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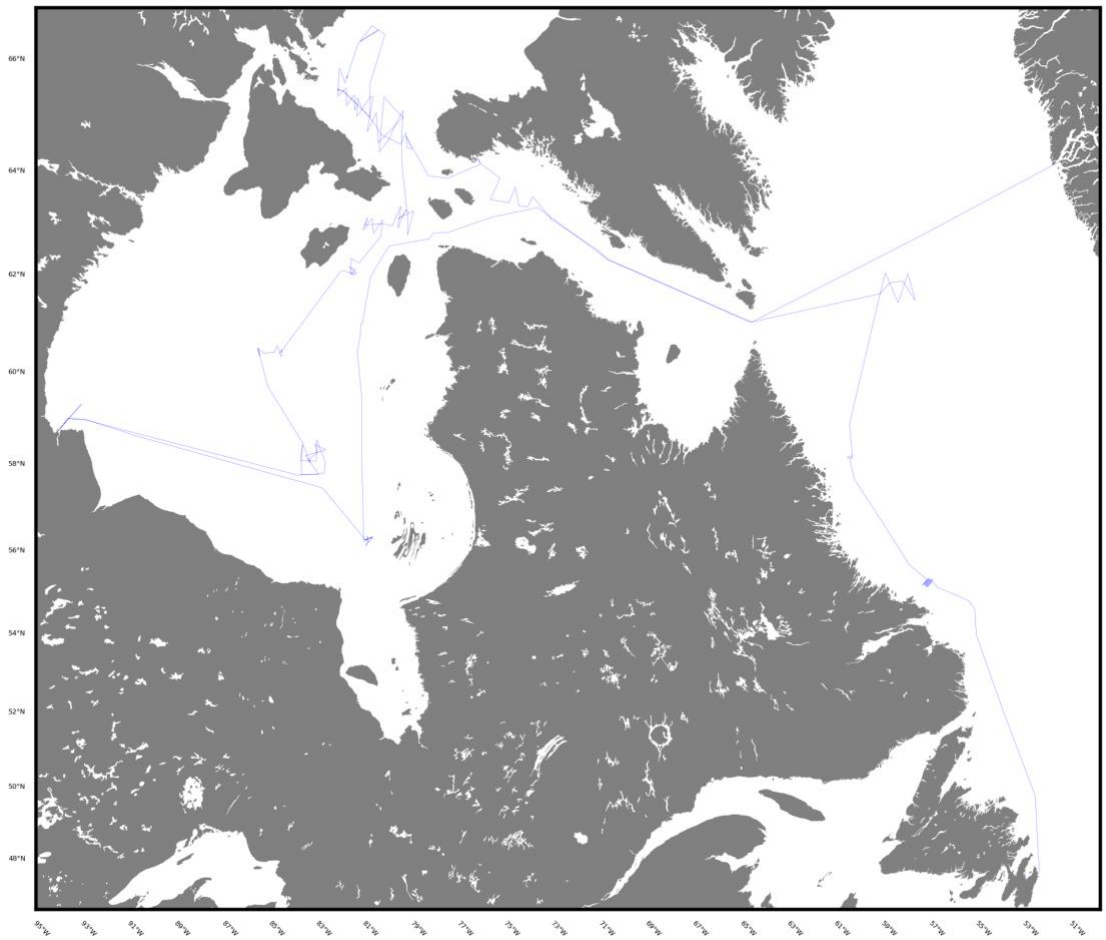
Short Cruise Report
RV MARIA S. MERIAN cruise MSM120

St. John´s (Canada) – Nuuk (Greenland)
15.08.2023 – 20.09.2023
Chief Scientist: Prof. Dr. Ralph Schneider
Captain: Ralf Schmidt

