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Short Cruise Report
Maria S. Merian cruise MSM51

Rostock (BRD) – Rostock (BRD)

01.02.2016 – 24.02.2016

Chief Scientist: Prof. Dr. Ralph Schneider

Captain: Ralf Schmidt

Cruise MSM 51 was subdivided in 2 Legs:

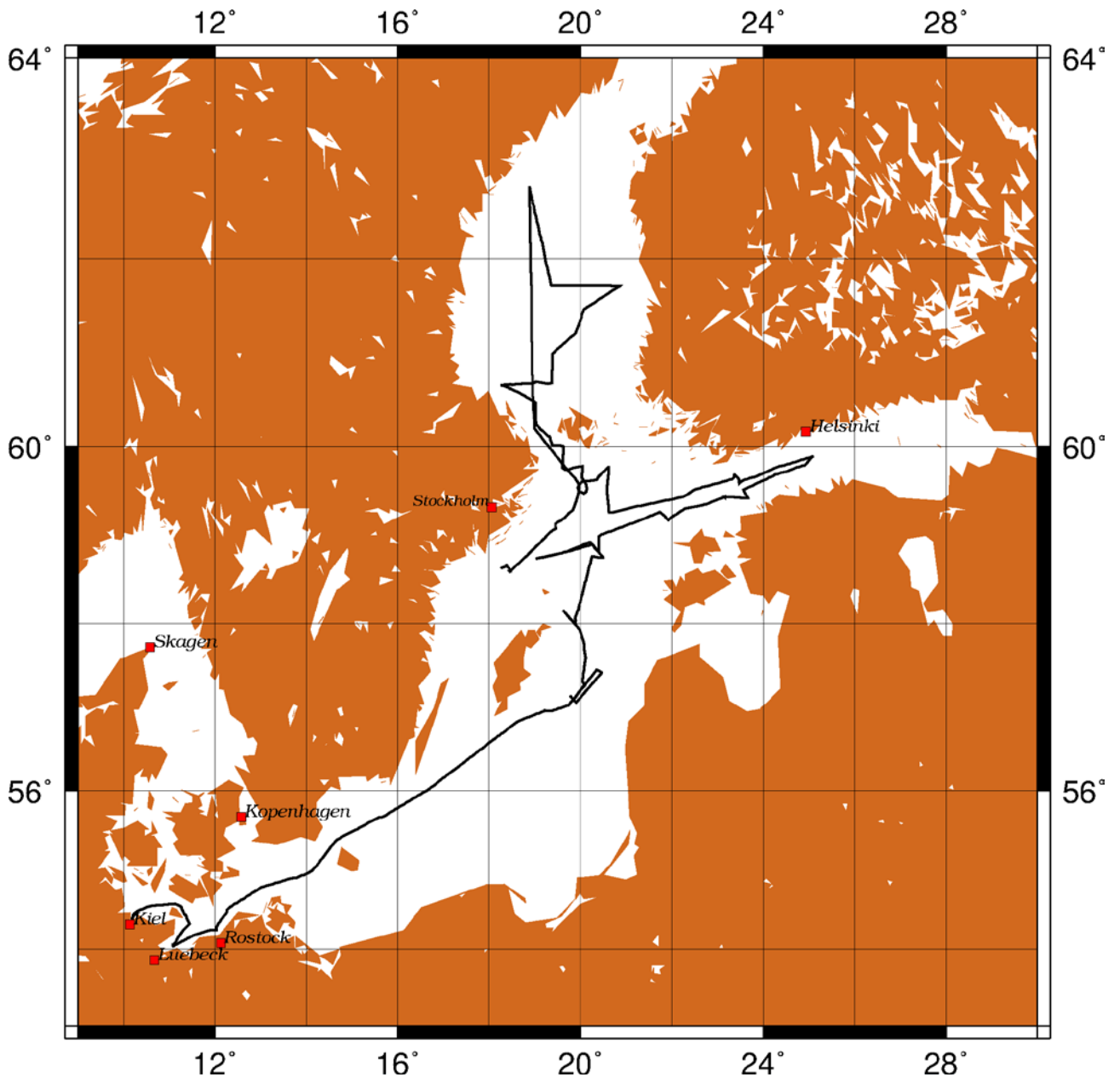
Leg 1. Rostock. 01.02.2016 – Kiel. 04.02.2016

