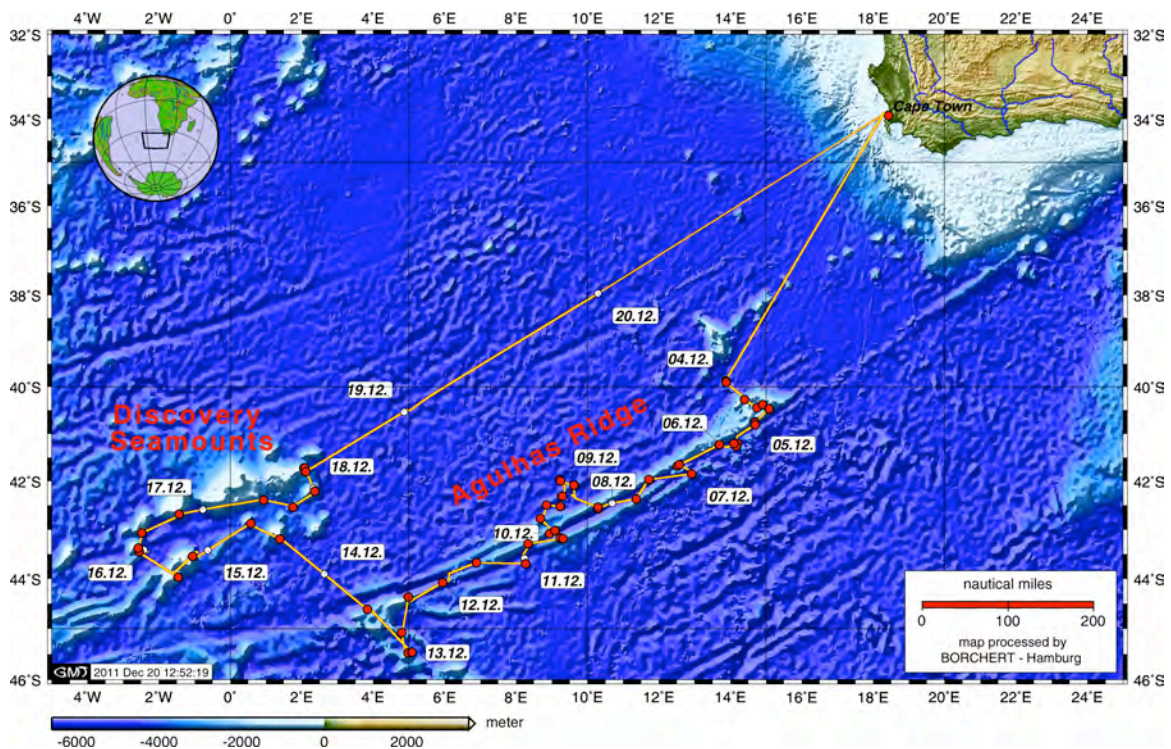


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Short Cruise Report RV MARIA S. MERIAN Cruise MSM19/3

Cape Town - Cape Town
01. - 22. December 2011
Chief Scientist: Reinhard Werner
Captain: Karl Friedhelm von Staa



Ship track of RV MARIA S. MERIAN cruise MSM19/3 with locations of dredge stations (red dots). Simrad EM120 and Parasound surveys were carried out on all ship tracks outside of the EEZ of the South Africa.