Cruise track MSM120

HuBS
Hudson Bay System



Objectives

Freshwater discharge through the Canadian Arctic Archipelago (CAA) feeds the Labrador Current (LC), a western boundary current of the Subpolar Gyre (SPG), thus affecting directly the ocean circulation pattern and deep-water formation in the subpolar North Atlantic Ocean. In addition to the North Atlantic's well-known 20th century salinity anomalies (GSAs), several studies documented a high latitude surface ocean freshening. This freshening is partly attributed to enhanced Greenland Ice Sheet melt and Arctic Ocean sea-ice retreat that might result in increased volume transport of Arctic freshwater via the CAA route. These waters are colder and fresher than those advected into the North Atlantic Ocean through Fram Strait via the East Greenland Current (EGC), and therefore, constitute a more direct impact on Labrador Sea Water formation and Deep Convection in the Labrador Sea. The rate of deep convection and heat loss/storage in the Labrador Sea also influences the SPG strength. A freshening of the North Atlantic may lead to a slowdown of the Atlantic Meridional Overturning Circulation (AMOC). Also, for past centuries and millenia weakening of the AMOC is suggested to have occurred in response to catastrophic freshwater drainage, e.g., during the early Holocene when proglacial lakes Agassiz and Ojibway drained through Hudson Strait. This outburst is thought to have triggered the cold event around 8.2 ka by diminishing heat exchange with the atmosphere. However, uncertainties exist regarding the origin of the '8.2 ka event' and of other Holocene likely freshwater induced cooling events, e.g., around 2.8 ka BP. A proper investigation of the regional development and pathways of freshwater pulses into the North Atlantic Ocean is thus required, based on high-resolution multi-proxy studies with a sound chronology along the main freshwater routes and in sensitive areas, such as Hudson Bay and Northwest Passage. However, only few studies have yet been conducted within this ´western´ western freshwater route. Therefore, expedition MSM120 and associated post-cruise work aim to improve our knowledge on the postglacial development within the HBS, i.e., Hudson Strait, Foxe Trough, Hudson Bay by studying i) early/mid Holocene proglacial freshwater outbursts recorded in Hudson Bay and Hudson Strait sediments, ii) documentation of Late Holocene freshwater events, and iii) recent/ sub-recent and past changes in deep-water formation and estuarine circulation and related coastal ecosystem response in the Hudson Bay System (HuBS). For this purpose, we collected new short and long sediment cores from key locations within the HuBS that were identified beforehand by detailed hydroacoustic surveys with the shipboard multibeam swath bathymetry and sediment echosounder systems. The bathymetric mapping also served the identification of glacial and postglacial features, e.g., iceberg scours, glacier striation on bedrocks, and meltwater channels, characterising the sea-floor in Hudson Bay.

Narrative

Expedition MSM120 started at Tuesday, August 15th 2023, leaving the port of St. John´s, Newfoundland, in the early afternoon. The day before, the scientific crew embarked the vessel after all the scientific equipment was taken onboard. The first two days at sea, heading towards the Labrador Shelf, were spent preparing the laboratories for the hydroacoustic surveys, for the water column and geological sampling. On Thursday, August 17th, hydroacoustic surveys using the shipboard ADCP (Acoustic Doppler Current Profiler), seafloor multibeam swath bathymetry, and sediment echosounder systems were started along the southern Labrador Shelf, the first work area planned. ADCP data will be transferred and stored directly into the data archive of the German Alliance for Marine Research (DAM) on the PANGAEA platform at the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven. The new data from multibeam swath bathymetry and sediment echosounder surveys will complete existing data sets already gained during the former MARIA S. MERIAN cruises MSM45, 46, and 84. These were accomplished to reconstruct the extension of the land-based Laurentide Ice Sheet onto the Labrador Shelf

at glacial sea-level low-stand by mapping out the grounding line wedges of the former ice margin.

The hydroacoustic surveying on the Labrador Shelf continued until Friday noon, August, 18th, in northerly direction. After a transit towards the next work area east of Hudson Strait, a first CTD station was performed in the Labrador Basin at 2200 m water depth on Sunday, August 20th. This station will provide the water mass properties characteristic for the central Labrador Sea, for comparison with those prevailing in the HuBS. Afterwards, we continued with the hydroacoustic surveying in order to identify geological sampling locations suitable for retrieving undisturbed postglacial sediment archives for palaeoceanographic reconstructions in the deeper Labrador Basin. We started our station work for water column and near-surface sediment sampling on Monday, August, 21st. At two locations at about 2200 and 2300 water depth, east of the outlet of Hudson Strait towards the Labrador Margin, the CTD, multicorer and a 15m long gravity corer were successfully deployed. The CTD profiles indicate the two major water masses characteristic for the open Labrador Sea, with the cold and high saline intermediate and deep waters, superimposed by a warmer, but low saline, surface layer. The deployments of the multicorer and gravity corer, with core lengths of up to 11 m, provided soft hemipelagic clayey muds, typical for the Labrador Sea region with Last Glacial brownish sediments, containing silty and sandy Heinrich Layers due to ice-berg drift of terrigenous detritus, that are superimposed by Holocene darker clayey muds. At Tuesday, August 22nd, we continued the hydroacoustic surveying in the northernmost part of the work area A on the Labrador Shelf, with a westerly heading towards Hudson Strait. The echosounder profiles revealed the coverage of the entire upper slope with debris flows and turbidites, originating from the transport and deposition of vast amounts of glacier debris during the Laurentian Glaciation and postglacial sea-level rise. During the night from Tuesday to Wednesday, August, 23rd, the hydroacoustic surveying on the Labrador Shelf was finished at the entrance of Hudson Strait. It was followed by a 4-days transit through Hudson Strait towards the southern Hudson Bay, west of Belcher Islands.

