18' N	7° 44,36' E	804,4	NNE 4	304,9	0,2	Ice Station alongside Floe	ICEST	Scientists on board	
PS62/315-1	12.09.02	18:41	81° 57,19' N	7° 44,30' E	804,0	NNE 4	310,7	0,2	Ice Station alongside Floe	ICEST	Ice Gangway on board	
PS62/315-1	12.09.02	18:43	81° 57,19' N	7° 44,29' E	804,0	NNE 4	307,7	0,2	Ice Station alongside Floe	ICEST	Departure from floe	
PS62/315-2	12.09.02	19:59	81° 56,42' N	7° 43,58' E	813,6	N 3	27,1	0,3	Multiple net	MN	surface	
PS62/315-2	12.09.02	20:02	81° 56,43' N	7° 43,58' E	813,2	NNE 4	186,4	0,0	Multiple net	MN	at depth	106 m
PS62/315-2	12.09.02	20:08	81° 56,45' N	7° 43,62' E	813,2	NNE 4	191,2	0,0	Multiple net	MN	on deck	
PS62/316-1	12.09.02	22:33	81° 44,89' N	8° 28,78' E	830,5	N 4	230,0	1,0	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/316-1	12.09.02	22:37	81° 44,80' N	8° 27,90' E	829,5	N 4	235,8	3,7	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/316-1	12.09.02	22:52	81° 44,23' N	8° 22,72' E	833,9	NNE 3	234,3	4,5	Seismic reflection profile	SEISREFL	airguns in the water	1. Schuss
PS62/316-1	12.09.02	22:53	81° 44,18' N	8° 22,33' E	836,9	N 3	224,3	4,5	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/316-1	12.09.02	22:54	81° 44,12' N	8° 21,95' E	847,5	NNE 3	227,5	4,8	Seismic reflection profile	SEISREFL	profile start	
PS62/316-1	12.09.02	23:12	81° 43,29' N	8° 12,15' E	861,9	N 3	238,1	5,8	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/316-1	13.09.02	00:11	81° 40,26' N	7° 42,01' E	811,2	N 4	243,5	3,6	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/316-1	13.09.02	00:46	81° 38,58' N	7° 25,95' E	809,5	N 3	239,8	4,7	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/316-1	13.09.02	06:00	81° 22,89' N	4° 51,90' E	808,5	WNW 2	233,1	5,2	Seismic reflection profile	SEISREFL	end of profile	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/316-1	13.09.02	06:12	81° 22,60' N	4° 48,47' E	791,2	WNW 2	253,0	1,8	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/316-1	13.09.02	06:18	81° 22,56' N	4° 47,41' E	783,5	W 2	248,8	1,8	Seismic reflection profile	SEISREFL	array on deck	
PS62/317-1	13.09.02	08:06	81° 24,18' N	5° 40,49' E	922,5	W 4	96,9	0,4	Gravity corer	GC	surface	
PS62/317-1	13.09.02	08:19	81° 24,22' N	5° 40,96' E	940,2	W 5	64,3	0,7	Gravity corer	GC	at sea bottom	917 m
PS62/317-1	13.09.02	08:32	81° 24,26' N	5° 41,24' E	954,2	W 4	350,9	0,2	Gravity corer	GC	on deck	
PS62/317-2	13.09.02	09:15	81° 24,39' N	5° 40,26' E	886,2	WSW 4	5,0	0,2	Gravity corer	GC	surface	
PS62/317-2	13.09.02	09:31	81° 24,43' N	5° 40,59' E	905,2	WSW 4	337,0	0,1	Gravity corer	GC	at sea bottom	904 m
PS62/317-2	13.09.02	09:47	81° 24,45' N	5° 40,90' E	915,8	WSW 4	90,6	0,7	Gravity corer	GC	surface	
PS62/318-1	13.09.02	11:14	81° 27,79' N	5° 31,52' E	849,5	W 6	157,1	1,9	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/318-1	13.09.02	11:29	81° 26,78' N	5° 32,90' E	864,9	W 6	166,6	2,6	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/318-1	13.09.02	11:30	81° 26,74' N	5° 32,98' E	864,2	W 6	164,0	3,0	Seismic reflection profile	SEISREFL	profile start	1. Schuß
PS62/318-1	13.09.02	15:48	81° 4,45' N	5° 30,02' E	674,5	WSW 6	178,1	5,1	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/318-1	13.09.02	18:01	80° 52,96' N	5° 30,15' E	764,6	SW 7	181,1	4,8	Seismic reflection profile	SEISREFL	end of profile	
