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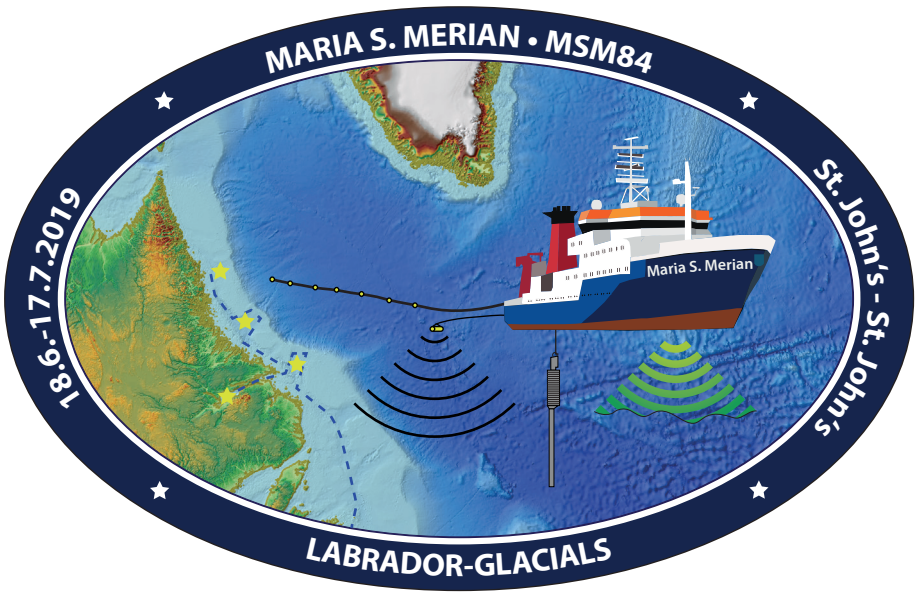
Short Cruise Report
RV Maria S. Merian cruise MSM84

St. John‘s, Canada – St. John’s, Canada
18 June 2019 - 17 July 2019
Chief Scientist: Catalina Gebhardt
Captain: Ralf Schmidt