The southernmost work area close to James Bay was reached on Sunday, August 28th. We had planned to carry out Multibeam and echosounder surveys to identify basins with muddy depocenters that contain a sedimentary record of the current warm period, the Holocene. However, due to unforeseen problems with receiving the official working permits for the Hudson Bay, islands, and the adjacent by Canada's indigenous communities that possess the land owner´s rights, the intended work program had to be delayed. After continuous email communication and video-based discussion from the vessel to the representatives of the indigenous communities and the Canadian regulatory bodies, we finally received a work permit on the evening of Friday, September 1st. As a second drawback, several members of the science and ships' crew showed signs of covid-19 infection, soon after departure from St. John's. Appropriate protocols such as testing of all personnel (PCR and antigen tests), masking and social distancing, as well as isolation of infected persons were implemented immediately. This rapid response helped to contain the spread of the virus to a few persons with few-like symptoms only. In addition, we had to visit the port of Churchill, approximately 350 nm to the southwest, to allow a crew member to disembark because of illness. Finally, the research program resumed on Tuesday evening, September 5th, after transiting back to the work area in the Winisk Trough and the central Hudson Bay. Here, we started the hydroacoustic surveys and geological station work in small basins, carved by meltwater streams into the underlying Late Pleistocene till deposits. The valleys were inspected for postglacial and complete sequences of Holocene sediments. However, none of the surveyed basins in the central Hudson Bay contained any Holocene deposits of reasonable thickness. Instead after a few centimeters of depth, all multicorer short tubes reached into the surface of glacial till layers. Die CTD profiles at all stations documented a pronounced thermocline at about 30 m water depth, with a low saline and relatively warm surface layer,

underlain by higher saline, but very cold subsurface waters down to the seafloor at about 200 to 270 m basin depth.

On Saturday, September 9th, the third work area between Coats and Mansell Islands, containing about 10 m thick postglacial sediments in a glacier channel that was mapped and sampled with the multicorer and gravity corer. These sediments are very soft, olive-green to gray muds, characterized by strong bioturbation and rarely containing rock fragments, and represent the youngest Holocene sediments on top of the glacial tills. Sunday, September 10th, the hydroacoustic surveys and geological sampling were continued in a 300 m deep, west-east stretching basin north of Coats and Mansell Islands. At two stations, up to 10 m long sediment cores were retrieved, containing again postglacial sands, silt and clay layers.

The last week from Monday, September 11th, to Friday, September, 15th, was dedicated to extensive hydroacoustic mapping and sampling of the water column and near-surface sediments in the Foxe Basin. Based on several N-S sediment echosounder surveys across the E-W stretching deeper part of the basin, different sedimentary facies with glacial tills at the base, superimposed by glaciomarine clays, silts, and sands could be identified. In the deepest parts of the basins (~ 400 m water depth) the latter are covered by Mid to Late Holocene hemipelagic, strongly bioturbated, soft muds. Along the basin fringes (~ 200-300 m water depth), the thickness of the Holocene muds is either strongly reduced or they are completely missing, due to strong erosion by bottom currents. In even shallower areas (~ 70-200 m), also the glaciomarine sediment layers are missing. Here, the glacial tills reach the sea-floor which is marked by many scours of drifting icebergs and sea-ice and covered by many ice-rafted fragments scraped from the surrounding Paleozoic and Proterozoic basement rocks. Nonetheless, we succeeded to core a 4m thick sequence of Holocene muds in the shallow region of the Foxe Basin near the Polar Circle.

The work program in the Foxe Basin was terminated Saturday morning, September, 16th north of Southampton Island, at the western entrance into Hudson Strait. During the following night and until Sunday afternoon, September, 17th, we executed further hydroacoustic surveying of the sea floor and sediments in the remaining work area of MSM120 within Hudson Strait. Here, the work program of MSM120 was finished with a final CTD and Water bottle sampling, as well as with multicorer deployments. As planned, the arrival at our final destination Nuuk Harbor at the west coast of Greenland took place Wednesday morning, September 20th. Despite the missing work licenses at the beginning of the cruise we were able to conduct most of the planned work in a very successful manner and to reach the essential goals identified for MSM120 beforehand.