PS62/318-1	13.09.02	18:15	80° 52,34' N	5° 30,46' E	761,6	WSW 7	166,4	2,0	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/318-1	13.09.02	18:22	80° 52,10' N	5° 30,66' E	763,2	WSW 7	170,9	1,9	Seismic reflection profile	SEISREFL	array on deck	
PS62/319-1	14.09.02	06:10	79° 11,44' N	5° 1,68' E	1487,0	S 13	216,5	2,4	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/319-1	14.09.02	06:29	79° 12,36' N	4° 57,22' E	1563,0	S 13	303,5	3,8	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/319-1	14.09.02	06:30	79° 12,40' N	4° 56,91' E	1567,0	S 13	296,3	4,6	Seismic reflection profile	SEISREFL	profile start	1. Schuss
PS62/319-1	14.09.02	20:26	79° 50,47' N	0° 58,89' W	2795,0	NNE 2	301,1	5,5	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/319-1	15.09.02	00:03	80° 0,07' N	2° 32,04' W	2689,0	N 4	301,9	5,6	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/319-1	15.09.02	07:28	80° 18,14' N	5° 31,17' W	917,2	NNE 10	300,9	5,6	Seismic reflection profile	SEISREFL	alter course	
PS62/319-1	15.09.02	11:47	80° 5,89' N	3° 59,05' W	2169,0	NNE 11	114,7	3,8	Seismic reflection profile	SEISREFL	alter course	östliche Kurse nach Eislage
PS62/319-1	15.09.02	20:30	80° 5,60' N	0° 8,96' E	2852,0	NNE 10	171,8	5,3	Seismic reflection profile	SEISREFL	alter course	drehen auf Südkurs
PS62/319-1	16.09.02	00:00	79° 47,71' N	0° 4,23' E	2817,0	NNE 10	278,0	4,8	Seismic reflection profile	SEISREFL	alter course	Westkurs entsprechend Eislage
PS62/319-1	16.09.02	00:23	79° 48,07' N	0° 6,76' W	2806,0	NNE 10	265,8	6,3	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/319-1	16.09.02	12:38	79° 48,00' N	6° 3,11' W	288,7	NNW 2	269,2	5,6	Seismic reflection profile	SEISREFL	alter course	SÜD
PS62/319-1	16.09.02	16:16	79° 29,73' N	5° 59,47' W	327,2	NNW 3	165,9	5,4	Seismic reflection profile	SEISREFL	alter course	
PS62/319-1	16.09.02	21:01	79° 29,96' N	3° 37,72' W	2156,0	NNW 4	88,0	5,7	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/319-1	17.09.02	05:54	79° 29,99' N	0° 31,22' E	3140,0	NNW 6	87,7	5,7	Seismic reflection profile	SEISREFL	alter course	
PS62/319-1	17.09.02	14:00	80° 10,93' N	0° 29,45' E	3099,0	N 5	353,5	4,2	Seismic reflection profile	SEISREFL	end of profile	
PS62/319-1	17.09.02	14:16	80° 11,37' N	0° 26,27' E	3085,0	NNE 4	283,2	3,1	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/319-1	17.09.02	14:21	80° 11,37' N	0° 24,62' E	3095,0	NNE 5	267,3	4,4	Seismic reflection profile	SEISREFL	array on deck	
PS62/320-1	17.09.02	17:25	80° 12,07' N	0° 54,21' W	2190,0	N 4	347,6	2,7	Rectangular midwater trawl	RMT	surface	
PS62/320-1	17.09.02	17:27	80° 12,15' N	0° 54,33' W	2205,0	N 4	346,7	2,3	Rectangular midwater trawl	RMT	action	26 m Draht ausgesteckt
PS62/320-1	17.09.02	17:48	80° 12,88' N	0° 55,58' W	2339,0	N 3	349,0	2,6	Rectangular midwater trawl	RMT	End of Trawl	
PS62/320-1	17.09.02	17:51	80° 12,99' N	0° 55,67' W	2341,0	N 4	353,0	2,1	Rectangular midwater trawl	RMT	on deck	
PS62/320-2	17.09.02	17:59	80° 13,14' N	0° 55,58' W	2315,0	N 4	358,9	2,6	Rectangular midwater trawl	RMT	surface	
PS62/320-2	17.09.02	18:08	80° 13,48' N	0° 55,48' W	2301,0	N 3	3,6	2,2	Rectangular midwater trawl	RMT	action	180m ausgesteckt
PS62/320-2	17.09.02	18:27	80° 14,17' N	0° 54,39' W	2402,0	N 4	16,3	2,2	Rectangular midwater trawl	RMT	End of Trawl	
