

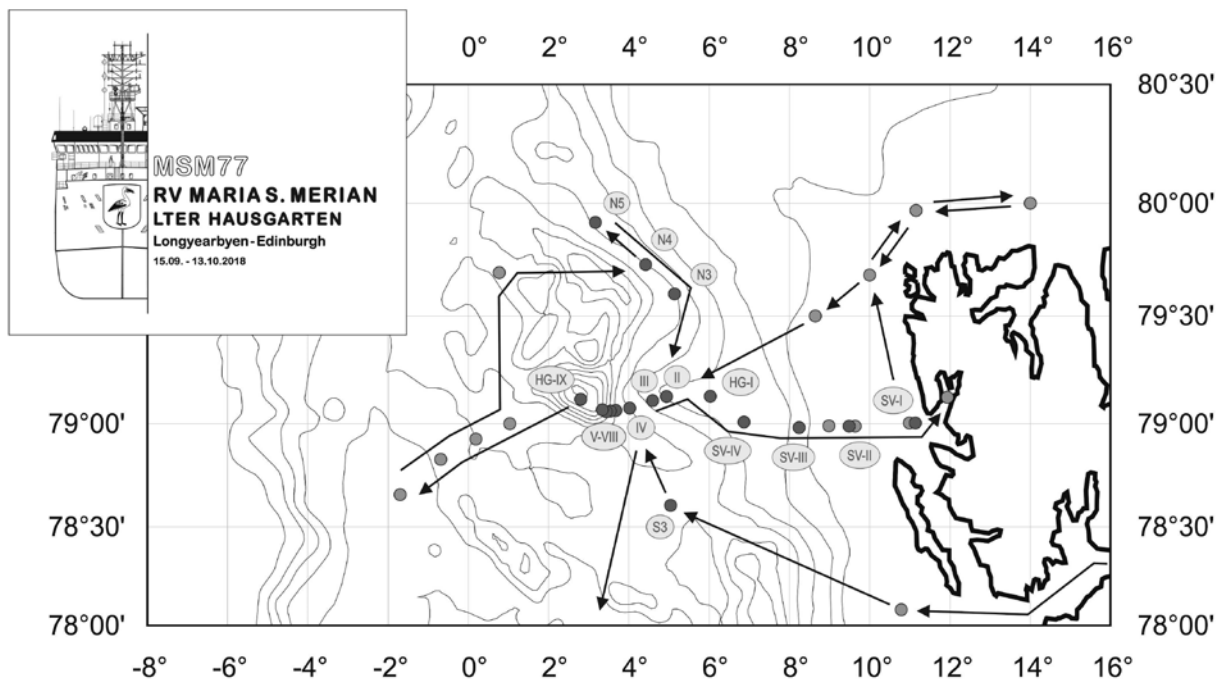
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Short Cruise Report Maria S. Merian - MSM77

Longyearbyen - Edinburgh
15.09. - 13.10.2018

Chief Scientist: Dr. Thomas Soltwedel
Captain: Ralf Schmidt



Objectives

Impact of Climate Change on Arctic marine ecosystems

To detect and track the impact of large-scale environmental changes in the transition zone between the northern North Atlantic and the central Arctic Ocean, and to determine experimentally the factors controlling deep-sea biodiversity, the Alfred-Wegener-Institute Helmholtz-Center for Polar and Marine Research (AWI) established the LTER (Long-Term Ecological Research) observatory HAUSGARTEN.

Since 2014, this observatory is successively extended within the frame of the HGF infrastructure project FRAM (Frontiers in Arctic marine Monitoring) and currently covers 21 permanent sampling sites on the West-Spitsbergen and East-Greenland slope at water depths between 250 and 5500 m. Regular sampling as well as the deployment of moorings and different free-falling systems (lander systems and bottom crawler), which act as local observation platforms, has taken place since the observatory was established back in 1999. Our research involves ecosystem compartments from the pelagic zone to the deep seafloor.