Acknowledgements

On behalf of the scientific crew members, I would like to thank all the authorities and the German Research Fleet Coordination Centre (Universität Hamburg) involved in the planning and execution of the cruise, as well as Captain R. Schmidt, the crew of RV MARIA S. MERIAN and BRIESE Research for their strong engagement and support, which has made cruise MSM120 a very successful scientific expedition, despite several delays in the execution of the planned work program.

Participant List, MSM120

1.	Schneider, Ralph	*Chief Scientist*	CAU
2.	Bauer, Benedikt	Hydroacoustics	CAU
3.	Besancon, Robin	Ornithology	ENVCA
4.	Blanz, Thomas	Palaeoceanography	CAU
5.	Brembach, Kerstin	Hydroacoustics	ULAVAL
6.	Hand, Ines	Geochemistry	IOW
7.	Hehl, Uwe	Geology, gear deployment	IOW
8.	Huygen, Finn	Sediment sampling	CAU
9.	Kienast, Stephanie	CTD, oceanography	DAL
10.	Kolling, Henriette	Palaeoceanography	CAU
11.	Lenz, Kai-Frederik	Hydroacoustic	CAU
12.	Matzerath, Peter	Sediment sampling	CAU
13.	Mikler, Monika	Palaeoceanography	AWI
14.	Moros, Matthias	Sedimentology	IOW
15.	Neumann, Thomas	CTD, oceanography	IOW
16.	Papenmeier, Svenja	Hydroacoustics	IOW
17.	Schuffenhauer, Ingo	CTD, oceanography	IOW
18.	Thamm, Viktoria	Hydroacoustics	CAU
19.	To, Anna	Micropalaeontology	UQAM
20.	Soth, Aidan	CTD, oceanography	DAL

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Station List

Station List Maria S. Merian cruise MSM120:

Hydroacoustics: EM122: Multibeam / P70: PARASOUND; Geological sampling, CTD/Rosette: Conductivity, Temperatur, and Depth Sonde, Water Bottle Sampler, Multicorer, and Gravity corer.