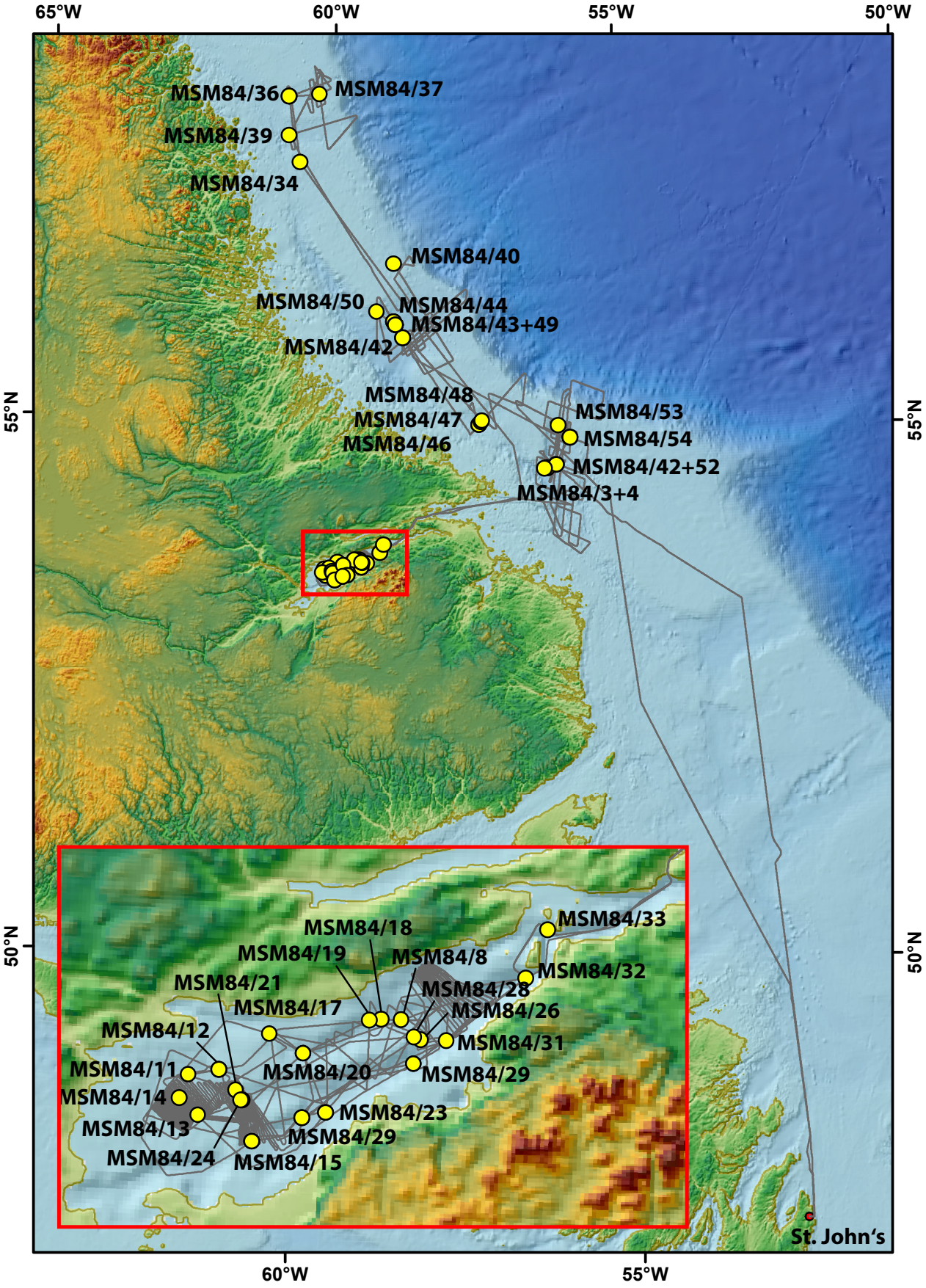


Fig. 1: *Ship's track during expedition MSM84. Inset shows enlarged view of Lake Melville. All stations are indicated with yellow dots.*

Objectives

The Eastern Canadian margin off Labrador is one of the key areas for paleoclimatic and paleoceanographic investigations as major past and recent ice sheets drain(ed) into this area, either directly (Laurentide Ice Sheet, LIS) or indirectly (Innuitian and Greenland ice sheets through Baffin Bay and Davis Strait). In addition, Hudson Bay located in the northernmost part of the Eastern Canadian margin is one of the major sources of freshwater input into the Labrador Sea and the North Atlantic. During the so-called 8.2 ka event, a large amount of freshwater was released to the Labrador Sea likely through a series of outburst events of Lake Agassiz-Objiway. This freshwater pulse has been hypothesized to have caused a reduction in the strength of the Atlantic meridional overturning circulation, leading to a reduction in northward heat transport. In the past decades, many studies have addressed the intercorrelations between the Laurentide Ice Sheet dynamics and Pleistocene and Holocene climate variability. Due to these studies, repeated collapses of the LIS may have resulted in Northern Hemisphere climate instabilities by releasing large volumes of freshwater into the North Atlantic. It was also shown that during the last glacial, intermediate water was not formed in the Labrador Sea as it is today. Hence, the dynamic behaviour of the LIS is key to the understanding of climate changes during the Quaternary. From this point of view, the Labrador coast and shelf deserve special attention, as they constituted a main terminus for the eastern LIS margin in the northwest North Atlantic Ocean.

Expedition MSM84 therefore had three overarching goals:

(1) Reconstruction of the maximum extent of the Laurentide Ice Sheet on the Labrador shelf, and its retreat history at the end of the last glacial towards the present-day coastline;
(2) Retreat history of the Laurentide Ice Sheet at the end of the last glacial inland of the present-day coastline in Lake Melville;
(3) Search for remnants (e.g. buried glacial features) from older glacials that overprinted the Labrador shelf and Lake Melville before the last glacial.

