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## Short Cruise Report R/V Meteor cruise M200

Rostock (Germany) – Rostock (Germany)

22.03.2024 - 09.04.2024

Chief Scientist: Dr. Volker Mohrholz

Captain: Derk-Ude Apetz

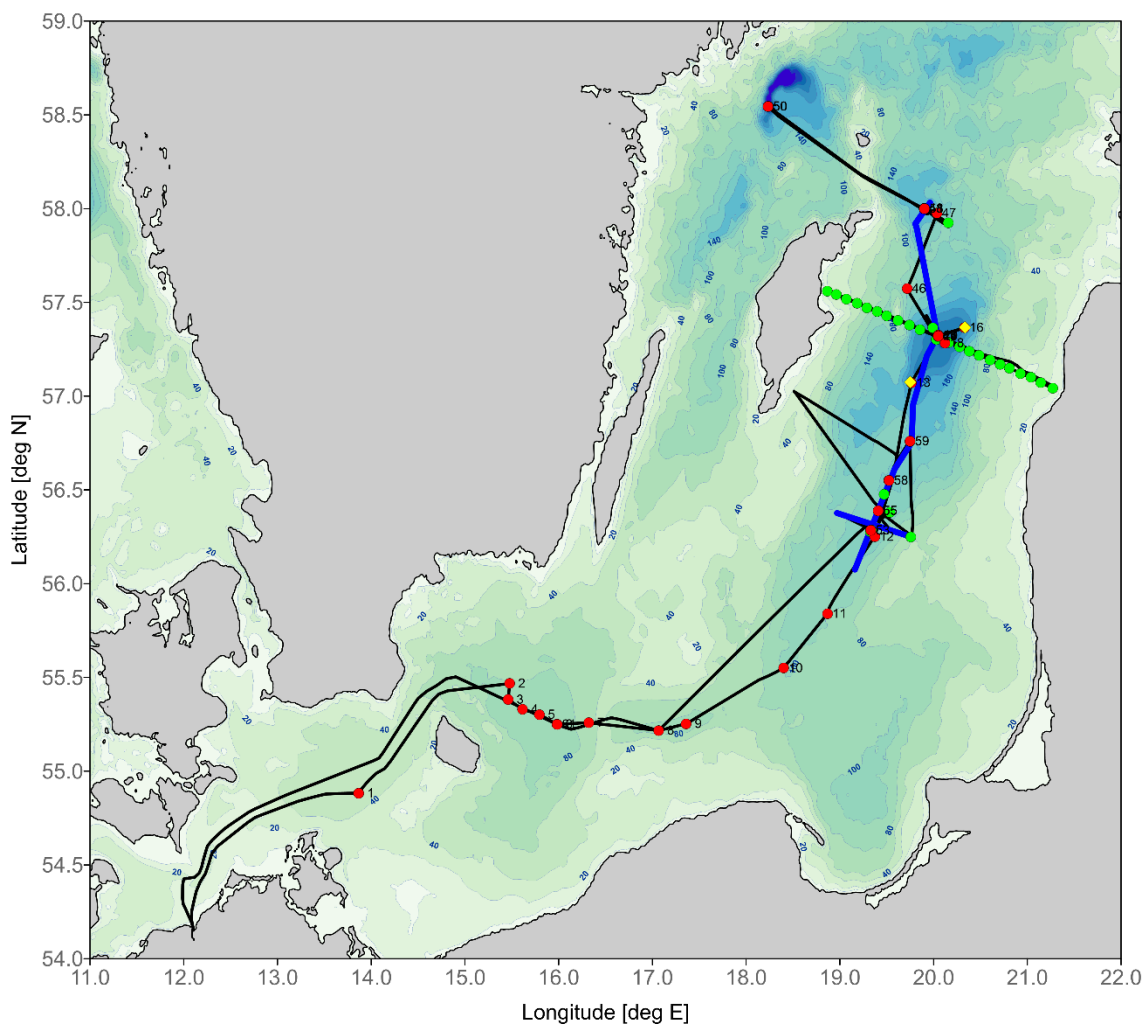


Figure 1: Cruise track of RV METEOR cruise M200.

## Objectives

The overall goal of the research during M200 is to define the distribution and underlying redox cycling pathways that govern the speciation of Mn, and to identify the subsequent coupling of Mn with the cycling of oxygen, iodine, and nitrogen. To accomplish this broader goal, we started the field work at a preceding cruise on the FS RV Elisabeth Mann Borgese in 2021 (EMB276). It was focused on characterizing the depth distributions of Mn, ROS, N, and I species over a diversity of stratified basins. This first stage of research provided the distributions, dynamics, and associations of these elements throughout the region.

For the cruise M200 on the much larger FS RV Meteor, we build on these data to interrogate the links between elemental cycles through incubations. We focused the work to three contrasting basins to conduct studies targeting the pathways responsible for Mn redox patterns, and to fully interrogate the coupling of ROS and Mn with I and N. To provide an important biogeochemical context, investigations did also constrain transport as well as the distribution of geochemical parameters associated with cycling of carbon (photosynthesis, methane turnover) and sulfur.