Date / Time	Station	Sounding/Gear	Position	Position	Depth	Course	Remark
[UTC]	No.		Lat	Lon	[m]	[°]	
17.08.23 07:32	MSM120_1-1, -2	EM122/P70	53° 57,653' N	055° 15,912' W	250	347	profile start
17.08.23 19:18	MSM120_1-1, -2	EM122/P70	55° 16,302' N	057° 08,454' W	267	244	profile end
17.08.23 19:19	MSM120_2-1, -2	EM122/P70	55° 16,285' N	057° 08,502' W	266	234	profile start
18.08.23 13:55	MSM120_2-1, -2	EM122/P70	55° 19,022' N	057° 21,361' W	148	43	profile end
18.08.23 13:56	MSM120_3-1, -2	EM122/P70	55° 19,026' N	057° 21,355' W	148	41	profile start
19.08.23 17:25	MSM120_3-1, -2	EM122/P70	58° 54,034' N	060° 38,916' W	195	357	profile end
20.08.23 10:07	MSM120_4-1	CTD	61° 24,648' N	059° 27,639' W	2280	157	max depth/on ground
20.08.23 11:05	MSM120_5-1, -2	EM122/P70	61° 24,650' N	059° 27,711' W	2277	29	profile start
21.08.23 09:35	MSM120_5-1, -2	EM122/P70	61° 52,807' N	058° 22,923' W	2432	326	profile end
21.08.23 12:13	MSM120_6-1	CTD	61° 51,051' N	058° 56,780' W	2300	79	max depth/on ground
21.08.23 13:57	MSM120_6-2	Multi Corer	61° 51,054' N	058° 56,781' W	2300	291	max depth/on ground
21.08.23 15:41	MSM120_6-3	Multi Corer	61° 51,052' N	058° 56,783' W	2302	347	max depth/on ground
21.08.23 17:23	MSM120_6-4	Gravity Corer 12 m	61° 51,049' N	058° 56,779' W	2298	289	max depth/on ground
21.08.23 20:40	MSM120_7-1	Multi Corer	61° 37,916' N	059° 20,891' W	2216	198	max depth/on ground
21.08.23 22:18	MSM120_7-2	Multi Corer	61° 37,919' N	059° 20,887' W	2216	231	max depth/on ground
21.08.23 23:48	MSM120_7-3	Gravity Corer 12 m	61° 37,917' N	059° 20,888' W	2217	213	max depth/on ground
22.08.23 01:44	MSM120_7-4	CTD	61° 37,772' N	059° 20,670' W	2219	112	max depth/on ground
22.08.23 02:34	MSM120_8-1, -2	EM122/P70	61° 37,643' N	059° 21,077' W	2220	259	profile start
22.08.23 10:18	MSM120_8-1, -2	EM122/P70	61° 24,689' N	061° 28,039' W	587	258	profile end
22.08.23 13:17	MSM120_9-1, -2	EM122/P70	61° 18,098' N	062° 30,392' W	0	258	profile start
22.08.23 18:54	MSM120_9-1, -2	EM122/P70	61° 08,386' N	064° 01,165' W	458	256	profile end
05.09.23 23:33	MSM120_10-1	CTD	57° 45,852' N	084° 06,158' W	167	306	max depth/on ground
06.09.23 00:28	MSM120_11-1, -2	EM122/P70	57° 45,800' N	084° 06,184' W	165	285	profile start
06.09.23 13:31	MSM120_11-1, -2	EM122/P70	58° 26,735' N	083° 20,162' W	177	297	profile end
06.09.23 14:50	MSM120_12-1	Gravity Corer 12 m	58° 16,330' N	083° 15,167' W	179	111	max depth/on ground
06.09.23 15:38	MSM120_13-1	CTD	58° 16,598' N	083° 13,338' W	179	36	max depth/on ground
06.09.23 16:03	MSM120_13-2	Multi Corer	58° 16,601' N	083° 13,342' W	180	208	max depth/on ground
06.09.23 16:34	MSM120_13-3	Multi Corer	58° 16,608' N	083° 13,347' W	180	68	max depth/on ground
06.09.23 18:34	MSM120_14-1	Gravity Corer 6 m	58° 06,129' N	083° 37,292' W	182	84	max depth/on ground
06.09.23 19:37	MSM120_15-1	CTD	58° 03,119' N	083° 33,183' W	184	268	max depth/on ground
06.09.23 20:10	MSM120_15-2	Multi Corer	58° 03,119' N	083° 33,182' W	185	34	max depth/on ground
06.09.23 20:42	MSM120_15-3	Multi Corer	58° 03,124' N	083° 33,187' W	185	196	max depth/on ground
06.09.23 21:39	MSM120_15-4	Gravity Corer 6 m	58° 03,127' N	083° 33,189' W	185	331	max depth/on ground
07.09.23 00:27	MSM120_16-1, -2	EM122/P70	58° 26,223' N	083° 52,515' W	149	189	profile start
07.09.23 15:15	MSM120_16-1, -2	EM122/P70	57° 46,045' N	083° 55,779' W	171	267	profile end
07.09.23 15:33	MSM120_17-1	CTD	57° 46,049' N	083° 55,801' W	171	282	max depth/on ground
07.09.23 15:56	MSM120_17-2	Multi Corer	57° 46,049' N	083° 55,801' W	171	230	max depth/on ground
07.09.23 16:28	MSM120_17-3	Multi Corer	57° 46,055' N	083° 55,802' W	170	238	max depth/on ground
07.09.23 16:56	MSM120_17-4	Gravity Corer 6 m	57° 46,055' N	083° 55,792' W	171	112	max depth/on ground
07.09.23 19:44	MSM120_18-1, -2	EM122/P70	58° 17,619' N	083° 53,611' W	128	6	profile start
07.09.23 20:46	MSM120_18-1, -2	EM122/P70	58° 28,099' N	083° 51,153' W	152	5	profile end