Objectives

On the R/V MARIA S. MERIAN cruise MSM19/3 comprehensive bathymetric mapping and hard rock sampling has been carried out at the Agulhas Ridge, adjacent basement highs, and the Discovery Rise. The c. 1,100 km long and more than 2,000 m high Agulhas Ridge is part of the Agulhas Falkland Fracture Zone, that initially formed during the Gondwana break-up in the early Cretaceous by the separation of South America and Africa. The Discovery Rise, located to the northwest of the Agulhas Ridge, extends over an area of c. 250 x 350 km and consists of several huge seamounts, which elevate up to > 4,000 m above the surrounding abyssal plain. Up till now too little is known about the ages and the geochemical composition of the magmatic rocks forming the Agulhas Ridge and the Discovery Rise to understand their nature and formation. Based on representative hard rock sampling of all geomorphological units of these features, MSM19/3 (and the subsequent laboratory studies on land) aim to reconstruct the age, origin, composition, and evolution of the Agulhas Ridge and the Discovery Rise. Combined with the results of the geophysical studies conducted by the Alfred Wegener Institute for Polar and Marine Research (AWI) on the previous leg MSM19/2, MSM19/3 aims to verify if the Agulhas Ridge has been tectonic-magmatically reactivated during the Cenozoic. Furthermore this approach should provide new constraints on the origin of the Dupal Anomaly in oceanic basalts of the southern hemisphere and of the enriched mantle components EM-I and EM-II as well as on the origin of intraplate volcanism („Great Plume Debate“, <http://www.mantleplumes.org/>).

Narrative

The starting point of MSM19/3 was the port of Cape Town in South Africa. Originally it was planned to leave the port in the morning of December 1st immediately after boarding of the scientists. Strong gusty winds from the Table Mountain, however, caused a closure of the port. Therefore, R/V MARIA S. MERIAN could not leave the port before the next morning. From Cape Town we sailed southwest approximately 400 nautical miles (nm) to arrive at the northeastern tip of the Agulhas Ridge in the evening of December 3rd. Despite little time we managed to prepare all laboratories and devices punctually thanks to the excellent support from the crew.

The northeastern tip of the Agulhas Ridge is formed by a huge plateau (Richardson Seamount) which extends over c. 180 x 80 km and elevates more than 2,000 m above the surrounding abyssal plain. Multibeam mapping carried out by the Alfred Wegener Institute for Polar and Marine Research (AWI) on the previous leg MSM19/2 revealed abundant small volcanic cones on the eastern part of the plateau and on the seafloor directly south of Richardson Seamount. Most of these cones have a circular base up to 2 km in diameter and are up to 400 m high. We presume that they represent a late phase of volcanic activity in the area of the Agulhas Falkland Fracture Zone which may be related to a reactivation of the fracture zone. Sampling of Richardson Seamount and both cone fields, however, proved difficult due to thick manganese crusts and solidified sediments which cover the magmatic rocks. Moreover the magmatic basement often appeared heavily altered and probably reflects long-term interaction with sea water. Nevertheless we managed to get magmatic rocks from most sampled features.

On December 6th, R/V MARIA S. MERIAN arrived at the Agulhas Ridge itself. At

noon we started with systematic sampling along the ridge, which is formed by two prominent, parallel striking ridge structures. In-between these ridges narrow troughs are up to 6,000 m deep, whereas the abyssal plain north and the south of the Agulhas Ridge is situated in "only" 4,000 to 5,000 m water depth. The foremost feature of the ridges are their steep flanks towards the troughs and more gentle slopes facing away from the troughs. This morphology indicates that the ridges represent fractured and tilted ocean crust; a perfect setup to systematically sample the ocean crust in this area. Therefore we aimed to sample the steep flanks of the ridges in more or less regular intervals of approximately 100 km in order to identify temporal geochemical variations (i.e. with increasing distance from the Mid Atlantic Ridge). Overall we sampled 10 sites at the flanks. At eight of these sites the dredge hauls recovered volcanic rocks which mainly comprise fragments of aphyric pillow lava. Another feature of the Agulhas Ridge has been revealed by bathymetric mapping and geophysical studies conducted on leg MSM19/2. Seamounts and small ridges are situated directly on the Agulhas Ridge and appear of volcanic origin. These structures may have formed after the formation of the Agulhas Falkland fracture zones and may be related to a reactivation of this fracture zone. To test this hypothesis, MSM19/3 sampled some of these volcanoes. The dredge hauls at these structures yielded pillow and sheet lava fragments.

