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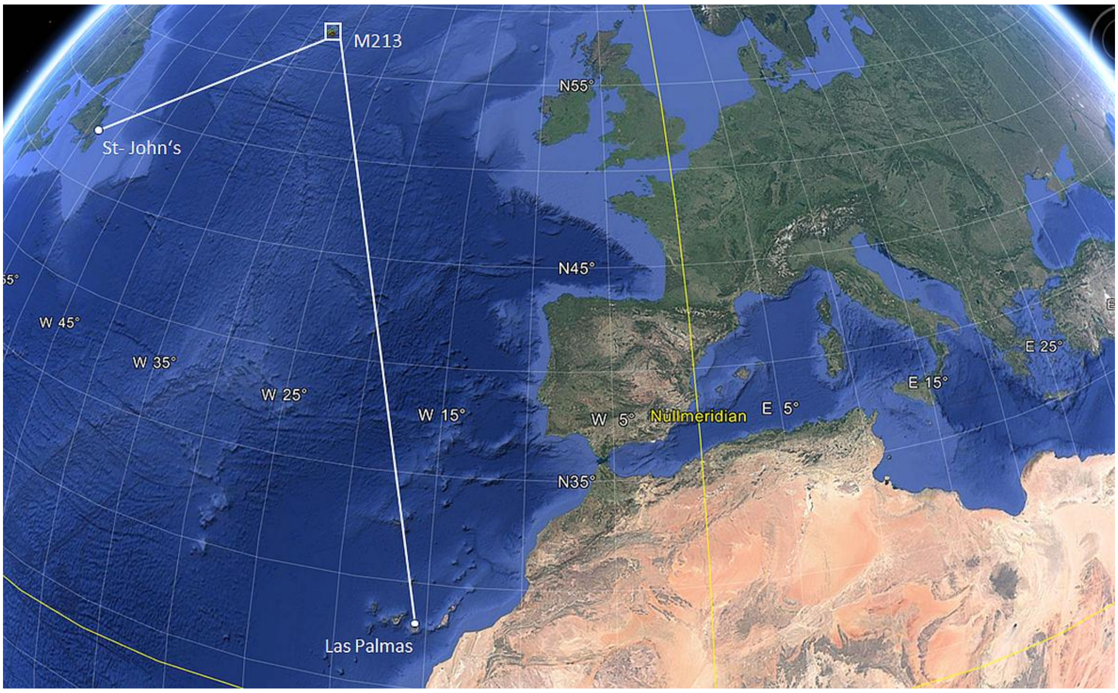
Short Cruise Report
RV METEOR, cruise M213

St. John's (Canada) – Las Palmas (Spain)

September 6, 2025 – October 7, 2025

Chief Scientist: Matthias Zabel

Captain: Detlef Korte



Objectives

The expedition M213 is the third cruise to a very small working area at the southern end of the Reykjanes Ridge, a section of the Mid-Atlantic Ridge. The main focus of all three expeditions was to investigate whether the rocks of the oceanic crust are suitable as a possible storage site for dissolved carbon dioxide. The basic prerequisites for the process of converting CO2 into carbonate are the permeability of the basalt rock and sufficient flow due to thermohaline circulation. After a test field suitable for these investigations was found on the M183 expedition in 2022, four boreholes were drilled through the overlying sediments down to the basaltic crustal rocks using the MARUM MeBo seabed drilling rig on the second expedition, MSM119, a year later. One pair of boreholes was drilled in the Squid Pond basin structure, previously described as ideal, and one in an area slightly further to the northwest. Modules for conducting a classic trace experiment were installed at both locations. The main objective of this expedition was to recover these observatories with the ROV SQUID and replace them with new modules.

Another important piece of information for evaluating the measurements of the heat flow in the sediments, but also the trace experiments, should they be successful, concerns the thickness of the sediments lying on the crustal rock. Due to the rough and small-scale morphology of the seafloor, earlier surveys with the ship's own Teledyne PARASOUND System PS70 did not provide a reliable estimate of sediment thicknesses, despite optimization of the system and intensive data analysis. Therefore, another goal of this expedition was to conduct seismic surveys of the working area and, in particular, Squid Pond. For this purpose, a necessary compressor container was made available to the expedition following a subsequently submitted request.