In order to achieve our goals, swath bathymetry, sediment echosounder, and high-resolution, shallow-penetration seismic reflection data were collected. These datasets were completed by geological samples (box cores, multi-cores, and gravity cores) for ground-truthing and for dating of glacial features. All data will be integrated in order to study glaciogenic landforms such as mega-scale glacial lineations, iceberg scours, subglacial drainage systems, and moraines. The spatial distribution of these features along with their exact age will allow the determination of the maximum ice extent, the location and lateral extent of ice streams, the nature of sub-glacial drainage systems, as well as the locations and timing of temporal stillstands and/or re-advances during the decay of the LIS at the end of the last and possibly also previous glaciations.

Narrative

On June 17, 2019, at 9:30, all scientists embarked RV *MARIA S. MERIAN*. Two Marine Mammal Observers joined during afternoon hours. Immediately after embarkation, scientists started to set up the seismic system, including seismic sources, streamers, and recording systems. At the same time, geological laboratories were equipped and geological coring tools were checked and installed. RV *MARIA S. MERIAN* left port on June 18, 9:30 local time, heading north to our first working area at Cartwright Saddle, which was reached on June 19 shortly before midnight. During transit, installation of the seismic and geological equipment continued. Upon arrival at the working area, we started with an overnight hydroacoustic survey to get a first impression of the Cartwright Saddle area. Based on the PARASOUND data, sediment cores were retrieved in the morning hours of June 20, followed by a second hydroacoustic survey. Our first seismic survey of Cartwright Saddle started on June 21 at 13:00 UTC and continued to June 25 at 11:00 UTC using our Sentinel streamer and a GI airgun. After all seismic equipment was on deck, we started our transit to Lake Melville. A technician from Sercel who had assisted in installing and testing the new high-resolution Sentinel streamer was brought to shore by the RV Maria S. Merian tender. After successful transfer, RV *MARIA S. MERIAN* continued to sail through “The Narrows” and towards the interior of Lake Melville.

Scientific work in the lake started on June 25 with an overnight hydroacoustic survey to get a first impression of the sediment characteristics and to start search for glacial features. Between June 26 and July 1, we alternated between coring and hydroacoustic surveys, accompanied by the frequent acquisition of velocity profiles of the water column for calibration of the multibeam system. All in all, we were able to take 5 gravity cores from glacial features that will be dedicated to characterize and date these features, and 5 longer gravity cores from sites where we expect relatively undisturbed sediments that date back beyond the deglaciation of the area. In addition, multi-corers were retrieved from 12 sites in the lake. The bathymetry survey added approx. 1650 km^2 of data to the previously existing Canadian bathymetry grid, and the lake is now almost completely mapped with exception of the southeasternmost area and the shallowest part of the lake that is inaccessible for RV *MARIA S. MERIAN* due to the ship’s draught. Along with the bathymetry data, we collected approx. 1720 km of PARASOUND profiles.

On July 1, after two last coring stations close to “The Narrows”, we left Lake Melville heading back to the Labrador Shelf. In the course of the week that we stayed in Lake Melville, ice conditions had significantly improved on the shelf. We therefore directly sailed to our northernmost working area around Okak Bank. Upon arrival at the Okak Bank area around noon on 2nd of July, we collected a water-column velocity profile to calibrate our multibeam system. Directly after, we started our next seismic survey using our Sentinel streamer system and a GI airgun. Acquisition of seismic data continued to July 4, 10:45 UTC. Based on the PARASOUND data that we collected along all seismic tracklines, locations for sediment core retrieval were chosen, and subsequently two multi-cores were taken from two stations on July 4. During the evening hours, a second, more detailed seismic survey from a small trough north of Okak Bank was started with our ultrahigh-resolution streamer and a Mini GI airgun, and continued to July 5, 18:15 UTC. Scientific work in our northernmost working area around Okak Bank was completed with a SVP profile to collect a calibration velocity profile for the multibeam system, and with a multi-core.