Leg MSM19/2 and a previous AWI cruise also revealed, that the ocean floor to the north and the south of the Agulhas Ridge is characterized by a unusual rough morphology which clearly differs from normal deep sea plain. Among others, seismic profiles show that the magmatic basement frequently penetrates the sediments in this area and forms basement highs which rise up to c. 1,000 m above the ocean floor. That also points to a younger (Cenozoic?) phase of volcanic activity in the area of the Agulhas Ridge and therefore may indicate reactivation of the fracture zone. To verify this observation, we made the attempt to sample some of the seamounts north of the ridge. Dredging at these features, however, proved to be a very difficult task most likely due to thick manganese crusts covering the magmatic rocks and most dredges returned empty or contained only manganese. Finally we managed to sample successfully one of the seamounts.

After finishing our work at the Agulhas Ridge on December 12th, R/V MARIA S. MERIAN sailed to the northern end of the Meteor Rise, adjacent to the southwestern tip of the Agulhas Ridge. Bathymetric maps based on satellite altimetry ("predicted bathymetry") reveal some large, up to 3,000 m high seamounts in this area which are situated on a huge ridge-like structure. Our bathymetric mapping, however, showed, that these seamounts are large plateaus with steep flanks. Several dredge hauls at the flanks of these plateaus yielded lavas, volcanoclastics, sediments and manganese. In the early morning of December 14th, we finished our work at the Meteor Rise and R/V MARIA S. MERIAN headed 140 m in northern direction towards the Discovery Rise.

During the third and last week of leg MSM19/3 we focused on mapping and sampling at the Discovery Rise. This area extends over c. 250 x 350 km and consists of several, often very large seamounts that rise up to 4,000 m above the surrounding seafloor. Although these seamounts are enormous structures and sometimes reach only a few 100m below sea-level, it took until 1936 before they were discovered. In order to reconstruct the origin of the Discovery Rise and to evaluate its role for geodynamic processes in the South Atlantic, it was the ultimate goal of MSM19/3 to sample this region with near complete aerial coverage for the first time. Therefore a total of 11 seamounts from almost the entire Discovery Rise were partially mapped and sampled by dredging. The dredges mostly delivered lava

fragments along with volcanic breccias and conglomerates. In the evening of December 18th, the station work ended with a last dredge haul in the northeastern area of the Discovery Rise under stormy weather conditions. Thereafter R/V MARIA S. MERIAN begun the 900 nm transit back to Cape Town. The transit was used to continue multibeam mapping and running the sediment echosounder. The scientific work ended on December 21st by turning off the multibeam echosounder shortly before entering the South African Exclusive Economic Zone. In the morning of December 22nd we reached the port of Cape Town.

Leg MSM19/3 has reached its main scientific goals. Complementing c. 2,500 nm multibeam mapping and c. 1,500 nm sediment echosounder profiling, a total of 57 dredge hauls were carried out in an average water depth of 3,300 m during only 15 working days at sea. Of these, 41 delivered *in situ* samples of which 31 obtained magmatic rocks, 16 volcanoclastics, 7 sedimentary rocks, and 23 Mn-Fe-Oxide crusts. Furthermore 45 of 57 dredges provided sediment samples for biological investigations.

Acknowledgements

We would especially like to thank Captain von Staa and the crew of R/V MARIA S. MERIAN. Their hard work, high level of experience, and willingness to help, as well as the pleasant working atmosphere on board, contributed directly to the success of the MSM19/3 cruise. We are also grateful to the German Science Foundation (DFG) for funding this cruise within their core program METEOR/MERIAN and the German Federal Ministry of Education and Research (BMBF) for their continuing support of the marine research. We would also like to thank the research institutes involved in this project for additional support. Lastly the chief scientist would like to thank the "scientific party" for their excellent work on board and their high level of motivation that also significantly contributed to the success of the cruise and to the good atmosphere on board.

