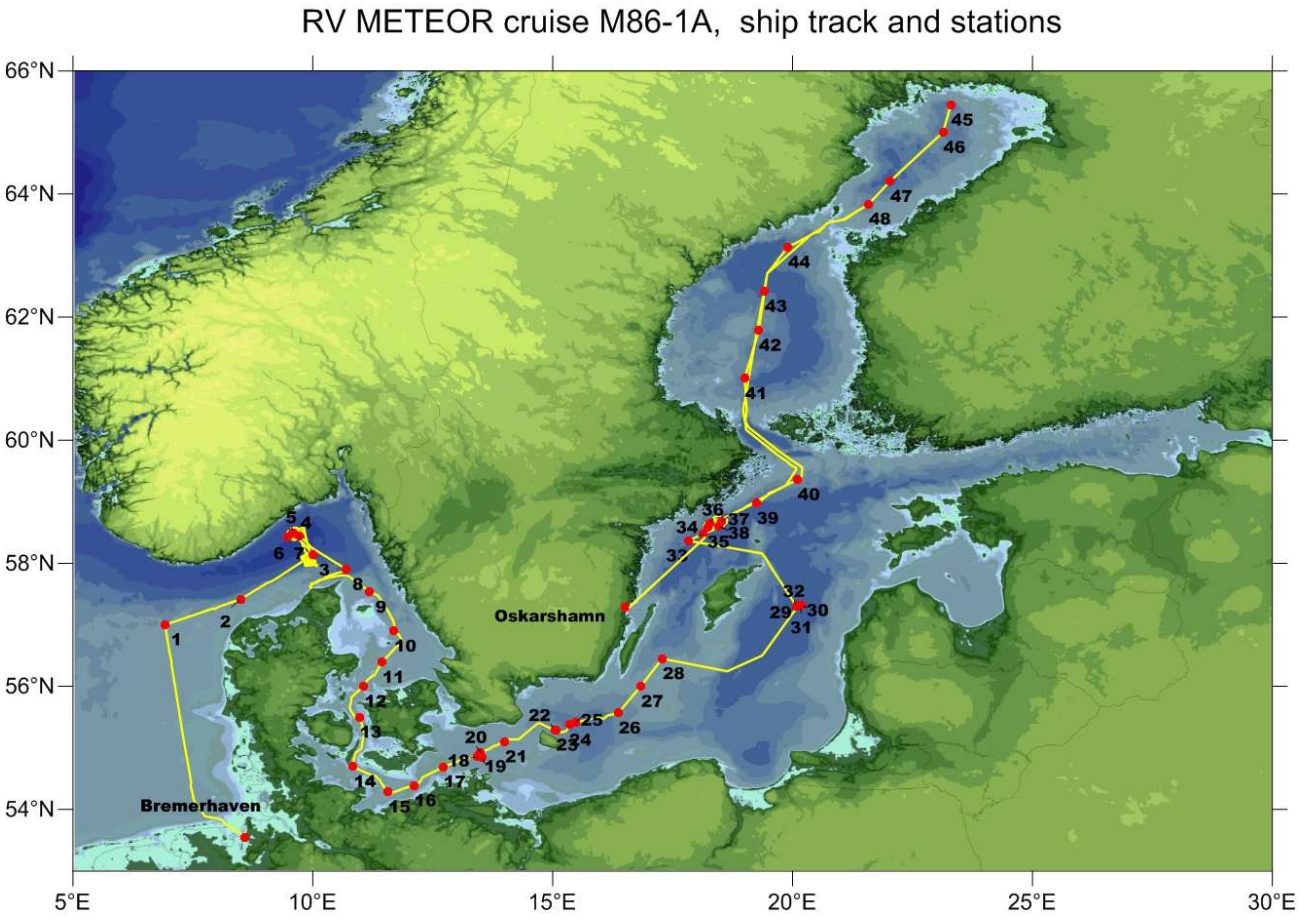
Prof. Dr. Helge W. Arz
Leibniz Institute for Baltic Sea Research Warnemünde
Seestrasse 15
18119 Rostock
Tel.: ++49 381 5197 350
Fax: ++49 381 5197 352
E-Mail: helge.arz@io-warnemuende.de