Narrative

During the first week of the RV Maria S. Merian cruise MSM77, we mainly operated in eastern parts of the Fram Strait between 77°00'N and 79°30'N, and between 3°00'E and 15°00'E. Water samples were taken using a CTD/Rosette, while particles in the water column were detected with a camera system and caught with a "Marine Snow Catcher" and a short drift-mooring equipped with sediment traps. A cabled photo/video system (Ocean Floor Observation System, OFOS) was towed at 1-2 m above seafloor to study large-scale distribution patterns of epi/megafauna organisms on the seafloor. Sediments were sampled by means of a TV-guided multiple corer and a box-corer. At the central HAUSGARTEN site (79°N, 4°E), we recovered a free-falling system (bottom-lander) and an autonomous benthic crawler system deployed during RV Polarstern expeditions PS107 and PS108, respectively, in summer 2017. Another bottom-lander equipped with incubation chambers and an oxygen microprofiler was deployed for about three days at the southernmost HAUSGARTEN site S3 to study remineralisation processes at the deep seafloor. An Autonomous Underwater Vehicle (AUV) was used for physico-chemical and

biological surveys in the water column. The AUV was equipped with various sensors (e.g. CTD, ADCP, CO₂ and light sensors) and a water sampler. Steaming time between stations was repeatedly used for litter surveys registering floating debris at the sea surface.

During the second week of the cruise, we mainly operated in front of Kongsfjorden and off northeast and north Svalbard. Slightly impeded by the rather bad weather conditions, we continued our sampling program in the water column and at the seafloor. On the shelf off northwestern Svalbard, a free-falling system (bottom-lander) equipped with incubation chambers and an oxygen microprofiler was deployed for about two days to study remineralisation processes at the deep seafloor. A second bottom-lander was deployed on the Vestnesa Ridge at about 1500 m water depth for a short-term test of a new experimental set-up to study effects of ocean acidification on benthic organisms. Our new autonomous benthic crawler NOMAD equipped with a microprofiler, benthic chambers and a camera system was deployed at the same site to test its performance. In-situ pumps attached to the CTD/Rosette cable were used at different water depths to detect microplastic particles in the water column. On the Svalbard shelf, the AUV was used close to the seafloor to test a new on-board multibeam system.

During the third week we worked mainly in central and northern parts of the Fram Strait. Once again we used the entire range of instruments that we had with us on this expedition. The bottom-lander carrying the acidification experiment as well as the benthic crawler TRAMPER were deployed for about one year at 1500 m and 2500 m, respectively, off Svalbard. The recovery of the two instruments is planned for the RV Polarstern cruise PS121 in summer 2019. Towards the end of the week we finally succeeded to recover our benthic crawler NOMAD, which we had deployed during the second week at 1500 m water depth on the Vestnesa Ridge off Spitsbergen. The crawler had persistently denied the dropping of its basic weight, so that the device could not independently return to the sea surface by its buoyancy. Therefore we decided to "fish" for the vehicle. For this we used our towed camera system OFOS, underneath we attached strong ropes with large hooks. Thanks to the incredible manoeuvrability of the "Maria S. Merian", which enabled us to hold the ship exactly in position and move it precisely at meter-scales (!), the ship's command and the winch operator finally managed to "pick up" the device and bring it safely back to the sea surface.

On Saturday, October 5th, we set sail for Edinburgh. A short stop over south of Jan Mayen was done to successfully recover a malfunctioning Argo-Float for colleagues at the the Euro-Argo Operations Centre. The expedition ended in the afternoon of October 12th.