After 16 hours of transit to our central working area at Hopedale Saddle, we started our scientific work with a CTD velocity profile for calibration of the multibeam system. Immediately after, we deployed our seismic equipment and started our first survey in the central area using our Sentinel streamer and a GI airgun. Seismic data acquisition continued to shortly before midnight UTC on July 8. Based on the PARASOUND profiles collected during the two days of seismic data acquisition, we identified 3 coring locations, from which we retrieved 4 multi-cores and 3 long gravity cores. During this long and exhausting night filled with geological work, weather conditions steadily deteriorated.

With the weather forecast indicating bad conditions for another 24 hours in the Hopedale Saddle area, we decided to sail southwards to the northern tip of our southern working area (Cartwright Saddle), where we started our next seismic survey on 9th of July at 16:30 UTC, using the Sentinel streamer with a Mini GI airgun. After seismic profiling was finished some 26 hours later, we identified 5 geological stations from the PARASOUND data and retrieved 5 gravity cores, one multi-core and one box core both from the Cartwright Saddle and - after transit back to the central area - from the Hopedale Saddle working area.

Seismic work was resumed in the Hopedale Saddle area on July 11 at 18:30 UTC, again using the Sentinel streamer with a Mini GI airgun. On July 12, 20:45 UTC, we finished this seismic survey and started our transit back to the southernmost working area.

Work at Cartwright Saddle started with coring. Three coring locations were identified from PARASOUND data, and one multi-core, one box core, and two gravity cores could be retrieved. On July 13, 22:00 UTC, our last seismic survey with our ultrahigh-resolution streamer combined with a Mini GI airgun started and continued to July 15, 18:30 UTC. After retrieval of all seismic equipment, we started our transit back to St. John's. During transit, all onboard measurements were finished, and both geological and geophysical equipment were packed for shipping. St. John's was reached on July 17, ca. 11:00 UTC.

All in all, we were able to collect approx. 3000 km of seismic profiles from three glacial trough systems along the Labrador shelf. Along all seismic profiles, PARASOUND and multibeam bathymetry data were collected, and 4 box cores, 6 multi-cores, and 10 gravity cores were retrieved from the Labrador shelf.

Acknowledgements

We would like to thank Captain Ralf Schmidt, his officers and crew of RV *MARIA S. MERIAN* for their excellent support of our working program. We enjoyed the very friendly atmosphere on board.

Funding for ship time on RV *MARIA S. MERIAN* was provided by the *German Research Foundation* (DFG) within the core program *METEOR/MERIAN*. We also benefited from financial contributions by the research institutes involved. We gratefully acknowledge all this support. Many thanks go to the Nunatsiavut government and the Inuit communities of Labrador who allowed us to investigate the glacial history of Lake Melville.

Participants

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2. Dr. Felix Gross	Group leader seismics	CAU
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Station lists