Date / Time	Station	Sounding/Gear	Position	Position	Depth	Course	Remark
[UTC]	No.		Lat	Lon	[m]	[°]	
08.09.23 03:35	MSM120_19-1, -2	EM122/P70	59° 42,512' N	085° 20,711' W	162	327	profile start
08.09.23 09:52	MSM120_19-1, -2	EM122/P70	60° 31,211' N	085° 46,031' W	176	328	profile end
08.09.23 11:13	MSM120_20-1	CTD	60° 21,872' N	085° 41,107' W	183	240	max depth/on ground
08.09.23 12:09	MSM120_20-2	CTD	60° 21,872' N	085° 41,106' W	183	138	max depth/on ground
08.09.23 12:30	MSM120_20-3	Multi Corer	60° 21,871' N	085° 41,107' W	184	220	max depth/on ground
08.09.23 13:00	MSM120_20-4	Multi Corer	60° 21,868' N	085° 41,100' W	184	247	max depth/on ground
08.09.23 13:21	MSM120_20-5	Gravity Corer 6 m	60° 21,865' N	085° 41,097' W	184	237	max depth/on ground
08.09.23 13:39	MSM120_21-1, -2	EM122/P70	60° 21,860' N	085° 41,087' W	183	145	profile start
08.09.23 20:12	MSM120_21-1, -2	EM122/P70	60° 29,228' N	084° 44,456' W	179	347	profile end
08.09.23 21:09	MSM120_22-1	CTD	60° 24,697' N	084° 49,861' W	187	201	max depth/on ground
08.09.23 21:27	MSM120_22-2	Multi Corer	60° 24,697' N	084° 49,861' W	187	220	max depth/on ground
08.09.23 21:53	MSM120_22-3	Multi Corer	60° 24,693' N	084° 49,851' W	186	7	max depth/on ground
08.09.23 22:19	MSM120_22-4	Gravity Corer 6 m	60° 24,691' N	084° 49,841' W	187	256	max depth/on ground
09.09.23 09:04	MSM120_23-1, -2	EM122/P70	62° 05,639' N	082° 13,456' W	179	87	profile start
09.09.23 14:34	MSM120_23-1, -2	EM122/P70	62° 00,140' N	081° 41,232' W	214	93	profile end
09.09.23 15:26	MSM120_24-1	CTD	62° 02,393' N	081° 48,919' W	225	91	max depth/on ground
09.09.23 16:16	MSM120_24-2	CTD	62° 02,393' N	081° 48,918' W	224	210	max depth/on ground
09.09.23 16:41	MSM120_24-3	Multi Corer	62° 02,392' N	081° 48,920' W	224	99	max depth/on ground
09.09.23 17:11	MSM120_24-4	Multi Corer	62° 02,395' N	081° 48,911' W	224	199	max depth/on ground
09.09.23 17:34	MSM120_24-5	Gravity Corer 6 m	62° 02,400' N	081° 48,918' W	224	329	max depth/on ground
09.09.23 18:07	MSM120_24-6	Gravity Corer 12 m	62° 02,403' N	081° 48,909' W	224	305	max depth/on ground
09.09.23 20:09	MSM120_25-1	Multi Corer	62° 19,910' N	081° 48,263' W	118	252	max depth/on ground
09.09.23 20:29	MSM120_25-2	Multi Corer	62° 19,918' N	081° 48,256' W	118	88	depth ground/empty
09.09.23 21:34	MSM120_26-1, -2	EM122/P70	62° 14,667' N	081° 28,528' W	215	117	profile start
10.09.23 10:13	MSM120_26-1, -2	EM122/P70	63° 06,917' N	081° 07,153' W	239	37	profile end
10.09.23 11:11	MSM120_27-1	CTD	63° 01,816' N	081° 11,597' W	273	270	max depth/on ground
10.09.23 11:36	MSM120_27-2	Multi Corer	63° 01,817' N	081° 11,596' W	321	334	max depth/on ground
10.09.23 12:06	MSM120_27-3	Multi Corer	63° 01,820' N	081° 11,606' W	273	311	max depth/on ground
10.09.23 12:34	MSM120_27-4	Gravity Corer 12 m	63° 01,822' N	081° 11,620' W	273	165	max depth/on ground
10.09.23 13:30	MSM120_28-1	Gravity Corer 6 m	62° 58,911' N	081° 14,038' W	257	16	max depth/on ground
10.09.23 15:56	MSM120_29-1	CTD	63° 00,454' N	080° 29,141' W	277	37	max depth/on ground
10.09.23 16:22	MSM120_29-2	Multi Corer	63° 00,455' N	080° 29,139' W	277	89	max depth/on ground
10.09.23 16:52	MSM120_29-3	Multi Corer	63° 00,457' N	080° 29,150' W	277	34	max depth/on ground
10.09.23 17:24	MSM120_29-4	Gravity Corer 12 m	63° 00,451' N	080° 29,153' W	277	59	max depth/on ground
10.09.23 17:52	MSM120_30-1, -2	EM122/P70	63° 00,583' N	080° 28,719' W	276	111	profile start
11.09.23 08:08	MSM120_30-1, -2	EM122/P70	63° 14,878' N	079° 09,459' W	220	349	profile end
11.09.23 10:06	MSM120_31-1	Multi Corer	63° 07,165' N	079° 45,949' W	278	62	max depth/on ground
11.09.23 10:40	MSM120_32-1	Gravity Corer 6 m	63° 06,841' N	079° 46,055' W	278	209	max depth/on ground
11.09.23 11:28	MSM120_33-1	CTD	63° 05,460' N	079° 46,499' W	276	40	max depth/on ground
11.09.23 11:55	MSM120_33-2	Multi Corer	63° 05,460' N	079° 46,500' W	276	66	max depth/on ground
11.09.23 12:27	MSM120_33-3	Multi Corer	63° 05,459' N	079° 46,512' W	276	148	max depth/on ground
11.09.23 12:58	MSM120_33-4	Gravity Corer 12 m	63° 05,459' N	079° 46,523' W	276	326	max depth/on ground
11.09.23 14:38	MSM120_34-1	CTD	63° 15,416' N	079° 26,848' W	228	323	max depth/on ground
11.09.23 14:54	MSM120_34-2	Multi Corer	63° 15,417' N	079° 26,852' W	228	12	max depth/on ground
11.09.23 15:15	MSM120_34-3	Multi Corer	63° 15,417' N	079° 26,866' W	228	264	max depth/on ground