Short Cruise Report
RV METEOR M86-1A

Bremerhaven, Germany - Oskarshamn, Sweden
04.11.2011 - 22.11.2011
Chief Scientist: Prof. Dr. Helge Arz
Captain: Stefan Schwarze



Objectives

The Baltic Sea with its still ongoing postglacial changes, its natural gradients, and strong reactions to climate change and anthropogenic activity can be used in an ideal way to examine basic ecological processes and their variability in marine ecosystems. The most striking characteristics of the Baltic Sea are the extended gradients in primary (topography, energy, salinity) and secondary (organisms, matter flux, oxygen, nutrients, sediments) environmental properties as a result of different dynamical processes. This cruise investigated the impacts of salinity and redox gradients on degradation of dissolved organic carbon of terrestrial origin (tDOC), microbially mediated processes, and on the structure and function of pelagic microbial communities. We expected, that heterotrophic microorganisms adapt to this situation by changes in diversity and specific decomposition rates.

During the cruise following aims were central to this study of microbial diversity and function in the lateral Baltic gradient between Skagerrak and Bothnian Bay:

1. Assessment of structure and (selected) functions of pelagic prokaryotic communities (Bacteria, Archaea). It provides the general background for the more specific question of decomposition dynamics of imported terrigenic compounds.
2. Quantification, chemical characterization and decomposition of discharged tDOC from northern (arctic) soils in relation to microbial diversity, in order to assess the decomposition capacity for organic matter, particularly the degradation potential for introduced terrestrial carbon compounds.
3. The identification of microbial key organisms and the relation to functional characteristics in the vertical pelagic oxygen gradients of the central Baltic (Gotland Basin, Landsort Deep)

The overall aim of these studies is to gain a comprehensive understanding of the effect of imported terrigeneous and autigeneous organic material on microbial decomposition processes within the salinity and redox gradients of the Baltic Sea.

The above described aims relate to microbial assemblages, functions, and organic transformations within today´s system. They could, however, provide also evidence for historic environmental changes by the definition of proxies in paleoenvironmental analyses, for which samples were also gathered during this cruise along the whole transect from Skagerrak to the Bothnian Bay. A second paleoceanographic aim was to address the question how climate changes of the last 8000 years affected the environmental conditions in the Baltic Sea with respect to salinity, oxygen (redox-state) nutrient cycles, and land input at decadal/centennial to millennial time scales and to identify the historic, climate-driven regime shifts affecting e.g. decomposition dynamics in the central basins. Accordingly, sediment coring was planned for selected stations in Skagerrak, Arkona and Bornholm basins. Depth transects in the Landsort Deep were expected to provide detailed records of the temporal. vertical evolution of the basin anoxia that ultimately are linked to the climatologically driven turnover of salt- and freshwater in the basin.

Narrative

On the evening of the 4th November RV Meteor left Bremerhaven, Germany towards the first working area. After one day transit busy with installing the scientific equipment and setting up the various biological, chemical,and geological labs we arrived the first stations

in the western Skagerrak that focused on sampling the water column by means of CTD-Rosette and marking the start of the horizontal transect from the Skagerrak to the Bothnian Bay. Continuous measurement of methane and carbon dioxide in surface waters were started. Water samples of the horizontal salinity gradient were generally taken from up to 5 depths. From these samples data were generated on board or will be generated later in home labs concerning nucleic acid analyses (microbial diversity and function based), total cell numbers, biomass, gene probe analyses, chlorophyll, bchl concentrations, nutrients, salinity, and temperature. Large-volume water samples were taken at the third station in central Skagerrak (Giant Water Sampler) representing the marine end-member-station to start shipboard biological experiments as schematically shown in Figure 1.