Leg 2. Kiel. 09.02.2016 – Rostock. 24.02.2016

Cruise track. MSM51 Leg 1



Cruise track. MSM51 Leg 2



Objectives

Cruise MSM51 into the western, central and northern Baltic Sea aimed to perform seismo- and hydroacoustic surveys, sampling of Holocene sediments and to investigate the water column wintertime mixing close to sea-ice limits. These surveys should improve our understanding of variations in the ventilation of the deeper Baltic, considering not only external climate forcing but also the effects of postglacial sea-level rise and isostatic uplift. In particular, we want to investigate in detail the impact of the Littorina transgression on the inFCow of saline waters into the western Baltic and assess the potential for future diminution of ventilation in the central and northern deeper basins due to isostatic uplift. As the influence of saline water inflow into these basins is likely to decrease in the future, the role of wintertime deep mixing in oxygenation of the northern deeper basins shall be studied in detail. Moreover, the western and northeastern regions actually experience increasing erosion of early to mid-Holocene sediments that are transported into the deeper central basins. The response of deeper ventilation and overall ecosystem conditions to such an erosional activity, e.g. organic matter re-suspension and transport of contaminants cannot be predicted with available data and models. A new sampling and surveying campaign in the northeastern basins during maximum sea ice extent and deployment of the vibrocorer system in silty-sandy sediment drifts and transgressive deposits outside and close to the deeper basins was therefore important for a quantitative assessment of Holocene water and sediment budgets as well as to account for the impact of budget changes on the Baltic Sea ecosystem during the Littorina Stage.

MSM51 was separated into 2 Legs (see separate cruise tracks above) to allow for an exchange of scientific personnel, guest scientists from Baltic countries, and sampling equipment according to the different needs for the western and northeastern working areas. For this purpose after the first nine days an extra port call at Kiel was planned. Our sampling program during the cruise included water and sediment sampling after detailed hydroacoustic surveying with hull-mounted multibeam bathymetry (EM 1002) and sediment echosounder (PARASOUND) systems. Water column structure and properties (i.e., temperature, salinity) were studied by detailed CTD profiling in order to assess the role of the winter time mixing and sea ice formation on formation of deep waters. Based on the obtained CTD profiles, individual water samples were taken along depth profiles and frozen or stored cold for a variety of biogeochemical analyses. These will include particularly measurements of DOC/POC, carboxylic acid/ amino acid/ humic-fulvic acid, total inorganic carbon and total alkalinity. In addition, water samples collected at the surface, above/in/below the thermo-/chemo-/halocline at mid water depth and close to the seabed were filtered. This includes biomarker sampling, e.g. for post-cruise organic biomarker analyses. Sediment sampling collected surface and sub-surface material using a multi-corer (MUC, up to 60 cm long), and Frahm-corer (FC, up to 80 cm long). Long sediment cores were retrieved using a gravity corer (GC, up to 18 m) and a vibro corer (VC, 6 m). Only during Leg 2 sediment cores were taken. Most of the multicores and selected gravity sediment cores were cut lengthwise onboard, opened and described. The other were stored and archived in the Kiel and Warnemünde core repositories.