Activity No.	Date / Time (UTC)	Device	Latitude	Longitude	Depth [m]	Comment
MSM84_4-1	6/20/2019 13:58	Box Corer	54°42.223'N	056°17.474'W	568.6	
MSM84_24-1	6/29/2019 12:49	Box Corer	53°41.224'N	059°40.535'W	49.3	
MSM84_49-1	7/11/2019 10:14	Box Corer	56°02.662'N	058°46.966'W	483.8	SVP
MSM84_53-1	7/13/2019 17:44	Box Corer	55°06.507'N	056°03.834'W	314	
MSM84_54-1	7/13/2019 19:07	Box Corer	54°59.714'N	055°52.332'W	297.9	
MSM84_3-2	6/20/2019 11:14	Gravity corer	54°42.671'N	056°14.936'W	574.9	
MSM84_3-3	6/20/2019 12:52	Gravity corer	54°42.671'N	056°14.937'W	572	
MSM84_9-2	6/26/2019 18:21	Gravity corer	53°45.178'N	059°13.378'W	215.4	
MSM84_12-1	6/27/2019 11:10	Gravity corer	53°44.024'N	059°44.228'W	55	
MSM84_12-2	6/27/2019 11:52	Gravity corer	53°44.023'N	059°44.229'W	58.5	
MSM84_14-1	6/27/2019 16:07	Gravity corer	53°41.214'N	059°50.331'W	86.2	
MSM84_18-1	6/28/2019 13:49	Gravity corer	53°49.250'N	059°18.759'W	222.6	
MSM84_19-1	6/28/2019 15:48	Gravity corer	53°49.128'N	059°20.660'W	192.5	
MSM84_21-1	6/28/2019 19:23	Gravity corer	53°42.158'N	059°41.424'W	73.9	
MSM84_24-2	6/29/2019 13:18	Gravity corer	53°41.244'N	059°40.369'W	72	
MSM84_26-1	6/30/2019 12:27	Gravity corer	53°47.467'N	059°12.387'W	228.9	
MSM84_28-1	6/30/2019 16:50	Gravity corer	53°47.694'N	059°13.482'W	162.1	
MSM84_42-2	7/9/2019 02:52	Gravity corer	55°55.512'N	058°39.074'W	548.3	
MSM84_43-3	7/9/2019 06:04	Gravity corer	56°02.666'N	058°46.981'W	484.1	
MSM84_44-2	7/9/2019 08:15	Gravity corer	56°04.456'N	058°48.990'W	428.5	
MSM84_46-2	7/10/2019 20:02	Gravity corer	55°06.960'N	057°22.132'W	355.1	
MSM84_47-1	7/10/2019 22:03	Gravity corer	55°08.425'N	057°19.921'W	338.5	
MSM84_48-1	7/11/2019 00:18	Gravity corer	55°09.225'N	057°18.711'W	334.7	
MSM84_49-2	7/11/2019 11:24	Gravity corer	56°02.662'N	058°46.969'W	484.5	
MSM84_50-1	7/11/2019 14:02	Gravity corer	56°09.919'N	059°06.112'W	321.7	
MSM84_52-2	7/13/2019 15:07	Gravity corer	54°44.368'N	056°05.719'W	475	
MSM84_54-2	7/13/2019 19:41	Gravity corer	54°59.714'N	055°52.333'W	297.5	
MSM84_3-1	6/20/2019 10:27	Multi Corer	54°42.671'N	056°14.936'W	574.6	
MSM84_8-1	6/26/2019 16:08	Multi Corer	53°49.271'N	059°15.548'W	206.3	SVP
MSM84_9-1	6/26/2019 17:38	Multi Corer	53°45.178'N	059°13.377'W	215.5	SVP
MSM84_11-1	6/27/2019 10:26	Multi Corer	53°43.434'N	059°48.995'W	134.3	SVP
MSM84_13-1	6/27/2019 14:06	Multi Corer	53°39.633'N	059°47.248'W	71.2	
MSM84_15-2	6/27/2019 18:43	Multi Corer	53°37.362'N	059°38.618'W	125	
MSM84_17-1	6/28/2019 10:14	Multi Corer	53°47.533'N	059°36.373'W	90.2	SVP
MSM84_20-2	6/28/2019 17:30	Multi Corer	53°45.793'N	059°30.909'W	150.2	
MSM84_23-2	6/29/2019 10:50	Multi Corer	53°40.309'N	059°27.082'W	177.5	
MSM84_29-3	6/30/2019 20:48	Multi Corer	53°39.760'N	059°30.799'W	145.8	
MSM84_31-1	7/1/2019 10:15	Multi Corer	53°47.453'N	059°08.319'W	215.9	
MSM84_32-1	7/1/2019 11:46	Multi Corer	53°53.533'N	058°56.018'W	207.3	
MSM84_33-1	7/1/2019 13:07	Multi Corer	53°58.128'N	058°52.720'W	132.5	
MSM84_36-2	7/4/2019 13:35	Multi Corer	58°09.633'N	060°46.801'W	238.5	
MSM84_37-1	7/4/2019 15:47	Multi Corer	58°11.513'N	060°14.466'W	241.4	SVP
MSM84_39-1	7/5/2019 22:08	Multi Corer	57°47.464'N	060°44.915'W	297.3	SVP
MSM84_42-1	7/9/2019 02:12	Multi Corer	55°55.513'N	058°39.065'W	548.8	SVP