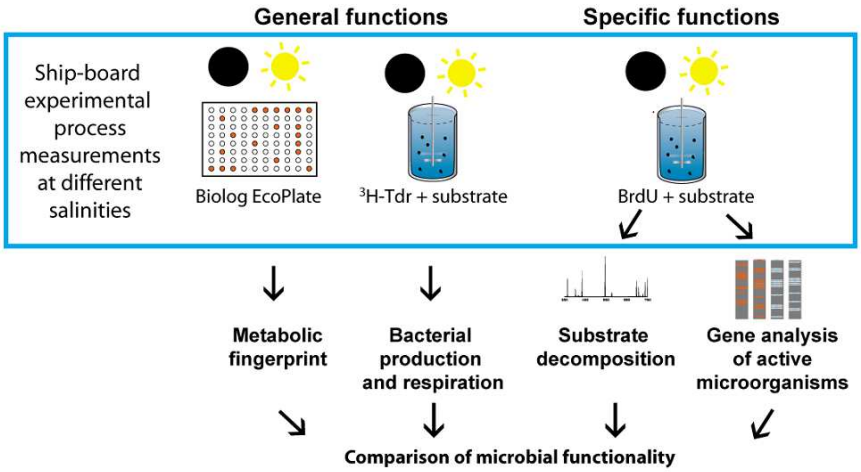


Fig.1: Scheme of proposed shipboard experiments to be conducted at the different salinity stations and at dark/light conditions for 24 h incubations. For general functions, substrate utilization (Biolog), bacterial production and respiration will be measured. For specific functions, substrate addition and decomposition will be linked to analysis of the active bacterial communities by the BrdU-approach.

At four stations in the central Skagerrak sediments were sampled with the Multicorer (MUC) and gravity corer (GC). Sampling at these stations was interrupted for multi-beam and sediment acoustic pre-site survey and the calibration and testing of the newly installed multi-beam EM710 device. After a short stop for exchange of scientific and technical personnel on the 10th November in Hirtshals, Denmark, station work (CTD/Rosette and MUC) continued under stable weather conditions along the horizontal transect towards the Baltic proper. Sediment sampling (MUC, GC) in the Arcona and Bornholm Basins at six stations resulted in average core recoveries of ca. 8 m (total core recovery during M86-1A was 146 m). On the 14. November we reached the central station in the southern basin of the Gotland Deep. As important ATKiM-station („Abbaubarkeit von arktischem, terrigenem Kohlenstoff im Meer“ - decomposition of terrigeneous carbon compounds in the sea), we performed extensive sampling of the water column and recovered and re-deployed a mooring system in order to continue the time series established since 1995 by the Leibniz-Institute for Baltic Sea Research. After a short transit to the second major deep north of Gotland Island - the Landsort Deep - altogether 5 geological stations along a depth transect down to the deepest part of the anoxic basin at ca. 460 m bsl, and about one day of Multibeam (EM710) and sediment acoustic profiling (PARASOUND) were completed by the 17. November. From there, water column and surface sediment sampling continued on eight stations to reach the northernmost ATKiM station at 65°26.7' N / 23°17.9' E on the 19. November. After 1 1/2 days transit and additional multi-beam and PARASOUND investigations in the Landsort Deep, RV METEOR reached the harbor Oskarshamn in Sweden, where the first leg of the cruise M86-1 ended.

Acknowledgements

A major part of the scientific program of the cruise is embedded in the WGL-PAKT Project ATKiM funded by the German federal and regional governments. Funding comes also from EU-Bonus projects and grants from the German Research Funding Agency - DFG and the

BMBF. We are grateful to the "DFG - Senatskommission für Ozeanographie" and the "Leitstelle Deutsche Forschungsschiffe" for making this cruise happen. We also acknowledge the permissions of Denmark, Sweden, Norway, Poland, and Latvia to conduct research in their territorial waters of the Baltic Sea. Finally, we thank Captain Stefan Schwarze and his crew for the overall success of the cruise M86-1A.