Narrative

On February 1, the vessel left the port of Rostock heading to the Little Belt to start the hydroacoustic surveys northward into the southern Kattegat. Meanwhile all sampling gears and laboratories aboard the vessel were set up for an immediate start of research activities after 3 days of surveying. Originally it was planned to start sediment sampling with the vibro corer in Mecklenburg Bight immediately after the departure in Rostock, but due to hydraulic problems with the central crane the coring actions were postponed to day 3 of the cruise. On Wednesday, February 3, the crane was repaired and it was intended to start water and sediment sampling along three stations identified according to the new

echosounder profiles retrieved before in the southeastern Kattegat. on a profile perpendicular to coast east of the city of Grena. Unfortunately at this moment, new problems with the Pod system arised and the captain and chief scientist agreed to cancel the scientific program and return to the port of Kiel immediately for safety reasons. Kiel port was reached Thursday evening, August 4, and the scientific crew disembarked immediately. On Friday morning, August 5, the scientific equipment from Kiel University was unloaded, except for the vibro corer which remained onboard for coring the Mecklenburg Bight at the begin of leg 2.

After embarkment of the scientific crew on Tuesday afternoon, Leg 2 started as planned Wednesday, August 10, with a short test of the repaired Pod system in the Kiel Ford and headed into the Mecklenburg Bight to start the vibrocoring program east of Fehmarn Island. Vibrocoring continued into night and all 10 stations planned were accomplished very successful with core lengths of 5 m on average. The sediment cores were stored away safely and the vessel started the transit to the next working area in the eastern Gotland Basin that was reached Friday afternoon. February 12. Here the scientific program began with 2 coring stations in water depths between 170 and 250 m and hydroacoustic surveying during the night. Coring in the Gotland Basin and Farö Deep was continued on Saturday. August 13 at 3 and 1 station, respectively. All sampling stations provided recent surface sediments and complete alternating sediment sequences of oxygen depleted and well ventilated periods since the Littorina Transgression at the eastern rim of the Gotland Basin. At 2 stations also CTD profiles and water samples were taken. After hydroacoustic surveys during the nights, sediment coring and water sampling continued Sunday and Monday, August 14 and 15, with 4 stations in the Farö Deep and 4 in the Northern Central Basin in water depths between 170 and 200 m. After this very successful coring program, the cruise advanced towards the east into the Gulf of Finland where an extensive water column sampling and CTD profiling program at 24 stations was achieved from Tuesday to Wednesday night. August 16 and 17, the goal was to assess the status of wintertime mixing of cold, well-ventilated water masses to deeper levels. Thursday. August 18, was scheduled for 3 geological sampling stations in the Aland Deep, where up to 13 m long gravity cores containing complete Holocene sediment sequences could be retrieved in water depths between 240 and 270 m, next to successful deployments of the multicorer, Frahm corer and the CTD with the Rosette water bottle sampler. Friday, August 19, was dedicated to the second water station sampling survey into the Gulf of Botnia. This survey was finished along a W-E profile at 61°43' N despite the plan to terminate the water sampling north of 63°10' North. Again, problems with the POD system urged the captain and the chief scientist to shorten the scientific program and go back to Rostock harbour for repair 4 days earlier than anticipated. The return to Rostock started Saturday. August 20, early in the morning, with a restricted sampling program in Landort Deep during Sunday morning. August 21. at 4 geological stations between 180 and 445 m water depth, mainly to obtain surface sediments with the multicorer and a gravity corer at the deepest station. As in the other deep basins before the sediments retrieved fulfilled the expactation for very good quality surface sediment samples and continuous Holocene post-Littorina sequences. Rostock harbour then was reached Tuesday morning, August 23, and the scientific crew disembarked the same day.

Acknowledgements

On behalf of the scientific crew, I would like to thank all the authorities and the Ship Coordination Office (Leitstelle) at the Institute of Marine Science, Hamburg University, as well as the crew of RV Maria S. Merian and BRIESE Research for their strong engagement and support. Despite the POD problems leg 2 of MSM51 could fulfill at least the planned program in the northeastern part of the Baltic Sea.