Cruise Participants

Werner, Reinhard	Chief Scientist	GEOMAR
Hauff, Folkmar	Co-Chief Scientist	GEOMAR
Anders, Maria	Dredging	GEOMAR
Borchert, Wolfgang	Bathymetry	Borchert-HH
Furchheim, Nina	Dredging, Biology	MfN
Garlichs, Thorsten	Dredging	GEOMAR
Hauff, Silke	Technican	GEOMAR
Herbrich, Antje	Dredging	GEOMAR
Hoffmann, Paulina	Dredging	GEOMAR
Kipf, Andrea	Dredging	GEOMAR
Rivera Vidal, Rayen	Guest	Univ. Concepcion
Roth, Alexandra	Dredging, Biology	MfN
Schiele, Kevin	Dredging	GEOMAR
Wanke, Maren	Dredging	GEOMAR
Wollenschläger, Tina	Dredging	GEOMAR
Zieske, Herny	Technican	GEOMAR

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Dredge Tracks

Stat.	Location	total volume	Rock summary	on bottom		off bottom		depth (m)	
				lat °S	long°E	lat °S	long°E	max	min
DR 1	Richardson Smt, NW-Rift	empty		39,868	13,879	39,872	13,871	4697	4376
DR 2	Richardson Smt, NW-Rift	few rocks	Mn-crusts	39,893	13,891	39,897	13,885	4233	3894
DR 3	Richardson Smt, N-flank	few rocks	pillow fragments	40,263	14,402	40,268	14,394	2778	2357
DR 4	Richardson Smt, cone on plateau	3/4 full	volcaniclastics, Mn-crusts	40,457	14,749	40,459	14,741	1776	1513
DR 5	Richardson Smt, cone on plateau	3/4 full	volcaniclastics, Mn-crusts	40,372	14,904	40,374	14,896	1606	1440
DR 6	Richardson Smt, cone on plateau	1/5 full	lava fragments, volcaniclastics, Mn-crusts	40,468	15,089	40,472	15,078	2323	1990
DR 7	Richardson Smt, SE-flank	1/2 full	lava fragments, volcaniclastics, sedimentary rocks	40,757	14,704	40,751	14,695	3083	2443
DR 8	Richardson Smt, SE-flank	few rocks	lava fragments, Mn-crusts	40,809	14,705	40,806	14,698	4198	3910
DR 9	Cones S of Richardson Smt	few rocks	lava fragment (dropstone?), sedimentary rocks	41,206	14,201	41,206	14,202	4100	4100*
DR 10	Cones S of Richardson Smt	few rocks	dropstones	41,261	14,169	41,260	14,160	4016	3706
DR 11	Cones S of Richardson Smt	empty		41,205	14,113	41,205	14,104	4245	3974
DR 12	Agulhas Ridge E, northern ridge	few rocks	pillow fragments	41,232	13,690	41,233	13,690	3120	3121*
DR 13	Agulhas Ridge E, northern ridge	few rocks	pillow fragments	41,231	13,699	41,229	13,694	3333	2923
DR 14	Agulhas Ridge central, northern ridge	few rocks	pillow fragments, volcaniclastics	41,678	12,529	41,679	13,520	4183	3667
DR 15	Agulhas Ridge central, northern ridge	empty		41,652	12,582	41,652	12,571	3870	3555
DR 16	Agulhas Ridge central, southern ridge	few rocks	plutonic/pegmatitic rocks, lava fragment (ds?), Mn-crusts	41,837	12,930	41,843	12,921	3692	3130
DR 17	Agulhas Ridge central, northern ridge	empty		41,968	11,735	41,970	11,728	3521	3137

