Sea ice conditions in the Transpolar Drift in August/September 2001

Observations during POLARSTERN cruise ARKTIS 17/2

Compiled by:

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Contents

A detailed description of the sea ice measurements and sampling during the expedition ARKTIS 17-2 can be found in Thiede (2002).

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

Foreword and summary

This report summarises visual shipboard ice observations carried out during leg ARKTIS 17/2 (ARK 17/2) of RV POLARSTERN in August and September 2001, operating along the Gakkel Ridge and at the North Pole. Data on general ice conditions, navigational information as well as photographs taken from the ships bridge are presented. Although most data are subject to large uncertainties due to the different experience of observers, they provide a general and quite representative overview of recent summer conditions in the Transpolar Drift, as seen from a ship. The data and photographs might be of interest as background information for discussions of recent changes of Arctic sea ice, and for comparisons with observations performed in other years. For those who have not seen a sea ice landscape so far, this report might yield first impressions of what the Arctic sea ice cover looks like. For scientists working on remote sensing, modelling, or other aspects of sea ice, the report provides some ground-truth and boundary conditions for their work in the summer of 2001.

Ice conditions were characterised by very easily penetrable ice in the first half of the cruise, west of 30°E. There were many large leads with ice concentrations ranging between only 60% and 90%. Only from late August onwards, and east of 30°E, narrower leads and ice concentrations above 90% were observed. At that time, also new ice started to form on the leads. In the late period, sometimes the ship became beset in convergent ice conditions. Initially, melt ponds were observed to cover 10% to 30% of the ice surface. The ponds were ice covered already when we entered the ice in early August. However, the pond ice cover was thick enough to step on ($>$0.05 m) only after about August 20. Melt ponds became snow covered for some period, before they were visible again. Only after mid-September air temperatures permanently dropped below 0°C, and no snow or surface melting was observed any more.

Introduction

ARK 17/2 commenced on July 31, 2001, in Tromsø, Norway, and ended October 7, 2001, in Bremerhaven. The ice was entered on August 4, and left only on September 28, i.e. after 56 days of ice breaking. The mean ice concentration in August and September as retrieved from satellite passive-microwave data (SSM/I) and the cruise track are shown in Figure 1. The main focus of the cruise was to investigate petrological and geological features and conditions of the Gakkel Ridge (Thiede et al.,2002). In fact, ARK 17/2 was part of the AMORE 2001 expedition (Arctic Mid Ocean Ridge Expedition), and was performed jointly with the US Coast Guard Cutter HEALY. She is visible on some images, too. Thus, the ships mostly operated along the ridge between 6°W and 74°E. Only a short seismic transect lead to the North Pole before returning to the Gakkel Ridge. Ice observations are performed as part of a larger sea ice research program including physical, biological, and geological ice core work as well as extensive thickness and morphology measurements. Visual observations were performed on an hourly basis. However, due to other commitments of the team there were many gaps in the record, and on average observations were performed only performed every 2.6 hours. Variables like ice concentration, ice thickness, floe and lead size, melt-pond coverage, ridge frequency, as well as the occurrence of dirty ice and icebergs were recorded, representing ice conditions in an area of 500 to 1000 m around the ship. In total, 511 observations were carried out. Note that these observations could be highly biased by the partially poor visibility. Figure 2 shows more details of the cruise track and the daily midnight positions.

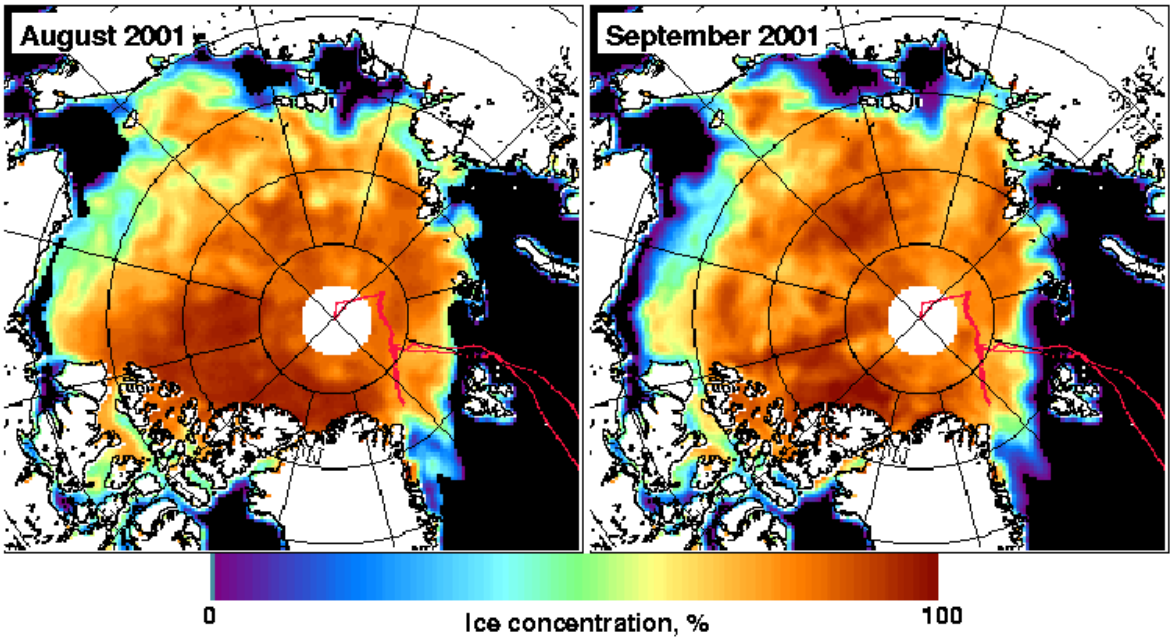


Figure 1: Cruise track of ARK 17/2 and mean ice concentration during the cruise, in August and September 2001. Data were retrieved from satellite passive-microwave measurements (SSM/I) provided through EOSDIS NSIDC Distributed Active Archive Center, University of Colorado, Boulder. Note the strong retreat of the ice in the Greenland Sea.

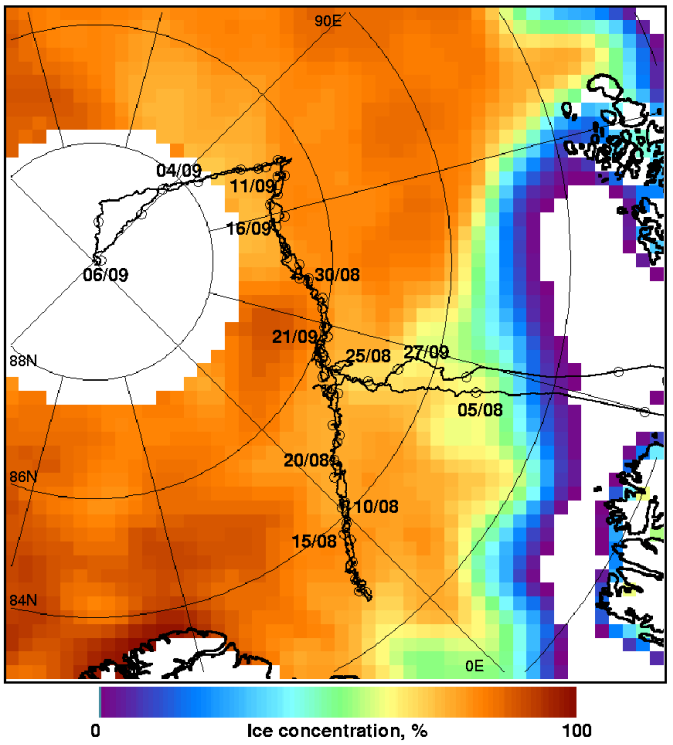


Figure 2: Map of the study regions with the cruise track and daily midnight ship-positions (circles). Colours indicate mean September ice concentration (c.f. Figure 1).

General ice conditions

Figure 3a) shows the ice concentration versus longitude, roughly representing a profile along the Transpolar Drift. It can be seen that the cruise track could be subdivided into two distinctly different sections. West of about 45°E, ice concentration was only between 60% and 90%. There, leads or polynjas with dimensions from 0 m up to 1000 m occurred between floes with typical diameters between 100 m to 2000 m (Figure 3b). These large polynjas are generated by divergent ice motion and are typical for summer conditions in the Central Arctic. Only east of 45°E ice concentration increased to 90% and more. At the North Pole, ice concentration was 95%, with 2m thick floes of 300 m to 1000 m in diameter and narrow leads less than 50 m wide, covered with new ice. After September 13, when air temperatures decreased significantly below -5°C for most of the expedition period, ice concentration was mostly close to 100%, because all leads were covered by nilas or grey ice. In the eastern region, most leads were 50 m to 100 m wide (Figure 3b). However, at many locations the leads were covered with small thick floes, such that ice breaking became more difficult.

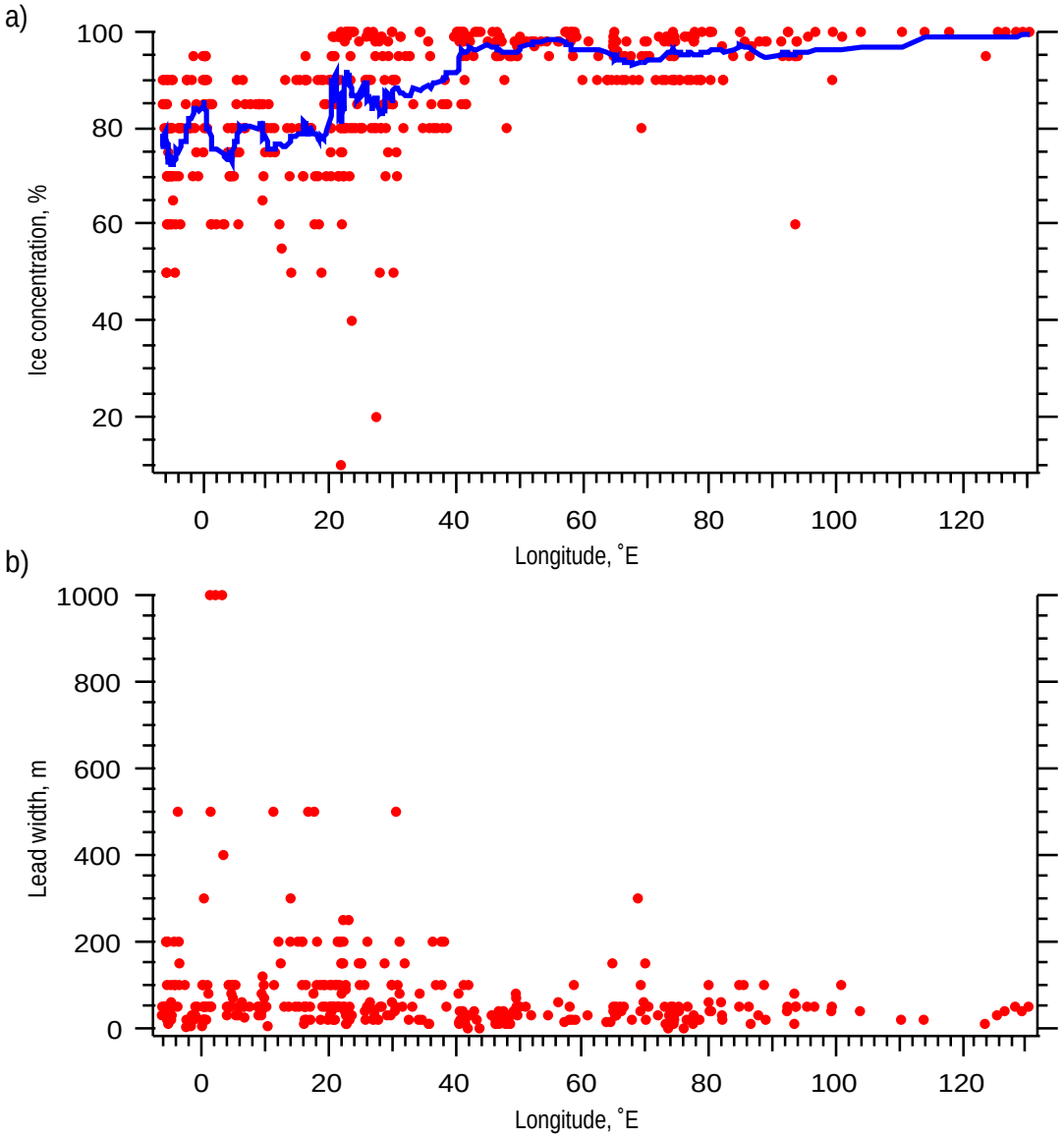


Figure 3: Observations of ice concentration and lead width along the Transpolar Drift. The solid line in a) is a 21 point running average.

Melt ponds

In Figure 4 a time series of melt pond coverage is shown. Melt ponds were well developed at the time when we entered the study region. The water surface of most ponds was at sea level, indicating that ponds were drained and in hydrostatic equilibrium with the underlying sea water. Typical pond depths ranged between 0.2 m and 0.4 m. It should be noted however, that most ponds were already covered by a thin ice rind when we entered the ice on August 4. Upon leaving the ice on September 28, the pond ice cover had a thickness of 0.3 m to 0.4 m. The decreases in pond coverage around observations 50, 160, and 290 are due to recently fallen snow making the identification of frozen ponds impossible. Later on, the bigger frozen ponds became visible again because the floes were partially blown snow-free by strong winds.

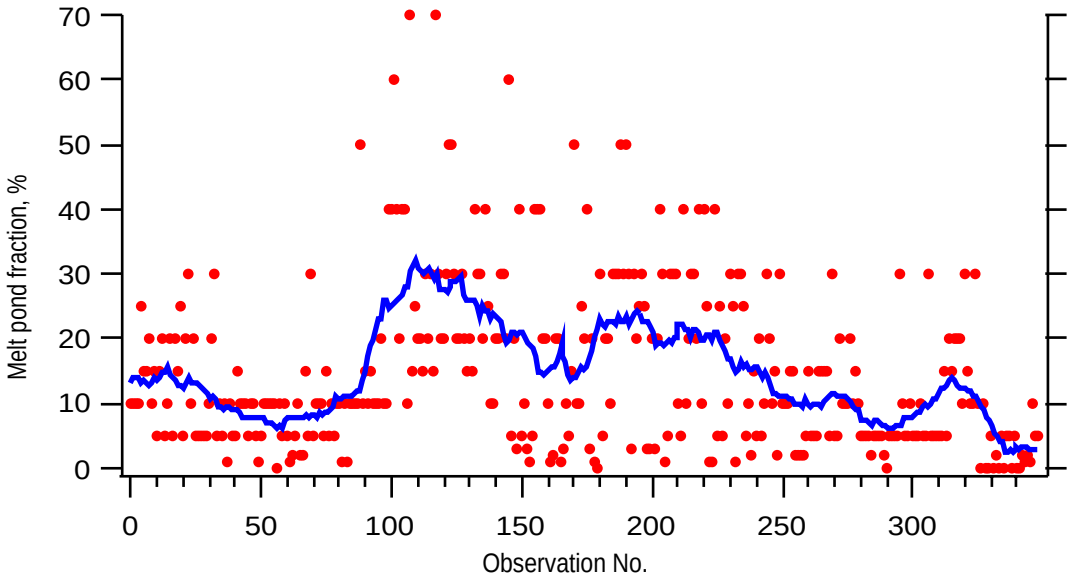


Figure 4: Time series of melt pond coverage from the first until the last day in the ice. The solid line is a 9 point running average. Data are from visual observations of ice conditions.

Dirty ice and icebergs

Interestingly, dirty ice was almost only observed in the western and southern study areas. Figure 6 shows the spatial distribution of icebergs. There were mainly two regions where icebergs were observed, partially in quite high numbers. Many icebergs had diameters of more than 100 m, and were sediment covered. Some big rocks were found on some of them, too. Some icebergs had a very rough pinnacled surface with melt ponds located in the troughs.

Reference

Thiede, J. and the Shipboard Scientific Party, **2002**: *POLARSTERN ARKTIS XVII/2 Cruise Report: AMORE 2001* (Arctic Mid Ocean Ridge Expedition), Rep. on Polar and Marine Res. 421/2002, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany.

Figure 5: Photographs of typical Icebergs in the Transpolar Drift

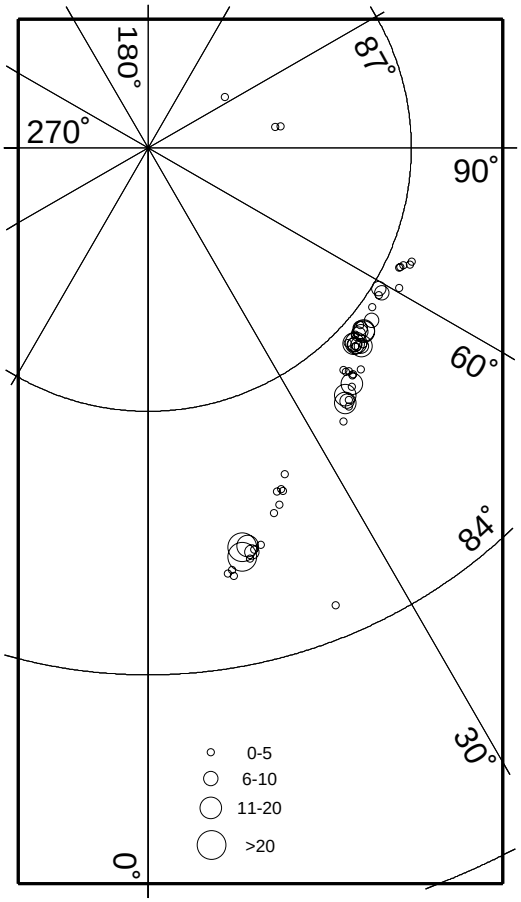
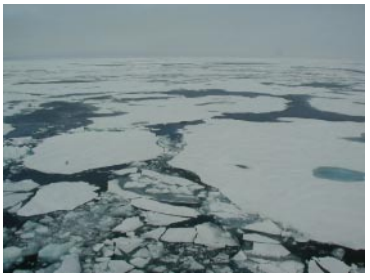


Figure 6: Spatial distribution of numbers of icebergs per observation.