Participant List, Leg 1

1. Schneider, Ralph	<i>Chief Scientist</i>	CAU
2. Bennicke, Ole	<i>Sedimentology, Mapping</i>	GEUS
3. Blanz, Thomas	<i>Biomarker geochemistry</i>	CAU
4. Jähmlich, Heiko	<i>Sediment coring</i>	CAU
5. Frahm, Andreas	<i>MUC and Frahm core sampling</i>	IOW
6. Keul, Nina	<i>Plankton biology</i>	CAU
7. Lehner, Katharina	<i>Sediment core sampling</i>	CAU
8. Lindhorst, Katja	<i>Hydrocoustic mapping</i>	CAU
9. Moros, Matthias	<i>Sedimentology, Paleoceanography</i>	IOW
10. Richter, Peter	<i>Sedimentology, Core sampling</i>	CAU
11. Norgaard-Pedersen, Nils	<i>Sedimentology, Mapping</i>	GEUS
12. Scholten, Jan	<i>Water chemistry</i>	CAU
13. Schramm, Bettina	<i>Hydroacoustic mapping</i>	CAU
14. Schwarzer, Klaus	<i>Sedimentology, Sediment coring</i>	CAU
15. Stark, Marlene	<i>Plankton sampling</i>	CAU
16. Stattegger, Karl	<i>Sedimentology, Paleoceanography</i>	CAU
17. Steen, Eric	<i>Sediment coring</i>	CAU
18. Thate, Ines	<i>Sediment core sampling</i>	CAU
19. Von Rönn, Gitta	<i>Sedimentology, Core sampling</i>	CAU
20. Tang, Wei	<i>Sedimentology, Core sampling</i>	CAU
21. Wittbrodt, Kerstin	<i>Sedimentology, Core sampling</i>	CAU

Participant List, Leg 2

1. Schneider, Ralph	<i>Chief Scientist</i>	CAU
2. Allen, Estelle	<i>Micropaleontology, Dinoflagellates</i>	UQUAM
3. Blanz, Thomas	<i>Biomarker geochemistry</i>	CAU
4. Buer, Anna-Lucia	<i>Micropaleontology, Sediment sampling</i>	IOW
5. Dobosz, Slawomir	<i>Micropaleontology, Diatoms</i>	USz
6. Frahm, Andreas	<i>MUC and Frahm core sampling</i>	IOW
7. Kotilainen, Aarno	<i>Paleoceanography</i>	GTK
8. Lehner, Katharina	<i>Sediment core sampling</i>	CAU
9. Leipe, Thomas	<i>Geochemistry</i>	IOW
10. Lorbeer, Nina	<i>Organic geochemistry</i>	CAU
11. Moros, Matthias	<i>Sedimentology, Paleoceanography</i>	IOW
12. Neumann, Thomas	<i>Oceanography, Modelling</i>	IOW
13. Nickel, Gerald	<i>Hydroacoustic mapping</i>	IOW
14. Perner, Kerstin	<i>Micropaleontology, Foraminifera</i>	IOW
15. Radke, Hagen	<i>Oceanography, CTD operations</i>	IOW
16. Scherff, Ines	<i>Nutrients</i>	IOW
17. Schuffenhauer, Ingo	<i>Oceanography, CTD operations</i>	IOW
18. Thate, Ines	<i>Sediment core sampling</i>	CAU
19. Trottier, Annie-Pier	<i>Hydroacoustic mapping</i>	LAVAL
20. Wiers, Steffen	<i>Sedimentology, Core sampling</i>	UU

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GEUS - Geological Survey of Denmark and Greenland
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GTK - Geological Survey of Finland,
P.O. Box 96, 02151, Finland
<https://www.gtk.fi>

IOW - Leibniz Institute for Baltic Sea Research
Seestrasse 15, 18119 Rostock, Germany
<http://www.io-warnemuende.de/>

UQAM - Université du Québec à Montréal
Département des sciences de la Terre et de l'atmosphère
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<https://scta.uqam.ca>

Laval - Université Laval
Département de géographie
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USz - University of Szczecin, Faculty of Geosciences,
Mickiewicza 18, 70-383 Szczecin, Poland
<http://www.wnoz.ztikm.szczecin.pl/en/2/wnoz/a4e5bffc/>

UU - University of Uppsala
P.O. Box 256, 751 05 Uppsala, Sweden
<https://www.uu.se>