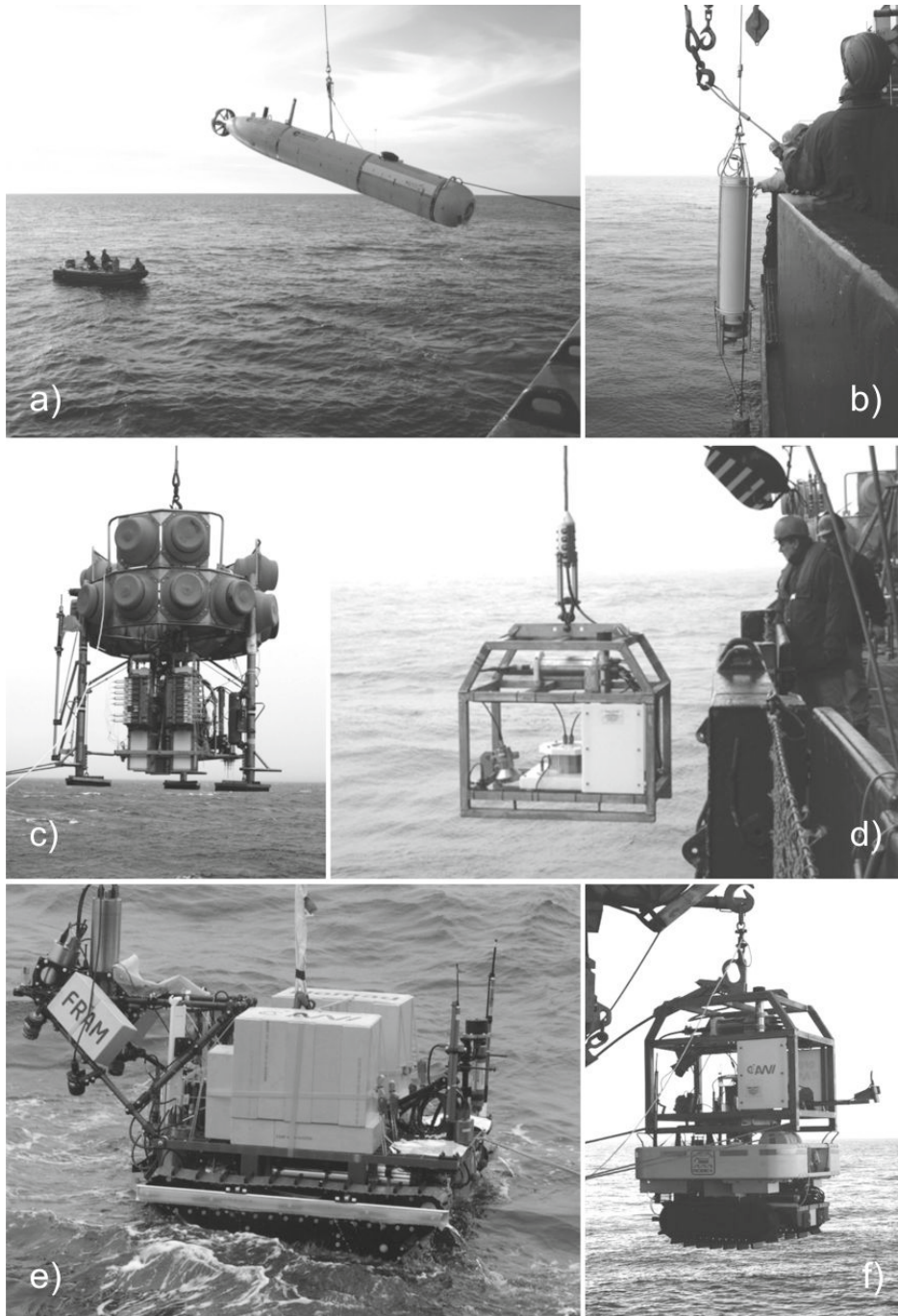


Fig. 1: Large equipment deployed during Maria S. Merian expedition MSM77:
a) Autonomous Underwater Vehicle (AUV), b) Marine Snow Catcher (MSC),
c) free-falling device (bottom-lander), d) towed photo/video system (Ocean Floor Observation System, OFOS), benthic crawler NOMAD (e) and TRAMPER (f).

Acknowledgements

We would like to thank Captain Ralf Schmidt and his crew for their hospitality, trusting collaboration and the great atmosphere on board. Financial support for the cruise was provided through the AWI – Research-Program PACES-II (Polar Regions and Coasts in the changing Earth System) as well as through funding by the research institutes involved. We gratefully acknowledge this support.

List of Participants

	Name	Task	Institute
1.	Dr. Thomas Soltwedel	Chief Scientist	AWI
2.	Jana Bäger	Technician	AWI
3.	Jakob Barz	Technician	MPIMM
4.	Dr. Melanie Bergmann	Biologist	AWI
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7.	Jonas Hagemann	Technician	AWI
8.	Dr. Christiane Hasemann	Biologist	AWI
9.	Michael Hofbauer	Technician	AWI
10.	Ulrich Hoge	Engineer	AWI
11.	Dr. Morten Iversen	Biogeochemist	AWI
12.	Melissa Käß	Biologist	AWI
13.	Tania Klüver	Technician	GEOAMR
14.	Christian Konrad	Technician	MARUM
15.	Sascha Lehmenhecker	Engineer	AWI
16.	Axel Nordhausen	Technician	MPIMM
17.	Dr. Ingo Schewe	Biologist	AWI
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19.	Mine Tekman	Biologist	AWI
20.	Anabel von Jackowski	Biogeochemist	AWI
21.	Dr. Frank Wenzhöfer	Biogeochemist	AWI
22.	Dr. Thorben Wulff	Engineer	AWI