The scientific approach was organized around specific objectives and associated hypotheses as follows:

1. To identify and quantify the role of ROS in the cycling and mineralization of Mn within the oxic zone and upper suboxic zone. We predict that the ROS superoxide ( $O_2^-$ ) and hydrogen peroxide ( $H_2O_2$ ), of biogenic and abiogenic origin, are primary redox reactants of Mn in the presence of oxygen.
2. To identify and quantify within oxic and suboxic zones the contribution of ROS and oxidized Mn (Mn(III)-L complexes and particulate Mn oxides) to the speciation and redox cycling of iodine. We predict that oxidation of iodide to both intermediate I species as well as iodate throughout the suboxic zones is largely controlled by reaction with reactive Mn (both Mn(III)-L and Mn oxide particles) and ROS (particularly superoxide).
3. To identify and quantify within and below the suboxic zone the contribution of oxidized Mn species to the oxidation of reduced nitrogen species. We predict that Mn(III)-L and Mn oxide particles are relevant oxidants in the abiotic and/or microbially mediated oxidation of nitrite, ammonium and other potential N intermediates in the suboxic zone.
4. To determine rates of methane oxidation below and across the redoxcline and the link to Mn. We predict that a fraction of  $CH_4$  oxidation occurring in the suboxic zones will be enhanced where redox turnover of Mn is highest – pointing to Mn(III) as a relevant oxidant.
5. To identify and characterize the potential links between Mn cycling and phototrophic activity, including anoxygenic photosynthesis. We predict that below the chemocline a fraction of Mn oxidation will be a consequence of activity of phototrophs, including via production of superoxide and elevation of pH allowing for homogenous oxidation of Mn by  $O_2$  to become thermodynamically favorable. We expect anoxygenic phototrophic communities to play a minor but consequential role in Mn oxidation and Mn oxide formation.
6. To provide high resolution observations of water column structure and turbulent mixing to relate the biochemical processes to physical forcing.

## Narrative

The METEOR arrived the port of Rostock on 19th March. On the day after we loaded the container and all heavy equipment. On 21st March the scientific crew of M200 embarking the ship before lunch time. The rest of the day was spent in port to allocating the deck and lab space to the working groups and devices, unloading the container, preparing the devices and labs, and for safety instructions. In the afternoon we had our first science meeting for planning the scientific work of

the first days.

The cruise started on the morning of the 22nd March with calm, but cold weather. We left the port at 8am heading to our first station in the central Arkona Basin. On the way to station the safety drill was performed. The preparation of devices and labs was continued. The wind increased slightly to 4Bft. In the early evening we reached the test station where also a permanent measuring buoy of the IOW is located. We performed some device tests with the CTD and took first water samples for testing the lab equipment. After the station we started the underway measurements with the thermosalinometer and the vessel mounted current meter (VMADCP). We proceeded along the planned cruise track towards the Bornholm Basin. In the late evening we passed the Bornholmgat. Shortly after midnight the first station in the Bornholm Basin was reached. Here CTD cast and sampling of surface sediments with a Rumohr corer were performed. The calm wind conditions and low sea state allowed safe and successful device operations. A second sediment sampling station was worked until the morning. Afterwards we resumed our transit towards the eastern Gotland Basin. During the day a few CTD stations were performed along the thalweg transect to investigate the spreading of saline waters from the Major Baltic Inflow (MBI) of December 2023. The deep water in the central Bornholm Basin and the Slupsk Furrow depicted a high vertical variability of temperature and oxygen concentration, that indicated the ongoing mixing between the inflow waters and the old deep water. However, an active overflow of the Slupsk Sill was not detected. The wind increased during the afternoon slightly to 4Bft. At nine in the evening, we passed the eastern sill of the Slupsk Furrow and headed towards the southern Gotland Basin.

We followed the Thalweg of the Baltic till our first mooring station Gotland Southwest (GOSW). The last sign of saline inflow water was detected at the bottom of station M200\_12 in the southern Gotland Basin. Further north the bottom water was anoxic. On 24th March shortly before noon we reached the mooring station GOSW. The weather was quite calm with good visibility well suited for mooring operation. After some preparation we recovered the mooring successfully without any losses. Soon after the mooring was deployed again for the next observation period till November. From here we proceeded to our first main station at the Gotland Deep, where we arrived in the afternoon. After performing a first CTD we deployed a drifting mooring that will gather time series data in the halocline. The program here consists of a number of CTD casts, microstructure measurements and sediment sampling, covering the next three days.