Station List

Station List Maria S. Merian cruise MSM51. Leg 1 and 2:

MB/PS = Multibeam & PARASOUND. MUC = Multicorer, FC = Frahm corer, GC = Gravity corer, VC Vibro corer

Datum 2016	UTC	MSM-51 Station Science	Number Vessel	Gear	Pos. N	Pos. E	Water (m) Depth
01.02.	20:22	MSM51-1-01-1	MSM-051/032-2	MB/PS	55°21.119	11°03.222	19.1
02.02.	02:19	MSM51-1-02-1	MSM-051/033-2	MB/PS	55°33.651	10°44.896	15.7
03.02.	00:24	MSM51-1-03-1	MSM-051/033-2	MB/PS	56°20.082	11°16.741	20.8
10.02.	15:50	MSM51-2-01-1	MSM-051/034-1	VC	54°27.387	11°19.813	18.1
	17:40	MSM51-2-02-1	MSM-051/035-1	VC	54°26.434	11°21.600	20.9
	18:18	MSM51-2-03-1	MSM-051/036-2	VC	54°26.410	11°21.974	21.2
	19:25	MSM51-2-04-1	MSM-051/037-1	VC	54°19.982	11°26.966	23.8
	20:23	MSM51-2-05-1	MSM-051/038-1	VC	54°14.976	11°18.637	21.5
	22:04	MSM51-2-06-1	MSM-051/039-1	VC	54°02.513	11°04.930	26.8
	22:43	MSM51-2-07-1	MSM-051/040-1	VC	54°02.914	11°04.501	25.7
	23:15	MSM51-2-08-1	MSM-051/041-1	VC	54°02.635	11°05.529	28.0
	23:42	MSM51-2-09-1	MSM-051/042-1	VC	54°02.796	11°06.396	27.8
11.02.	00:08	MSM51-2-10-1	MSM-051/043-1	VC	54°02.893	11°06.658	27.3
12.02.	15:45	MSM51-2-11-1	MSM-051/044-1	CTD	56°58.264	19°13.498	169.0
	16:13	MSM51-2-11-2	MSM-051/044-2	MUC	56°58.263	19°13.499	169.0
	16:42	MSM51-2-11-3	MSM-051/044-3	FC	56°58.263	19°13.499	169.0
	17:30	MSM51-2-11-4	MSM-051/044-4	GC	56°58.264	19°13.496	168.0
12.02.	19:38	MSM51-2-12-1	MSM-051/045-1	GC	56°57.921	19°22.209	176.0
	19:59	MSM51-2-12-2	MSM-051/045-2	FC	56°57.921	19°22.207	175.0
	20:20	MSM51-2-12-3	MSM-051/045-3	MUC	56°57.921	19°22.203	176.0
13.02.	04:23	MSM51-2-13-1	MSM-051/046-1	MB/PS	57°27.440	20°21.460	196.9
13.02.	14:00	MSM51-2-14-1	MSM-051/047-1	MUC	57°06.238	19°51.126	217.0
	14:15	MSM51-2-14-2	MSM-051/047-2	MUC	57°06.238	19°51.126	217.0
	14:30	MSM51-2-14-3	MSM-051/047-3	MUC	57°06.238	19°51.126	217.0
	14:45	MSM51-2-14-4	MSM-051/047-4	FC	57°06.237	19°51.132	218.0
	15:00	MSM51-2-14-5	MSM-051/047-5	GC	57°06.235	19°51.134	217.0
13.02.	17:36	MSM51-2-15-1	MSM-051/048-1	CTD	57°16.829	20°05.858	243.0
	18:10	MSM51-2-15-2	MSM-051/048-2	GC	57°16.830	20°05.859	242.0
	18:40	MSM51-2-15-3	MSM-051/048-3	FC	57°16.830	20°05.860	243.0
	19:15	MSM51-2-15-4	MSM-051/048-4	MUC	57°16.829	20°05.858	243.0
	19:46	MSM51-2-15-5	MSM-051/048-5	MUC	57°16.827	20°05.863	243.0
	20:10	MSM51-2-15-6	MSM-051/048-6	FC	57°16.818	20°05.875	243.0
13.02.	21:05	MSM51-2-16-1	MSM-051/049-1	CTD	57°19.192	20°02.987	237.0
	21:50	MSM51-2-16-2	MSM-051/049-2	MUC	57°19.191	20°02.987	237.0
14.02.	02:59	MSM51-2-17-1	MSM-051/050-1	MB/PS	57°55.610	19°59.670	320.0
14.02.	07:36	MSM51-2-18-1	MSM-051/051-1	MUC	58°05.889	19°43.255	166.0
	08:08	MSM51-2-18-2	MSM-051/051-2	MUC	58°05.890	19°43.260	166.0
	08:36	MSM51-2-18-3	MSM-051/051-3	FC	58°05.889	19°43.260	167.0
14.02.	09:30	MSM51-2-19-1	MSM-051/052-1	MUC	58°03.481	19°47.041	160.0
14.02.	11:09	MSM51-2-20-1	MSM-051/053-1	CTD	57°59.867	19°52.843	198.0
	11:22	MSM51-2-20-2	MSM-051/053-2	MUC	57°59.866	19°52.845	198.0
	11:38	MSM51-2-20-3	MSM-051/053-3	MUC	57°59.870	19°52.840	198.0
	12:38	MSM51-2-20-4	MSM-051/053-4	FC	57°59.869	19°52.850	199.0
	13:04	MSM51-2-20-5	MSM-051/053-5	GC	57°59.870	19°52.851	198.0
	14:30	MSM51-2-20-6	MSM-051/053-6	GC	57°59.870	19°52.854	198.0
14.02.	20:32	MSM51-2-21-1	MSM-051/054-1	CTD	58°46.101	20°15.290	191.0
	20:56	MSM51-2-21-2	MSM-051/054-2	MUC	58°46.101	20°15.287	190.0
	21:18	MSM51-2-21-3	MSM-051/054-3	FC	58°46.100	20°15.290	190.0
14.02.	22:46	MSM51-2-22-1	MSM-051/055-1	MB/PS	58°46.270	20°28.970	153.0
15.02.	03:19	MSM51-2-23-1	MSM-051/056-1	MB/PS	58°48.600	19°36.400	151.0