PS62/320-2	17.09.02	18:36	80° 14,49' N	0° 53,85' W	2460,0	N 4	20,8	2,2	Rectangular midwater trawl	RMT	on deck	
PS62/321-1	17.09.02	20:12	80° 9,53' N	1° 32,87' W	3011,0	N 4	187,3	4,1	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/321-1	17.09.02	20:33	80° 8,26' N	1° 33,77' W	2982,0	NNE 3	182,8	3,1	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/321-1	17.09.02	20:33	80° 8,26' N	1° 33,77' W	2982,0	NNE 5	182,8	3,1	Seismic reflection profile	SEISREFL	profile start	1. Schuss
PS62/321-1	18.09.02	11:26	78° 53,38' N	1° 29,69' W	2683,0	N 5	130,7	3,9	Seismic reflection profile	SEISREFL	alter course	
PS62/321-1	18.09.02	14:55	78° 54,00' N	0° 2,30' E	2503,0	N 9	89,1	5,5	Seismic reflection profile	SEISREFL	alter course	Nordkurs
PS62/321-1	18.09.02	21:35	79° 30,27' N	0° 0,02' W	2829,0	NW 8	1,1	5,3	Seismic reflection profile	SEISREFL	alter course	Profil unterbrochen
PS62/321-1	18.09.02	21:59	79° 30,54' N	0° 10,54' E	2822,0	WNW 9	91,3	5,6	Seismic reflection profile	SEISREFL	alter course	
PS62/321-1	18.09.02	22:05	79° 30,23' N	0° 12,44' E	2794,0	NW 8	183,1	5,7	Seismic reflection profile	SEISREFL	alter course	Profil fortgesetzt
PS62/321-1	19.09.02	01:30	79° 11,66' N	0° 12,01' E	2756,0	NW 7	180,6	5,6	Seismic reflection profile	SEISREFL	alter course	270°
PS62/321-1	19.09.02	03:28	79° 12,01' N	0° 44,39' W	2748,0	WNW 5	271,6	5,5	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/321-1	19.09.02	15:30	79° 12,00' N	6° 5,17' W	653,9	SSW 7	271,1	6,0	Seismic reflection profile	SEISREFL	alter course	180°
PS62/321-1	19.09.02	19:28	78° 50,78' N	6° 6,93' W	330,6	SSW 6	182,5	5,6	Seismic reflection profile	SEISREFL	alter course	
PS62/321-1	19.09.02	23:52	78° 50,98' N	4° 14,46' W	1760,0	SW 6	92,5	5,0	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/321-1	20.09.02	08:36	78° 51,00' N	0° 34,58' W	2697,0	WSW 6	80,6	5,4	Seismic reflection profile	SEISREFL	alter course	Profilunterbrechung wegen Helimag Start
PS62/321-1	20.09.02	08:54	78° 50,97' N	0° 35,33' W	2699,0	SW 7	86,4	5,7	Seismic reflection profile	SEISREFL	alter course	back on track

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/321-1	20.09.02	10:23	78° 50,81' N	0° 5,26' E	2611,0	WSW 6	172,2	4,3	Seismic reflection profile	SEISREFL	alter course	auf Südkurs
PS62/321-1	20.09.02	12:24	78° 41,61' N	0° 5,99' E	2742,0	WSW 7	181,1	5,5	Seismic reflection profile	SEISREFL	alter course	270°
PS62/321-1	21.09.02	01:24	78° 41,36' N	5° 44,51' W	337,8	SSW 8	267,0	5,3	Seismic reflection profile	SEISREFL	alter course	112°
PS62/321-1	21.09.02	06:33	78° 29,97' N	3° 30,11' W	2256,0	SW 8	111,4	6,0	Seismic reflection profile	SEISREFL	alter course	
PS62/321-1	21.09.02	17:00	78° 29,93' N	0° 50,63' E	1545,0	SW 10	92,3	5,4	Seismic reflection profile	SEISREFL	end of profile	Letzter Schuss; Drehen in Wind für Einholen Array
PS62/321-1	21.09.02	17:27	78° 28,87' N	0° 51,24' E	1344,0	SSW 10	189,3	1,3	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/321-1	21.09.02	17:32	78° 28,77' N	0° 51,13' E	1316,0	SW 9	191,5	1,4	Seismic reflection profile	SEISREFL	array on deck	
PS62/322-1	21.09.02	17:38	78° 28,49' N	0° 50,45' E	1257,0	SSW 10	213,9	6,0	Calibration	CAL	start	Magnetic Survey - 2 Kreise, 1 Stb., 1 Bb.