In addition, further heat flow measurements were to be carried out, the high-resolution bathymetric maps were to be expanded using the EM122 multibeam echo sounder, and the AIMS3 lander from develogic subsea systems, which had already been used on both previous expeditions and was equipped with ADCP and various sensors, was to be used again. The ship's own CTD rosette water sampler was to be used to create acoustic profiles for evaluating the data from the soundings, but also for profiling and sampling the water column.

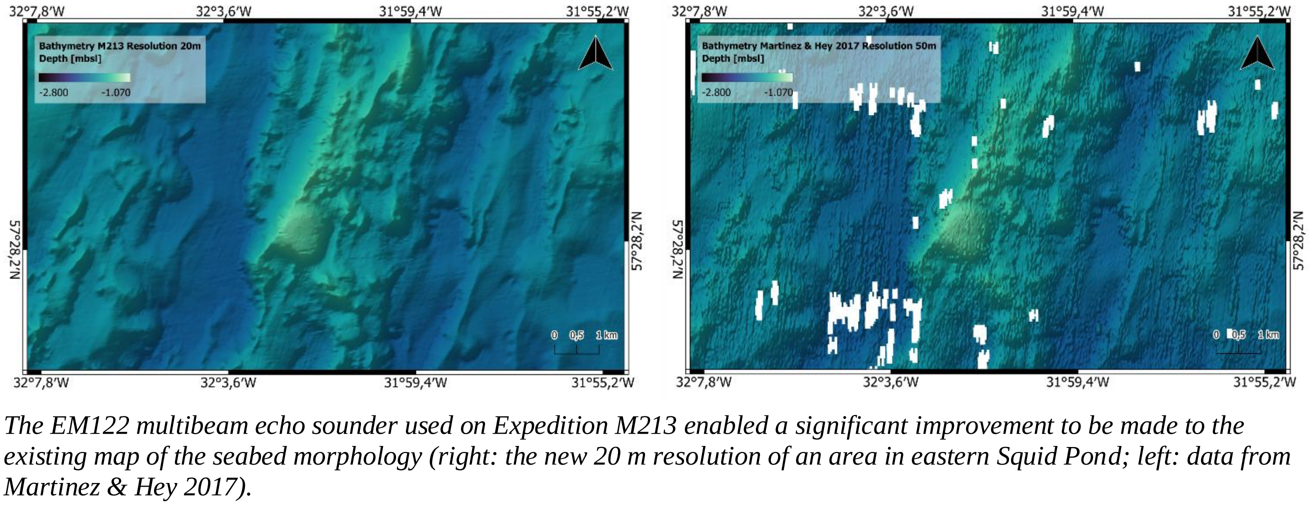
The program planning was completed by sampling the sediments with a gravity corer and a multicorer. The latter was not used on previous expeditions, so that undisturbed surface samples could now be obtained for the first time. In addition to the classic investigations of pore water constituents, special sampling and experiments were planned to record microbial diversity and its turnover rates. In addition, attempts were to be made to obtain sediment cores from the youngest section of the oceanic crust, i.e., as close as possible to the spreading axis. Here, it was hoped that, thanks in part to possible layers of volcanic material, information on the developmental history of the spreading process could be obtained and potential differences in the composition of the extruded magma compared to other ridge segments could be identified.

Narrative

The expedition's launch, scheduled for September 5, 2025 was delayed by one day due to the late delivery of the Sonardyne Ranger2 positioning system, which had been specially rented for this cruise. The RV METEOR therefore left the port of St. Johns' in Newfoundland (Canada) on the morning of September 6. The four-day transit time to the work area was used to set up all the laboratories, test the equipment, and familiarize ourselves with the procedures and rules on board. After several unsuccessful attempts to use the rented positioning system, damage to a power supply unit that could not be repaired on board was discovered, so it quickly became clear that we would have to rely on the Posidonia system on board, especially for the planned dives with the remotely operated robot ROV SQUID.

We reached the work area on the afternoon of September 10. As was to be expected at this time of year, the first few days of the transit confirmed that wind and sea conditions would have a decisive influence on the course of this expedition. New low-pressure areas formed almost continuously around the work area, strongly influencing the wind and sea conditions with varying trajectories. During the nearly three weeks we spent in the working area, wave heights of 5 m and wind speeds of 9-10 Bft, with peaks reaching hurricane force, were unfortunately not uncommon. The time windows that allowed us to launch the ROV SQUID, as well as the seismic equipment, streamer, and gun, were correspondingly short and very few in number.