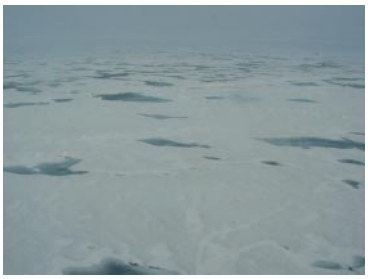
4.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
9	81.87	29.22	8.2	192	-0.7	4	3	3	75		1	5	20	50	10	5	10	0			1	2	500	1	0	0
11	82.02	28.88	7.4	186	-0.7	5.1	3	0	80		1	10	40	80	30	8	10	0			0.5	1	200	1	0	0
12	82.10	28.68	5.7	179	-0.8	4.8	3	0	90		0.8	5	200	300	30	5	8	0			0.8	1	400	1	0	0
14	82.35	28.12	4.5	137	-0.5	6.6	3	0	80		1	5	300	400	30	5	10	0			1	2	500	1	0	0
15	82.42	27.95	5	150	-0.7	5.2	3	0	50	20	0.8	5	300	400	20	8	10	0			0.5	1.5	600	1	0	0
19	82.77	27.37	4.6	90	-0.8	6.7	3	0	20		1	5	40	120	20	5	10	0			1.5	3	300	2	0	0
20	82.88	27.17	5.8	88	-1	5.9	3	1				10	300		30	5	20	0	200		0.5	1.5	150	1	0	0
21	82.98	26.88	5.7	74	-1.1	5.3	3	0	100	20	1.5	10			30	7	0				0.3	0.5	800	1	0	0
22	83.05	26.55	7.4	72	-1.1	6.2	3	1	80	10	1	10	200	500	25	10	1	1	50		0.3	1.5	400	1	0	0
23	83.13	26.52	5.8	47	-0.6	6.7	3	1	90		1	10	200	400	20	8	1	1	60		0.5	1.5	400	1	0	0

20:00 going through big lead, up to 200m width, poor visibility because of fog, no ice thickness estimates
21:00 poor visibility
22:00 some fog, following HEALY
23:00 photos taken after observation in more ice free area

Hour	Port	Ahead	Starboard
9:00			
11:00			
12:00			

4.8.2001

Hour	Port	Ahead	Starboard
14:00			
15:00			
21:00			

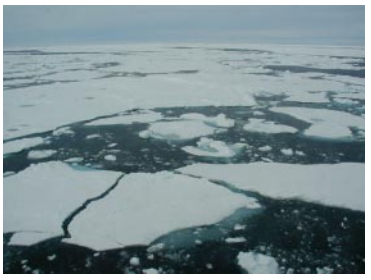
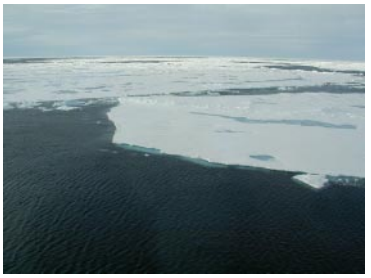
5.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	83.22	26.13	6.8	37	-0.9	6.4	3	1	90		1	10	300	500	30	8	0		200		0.6	1.2	300	1	0	0
2	83.42	25.67	6.6	2	-2.7	6.4	3	3	90		1.3	10	400	600	30	10	0		100		0.5	1	300	1	0	0
4	83.53	25.13	5.2	350	-3.9	7.6	3	1	80		1.2	10	500	700	30	10	0		150		1	1.5	400	1	0	0
7	83.78	24.78	4	354	-2.7	6	3	1	80		1.2	10	150	600	30	10	0		150		1	1.5	400	1	0	0
8	83.87	24.90	4.5	338	-2.5	6.5	3	1	80			10	500	1000	50	5	0		100		1	1.5	60	1	0	0
10	84.10	25.17	5	314	-3.3	6.6	3	1	80		1.4	10	500	1000	50	10	0		150		1	2	60	1	0	0
13	84.23	23.13	6	261	-3	5.2	3	1	70		1.5	10	400	800	30	5	0		250		1	2.5	60	1	0	0
14	84.28	22.72	6.1	246	-2.7	5.9	3	1	80		1.5	10	150	250	20	5	0		100		3	5	50	1	0	0
15	84.37	22.32	7	257	-2	6.8	3	1	80		1.5	3	200	2000	20	10	5	5	150	20	1	2	50	1	0	1
16	84.45	21.85	7.6	275	-1.6	7.6	3	1	80		2.5	10	500	800	15	10	5	5	200	3	0.5	1	30	1	0	0
17	84.55	21.78	6.5	245	-1.4	7.6	3	1	75		2.5	10	1200	2000	5	3	5	10	200	3	3	5	1000	1	0	0
18	84.60	22.32	7.9	236	-1.4	3.4	3	1	70		1.5	15	400	800	25	3	5		250	10	1.5	3	300	1	0	0
19	84.65	22.10	8.2	238	-1.3	5.5	3	1	70				400		10	3	5		150	10	2	3	500	1	0	0
20	84.72	21.97	8.3	226	-1.9	5	3	1	60		1.5	10	500	1000	50	5	10		200		0.5	2	100	1	0	0
21	84.77	21.98	5.7	216	-1.7	5.7	3	1	75		2.5	10	200	500	10	2	5	10	150	3	2	4	500	1	0	0
22	84.83	21.35	7.9	208	-1.5	5.9	3	1	70		1.5	15	100	200	10	2	3		100	2	1	1.5	150	0		
23	84.92	21.75	10.3	208	-1.3	5.5	3	1	80		2	5	400	1000	10	7	15		100	10	1.5	2.5	300	1		

0:00 steaming in lead
15:00 dirty ice difficult to see because of snow cover, melt ponds frozen over, dark and light blue
20:00 transiting from going in lead to ice

Hour	Port	Ahead	Starboard
8:00			
13:00			
15:00			

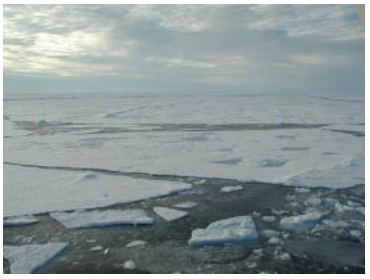
5.8.2001

Hour	Port	Ahead	Starboard
16:00			
22:00			
23:00			

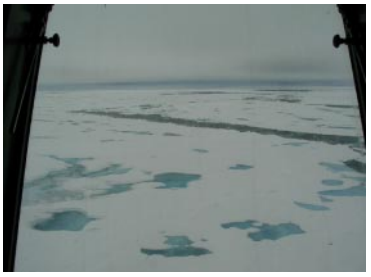
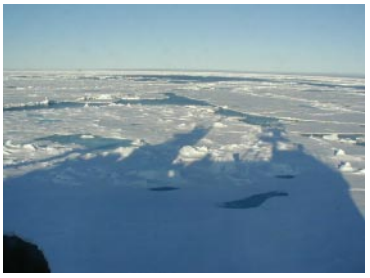
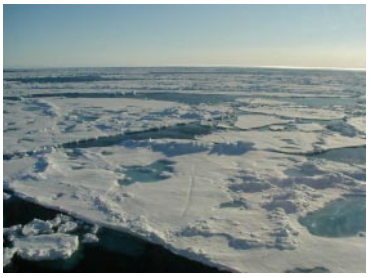
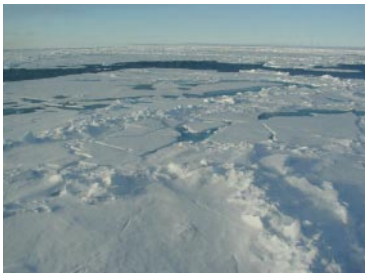
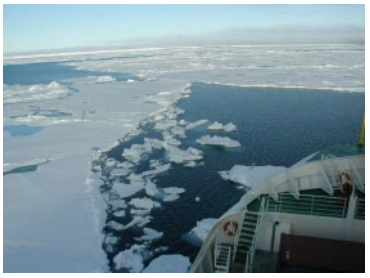
6.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	84.97	21.47	10.3	206	-1.4	6.4	3	1	90		2.1	10	500	1000	20	4	7		50	5	1.5	3	300	1		
2	85.13	21.00	10	216	-0.8	6.3	3	1	90		2.2	10	500	1000	20	5	15		100	10	1.5	2.5	300	1		
4	85.25	20.45	7.9	239	-0.6	6.3	3	1	90		1.8	10	500	1000	10	5	20		100	5	1.5	2	300	1		
7	85.35	18.70	8.7	234	-0.7	6.4	3	1	90		1.8	10	5000	8000	20	20	30		100	10	2	2.5	1000	1		
8	85.42	18.13	10.3	238	-0.4	5.7	3	1	90			15	300	800	30	5	15		100	30	1	2	300	1		
10	85.50	16.43				5.5		1	80			18	400	800	20	5	20		100	30	2	2	300	1		
12	85.60	16.75	7.7	223	-0.8	6.5	3	1	80		2	12	500	1000	20	5	20		500	100	2	5	500	2		
13	85.72	15.80	8	209	-0.6	6.7	3	1	80		2	10	800	2000	15	5	40		200		1.5	2	1000	2		
14	85.73	15.18	8.2	214	-0.3	5	3	1	80		1.5	10	120	200	20	3	5		200	10	1	2	300	1		
16	85.63	16.18	7.5	263	0	1.7	3	1	90		1.5	10	400	1000	20	5	10	5	50	10	2	5	400	1		
17	85.57	16.23	8.1	284	-0.1	0	2		95		2	10	500	1000	50	5	10	5	50	5	2.5	5	100	1		
20	85.55	16.20	5.9	305	0.2	0			90		2	15	250	600	30	5	15	0	20		1.5	2	60	1		
21	86.55	16.20	6.1	284	0	0																				
23	85.53	16.12	6.4	271	-0.4	1.8	3	3	90		2	15	300	800	20	3	10	10	10		2	4	50	1		

12:00 low Stratus, poor visibility
16:00 fog
17:00 on station, poor visibility
21:00 clear visibility, fog ahead

Hour	Port	Ahead	Starboard
2:00			
4:00			
13:00			

6.8.2001

Hour	Port	Ahead	Starboard
14:00			
16:00			
17:00			
22:00			
23:00			

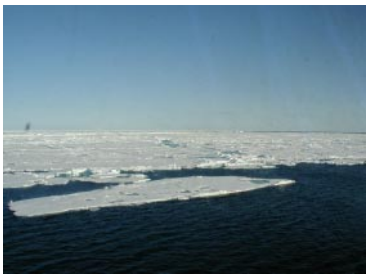
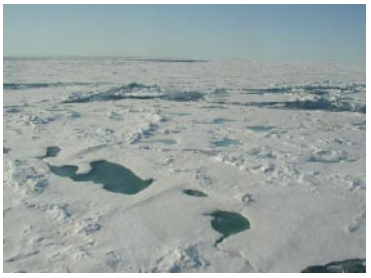
7.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	85.52	16.50	4.5	255	-0.8	6.6	3	3	80		1.7	15	100	500	20	3	10	0	20		1.5	2	50	1		
4	85.48	17.07	5.7	240	0	1	3	1	80		1.8	20	200	500	15	3	10	0	50		1.5	2	50	1		
7	85.47	17.12	7.3	214	-0.3	2.2	3	3	80		1.8	20	300	1000	20	3	10	0	20		1.5	2	50	1		
8	85.48	16.43	8.7	213	-0.2	4		4	90		1.5	20	200	1000	30	2	10	0	50		1.5	2.5	50	1		
10	85.48	15.32	11.7	235	-0.3	5.4	3	3	90		1.5	20	200	500	30	3	10	0	50		1.5	2.5	50	1		
11	85.43	14.77	9	226	-0.4	4.7	3	3	90		1.5	20	300	1000	30	3	10	0	50		1.5	2.5	50	1		
13	85.33	14.02	9.5	219	-0.3	5.2	3	1	80		2	0	500	2000	15	5	20	0	300		1.5	3	50	1		15
14	85.33	13.30	7.5	241	-0.3	5.7	3	1	80		2		300	800	25	2	10	0			1.5	3	50	2		35
15	85.22	12.98	7.5	233	-0.1	5.9	3	0	90		1.8	5	400	2000	15	10	20	1	50		1.5	3	80	1	5	42
16	85.10	11.27	6.2	224	-0.4	5.4	3	1	80		2.5	10	300	800	40	3	30	0	500	2	3	5	10	1	30	2
17	85.10	10.8	6.1	223	-1.2				80		2.5		300	1000	20	3	25	0			1.5	3	150	1		
19	85.08	10.68	6.9	225	-1.3	7.2	3	4			2.5	5			20	5	10	0			1.5	3	400	1		
20	85.00	10.38	7.8	229	-1.3	5.6	4	4	85		2	15	250		60	3	15	0	5		1.5	3.5	50	1		
22	84.95	9.42	6.4	222	-1.4	1.7	3	3	80		1.8	10	500	2000	10	10	15	0	40	30	1.5	2	150	1		
23	84.97	9.42	5.7	235	-1.5				65						10	5	10	0	80	20	1.5	2	80	1		

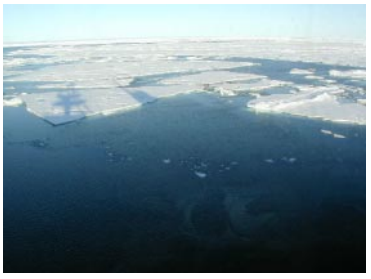
15:00 groups of icebergs scattered all around the ship, up to 10-20 miles away, max diameter:100-200 m
17:00 fog, poor visibility
19:00 fog, Number of Engines 3 + Hilfsdiesel
20:00 fog, hard to estimate % ice coverage, % melt ponds, % floe size etc.
22:00 foggy
23:00 on station

Hour	Port	Ahead	Starboard
4:00			
7:00			
8:00			

7.8.2001

Hour	Port	Ahead	Starboard
12:00			
13:00			
15:00			
16:00			
17:00			
18:00			

7.8.2001

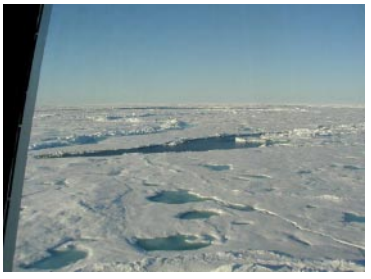
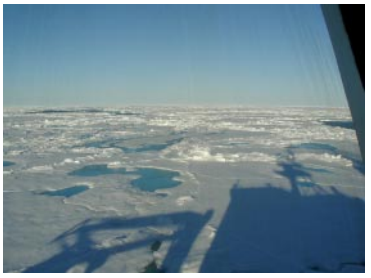
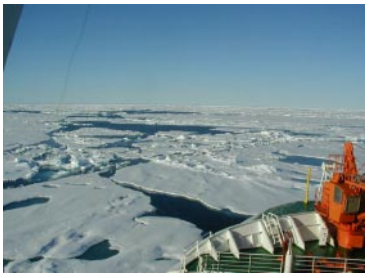
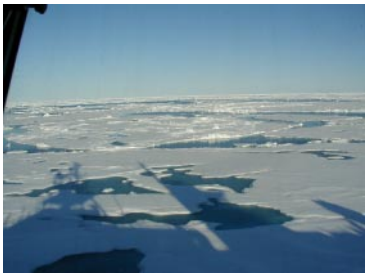
Hour	Port	Ahead	Starboard
19:00			
20:00			
21:00			
22:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

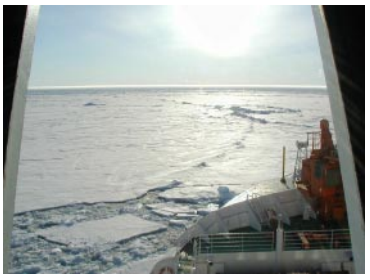
8.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.97	9.57	6.4	228	-1.5	9.6	3	1	70		1.7	10	200	500	10	5	10	0	120	20	1.5	2	100	1		
3	85.02	9.77	4.1	254	-1.4	0.8	2	1	80		1.7	10	300	500	10	5	10	0	100	20	1.5	2	80	1		
7	84.83	9.35	2.9	222	-2	2.2	3	3	85		1.2	10	300	700	10	5	10	0	30	10	1.5	2	80			
10	84.97	8.93	3.2	187	-2.4	4.3	3	3	85		1.5	10	300	700	10	5	10	0	30	30	1.5	2	80	1		
11	84.95	8.30	3.5	173	-2.7																					
13	84.87	6.68	5	149	-2.4																					
14	84.83	6.30	5	253	-1.5	2.3	3	3	90	20	1.5	5	150	300	10	5	8	0	60	10	2	4	100	1		
15	84.82	5.28	6.5	164	-1.7	5.9	3	3	85		2	5	500	2000	10	5	15	0	100	50	1.5	3	150	1		
16	84.77	5.00	4.7	164	-1.7	7	3	3	75		1.5	5	300	500	5	5	10	0	100	10	1.5	2	200	1		
19	84.63	5.37	5.7	173	-1.3	3.8		4	90	5	1.5	5	150	200	10	5	10	0				2	4	2	20	

10:00 very poor visibility <300m
11:00 poor visibility, no ice observations
14:00 following HEALY while streamering
15:00 poor visibility