Stat.	Location	total volume	Rock summary	on bottom		off bottom		depth (m)	
				lat °S	long°E	lat °S	long°E	max	min
DR 18	Agulhas Ridge central, northern ridge	1/2 full	pillow fragments	41,958	11,726	41,962	11,718	2795	2270
DR 19	Agulhas Ridge central, southern ridge	few rocks	pillow fragments, dropstones	42,356	11,367	42,363	11,361	4134	3680
DR 20	Agulhas Ridge W, northern ridge	empty		42,564	10,310	42,569	10,304	4190	3864
DR 21	Agulhas Ridge W, northern ridge	few rocks	volcaniclastics (dropstones?)	42,535	10,308	42,538	10,299	3611	3273
DR 22	Smt north of Agulhas Ridge	few rocks	Mn-knolls	42,300	9,645	42,307	9,638	4764	4435
DR 23	Smt north of Agulhas Ridge	empty		42,078	9,618	42,080	9,625	4410	4095
DR 24	Smt north of Agulhas Ridge	1 rock	dropstone	41,959	9,231	41,962	9,219	4872	4521
DR 25	Smt north of Agulhas Ridge		not on bottom because of technical problems	41,823	9,243				
DR 26	Smt north of Agulhas Ridge	empty		42,319	9,292	42,317	9,282	4788	4534
DR 27	Smt north of Agulhas Ridge	empty		42,306	9,304	42,308	9,295	4817	4597
DR 28	Smt north of Agulhas Ridge	empty		42,510	9,237	42,517	9,233	4610	4280
DR 29	Smt north of Agulhas Ridge	1/5 full	lava fragments, metamorphic rocks, dropstones	42,492	8,863	42,491	9,851	4311	3938
DR 30	Smt. on (northern) Agulhas Ridge	few rocks	pillow fragments, Mn-crusts, dropstones	42,765	8,688	42,770	9,140	3650	3225
DR 31	Agulhas Ridge W, northern ridge	empty		43,077	8,940	43,077	8,941	2993	3100*
DR 32	Agulhas Ridge W, northern ridge	1/2 full	pillow fragments, volcaniclastics, Mn-crusts, dropstones	43,016	9,099	43,013	9,089	3404	3041
DR 33	Smt. on (southern) Agulhas Ridge	1/5 full	lava fragments, dropstones, Mn-crusts	43,172	9,244	43,166	9,237	3015	2497
DR 34	Agulhas Ridge W, southern ridge	empty		43,187	9,326	43,182	9,317	3796	3330
DR 35	Agulhas Ridge W, northern ridge	1/2 full	pillow fragments, Mn-crusts, dropstones	43,292	8,347	43,288	8,338	2940	2345
DR 36	Smt south of Agulhas Ridge	few rocks	Intrusiva (gabbro?), Mn-knolls	43,698	8,277	43,691	8,273	4465	4110
DR 37	Agulhas Ridge-Meteor, northern ridge	few rocks	lava fragment, dropstones	43,675	6,902	43,670	6,895	3953	3579
DR 38	Agulhas Ridge-Meteor, southern ridge	1/2 full	lava fragments, metamorphic rocks (ds?), volcaniclastics	44,062	5,950	44,070	5,950	3926	3495
DR 39	Meteor Rise, north-eastern smt	few rocks	lava fragments, sedimentary rocks	44,360	4,987	44,367	4,989	2461	1943
DR 40	Meteor Rise, central smt	1/3 full	pillow fragments, volcaniclastics, metamorphic rocks, Mn	45,065	4,799	45,073	4,800	3253	2717
DR 41	Meteor Rise, southern smt	few rocks	metamorphic rocks, Mn-crusts	45,469	4,977	45,478	4,978	2559	2244
DR 42	Meteor Rise, southern smt	1/4 full	lava fragments (ds?), volcaniclastics, sedimentary rocks, Mn	45,451	5,082	45,460	5,085	3276	2920
DR 43	Meteor Rise, northern flank	1/4 full	sedimentary rocks, dropstones	44,605	3,848	45,612	3,841	3222	2874
DR 44	Discovery Smts SE	few rocks	lava fragments, sedimentary rocks, Mn-crusts	43,192	1,396	43,186	1,391	2616	2178
DR 45	Discovery Smts SE	few rocks	lava fragments, volcaniclastics, Mn-crusts	42,862	0,582	42,867	0,574	2349	1889
DR 46	Discovery Smts SW	few rocks	lava fragments, volcaniclastics	43,540	-1,047	43,541	-1,056	1460	1057*
DR 47	Discovery Smts SW		dredge lost because of broken bolt	43,971	-1,454	43,966	-1,459	1479	1100*