Teilnehmerliste

1. Arz, Helge	Fahrtleiter / *Chief Scientist*	IOW
2. Kaiser Jerome	Coring, sediment lab	IOW
3. Dellwig, Olaf	Coring/(pore)water geochemistry	IOW
4. Leipe, Thomas	Coring, sediment lab	IOW
5. Moros, Matthias	Coring, sediment lab	IOW
6. Endler, Rudolf	Multibeam/PARASOUND	IOW
7. Pollehne, Falk	Moorings/isotopes	IOW
8. Hehl, Uwe	Moorings/coring	IOW
9. Hand, Ines	Nutrients/oxygen	IOW
10. Hagenmeier, Anna	Nutrients/oxygen	IOW
11. Wlost, Peter	Instrumentation/CTD	IOW
12. Schuffenhauer, Ingo	Instrumentation/CTD	IOW
13. Glockzin, Michael	CO2/CH4 profiling	IOW
14. Herlemann, Daniel	Microbiology/nutrients	IOW
15. Struck, Ulrich	Nat. Isotopes	MNB
16. Marina Nazarova	Nat. Isotopes	MNB
17. Falk, Marianne	Nutrients/oxygen	MNB
18. Kiesslich, Kathrin	Microbiology S	IOW
19. Klier, Julia	Protozoa, sediment+water	IOW
20. Brinks, Erik	Water sampling S	IOW
21. Hammer, Karoline	pH measurements	IOW
22. Otto, Stefan	Nutrients/oxygen	HRO
23. Hoffmann, Ralf	Protozoa, sediment+water S	IOW
24. Rieck, Angelika	Microbiology/experiments	IGB
25. Simon, Julia	Culturing	DSMZ
26. Manecki, Markus	DOC chemistry	IOW/ICBM
27. Woelk, Jana	Water sampling	IOW
28. Häusler, Katharina	Sediment lab	IOW
29. Knuth, Edmund	Meteorology	DWD
30. Frey, Bernd	Meteorology	DWD
31. Dos Santos Ferreira, Christian	Multibeam	GeoB
32. Albrecht, Sebastian	Multibeam	Laeisz
33. Rogenhagen, Johannes		Laeisz
34. Jakobi, Niels	Leitstelle Deutsche Forschungsschiffe	

Institute

DSMZ
Deutsche Sammlung von Mikroorganismen und Zellkulturen Braunschweig
Inhoffenstraße 7 B
D-38124 Braunschweig, GERMANY

DWD
Deutscher Wetterdienst
Seeschifffahrtsberatung
Bernhard-Nocht-Straße 76
D-20359 Hamburg / Germany
Internet: www.dwd.de
e-mail: seeschifffahrt@dwd.de

GeoB
Fachbereich 5 - Geowissenschaften
Universität Bremen
Klagenfurter Straße
D-28359 Bremen, Germany
http://www.geo.uni-bremen.de/

HRO
Universität Rostock
Institut für Chemie
Albert-Einstein-Straße 3a
D-18051 Rostock

ICBM
Institut für Chemie und Biologie des Meeres, Carl-von-Ossietzky Universität, Oldenburg
Carl-von-Ossietzky-Str. 9-11
D-26111 Oldenburg, Germany
http://www.icbm.de/

IGB
Leibniz-Institut für Gewässerökologie und Binnenfischerei Berlin
Müggelseedamm 301 und 310
D-12587 Berlin, Germany
http://www.igb-berlin.de

IOW
Leibniz-Institut für Ostseeforschung Warnemünde
Seestraße 15
D-18119-Rostock-Warnemünde, Germany
http://www.io-warnemuende.de

Leitstelle Deutsche Forschungsschiffe
Institut für Meereskunde
Universität Hamburg
Bundesstraße 53
D-20146 Hamburg, Germany

MNB
Museum für Naturkunde Berlin
Invalidenstraße 43
D-10115 Berlin, Germany
http://www.naturkundemuseum-berlin.de/

Reederei F. Laeisz (Bremerhaven) GmbH
Brückenstrasse 25
D-27568 Bremerhaven, Germany
http://www.laeisz.de