Activity No.	Date / Time (UTC)	Device	Latitude	Longitude	Depth [m]	Comment
MSM84_43-1	7/9/2019 04:29	Multi Corer	56°02.663'N	058°46.977'W	483.6	
MSM84_43-2	7/9/2019 05:10	Multi Corer	56°02.665'N	058°46.983'W	491.3	
MSM84_44-1	7/9/2019 07:40	Multi Corer	56°04.455'N	058°48.989'W	428	SVP
MSM84_46-1	7/10/2019 19:28	Multi Corer	55°06.961'N	057°22.120'W	366.3	SVP
MSM84_52-1	7/13/2019 14:36	Multi Corer	54°44.367'N	056°05.720'W	466.8	

Tab. 1: *Geological station list. SVP was always mounted 30 m above the respective coring device.*

Activity No.	Date / Time (UTC)	Device	Latitude	Longitude	Depth [m]
MSM84_1-1	6/19/2019 13:07	XCTD	52°28.802'N	053°05.207'W	239.2
MSM84_15-1	6/27/2019 18:22	CTD	53°37.362'N	059°38.618'W	125
MSM84_20-1	6/28/2019 17:12	CTD	53°45.793'N	059°30.908'W	150.6
MSM84_23-1	6/29/2019 10:33	CTD	53°40.309'N	059°27.081'W	177.6
MSM84_29-2	6/30/2019 20:24	CTD	53°39.761'N	059°30.799'W	207.2
MSM84_34-1	7/2/2019 15:08	CTD	57°32.613'N	060°31.594'W	164.7
MSM84_36-1	7/4/2019 13:15	CTD	58°09.633'N	060°46.803'W	240.5
MSM84_40-1	7/6/2019 14:23	CTD	56°37.217'N	058°50.466'W	207.1
MSM84_56-1	7/14/2019 17:34	XCTD	54°56.536'N	056°04.486'W	358.2

Tab. 2: *CTD station list. XCTD = Expendable sound velocimeter.*

	Start			End			
Profile No.	Date	Time (UTC)	Latitude	Longitude	Time (UTC)	Latitude	Longitude
AWI-20190101	6/21/2019	13:06	54°04.347	056°07.838	17:06	54°23.668	056°05.733
AWI-20190102	6/21/2019	20:14	54°39.142	056°02.331	10:34	55°25.480	055°19.412
AWI-20190104	6/22/2019	10:34	55°25.480	055°19.412	13:31	55°10.075	055°21.068
AWI-20190105	6/22/2019	13:31	55°10.075	055°21.068	14:16	55°09.902	055°25.718
AWI-20190105_2	6/22/2019	14:34	55°10.350	055°27.667	21:26	55°20.255	056°11.210
AWI-20190106	6/22/2019	21:51	55°19.379	056°13.551	0:38	55°05.107	056°16.243
AWI-20190107	6/23/2019	00:38	55°05.107	056°16.243	6:10	54°54.785	055°34.487
AWI-20190108	6/23/2019	06:37	54°52.585	055°35.018	9:39	54°48.804	056°23.073
AWI-20190109	6/23/2019	09:39	54°39.120	055°41.126	14:34	54°48.804	056°23.073
AWI-20190110	6/23/2019	14:34	54°48.804	056°23.073	17:37	54°34.293	056°26.107
AWI-20190111	6/23/2019	17:37	54°34.293	055°38.533	22:52	54°24.255	055°42.979
AWI-20190112	6/23/2019	22:52	54°24.255	055°42.979	1:16	54°35.249	055°38.533
AWI-20190113	6/24/2019	01:16	54°35.249	055°38.533	4:01	54°41.081	055°59.737
AWI-20190114	6/24/2019	04:01	54°41.081	055°59.737	8:18	54°21.062	056°05.123
AWI-20190115	6/24/2019	08:18	54°21.062	056°05.123	10:46	54°16.153	055°44.011
AWI-20190116	6/24/2019	10:46	54°16.153	055°44.011	14:12	53°58.950	055°46.656
AWI-20190117	6/24/2019	14:12	53°58.950	055°46.656	15:21	54°00.181	055°54.507
AWI-20190118	6/24/2019	15:21	54°00.181	055°54.507	21:02	54°28.470	055°50.190
AWI-20190119	6/24/2019	21:02	54°28.470	055°50.190	21:40	54°29.580	055°55.038
AWI-20190120	6/24/2019	21:40	54°29.580	055°55.038	2:43	54°04.404	056°02.073
AWI-20190121	6/25/2019	02:43	54°04.404	056°02.073	8:26	54°27.525	056°19.374
AWI-20190122	6/25/2019	08:26	54°27.525	056°19.374	11:01	54°22.729	055°56.831