Stat.	Location	total volume	Rock summary	on bottom		off bottom		depth (m)	
				lat °S	long°E	lat °S	long°E	max	min
DR 48	Discovery Smts southernmost NW	1 rock	Mn-crust	43,452	-2,540	43,448	-2,550	3370	2939
DR 49	Discovery Smts NW	few rocks	lava fragments, volcaniclastics, Mn-crusts	43,370	-2,575	43,375	-2,583	2517	2160
DR 50	Discovery Smts NW	few rocks	volcaniclastics	43,071	-2,469	43,068	-2,478	2263	1834
DR 51	Discovery Smts NW	1/6 full	pillow fragments, volcaniclastics	42,678	-1,426	43,679	-1,433	1441	1100
DR 52	Discovery Smts NE	few rocks	pillow fragments, Mn-crusts, dropstones	42,385	0,943	42,387	0,935	2907	2514
DR 53	Discovery Smts NE	1/5 full	lava fragments, Mn-crusts	42,529	1,766	42,533	1,756	2343	1947
DR 54	Discovery Smts NE	1/5 full	lava fragments	42,205	2,369	42,207	2,369	1705	1454*
DR 55	Discovery Smts NE	empty		41,721	2,091	41,721	2,042	2177	2188*
DR 56	Discovery Smts NE	1/4 full	lava fragments, volcaniclastics	41,713	2,084	41,714	2,075	1947	1539
DR 57	Discovery Smts NE	few rocks	sedimentary rocks, Mn-crusts	41,799	2,124	41,798	2,114	2513	2152