During the night the weather was rainy and cold, but with calm winds. We observed some passing military ships and a submarine, but they didn't interfere with our observation program. The military exercise was announced for this area till the 31st March. On the next morning we interrupted our program at Gotland Deep for maintaining a second mooring at the station Gotland Northeast (GONE). Also, this mooring operation was successfully performed without any problems. Afterwards we resumed the station work at Gotland Deep. Here we met the research vessel ELISABETH MANN BORGESE (EMB), which was on its regular March cruise of the IOW Baltic long term observation program. The EMB left the position in the early afternoon. We continued our station work till the late evening. Afterwards we went to the actual drifter position, which has reached a distance of about five miles in northwesterly direction. Here a time series with the microstructure profiler was performed till the next morning. The aim was to gather information about turbulent mixing at the halocline, where the majority of the drifter sensors were mounted. At six o'clock on the morning we sailed back to the station Gotland for continuation of our sampling program. For the afternoon the first pumpCTD deployment was planned. Unfortunately, the cable on the dedicated winch caused serious problems. So, we could not perform the pumpCTD cast at that time. A careful repair of the cable would take us some hours. We decided to shift the pumpCTD cast to a later day and finished our operations on the station for the moment. In the late evening of the 26th March, we started with the planned microstructure transect across the EGB at the Swedish coast. This transect kept us busy for the next day. The weather was still good so that we could work without any problems. Most groups used the day for performing analyses and incubations with the collected water samples. We could also fix the damaged cable for the pump CTD. The end of the MSS transect at the Latvian coast was reached on 27th March at 10pm. From here we sailed back to

the station Gotland Deep. The shifted pumpCTD deployment was started at 4am. The with the repaired cable the device worked as expected and we could perform our measurements as initially planned. We finished the pumpCTD deployment at noon on the 28th March.

In the meantime, the drifter has increased its speed and changed the drift direction to west. To prevent an advection of the drifter in too shallow waters we decided to recover it on the way to our next station at the Farö Deep. We reached at drifter position at about 3pm and recovered the drifter successfully. Three hours later it was deployed again near the Farö Deep station. We reached the station at 8 in the evening and started our station program with a first CTD cast. The weather conditions were quite stable all the time with low wind speed, but some fog and rain. We continued the station work at Farö Deep during the next. The Drifter moved unexpectedly towards east with a drift speed of about 0.1m/s. However, it will not depart to far from the station within the next two days before it is recovered. The air temperature was cold, but the sky becomes clear in the afternoon. The mood on board was very good since we could perform our planned program without bigger issues. In the evening of the 29th the second pumpCTD cast was started. It was successful finished around midnight. The station work was continued at the Farö Deep until noon of the 30th March. In the afternoon we worked at the drifter position and recovered the drifter. It has moved about 6 miles during the two days of drifting. After the drifter was on deck, we started our transit to the Landsort Deep station in the western Gotland basin. We used the short break from scientific work to celebrate the 200th voyage of Meteor 3 and the 100th anniversary of the commissioning of Meteor 1.

Easter Sunday at noon the work at our third main station started. The position of the Landsort Deep is in Swedish territorial waters. Unfortunately, we got not permission to work there. Since our main interest were the processes at the redoxcline we used a station nearby which is in the EEZ outside the territorial waters. This shift will have not much impact on the results. Again, a PumpCTD cast was performed at this station. Beside the work Easter was celebrated together with the crew. The weather was calm, but cold and foggy. The station work was continued on Easter Monday the 1st April. We did mainly water sampling with CTD cast for analyses, incubations and experiments in the labs. The station work was finished in the evening at eight. The has increased in the afternoon and reached 6 to 7 when we started our transit to the Farö Deep station. Stormy conditions were forecasted for Tuesday and Wednesday. The transit was a bit unpleasant since we got the wind from the side. We reached the Farö Deep station on early Tuesday morning. Here we did a CTD cast before we deployed the ScanFish for a longer transect towards the southern Gotland Basin. We planned to follow the Thalweg until we reach the tip of the inflow water body, that was reported by our colleagues on the ELISABETH MANN BORGESE. The wind was slightly increasing while we sailed through the eastern Gotland Basin. At its southern rim we detected the first weak signs of the inflow water. Unfortunately, the ScanFish depicted technical problems so that we interrupted the transect in the late evening. In the meantime, the wind has increased to 7/8 Bft. We decided to seek shelter at the southern tip of Gotland before the predicted storm reached its full strength. During the following day the bad weather did not allow the deployment of devices. However, the work was still going on in the Labs with analysis of samples and incubations. The afternoon was used for a scientist meeting for presenting and discussion of the first preliminary results of our cruise. Also, the plans for the next days were prepared. The strong winds relaxed during the night to Thursday. We resumed the ScanFish transect in the early morning of the 4th April. Despite some technical issues with the ScanFish the transect was finished at about noon. Nearby we started the station work along the plume of inflowing water. The unique inflow situations make it possible to investigate the biogeochemical processes at the active mixing front between oxic and anoxic water masses in the central Baltic. The first station was placed directly in the core of the inflow plume. Unfortunately, the planned PumpCTD cast could not be realized. Ten minutes after the cast was started the pump-cable of the PumpCTD was blocked for unknown reason. We were not able to fix the problem in time, and decided to use the normal CTD with a high number of bottles for sampling instead. After finishing of this station, we performed a high resolution MSS transect through the front of the inflow plume with the ambient older water. We

could successfully complete this transect on 5th April at 10 am. The weather was good with moderate winds, but sometimes foggy conditions. The day was spent on station work at the front of the inflow plume. Here we also started our third drifter deployment to gather high resolution time series in the upper halocline.