Institutes

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Station list

Station	Timestamp	Latitude	Longitude	Depth	Device
MSM77_1-1	16/09/2018 06:28	76° 56,283' N	014° 59,959' E	104	Box Corer
MSM77_2-1	16/09/2018 13:44	77° 49,998' N	010° 35,953' E	144	Box Corer
MSM77_3-1	16/09/2018 21:05	78° 36,988' N	005° 04,081' E	2292	CTD
MSM77_3-2	16/09/2018 23:14	78° 36,988' N	005° 04,079' E	2293	CTD
MSM77_3-3	17/09/2018 00:24	78° 36,989' N	005° 04,083' E	2292	Marine snow catcher
MSM77_3-4	17/09/2018 01:25	78° 36,989' N	005° 04,082' E	2293	Particle Camera
MSM77_3-5	17/09/2018 03:29	78° 37,006' N	005° 00,069' E	2313	OFOS
MSM77_3-6	17/09/2018 08:38	78° 37,441' N	005° 08,993' E	2299	Lander (generic)
MSM77_4-1	17/09/2018 12:11	79° 03,599' N	004° 09,532' E	2448	OFOS
MSM77_4-2	17/09/2018 15:15	79° 03,595' N	004° 09,816' E	2446	Lander (generic)

MSM77_4-3	17/09/2018 17:43	79° 03,551' N	004° 12,013' E	2431	CTD
MSM77_4-4	17/09/2018 18:12	79° 03,551' N	004° 12,014' E	2432	Marine snow catcher
MSM77_4-5	17/09/2018 19:03	79° 03,551' N	004° 12,013' E	2433	In Situ Camera
MSM77_4-6	17/09/2018 20:27	79° 03,551' N	004° 12,006' E	2438	CTD
MSM77_4-7	17/09/2018 22:29	79° 03,914' N	004° 10,846' E	2408	Box Corer
MSM77_4-8	18/09/2018 01:28	79° 03,914' N	004° 10,845' E	2407	Video Multi Corer
MSM77_4-9	18/09/2018 02:46	79° 04,834' N	004° 06,759' E	2439	Lander (generic)
MSM77_4-10	19/09/2018 11:05	79° 03,910' N	004° 18,437' E	2346	Trap, drifting
MSM77_4-11	18/09/2018 07:26	79° 04,992' N	004° 05,545' E	2445	In Situ Camera
MSM77_5-1	18/09/2018 07:54	79° 04,991' N	004° 05,541' E	2446	Litter Survey
MSM77_5-2	19/09/2018 12:55	79° 04,025' N	004° 18,582' E	2334	Litter Survey
MSM77_5-3	19/09/2018 14:01	78° 53,176' N	004° 40,353' E	2735	Litter Survey
MSM77_5-4	19/09/2018 15:07	78° 40,901' N	005° 02,468' E	2307	Litter Survey
MSM77_5-5	20/09/2018 05:06	79° 07,961' N	006° 07,084' E	1238	Litter Survey
MSM77_6-1	18/09/2018 09:23	79° 03,601' N	003° 34,944' E	3468	CTD
MSM77_6-2	18/09/2018 10:32	79° 03,601' N	003° 34,934' E	3480	Autonomous Underwater Vehicle
MSM77_6-3	18/09/2018 18:17	79° 03,609' N	003° 34,890' E	3511	Box Corer
MSM77_6-4	18/09/2018 21:08	79° 03,609' N	003° 34,886' E	3502	Video Multi Corer
MSM77_7-1	19/09/2018 00:06	79° 03,802' N	003° 39,499' E	3085	Box Corer
MSM77_7-2	19/09/2018 02:58	79° 03,803' N	003° 39,497' E	3092	Video Multi Corer
MSM77_8-1	19/09/2018 05:16	79° 06,483' N	004° 36,033' E	1880	CTD
MSM77_8-2	19/09/2018 06:27	79° 06,491' N	004° 36,020' E	1874	Box Corer
MSM77_8-3	19/09/2018 08:52	79° 06,491' N	004° 36,017' E	1879	Video Multi Corer
MSM77_9-1	19/09/2018 12:26	79° 03,963' N	004° 18,444' E	2338	In Situ Camera
MSM77_10-1	19/09/2018 18:29	78° 36,597' N	005° 04,119' E	2289	Box Corer
MSM77_10-2	19/09/2018 20:03	78° 36,600' N	005° 04,111' E	2289	Video Multi Corer
MSM77_11-1	20/09/2018	79° 07,933' N	006° 15,703' E	1290	OFOS