* dredge stucked, released by vessel

MSM19/3 Station List

Station No.	Date	Time [UTC]	Position Lat	Position Lon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Action
MSM19/1072-1	03.12.11	21:22	39° 52,08' S	13° 52,73' E	4741,8	WSW 6	66,0	0,9	Dredge	surface
MSM19/1072-1	03.12.11	22:58	39° 52,31' S	13° 52,25' E	4319,1	WSW 5	216,3	0,9	Dredge	start dredging
MSM19/1072-1	03.12.11	23:45	39° 52,32' S	13° 52,25' E	4376,2	W 5	118,4	0,7	Dredge	stop dredging
MSM19/1072-1	04.12.11	00:45	39° 52,32' S	13° 52,24' E	4326,7	W 6	60,7	0,4	Dredge	on deck
MSM19/1073-1	04.12.11	01:20	39° 53,59' S	13° 53,49' E	4244,5	W 6	196,7	0,7	Dredge	surface
MSM19/1073-1	04.12.11	02:39	39° 53,81' S	13° 53,11' E	3889,5	WNW 6	246,0	0,4	Dredge	start dredging
MSM19/1073-1	04.12.11	03:20	39° 53,81' S	13° 53,11' E	3890,0	WNW 6	41,6	0,0	Dredge	stop dredging
MSM19/1073-1	04.12.11	04:13	39° 53,80' S	13° 53,11' E	3890,6	WNW 6	43,4	-0,2	Dredge	on deck
MSM19/1074-1	04.12.11	07:22	40° 15,79' S	14° 24,10' E	2786,7	WNW 7	41,3	0,3	Dredge	surface
MSM19/1074-1	04.12.11	08:32	40° 16,09' S	14° 23,66' E	2358,4	WNW 9	44,0	0,3	Dredge	start dredging
MSM19/1074-1	04.12.11	09:16	40° 16,09' S	14° 23,66' E	2362,3	WNW 8	259,5	-0,2	Dredge	stop dredging
MSM19/1074-1	04.12.11	09:51	40° 16,09' S	14° 23,66' E	2360,1	W 8	219,7	-0,1	Dredge	on deck
MSM19/1075-1	04.12.11	12:01	40° 27,39' S	14° 44,96' E	1690,1	W 8	353,8	-0,2	Dredge	surface
MSM19/1075-1	04.12.11	12:56	40° 27,56' S	14° 44,45' E	1525,5	W 8	234,3	0,4	Dredge	start dredging
MSM19/1075-1	04.12.11	13:28	40° 27,55' S	14° 44,45' E	1515,5	W 7	89,3	0,3	Dredge	stop dredging
MSM19/1075-1	04.12.11	13:59	40° 27,56' S	14° 44,43' E	1539,6	W 6	250,9	-0,1	Dredge	on deck
MSM19/1076-1	04.12.11	15:14	40° 22,29' S	14° 54,26' E	1649,0	W 6	239,9	-0,4	Dredge	surface
MSM19/1076-1	04.12.11	16:03	40° 22,46' S	14° 53,77' E	1478,5	WSW 6	54,8	-0,1	Dredge	start dredging
MSM19/1076-1	04.12.11	16:33	40° 22,46' S	14° 53,77' E	1475,9	W 5	36,8	-0,3	Dredge	stop dredging
MSM19/1076-1	04.12.11	16:57	40° 22,49' S	14° 53,68' E	1556,7	WSW 5	106,4	-0,4	Dredge	on deck
MSM19/1077-1	04.12.11	18:26	40° 28,08' S	15° 5,31' E	2363,7	W 5	208,9	-1,3	Dredge	surface
MSM19/1077-1	04.12.11	19:25	40° 28,31' S	15° 4,77' E	1990,6	WNW 6	30,8	-0,6	Dredge	start dredging
MSM19/1077-1	04.12.11	20:02	40° 28,32' S	15° 4,78' E	1990,6	NW 6	289,4	-0,8	Dredge	stop dredging
MSM19/1077-1	04.12.11	20:28	40° 28,38' S	15° 4,65' E	2112,6	NW 6	132,2	-0,6	Dredge	on deck
MSM19/1078-1	04.12.11	23:13	40° 45,47' S	14° 42,49' E	3214,9	NW 9	220,4	0,7	Dredge	surface
MSM19/1078-1	05.12.11	00:27	40° 45,07' S	14° 41,74' E	2442,8	WNW 8	65,7	0,7	Dredge	start dredging
MSM19/1078-1	05.12.11	01:28	40° 45,07' S	14° 41,74' E	2441,5	WNW 9	56,8	0,7	Dredge	stop dredging
MSM19/1078-1	05.12.11	02:06	40° 45,09' S	14° 41,72' E	2439,9	WNW 10	211,5	0,0	Dredge	on deck
MSM19/1079-1	05.12.11	03:01	40° 48,51' S	14° 42,32' E	4203,3	WNW 11	247,9	0,4	Dredge	surface
MSM19/1079-1	05.12.11	04:19	40° 48,37' S	14° 41,89' E	3929,3	WNW 10	247,6	0,9	Dredge	start dredging
MSM19/1079-1	05.12.11	04:47	40° 48,38' S	14° 41,89' E	3925,2	W 11	248,8	0,6	Dredge	stop dredging
MSM19/1079-1	05.12.11	05:48	40° 48,45' S	14° 41,58' E	4002,8	WNW 13	174,3	0,6	Dredge	on deck
MSM19/1080-1	05.12.11	10:10	41° 12,36' S	14° 12,07' E	4056,3	WNW 15	240,5	-0,1	Dredge	surface