In the evening we started the next ScanFish transect across the inflow plume to gather the lateral structure and extent of the water body. The wind increased during the night to 6/7 Bft, but did not hamper the device operations. The ScanFish transect was completed in the early morning of the 6th April. Afterwards we went again to inflow station 5 to gather further surface sediment samples with the multi corer. During the day the weather was calm but still foggy. We worked the inflow stations 3 and 2 downstream of the inflow water front. After analyzing the data from the cross plume ScanFish transect we decided to skip the inflow station 1 to save time for another Microstructure transect at the rim of the southern Gotland Basin where the core of the inflow plume was found. We finished the last work on inflow station 2 in the late evening and began the Microstructure transect at two in the night. The wind has increased again to 7Bft from southerly directions. This made it difficult to follow the intended transect line. However, we were able to complete the transect in the early afternoon of the 7th April. An hour later our drifter was successfully recovered. We finished the scientific work in the southern Gotland Basin and started the transit to Rostock. The last science activity of the cruise was a CTD station in the Bornholm Deep for calibration of the microstructure profiler. The 8th April was used for a safety drill, the packing of stuff and cleaning the laboratories. The underway data registration was stopped in the afternoon, when the ship left the Danish EEZ. The port of Rostock was arrived in the morning of the 9th April. Here the packing of equipment was finished. The scientific equipment was unloaded and sent back to the participating institutes. We left the ship in the early afternoon of the same day, which was the official end of the expedition M200.

## **Acknowledgements**

We like to thank the captain Derk Apetz and crew of the RV METEOR for their efforts and for their effective and great support during the cruise, as well as the cruise participants from the Leibniz Institute for Baltic Sea Research Warnemünde, the Woods Hole Oceanographic Institution, the Max-Planck-Institut für Marine Mikrobiologie, the Aarhus University and the Michigan State University who carried out the measurements and experiments at sea. We are also grateful to all other people who help to prepare the cruise, and made this study possible. The cruise was funded by the BMBF, the DFG and institutional funds of the IOW, the MPI and WHOI.

## Participants

Name	Discipline	Institution
Mohrholz, Volker, Dr.	Phys. Oceanogr. / Chief Scientist	IOW
Beier, Sebastian	Phys. Oceanogr.	IOW
Burmeister, Christian	Biology / Nutrients	IOW
Cheng, Keyi	Chemistry	MSU
Choisnard, Noémie	Biology / Nitrogen	IOW
De Beer, Dirk	Microbiology	MPI
Dellwig, Olaf	Geology / Trace metals	IOW
Edgcomb, Virginia P.	Microbiology	WHOI
Ferdelmann, Timothy G.	Microbiology	MPI
Hansel, Colleen M.	Microbiology	WHOI
Hardisty, Dalton	Chemistry	MSU
Heene, Toralf	Phys. Oceanogr.	IOW
Henkel, Jan	Microbiology	IOW
Lane, Katherine	Biochemistry	WHOI
Mara, Paraskevi	Microbiology	WHOI
Martocello, Don	Microbiology	WHOI
McPaul, Katelyn	Microbiology	WHOI
Necker, Jennifer	Microbiology	WHOI
Neumüller, Katharina	Microbiology	MPI
Ryberg, Eric	Biochemistry	WHOI
Schuffenhauer, Ingo	Phys. Oceanogr.	IOW
Schulz-Vogt, Heide, Prof.	Microbiology / Nutrients	IOW
Selak, Lorena	Microbiology	AU
Hansen, Nina S.	Microbiology	AU
Taenzer, Lina M.	Biochemistry	WHOI
Tölke, Nina	Biochemistry	MPI
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Wille, Martin	Geology / Trace metals	UniBern
Raeke, Andreas	Meteorology	DWD

<b>IOW</b>	Leibniz-Institute for Baltic Sea Research Warnemünde
<b>MPI</b>	Max-Planck-Institut für Marine Mikrobiologie, Bremen
<b>WHOI</b>	Woods Hole Oceanographic Institution, Woods Hole / USA
<b>AU</b>	Aarhus University, Section for Microbiology, Department of Biology / Denmark
<b>MSU</b>	Michigan State University / USA
<b>UniBern</b>	University of Bern / Swizerland
<b>DWD</b>	Deutscher Wetterdienst Hamburg, Seeschiffahrtsberatung