We began our program on September 10 with a CTD rosette deployment near one of the observatories. Two multicorer deployments were unsuccessful, probably due to increasing sea conditions. However, during the first deployment, a rock fragment approximately 20 cm in diameter was brought on deck in an extremely unusual manner and without causing even minimal damage to the device. The first storm interruption until the morning of September 13 was used for bathymetric surveying of an area northwest of Squid Pond. It was selected to close the gap between the well-mapped Squid Pond and the location of the second borehole observatory. In two and a half days, almost 300 nm of profile lines were surveyed in an S-N orientation with the EM122 multibeam echo sounder, mapping approximately 500 km² of new territory. PARASOUND data was also recorded to supplement this. The southern part of this grid was densified over the course of the next two weeks using E-W sections whenever sea conditions did not allow other work to be carried out. In the end, the length of this grid was a good 550 nm, resulting in a map of the seabed surface with significantly improved spatial resolution.



The EM122 multibeam echo sounder used on Expedition M213 enabled a significant improvement to be made to the existing map of the seabed morphology (right: the new 20 m resolution of an area in eastern Squid Pond; left: data from Martinez & Hey 2017).

A brief calming of the weather on the morning of September 13 was initially used for the first successful deployment of the multicorer on this expedition at a selected site in Squid Pond. We then sailed to the nearby MeBo site to deploy ROV SQUID. After the ROV was already in the water, a previously undetectable fault in the electronics was discovered, so the device had to be brought back on deck. The day ended with the first 12 m gravity coring operation at the site of the previous multicorer use. On the same day, pore water extraction and initial analyses were started on the 8.2 m long core in the vessel's cold room.

We wanted to use the night to begin seismic surveys, but here too, a fault in the measurement signals that was not initially detected prevented successful deployment. A little later, it turned out that the cause was other electrical sources on the ship, and after the cables were re-laid, the recording worked perfectly for the rest of the work. On the morning of September 14, a second gravity probe (8.8 m) was pulled, including multicorer use to obtain the sediment surfaces. The lander was deployed between the two deployments. Unfortunately, when the winch cable stopped at a depth of 100 m, the lander's attachment to the releaser came loose, causing the lander to sink to the seabed in free fall, contrary to the plan. The connection to the deck unit, which was initially not possible, was established at the end of our stay in the working area. From the evening of September 14 to the afternoon of September 15, only bathymetric surveying and PARASOUND were possible again. This time in an area southeast of Squid Pond. This was followed by the first seismic recordings along 10 SE-NW profile lines across Squid Pond until the morning of September 16.

On the morning of the 16th, the time had come. ROV SQUID was submerged in Squid Pond. Thanks to the highly effective Posidonia system, the MeBo corks were quickly located, and by optimizing the workflows during the dive, three of the four necessary steps were completed: the recovery of both installed units and the reinstallation of the tracer unit. This complicated maneuver was a first for the ROV team. It was solved just as brilliantly as the placement of the Osom sample during the second dive a day later. Seismic surveys continued during the night between the two missions.

On the evening of September 17, the CTD rosette was deployed for a second time, before the heat flow probe was tested for the first time at four positions in northwestern Squid Pond in the early hours of September 18. However, strong winds and swells made recovering the heavy, free-swinging lance a dangerous maneuver that was only possible with the massive nighttime efforts of the entire deck crew. Interrupted by six hours of seafloor surveying, the third gravity sounding (9.0 m) followed, including multicore deployment in Squid Pond. All three cores serve to verify or refute unusual geochemical features observed on previous voyages and to take supplementary samples for the identification of microbial life. Until the morning of September 19, further profile lines were surveyed with the EM122.

The third ROV dive was to take place, this time at the northwestern MeBo sites. However, it quickly became apparent that, unlike at Squid Pond just two days earlier, a strong current was causing the device to drift away very quickly. According to the ship's ADCP, this water mass reached a thickness of at least 500 m. As these conditions did not allow for precise maneuvering of the ROV, the dive was aborted. Until the next morning, surveying with EM122, PARASOUND, and seismic equipment. Data collection was carried out along two profile lines extending from west of the spreading axis to east of Squid Pond.