STATIONSLISTE

Date	UTC Time	Board station	Station M86-1a	Alias	Gear	Latitude	Longitude	Water depth	Core recovery	Remarks
						°N	°E	(m bsl)	(cm)	
05.11.2011	17:15	ME861/1224-1	1-1	S1	CTD/RO	57°00.100	06°55.110	39	----	
06.11.2011	00:16	ME861/1225-1	2-1	S2	CTD/RO	57°25.003	08°30.020	42	----	
	06:51	ME861/1226-1	3-1	At1	CTD/RO	58°07.980	10°00.310	239	----	
	07:30	ME861/1226-2	3-2	At1	GWS	58°07.980	10°00.310	239	----	
	10:45	ME861/1227-1	4-1	Geo2	CTD/RO	58°29.738	09°35.896	556	----	
	11:31	ME861/1227-2	4-2	Geo2	MUC	58°29.738	09°35.896	537	37	slide in the middle of the cores
06-07.11.2011		ME861/1228 - ME861/1235			MB-PS					
09.11.2011	07:52	ME861/1236-1	5-1	Geo2a	MUC	58°29.503	09°34.792	553	0	sediment released
	08:23	ME861/1236-2	5-2	Geo2a	MUC	58°29.513	58°34.787	553	38	
	09:04	ME861/1236-3	5-3	Geo2a	MUC	58°29.513	58°34.787	553	38	
	09:42	ME861/1236-4	5-4	Geo2a	MUC	58°29.513	58°34.787	554	38	
	10:35	ME861/1236-5	5-5	Geo2a	GC	58°29.513	58°34.787	553	839	
		ME861/1237-1			MB-PS					
	14:17	ME861/1238-1	6-1	Geo2b	GC	58°25.756	58°28.551	508	672	
	15:08	ME861/1238-2	6-2	Geo2b	MUC	58°25.756	09°28.616	509	35	
	17:12	ME861/1239-1	7-1	Geo1	GC	58°26.370	09°43.530	667	816	
	18:12	ME861/1239-2	7-2	Geo1	MUC	58°26.376	09°43.590	666	----	sediment released
	18:52	ME861/1239-3	7-3	Geo1	MUC	58°26.379	09°43.606	665	35	
	20:32	ME861/1239-4	7-4	Geo1	CTD/RO	58°26.530	09°45.230	652	----	
		ME861/1240-1			MB-PS					
10.11.2011	06:14	ME861/1241-1	8-1	Mo1	CTD/RO	57°54.040	10°42.180	140	----	

	19:55	ME861/1242-1	9-1	S3	CTD/RO	57°32.005	11°10.976	38	----	
11.11.2011	01:16	ME861/1243-1	10-1	Mo2	CTD/RO	56°53.940	11°41.200	15	----	
	05:27	ME861/1244-1	11-1	S4	CTD/RO	56°23.384	11°26.202	14	----	
	05:49	ME861/1244-2	11-2	S4	MUC	56°23.390	11°26.270	14	10	sand and mussels
	09:12	ME861/1245-1	12-1	Mo3	CTD/RO	56°00.090	11°04.140	17	----	
	14:05	ME861/1246-1	13-1	Mo4	CTD/RO	55°29.990	10°57.860	20	----	strong current
	20:31	ME861/1247-1	14-1	Mo5	CTD/RO	54°41.740	10°50.580	15	----	strong current
	20:52	ME861/1247-2	14-2	Mo5	MUC	54°41.720	10°50.610	15	----	sand and stones; sediment released
	20:59	ME861/1247-2	14-3	Mo5	MUC	54°41.720	10°50.620	15	----	sand and stones; sediment released
12.11.2011	01:45	ME861/1248-1	15-1	Mo6	CTD/RO	54°17.010	11°33.990	19	----	
	02:06	ME861/1248-2	15-2	Mo6	MUC	54°17.010	11°33.990	19	37	mussels, bioturbation
	02:25	ME861/1248-3	15-3	Mo6	MUC	54°17.010	11°33.990	19	37	mussels, bioturbation
	04:58	ME861/1249-1	16-1	At2	CTD/RO	54°23.190	12°06.290	15	----	
	08:15	ME861/1250-1	17-1	Mo7	CTD/RO	54°41.398	12°43.034	16	----	
	11:21	ME861/1251-1	18-1	Geo3	MUC	54°51.090	13°25.940	41	0	empty
	11:30	ME861/1251-2	18-2	Geo3	MUC	54°51.120	13°25.970	41	35	
	12:08	ME861/1251-3	18-3	Geo3	GC	54°51.100	13°25.990	41	966	
	13:08	ME861/1252-1	19-1	Geo4	CTD/RO	54°50.290	13°31.990	41	----	
	13:38	ME861/1252-2	19-2	Geo4	GC	54°50.290	13°32.000	41	964	overshoot; ca. 2m core lost
	14:29	ME861/1252-3	19-3	Geo4	MUC	54°50.290	13°32.000	41	40	
	14:52	ME861/1252-4	19-4	Geo4	MUC	54°50.293	13°32.001	41	----	disturbed sediment, not sampled
	15:15	ME861/1252-5	19-5	Geo4	MUC	54°50.280	13°32.020	41	43	
	16:23	ME861/1253-1	20-1	S5	CTD/RO	54°55.522	13°29.968	42	----	
	19:06	ME861/1254-1	21-1	Mo8	CTD/RO	55°06.026	13°59.968	42	----	