## Stationlist

Station No.	Station name	Gear	Date/Time	Latitude	Longitude	Water Depth	Remarks
METEOR	IOW		[UTC]			[m]	
M200_1-1	ABboje	CTD	22.03.2024 16:53	54° 52.97'N	013° 51.99'E	48	
M200_2-1	BB03	CTD	23.03.2024 00:31	55° 28.10'N	015° 28.70'E	83	
M200_2-2	BB03	RL	23.03.2024 01:17	55° 28.12'N	015° 28.65'E	83	
M200_2-3	BB03	RL	23.03.2024 01:31	55° 28.12'N	015° 28.64'E	83	
M200_2-4	BB03	RL	23.03.2024 01:42	55° 28.12'N	015° 28.65'E	82	
M200_2-5	BB03	RL	23.03.2024 01:50	55° 28.12'N	015° 28.65'E	83	
M200_2-6	BB03	RL	23.03.2024 01:59	55° 28.12'N	015° 28.65'E	82	
M200_2-7	BB03	RL	23.03.2024 02:07	55° 28.12'N	015° 28.65'E	82	
M200_2-8	BB03	RL	23.03.2024 02:16	55° 28.12'N	015° 28.65'E	82	
M200_2-9	BB03	RL	23.03.2024 02:25	55° 28.12'N	015° 28.65'E	82	
M200_2-10	BB03	RL	23.03.2024 02:33	55° 28.12'N	015° 28.65'E	82	
Station No.	Station name	Gear	Date/Time	Latitude	Longitude	Water Depth	Remarks
METEOR	IOW		[UTC]			[m]	
M200_2-11	BB03	RL	23.03.2024 02:40	55° 28.12'N	015° 28.65'E	82	
M200_2-12	BB03	RL	23.03.2024 02:50	55° 28.12'N	015° 28.65'E	82	
M200_2-13	BB03	RL	23.03.2024 02:58	55° 28.12'N	015° 28.65'E	82	
M200_3-1	BB01	CTD	23.03.2024 03:53	55° 22.93'N	015° 27.61'E	93	
M200_3-2	BB01	RL	23.03.2024 04:16	55° 22.91'N	015° 27.64'E	91	
M200_3-3	BB01	RL	23.03.2024 04:25	55° 22.91'N	015° 27.64'E	91	
M200_3-4	BB01	RL	23.03.2024 04:34	55° 22.91'N	015° 27.64'E	91	
M200_3-5	BB01	RL	23.03.2024 04:44	55° 22.91'N	015° 27.64'E	91	
M200_3-6	BB01	RL	23.03.2024 04:54	55° 22.91'N	015° 27.64'E	91	
M200_3-7	BB01	RL	23.03.2024 05:04	55° 22.91'N	015° 27.64'E	91	
M200_3-8	BB01	RL	23.03.2024 05:40	55° 22.91'N	015° 27.64'E	91	
M200_3-9	BB01	RL	23.03.2024 05:49	55° 22.91'N	015° 27.64'E	91	
M200_3-10	BB01	RL	23.03.2024 05:59	55° 22.91'N	015° 27.64'E	91	
M200_3-11	BB01	RL	23.03.2024 06:09	55° 22.91'N	015° 27.64'E	91	
M200_3-12	BB01	RL	23.03.2024 06:19	55° 22.91'N	015° 27.64'E	92	
M200_4-1	TF0211	CTD	23.03.2024 07:33	55° 19.80'N	015° 36.91'E	94	
M200_5-1	TF0212	CTD	23.03.2024 08:54	55° 18.09'N	015° 47.71'E	93	
M200_6-1	TF0213	CTD	23.03.2024 10:16	55° 15.02'N	015° 58.94'E	92	
M200_7-1	TF0225	CTD	23.03.2024 12:03	55° 15.53'N	016° 19.25'E	63	
M200_8-1	TF0222	CTD	23.03.2024 15:15	55° 13.03'N	017° 04.04'E	89	
M200_9-1	TF0266	CTD	23.03.2024 16:46	55° 15.15'N	017° 21.64'E	86	
M200_10-1	TF0259	CTD	23.03.2024 21:18	55° 33.01'N	018° 24.04'E	88	
M200_11-1	TF0253	CTD	24.03.2024 00:13	55° 50.40'N	018° 52.06'E	98	
M200_12-1	gsf014	CTD	24.03.2024 03:44	56° 15.07'N	019° 22.32'E	127	
M200_13-1	GOSW	CTD	24.03.2024 09:19	57° 04.28'N	019° 45.76'E	213	
M200_13-2	GOSW	MOOR	24.03.2024 10:04	57° 04.28'N	019° 45.76'E	213	
M200_14-1	TF0271	CTD	24.03.2024 13:35	57° 19.19'N	020° 03.02'E	241	
M200_14-2	TF0271	DRIFT	24.03.2024 15:11	57° 19.19'N	020° 03.02'E	241	deployed
M200_14-3	TF0271	CTD	24.03.2024 15:27	57° 19.16'N	020° 03.00'E	240	
M200_14-4	TF0271	MSS	24.03.2024 17:18	57° 19.16'N	020° 03.00'E	241	
M200_15-1	TF0271	CTD	24.03.2024 20:39	57° 19.21'N	020° 02.99'E	240	
M200_15-2	TF0271	MUC	24.03.2024 21:21	57° 19.21'N	020° 02.71'E	240	
M200_15-3	TF0271	CTD	25.03.2024 00:41	57° 19.22'N	020° 03.00'E	240	
M200_15-4	TF0271	MSS	25.03.2024 01:55	57° 19.19'N	020° 02.99'E	240	
M200_15-5	TF0271	CTD	25.03.2024 04:55	57° 19.26'N	020° 02.98'E	240	
M200_16-1	GONE	CTD	25.03.2024 08:23	57° 21.95'N	020° 19.78'E	220	
M200_16-2	GONE	MOOR	25.03.2024 08:56	57° 21.95'N	020° 19.78'E	220	
M200_17-1	TF0271	CTD	25.03.2024 12:15	57° 19.53'N	020° 03.05'E	239	
M200_17-2	TF0271	CTD	25.03.2024 18:06	57° 19.55'N	020° 03.06'E	240	
M200_18-1	GB1	CTD	25.03.2024 19:19	57° 17.00'N	020° 07.23'E	244	
M200_18-2	GB1	MUC	25.03.2024 20:35	57° 16.98'N	020° 07.22'E	245	
M200_19-1	Drift	MSS	25.03.2024 22:02	57° 21.88'N	019° 59.52'E	227	
M200_20-1	TF0271	CTD	26.03.2024 05:31	57° 19.34'N	020° 03.07'E	240	
M200_20-2	TF0271	CTD	26.03.2024 10:00	57° 19.37'N	020° 03.21'E	240	