Before the next spell of bad weather set in, 10 measurements were taken with the heat flow probe in Squid Pond during daylight hours on September 20. Until the morning of September 22, again only mapping could be continued. With the help of the surveys, four potential locations were identified near the spreading axis where the sediment cover should allow the use of the gravity corer. The first attempt was extremely successful, with a core recovery of 11.4 m using a 12 m gravity corer. Despite shortening the core tube to 6 m, the next two attempts not only failed, but the tubes were unfortunately damaged to such an extent that they had to be replaced. The fourth attempt was then reasonably successful again with 3.8 m.

On September 23, the second and final attempt was made to replace the observatories at the second MeBo site. This time, too, the dive failed due to the extremely strong NW current. Even diving to a depth of 1,300 m did not bring the improvement hoped for based on a CTD profile. We were therefore very disappointed to note that only 50% of the stated core objective of this expedition could be achieved. Considering the conditions during the two previous expeditions, it can be assumed that a mission 1.5-2 months earlier would probably have been successful. The rest of the day was therefore spent sampling sediments at another station near the spreading axis. Despite the winch speed being halved, sediment stuck to the weight set of two 12 m gravity cores. It was only on the 26th of September that a third attempt with an 18 m pipe yielded a complete core sample of 15.5 m.

After another break in the weather from the evening of the 23rd to the afternoon of the 24th of September, the heat flow probe was able to be used at 17 further points until the morning of the 25th. After that, the weather forecast predicted a storm with wind gusts of around 12 Bft and waves of up to 6 m, so the RV METEOR had to leave the working area in a westerly direction for approx. 30 hours.

On September 26, we were able to continue our work with the sediment core sampling described above. By the morning of September 27, the geophysical measurements in the Squid Pond had been completed with further E-W and two N-S profiles. Early in the morning of the 27th, contact was established with the lander. The weight set was triggered, the lander rose to the water surface and was brought on deck at 8:09 a.m. This was followed by a transect with the CTD towed close to the seabed from the Squid Pond over an elevation in the edge area to a secondary depression. The aim here was to determine whether there was a significant difference in the chemistry of the calcium-carbonic acid equilibrium between the individual basins.

The scientific work was concluded with 13 further deployments of the heat flow lance. On the morning of September 28, we finished the work in the study area. Once again, an approaching severe storm and the forecast of hurricanes crossing our return route left us with no other choice. Finally the cruise ended one day earlier as originally planned on October 7, 2025 in Las Palmas de Gran Canaria.

Reference

Martinez, F, Hey, R., 2017. Propagating buoyant mantle upwelling on the Reykjanes Ridge. Earth Planet. Sci. Lett., 457, 10-22.

Acknowledgements

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List of scientific participants

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Baltz, Anna Katherina	Geophysics	FBG
Bernhard, Renée	Geotechnics (heat Flow)	MARUM
Burmester, Anne	Geochemistry	FBG
Cabanillas Núñez, Elvira	Geophysics	FBG
Eberhard, Lisa, Dr.	Mineralogy	FBG
Esposito, Mario, Dr.	Oceanography	GEOMAR
Groth, Finja	Sedimentology	FBG
Krohn, Jule Melina Sophie	Geochemistry	MARUM
Linowski, Erik	ROV Team	MARUM
Müller, Annika,	Geology, Geophysics	FBG
Nowald, Nico, Dr.	ROV Team	MARUM
Otterpohl, Sophia	Geophysics	FBG
Reichert, Leo	Sedimentology	FBG
Rohleder, Christian	Weather Technician	DWD
Schillai, Sophia, Dr.	ROV Team	MARUM
Seeliger, Julian	Geology	FBG
Wali, Shiwan	ROV Team	MARUM
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Wegener, Gunter, Dr.	Geochemistry	MARUM
Weigelt, Jakob	Geotechnics (Lander)	FBG
Witzleb, Antonia M.	Geochemistry	FBG

Participating Institutions

DWD	Deutscher Wetterdienst, Geschäftsfeld Seeschifffahrt
GEOMAR	Helmholtz-Zentrum für Ozeanforschung Kiel
MARUM	Zentrum für Marine Umweltwissenschaften
FBG	Fachbereich Geowissenschaften an der Universität Bremen