	23:57	ME861/1255-1	22-1	Geo5	CTD/RO	55°16.902	15°02.750	68	----	
13.11.2011	00:15	ME861/1255-2	22-2	Geo5	MUC	55°16.928	15°02.814	68	40	
	00:56	ME861/1255-2	22-3	Geo5	GC	55°16.934	15°02.811	68	968	ca 15cm core loss at the top
	02:23	ME861/1256-1	23-1	Geo6	GC	55°17.408	15°03.773	70	780	
	03:30	ME861/1256-2	23-2	Geo6	MUC	55°17.409	15°03.772	70	40	
	05:27	ME861/1257-1	24-1	Geo7	CTD/RO	55°22.680	15°21.810	90	----	
	05:45	ME861/1257-2	24-2	Geo7	MUC	55°22.650	15°21.800	90	46	
	06:17	ME861/1257-3	24-3	Geo7	GC	55°22.648	15°21.802	89	780	foam on top, labeled depth - 2 cm
	07:26	ME861/1258-1	25-1	Geo8	GC	55°24.670	15°28.090	90	917	
	08:18	ME861/1258-2	25-2	Geo8	MUC	55°24.670	15°28.090	95	44	
	11:58	ME861/1259-1	26-1	S6	CTD/RO	55°34.000	16°21.980	70	----	
	15:20	ME861/1260-1	27-1	Mo16	CTD/RO	56°00.010	16°49.880	33	----	
	18:43	ME861/1261-1	28-1	Mo15	CTD/RO	56°27.020	17°16.970	51	----	
	19:05	ME861/1261-2	28-2	Mo15	MUC	56°27.010	17°16.980	51	26	
	19:28	ME861/1261-3	28-3	Mo15	MUC	56°27.010	17°16.980	51	----	sediment released
	19:37	ME861/1261-4	28-4	Mo15	MUC	56°27.010	17°16.980	51	----	sediment released
	19:45	ME861/1261-5	28-5	Mo15	MUC	56°27.010	17°16.980	51	16	
14.11.2011	07:43	ME861/1262-1	29-1	Gotl. AM	MOR	57°18.720	20°07.660	244	----	mooring recovered
	09:08	ME861/1263-1	30-1	Dredge	MOR	57°18.680,	20°10.700	243	----	2x dredging of mooring; no recovery
	15:35	ME861/1264-1	31-1	Gotl. AM	MOR	57°18.840	20°07.320	242	----	mooring deployment
	17:05	ME861/1265-1	32-1	At3	CTD/RO	57°18.345	20°04.712	242	----	
	18:09	ME861/1265-2	32-2	At3	CTD/RO	57°18.340	20°04.700	243	----	
	18:22	ME861/1265-3	32-3	At3	GWS	57°18.340	20°04.700	243	----	
	18:36	ME861/1265-4	32-4	At3	GWS	57°18.340	20°04.710	243	----	