Date / Time	Station	Sounding/Gear	Position	Position	Depth	Course	Remark
[UTC]	No.		Lat	Lon	[m]	[°]	
11.09.23 15:33	MSM120_34-4	Gravity Corer 12 m	63° 15,417' N	079° 26,873' W	228	92	max depth/on ground
11.09.23 20:21	MSM120_35-1, -2	EM122/P70	64° 07,223' N	079° 38,906' W	316	360	profile start
12.09.23 13:22	MSM120_35-1, -2	EM122/P70	65° 20,297' N	080° 25,017' W	131	3	profile end
12.09.23 16:26	MSM120_36-1	CTD	64° 58,885' N	079° 36,711' W	222	345	max depth/on ground
12.09.23 17:08	MSM120_36-2	Multi Corer	64° 58,556' N	079° 36,675' W	223	332	max depth/on ground
12.09.23 17:44	MSM120_36-3	Gravity Corer 6 m	64° 58,735' N	079° 36,641' W	224	134	max depth/on ground
12.09.23 18:38	MSM120_36-4	Gravity Corer 6 m	64° 58,736' N	079° 36,650' W	223	32	max depth/on ground
12.09.23 22:34	MSM120_37-1, -2	EM122/P70	64° 31,323' N	080° 39,015' W	370	222	profile start
13.09.23 14:05	MSM120_37-1, -2	EM122/P70	65° 19,310' N	081° 32,459' W	346	6	profile end
13.09.23 15:40	MSM120_38-1	Multi Corer	65° 07,400' N	081° 21,032' W	440	200	max depth/on ground
13.09.23 16:10	MSM120_38-2	Multi Corer	65° 07,389' N	081° 21,069' W	441	253	max depth/on ground
13.09.23 16:40	MSM120_38-3	Multi Corer	65° 07,389' N	081° 21,104' W	442	63	max depth/on ground
13.09.23 17:11	MSM120_38-4	Gravity Corer 12 m	65° 07,389' N	081° 21,119' W	441	81	max depth/on ground
13.09.23 19:09	MSM120_39-1	Multi Corer	64° 58,857' N	081° 01,429' W	452	52	max depth/on ground
13.09.23 19:38	MSM120_39-2	Multi Corer	64° 58,856' N	081° 01,431' W	450	171	max depth/on ground
13.09.23 20:08	MSM120_39-3	Multi Corer	64° 58,855' N	081° 01,434' W	449	95	max depth/on ground
13.09.23 20:37	MSM120_39-4	Gravity Corer 12 m	64° 58,858' N	081° 01,450' W	449	195	max depth/on ground
13.09.23 21:46	MSM120_40-1	Gravity Corer 12 m	65° 00,738' N	081° 00,711' W	443	279	max depth/on ground
13.09.23 22:03	MSM120_41-1, -2	EM122/P70	65° 00,746' N	081° 00,739' W	444	328	profile start
14.09.23 10:48	MSM120_41-1, -2	EM122/P70	66° 18,649' N	081° 24,349' W	73	59	profile end
14.09.23 13:12	MSM120_42-1	CTD	66° 30,065' N	080° 38,962' W	104	226	max depth/on ground
14.09.23 13:38	MSM120_42-2	Multi Corer	66° 30,076' N	080° 38,935' W	103	360	max depth/on ground
14.09.23 13:58	MSM120_42-3	Multi Corer	66° 30,081' N	080° 38,939' W	104	41	max depth/on ground
14.09.23 14:17	MSM120_42-4	Gravity Corer 12 m	66° 30,081' N	080° 38,953' W	105	96	max depth/on ground
14.09.23 15:18	MSM120_43-1	Gravity Corer 6 m	66° 27,123' N	080° 50,672' W	105	49	max depth/on ground
14.09.23 17:05	MSM120_44-1, -2	EM122/P70	66° 18,208' N	081° 26,531' W	74	233	profile start
14.09.23 20:31	MSM120_44-1, -2	EM122/P70	65° 40,714' N	081° 58,971' W	187	21	profile end
14.09.23 20:58	MSM120_45-1	Multi Corer	65° 42,803' N	081° 57,893' W	203	299	max depth/on ground
14.09.23 21:24	MSM120_45-2	Multi Corer	65° 42,805' N	081° 57,905' W	203	239	max depth/on ground
14.09.23 21:44	MSM120_45-3	Gravity Corer 6 m	65° 42,810' N	081° 57,913' W	203	23	max depth/on ground
14.09.23 22:21	MSM120_45-4	CTD	65° 42,920' N	081° 58,296' W	203	37	max depth/on ground
14.09.23 22:46	MSM120_46-1, -2	EM122/P70	65° 40,909' N	081° 59,801' W	188	186	profile start
15.09.23 10:02	MSM120_46-1, -2	EM122/P70	65° 06,773' N	081° 39,549' W	372	69	profile end
15.09.23 11:08	MSM120_47-1	CTD	65° 12,868' N	081° 32,831' W	454	125	max depth/on ground
15.09.23 12:22	MSM120_47-2	CTD	65° 12,867' N	081° 32,832' W	453	67	max depth/on ground
15.09.23 12:56	MSM120_47-3	Multi Corer	65° 12,867' N	081° 32,832' W	454	343	max depth/on ground
15.09.23 13:28	MSM120_47-4	Multi Corer	65° 12,870' N	081° 32,842' W	454	51	max depth/on ground
15.09.23 14:04	MSM120_47-5	Gravity Corer 18 m	65° 12,875' N	081° 32,851' W	454	23	max depth/on ground
15.09.23 17:15	MSM120_48-1	CTD	65° 29,594' N	082° 21,603' W	354	118	max depth/on ground
15.09.23 17:38	MSM120_48-2	Multi Corer	65° 29,594' N	082° 21,603' W	354	306	max depth/on ground
15.09.23 18:06	MSM120_48-3	Multi Corer	65° 29,599' N	082° 21,604' W	354	65	max depth/on ground
15.09.23 18:35	MSM120_48-4	Gravity Corer 12 m	65° 29,604' N	082° 21,607' W	353	252	max depth/on ground
15.09.23 19:33	MSM120_49-1	Gravity Corer 6 m	65° 27,167' N	082° 21,965' W	356	37	max depth/on ground
15.09.23 20:00	MSM120_50-1, -2	EM122/P70	65° 28,378' N	082° 22,195' W	355	103	profile start
16.09.23 08:33	MSM120_50-1, -2	EM122/P70	64° 24,205' N	079° 13,927' W	292	44	profile end