	Start			End			
Profile No.	**Date**	**Time (UTC)**	**Latitude**	**Longitude**	**Time (UTC)**	**Latitude**	**Longitude**
AWI-20190201	7/2/2019	17:56	57°45.416	060°36.152	23:59	58°15.197	060°49.261
AWI-20190202	7/2/2019	23:59	58°15.197	060°49.261	1:08	58°09.088	060°50.570
AWI-20190203	7/3/2019	01:08	58°09.088	060°50.570	7:08	58°20.661	060°03.751
AWI-20190204	7/3/2019	07:13	58°20.830	060°04.342	9:04	58°23.151	060°18.580
AWI-20190205	7/3/2019	09:04	58°23.151	060°18.580	17:25	57°41.078	060°01.948
AWI-20190206	7/3/2019	17:25	57°41.078	060°01.948	22:29	58°00.535	059°34.899
AWI-20190207	7/3/2019	22:33	58°00.535	059°34.899	7:01	57°47.439	060°44.920
AWI-20190208	7/4/2019	07:01	57°47.439	060°44.920	8:22	57°40.207	060°40.760
AWI-20190209	7/4/2019	08:45	57°40.410	060°37.769	10:46	57°49.652	060°40.596
AWI-20190301	7/4/2019	21:14	58°22.466	060°13.569	23:01	58°15.822	060°03.212
AWI-20190302	7/4/2019	23:01	58°15.822	060°03.212	2:32	58°08.049	060°27.685
AWI-20190303	7/5/2019	02:32	58°08.049	060°27.685	4:17	58°01.372	060°23.288
AWI-20190304	7/5/2019	04:17	58°01.372	060°23.288	4:34	58°01.178	060°21.125
AWI-20190305	7/5/2019	04:34	58°01.178	060°21.125	9:13	58°19.320	060°25.922
AWI-20190306	7/5/2019	09:13	58°19.320	060°25.922	9:37	58°19.934	060°23.181
AWI-20190307	7/5/2019	09:47	58°19.644	060°22.136	13:13	58°04.844	060°16.796
AWI-20190308	7/5/2019	13:13	58°04.844	060°16.796	14:18	58°06.477	060°08.724
AWI-20190309	7/5/2019	14:18	58°06.477	060°08.724	18:09	58°22.247	060°13.714
AWI-20190401	7/6/2019	15:32	56°32.840	058°44.956	3:00	55°43.328	057°48.898
AWI-20190402	7/7/2019	03:00	55°43.328	057°48.898	6:49	55°35.852	058°17,307
AWI-20190403	7/7/2019	06:49	55°35.852	058°17,307	17:39	56°17.760	059°06.306
AWI-20190404	7/7/2019	17:39	56°17.760	059°06.306	22:10	55°54.063	059°54,052
AWI-20190405	7/7/2019	22:10	55°54.063	059°54,052	0:00	55°45.844	058°56.450
AWI-20190406	7/8/2019	00:00	55°45.844	058°56.450	12:34	56°23.041	057°35.376
AWI-20190407	7/8/2019	12:34	56°23.041	057°35.376	13:30	56°17.530	057°35.934
AWI-20190408	7/8/2019	13:30	56°17.530	057°35.934	19:45	55°56.576	058°18.997
AWI-20190409	7/8/2019	21:24	55°56.576	058°18.997	23:54	55°48.585	058°33.769
AWI-20190501	7/9/2019	16:32	55°05.350	057°24.578	0:23	55°35.754	056°35.586
AWI-20190502	7/10/2019	00:23	55°35.754	056°35.586	4:13	55°18.145	056°40.931
AWI-20190503	7/10/2019	04:13	55°18.145	056°40.931	8:43	55°24.243	057°12.773
AWI-20190504	7/10/2019	08:43	55°24.243	057°12.773	13:05	55°04.836	057°06.241
AWI-20190505	7/10/2019	13:05	55°04.836	057°06.241	16:52	55°16.326	057°31.187
AWI-20190601	7/11/2019	18:26	55°45.501	058°44.008	23:52	56°03.797	058°06.448
AWI-20190602	7/11/2019	23:52	56°03.797	058°06.448	0:34	56°00.523	058°04.383
AWI-20190603	7/12/2019	00:34	56°00.523	058°04.383	4:35	55°5.921	058°34.862
AWI-20190604	7/12/2019	04:35	55°5.921	058°34.862	5:38	55°51.175	058°38.168
AWI-20190605	7/12/2019	05:38	55°51.175	058°38.168	9:55	56°06.827	058°08.681
AWI-20190606	7/12/2019	09:55	56°06.827	058°08.681	10:44	56°10.130	058°12.737
AWI-20190607	7/12/2019	10:44	56°10.130	058°12.737	12:38	56°02.752	058°25.132
AWI-20190608	7/12/2019	12:38	56°02.752	058°25.132	14:46	55°50.791	058°16.826
AWI-20190609	7/12/2019	14:46	55°50.791	058°16.826	15:27	55°8.680	058°22.486
AWI-20190610	7/12/2019	15:27	55°8.680	058°22.486	17:48	56°00.103	058°32.110
AWI-20190611	7/12/2019	17:48	56°00.103	058°32.110	18:35	55°57.194	058°36.955