	01:07				
MSM77_12-1	20/09/2018 07:11	79° 07,816' N	004° 54,162' E	1510	CTD
MSM77_12-2	20/09/2018 08:38	79° 07,842' N	004° 54,167' E	1508	Autonomous Underwater Vehicle
MSM77_12-3	20/09/2018 11:06	79° 07,817' N	004° 54,074' E	1510	Box Corer
MSM77_12-4	20/09/2018 12:40	79° 07,828' N	004° 54,114' E	1508	Video Multi Corer
MSM77_12-5	20/09/2018 14:38	79° 08,011' N	004° 49,963' E	1553	Lander (generic)
MSM77_13-1	20/09/2018 16:11	79° 08,002' N	006° 05,546' E	1241	CTD
MSM77_13-2	20/09/2018 16:42	79° 08,004' N	006° 05,544' E	1242	Marine snow catcher
MSM77_13-3	20/09/2018 17:29	79° 08,003' N	006° 05,547' E	1247	In Situ Camera
MSM77_13-4	20/09/2018 18:25	79° 08,003' N	006° 05,546' E	1246	CTD
MSM77_13-5	20/09/2018 19:31	79° 08,004' N	006° 05,544' E	1242	Box Corer
MSM77_13-6	20/09/2018 21:13	79° 08,004' N	006° 05,545' E	1243	Video Multi Corer
MSM77_14-1	21/09/2018 01:21	78° 36,602' N	005° 04,070' E	2290	Video Multi Corer
MSM77_15-1	21/09/2018 06:56	78° 38,806' N	009° 27,864' E	224	Deep-sea Multibeam Echosounder
MSM77_15-2	21/09/2018 09:16	78° 39,174' N	009° 25,339' E	237	CTD
MSM77_15-3	21/09/2018 10:06	78° 39,182' N	009° 25,297' E	249	Autonomous Underwater Vehicle
MSM77_16-1	21/09/2018 20:32	79° 00,003' N	008° 17,979' E	818	Box Corer
MSM77_17-1	21/09/2018 22:31	79° 01,793' N	006° 59,666' E	1266	CTD
MSM77_17-2	21/09/2018 23:06	79° 01,801' N	006° 59,886' E	1266	Marine snow catcher
MSM77_17-3	21/09/2018 23:21	79° 01,807' N	006° 59,855' E	1271	Marine snow catcher
MSM77_17-4	22/09/2018 00:14	79° 01,801' N	006° 59,890' E	1267	In Situ Camera
MSM77_17-5	22/09/2018 01:32	79° 01,803' N	006° 59,896' E	1269	Box Corer
MSM77_17-6	22/09/2018 03:18	79° 01,812' N	006° 59,930' E	1270	Video Multi Corer
MSM77_18-1	22/09/2018 08:45	79° 07,503' N	004° 54,985' E	1526	Crawler
MSM77_19-1	22/09/2018 13:02	78° 59,995' N	008° 15,004' E	870	CTD
MSM77_20-1	22/09/2018 14:28	79° 00,019' N	008° 42,067' E	233	Autonomous Underwater Vehicle
MSM77_20-2	22/09/2018 17:02	79° 00,011' N	008° 41,966' E	231	Box Corer

MSM77_20-3	22/09/2018 17:45	79° 00,012' N	008° 41,963' E	232	Box Corer
MSM77_21-1	22/09/2018 18:38	79° 00,003' N	008° 14,981' E	871	Trap, drifting
MSM77_21-2	22/09/2018 19:39	79° 00,222' N	008° 16,847' E	840	Marine snow catcher
MSM77_21-3	22/09/2018 20:28	79° 00,221' N	008° 16,849' E	839	In Situ Camera
MSM77_21-4	22/09/2018 21:45	79° 00,233' N	008° 16,893' E	840	Video Multi Corer
MSM77_21-5	22/09/2018 22:35	79° 00,231' N	008° 16,893' E	841	Video Multi Corer
MSM77_22-1	23/09/2018 00:22	78° 58,809' N	009° 30,839' E	222	CTD
MSM77_22-2	23/09/2018 00:50	78° 58,809' N	009° 30,839' E	222	Marine snow catcher
MSM77_22-3	23/09/2018 01:27	78° 58,809' N	009° 30,843' E	220	In Situ Camera
MSM77_22-4	23/09/2018 02:01	78° 58,836' N	009° 30,998' E	220	Video Multi Corer
MSM77_23-1	23/09/2018 03:02	79° 00,016' N	009° 47,970' E	224	Box Corer
MSM77_24-1	23/09/2018 05:00	79° 01,705' N	011° 05,172' E	275	CTD
MSM77_24-2	23/09/2018 07:39	79° 01,702' N	011° 05,184' E	278	Video Multi Corer
MSM77_24-3	23/09/2018 08:19	79° 01,705' N	011° 05,211' E	277	Video Multi Corer
MSM77_24-4	23/09/2018 09:09	79° 01,704' N	011° 05,217' E	278	Box Corer
MSM77_25-1	23/09/2018 10:59	79° 12,007' N	011° 53,974' E	201	Box Corer
MSM77_25-2	23/09/2018 11:28	79° 12,007' N	011° 53,980' E	202	Box Corer
MSM77_26-1	23/09/2018 17:09	79° 42,983' N	009° 54,956' E	296	Lander (generic)
MSM77_27-1	23/09/2018 18:22	79° 42,082' N	010° 00,066' E	164	In Situ Camera
MSM77_28-1	23/09/2018 21:37	79° 56,491' N	011° 15,591' E	130	In Situ Camera
MSM77_29-1	24/09/2018 02:21	80° 18,008' N	013° 59,951' E	83	CTD
MSM77_29-2	24/09/2018 02:49	80° 18,007' N	013° 59,954' E	82	In Situ Camera
MSM77_29-3	24/09/2018 03:28	80° 18,015' N	013° 59,952' E	85	Box Corer
MSM77_29-4	24/09/2018 08:39	80° 18,019' N	013° 59,969' E	83	Box Corer
MSM77_30-1	24/09/2018 12:03	79° 56,540' N	011° 16,277' E	134	Box Corer
MSM77_30-2	24/09/2018 12:57	79° 56,538' N	011° 16,301' E	134	Box Corer
MSM77_31-1	24/09/2018	79° 42,086' N	010° 00,075' E	165	Box Corer