Datum 2016	UTC	MSM-51 Station Number Science	MSM-51 Station Number Vessel	Gear	Pos. N	Pos. E	Water (m) Depth	
15.02.	08:28	MSM51-2-24-1	MSM-051/057-1	CTD	58°46.652	19°18.398	156.0	
	08:53	MSM51-2-24-2	MSM-051/057-2	MUC	58°46.652	19°18.401	156.0	
	09:33	MSM51-2-24-3	MSM-051/057-3	MUC	58°46.652	19°18.395	156.0	
	09:56	MSM51-2-24-4	MSM-051/057-4	FC	58°46.653	19°18.393	156.0	
	10:24	MSM51-2-24-5	MSM-051/057-5	GC	58°46.653	19°18.393	156.0	
15.02.	14:00	MSM51-2-25-1	MSM-051/058-1	CTD	58°54.987	20°14.756	187.0	
	14:26	MSM51-2-25-2	MSM-051/058-2	MUC	58°54.988	20°14.756	187.0	
	15:14	MSM51-2-25-3	MSM-051/058-3	MUC	58°54.997	20°14.766	186.0	
	15:37	MSM51-2-25-4	MSM-051/058-4	MUC	58°54.997	20°14.765	185.0	
15.02.	16:53	MSM51-2-26-1	MSM-051/059-1	MUC	58°50.951	20°21.358	175.0	
	17:16	MSM51-2-26-2	MSM-051/059-2	FC	58°50.953	20°21.352	178.0	
	17:34	MSM51-2-26-3	MSM-051/059-3	FC	58°50.953	20°21.355	176.0	
15.02.	18:50	MSM51-2-27-1	MSM-051/060-1	CTD	58°49.533	20°23.741	187.0	
	19:17	MSM51-2-27-2	MSM-051/060-2	MUC	58°49.533	20°23.738	187.0	
	19:54	MSM51-2-27-3	MSM-051/060-3	MUC	58°49.534	20°23.737	186.0	
	20:19	MSM51-2-27-4	MSM-051/060-4	FC	58°49.533	20°23.730	187.0	
	20:46	MSM51-2-27-5	MSM-051/060-5	GC	58°49.534	20°23.730	186.0	
	22:02	MSM51-2-27-6	MSM-051/060-6	GC	58°49.531	20°23.745	187.0	
15.02.	23:39	MSM51-2-28-1	MSM-051/061-1	CTD	51°01.250	20°26.980	142.0	
16.02	01:23	MSM51-2-29-1	MSM-051/062-1	CTD	59°06.030	20°52.890	129.0	
	03:19	MSM51-2-30-1	MSM-051/063-1	CTD	59°11.460	21°20.310	122.0	
	05:10	MSM51-2-31-1	MSM-051/064-1	CTD	59°15.220	21°47.820	120.5	
	07:21	MSM51-2-32-1	MSM-051/065-1	CTD	59°18.830	22°16.380	117.0	
	08:58	MSM51-2-33-1	MSM-051/066-1	CTD	59°21.360	22°41.730	95.9	
	11:15	MSM51-2-34-1	MSM-051/067-1	CTD	59°26.840	23°09.370	92.6	
	12:55	MSM51-2-35-1	MSM-051/068-1	CTD	59°25.720	23°40.590	89.8	
	13:39	MSM51-2-36-1	MSM-051/069-1	CTD	59°28.470	23°37.320	89.2	
	14:31	MSM51-2-37-1	MSM-051/070-1	CTD	59°31.570	23°34.070	84.6	
	16:54	MSM51-2-38-1	MSM-051/071-1	CTD	59°39.520	24°07.430	57.9	