Hour	Port	Ahead	Starboard
1:00			
3:00			
7:00			

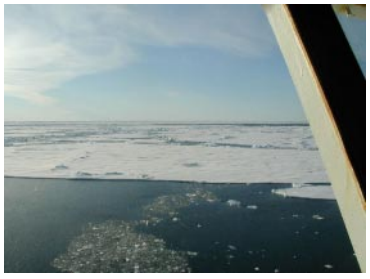
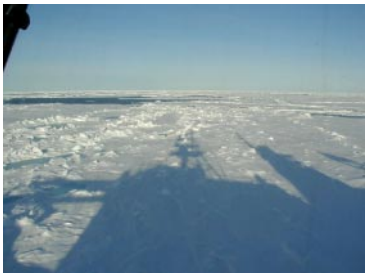
8.8.2001

Hour	Port	Ahead	Starboard
15:00			
19:00			

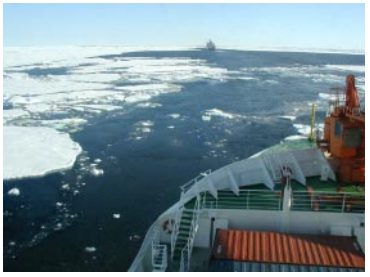
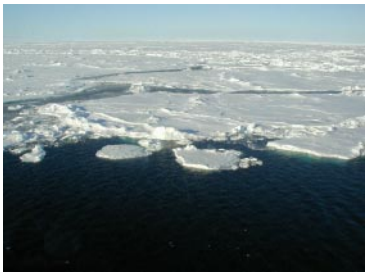
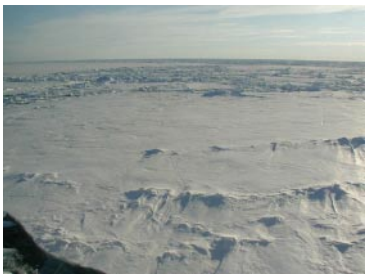
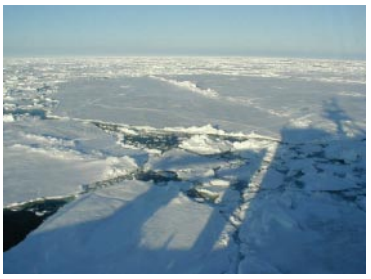
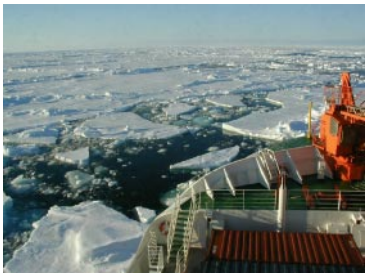
9.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
3	84.65	5.22	6.9	170	-1.8	0	2	4	80			10	200	400	10	5	10	0			1.5	2.5	100	1	10	
7	84.65	5.75	7.3	159	-1.7	8.5	3	1	80		1.8	10	200	1000	1	3	5	0	30	3	1.5	2.5	50	1		
8	84.60	5.33	6.6	150	-1.6	8.3	3	1	75		1.8	10	200	500	1	5	10	0	30	3	1.5	2.5	50	1		
10	84.48	3.92	6.7	148	-0.8	6.7	3	3	75		2	20	200	400	5	5	10	0	30	10	2	2.5	50	1	0	
15	84.40	2.13	7.7	159	0	6.2	3	1	60		2	15	500	2000	2	5	30	0	1000	100	1	3	100	1	5	
17	84.32	1.40	7.5	164	0.3	5.3	3	1	60		2	10	200	300	2	3	5		500	10	2	3	50	1	5	
20	84.13	0.32	7.6	166	0.5	7.2	3	1	90		1.5	15	100	100	10	2	5	0	300		2	3.5	20	1		
21	84.07	0.03	6.7	167	0.8	1.1	3	3	95		1.8	20	300	800	0			0	5		2	5	100	1		
22	84.12	0.03	7.3	175	0.8	2.1	3	3	90		2.5	20	100	200				2	20	10	4	5	80	1	10	

15:00 most meltponds are snowcoverd now, floes are quite level with few, linear ridges
17:00 pictures taken after a big lead while POLARSTERN was following HEALY
21:00 heading N for TV-grab station, meltponds with snow cover not detectible

Hour	Port	Ahead	Starboard
3:00			
7:00			
8:00			

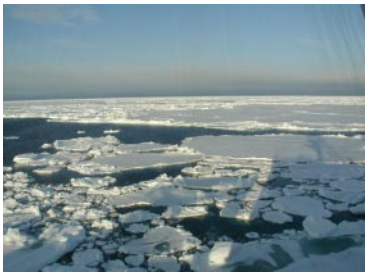
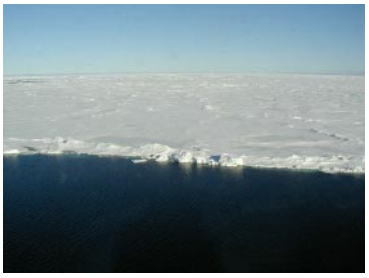
9.8.2001

Hour	Port	Ahead	Starboard
10:00			
15:00			
16:00			
20:00			
21:00			
22:00			

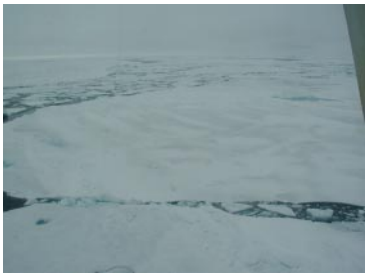
10.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.12	0.30	8.1	185	1.5	0	2	2	95		1.8	20	200	500	5	5	10	0	20	10	1	2	200	1	10	
3	84.13	0.33	7.3	183	1.3	0	2	2	95		1.8	20	200	500	5	5	10	0	20	10	1	2	200	1	10	
15	84.02	0.48	6.3	119	1.4	5.3	3	3	95		1.5	15	100	200	2			0	20	5		2	100	1	15	
17	83.97	0.68	6.3	125	0.9				90		2	10	500	100	5	5	20	5	50		2	4	100	1	10	
19	82.97	0.68	5	134	0.4	1.7	3		80			20	300	600	10	8	20	0	20	5	2	6	50	0	0	0
21	83.90	-1.27	5	155	-0.3	5	3	0	80		2	10	200	300	10	5	10	2	20	5						0
22	83.87	-1.50	5.1	159	-0.3	4.7	3	0	95		2	10	500	1000	10	4	15	5	20	3						0

1:00 on station
3:00 on station, fog
17:00 ship is not moving
19:00 on station
21:00 poor visibility <300m
22:00 following HEALY in channel, meltponds snow covered, fog => bad visibility

Hour	Port	Ahead	Starboard
1:00			
14:00			
17:00			

10.8.2001

Hour	Port	Ahead	Starboard
19:00			
22:00			

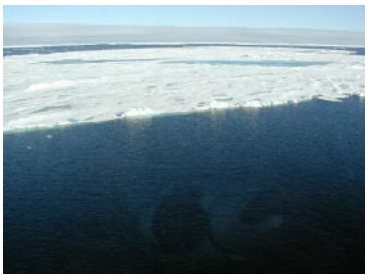
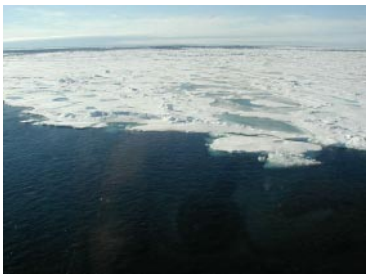
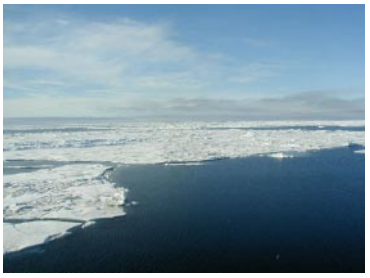
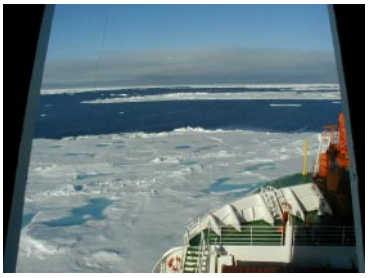
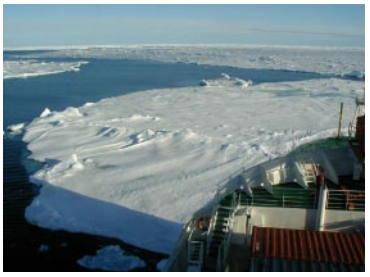
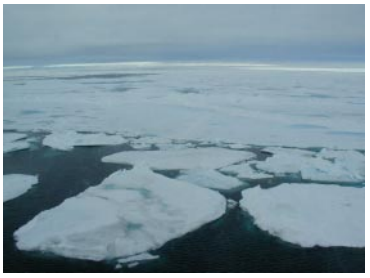
11.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	83.72	-2.47	6.2	158	0	6.5	3	0	80		2	10	300	500	10	5	10	1	20	3	1	2	100	1	0	0
3	83.62	-3.30	6.7	171	0.2	5.2	3	1	80		2	10			10	5	10	2								0
11	83.55	-3.57	7	299	-1.2	3.1	3	1	60		2	15	500	1000	15	5	8	10	150	5	2	5	50	1		0
12	83.52	-3.82	7.3	305	-1.3	6.8	3	1	70		1.8	5	500	2000	10	5	10	40	500	2	1	2	300	1		0
13	83.43	-4.28	5	320	-0.9	5.8	3	1	70			5	300	500	10	5	10	10	100	2	1	2	200	1	10	0
15	83.30	-5.53	5.9	295	-0.3	6.1	3	1	60		1.5	5	200	300	5	5	10	0	100	2	1	2	100	1	15	0
18	83.20	-4.72	5.3	263	0.3	2.5	3		65		1.2	5	120	200	10	8	15	10	50	10	1	2	50	1	10	0
19	83.17	-4.88	5.9	269	-1.1	7.3	3	1+4	70		1.5	10	70	500	10	3	10	0	60	5	2	2.5	15	1		0
20	83.10	-4.98	5.7	280	-0.7	4.5	3	3+4	80		2	5	150	500	5	5	15	50	50	50	2	4	50	1	10	0
21	83.07	-5.30	4.7	255	-0.8	2.3	3	3+4	80		1.5	8	200	250	10	5	10	5	10	2	1.5	2	20	1	25	0
22	82.93	-5.45	4.3	276	-0.7	6.1	3	1	75		2	10	200	300	5	5	10	30	50	20	2	4	50	1		0

1:00 meltponds snow covered, fog => bad visibility
3:00 meltponds snow covered, fog => bad visibility
12:00 wide lead
20:00 system of leads, partially ramming, some spectacular and high ridges
22:00 following leads in various directions
24:00 heading south in old ice regime, ramming from time to time

Hour	Port	Ahead	Starboard
1:00			
11:00			
12:00			

11.8.2001

Hour	Port	Ahead	Starboard
13:00			
15:00			
18:00			
19:00			
20:00			
21:00			

11.8.2001

Hour	Port	Ahead	Starboard
22:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

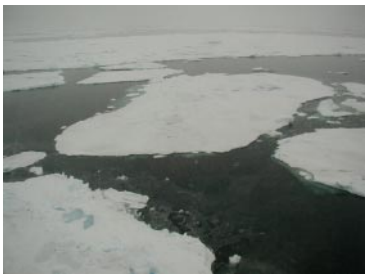
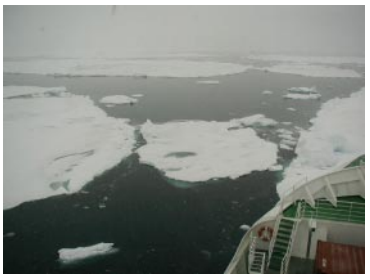
12.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	82.80	-5.47	2.5	261	-1.4	8.1	3	0+4	80		2.5	15	300	500	25	3	10	5	20	15	2	4	40	1		0
1	82.72	-5.48	3.5	270	-1.1	7.4	3	1+3	80		2.2	15	200	300	15	5	10	5	20	10	2	3	50	1		0
3	82.67	-6.00	2.2	266	-0.9	3	3	3	85		2.2	15	200	300	15	4	10	25	50	5	2	4	50	1		0
7	82.85	-5.78	3.4	305	-0.2	6.8	3	3	85		2	15	300	500	15	3	10	10	50	5	2	5	50	1		0
8	52.90	-5.67	2.5	301	-0.6	1.5	3	3	85		2	15	300	500	15	3	10	10	30	5	2	5	50	1		0
10	83.03	-5.82	1.2	27	-0.7	7.7	3	1																		
12	83.08	-6.05	0.7	35	-1.2				80		2	10	300	800	25	5	50	10	50	2	2	5	100	1		0
17	83.10	-5.30			1				70		2	20	300	500	30	3	25	40	50	5	3	3	500	2		0
18	84.00	-5.67				3	3	4	90	5	2	5	200	300	20	3	8	30	50	5	1.5	3	300	2		0
19	83.12	-4.78					3	1+4	70		2	10	500	1000	30	10	25	75	50	15	2	3	30	1		
22	83.13	-4.85	1.7	28	-1.4	0	2		80	5	2.5	5	500	1000	20	5	10	70	20	5	4	6	50	1		

10:00 fog, poor visibility, no ice obs
17:00 poor visibility <300m, no PODAS data, new ice formation
19:00 no PODAS data
22:00 snow, new ice formation, melt ponds with sediment & algae

Hour	Port	Ahead	Starboard
0:00			
1:00			
7:00			

12.8.2001

Hour	Port	Ahead	Starboard
8:00			
22:00			

13.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	83.08	-5.77	2.9	46	-1.8	0	2	1	50	5	2.5	5	100	300	20	5	10				3	5	50	1		
3	83.07	-5.70	3	49	-1.5	0	2	1	50	5	2.5	5	100	300	15	5	10				3	5	40	1		
6	83.02	-5.12	3.4	46	-1.6	4.4	3	3	70		2.5	10	70	200	5	3	10			30	3	5	50	1		
7	82.98	-5.23	4	57	-1.6	3.8	3	4	80		1.5	10	300	500	20	3	5				1.5	3	100	1		
8	82.98	-5.00	3.4	65	-1.5	4.7	3	1+3	90	2	2	15	300	500	5	5	20		30	30	1.5	3	50	1	5	
10	82.93	-4.77	3.3	45	-1.5	5.8	3	1+3	90	2	2	15	300	500	5	5	20		30	30	1.5	5	50	1	5	
17	82.90	-6.27	3.5	64	-1.3				85	10	2.2	10	600	1000	10	5	20		50	5	2	4	100	1		
18	82.88	-6.30	2.6	69	-1.2	0.4	3	4	85	10	3	15	300	500	10	5	10		30	5	1	2	50	1		
21	82.90	-6.32	2.7	34	-1.5	0	2		90	5	2.5	20	750	2500	10	3	10				3	5	500	1		

1:00 it is snowing, fresh snow cover on ice and it is difficult to estimate dirty ice %, grease ice %
3:00 snowing, bad visibility, grease ice ∼5%
6:00 snow
7:00 still snowing
8:00 heavy snowfall accumulating on the ice and as slush on the water
17:00 fresh snow -> sediment not visible
21:00 situation after snowfall, meltponds & dirty ice not detectible completely, on station since 18:00 UTC

Hour	Port	Ahead	Starboard
1:00			
6:00			
7:00			

13.8.2001

Hour	Port	Ahead	Starboard
8:00			
10:00			
21:00			

14.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	82.85	-6.12	3.3	17	-1.4	8.7	3	1	90	5	2	20	200	500	10	5	10				2	3	100	1		
3	83.00	-5.75	2.7	36	-1.5	5.6	3	1	80	5	2.5	20	500	1000	10	5	10				2	4	200	1		
6	83.15	-5.20	3.8	53	-1.4	10.3	3	1	60		2.5	15	500	1000	5	5	10		50	5	2	3	200	1		
7	83.20	-5.43	3.7	55	-1.4	5.1	3	1	70			20	1000	1000	20	7	10		200		2	2.5		1		
9	83.20	-5.50	4.1	60	-1.4	0.4	2	1	90		3	30	1000	1000	20	7	10		200		2	4	200	1		
13	83.27	-5.58	3.6	18	-1.7	0	2		70	5	3	30	300	600	20	5	20		200	3	2	4	100	1		
16	83.27	-5.63	4.1	17	-1.6	1.1	2	4	70	2	3	25	300	1000	10	5	8				1.5	5	150	1		
17	83.28	-5.67	4.6	18	-1.9				70	2	2.5	12	300	2000	5	5	20		200	20	2	5	300	1		
18	83.27	-5.68	4.1	23	-2	0.6	2		60	2	3	20	200	1000	5	2	10				1.5	4	200	1		
22	83.27	-4.93	4.6	30	-2.1	6.3	3	1	60	5	2	15	150	300	5	5	10		100	1	2	4	100	1		

1:00 situation after snowfall, 5% grease ice
3:00 it is snowing, 5% grease ice
6:00 snow, some new ice formation
7:00 still snowing, on station in lead, no ice thickness entimation, melt ponds hardly detectible
13:00 on station, snow
16:00 on Dredge station, meltponds & dirty ice with snow cover hardly visible
18:00 going with Dredge, snow, poor visibility, meltpond and dirty ice hardly visible
22:00 snowfall, new ice formation, ponds & dirty ice snow covered