	16:37				
MSM77_31-2	24/09/2018 17:54	79° 42,087' N	010° 00,094' E	164	In Situ Camera
MSM77_32-1	24/09/2018 20:10	79° 29,902' N	008° 41,704' E	206	Box Corer
MSM77_33-1	25/09/2018 15:12	79° 08,012' N	006° 05,373' E	1253	In Situ Pump
MSM77_34-1	26/09/2018 14:51	78° 59,151' N	008° 10,612' E	940	In Situ Camera
MSM77_35-1	27/09/2018 09:55	79° 04,004' N	004° 10,093' E	2415	In Situ Camera
MSM77_35-2	27/09/2018 12:38	79° 04,004' N	004° 10,067' E	2418	In Situ Pump
MSM77_35-3	27/09/2018 15:31	79° 04,808' N	004° 06,772' E	2438	Lander (generic)
MSM77_35-4	27/09/2018 17:23	79° 03,934' N	004° 17,377' E	2354	OFOS
MSM77_36-1	28/09/2018 00:12	79° 03,788' N	003° 39,573' E	3093	CTD
MSM77_37-1	28/09/2018 01:04	79° 03,610' N	003° 28,627' E	4043	CTD
MSM77_37-2	28/09/2018 04:01	79° 03,617' N	003° 28,597' E	4045	Box Corer
MSM77_37-3	28/09/2018 07:16	79° 03,631' N	003° 28,474' E	4041	Video Multi Corer
MSM77_38-1	28/09/2018 13:21	79° 07,992' N	002° 50,538' E	5551	Trap, drifting
MSM77_38-2	28/09/2018 14:38	79° 07,823' N	002° 49,554' E	5552	In Situ Camera
MSM77_38-3	28/09/2018 15:33	79° 07,785' N	002° 49,584' E	5549	Lander (generic)
MSM77_38-4	28/09/2018 17:47	79° 08,015' N	002° 50,589' E	5557	Box Corer
MSM77_38-5	28/09/2018 21:04	79° 08,039' N	002° 50,334' E	5551	Video Multi Corer
MSM77_38-6	29/09/2018 01:18	79° 08,725' N	002° 55,163' E	5543	OFOS
MSM77_39-1	29/09/2018 11:48	79° 06,781' N	004° 52,676' E	1626	Autonomous Underwater Vehicle
MSM77_39-2	30/09/2018 13:18	79° 07,690' N	004° 51,809' E	1563	Lander (generic)
MSM77_40-1	29/09/2018 18:15	79° 03,869' N	003° 20,243' E	5096	CTD
MSM77_40-2	29/09/2018 20:16	79° 03,866' N	003° 20,231' E	5100	Video Multi Corer
MSM77_41-1	30/09/2018 00:55	79° 07,991' N	002° 49,754' E	5555	CTD
MSM77_41-2	30/09/2018 11:10	78° 58,820' N	003° 29,119' E	2510	In Situ Camera
MSM77_42-1	30/09/2018 19:04	79° 03,866' N	003° 20,222' E	5121	Box Corer
MSM77_43-1	30/09/2018 21:50	79° 08,015' N	002° 50,598' E	5573	Marine snow catcher