	Start			End			
Profile No.	**Date**	**Time (UTC)**	**Latitude**	**Longitude**	**Time (UTC)**	**Latitude**	**Longitude**
AWI-20190612	7/12/2019	18:35	55°57.194	058°36.955	20:42	55°45.206	058°28.566
AWI-20190701	7/13/2019	21:42	55°03.857	055°51.288	0:21	55°07.730	056°09.777
AWI-20190702	7/14/2019	01:26	55°07.701	056°09.816	3:07	55°00.322	056°11.105
AWI-20190703	7/14/2019	03:07	55°00.322	056°11.105	5:43	54°55.761	055°52.807
AWI-20190704	7/14/2019	05:43	54°55.761	055°52.807	6:58	54°50.725	055°53.998
AWI-20190705	7/14/2019	06:58	54°50.725	055°53.998	9:18	54°54.555	056°12.201
AWI-20190706	7/14/2019	09:18	54°54.555	056°12.201	10:27	54°49.908	056°12.901
AWI-20190707	7/14/2019	10:27	54°49.908	056°12.901	12:50	54°45.982	055°57.669
AWI-20190708	7/14/2019	12:50	54°45.982	055°57.669	14:07	54°42.787	056°07.088
AWI-20190709	7/14/2019	14:07	54°42.787	056°07.088	19:58	55°07.410	056°01.993
AWI-20190710	7/14/2019	19:58	55°07.410	056°01.993	2:37	55°20.656	056°55.572
AWI-20190711	7/15/2019	02:37	55°20.656	056°55.572	3:41	55°16.576	056°43.305
AWI-20190712	7/15/2019	03:41	55°16.576	056°43.305	18:30	54°29.329	055°22.120

Tab. 3: *List of seismic profiles.*