M200_20-3	TF0271	CTD	26.03.2024 12:34	57° 19.37'N	020° 03.21'E	240	
M200_20-4	TF0271	MSS	26.03.2024 13:22	57° 19.34'N	020° 03.19'E	240	
M200_20-5	TF0271	PCTD	26.03.2024 14:57	57° 19.38'N	020° 03.07'E	240	
M200_21-1	GB1	MUC	26.03.2024 16:44	57° 16.99'N	020° 07.23'E	245	
M200_22-1	SF001EGB	MSS	26.03.2024 21:42	57° 33.59'N	018° 51.97'E	22	
M200_23-1	SF002EGB	MSS	26.03.2024 22:37	57° 32.49'N	018° 57.70'E	25	
M200_24-1	SF003EGB	MSS	26.03.2024 23:58	57° 31.08'N	019° 04.12'E	38	
M200_25-1	SF004EGB	MSS	27.03.2024 00:56	57° 29.74'N	019° 10.97'E	37	
M200_26-1	SF005EGB	MSS	27.03.2024 01:51	57° 28.26'N	019° 17.35'E	75	
M200_27-1	SF006EGB	MSS	27.03.2024 02:47	57° 27.07'N	019° 23.80'E	94	
M200_28-1	SF007EGB	MSS	27.03.2024 03:43	57° 25.68'N	019° 29.97'E	117	
M200_29-1	SF008EGB	MSS	27.03.2024 04:43	57° 24.26'N	019° 37.25'E	41	
M200_30-1	SF009EGB	MSS	27.03.2024 05:40	57° 22.72'N	019° 44.64'E	153	
M200_31-1	SF010EGB	MSS	27.03.2024 06:40	57° 21.29'N	019° 51.38'E	207	
M200_32-1	SF011EGB	MSS	27.03.2024 07:44	57° 20.11'N	019° 56.90'E	228	
M200_33-1	TF0271	MSS	27.03.2024 09:01	57° 19.19'N	020° 03.04'E	241	
M200_34-1	SF012EGB	MSS	27.03.2024 10:16	57° 17.19'N	020° 09.67'E	244	
M200_35-1	SF013EGB	MSS	27.03.2024 11:28	57° 15.80'N	020° 16.67'E	197	
Station No.	Station name	Gear	Date/Time	Latitude	Longitude	Water Depth	Remarks
METEOR	IOW		[UTC]			[m]	
M200_36-1	SF014EGB	MSS	27.03.2024 12:31	57° 14.40'N	020° 22.88'E	148	
M200_37-1	SF015EGB	MSS	27.03.2024 13:29	57° 13.08'N	020° 29.16'E	89	
M200_38-1	SF016EGB	MSS	27.03.2024 14:29	57° 11.61'N	020° 36.15'E	95	
M200_39-1	SF017EGB	MSS	27.03.2024 15:24	57° 10.17'N	020° 42.52'E	66	
M200_40-1	SF018EGB	MSS	27.03.2024 16:12	57° 08.93'N	020° 48.56'E	46	
M200_41-1	SF019EGB	MSS	27.03.2024 17:09	57° 07.25'N	020° 55.57'E	20	
M200_42-1	SF020EGB	MSS	27.03.2024 17:55	57° 06.03'N	021° 02.26'E	19	
M200_43-1	SF021EGB	MSS	27.03.2024 18:42	57° 04.35'N	021° 08.50'E	25	
M200_44-1	SF022EGB	MSS	27.03.2024 19:40	57° 02.55'N	021° 16.22'E	17	
M200_45-1	TF0271	CTD	28.03.2024 00:35	57° 19.19'N	020° 02.82'E	240	
M200_45-2	TF0271	MSS	28.03.2024 01:00	57° 19.15'N	020° 02.87'E	240	
M200_45-3	TF0271	PCTD	28.03.2024 02:40	57° 19.27'N	020° 02.92'E	241	