Hour	Port	Ahead	Starboard
1:00			
17:00			
19:00			

14.8.2001

Hour	Port	Ahead	Starboard
22:00			

15.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	83.30	-4.40	4.2	9	-1.9	0.4	2	1	50	5	2	20	200	500	5				200	5	1.5	3	100	1		
3	83.28	-4.30	4.4	2	-1.9	0.3	2	1+4	60	5	2	20	150	300					100	5	1.5	3	100	1		
6	83.37	-3.88	4.2	228	-1.6	4.1	3	3	80		2	15	200	1000	1	5	10	0	50	3	2	4	20	1		
7	83.37	-3.60	5.6	1	-1.3	2	3	1+4	80	5	1.8	20	500	1000	5	10	30		100		1.5		150	1		
9	83.37	-3.63	5.3	341	-1.5	0.8	2	1+4	80	5	2	20	500	1000	5	10	30		200	4	2	4	150	1		
17	83.57	-2.48	6.7	10	-1.2	3.2	3	4	90	2	1.5	25	300	1000	10	5	10				1.5	3	150	1		
18	83.57	-2.70	6.2	1	-1.1	1.3	3	4	85	5	1.5	20	300	400	10	10	40		100	5	2	3	100	1		
19	83.55	-2.55	5.7	15	-1	0.9	3	4	90	2	1.5	25	300	500	10	2	5					3	100	1		
20	83.55	-2.58	6.4	11	-0.9	0	2																			
23	83.58	-2.50	7	4	-1.1	5.9	4	4	90		1.5	15	2000	3000	5	5	10		3		2	5	1000	1		

1:00 snowfall, new ice formation, ponds & dirty ice snow covered
3:00 snowfall, new ice formation, ponds & dirty ice snow covered
6:00 light snowfall
7:00 still snowing, ponds snow covered, ridges hardly visible, on station
17:00 maneuvering in ice floe field, after snowfall meltponds & dirty ice hardly detectible, ramming shows dirty ice
18:00 new snow
19:00 turning in ice field for dredge
20:00 on station
23:00 ramming through a crack between two very big ice floes, speed reduced to 1.5 kn

Hour	Port	Ahead	Starboard
1:00			
3:00			
6:00			

15.8.2001

Hour	Port	Ahead	Starboard
18:00			
19:00			
20:00			

16.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	83.70	-2.18	7.5	354	-1	8.8	3	1+4	80		1.5	20	200	500							1.5	3	100	1		
3	83.68	-2.15	6.3	343	-1	2.2	2	1	80		1.5	20	200	500							1.5	3	100	1		
6	83.72	-1.73	8	330	-1.5	1.3	3	3	90		2	20	200	1000	1	2	10		5		2	4	50	1		
7	83.75	-1.83	8.2	333	-1.5	4	3	4				15														
18	83.78	-1.85	10	302	-1.5	3.5	3	1+4	80		2	10	400	1000	5	3	10	5	20	10	1.5	2	200	1		
19	83.77	-1.60	10.5	302	-1.4	3.7	3	4	70		1.8		150	500	5	1.5	2	5	30		2	2.5	50	1		
21	83.85	-0.73	9.4	297	-1.4	7	3	1	70		2	15	200	500	10	3	8		50		2	4	150	1		
22	83.90	-1.03	10	312	-1.3	5.1		3	75		1.5	20	100	500	10	10	30		30	10	2	3	100	1		

1:00 ponds and dirty ice are covered by fresh snow
3:00 ponds and dirty ice are covered by fresh snow, fog, poor visibility
7:00 white out, some dirty ice
18:00 fresh snow, ice crust, dirty ice and melt ponds covered by snow
19:00 rain, transit to TV-Grab Station, ice floes snow covered, dirty ice and ponds hardly detectible
22:00 end of TV-Grab station, ice floes are snow covered

Hour	Port	Ahead	Starboard
1:00			
6:00			
7:00			

16.8.2001

Hour	Port	Ahead	Starboard
19:00			
20:00			
21:00			
22:00			

17.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	83.88	-1.03	9.8	304	-1.3	0	3	3	85		1.5	20	100	400	10	5	20		50	5	2	3	50	1		
3	83.93	0.07	10.4	299	-1.6	9.1	3	1	75		1.6	20	200	500					100	5	1.5	3	100	1		
6	83.95	0.38	9.7	288	-1.7	1.7	3	3	90		2	20	500	150	1				50	5	1.5	3	100	1		
9	83.93	0.23	9.2	281	-0.7	0	2	3	80		2	20	500	500	10				100	5	1.5	3	100	1		
17	83.97	0.42	10	292	-1.8	0			80		1.8	15	300	700					50	5	1.5	3	500	1		
20	83.95	0.18	8.3	275	-2	4.8	3	1+3	85		1.8	10	200	2000				1	50	50	1.5	3	200	1		
22	83.00	1.02	7.7	282	-1.8	7.9	3	1+3	85		2	20	100	300				5	80	5	1.5	3	150	1		
23	84.07	1.25	8.2	278	-1.9	11.1	3	1	60		1.8	12	200	1500					1000	100	1	2	300	1		

1:00 ice floes are snow covered
9:00 ponds snow covered, snow covered with ice crust, ridges badly visible at low contrast
20:00 large lead, ponds snow covered
22:00 ponds and dirty ice are snow covered
23:00 ponds and dirty ice are snow covered

Hour	Port	Ahead	Starboard
1:00			
6:00			
10:00			

17.8.2001

Hour	Port	Ahead	Starboard
18:00			
21:00			
23:00			
24:00			

18.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.18	0.87	8.8	285	-1.8	0.2	2	1	85		1.8	20	100	300					100	5	1	2	50	1		
3	84.17	1.12	7.6	293	-1.8	0.7	2	1	85		1.7	20	150	300					50	5	1.5	3	100	1		
6	84.22	1.47	7.7	268	-2.9	3.7	3	3	85		1.7	20	150	500					50	5	2	3	50	1		
9	84.25	1.38	6.2	268	-4.2	0	3	3	85		1.7	20	150	500					50	5	2	3	100	1		
19	84.42	3.93	6.9	254	-2.8	7.7	3	4	80		1.8	20	700	1000	30	5	10		50		1.5	2.5	80	1		
20	84.48	4.63	5.3	266	-2.5	6	3	1	75		2	10	300	2000	5	5	50	1	100	50	1.5	3	200	1		
21	84.53	4.90	4.7	241	-3.4	4.1		1	70	10	2	15	150	200	10	5	10	2	70	20	1.5	2	150	1		
22	84.50	4.62	6.5	255	-3.5	3.5	3	1	80	2	2	10	120	300	15	3	10	5	80	10	2	4	200	1		

20:00 many ponds not snowed but ice covered
21:00 new thin ice forming in wind shelterd areas

Hour	Port	Ahead	Starboard
20:00			
21:00			
22:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

19.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.57	3.20	5.1	244	-3.5	1.4	2	1	60	0									1000							
3	84.57	3.38	2.9	249	-2.8	0.4	2	1	60	0	2	20	300	1000	15	5	10		400	20	2	4	200	1		
6	84.63	4.20	1.6	216	-2.2	6.3	3	3	75		2	20	200	500	5	5	10		50	5	2	3	100	1		
7	84.65	4.20																								
8	84.63	4.23	4.1	219	-2				70		1.8	10	300	500	10	5	10	5	100	30	1.5	3	200	1		
9	84.62	4.22	3.8	203	-2.3				70	2	1.8	8	150	300	10	8	15	0	100	20	1.5	2	150	1		
15	84.73	4.53	4.3	205	-3.1				70		2	10	300	500	10	10	30		50	20	2	2	200	1		
17	84.73	4.60	4.2	213	-3.8				80	5	2	10	400	700	5	5	20		50	5	1.5	1.5	200	2		

1:00 lead is very large, it's not possible to estimate ice characteristics
3:00 dirty ice is snow covered
9:00 fog
17:00 new ice in leads, huge area of open water

Hour	Port	Ahead	Starboard
1:00			
3:00			
18:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

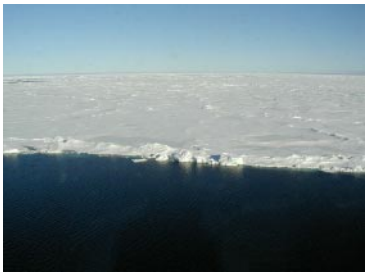
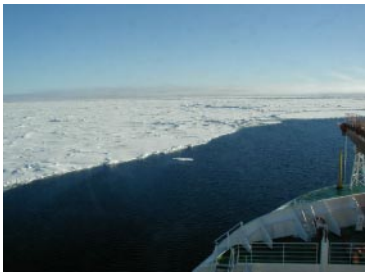
20.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.80	5.62	3.3	207	-3.8	0	2	1	60																	
3	84.78	5.77	2.9	211	-3.8	1.3	2	1+3	75		1.8	20	150	500	10	5	15		50	5	1.5	3	100	1		
7	84.83	6.70	5	197	-4.8	5.7		3	80		1.5	20	500	1000	50	10	20		25	15	1.5	3	200	1		
12	84.88	6.48	6.4	160	-4.5				80	5	1.8	10	200	1200	10	5	10		50	5	2	4	100	2		
14	84.88	6.68	6.1	157	-3.8				85		2	10	300	2000	10	10	30	1	50	20	1	3	200	1	0	
18	84.83	7.52	7.9	181	-3.7	3.5	3	3	85	5	1.5	10	100	200	10	10	15		50	40	1	3	100	1		
23	84.87	8.42	6.3	185	-0.5	6.7	3	1	85		2															

1:00 on station in large (500m x 500 m) lead, difficult to decribe the ice
3:00 it is snowing, ice floes are coverd by fresh snow, it's difficult to estimate dirty ice
7:00 ridges hard to estimate (height, distance)
14:00 melt ponds are ice covered with very thin new snow on top, some sediments during ice station
23:00 dense fog, just started steaming from dredge station

Hour	Port	Ahead	Starboard
3:00			
7:00			
12:00			

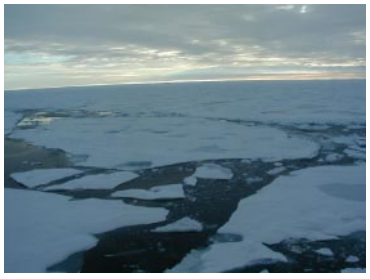
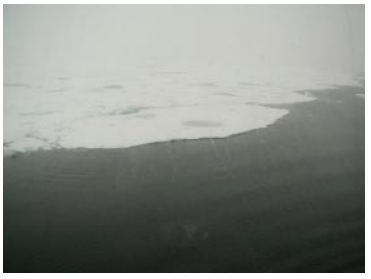
20.8.2001

Hour	Port	Ahead	Starboard
14:00			

21.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.95	8.80	5.5	187	-2.1	7.9	3	1	85		2	20	200	500	15	5	20		50	15	1	3	100	1		
3	84.95	8.95	4.6	179	-2	1.6	3	1+3	85		1.9	15	300	1000	15	5	10		50	10	1	3	100	1		
6	84.95	9.45	6.3	149	-0.1	5.6	3	3	85		2	10	1000	2000	20	5	10		50	20	1.5	3	100	1		
7	84.97	9.82	7.2	146	0.3	2		3	75		1.5	10	1000	2000	40	15	30		70	40	1.5	2	100	1		
12	84.98	10.18	4.8	185	-0.1	6.2	3	1	80		1.7	8	500	2000	40	10	40		50	5	1.5	3	300	2		
17	85.03	11.38	5.2	179	0.8				75		1.8	5	700	2000	40	5	20		100	20	1.5	2	200	2		3
18	85.07	10.62	4.3	161	0.3	4	3	3	75		2	2	300	1000	40	3	10	5			1.5	3	150	1		2

1:00 fog
6:00 fog
7:00 fog,rain
12:00 no fresh snow, melting surface layer, meltponds with thin ice crust, streams connecting ponds
17:00 two icebergs + sediments + rocks, one iceberg at horizon

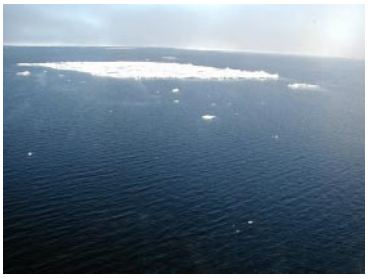
Hour	Port	Ahead	Starboard
3:00			
6:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

22.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.08	10.73	2.9	235	-2.4	1.6	2	1																		
3	85.13	10.92	2.4	220	-3.2	0	2	1																		
6	85.07	12.07	2.3	186	-3.3	2.1	3	2+3	60		2	10	20	100	10	5	10		200	5	2	4	20	1		
7	85.08	12.45	3	206	-3.1	5.7	3	1	55			5	5000	5000	70	15	50	5	150	10	2	3	50	1		
14	85.18	13.97	5.2	95	-1.5	4.8	3	1	50		1.8	5	100	2000	20	10	50	50	200	50	1.5	4	200	1	1	2
20	85.23	13.70	6.5	177	-3.1	5.8	3	1	70		1.5	5	200	1000	20	10	30	10	50	40	1.5	5	200	1	1	
21	85.25	14.40	6.5	175	-2.9	4.7	3	1																		6
22	85.27	14.78	7.7	170	-2.9	7.9	3	1																		1
23	85.30	15.87	6.4	183	-2.5	6	3	1	70		1.4		150	800	30	5	40	5	200	10	1.5	3	300	2		4

1:00 on Dredge station, we work in large lead, strong fog, very poor visibility
3:00 on Dredge station, we work in large lead, strong fog, very poor visibility
6:00 much open water
7:00 new ice formation, fog, as far as visible: just water, no ice
14:00 very foggy; 2 icebergs very closely passed, probably more in the vincinity; green and blue ponds, some melted through, many algae and some floes are sedimented
20:00 very foggy; green and blue ponds, some good icebreaking
21:00 huge ice free area and very poor visibility, 2 large icebergs > 50m
22:00 very poor visibility, fog, operating in big lead
23:00 fog, poor visibility

Hour	Port	Ahead	Starboard
6:00			
7:00			
14:00			

22.8.2001

Hour	Port	Ahead	Starboard
20:00			
23:00			

23.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.40	16.52	8.1	174	-2.8	6.6	3	1+3	80	0	1.5	10			30	5	30									
3	85.38	14.73	8.1	177	-2.5	0.2	2	1																		
7	85.40	15.83	11.1	177	-2.1	6.4		1+3	70		1.8	10	300	1000	70	10	30		100		1.5	2.5	100	1		

1:00 beginning of station, very poor visibility - fog

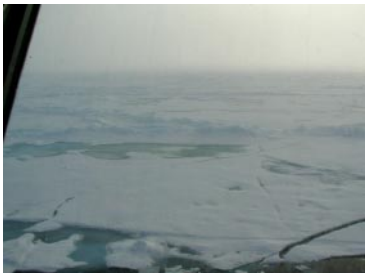
Hour	Port	Ahead	Starboard
1:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

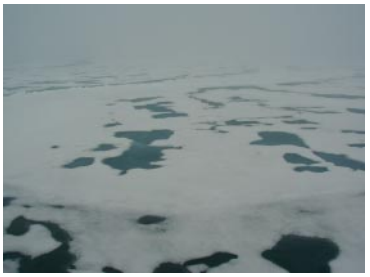
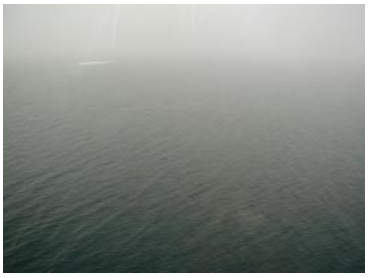
24.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.42	16.33	8.7	185	-2.7	5.8	3	1+3	80	0	1.5	10	300	1000	50	5	30	0			2	3	300	1		
3	85.42	17.73	7.4	201	-2.6	3.7	3	1	70	0	1.5	10	300	1000	40	5	30	0	500		1.5	3	200	1		
6	85.48	19.18	5.8	189	-2.4	6	3	1+3	85		2	10	500	1000	10	5	20	0	100	5	2	3	300	1		
7	85.55	19.45	5.6	194	-1.9	2.7	3	1+3	85		2	10	500	1000	10	5	20	0	100	5	2	3	300	1		
8	85.58	19.87	5.7	193	-2.2	2	3	3	90		1.5	10	500	2000	20	10	30	0	20	20	1.5	3	400	1		
13	85.55	22.33	7	202	-2.2				80		1.5	5	1000	2000	40	10	30	5	200	20	2	3	400	1		
14	85.50	23.30	5.1	224	-2.4	6.3	3	3	90		1.5	5	500	2000	20	10	30	0	20	20	1.5	3	300	1		
16	85.37	23.52	5.6	204	-2.3	5.7	3	1	40		1	5	100	300	10	5	10			5	1.5	3	50	1		
19	85.42	22.62			-2.8	6.5	3	1					¿1500						500		2	3		1		
20	85.47	21.78			-3	7.5	3	1	10																	
21	85.50	21.00			-2.4	5.8	3	1	85		1.5	10	150	200	20	10	20		20	5	1.5	3.5	100	1	10	
22	85.53	20.32	4.9	218	-2.8	1.7	3	4	95	2	1.2	5	150	300	40	2	10				1.5	3	80	1		
23	85.53	20.93			-2.8				90	5	1.4	10	300	1000	40	2	10				1.5	2.5	50	1		

13:00 spaces between older floes are filled with thin and undeformed FYI, very evenly ponded with most ponds melted through
16:00 operating in big lead, dirty ice not detectible
19:00 in open water, fog, hard to estimate ice situation, no wind data
20:00 fog and giant lead - 1.5 x 7 km large
21:00 sunny!