PS62/322-1	21.09.02	19:19	78° 28,90' N	0° 51,56' E	1388,0	SW 11	212,5	7,1	Calibration	CAL	End	
PS62/323-1	21.09.02	19:22	78° 28,57' N	0° 50,97' E	1280,0	SW 11	189,6	7,1	HydroSweep/ParaSound profile	HS_PS	start track	
PS62/323-1	22.09.02	05:28	79° 27,81' N	0° 50,04' W	2778,0	NNE 2	7,3	9,0	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/323-1	22.09.02	07:21	79° 27,99' N	0° 29,10' E	3181,0	N 3	92,9	8,1	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/323-1	22.09.02	09:00	79° 32,48' N	1° 35,12' E	3031,0	NNW 5	6,4	1,9	HydroSweep/ParaSound profile	HS_PS	profile end	
PS62/324-1	22.09.02	09:11	79° 32,48' N	1° 34,87' E	3051,0	N 5	229,0	0,3	Rectangular midwater trawl	RMT	surface	
PS62/324-1	22.09.02	09:20	79° 32,67' N	1° 34,71' E	3055,0	NNW 4	358,8	1,7	Rectangular midwater trawl	RMT	action	180 m gefiert
PS62/324-1	22.09.02	09:40	79° 33,26' N	1° 34,89' E	3039,0	NNW 3	4,1	1,7	Rectangular midwater trawl	RMT	End of Trawl	
PS62/324-1	22.09.02	09:55	79° 33,65' N	1° 35,07' E	2973,0	NNW 4	15,0	0,6	Rectangular midwater trawl	RMT	on deck	
PS62/324-2	22.09.02	10:03	79° 33,63' N	1° 35,03' E	2972,0	N 5	321,6	0,2	Rectangular midwater trawl	RMT	surface	
PS62/324-2	22.09.02	10:13	79° 33,83' N	1° 34,96' E	2955,0	N 4	359,6	1,8	Rectangular midwater trawl	RMT	action	auf Tiefe 250m gefiert und mit 0,2 m/s gehievt
PS62/324-2	22.09.02	10:34	79° 34,45' N	1° 35,16' E	2988,0	NNW 5	9,7	1,1	Rectangular midwater trawl	RMT	on deck	
PS62/325-1	22.09.02	13:45	79° 35,39' N	2° 0,71' E	2184,0	NNW 6	177,9	0,9	UBA whale watching	UBA	begin	ZODIAK mit Walhydrofon zu Wasser
PS62/325-1	22.09.02	14:51	79° 34,27' N	1° 58,79' E	2523,0	NNW 8	181,4	0,9	UBA whale watching	UBA	end	Schlauchboot an Deck
PS62/326-1	22.09.02	16:11	79° 35,84' N	1° 22,95' E	2957,0	NNW 5	189,4	1,2	Rectangular midwater trawl	RMT	surface	
PS62/326-1	22.09.02	16:13	79° 35,77' N	1° 22,88' E	2960,0	NNW 5	191,5	2,3	Rectangular midwater trawl	RMT	action	30 m Draht ausgesteckt
PS62/326-1	22.09.02	16:34	79° 34,87' N	1° 22,66' E	2999,0	N 7	175,2	2,6	Rectangular midwater trawl	RMT	End of Trawl	
PS62/326-1	22.09.02	16:38	79° 34,71' N	1° 22,72' E	3015,0	NNW 6	178,4	2,3	Rectangular midwater trawl	RMT	on deck	
PS62/327-1	22.09.02	18:51	79° 42,18' N	0° 7,83' E	2823,0	N 5	227,0	1,6	Rectangular midwater trawl	RMT	surface	
PS62/327-1	22.09.02	18:55	79° 42,07' N	0° 7,57' E	2828,0	N 5	197,6	2,0	Rectangular midwater trawl	RMT	action	33m Draht gefiert
PS62/327-1	22.09.02	19:14	79° 41,38' N	0° 6,87' E	2826,0	NNW 5	189,5	2,1	Rectangular midwater trawl	RMT	End of Trawl	
PS62/327-1	22.09.02	19:19	79° 41,21' N	0° 6,72' E	2830,0	N 5	190,7	1,8	Rectangular midwater trawl	RMT	on deck	
PS62/328-1	23.09.02	06:10	78° 59,27' N	3° 58,32' W	2021,0	N 11	234,4	4,0	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/328-2	23.09.02	06:13	78° 59,16' N	3° 59,10' W	2016,0	N 10	233,3	3,4	Eisfischen	EF		nur Probe im freien Wasser
PS62/328-2	23.09.02	06:15	78° 59,10' N	3° 59,55' W	2007,0	N 10	231,2	3,2	Eisfischen	EF		nur Test - Korb im offenen Wasser
PS62/328-1	23.09.02	06:26	78° 58,49' N	4° 2,41' W	1982,0	N 9	213,6	3,9	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/328-1	23.09.02	06:28	78° 58,38' N	4° 2,70' W	1981,0	N 9	200,6	4,3	Seismic reflection profile	SEISREFL	profile start	1. Schuss