Station list

dship	GeoB No.	Date 2025	Device	Action	Latitude (°N)	Longitude (°W)	Depth (m)
M213_0_Underway-1		07. Sep	EM122	profile start	50° 38,513'	048° 09,616'	NN
M213_0_Underway-2		07. Sep	P-70 Parasound	profile start	50° 38,486'	048° 09,660'	NN
M213_0_Underway-2		28. Sep	P-70 Parasound	profile end	57° 20,227'	031° 58,359'	2406
M213_0_Underway-3		08. Sep	ADCP (75kHz)	profile start	53° 05,151'	043° 44,966'	3675
M213_1-1	27001-1	10. Sep	CTD	max depth/on ground	57° 39,347'	032° 39,572'	1794
M213_2-1	27001-2	10. Sep	Multi Corer	max depth/on ground	57° 39,348'	032° 39,574'	1783
M213_3-1	27002-1	10. Sep	Multi Corer	max depth/on ground	57° 37,364'	032° 37,577'	1675
M213_4-1	27003-1	10. Sep	EM122	profile start	57° 48,211'	032° 37,215'	2250
M213_4-1	27003-2	12. Sep	EM122	profile interrupted	57° 45,168'	032° 24,712'	1623
M213_4-1	27004-1	12. Sep	EM122	profile continued	57° 47,873'	032° 37,244'	2239
M213_4-1	27004-2	13. Sep	EM122	profile end	57° 36,128'	032° 23,639'	1802
M213_5-1	27005-1	10. Sep	P-70 Parasound	profile start	57° 48,238'	032° 37,255'	2250
M213_5-1	27005-2	12. Sep	P-70 Parasound	profile interrupted	57° 45,144'	032° 24,720'	1592
M213_5-1	27005-3	12. Sep	P-70 Parasound	profile continued	57° 47,859'	032° 37,374'	2172
M213_5-1	27005-4	13. Sep	P-70 Parasound	profile end	57° 36,120'	032° 23,641'	1807
M213_6-1	27006-1	13. Sep	P-70 Parasound	profile start	57° 36,140'	032° 45,447'	1949
M213_6-1	27006-2	13. Sep	P-70 Parasound	profile end	57° 30,196'	032° 08,800'	1605
M213_7-1	27007-1	13. Sep	Multi Corer	max depth/on ground	57° 31,193'	032° 13,708'	1843
M213_8-1	27008-1	13. Sep	ROV	in the water	57° 33,390'	032° 15,403'	1692
M213_8-1	27008-1	13. Sep	ROV	on deck	57° 33,390'	032° 15,401'	1691
M213_9-1	27007-2	13. Sep	Gravity Corer	max depth/on ground	57° 31,201'	032° 13,723'	1841
M213_11-1	27009-1	14. Sep	P-70 Parasound	profile start	57° 36,017'	032° 15,080'	1700
M213_11-1	27010-1	14. Sep	P-70 Parasound	profile end	57° 30,871'	032° 19,982'	1544
M213_12-1	27011-1	14. Sep	Gravity Corer	max depth/on ground	57° 31,419'	032° 14,126'	1839
M213_13-1	27011-2	14. Sep	Lander (generic)	in the water	57° 31,421'	032° 14,146'	1838
M213_14-1	27011-3	14. Sep	Multi Corer	max depth/on ground	57° 31,422'	032° 13,834'	1837
M213_15-1	27012-1	14. Sep	EM122	profile start	57° 31,529'	032° 12,959'	1842