Hour	Port	Ahead	Starboard
1:00			
3:00			
6:00			

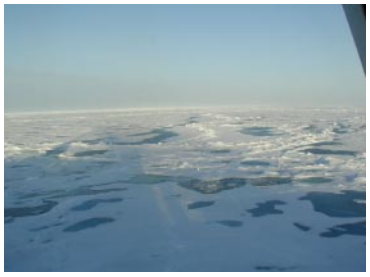
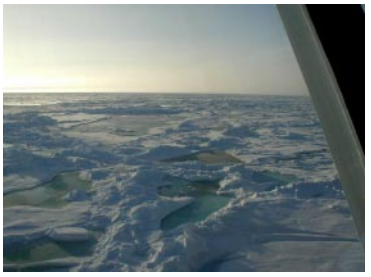
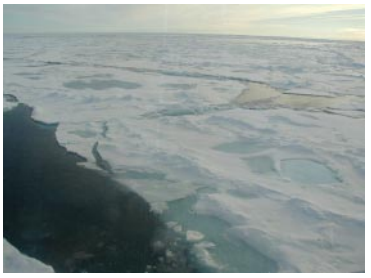
24.8.2001

Hour	Port	Ahead	Starboard
14:00			
16:00			
19:00			
21:00			
22:00			
23:00			

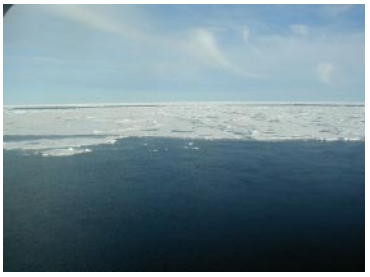
25.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.55	20.77			-3.5	1.4	2	3	95		1.2	10	300	500	40	3	10	0	50		1.5	3	100	1		
3	85.55	20.70			-3.4	0.4	2	3+1	95		1.2	10	300	1000	40	3	10	0	20		1.5	3	200	1		
6	85.65	20.18			-2.8	4.7	2	3+1	75		2	10	200	1000	30	3	10	0	100		2	3	200	1		
7	85.68	20.22	6.2	189	-2.1	5.8	3	1	80		1.5	10	100	1000	60	5	15				1	2.5	50	1		
12	85.67	20.20	5.1	200	-0.1				80		2	8	200	2000	20	5	10		50		1	2	200	1		3
15	85.60	19.03			-0.1				90		2	5	300	2000	25	5	50		50		1	3	300	1	0	2
16	85.58	18.72			-0.1				50		2	5	300	1000	40	4	10		20		1	2	200	1		
17	85.62	18.18	6.1	188	-0.1				70	5	2	5	1000	3000	30	5	10		200		1.5	2	200	1		
21	85.65	17.60			-0.2	5.5	3	3	60		1	10	50	100	15	10	15		80	20	1.5	2.5	100	1	15	

6:00 some new ice formation
12:00 Petrology station, clear sky!
15:00 good visibility, very homogeneous floes with few ridges, green and blue ponds.
17:00 on station

Hour	Port	Ahead	Starboard
1:00			
6:00			
7:00			

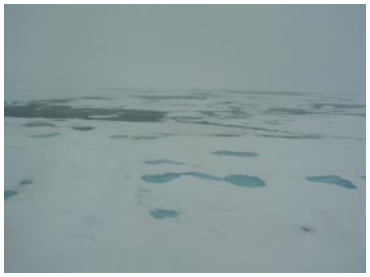
25.8.2001

Hour	Port	Ahead	Starboard
12:00			
15:00			
16:00			
17:00			
21:00			

26.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.72	18.32	6.8	200	-0.1	0	2	1	60																	
3	85.73	19.47	7	200	-0.2	0	2	1+3	70						20	5	15		50	5	1.5	3	100	1		
6	85.75	20.23	6.2	208	-0.3	3.5	3	1+3	70		2	10	100	200	20	5	15		30	15	1.5	3	100	1		
9	85.77	20.25	9.8	194	-0.1	0.2																				
12	85.82	21.48			-0.2	3.8	3	0	70		1.8	8	300	500	20	5	10		50	5	1	2	100	1		
15	85.92	23.30	9.8	220	-0.3	3.9	3	0	95		2	10	150	200	20	8	10		50	15	1	1.5	100	1		
19	85.98	23.65	10.3	220	-1.3	4.3	3	3+4	80		2	10	100	300	30	15	30		30	10	1.5	2	100	1		

1:00 on station
3:00 on station
6:00 fog
9:00 on station
15:00 fog

Hour	Port	Ahead	Starboard
1:00			
3:00			
6:00			

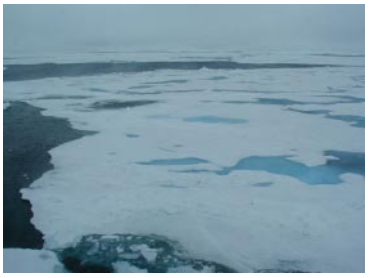
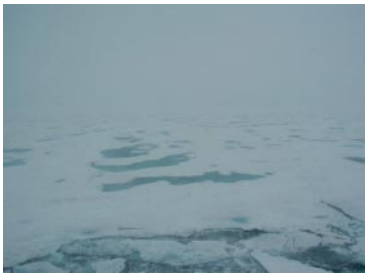
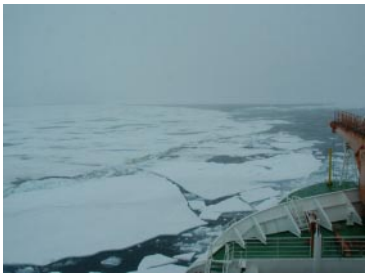
26.8.2001

Hour	Port	Ahead	Starboard
9:00			
15:00			

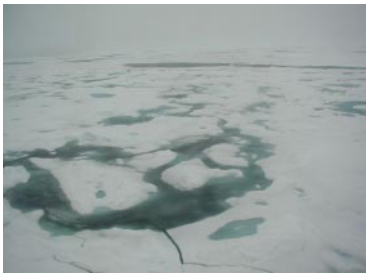
27.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	85.95	24.10	11.1	228	-1.6	0.7	3	3+1	80																	
3	85.93	23.27			-1.5	0	3	1	80																	
11	85.98	24.35	9.7	270	-1		3		85		2	5	100	200	30	5	10	10			1	1.5	100	2		
14	85.98	27.00	11.3	230	-1.1	3.6	3	0	80		1.5	5	400	800	25	5	10	15	20		1	1.5	100	2	10	
17	85.95	28.10	8.8	226	-1.2	4	3	0	80		1.8	5	500	2000	40	5	200	20			1	1.5	500	1		
18	85.98	28.83	8.3	219	-0.9	5.5	3	0+1	70		1.5	15	200	500	30	20	50	15	150		1	1.5	100	1		
20	86.02	29.97	8.4	218	-0.9	0.2	3	0	85		1.3	5	300	2000	20	15	30	0	100	70	1	1.5	100	1	1	
21	86.00	30.18	10.7	216	-0.8	5.9	3	4	90		1.2	5	250	1000	40	5	20				1	4	200	1		
22	86.02	29.97	8.8	217	-0.9	3.7	3	1+4	85		1.8	10	200	1000	30	5	50		60	30	1.5	3.5	100	1		

0:00 on station, fog, bad visibility
3:00 on station, fog, bad visibility
17:00 fog, sediments
20:00 mixture of very level, greyish and very ridged floes; many ponds melted through, it seems that many ridges are formed by blocks of very thin ice, no sediments
22:00 many pressure ridges, ship is ramming

Hour	Port	Ahead	Starboard
10:00			
14:00			
16:00			

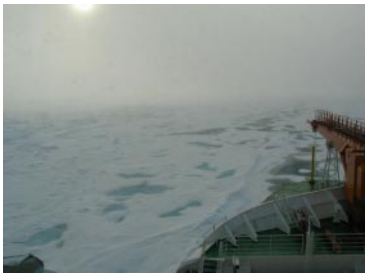
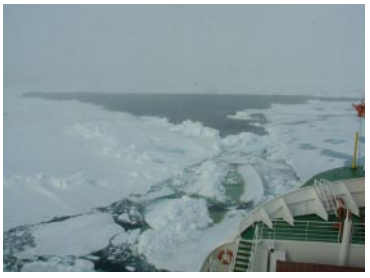
27.8.2001

Hour	Port	Ahead	Starboard
19:00			
21:00			
22:00			

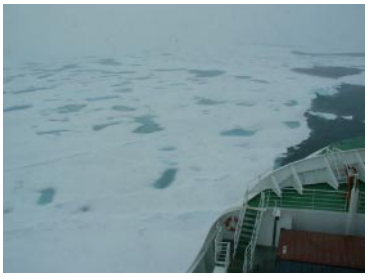
28.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	86.00	29.27	7.5	234	-0.9	3.2	3	4	95		1.7	10	400	1000	40	10	25	0			1.5	3	100	1		
2	85.97	29.12	7.5	233	-0.6	0	2	1	85																	
5	85.95	29.78	7.3	231	-1.5	4.5	3	1+3	85		2	10	50	100	10	5	20		30	5	1.5	3	40	1		
6	85.97	30.50	6	231	-2.2	0.1																				
11	85.97	29.95	6	222	-2.1						2	10	1000	3000	30	5	20		100		1	3	80	2		
15	86.03	30.53	5.5	232	-2.3	0.6	3	1	75		1.8	10	500	800	40	5	15		50		1	2	100	1		
18	86.05	30.63	6	223	-1.5	0.3	2		70		1.8	10	200	500	25	2	10		500		1.5	3	200	1		
21	86.05	31.63	5.3	238	-1.2	4.4	3	1	80		1.2	10	300	500	40	5	10	5	50		1	2	200	1		
23	86.10	33.20	4.8	245	-0.7	3.1	3	1	85		1.4	10	200	500	25	5	15	0	50		1	2	100	1		

0:00 ship is ramming, fog
2:00 on station, fog, poor visibility
5:00 fog, thin ice
11:00 on station
15:00 leaving station
18:00 on station, fog, poor visibility
21:00 seismic transit, some fog, big leads at the end of observation, some very fine new ice
23:00 seismic transit, fog, poor visibility

Hour	Port	Ahead	Starboard
5:00			
11:00			
15:00			

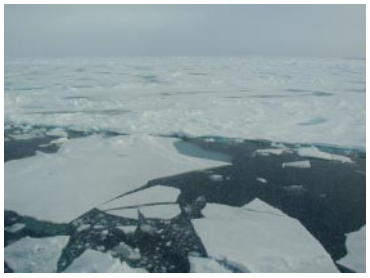
28.8.2001

Hour	Port	Ahead	Starboard
18:00			
21:00			

29.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.17	34.70	5	253	-0.5	3.8	3	0	80		1.2	10	200	400	20	5	15	1	20		1	2	50	1		
4	86.27	35.80	5.2	275	-1.4	5.5	3	0+3	80		2	10	200	1000	10	5	15	1	10		2	3	50	1	10	
5	86.28	36.43	6.3	279	-1.4	5.2	3	1+0	80		1.8	10	200	1000	30	10	40		200		2.5	3.5	100	1		
7	86.32	38.22	3.1	308	-2.9	3.5	3	1	85		2	10	200	1000	30	10	40		200		2.5	3	100	1		
10	86.33	37.77	3	331	-3.6	0	3	1	85		2	10	300	1000	25	10	40		200		2	3	100	1		¿20
17	86.32	38.58	3.1	335	-3.1																					
21	86.33	38.18	1.3	37	-2.6	2.2	3	4	90	5		10	100	500	30	5	30	5			2	4	100	2		7
23	86.40	38.58	0.9	1	-2.5	7.4	3	0	85	5	1.8	10	300	1000	25	5	25	0	50		1	3	150	2		18

2:00 seismic transit, following HEALY
4:00 seismic transit, following HEALY
5:00 seismic transit, following HEALY
10:00 many icebergs around the ship (11 of them 100-200m dist, >20 15-100m dist)
17:00 on station
21:00 several icebergs

Hour	Port	Ahead	Starboard
2:00			
4:00			
5:00			

29.8.2001

Hour	Port	Ahead	Starboard
21:00			

30.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	86.45	40.80	2.8	47	-3.3	4.2	3	0	85	5	1.9	10	150	500	20	5	20	5	20		1	3	50	2		13
4	86.52	41.58	1.2	17	-3.8	3	3	0	85		2	10	100	500	10	5	20	5	20		1.5	3	20	1		
5	86.52	41.97	2.4	353	-4.1	4.4	3	0	99	15	1.5	5		500	15			0	0		1	1.5	500	1		5
7	86.50	43.83	2.8	318	-4.5	1.6	3	0	100	15	2	10	300	500	15			0	0		1	1.5	500	1		5
16	86.58	42.05	2.9	330	-2.9	1.5	4	4		10	1.5	10	3000	5000	30	5	30		100		1	2	500	2		1
17	86.60	41.45	3.2	206	-2.7	3.1		4	85		1.5	5	3000	5000	30	20	40		30		2	3	500	2		1
18	86.57	41.57	3.9	222	-2.5	2.2	4	4	95		1.5	5	500	5000	20			0	10	10	1	2	500	2		
19	86.52	42.15	5.3	219	-2.7	4.2	4	0	98	2	1.2	2	300	2000	10	10		10	30	5	1	2	500	2		1
20	86.50	42.73	3.8	220	-2.7	7.4	4	0	95	2	1.2	2	400	2000	10	10		5	30	5	1	2	300	2		
23	86.53	43.35	2.9	228	-2.5	1	4	0+4	100	2	1.3	5	500	2000	15	10	20	0	20		1	2	200	2		

5:00 all covered with new or thin old ice, ponds new covered (thin snow); clean HEALY channel
16:00 new ridge forming at floe contacts, new ice (grease) in leads
17:00 ponds covered with snow, new ice partly
18:00 ice under pressure, new ridges at contact points, melt ponds snow covered, foggy, some new ice
19:00 seismic transit, following HEALY, snowfall, new ice formation
20:00 seismic transit, following HEALY, more snowfall, new ice formation
23:00 following HEALY

Hour	Port	Ahead	Starboard
1:00			
4:00			
5:00			

30.8.2001

Hour	Port	Ahead	Starboard
16:00			
17:00			
18:00			
19:00			
20:00			

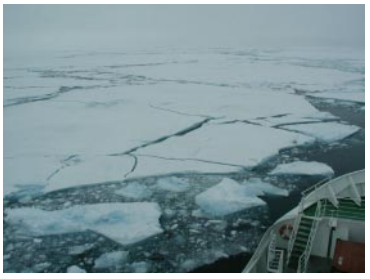
31.8.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	86.60	44.98	1.9	310	-2.4	6.1	4	0+4	98	2	1.3													1		
3	86.62	46.87	3	274	-2.5	3.7	4	0	95		1.5	5	500	2000	15	5	10		10	2	1	2	100			
4	86.68	48.65	1.8	355	-2.7	3.4	4	0	95		1.5	10	500	2000	15	5	10		10	2	1	2	100			
5	86.70	48.37	1.3	359	-3.1	4.2	4	0	95	2	1.5	5	1000	3000	15	10			30	20						
6	86.70	48.82	1	346	-1.6	0	0	0	95	2	1.5	5	1000	3000	15	10			30	20						
16	86.77	49.58	1.6	322	-3.2	1.5	4	0	95	5	2	10	5000	5000	30	5	40		80		2	5	200	1		12
17	86.80	48.57	2.4	67	-3.2	2.4	4	0+4	95	5	2	15	2000	3000	15	10	20		10		1	1.5	250	2		8
18	86.82	47.95	2	62	-3.4	1.4	4	4	80		1.5	10	100	200					10		2.5	3.5	150			3
22	86.78	49.27	2.7	103	-3.7	1.7	3	1																		

1:00 dense fog, poor visibility
4:00 very foggy
5:00 ponds covered with a thin layer of new snow, very foggy
16:00 melt ponds snow covered
17:00 melt ponds snow covered
18:00 melt ponds snow covered
22:00 fog, it is difficult to estimate ice characteristics, new ice formation

Hour	Port	Ahead	Starboard
3:00			
5:00			
6:00			

31.8.2001

Hour	Port	Ahead	Starboard
8:00			
14:00			
15:00			
16:00			

1.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	86.78	49.82	1.8	155	-3.1	6.2	4	0+1	98	5	1.4	10	500	5000	20	5	25	0	30	10	1.5	3	200	2		14
3	86.85	51.97	2.4	187	-3.2	3.8	4	0+1	98		1.8	10	500	5000	10	5	20		30	10	1.5	3	100	2		
11	86.95	58.42	6	199	-1	6.7	4	3	95	10	1.7	5	100	5000	0			0	20	20	1.5	3	200	2	0	0
12	86.92	59.90	7	217	-0.2	6	4	4	90	10	1.5	10	100	500							1	3	200	2		
15	86.90	62.22	7.6	259	0.2	2.4	4	4	90	10	1.6	10	100	1000							1.5	3	200	2		
16	86.88	63.83	7.7	276	0.3	4.7	4	4	90	10	1.5	10	200	500	30	5	15		15		1.5	2.5	100	2		
22	86.90	63.85	2	300	-0.3	0	2	1+4	90	10																

0:00 many icebergs around us, two of them as high as 20 m, new ice formation
11:00 ponds snow covered, hardly distinguishalbe, most water covered with slush due to recent snowfalls
12:00 ponds and sediments not visible due to fresh snow
16:00 ponds mostly snow covered, some visible, new ice formation, snow
22:00 on station, it's snowing, bad visibility