PS62/328-1	23.09.02	19:33	77° 47,75' N	4° 0,02' W	2742,0	N 14	181,6	6,1	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/328-1	24.09.02	02:55	77° 5,64' N	4° 0,05' W	1792,0	NNE 10	182,0	5,3	Seismic reflection profile	SEISREFL	alter course	090°
PS62/328-1	24.09.02	05:29	77° 6,01' N	2° 58,60' W	3085,0	NNW 10	94,6	5,3	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	24.09.02	13:05	77° 45,59' N	2° 59,99' W	2971,0	N 8	2,1	4,0	Seismic reflection profile	SEISREFL	array on deck	Reparatur von 2 Kannonen, Warteschleifen
PS62/328-1	24.09.02	15:00	77° 45,01' N	3° 5,34' W	2960,0	N 6	134,9	2,9	Seismic reflection profile	SEISREFL	airguns in the water	Profilfortsetzung
PS62/328-1	24.09.02	19:01	78° 6,01' N	2° 59,98' W	2836,0	WSW 3	0,2	5,6	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/328-1	25.09.02	04:52	78° 56,35' N	2° 59,81' W	2503,0	SSW 6	349,5	5,0	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	25.09.02	08:35	78° 54,97' N	1° 28,71' W	2677,0	S 3	205,2	5,3	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	25.09.02	20:40	77° 48,70' N	1° 30,03' W	3043,0	ESE 6	180,6	5,7	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/328-1	25.09.02	21:35	77° 43,66' N	1° 29,99' W	3059,0	E 8	180,2	5,5	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/328-1	26.09.02	04:33	77° 5,67' N	1° 30,13' W	3206,0	E 8	176,6	5,3	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	26.09.02	08:23	77° 5,96' N	0° 2,75' E	3251,0	ESE 8	93,4	5,6	Seismic reflection profile	SEISREFL	Remark	Drehen über steuerbord, wegen

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/328-1	26.09.02	08:49	77° 5,83' N	0° 0,29' E	3249,0	ESE 9	1,3	5,6	Seismic reflection profile	SEISREFL	Remark	Helistart back on track
PS62/328-1	26.09.02	17:35	77° 47,82' N	0° 1,02' E	3143,0	E 8	75,8	5,9	Seismic reflection profile	SEISREFL	Remark	drehen über Stb auf 095° wegen Helimag-Landung
PS62/328-1	26.09.02	17:41	77° 47,82' N	0° 3,62' E	3139,0	E 10	95,5	5,0	Seismic reflection profile	SEISREFL	Remark	drehen zurück auf Kurs nach Helimaglandung
PS62/328-1	27.09.02	01:40	78° 30,65' N	0° 0,04' E	2770,0	ENE 7	3,6	5,6	Seismic reflection profile	SEISREFL	alter course	090°
PS62/328-1	27.09.02	02:08	78° 30,52' N	0° 11,81' E	2422,0	ENE 6	160,3	5,9	Seismic reflection profile	SEISREFL	alter course	180°
PS62/328-1	27.09.02	05:32	78° 11,71' N	0° 11,89' E	3061,0	NE 6	180,8	5,5	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	27.09.02	15:16	78° 12,00' N	3° 21,06' W	2698,0	NNE 11	270,4	5,5	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/328-1	27.09.02	21:56	78° 12,03' N	6° 12,78' W	348,6	NE 11	273,0	5,7	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	28.09.02	01:34	77° 53,81' N	6° 11,88' W	389,5	N 11	180,4	5,5	Seismic reflection profile	SEISREFL	alter course	090°
PS62/328-1	28.09.02	13:54	77° 53,98' N	0° 57,72' W	3082,0	NNW 8	87,0	5,7	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/328-1	28.09.02	16:31	77° 54,13' N	0° 13,47' E	3088,0	NNW 8	88,7	5,2	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	28.09.02	19:55	77° 35,68' N	0° 11,97' E	3173,0	NNW 5	177,7	5,7	Seismic reflection profile	SEISREFL	alter course	
PS62/328-3	29.09.02	07:43	77° 35,82' N	4° 51,92' W	1316,0	N 2	245,6	2,3	Eisfischen	EF		
PS62/328-3	29.09.02	07:46	77° 35,78' N	4° 52,39' W	1306,0	N 2	248,3	2,1	Eisfischen	EF		Verholen 500 m voraus zu kleinerem Pfannkucheneis
PS62/328-3	29.09.02	07:54	77° 35,70' N	4° 54,35' W	1276,0	NNW 2	245,2	2,8	Eisfischen	EF		