M213_15-1	27013-1	15. Sep	EM122	profile end	57° 36,434'	032° 16,244'	1678
M213_16-1	27012-2	14. Sep	P-70 Parasound	profile start	57° 31,529'	032° 12,959'	1842
M213_16-1	27013-2	15. Sep	P-70 Parasound	profile end	57° 36,476'	032° 16,235'	1681
M213_17-1	27014-1	15. Sep	Seismic TR	profile start	57° 29,281'	032° 21,146'	1638
M213_17-1	27015-1	16. Sep	Seismic TR	profile end	57° 32,254'	032° 07,333'	1428
M213_18-1	27014-2	15. Sep	P-70 Parasound	profile start	57° 29,311'	032° 21,198'	1635
M213_18-1	27015-2	16. Sep	P-70 Parasound	profile end	57° 32,259'	032° 07,362'	1429
M213_19-1	27016-1	16. Sep	ROV	in the water	57° 33,398'	032° 15,342'	1700
M213_19-1	27016-1	16. Sep	ROV	max depth/on ground	57° 33,400'	032° 15,348'	NN
M213_19-1	27016-1	16. Sep	ROV	on deck	57° 33,477'	032° 15,427'	NN
M213_20-1	27017-1	16. Sep	Seismic TR	profile start	57° 32,983'	032° 06,332'	1389
M213_20-1	27017-1	17. Sep	Seismic TR	profile end	57° 32,437'	032° 18,629'	1534
M213_21-1	27017-2	16. Sep	P-70 Parasound	profile start	57° 33,147'	032° 14,721'	1750
M213_21-1	27017-2	17. Sep	P-70 Parasound	profile end	57° 32,448'	032° 18,667'	1559
M213_22-1	27018-1	17. Sep	ROV	in the water	57° 33,445'	032° 15,423'	1691
M213_22-1	27018-1	17. Sep	ROV	information	57° 33,444'	032° 15,422'	NN
M213_22-1	27018-1	17. Sep	ROV	on deck	57° 33,512'	032° 15,455'	NN
M213_23-1	27019-1	17. Sep	CTD	max depth/on ground	57° 33,509'	032° 15,453'	1692
M213_24-1	27020-1	17. Sep	Heat Flow Probe	profile start	57° 33,400'	032° 14,620'	1742
M213_24-1	27023-1	18. Sep	Heat Flow Probe	profile end	57° 34,028'	032° 16,136'	1779
M213_25-1	27024-1	18. Sep	EM122	profile start	57° 34,616'	032° 04,699'	1596
M213_25-1	27025-1	18. Sep	EM122	profile end	57° 32,226'	032° 07,418'	1426
M213_26-1	27026-1	18. Sep	Gravity Corer	max depth/on ground	57° 31,347'	032° 13,466'	1844
M213_27-1	27026-2	18. Sep	Multi Corer	max depth/on ground	57° 31,346'	032° 13,464'	1844
M213_28-1	27026-3	18. Sep	Multi Corer	max depth/on ground	57° 31,347'	032° 13,465'	1844
M213_29-1	27027-1	18. Sep	EM122	profile start	57° 31,654'	032° 09,236'	1527
M213_29-1	27027-2	18. Sep	EM122	profile interrupted	57° 29,815'	032° 05,845'	1793
M213_29-1	27028-1	18. Sep	EM122	profile continued	57° 29,718'	032° 05,513'	1856
M213_29-1	27028-2	19. Sep	EM122	profile end	57° 37,500'	032° 39,447'	1479