Hour	Port	Ahead	Starboard
3:00			
11:00			
12:00			

1.9.2001

Hour	Port	Ahead	Starboard
14:00			
16:00			

2.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	86.90	63.37	3	316	-0.4	0.5		1																		
3	86.83	64.50	3.8	60	-2.4	3.7	3	1	90		1.8	10	200	1000	10	5	10		15	5	1.5	2	60	2		2
4	86.80	65.35	2.7	58	-3.5	4.9	3	0	90	5	2	10	1000	5000	30	10	40		30	5	1	2	50	2		1
5	86.73	65.98	5.3	86	-3.3	4.9	3	0	95	5	1.7	5	200	2000	5	10	30		50	30	1	3	200	1	1	3
6	86.73	66.63	2.2	83	-3.4	3.4	3	1	95	5	2	10	300	1000	5	10	30		50	30	1	3	200	1	1	3
21	86.72	66.72	2.6	92	-4.1	2.4	3	4	90	5	2.3	8	300	2000							1	2.5	300	2		
15	86.68	67.85	2.9	105	-5.5	1.3	4	1+4	90	5	2	15	400	2000	5	10	15	5	20	15	1	1.5	200	2	5	
16	86.65	68.80	1.9	100	-4.9	4.9	4	1	90	10	2	15	250	1000					300		2.5	4	200	2		
22	86.57	70.00	2.9	136	-5.4	5.4	4	1+4	95	5	1.3	15	300	2000	20	5	25	0	150	10	1	3	200	2		
23	86.62	70.48	2.5	156	-5.3	1.5	4	4	95	3	1.3	15	300	1000					50		1	3	50	2		

0:00 waiting for HEALY, it is snowing, very poor visibility
4:00 ponds snow covered
5:00 frozen ponds appear greyish due to last days snow and rain
16:00 new ice
22:00 melt ponds are fresh snow covered, new ice formation
23:00 melt ponds are fresh snow covered, new ice formation

Hour	Port	Ahead	Starboard
3:00			
4:00			
5:00			

2.9.2001

Hour	Port	Ahead	Starboard
15:00			
16:00			
21:00			

3.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
16	86.27	72.55	4.7	193	-3.4	4	4	0	90		2	10	500	1500	30	5	10				2	2.5	200	2		
17	86.37	73.02	5.3	214	-3.2	4.5	4	0	90	5	1.7	15	150	1000	10	10	30	0	50	20	1	3	200	1	1	
21	86.62	74.02	5.5	233	-2.5	4.2	4	0	90	5	1.6	15	200	1000	10	10	25	0	50	10	1	3	150	1		
23	86.77	75.28	5.8	241	-2.4	4.5	4	0	90	5	1.6	20	200	1000					50	10	1	3	100	2		

17:00 ponds partially snow covered. HEALY sometimes needs to ram
21:00 ice floes are fresh snow covered, new ice formation
23:00 ice floes are fresh snow covered, new ice formation

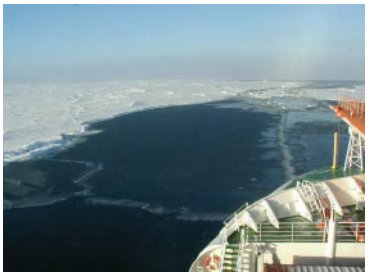
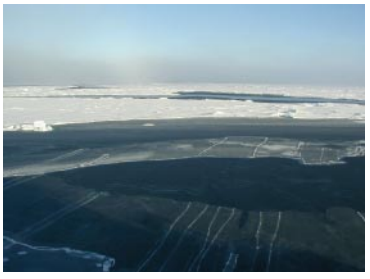
Hour	Port	Ahead	Starboard
15:00			
17:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

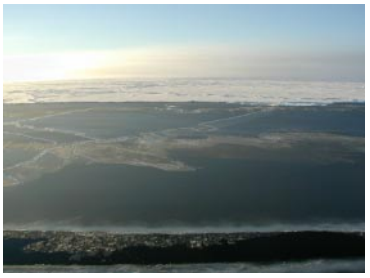
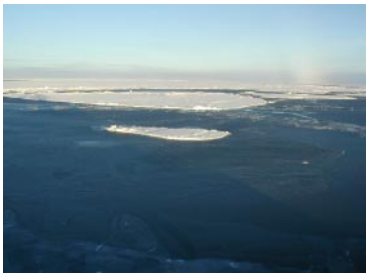
4.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
3	87.02	76.52	4.7	247	-2.7	6.6	4	0	90	5	1.6	20	2000	1000					20	5	1	3	100	2	1	
4	87.10	77.02	3.7	239	-2.7	5.7	4	0	90	5	1.8	20	300	5000					20	10	2	3	250	2		
5	87.18	77.95	2.5	205	-2.8	7.1	4	0	90	5	1.8	20	300	1000					20	10	2	3	250	2		
9	87.47	80.12	2	213	-4.4	5	4	0	90		1.5	20	300	2000					40	10	2	3	250	2		
10	87.55	79.98	3.9	205	-4.3	5.2	4	0	100	10	2	15	300	2000					100	50	1	2	200	1		
12	87.60	82.10	2.9	180	-6	4.6	4	0	90	15	1.8	15	500	800					30	5	1.5	2	150	2		
15	87.80	82.15	3.8	190	-6.5	4.6	4	0	90	10	1.8	20	1500	2000					20		2.5	4.5	20	2		
16	87.87	84.80	3.6	179	-6.2	5.5	4	0	100	20	2	15	500	2000					100	20	1	4	200	2		
18	87.93	84.82	4.5	164	-7.1	6.9	4	0	100	20	2.2	15	400	5000					50	5	1	2.5	300	2		
21	88.12	88.73	3.5	181	-5.3	6.2	4	0	98	40	1.8	15	200	800					100	10	1	2	100	2		
23	88.23	92.43	4.2	189	-4.5	9	4	0	100	20	1.7	20	300	2000					50	10	1	2	200	2		

9:00 a day for a daydream :-)
10:00 all ice coverd with 5cm powder snow, all water covered with nilas
12:00 fog
15:00 following HEALY
16:00 all open water coverd with nilas, long system of leads
21:00 ice floes are snow covered (fresh snow), new ice formation
23:00 ice floes are snow covered (fresh snow), new ice formation

Hour	Port	Ahead	Starboard
2:00			
9:00			
10:00			

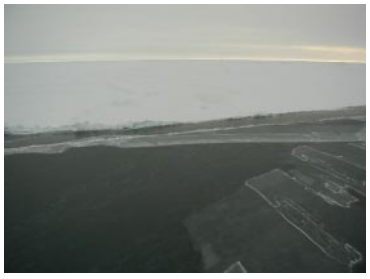
4.9.2001

Hour	Port	Ahead	Starboard
12:00			
15:00			
16:00			
18:00			

5.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	88.43	96.67	3.9	190	-4.2	5.1	4	0	100	40	2	20	100	300					50	10	1.5	2	50	2	6	
3	88.47	99.37	4.5	189	-4.4	4.6	4	0	90	10	1.8	2	200	400					40	10	1	2	100	2		1
4	88.53	99.47	3.6	174	-4.2	5.1	4	0	100	15	2	15	700	2000					50		1	2	200	2		1
9	88.73	103.85	3.7	191	-3.7	3.2	4	0	100	15	2	20	1000	3000					40	10	1	2	400	2		
10	88.82	110.35	4.7	187	-3.9	4.1	4	0	100	10	2	15	200	500					20	20	1	3	200	2	1	
12	88.88	113.95	4.1	199	-4.1	2.7	4	0	100	15	2	10	500	1000	5				20		1	2	300	2		
13	88.92	117.82	5.5	196	-6.3	4.7	4	0	100	10	2.1	10	1000	3000							1	1.5	200	2		
15	88.95	123.58	5.3	206	-6.4	6.2	4	0	95	10	2	15	200	500					10		1.5	2	50	2		2
16	88.98	128.37	5.4	214	-7	4.6	4	0	100	10	2	10	300	2000					50	30	1	3	200	2		
21	89.08	126.70	5.6	211	-4.6	5.1	4	0	100	15	1.7	15	200	1000					40	5	1	2	100	2		
23	89.22	129.43	5.8	220	-4.3	7.4	4	0	100	10	1.5	10	300	1500					40	5	1	2	200	2		

2:00 new ice
3:00 new ice, following HEALY, ice thickness probably underestimated
4:00 ahead photo shows where HEALY had to ram 3-4 times, sb photo shows 15m high pinackle iceberg at horizon
21:00 new ice formation
23:00 new ice formation

Hour	Port	Ahead	Starboard
2:00			
3:00			
4:00			

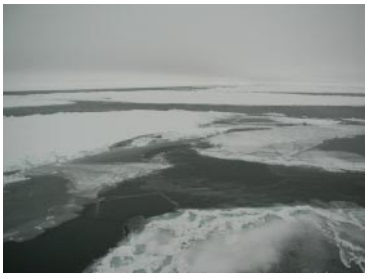
5.9.2001

Hour	Port	Ahead	Starboard
9:00			
10:00			
11:00			

6.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	89.47	125.48	7.4	222	-2.8	3.6	4	0	100	10	2	10	200	500					30	5	1	2	50	2		
3	89.52	130.48	7.1	232	-2.6	0.4	4	0	100	10	2	20	500	1000					50		1	2	150	2		
21	89.95	34.35	2.1	74	-2.2	4.6	4	1	100	15	1.7	15	300	1000					80		1	2	100	2		
23	89.92	26.05	5.7	761	-1.7	3.3	4	3	100	5	1.8	15	300	1000					50		1	2	100	2		

3:00 it's snowing

Hour	Port	Ahead	Starboard
21:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

7.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	89.90	93.75	5.2	221	-2.5	4.5	4	1	98	15	2	3	500	100					50	5	1	2	300	2	2	
5	89.80	100.92	5.1	217	-2.5	6	3	3	99	10	1.8	10	300	2000					100	30	1	2	200	1		
15	89.33	93.72	2.4	279	-1.6	1	3	3	98	10	2	10	100						50		1	3	50	1		
18	89.22	95.55	3.5	317	-1.9	2.5		4	99	10	2	25	150	500				30	50	5	1	2	100	2		
19	89.15	93.93	3.3	316	-1.9	3.2	4	4	95	10	2	20	2000	5000							1	2	1000	2		
21	89.05	92.53	4.4	318	-1.7	8.5	4	1+4	95	10	1.8	20	500	2000							1	2	200	2		
23	88.95	91.30	4.8	328	-1.7	5.3	3	1+4	98	10	1.8	20	500	2000							1	2	300	2		

5:00 ponds not visible, staeming without HEALY
15:00 very foggy, poor visibility, max. floe size and % ice coverage hard to estimate
18:00 fresh snow cover, no melt ponds visible, transit to station

Hour	Port	Ahead	Starboard
2:00			
5:00			
18:00			

7.9.2001

Hour	Port	Ahead	Starboard
19:00			
23:00			

8.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	88.78	93.52	3.1	302	-1.8	8.1	3	0	60	1	2	10	200	500	5	2	6		10	2	1	2	100	2		
3	88.72	93.50	6.1	338	-1.7	6.4	4	3	95	10	1.8	15	1000	1500							1	2	20	2	2	
5	88.58	91.48	3.3	344	-1.5	5	3	3	95	10	1.8	20	800	1500							1	2	300	2	2	
9	88.40	92.37	5.3	321	-2.8		3	4	100	20	1.8	5	800	2000	10				40		3	5	300	2		
10	88.38	93.52	5.8	303	-3.2	0		1	95	20			500	700					80	20	2	3		2	5	
15	88.25	88.98	3.9	292	-2	0		4+1	98	10	1.5	20	500	1000					20		1	2.5	200	2	3	
16	88.22	87.85	3.4	315	-2	6.8	4	3	98	10	1.8	10	200	1000	1	10		1	30	20	2	4	100	2	1	0
17	88.17	86.60	4.8	303	-2.4	7.4		3	97	5	1.5	10	300	1000	2	5			10	5	1.5	2	150	2	2	0
19	88.05	86.32	3.9	295	-2.3	2.3	4	4	95	10	1.8	10	200	1000	1	10	15		50	50	1.5	4	200	2	1	0
21	87.93	85.52	4.7	291	-1.7	5	4	4+1	98	20	1.7	10	200	500	2	10	20		100	5	1	4	100	2		
23	87.82	83.70	5.9	315	-1.4	3.6	4	4+1	95	20	1.7	10														

10:00 ship just in thin ice, not possible to estimate thickness
16:00 20% of surface covered with frozen ponds, some sediment visible, a very dirty spot was sighted in the afternoon, some open water in leads surrounded by nilas
21:00 strong fog
23:00 strong fog, very poor visibility

Hour	Port	Ahead	Starboard
2:00			
15:00			
16:00			

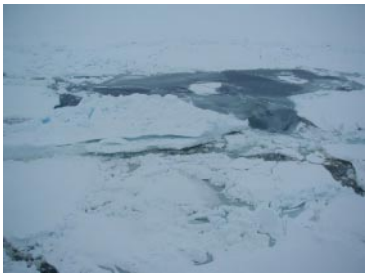
8.9.2001

Hour	Port	Ahead	Starboard
17:00			
19:00			

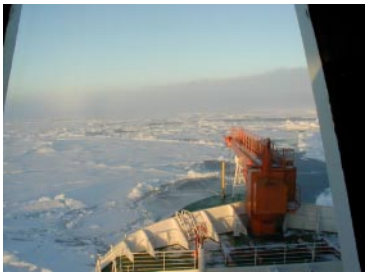
9.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
3	87.63	81.97	6.8	314	-1.2	4.5	4	3	97	10	2	15	500	1000	0			0	60	50						
9	87.50	80.40	4.5	320	-2.3	4	3	4	100	20	1.5	10	500	1000					40		2	4				
11	87.35	80.00	5.4	314	-2.3	6.2		1+3	100	15	1.5	10							60	40						
13	87.20	78.77	4.6	312	-3.2	5.3	4	4	100	20	1.6	10	500	1000							1	2.5	300	2		
14	87.18	78.70	5.2	318	-3.3	3.1	4	4	90	10	1.5	10	200	500							1	2	200	2		
15	87.13	78.52	5	318	-3.5	4.3	4	4	90	10	2	10							20							
16	87.10	77.62	3.7	335	-3.8	7.1	4	3	99	5	2	15	100	5000	0				30	20	1	2	300	1		
17	87.08	77.52	3.7	310	-3.9	2.6	4	4	98	10	1.5	15	800	1000	5				10	15	1.5	2	50	0		
21	87.08	77.53	3.3	269	-7.5	0	2		98	3	2.2	15	500	1000					20	5	1.5	4	200	2		
23	87.08	77.60	2.6	215	-6.3	0	2		100	3	2.2	15	500	1000					20	5	1.5	4	200	2		

3:00 conditions difficult to judge
9:00 conditions difficult to judge
11:00 poor visibility < 300m
13:00 fog
14:00 fog
15:00 fog
16:00 ponds frozen and snow covered, but visible
17:00 pressure ridge formation, ship stuck, lots of algae on ice underside (red)
21:00 pressure ridge formation, ship stuck, lots of algae on ice underside (red)

Hour	Port	Ahead	Starboard
13:00			
16:00			
17:00			

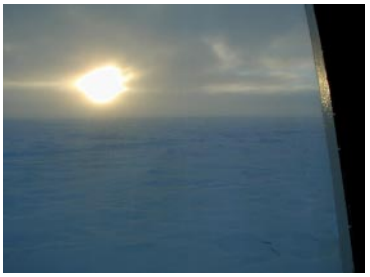
9.9.2001

Hour	Port	Ahead	Starboard
21:00			

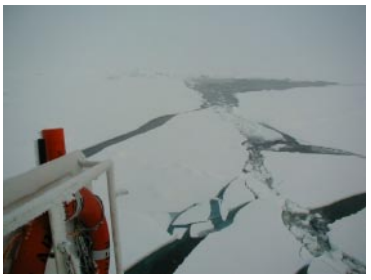
10.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
10	87.05	76.65	5.7	16	-4.1	4.2	4	3	99	5	2	15	600	5000	0				50	30				2		
11	87.00	76.08	2.8	254	-3.2	0.5	4	4	99	10	2	10			5	10	10		0							
13	86.93	76.10	3.2	272	-2.2	3.3	4	4	99	10	1.8	10														
14	86.90	75.33	3.3	241	-2.9	5	4	4	90		1.7	10	1000	3000					40		2	4	100	2		
15	86.87	74.57	3.9	237	-2.4	7.5	4	4	90	10	1.5	15	400	1500					20	10	1.5	2.5	150	2	1	
16	86.82	74.42	5	235	-2.3	6.9	4	4	99	5	2	15	300	2000	0			0			1.5	3	150	2	0	0
17	86.78	74.38	4.8	249	-2		4	4	95	10	1.8	10	300	1000	0			0			1	2.5	100	2		
18	86.77	74.45	5.8	238	-3.3	6.3	4	4	98	10	1.8	15	400	1000	5				10		1	2	150	2		
19	86.75	74.40	5.8	216	-2.9	4.5	4	4	99	10	1.8	15	500	2000	5						1	2	200	2		
22	86.72	74.53	5.6	223	-2.7	0		1	98	10	1.7	15	400	1000					30	10	1	3	200	2		

10:00 fog, only very few green ponds visible from helicopter, new ridges at floe contacts
11:00 fog and poor visibility
13:00 fog, white out, difficult to estimate
14:00 fog
16:00 only some few green ponds are snow free visible; still much ramming; new ridges at floe contact
17:00 POLARSTERN got stuck
18:00 ramming in ice, fog, algae in broken ice
19:00 still ramming, some melt ponds without snow cover
22:00 on station