MSM77_43-2	30/09/2018 22:06	79° 08,015' N	002° 50,601' E	5572	Marine snow catcher
MSM77_44-1	01/10/2018 00:05	78° 59,985' N	001° 30,078' E	2527	CTD
MSM77_44-2	01/10/2018 01:15	79° 00,005' N	001° 30,024' E	2527	Box Corer
MSM77_44-3	01/10/2018 03:02	79° 00,060' N	001° 29,963' E	2527	Video Multi Corer
MSM77_45-1	01/10/2018 12:29	78° 38,718' N	002° 04,736' W	2683	CTD
MSM77_46-1	01/10/2018 16:11	78° 32,948' N	001° 50,205' W	2709	In Situ Pump
MSM77_46-2	01/10/2018 16:54	78° 32,948' N	001° 50,204' W	2712	In Situ Camera
MSM77_46-3	01/10/2018 18:48	78° 32,951' N	001° 50,207' W	2709	In Situ Camera
MSM77_46-4	01/10/2018 19:48	78° 32,959' N	001° 50,217' W	2709	CTD
MSM77_46-5	01/10/2018 21:03	78° 32,960' N	001° 50,216' W	2708	Box Corer
MSM77_47-1	02/10/2018 02:42	78° 45,002' N	000° 52,965' W	2640	CTD
MSM77_47-2	02/10/2018 03:53	78° 45,005' N	000° 52,987' W	2640	Box Corer
MSM77_47-3	02/10/2018 05:40	78° 45,027' N	000° 53,075' W	2641	Video Multi Corer
MSM77_48-1	02/10/2018 08:20	78° 52,989' N	000° 18,039' E	2544	CTD
MSM77_48-2	02/10/2018 09:45	78° 53,003' N	000° 18,050' E	2543	Box Corer
MSM77_48-3	02/10/2018 11:23	78° 53,025' N	000° 17,975' E	2550	Video Multi Corer
MSM77_49-1	02/10/2018 15:10	79° 19,360' N	000° 48,090' E	3094	CTD
MSM77_49-2	02/10/2018 16:18	79° 22,123' N	000° 39,209' E	3127	CTD
MSM77_49-3	02/10/2018 17:23	79° 25,004' N	000° 30,056' E	3125	CTD
MSM77_49-4	02/10/2018 17:54	79° 25,608' N	000° 32,335' E	3130	CTD
MSM77_49-5	02/10/2018 18:30	79° 26,267' N	000° 34,282' E	3132	CTD
MSM77_49-6	02/10/2018 19:15	79° 26,890' N	000° 37,192' E	3133	CTD
MSM77_49-7	02/10/2018 19:47	79° 27,517' N	000° 39,215' E	3132	CTD
MSM77_49-8	02/10/2018 20:21	79° 28,208' N	000° 41,489' E	3130	CTD
MSM77_49-9	02/10/2018 20:52	79° 28,865' N	000° 44,241' E	3122	CTD
MSM77_49-10	02/10/2018 21:24	79° 29,596' N	000° 46,515' E	3080	CTD
MSM77_49-11	02/10/2018	79° 30,226' N	000° 48,858' E	3028	CTD