dship	GeoB No.	Date 2025	Device	Action	Latitude (°N)	Longitude (°W)	Depth (m)
M213_30-1	27029-1	19. Sep	ROV	in the water	57° 37,556'	032° 39,637'	1530
M213_30-1	27029-1	19. Sep	ROV	dive aborted	57° 37,624'	032° 39,592'	NN
M213_30-1	27029-1	19. Sep	ROV	on deck	57° 37,653'	032° 39,575'	NN
M213_29-1	27027-1	18. Sep	EM122	profile start	57° 31,654'	032° 09,236'	1527
M213_29-1	27027-2	18. Sep	EM122	profile interrupted	57° 29,815'	032° 05,845'	1793
M213_29-1	27028-1	18. Sep	EM122	profile continued	57° 29,718'	032° 05,513'	1856
M213_29-1	27028-2	19. Sep	EM122	profile end	57° 37,500'	032° 39,447'	1479
M213_30-1	27029-1	19. Sep	ROV	in the water	57° 37,556'	032° 39,637'	1530
M213_30-1	27029-1	19. Sep	ROV	dive aborted	57° 37,624'	032° 39,592'	NN
M213_30-1	27029-1	19. Sep	ROV	on deck	57° 37,653'	032° 39,575'	NN
M213_31-1	27030-1	19. Sep	Seismic TR	profile start	57° 38,287'	032° 40,978'	1787
M213_31-1	27031-1	20. Sep	Seismic TR	profile end	57° 31,611'	032° 19,681'	1392
M213_32-1	27030-2	19. Sep	P-70 Parasound	profile start	57° 38,051'	032° 37,708'	1689
M213_32-1	27031-2	20. Sep	P-70 Parasound	profile end	57° 31,616'	032° 19,704'	1385
M213_33-1	27030-3	19. Sep	EM122	profile start	57° 38,182'	032° 37,462'	1696
M213_33-1	27031-3	20. Sep	EM122	profile end	57° 31,623'	032° 19,732'	1423
M213_34-1	27032-1	20. Sep	Heat Flow Probe	profile start	57° 33,050'	032° 16,883'	1594
M213_34-1	27041-1	20. Sep	Heat Flow Probe	profile end	57° 31,719'	032° 11,593'	1736
M213_35-1	27042-1	20. Sep	EM122	profile start	57° 29,598'	032° 11,604'	1484
M213_35-1	27042-2	21. Sep	EM122	profile end	57° 24,139'	031° 59,164'	2150
M213_36-1	27043-1	21. Sep	EM122	profile start	57° 25,579'	031° 58,397'	2030
M213_36-1	27043-2	22. Sep	EM122	profile end	57° 30,972'	031° 52,337'	1688
M213_37-1	27044-1	22. Sep	Gravity Corer	max depth/on ground	57° 38,184'	032° 51,944'	2170
M213_38-1	27045-1	22. Sep	Gravity Corer	max depth/on ground	57° 37,897'	032° 47,360'	2234
M213_39-1	27046-1	22. Sep	Gravity Corer	max depth/on ground	57° 30,554'	032° 53,335'	1627
M213_40-1	27047-1	22. Sep	Gravity Corer	max depth/on ground	57° 32,267'	033° 06,454'	1988
M213_41-1	27048-1	23. Sep	P-70 Parasound	profile start	57° 32,542'	032° 44,760'	2033
M213_41-1	27049-1	23. Sep	P-70 Parasound	profile end	57° 33,894'	032° 26,504'	1851
M213_42-1	27048-2	23. Sep	EM122	profile start	57° 32,539'	032° 44,679'	2032
M213_42-1	27049-2	23. Sep	EM122	profile end	57° 33,876'	032° 26,575'	1851
M213_43-1	27050-1	23. Sep	ROV	in the water	57° 37,510'	032° 39,632'	1540
M213_43-1	27050-1	23. Sep	ROV	dive aborted	57° 37,475'	032° 39,643'	NN
M213_43-1	27050-1	23. Sep	ROV	on deck	57° 37,399'	032° 39,175'	NN
M213_44-1	27051-1	23. Sep	Gravity Corer	max depth/on ground	57° 38,025'	032° 44,113'	1918
M213_45-1	27052-1	23. Sep	Gravity Corer	max depth/on ground	57° 27,588'	032° 55,096'	2222
M213_46-1	27053-1	23. Sep	P-70 Parasound	profile start	57° 35,276'	032° 43,591'	1988
M213_46-1	27054-1	24. Sep	P-70 Parasound	profile end	57° 39,807'	032° 14,303'	1470
M213_47-1	27053-2	23. Sep	EM122	profile start	57° 35,278'	032° 43,500'	1989
M213_47-1	27054-2	24. Sep	EM122	profile end	57° 39,804'	032° 14,269'	1470
M213_48-1	27055-1	24. Sep	Heat Flow Probe	profile start	57° 31,161'	032° 09,486'	1643
M213_48-1	27071-1	25. Sep	Heat Flow Probe	profile end	57° 29,679'	031° 57,995'	1945
M213_49-1	27052-2	26. Sep	Gravity Corer	max depth/on ground	57° 27,588'	032° 55,104'	2223
M213_50-1	27052-3	26. Sep	Gravity Corer	max depth/on ground	57° 27,588'	032° 55,108'	2226
M213_51-1	27072-1	26. Sep	Seismic TR	profile start	57° 31,930'	032° 19,144'	1389
M213_51-1	27073-1	27. Sep	Seismic TR	profile end	57° 27,244'	032° 17,370'	1664
M213_52-1	27072-2	26. Sep	P-70 Parasound	profile start	57° 31,929'	032° 19,145'	1383
M213_52-1	27073-2	27. Sep	P-70 Parasound	profile end	57° 27,268'	032° 17,333'	1666
M213_53-1	27074-1	27. Sep	Lander (generic)	released	57° 31,430'	032° 14,059'	1839
M213_53-1	27075-1	27. Sep	Lander (generic)	at surface	57° 31,433'	032° 13,668'	1842
M213_54-1	27076-1	27. Sep	CTD	profile start	57° 34,273'	032° 16,676'	1677
M213_54-1	27077-1	27. Sep	CTD	profile end	57° 32,455'	032° 12,659'	1790
M213_55-1	27078-1	27. Sep	Heat Flow Probe	profile start	57° 34,562'	032° 10,153'	1792
M213_55-1	27090-1	28. Sep	Heat Flow Probe	profile end	57° 32,594'	032° 10,895'	1832