M200_45-4	TF0271	MSS	28.03.2024 08:28	57° 18.85'N	020° 03.63'E	243	
M200_45-5	TF0271	CTD	28.03.2024 10:06	57° 19.23'N	020° 02.97'E	240	
M200_46-1	Drift	DRIFT	28.03.2024 13:58	57° 34.40'N	019° 42.99'E	117	recovered
M200_46-2	Drift	CTD	28.03.2024 14:09	57° 34.41'N	019° 43.01'E	117	
M200_47-1	Drift	CTD	28.03.2024 17:18	57° 58.57'N	020° 02.24'E	152	
M200_47-2	Drift	DRIFT	28.03.2024 17:54	57° 58.57'N	020° 02.25'E	153	deployed
M200_48-1	TF0286	CTD	28.03.2024 18:48	58° 00.02'N	019° 53.99'E	194	
M200_48-2	TF0286	CTD	28.03.2024 20:51	58° 00.01'N	019° 53.99'E	195	
M200_48-3	TF0286	CTD	28.03.2024 21:40	58° 00.01'N	019° 53.99'E	195	
M200_48-4	TF0286	MUC	28.03.2024 22:55	58° 00.01'N	019° 53.99'E	194	
M200_48-5	TF0286	MSS	29.03.2024 00:03	57° 59.94'N	019° 54.13'E	195	
M200_48-6	TF0286	CTD	29.03.2024 05:00	58° 00.03'N	019° 54.04'E	194	
M200_48-7	TF0286	CTD	29.03.2024 07:21	58° 00.03'N	019° 54.04'E	195	
M200_48-8	TF0286	CTD	29.03.2024 11:03	58° 00.03'N	019° 54.04'E	195	
M200_48-9	TF0286	CTD	29.03.2024 12:50	58° 00.03'N	019° 54.04'E	195	
M200_48-10	TF0286	CTD	29.03.2024 16:56	58° 00.03'N	019° 54.04'E	195	
M200_48-11	TF0286	MSS	29.03.2024 17:48	57° 59.99'N	019° 53.98'E	196	
M200_48-12	TF0286	PCTD	29.03.2024 19:30	58° 00.03'N	019° 54.06'E	194	
M200_48-13	TF0286	MSS	30.03.2024 00:59	58° 00.05'N	019° 54.09'E	195	
M200_48-14	TF0286	CTD	30.03.2024 02:26	57° 59.98'N	019° 54.01'E	194	
M200_48-15	TF0286	CTD	30.03.2024 05:00	58° 00.00'N	019° 54.00'E	195	
M200_48-16	TF0286	CTD	30.03.2024 06:22	58° 00.01'N	019° 54.00'E	194	
M200_48-17	TF0286	CTD	30.03.2024 10:48	58° 00.01'N	019° 54.00'E	195	
M200_49-1	Drift	MSS	30.03.2024 12:46	57° 55.44'N	020° 09.45'E	261	
M200_49-2	Drift	DRIFT	30.03.2024 13:52	57° 54.59'N	020° 09.56'E	272	recovered
M200_50-1	TF0284a	CTD	31.03.2024 11:03	58° 32.69'N	018° 14.08'E	369	
M200_50-2	TF0284a	CTD	31.03.2024 13:20	58° 32.69'N	018° 14.08'E	350	
M200_50-3	TF0284a	MUC	31.03.2024 15:30	58° 32.69'N	018° 14.08'E	349	
M200_50-4	TF0284a	CTD	31.03.2024 16:22	58° 32.69'N	018° 14.08'E	370	
M200_50-5	TF0284a	MSS	31.03.2024 17:18	58° 32.67'N	018° 14.16'E	316	
M200_50-6	TF0284a	PCTD	31.03.2024 18:41	58° 32.70'N	018° 14.06'E	378	
M200_50-7	TF0284a	MSS	31.03.2024 23:57	58° 32.78'N	018° 14.19'E	327	