Hour	Port	Ahead	Starboard
10:00			
14:00			
16:00			

10.9.2001

Hour	Port	Ahead	Starboard
17:00			
18:00			
22:00			

11.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.68	74.37	7.1	223	-3.3	5.7		4	98	10	1.6	15	600	1000	2				20	5	1	2	200	2		
9	86.62	74.20	7.3	214	1.4	0.3	4		100	10	1.7	10	500	1000	5						1.5	2	200	2		
10	86.57	74.18	8.5	223	-1	1.2	4	4	99	5	1.8	10	300	2000	0			0	30	30			150	2	0	0
11	86.55	74.20	9.4	227	-0.9	0.4		4	98	10	1.5	15	300	1000	0			0	30	20	1	1.5	200	2	0	0
13	86.55	74.30	10.7	222	-0.8		4	4	95	10	1.6	15	800	2000	0						1	2	400	2		
15	86.52	73.53	12.8	233	-0.8	3.2	4	4	98	10	1.7	15	300	1500							1	2	300	2		
16	86.50	73.73	12.7	239	-0.7	2.2	4	4	95	5	1.7	15	150	2000	0			0	30	30	1	2	300	2		0
17	86.50	73.80	12.6	242	-0.6	2.9	4	4																		
21	86.48	74.23	11.1	245	-0.2	0	2	1																		
23	86.48	74.43	10.8	247	-0.4	1		1																		

2:00 only few meltponds visible, many ridges formed by ramming
9:00 POLARSTERN got stuck again, snowfall
10:00 snowfall and fog; very few snow-free green ponds, others partially visible; ice under pressure, new ridges at floe contact
11:00 strong snowfall, mainly horizontal, big snowflakes, on station
13:00 ship on staion, fresh snow fall
15:00 snow, poor visibility
16:00 20% melt pond cover, snow and ice covered, greyish; ice under pressure
17:00 still ramming at same position
21:00 on station, fog, poor visibility
23:00 on station, it's snowing, poor visibility

Hour	Port	Ahead	Starboard
2:00			
10:00			
16:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

12.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.43	74.35	9.5	252	-0.7	6.4	4	0+4	90	5	2	15	500	1000					50	5	1	2	300	2		0
3	86.42	74.35	9.5	249	-1.1	2.7																				
12	86.37	73.62	7.9	168	-2.5	0.7	4	4	99	5	2	15	400	1000	10	3		15	0		1	2	300	2		
15	86.42	73.20	12.8	170	-0.6	2.3	4	4	99		2	20	1000		30	7	20	1			1	1.5	200	1		
16	86.43	73.20	12.5	174	-0.3	0	4	4	99	5	1.7	10	1000	2000	10	5	20	1	10	10	1	3	200	2		
17	86.45	72.83	8.6	177	-0.2	4	4	4	98	3	1.5	10	500	700	15	8	15	0			1	1.5	200	2		
18	86.47	71.97	9.2	210	-0.1	5	4	3	99	5	1.8	10	500	2000	10	10	20	20	30	20	1	4	200	2	10	
19	86.50	71.47	5.3	206	-0.2	6.4	4	4	90	2	1.6	10	1000	2000	20	10	30	10			1	2	200	2		
21	86.48	70.10	9.8	245	-0.2	5.5	4	3+4	98	5	1.7	10			20	10	25	5	20	5	1	3	100	2		
23	86.48	69.72	9.5	250	-0.2	1		1+4	98	3	1.8	10			15	5	25	5	60	10	1	3	100	2		

2:00 fog
3:00 still running at same position
12:00 POLARSTERN got stuck, dirty ice visible in floes (algae?), meltpond snow covered
16:00 rain, still ramming at the same floe since 15:30, new ridges at floe contacts; ponds well visible and almost snow free
17:00 rain
18:00 some heavily rubbled floes, dirty, heavy sediments inside the ice, many ponds snow free but frozen, rain, sediments around formerly broken ice
21:00 poor visibility, it is not possible to estimate ice floe sizes, rain
23:00 on station, poor visibility, it is difficult to estimate floe size

Hour **Port** **Ahead** **Starboard**

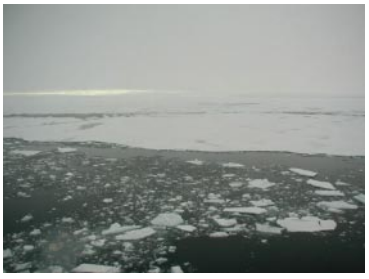
17:00

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

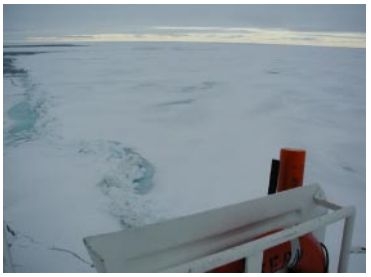
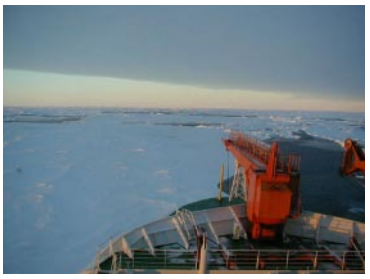
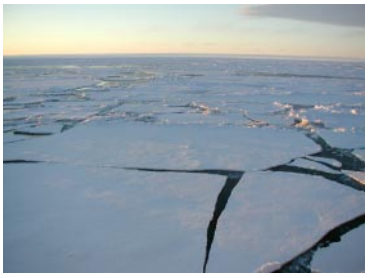
13.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
8	86.53	69.27	5.7	332	-4.3				95	5	1.8	10	1000	3000	20	10	30	5	100	10	1	3	500	2		
9	86.52	69.20	6.9	328	-4.5	8.2	4	3	80		1.8	10	500	1000		10	30		40	10	1	3	300	2		
11	86.57	67.58	7.1	317	-5.2	7.6	4	4	95	3	1.5	10	300	800	15	5	10	2			1	1.5	300	2		
12	86.58	66.88	5.9	330	-5.6	5.5	4	4	98	2	1.2	15	100	500	5	5	10	5			1	1.5	150	2		
14	86.60	66.20	5.2	320	-6.5	1.3	4	4	90		1.5	10	100	500	5	5	10		40		2	3	150	2		
15	86.62	65.83	5.3	310	-7.4	1.8	4	4	95		1.5	10	1000	200	5	2	5				1.5	2	100	2	1	
16	86.68	65.27	5.4	318	-9.6	5.9	4	3	98	1	1.7	10	500	2000	10	10	30	0	30	20	1	3	150	2	1	
17	86.75	65.33	6.4	313	-9.3	5.4	4	3	95	2	1.5	10	400	1500	5	15	30		50	20	1	2	100	2	2	
18	86.73	64.85	8.5	310	-9.4	0.8	4	3	95	2	1.5	10	200	1000	5	5	20	5			1	1.5	100	2		
21	86.73	64.97	7.5	315	-9.9	0.3	3	3	96	3	1.5	10	200	1000	5	10	25	2	50	10	1	2	100	2		
23	86.72	65.28	11.6	318	-10.1	1		3	96	3	1.5	10	150	1000	5	10	20	2	30	5	1	2	100	2		

8:00 on station
11:00 POLARSTERN got stuck several times
16:00 despite high ice concentration we make good progress
18:00 just reached next Dredge station, preparing a broken ice field for Dredge transit
21:00 on station, new ice formation
23:00 on station

Hour	Port	Ahead	Starboard
8:00			
9:00			
11:00			

13.9.2001

Hour	Port	Ahead	Starboard
12:00			
13:00			
15:00			
16:00			
17:00			
18:00			

13.9.2001

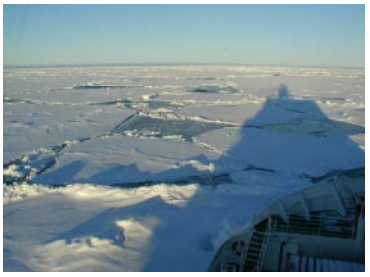
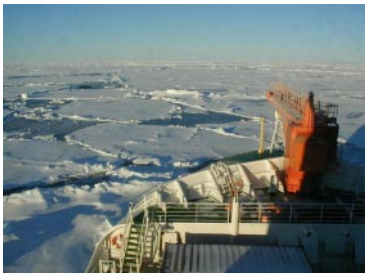
Hour	Port	Ahead	Starboard
23:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

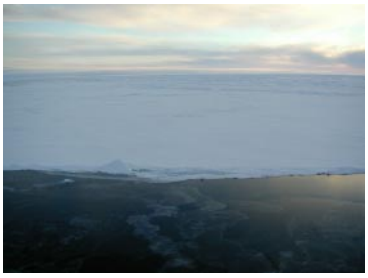
14.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.73	65.38	5.9	289	-11.2	6.9	4	1+3	96	5	2	10	200	1000					30	5	1	2	100	2		
3	86.78	65.47	9.6	309	-10.9																					
5	86.78	65.47	9.6	299	-10.3																					
14	86.78	64.93	3.1	323	-9.5	2.1	4	4	100		1.2	10	500	700	5	5	20		40		1	2	300	2		
15	86.78	64.78	2.6	307	-9.5	8	4	4	98	1	2	15	1000	1500	10	5	15				1	2	50	1		
16	86.82	64.78	3.5	298	-9.8	1.3	4		99	10	1.7	15	1000	2000	5	10	30	0	150	100	1	2	150	2		1
17	86.85	64.75	6.3	261	-9.8	7	4	3	97	10	2	15	800	1200	5	10	20				1	2	200	2		
19	86.75	62.42	6.3	284	-8.6	6.3	4	0	95	15	1.8	10	400	1000	5						1	2	200	2		
21	86.72	60.85	6.3	290	-8.4	6.2	4	0+3	98	10	1.8	10	300	1000	5	5	20		30	5	1	2	100	2		1
23	86.72	58.97	1.7	22	-7.8	5.5	4	3+4	99	5	1.8	10	200	1000	5	5	20		20		1	3	100	2		

3:00 on station
14:00 fog
16:00 on station
21:00 new ice formation
23:00 fog

Hour	Port	Ahead	Starboard
2:00			
3:00			
6:00			

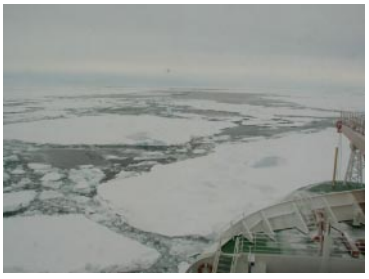
14.9.2001

Hour	Port	Ahead	Starboard
14:00			
15:00			
16:00			

15.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.77	58.02	4	117	-9.5	3.2	4	3+4	99	5	2	10	200	1000	5	5	20		20		1	3	100	2		
3	86.78	58.07	4.7	129	-8.4	3.5	4	1+4	98	10	1.7	10	500	1000	5	5	15		50	10	1.5	3.5	50	2		
8	86.92	58.70	4.7	102	-8.4	4.2	4	4	100	10	1.8	10	1000	3000	5	10	15		100	5	1	2	200	2		8
11	86.90	58.48	3.5	282	-7.9																					
12	86.88	58.48	3.7	80	-7.8	0																				
13	86.87	58.22	5.8	85	-7.8	7.5	4	4	100	5	1.8	10	1000	5000	2						1.5	3	500	2		7
14	86.88	58.10	5	87	-8	2.6	4	4	100		1.7	10	1000	5000	5						1.5	3	300	2		
15	86.88	57.47	7.5	102	-7.4	0.7	4	4	100	2	1.9	10	1000	5000	5						1	2	500	2		3
16	86.90	57.40	5.8	98	-7.1	1	4	4	100	1																
17	86.90	57.20	7.5	104	-6.5	3	4	4	100	3	2	10	1000	5000	2	5	10		15		1	2.5	500	2		
21	86.90	56.25	8	86	-6.4	1.1	4	1+3	98	3	1.8	10	150	1000	5	5	15		60	10	1	3	100	2		
23	86.88	56.05	11.3	102	-6.1	0.2	4	3	98	5	1.8	10														

12:00 on station
15:00 got stuck, ice thickness estimated from broken ice around the ship
16:00 still ramming through two big floes > 2km diam. with big fresh ridge inbetween
17:00 stuck again, ramming
21:00 on station
23:00 on station, fog, poor visibility, new ice formation

Hour	Port	Ahead	Starboard
4:00			
8:00			
13:00			

15.9.2001

Hour	Port	Ahead	Starboard
14:00			
15:00			
17:00			

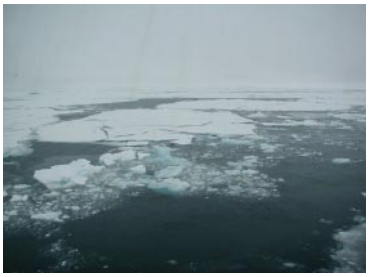
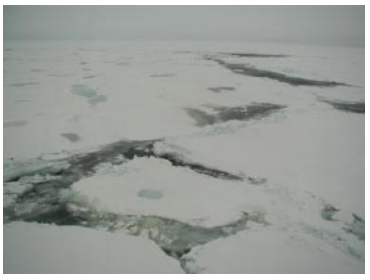
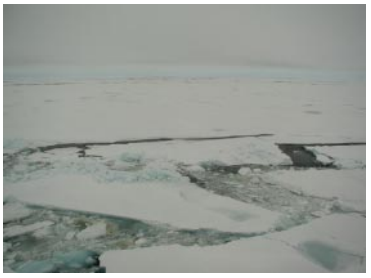
16.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.87	54.62	9.2	254	-5.3	5.8	4	3	95	5	2	10	100	500	5	5	10		30		1	2	50	2		1
3	86.88	54.3	9.9	109	-5.1	4.7	4	4	98	2	1.7	10	1000		5	2	10	2			1	2.5	50	2		
5	86.83	53.38	7.5	106	-3.7	1.2	4	4	98	2	1.8	10	1000	5000	5	2	10	2			1	2	50	2		
8	86.78	52.37	6.6	88	-2.7	4	4	4	98	5	1.7	10	300	1000	10	5	40				1	2.5	100	2		7
11	86.80	52.30	0.2	68	-2	0.2	2		97	8	1.5	10	500	1000	15	8	15				1	2	150	2		
13	86.80	51.85	3.6	30	-1.7	5.4	4	4	98	10	1.7	10	500	2000	20	5	10				1	3	200	2		
15	86.77	51.13	4.2	33	-2	5.4	4	1	98	5	1.5	10	300	1000	10	10	20		50		1	2	100	2		
16	86.85	50.22	6.1	352	-2.9	6.3	4	4	98	5	1.5	15	100	1000	10	10	30	0	50	50	1	2	200	2		1
17	86.85	50.05	6.6	350	-3.7	4.5	4	4	99	5	1.7	10	500	800	10	10	20				1	2	200	2		
18	86.80	49.65	8.2	344	-4.3	6.9	4	4	95	5	1.7	15	300	800	5	5	10		50	10	1	2	300	2		
19	86.83	49.62	9.5	344	-4.9	5	4	3	97	10	2	15	100	2000	5	10	30	0	70	60	1	2	250	2	0	9
23	86.80	49.22	9.6	346	-6.1	3.2	4	3	98	5	1.8	15	150	2000	5	5	30		40	15	1	2	100	2		7

3:00 foggy
11:00 on station
13:00 foggy
16:00 due to todays rain surface appears grey, and more ponds are visible than before
19:00 good visibility; ahaed photo shows brush broken for dredging

Hour	Port	Ahead	Starboard
2:00			
3:00			
5:00			

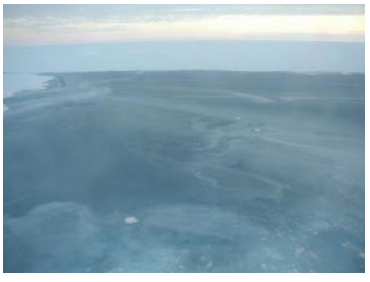
16.9.2001

Hour	Port	Ahead	Starboard
8:00			
17:00			
19:00			

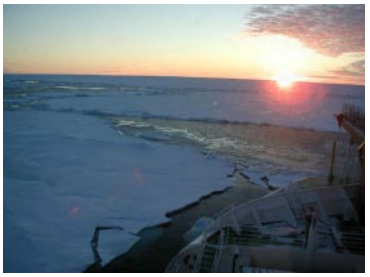
17.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
3	86.68	47.12	8.7	346	-7.2	6.1	4	3+4	98	5	2	15	200	500	5	5	20		20		1	2	100	2		8
4	86.68	47.13	4.3	299	-8.3	1.2	4	3+4	98	2	1.7	10	200	1000	5	10	20		30		1	2	200	2		18
10	86.68	47.60	4.4	327	-11.5	7	4	3+4	90	10	1.7	5	200	500	5	5	10		40		1	2	200	2		2
16	86.75	46.50	2.3	320	-10.9	0.2	4	4	95	5	1.7	10	300	1000					20		1.5	3	100	2		7
17	86.75	46.85	1.6	288	-11.2	2.2	4	4	99	5	1.7	10	150	2000	5	10	50	0	40	40	1	3	200	2		19
18	86.77	46.42	2.8	337	-11.3	6.5	4	4	100	5	1.8	15	100	1500	2	10	20		30	20	1	2	150	2		13
19	86.73	46.32	1	335	-11.1	3.5	4	4	98	2	2	10	100	800	2	5	10		10	5	1	2	100	2		3
20	86.73	46.28	1.1	326	-11.2	7.1	4	4	95	5	1.8	10	300	800							1	1.5	100	2		4
23	86.75	46.32	1.5	97	-12	0	3	4	98	2	1.8	10	300	1000	2	5	20	0	20		1	2	150	2		6

16:00 melt ponds snow covered, good visibility
17:00 some big icebergs > 100m diam., some impressive linear new and old ridges
19:00 just reached Dredge position, making a path
20:00 still looking for Dredge position
23:00 on station