PS62/328-3	29.09.02	07:55	77° 35,68' N	4° 54,55' W	1271,0	NNW 2	246,0	2,8	Eisfischen	EF		
PS62/328-4	29.09.02	10:28	77° 36,16' N	5° 57,79' W	347,6	W 2	264,0	2,4	Eisfischen	EF		Pfannekucheneis
PS62/328-1	29.09.02	11:11	77° 35,87' N	6° 15,15' W	291,9	W 1	191,4	4,0	Seismic reflection profile	SEISREFL	alter course	
PS62/328-1	29.09.02	14:30	77° 17,84' N	6° 12,14' W	283,0	SE 3	182,9	5,8	Seismic reflection profile	SEISREFL	alter course	090°
PS62/328-1	30.09.02	06:07	77° 18,01' N	0° 13,38' E	3243,0	N 2	89,2	5,4	Seismic reflection profile	SEISREFL	end of profile	last shot
PS62/328-1	30.09.02	06:10	77° 18,01' N	0° 14,31' E	3244,0	NNW 2	88,3	3,4	Seismic reflection profile	SEISREFL	Remark	Pulsergestell kommt zerstört aus dem Wasser; Rahmen gebrochen
PS62/328-1	30.09.02	06:29	77° 18,02' N	0° 17,47' E	3243,0	NNW 2	91,5	2,2	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/328-1	30.09.02	06:38	77° 18,01' N	0° 18,88' E	3245,0	NNW 2	93,0	2,1	Seismic reflection profile	SEISREFL	array on deck	
PS62/329-1	30.09.02	06:43	77° 18,02' N	0° 20,90' E	3243,0	NNW 2	87,2	7,8	Calibration	CAL	start	1 Magnetik Drehkreis, 2nm Durchmesser, v=7kn
PS62/329-2	30.09.02	07:36	77° 17,94' N	0° 20,86' E	3242,0	NNW 2	80,6	6,8	Calibration	CAL	start	1 Magnetik-Drehkreis; 2nm Durchmesser, v=5 kn
PS62/329-1	30.09.02	07:36	77° 17,94' N	0° 20,86' E	3242,0	NNW 2	80,6	6,8	Calibration	CAL	End	
PS62/329-2	30.09.02	08:49	77° 17,83' N	0° 20,87' E	3242,0	N 2	80,3	4,7	Calibration	CAL	End	2. Drehkreis beendet
PS62/330-1	30.09.02	13:03	76° 44,91' N	2° 0,33' E	3276,0	ENE 4	199,6	0,3	Multiple net	MN	surface	
PS62/330-1	30.09.02	14:12	76° 45,02' N	1° 59,94' E	3275,0	NE 6	6,8	0,6	Multiple net	MN	at depth	2033m
PS62/330-1	30.09.02	15:29	76° 45,01' N	2° 0,15' E	3276,0	NNE 6	163,6	0,2	Multiple net	MN	on deck	
PS62/330-2	30.09.02	15:38	76° 45,02' N	2° 0,17' E	3277,0	NE 6	85,8	0,1	Multiple net	MN	surface	
PS62/330-2	30.09.02	15:47	76° 45,01' N	2° 0,12' E	3275,0	NNE 5	19,5	0,2	Multiple net	MN	at depth	205m
PS62/330-2	30.09.02	15:57	76° 45,03' N	2° 0,13' E	3275,0	NE 5	253,5	0,2	Multiple net	MN	on deck	
PS62/330-3	30.09.02	16:08	76° 45,13' N	2° 0,43' E	3275,0	NNE 6	42,1	2,6	Rectangular midwater trawl	RMT	surface	
PS62/330-3	30.09.02	16:19	76° 45,33' N	2° 1,77' E	3273,0	NE 6	55,3	2,3	Rectangular midwater trawl	RMT	action	250 m Draht gefiert, Beginn hieven
PS62/330-3	30.09.02	16:40	76° 45,76' N	2° 4,51' E	3273,0	NNE 5	58,6	2,3	Rectangular midwater trawl	RMT	End of Trawl	Trawlen mit gleichzeitigem Hieven
PS62/330-3	30.09.02	16:42	76° 45,80' N	2° 4,78' E	3274,0	NNE 5	59,0	2,2	Rectangular midwater trawl	RMT	on deck	
PS62/331-1	30.09.02	20:19	76° 59,97' N	4° 29,84' E	2931,0	NNW 11	71,7	10,1	HydroSweep/ParaSound profile	HS_PS	start track	nur Hydrosweep
PS62/331-1	01.10.02	03:19	75° 59,72' N	4° 30,64' E	3132,0	NNW 9	95,9	6,8	HydroSweep/ParaSound profile	HS_PS	alter course	090°
PS62/331-1	01.10.02	03:42	75° 59,75' N	4° 43,93' E	3104,0	NW 11	89,4	8,5	HydroSweep/ParaSound profile	HS_PS	alter course	000°
PS62/331-1	01.10.02	10:49	77° 0,30' N	4° 57,84' E	2808,0	NW 10	181,6	8,1	HydroSweep/ParaSound profile	HS_PS	alter course	südkurs
PS62/331-1	01.10.02	19:01	75° 59,89' N	4° 56,17' E	2759,0	NNW 10	179,7	8,9	HydroSweep/ParaSound profile	HS_PS	alter course	090°
PS62/331-1	01.10.02	19:17	75° 59,68' N	5° 5,01' E	2673,0	NW 10	96,7	8,7	HydroSweep/ParaSound profile	HS_PS	alter course	360°