	19:07	ME861/1265-5	32-5	At3	CTD/RO	57°18.340	20°04.720	242	----	
	19:51	ME861/1265-6	32-6	At3	CTD/RO	57°18.340	20°04.730	242	----	
	20:38	ME861/1265-7	32-7	At3	MUC	57°18.310	20°03.760	236	41	
	21:19	ME861/1265-8	32-8	At3	FC	57°18.310	20°03.754	235	78	
15.11.2011	08:16	ME861/1266-1	33-1	Geo9	CTD/RO	58°21.890	17°49.980	103	----	
	08:47	ME861/1266-2	33-2	Geo9	MUC	58°21.870	17°50.050	104	31	
	09:09	ME861/1266-3	33-3	Geo9	MUC	58°21.900	17°50.040	101	38	
	10:27	ME861/1266-4	33-4	Geo9	GC	58°21.900	17°50.040	101	959	
	11:07	ME861/1266-5	33-5	Geo9	FC	58°21.930	17°50.040	105	63	
	11:32	ME861/1266-6	33-6	Geo9	FC	58°21.930	17°50.030	107	70	
	13:24	ME861/1267-1	34-1	PS-start	CTD/RO	58°28.800	18°08.520	134	----	
		ME861/1268-1			MB-PS					
16.11.2011	04:31	ME861/1269-1	35-1	S7	CTD/RO	58°34.960	18°13.950	437	----	
	08:00	ME861/1270-1	36-1	Geo10a	MUC	58°38.360	18°16.040	437	49	overshoot; surface dusturbed
	08:48	ME861/1270-2	36-2	Geo10a	MUC	58°38.360	18°16.040	435	44	less weight on the MUC
	09:39	ME861/1270-3	36-3	Geo10a	MUC	58°38.360	18°15.910	435	49	
	10:39	ME861/1270-4	36-4	Geo10a	GC	58°38.360	18°15.910	440	1250	full of cracks
	11:34	ME861/1270-5	36-5	Geo10a	FC	58°38.370	18°15.850	436	69	
	12:21	ME861/1270-6	36-6	Geo10a	FC	58°38.370	18°15.850	436	30	
	13:08	ME861/1270-7	36-7	Geo10a	CTD/RO	58°38.370	18°15.810	441	----	
	14:34	ME861/1271-1	37-1	Geo10b	CTD/RO	58°40.390	18°31.070	251	----	
	15:03	ME861/1271-2	37-2	Geo10b	GC	58°40.390	18°31.070	250	1199	foam at top, labeled depth - 6 cm
	15:48	ME861/1271-3	37-3	Geo10b	MUC	58°40.390	18°31.070	250	27	
	16:28	ME861/1271-4	37-4	Geo10b	MUC	58°40.390	18°31.060	250	37	

	17:08	ME861/1271-5	37-5	Geo10b	FC	58°40.390	18°31.060	251	71	
	18:37	ME861/1272-1	38-1	Geo11	CTD/RO	58°35.850	18°28.090	188	----	
	18:59	ME861/1272-2	38-2	Geo11	MUC	58°35.840	18°28.070	190	36	
	19:39	ME861/1272-3	38-3	Geo11	GC	58°35.840	18°28.030	179	626	
	20:10	ME861/1272-4	38-4	Geo11	FC	58°35.840	18°27.980	180	71	
	20:39	ME861/1272-5	38-5	Geo11	FC	58°35.840	18°27.980	180	----	sediment released
		ME861/1273-1			MB-PS					
17.11.2011	06:11	ME861/1274-1	39-1	Geo12	CTD/RO	58°58.420	19°14.470	102	----	
	06:30	ME861/1274-2	39-2	Geo12	MUC	58°58.420	19°14.470	102	0	empty
	06:51	ME861/1274-3	39-3	Geo12	MUC	58°58.420	19°14.470	103	37	
	07:30	ME861/1274-4	39-4	Geo12	GC	58°58.420	19°14.430	104	780	
	07:59	ME861/1274-5	39-5	Geo12	FC	58°58.420	19°14.380	100	73	
	08:19	ME861/1274-6	39-6	Geo12	FC	58°58.430	19°14.380	100	73	
	12:00	ME861/1275-1	40-1	S8	CTD/RO	59°21.488	20°06.063	43	----	
	12:42	ME861/1275-3	40-2	S8	MUC	59°21.498	20°06.011	44	26	
	13:00	ME861/1275-4	40-3	S8	MUC	59°21.498	20°06.011	43	26	
18.11.2011	00:01	ME861/1276-1	41-1	Mo9	CTD/RO	60°59.990	18°59.960	85	----	
	00:25	ME861/1276-2	41-2	Mo9	MUC	60°59.990	18°59.960	85	31	
	05:16	ME861/1277-1	42-1	S10	CTD/RO	61°46.960	19°17.650	54	----	
	05:40	ME861/1277-2	42-2	S10	MUC	61°46.660	19°17.660	53	0	empty
	05:53	ME861/1277-3	42-3	S10	MUC	61°46.990	19°17.650	53	0	empty
	06:08	ME861/1277-4	42-4	S10	MUC	61°46.990	19°17.600	54	12	
	10:16	ME861/1278-1	43-1	Mo10	CTD/RO	62°24.987	19°64.938	89	----	
	10:54	ME861/1278-2	43-2	Mo10	CTD/RO	62°24.990	19°64.940	89	----	