	20:28	MSM51-2-39-1	MSM-051/072-1	CTD	59°53.790	25°05.740	46.6	
	17.02.	01:44	MSM51-2-40-1	MSM-051/073-1	CTD	59°35.940	23°29.060	72.8
		02:46	MSM51-2-41-1	MSM-051/074-1	CTD	59°41.610	23°22.840	34.0
		12:55	MSM51-2-42-1	MSM-051/075-1	CTD	59°16.020	20°37.980	83.4
		14:52	MSM51-2-43-1	MSM-051/076-1	CTD	59°30.660	20°35.090	53.8
		17:03	MSM51-2-44-1	MSM-051/077-1	CTD	59°46.420	20°36.900	46.6
18:41		MSM51-2-45-1	MSM-051/078-1	CTD	59°40.900	20°25.000	36.7	
19:53		MSM51-2-46-1	MSM-051/079-1	CTD	59°37.410	20°13.370	30.5	
18.02.	21:19	MSM51-2-47-1	MSM-051/080-1	CTD	59°32.870	19°56.420	31.6	
	00:10	MSM51-2-48-1	MSM-051/081-1	CTD	59°47.150	20°02.940	199	
	01:57	MSM51-2-49-1	MSM-051/082-1	CTD	59°46.210	19°36.430	82.9	
	03:40	MSM51-2-50-1	MSM-051/083-1	CTD	60°00.680	19°38.090	221.0	
	05:00	MSM51-2-51-1	MSM-051/084-1	CTD	60°01.050	19°23.090	117.0	
18.02.	06:06	MSM51-2-52-1	MSM-051/085-1	CTD	60°06.888	19°19.482	253.0	
	06:31	MSM51-2-52-2	MSM-051/085-2	FC	60°06.888	19°19.478	253.0	
	07:17	MSM51-2-52-3	MSM-051/085-3	GC	60°06.887	19°19.479	253.0	
	07:48	MSM51-2-52-4	MSM-051/085-4	MUC	60°06.885	19°19.482	253.0	
18.02.	08:57	MSM51-2-53-1	MSM-051/086-1	CTD	60°06.930	19°17.929	245.0	
	09:24	MSM51-2-53-2	MSM-051/086-2	MUC	60°06.929	19°17.926	245.0	
	09:45	MSM51-2-53-3	MSM-051/086-3	FC	60°06.928	19°17.928	246.0	
	10:13	MSM51-2-53-4	MSM-051/086-4	MUC	60°06.927	19°17.925	245.0	
	11:14	MSM51-2-53-5	MSM-051/086-5	GC	60°06.927	19°17.918	245.0	
18.02.	12:45	MSM51-2-54-1	MSM-051/087-1	CTD	60°11.674	19°07.209	266.0	
	13:19	MSM51-2-54-2	MSM-051/087-2	GC	60°11.683	19°07.252	267.0	
	13:46	MSM51-2-54-3	MSM-051/087-3	FC	60°11.683	19°07.253	266.0	
	14:14	MSM51-2-54-4	MSM-051/087-4	FC	60°11.679	19°07.254	267.0	
	14:42	MSM51-2-54-5	MSM-051/087-5	MUC	60°11.677	19°07.253	266.0	
	15:19	MSM51-2-54-6	MSM-051/087-6	MUC	60°11.677	19°07.254	266.0	
18.02.	21:09	MSM51-2-55-1	MSM-051/088-1	CTD	60°40.170	18°15.200	51.7	
	22:28	MSM51-2-56-1	MSM-051/089-1	CTD	60°40.890	18°35.790	51.2	