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/331-1	02.10.02	01:34	77° 0,26' N	5° 8,02' E	2712,0	N 8	359,6	8,8	HydroSweep/ParaSound profile	HS_PS	alter course	090°
PS62/331-1	02.10.02	01:56	77° 0,53' N	5° 21,07' E	2988,0	N 4	123,4	7,8	HydroSweep/ParaSound profile	HS_PS	alter course	180°
PS62/331-1	02.10.02	08:44	75° 59,43' N	5° 17,19' E	2687,0	WSW 2	181,0	8,9	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/331-1	02.10.02	09:02	75° 59,24' N	5° 27,37' E	2731,0	W 3	86,2	9,0	HydroSweep/ParaSound profile	HS_PS	alter course	auf nordkurs
PS62/331-1	02.10.02	15:01	77° 0,02' N	5° 33,38' E	2561,0	S 6	0,4	11,1	HydroSweep/ParaSound profile	HS_PS	alter course	090°
PS62/331-1	02.10.02	15:18	77° 0,09' N	5° 44,97' E	1914,0	S 6	170,6	9,3	HydroSweep/ParaSound profile	HS_PS	alter course	180°
PS62/331-1	02.10.02	21:36	75° 58,68' N	5° 40,83' E	2672,0	SSW 10	90,5	10,3	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/331-1	02.10.02	21:50	75° 59,10' N	5° 50,32' E	2301,0	SSW 9	358,0	10,0	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/331-1	03.10.02	03:22	76° 59,64' N	5° 53,74' E	2060,0	S 12	28,3	10,7	HydroSweep/ParaSound profile	HS_PS	alter course	091°
PS62/331-1	03.10.02	03:36	76° 59,72' N	6° 4,40' E	2192,0	SSW 14	98,7	10,1	HydroSweep/ParaSound profile	HS_PS	alter course	182°
PS62/331-1	03.10.02	09:52	75° 59,12' N	6° 2,22' E	2652,0	SSW 13	178,9	10,0	HydroSweep/ParaSound profile	HS_PS	profile end	
PS62/332-1	03.10.02	12:43	75° 58,89' N	7° 35,08' E	2906,0	SSW 9	186,1	3,7	Seismic reflection profile	SEISREFL	Streamer into water	
PS62/332-1	03.10.02	13:00	75° 57,84' N	7° 35,75' E	2757,0	SSW 10	117,7	4,8	Seismic reflection profile	SEISREFL	airguns in the water	
PS62/332-1	03.10.02	13:40	75° 59,95' N	7° 42,19' E	2726,0	S 9	309,2	5,4	Seismic reflection profile	SEISREFL	profile start	
PS62/332-1	04.10.02	01:28	76° 40,16' N	4° 7,57' E	3168,0	S 8	313,3	5,5	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/332-1	04.10.02	14:58	77° 26,27' N	0° 12,03' W	3182,0	SSE 11	307,2	5,3	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/332-1	05.10.02	02:43	78° 5,98' N	4° 8,41' W	2360,0	S 6	306,3	5,6	Seismic reflection profile	SEISREFL	Sono-buoy	
PS62/332-1	05.10.02	07:31	78° 20,72' N	5° 39,23' W	392,2	S 4	310,3	3,9	Seismic reflection profile	SEISREFL	end of profile	letzter Schuss
PS62/332-1	05.10.02	07:44	78° 20,97' N	5° 40,90' W	375,4	S 4	178,4	0,7	Seismic reflection profile	SEISREFL	streamer on deck	
PS62/332-1	05.10.02	07:48	78° 20,94' N	5° 40,96' W	373,7	S 4	245,0	0,4	Seismic reflection profile	SEISREFL	array on deck	
PS62/333-1	05.10.02	16:20	78° 44,49' N	3° 21,10' W	2282,0	SW 5	201,3	3,2	Rectangular midwater trawl	RMT	surface	
PS62/333-1	05.10.02	16:23	78° 44,35' N	3° 21,38' W	2276,0	SSW 5	199,9	2,7	Rectangular midwater trawl	RMT	action	31 m Draht
PS62/333-1	05.10.02	16:43	78° 43,51' N	3° 23,13' W	2244,0	SW 5	202,8	2,7	Rectangular midwater trawl	RMT	End of Trawl	
PS62/333-1	05.10.02	16:47	78° 43,33' N	3° 23,49' W	2239,0	SSW 5	202,4	2,8	Rectangular midwater trawl	RMT	on deck	
PS62/334-1	06 10.02	09:26	79° 34,17' N	1° 13,78' E	3030,0	S 14	11,1	0,7	Rubber boat, Zodiak	ZODIAK	surface	Walhydrophonetest, Aufnahme Schiffsgeräusche
PS62/334-1	06.10.02	10:30	79° 34,83' N	1° 15,27' E	2984,0	S 14	305,7	0,7	Rubber boat, Zodiak	ZODIAK	on deck	
PS62/335-1	06.10.02	15:52	79° 34,98' N	5° 37,94' E	2202,0	SSW 16	84,7	10,4	HydroSweep/ParaSound profile	HS_PS	start track	Südkurs