	11:15	ME861/1278-3	43-3	Mo10	MUC	62°24.987	19°64.939	89	25	
	11:41	ME861/1278-4	43-4	Mo10	MUC	62°24.987	19°64.939	89	26	
	16:34	ME861/1279-1	44-1	Mo11	CTD/RO	63°08.010	19°53.990	110	----	
	16:57	ME861/1279-2	44-2	Mo11	MUC	63°08.000	19°53.977	111	26	
19.11.2011	09:57	ME861/1280-1	45-1	At4	CTD/RO	65°26.680	23°17.710	95	----	
	10:13	ME861/1280-2	45-2	At4	GWS	65°26.700	23°17.900	79	----	cleaning
	10:22	ME861/1280-2	45-3	At4	GWS	65°26.700	23°17.900	78	----	
	10:44	ME861/1280-3	45-4	At4	MUC	65°26.700	23°17.900	79	33	
	11:23	ME861/1280-4	45-5	At4	MUC	65°26.710	23°17.910	77	35	
	11:48	ME861/1280-5	45-6	At4	MUC	65°26.710	23°17.910	77	0	empty
	12:04	ME861/1280-6	45-7	At4	MUC	65°26.710	23°17.920	75	35	
	12:41	ME861/1280-7	45-8	At4	GC	65°26.730	23°17.950	68	0	empty
	13:03	ME861/1280-8	45-9	At4	GC	65°26.750	23°17.990	62	0	empty
	13:30	ME861/1280-9	45-10	At4	GC	65°26.700	23°17.900	77	0	empty
	16:34	ME861/1281-1	46-1	Mo14	CTD/RO	64°59.990	23°07.920	75	----	
	16:55	ME861/1281-2	46-2	Mo14	MUC	65°00.000	23°07.932	75	38	
	17:25	ME861/1281-3	46-3	Mo14	GC	64°59.990	23°07.990	75	0	empty; tube bended
	17:52	ME861/1281-4	46-4	Mo14	FC	65°00.010	23°08.010	75	----	sediment released
	18:03	ME861/1281-4	46-5	Mo14	FC	65°00.010	23°08.010	75	67	
	23:28	ME861/1282-1	47-1	S11	CTD/RO	64°12.210	22°01.680	109	----	
	23:58	ME861/1282-2	47-2	S11	CTD/RO	64°12.210	22°01.690	109	----	
20.11.2011	00:21	ME861/1282-3	47-3	S11	MUC	64°12.210	22°01.690	110	41	
	00:45	ME861/1282-4	47-4	S11	MUC	64°12.210	22°01.690	109	0	empty
	01:08	ME861/1282-5	47-5	S11	MUC	64°12.220	22°01.710	109	42	

	04:09	ME861/1283-1	48-1	Mo12	CTD/RO	63°50.020	21°35.060	60	----	
	04:28	ME861/1283-2	48-2	Mo12	MUC	63°50.000	21°35.000	59	42	
21.11.2011		ME861/1284-1			MB-PS					

CTD/RO = Rosette-Watersampler with Conductivity-Temparature-Depth-Profiler
GWS = Giant Water Sampler 400 l
MUC = Multicorer (4 tubes)
FC = Frahmcorer (Minicorer, 80 cm tube)
GC = Gravity corer (2 t weight)