M200_50-8	TF0284a	CTD	01.04.2024 01:12	58° 32.68'N	018° 14.07'E	373	
M200_50-9	TF0284a	MSS	01.04.2024 03:03	58° 32.73'N	018° 14.12'E	365	
M200_50-10	TF0284a	CTD	01.04.2024 03:59	58° 32.70'N	018° 14.03'E	383	
M200_50-11	TF0284a	CTD	01.04.2024 06:34	58° 32.70'N	018° 14.03'E	381	
M200_50-12	TF0284a	CTD	01.04.2024 10:35	58° 32.70'N	018° 14.04'E	378	
M200_50-13	TF0284a	CTD	01.04.2024 12:09	58° 32.70'N	018° 14.04'E	377	
M200_50-14	TF0284a	CTD	01.04.2024 14:34	58° 32.69'N	018° 14.04'E	378	
M200_50-15	TF0284a	CTD	01.04.2024 17:04	58° 32.69'N	018° 14.04'E	374	
M200_51-1	TF0286	CTD	02.04.2024 00:21	58° 00.01'N	019° 54.07'E	194	
M200_51-2	TF0286	SCF	02.04.2024 01:55	58° 02.04'N	019° 57.42'E	176	deployed
M200_52-1	SF001	SCF	04.04.2024 00:53	56° 40.17'N	019° 37.73'E	143	
M200_53-1	Inf_05	MSS	04.04.2024 09:57	56° 17.06'N	019° 19.71'E	130	
M200_53-2	Inf_05	PCTD	04.04.2024 11:28	56° 17.17'N	019° 19.76'E	130	aborted
M200_53-3	Inf_05	CTD	04.04.2024 13:03	56° 17.11'N	019° 19.71'E	129	
M200_53-4	Inf_05	CTD	04.04.2024 14:45	56° 17.11'N	019° 19.71'E	129	
M200_53-5	Inf_05	CTD	04.04.2024 17:06	56° 17.11'N	019° 19.71'E	131	
M200_54-1	Inf_09	MSS	04.04.2024 18:19	56° 16.66'N	019° 19.34'E	130	transect
M200_55-1	Inf_04	CTD	05.04.2024 10:04	56° 23.33'N	019° 24.48'E	136	
<b>Station No.</b>	<b>Station name</b>	<b>Gear</b>	<b>Date/Time</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Water Depth</b>	<b>Remarks</b>
<b>METEOR</b>	<b>IOW</b>		<b>[UTC]</b>			<b>[m]</b>	
M200_55-2	Inf_04	CTD	05.04.2024 10:33	56° 23.33'N	019° 24.50'E	136	
M200_55-3	Inf_04	CTD	05.04.2024 11:52	56° 23.33'N	019° 24.50'E	136	
M200_55-4	Inf_04	DRIFT	05.04.2024 12:51	56° 23.31'N	019° 24.52'E	136	deployed
M200_55-5	Inf_04	CTD	05.04.2024 14:23	56° 23.30'N	019° 24.53'E	136	
M200_55-6	Inf_04	CTD	05.04.2024 16:11	56° 23.30'N	019° 24.53'E	135	
M200_55-7	Inf_04	MSS	05.04.2024 16:40	56° 23.28'N	019° 24.47'E	136	
M200_55-8	Inf_04	MUC	05.04.2024 18:12	56° 23.33'N	019° 24.52'E	135	
M200_56-1	Inf_08	SCF	05.04.2024 20:35	56° 14.55'N	019° 47.57'E	55	
M200_57-1	Inf_05	MSS	06.04.2024 03:18	56° 17.13'N	019° 20.09'E	130	
M200_57-2	Inf_05	MUC	06.04.2024 04:50	56° 17.10'N	019° 19.72'E	130	
M200_58-1	Inf_03	CTD	06.04.2024 07:06	56° 33.01'N	019° 31.45'E	144	
M200_58-2	Inf_03	CTD	06.04.2024 08:49	56° 33.02'N	019° 31.45'E	145	
M200_58-3	Inf_03	CTD	06.04.2024 11:09	56° 33.02'N	019° 31.45'E	144	
M200_58-4	Inf_03	MSS	06.04.2024 12:33	56° 33.02'N	019° 31.27'E	144	
M200_59-1	Inf_02	CTD	06.04.2024 15:32	56° 45.59'N	019° 44.91'E	152	
M200_59-2	Inf_02	CTD	06.04.2024 16:45	56° 45.59'N	019° 44.90'E	152	
M200_59-3	Inf_02	CTD	06.04.2024 18:40	56° 45.60'N	019° 44.90'E	152	
M200_59-4	Inf_02	MSS	06.04.2024 19:20	56° 45.53'N	019° 44.89'E	153	
M200_60-1	Drift	MSS	06.04.2024 23:39	56° 14.97'N	019° 45.32'E	62	
M200_60-2	Drift	MSS	07.04.2024 11:39	56° 22.85'N	019° 32.04'E	137	
M200_60-3	Drift	DRIFT	07.04.2024 13:13	56° 22.84'N	019° 33.82'E	135	recovered
M200_61-1	TF0213	CTD	08.04.2024 06:00	55° 15.00'N	015° 58.97'E	91	