Datum 2016	UTC	MSM-51 Station Number Science	MSM-51 Station Number Vessel	Gear	Pos. N	Pos. E	Water (m) Depth
18.02.	23:49	MSM51-2-57-1	MSM-051/090-1	CTD	60°41.250	18°58.870	94.8
19.02.	01:18	MSM51-2-58-1	MSM-051/091-1	CTD	60°41.240	19°22.410	72.1
	03:20	MSM51-2-59-1	MSM-051/092-1	CTD	61°00.090	19°22.760	121.0
	05:43	MSM51-2-60-1	MSM-051/093-1	CTD	61°13.680	19°53.850	102.0
	07:36	MSM51-2-61-1	MSM-051/094-1	CTD	61°28.780	20°05.390	119.0
	10:17	MSM51-2-62-1	MSM-051/095-1	CTD	61°43.250	20°52.060	63.1
	11:51	MSM51-2-63-1	MSM-051/096-1	CTD	61°43.630	20°27.590	116.0
	13:42	MSM51-2-64-1	MSM-051/097-1	CTD	61°43.610	19°56.220	112.4
	15:34	MSM51-2-65-1	MSM-051/098-1	CTD	61°43.450	19°27.150	75.8
	21:40	MSM51-2-66-1	MSM-051/099-1	CTD	62°44.120	18°53.020	196.0
21.02.	04:38	MSM51-2-67-1	MSM-051/100-1	MUC	58°35.837	18°28.044	188.0
	05:04	MSM51-2-67-2	MSM-051/100-2	MUC	58°35.837	18°28.043	182.0
21.02.	06:08	MSM51-2-68-1	MSM-051/101-1	MUC	58°39.419	18°25.252	287.0
	06:40	MSM51-2-68-2	MSM-051/101-2	MUC	58°39.418	18°25.525	287.0
	07:33	MSM51-2-69-1	MSM-051/102-1	MUC	58°40.289	18°24.553	353.0
	08:50	MSM51-2-70-1	MSM-051/103-1	CTD	58°38.356	18°15.922	442.0
	09:35	MSM51-2-70-2	MSM-051/103-2	MUC	58°38.356	18°15.922	443.0
	10:16	MSM51-2-70-3	MSM-051/103-3	MUC	58°38.355	18°15.925	443.0
21.02.	11:25	MSM51-2-70-4	MSM-051/103-4	GC	58°38.355	18°15.927	443.0