Date / Time	Station	Sounding/Gear	Position	Position	Depth	Course	Remark
[UTC]	No.		Lat	Lon	[m]	[°]	
16.09.23 10:23	MSM120_51-1	CTD	64° 38,341' N	079° 28,470' W	283	178	max depth/on ground
16.09.23 10:57	MSM120_51-2	Multi Corer	64° 38,342' N	079° 28,477' W	283	204	max depth/on ground
16.09.23 11:22	MSM120_51-3	Multi Corer	64° 38,344' N	079° 28,470' W	282	148	max depth/on ground
16.09.23 11:46	MSM120_51-4	Gravity Corer 6 m	64° 38,335' N	079° 28,441' W	282	149	max depth/on ground
17.09.23 01:17	MSM120_52-1, -2	EM122/P70	63° 51,587' N	075° 29,539' W	225	214	profile start
17.09.23 15:09	MSM120_52-1, -2	EM122/P70	63° 06,088' N	073° 19,212' W	340	160	profile end
17.09.23 15:30	MSM120_53-1	CTD	63° 06,179' N	073° 19,935' W	341	291	max depth/on ground
17.09.23 16:16	MSM120_53-2	Multi Corer	63° 06,089' N	073° 19,187' W	339	223	max depth/on ground
17.09.23 16:41	MSM120_53-3	Multi Corer	63° 06,092' N	073° 19,200' W	339	334	max depth/on ground