Hour	Port	Ahead	Starboard
10:00			
17:00			
18:00			

17.9.2001

Hour	Port	Ahead	Starboard
19:00			
20:00			
23:00			

18.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	86.82	45.73	3.1	142	-11.4	8.7	4	1+4	100	10	1.8	15	300	1000	2	5	15	0	30		1	2	100	2		4
11	86.68	42.97	9.4	138	-6	5.4	4	4	100	15	1.8	5	500	1000	10	5	10		40		2	3	200	2		
15	86.63	41.30	10.7	116	-5.4				90	5	1.9	8			10	15	30		100		1	1.5	200	2		1
17	86.63	40.85	13	132	-5.2	7.5	4	4	98	10	1.5	5	200			5	15									
18	86.65	40.58	12.2	112	-5	1.3	4	4	100	2	1.9	10	1000	1000	15	10	30	0	15	15	1	3	200	2	0	0
21	86.67	40.42	14.3	104	-4.7	4.8	4	4	99	10	1.9	10	500	2000	10	10	25	0			1	2.5	200	2	0	0
23	86.62	40.28	13	105	-4.2	0.6	4	4	100	10	1.8	10														

1:00 new ice formation in leads
15:00 poor visibility, snowfall, new ice forming in lead, on station
17:00 poor visibility, snowfall, new ice forming in lead, on station
18:00 very foggy, ramming between two big floes, ponds well visible by their white snow cover in contrast to greyish bare ice surface, bigger ponds are snow free
21:00 heavy snowfall, dark
23:00 heavy snowfall, bad visibility

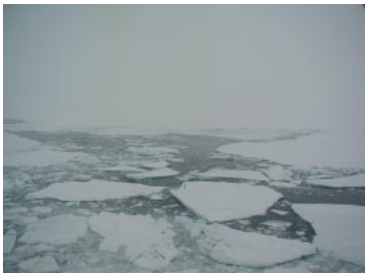
Hour	Port	Ahead	Starboard
11:00			
15:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

19.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	86.53	40.37	9.7	107	-3.5	0	2	4	100	15	1.8	10														
4	86.52	40.10	8.8	343	-3			4	100		2	10	1000	2000	5	10	20				2	4	200			
5	86.50	40.62	7.3	99	-2.7	3.1		4	100	1	1.5	10	1000	2000	5	7	15				1.5	2	100	2		
11	86.45	41.17	1.5	109	-2.1	7.9	4	4	100	10	1.5	10	1000	2000	5	7	20		40		2	4	200	2		
12	86.43	41.98	5.5	267	-3.3	4.5	4		98	5	2	15	500	2000	2	15	30	0								
13	86.43	40.98	6.5	266	-4.9	0.2	4		98	5	1.6	10														
15	86.42	40.97	6.9	270	-5.6				95	2	1.8	15	300	2000							1	2	200	2		
16	86.42	41.08	6	268	-5.7				100	10	1.5	10	300	500												
17	86.40	41.18	6.4	270	-6.3	0.9	4	4	98	5	1.8	10	300	500												
18	86.42	40.48	4.6	255	-5.9	6.4	4	3	98	10	1.8	15	200	1000	2			0	80	50	1	2	100	2	1	3
19	86.42	40.60	4.3	239	-6.2	2.2	4	4	98	5	1.5	10	100	800					10	8	1	2	100	2	2	
23	86.40	40.73	3.7	272	-5.6	0	2	4	98	10	1.7	15	200	1000					40	5	1	3	100	2		

1:00 heavy snowfall, bad visibility
4:00 poor visibility, snowfall
5:00 poor visibility, snowfall
12:00 preparing for Dredge station, most ponds covered with new snow, no more visible
13:00 on station
15:00 on station
16:00 on station
18:00 most ponds covered by new snow, thick, favourable ice condition for steaming
19:00 getting dark, melt ponds covered with snow, not possible to see them, snow drift
23:00 ponds are fresh snow covered

Hour	Port	Ahead	Starboard
4:00			
5:00			
11:00			

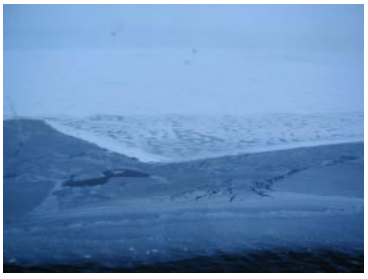
19.9.2001

Hour	Port	Ahead	Starboard
13:00			
19:00			

20.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	86.38	39.63	3	258	-5.8	2.3	4	4	99	10	1.5	15	300	1000								3	150	2		
11	86.33	38.55	9	30	-5.6	0	4		80	10	1.5	10	200	500							2	3	200	2		1
12	86.27	37.85	9	35	-5.4	7.6	4	1	80	15	2	15	200	1000	1	5		0	100	50	1	3	100	2	0	1
13	86.20	36.95	9.7	37	-5.4	3.7	4	1	80	10	1.8	15	200	1000					100	30	1	2.5	150	2	0	0
15	86.23	36.08	11.8	17	-5.9	1.5	4	4	85	10	2	10	300	2000							1	2.5	200	2		
20	86.18	35.90	10.6	27	-6.9	4.6	4	4	95	5	1.7	15	500	1000				10	10		1	1.5	300	2		
23	86.17	35.58	6.6	12	-7	5.3	4	4	98	5	1.8	15	300	1000						10	1	2	150	2		1

1:00 ponds are fresh snow covered
11:00 on station
12:00 most ponds are snow covered, snow windblown and accumulated in prominent snow drifts
20:00 steaming 2 miles to next Dredge station, floes freshly snow covered => no meltponds visible

Hour	Port	Ahead	Starboard
11:00			
12:00			
13:00			

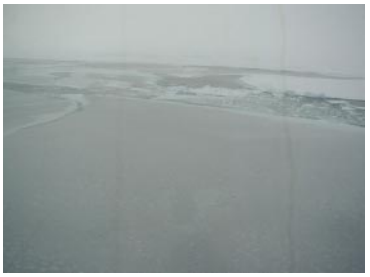
20.9.2001

Hour	Port	Ahead	Starboard
15:00			

21.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
2	86.03	34.20	7.3	17	-6.3	0.7	4	4	100	5	1.8	10	300	1000	5	5		10	20	5	1	2	100	2		
4	86.00	32.65	5.8	10	-5.9	4.3	4	4	95	5	2	10	200	1000	5	3	10		20	5	1	2	100	2		
10	85.98	31.98	6.8	30	-8.7	7.4	4	0	95	10	1.8	10	200	500					150	10	1	1.5	200	2		
12	85.98	31.20	4.9	24	-9.2				99	20	1.5	15	200	500	1	15	50	0	200	80	1	3	100	1	1	0
13	85.95	31.18	4.6	8	-9.5	1.8	2	0	99	20	1.5	10	500	1000	1	10	20		80	30	1	2	150	1	2	0
15	85.93	30.92	5.4	15	-10.5	2.5	4	4	95	10	1.6	15	800	2000					100		1	1.5	300	2		
16	85.92	30.43	5	108	-10.6	4.1	4	4	90	10	1.5	10	500	1000	10	3	10		40		1	1.5	200	2		
17	85.87	29.25	4.8	7	-10.5	3.8	3	1+4	98	5	1.4	5	300	500	5	2	10		30		1.5	2.5	150	2	1	
18	85.90	28.12	4.7	359	-11.8	4.6	4	3	99	5	1.5	10	200	2000	1	5	20	0	50	30	1.5	3	150	1	2	0
19	85.92	27.82	5.2	346	-12.2			3	98	5	1.5	10	300	2000	3	5	10		20	30	1.5	2.5	150	2	5	0
20	85.90	27.25	4.8	355	-12.5	3.2	3	3	95	2	1.7	5	100	800	3	3	10		40	5	1	2	100	2		

4:00 foggy
10:00 on station, quite heavily ridged floes around, although station floe was so flat
12:00 on station, lead frozen over with thin ice
18:00 mixture of flat and heavily deformed floes
20:00 preparing way for Dredge in a field of loose ice floes

Hour	Port	Ahead	Starboard
4:00			
12:00			
13:00			

21.9.2001

Hour	Port	Ahead	Starboard
14:00			

22.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	85.90	27.23	4.1	351	-10.3	0	2	3	98	5	1.7	5	100	1000	3	5	10		30	5	1	2	70	2		
2	85.95	25.83	3.8	359	-10.1	5.9	4	4	99	5	1.6	5	200	1000	3	5	10		20	5	1	2	100	2		
4	85.92	25.80	4.1	343	-9.3																					
11	85.90	25.70	3.6	327	-9.2	1.5	3	3	90	5	1.5	5	200	1000					40	10	1	2	200	2		
16	85.93	25.08	1	314	-7.9																					

0:00 on station
2:00 on station
4:00 on station
16:00 on station

No images.

23.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	85.78	21.68	2.9	285	-8.8	4.7	3	4	99	15	1.5	5	200	1000	3	5	15		50	5	1	2	150	2		
2	85.82	20.47	3	284	-10.2	0	2	4	99	10	1.5	5	500	1500	3	5	10		40		1	2	200	2		
6	85.82	20.58	2.3	285	-9.6	3.4	3	3	99	15	1.8	5	300	1000	1	10	30		50	40	1	2	300	1	0	2
7	85.83	21.37	2.9	284	-9.4	1.8	3	3	99	15	1.8	5	300	1000	1	5	15		50	40	1	2	200	1	0	2
18	85.80	21.50	3.7	36	-9.2	5.6	3	3	99	10	2	15	300	2000	1	10	30	0	200	50	1	4	300	1	0	1
19	85.85	22.07	5.8	42	-8.9	5.6	3	1	99	10	1.8	15	500	1000					80		1	3	200	2	2	

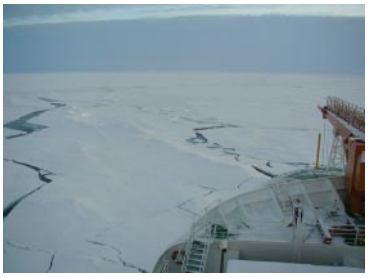
2:00 TV-Grab station
19:00 lots of algae on ice underside

No images.

24.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
0	85.85	22.28	3.1	115	-8.7	0	2	4	99	10																
2	85.87	22.32	4.5	104	-7.3	3.4	3	4	99	10	1.5	15	400	1000					50	5	1	2	200	2		
4	85.92	22.50	5.9	110	-7	3.9	4	4	99	10	1.5	10	200	1000					50		1	2	100	2		
5	85.95	22.77	5.8	105	-7.1	5.4		1+4	99	10	1.2	15	300	1000					30		1	2.5	100	2		
7	85.97	22.72	6.8	88	-7.2	5.1	4	4	99	10	1.2	15	400	1000					90	50	1	4	300	1	0	1
11	85.97	22.53	5.6	69	-7.9	3.1	4	4	100		1.5	30	400	1000					40		2	4	100	2		
12	85.93	22.73	6.5	62	-8.8		3	4	100	5	1.8	15	300	5000	1	10	30	0	10	10	0.8	2	200	2	0	
13	85.92	22.72	2.3	17	-8.6	3.5	3	4	100	5	1.5	10	200	2000							1	1.5	150	2		
16	85.88	22.85	10.7	67	-9	8.9	3	4	100		1.2	15	200	2000	0				10	10	1	1.5	100	2		
17	85.90	22.55	7.7	45	-10.3																					
19	85.90	22.63	10.8	41	-9.1																					
23	85.95	23.88	13.9	52	-8.4	1.8	3	4	100	15	1.3	10														

0:00 on station, it's snowing, poor visibility
4:00 poor visibility
5:00 poor visibility, snowfall
12:00 new ice hard to distinguish due to new snow
17:00 on station
19:00 on station
23:00 approaching station, poor visibility

Hour	Port	Ahead	Starboard
12:00			
13:00			
16:00			

Data and color images are available via
http://www.awi-bremerhaven.de/Modelling/SEAICE/icereport/index.html

25.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.93	23.63	16.4	54	-8.7	0.8	2	4	100	15																
4	85.95	23.18	19.7	52	-8	1.5	4	4	100	5	2	10	500	1000	5	5	10		20		1	2	50	2		
5	85.95	23.03	19.4	53	-7.9	3.5		4	100																	
7	85.95	22.72	20.7	48	-7.2	1.4		4	100																	
12	85.95	21.80	21.9	62	-6.2				100																	
18	85.97	20.73	16.7	24	-2.7		4	4	99	5	2	15	500	1000					50	50						
23	85.90	20.98	16.5	80	-2.8	1.2	4	4	99	3	1.7	15														

1:00 on station, poor visibility
4:00 poor visibility
5:00 stuck due to bad ice condition, poor visibility
7:00 stuck due to bad ice condition, poor visibility
12:00 stuck in the ice at same position; white out conditions; strong drift to W
18:00 ramming since 1h at same position; dark and foggy
23:00 it is dark, bad visibility, it is difficult to estimate ice floes parameters

No images.

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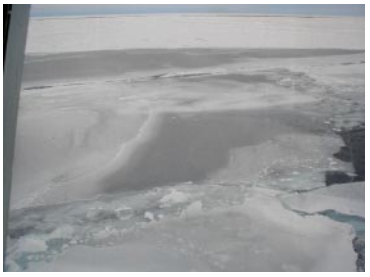
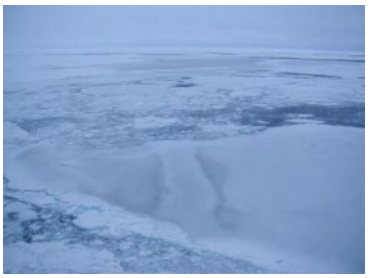
26.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	85.73	20.65	12.7	71	-3.3	7.3	4	4+0	90	5	1.5	10	400	1000	5	5	10		50	25	1	2	100	2		
4	85.45	20.43	14	83	-3.3	5.1	4	0+4	90	5	1.5	10	200	500	5	5	10		50	20	0.8	1.5	50	2		
7	85.25	20.23	11.9	73	-4.2	5.4	3	0+4	90	5	1.5	10	200	1000	5	5	10		50	20	0.8	2	100	2		
15	84.93	20.20	10.2	69	-4.1	5.5	3	0+4	90	20	1.5	5	500	3000	30	10	30				1	3	100	2		
17	84.80	20.28	10.2	58	-4.3	6.8	3	0+3	90	15	1.3	5	300		3	2	10									
18	84.78	21.43	2.9	357	-4.4	6.9	3	0+1	90	10	1.6	5	300		2	10	30	0	200	30	1	5	150	1	0	0
19	84.68	22.42	7.4	56	-4.7	0.1	3	0+1	98	10	1.5	5	500		3	10	20				1	2	200	1		
23	84.62	24.67	7	38	-6	5.4	3	0+1	98	10	1.4	5														

1:00 new ice formation in leads
17:00 contrasts too low to detect ridges
18:00 leads have open water, most ponds covered with wind blown, packed snow; only few are still visible
19:00 stuck
23:00 it is dark to make estimation of floes size etc.

Hour	Port	Ahead	Starboard
4:00			
15:00			
17:00			

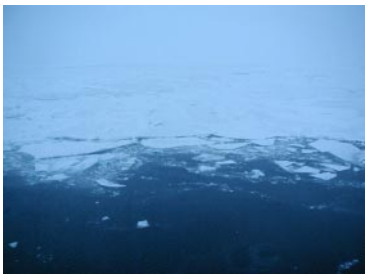
26.9.2001

Hour	Port	Ahead	Starboard
18:00			

27.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	84.52	26.67	4.8	32	-5.6	5.3	3	0	99	50	0.2	2														
4	84.37	28.25	7.8	53	-5.9	6.4	3	0	99	50	0.2															
5	84.28	28.37	9.3	45	-5.9	6		0	95	30	1.2	5	200	700	5	3	10		50		1	2	300	1		
23	83.53	27.40	8	30	-6.3	5.8	3	3	80																	

1:00 we go mostly in new ice
4:00 no leads, no floes visible, water is covered by new ice
23:00 too dark

Hour	Port	Ahead	Starboard
4:00			
5:00			

28.9.2001

Time UTC	Latitude [°N]	Longitude [°E]	True Wind speed [m/s]	True Wind direction [°]	Air Temperature [°C]	Ship speed [kn]	Number of Engines	Operation mode: channel=0, lead=1, floe ice=3, ramming=4	Total ice concentration [%]	C thin ice <30cm [%]	Typical sea ice thickness [m]	Snow thickness [cm]	Typical floe diameter [m]	Max. floe diameter [m]	Melt pond coverage [%]	Typical pond diameter [m]	Maximum pond diameter [m]	Dirty ice concentration [%]	Lead width [m]	Lead floes, diameter [m]	Typical ridge height [m]	Max. ridge height [m]	Typical ridge spacing [m]	Ridges: New=0,Old=1,Both=2	Rubble fields, coverage [%]	Icebergs, Number of
1	83.40	28.55	8.2	17	-5.3	4.7	3	3	85	40	0.2	5	50	200												
4	83.18	29.83	8.7	54	-2.4	3.5	3	3	100			50			20							30	0.3	0		
5	83.13	29.88	7.9	62	-2.1	6.3	3	3	100		0.4	10	20	80				2								
6	83.05	29.97	3.6	54	-1.8	5.7	3											2								
7	82.95	30.07	3.6	49	-1.6	6.1	3		50	50	0.4	0	5	10				1								
10	82.63	30.35	4.4	75	-1.5	6.5	3																			

1:00 it is too dark to estimate other parameters
4:00 snow fall
6:00 approaching the ice edge, small floes + brash ice
7:00 patches of new ice and brash floes, swell present
10:00 THE END

No images.