	22:00				
MSM77_49-12	02/10/2018 22:42	79° 30,895' N	000° 50,639' E	2993	CTD
MSM77_49-13	02/10/2018 23:29	79° 31,576' N	000° 53,343' E	2988	CTD
MSM77_49-14	03/10/2018 00:10	79° 32,307' N	000° 55,953' E	3005	CTD
MSM77_49-15	03/10/2018 00:45	79° 32,975' N	000° 58,273' E	3006	CTD
MSM77_49-16	03/10/2018 01:25	79° 33,617' N	001° 00,574' E	2992	CTD
MSM77_49-17	03/10/2018 02:01	79° 34,273' N	001° 03,123' E	2976	CTD
MSM77_49-18	03/10/2018 02:43	79° 34,935' N	001° 05,728' E	2957	CTD
MSM77_49-19	03/10/2018 03:50	79° 35,459' N	001° 08,388' E	2920	CTD
MSM77_49-20	03/10/2018 04:30	79° 36,135' N	001° 10,316' E	2887	CTD
MSM77_49-21	03/10/2018 05:10	79° 36,889' N	001° 12,202' E	2843	CTD
MSM77_49-22	03/10/2018 05:46	79° 37,521' N	001° 14,947' E	2805	CTD
MSM77_49-23	03/10/2018 06:24	79° 38,256' N	001° 17,552' E	2649	CTD
MSM77_49-24	03/10/2018 07:08	79° 38,935' N	001° 19,969' E	2570	CTD
MSM77_49-25	03/10/2018 07:42	79° 39,618' N	001° 22,016' E	2488	CTD
MSM77_49-26	03/10/2018 08:36	79° 40,213' N	001° 24,603' E	2415	CTD
MSM77_49-27	03/10/2018 09:19	79° 40,895' N	001° 27,148' E	2416	CTD
MSM77_49-28	03/10/2018 09:57	79° 41,547' N	001° 29,405' E	2363	CTD
MSM77_49-29	03/10/2018 10:35	79° 42,214' N	001° 31,851' E	2316	CTD
MSM77_49-30	03/10/2018 11:16	79° 42,878' N	001° 34,396' E	2236	CTD
MSM77_49-31	03/10/2018 11:54	79° 43,574' N	001° 36,745' E	2144	CTD
MSM77_49-32	03/10/2018 12:34	79° 44,238' N	001° 39,044' E	2096	CTD
MSM77_49-33	03/10/2018 13:10	79° 44,923' N	001° 41,523' E	2168	CTD
MSM77_50-1	02/10/2018 15:27	79° 19,372' N	000° 48,054' E	3097	ADCP
MSM77_51-1	03/10/2018 16:54	79° 44,180' N	004° 29,040' E	2620	Trap, drifting
MSM77_52-1	03/10/2018 20:32	79° 56,286' N	003° 11,646' E	2494	CTD
MSM77_52-2	03/10/2018 23:41	79° 56,285' N	003° 11,766' E	2496	Marine snow catcher

MSM77_52-3	03/10/2018 23:57	79° 56,285' N	003° 11,763' E	2496	Marine snow catcher
MSM77_52-4	04/10/2018 00:07	79° 56,284' N	003° 11,761' E	2497	Marine snow catcher
MSM77_52-5	04/10/2018 01:04	79° 56,284' N	003° 11,759' E	2497	In Situ Camera
MSM77_52-6	04/10/2018 03:13	79° 56,284' N	003° 11,727' E	2497	Box Corer
MSM77_52-7	04/10/2018 05:26	79° 56,296' N	003° 11,314' E	2497	Video Multi Corer
MSM77_53-1	04/10/2018 09:15	79° 44,187' N	004° 29,117' E	2619	CTD
MSM77_53-2	04/10/2018 11:07	79° 44,185' N	004° 29,110' E	2623	In Situ Camera
MSM77_53-3	04/10/2018 11:58	79° 44,184' N	004° 29,110' E	2616	CTD
MSM77_53-4	04/10/2018 13:14	79° 44,186' N	004° 29,120' E	2616	Box Corer
MSM77_53-5	04/10/2018 15:00	79° 44,207' N	004° 29,021' E	2619	Video Multi Corer
MSM77_53-6	04/10/2018 17:55	79° 39,069' N	004° 31,706' E	3001	In Situ Camera
MSM77_54-1	04/10/2018 19:18	79° 36,230' N	005° 10,371' E	2729	CTD
MSM77_54-2	04/10/2018 20:03	79° 36,233' N	005° 10,363' E	2725	Marine snow catcher
MSM77_54-3	04/10/2018 20:55	79° 36,233' N	005° 10,358' E	2729	In Situ Camera
MSM77_54-4	04/10/2018 22:15	79° 36,233' N	005° 10,370' E	2727	Box Corer
MSM77_54-5	05/10/2018 00:07	79° 36,261' N	005° 10,326' E	2727	Video Multi Corer
MSM77_55-1	05/10/2018 08:46	79° 07,502' N	004° 55,056' E	1524	OFOS
MSM77_55-2	05/10/2018 16:38	79° 07,491' N	004° 54,918' E	1530	Lander (generic)
MSM77_56-1	05/10/2018 17:48	79° 03,622' N	004° 07,623' E	2475	Crawler
MSM77_56-2	05/10/2018 18:07	79° 03,623' N	004° 07,627' E	2477	Marine snow catcher
MSM77_57-1	06/10/2018 04:13	79° 01,312' N	010° 50,956' E	321	In Situ Camera
MSM77_58-1	06/10/2018 07:26	79° 01,070' N	011° 30,250' E	278	Autonomous Underwater Vehicle