PS62/335-1	06.10.02	20:42	78° 54,48' N	5° 53,52' E	2461,0	SSW 15	23,9	11,5	HydroSweep/ParaSound profile	HS_PS	alter course	1, 3 sm Radius nach Überlappung auf Nordkurs
PS62/335-1	07.10.02	00:55	79° 35,27' N	6° 1,41' E	1689,0	SW 11	112,7	8,7	HydroSweep/ParaSound profile	HS_PS	alter course	auf Süd
PS62/335-1	07.10.02	05:01	78° 54,79' N	6° 5,99' E	2287,0	SSW 14	176,5	9,0	HydroSweep/ParaSound profile	HS_PS	alter course	1,2 nm Radius nach Überlappung auf Nordkurs
PS62/335-1	07.10.02	09:26	79° 35,34' N	6° 17,67' E	1412,0	SSW 15	158,3	9,3	HydroSweep/ParaSound profile	HS_PS	alter course	0,75 sm Radius auf Nordkurs
PS62/335-1	07.10.02	15:30	78° 55,60' N	6° 25,65' E	1829,0	WNW 8	173,9	9,2	HydroSweep/ParaSound profile	HS_PS	profile end	
PS62/336-1	08.10.02	01:40	77° 49,99' N	6° 51,45' E	2059,0	SSW 13	269,6	10,4	HydroSweep/ParaSound profile	HS_PS	start track	auf Südkurs
PS62/336-1	08.10.02	13:18	76° 0,06' N	6° 49,44' E	2621,0	SW 11	238,5	5,7	HydroSweep/ParaSound profile	HS_PS	profile break	
PS62/337-1	08.10.02	13:22	75° 59,94' N	6° 48,74' E	2604,0	SW 10	224,4	1,7	Rectangular midwater trawl	RMT	surface	
PS62/337-1	08.10.02	14:06	75° 59,02' N	6° 43,80' E	2479,0	SW 11	235,1	2,4	Rectangular midwater trawl	RMT	on deck	

Station	Date	Time	PositionLat	PositionLon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	Comment
PS62/336-1	08.10.02	14:24	76° 0,07' N	6° 36,74' E	2322,0	SW 11	6,1	10,9	HydroSweep/ParaSound profile	HS_PS	continue the profile	
PS62/336-1	09.10.02	01:33	77° 50,00' N	6° 20,86' E	2150,0	SW 14	268,9	8,4	HydroSweep/ParaSound profile	HS_PS	alter course	auf 180°, Radius 1,6nm
PS62/336-1	09.10.02	06:22	77° 2,98' N	6° 23,36' E	2169,0	SW 12	179,1	10,5	HydroSweep/ParaSound profile	HS_PS	alter course	auf 270°
PS62/336-1	09.10.02	06:41	77° 2,72' N	6° 10,38' E	2221,0	SW 13	271,8	10,1	HydroSweep/ParaSound profile	HS_PS	alter course	auf 359°
PS62/336-1	09.10.02	11:37	77° 49,64' N	6° 4,54' E	2305,0	SW 14	342,0	10,2	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/336-1	09.10.02	14:20	77° 26,87' N	5° 51,20' E	2661,0	SW 11	244,8	8,5	HydroSweep/ParaSound profile	HS_PS	alter course	270°
PS62/336-1	09.10.02	14:36	77° 26,95' N	5° 38,51' E	2644,0	SW 12	272,4	10,6	HydroSweep/ParaSound profile	HS_PS	alter course	000°
PS62/336-1	09.10.02	16:52	77° 49,82' N	5° 33,54' E	2399,0	SSW 12	354,9	7,5	HydroSweep/ParaSound profile	HS_PS	profile break	für Magnetik Drehkreis PS62/338-1 und Dichtigkeit-Test der Rudermaschine
PS62/338-1	09.10.02	16:52	77° 49,82' N	5° 33,54' E	2399,0	SSW 12	354,9	7,5	Calibration	CAL	start	1 Drehkreis über Bb, Radius 1nm
PS62/338-1	09.10.02	17:46	77° 49,59' N	5° 32,49' E	2351,0	SW 13	358,8	6,7	Calibration	CAL	End	
PS62/336-1	09.10.02	18:45	77° 50,08' N	5° 24,70' E	2257,0	SSW 9	168,4	9,5	HydroSweep/ParaSound profile	HS_PS	continue the profile	Abschluss des Rudermaschinentests
PS62/336-1	09.10.02	19:00	77° 51,88' N	5° 33,60' E	2497,0	SSW 9	37,6	11,6	HydroSweep/ParaSound profile	HS_PS	alter course	auf 090°
PS62/336-1	09.10.02	20:59	77° 52,01' N	7° 28,26' E	3439,0	SSW 10	90,3	12,4	HydroSweep/ParaSound profile	HS_PS	alter course	
PS62/336-1	10.10.02	06:05	76° 0,28' N	7° 29,98' E	2904,0	SW 9	178,5	11,9	HydroSweep/ParaSound profile	HS_PS	profile end	Fortsetzung von HS bis zur 200nm-Zone

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