Station No.	Date	Time [UTC]	Position Lat	Position Lon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Action
MSM19/1080-1	05.12.11	11:36	41° 12,23' S	14° 11,47' E	3918,3	WNW 14	43,2	0,3	Dredge	start dredging
MSM19/1080-1	05.12.11	12:00	41° 12,23' S	14° 11,47' E	3901,9	WNW 13	156,0	-0,2	Dredge	stop dredging
MSM19/1080-1	05.12.11	13:25	41° 12,37' S	14° 12,12' E	6246,0	W 15	46,2	0,6	Dredge	information
MSM19/1080-1	05.12.11	14:23	41° 12,37' S	14° 12,13' E	4182,5	W 12	51,3	0,0	Dredge	on deck
MSM19/1081-1	05.12.11	15:18	41° 15,67' S	14° 10,16' E	4010,5	W 13	181,5	0,2	Dredge	surface
MSM19/1081-1	05.12.11	16:39	41° 15,62' S	14° 9,58' E	3980,3	W 13	332,3	1,0	Dredge	start dredging
MSM19/1081-1	05.12.11	17:39	41° 15,62' S	14° 9,58' E	3710,7	WSW 9	267,8	0,3	Dredge	stop dredging
MSM19/1081-1	05.12.11	18:23	41° 15,62' S	14° 9,58' E	3732,4	W 9	289,4	0,7	Dredge	on deck
MSM19/1082-1	05.12.11	19:11	41° 12,29' S	14° 6,78' E	4253,6	WSW 8	134,2	0,7	Dredge	surface
MSM19/1082-1	05.12.11	20:29	41° 12,29' S	14° 6,26' E	3960,9	W 6	214,9	0,9	Dredge	start dredging
MSM19/1082-1	05.12.11	21:07	41° 12,29' S	14° 6,26' E	3966,8	W 5	255,7	0,4	Dredge	stop dredging
MSM19/1082-1	05.12.11	22:00	41° 12,29' S	14° 6,26' E	3924,9	W 4	258,0	0,8	Dredge	on deck
MSM19/1083-1	06.12.11	00:13	41° 13,99' S	13° 41,44' E	3205,4	NW 11	281,3	-0,8	Dredge	surface
MSM19/1083-1	06.12.11	01:12	41° 13,90' S	13° 41,06' E	2730,2	WNW 12	296,0	-0,8	Dredge	start dredging
MSM19/1083-1	06.12.11	01:41	41° 13,90' S	13° 41,06' E	2705,2	WNW 11	66,6	-0,8	Dredge	information
MSM19/1083-1	06.12.11	02:42	41° 13,99' S	13° 41,39' E	3121,5	SW 6	70,8	-0,9	Dredge	information
MSM19/1083-1	06.12.11	03:27	41° 13,99' S	13° 41,39' E	3120,0	SE 4	26,2	-0,5	Dredge	on deck
MSM19/1084-1	06.12.11	03:51	41° 13,87' S	13° 41,92' E	3316,5	SSE 8	61,1	-0,5	Dredge	surface
MSM19/1084-1	06.12.11	04:51	41° 13,76' S	13° 41,61' E	2907,6	SSE 7	179,6	-0,4	Dredge	start dredging
MSM19/1084-1	06.12.11	05:30	41° 13,76' S	13° 41,61' E	2857,5	SSE 8	188,6	-0,5	Dredge	stop dredging
MSM19/1084-1	06.12.11	06:11	41° 13,60' S	13° 41,51' E	0,0	SSE 9	297,1	-0,4	Dredge	on deck
MSM19/1085-1	06.12.11	12:23	41° 40,71' S	12° 31,81' E	4194,3	WSW 4	188,5	-0,2	Dredge	surface
MSM19/1085-1	06.12.11	13:52	41° 40,71' S	12° 31,17' E	3663,6	WSW 5	340,6	0,4	Dredge	start dredging
MSM19/1085-1	06.12.11	15:07	41° 40,71' S	12° 31,17' E	3667,3	SSW 5	207,4	-0,1	Dredge	stop dredging
MSM19/1085-1	06.12.11	15:51	41° 40,71' S	12° 31,17' E	3663,1	SW 5	47,7	0,1	Dredge	on deck
MSM19/1086-1	06.12.11	16:46	41° 39,11' S	12° 34,90' E	3975,9	SSW 4	255,5	0,3	Dredge	surface
MSM19/1086-1	06.12.11	18:04	41° 39,11' S	12° 34,29' E	3539,5	SW 3	279,8	0,3	Dredge	start dredging
MSM19/1086-1	06.12.11	18:49	41° 39,11' S	12° 34,28' E	3534,5	WSW 5	25,3	0,1	Dredge	stop dredging
MSM19/1086-1	06.12.11	19:31	41° 39,11' S	12° 34,28' E	3561,9	W 6	45,6	0,0	Dredge	on deck
MSM19/1087-1	06.12.11	21:41	41° 50,19' S	12° 55,79' E	3717,8	SW 3	280,9	0,1	Dredge	surface
MSM19/1087-1	06.12.11	23:03	41° 50,55' S	12° 55,24' E	3106,5	SW 3	78,2	0,1	Dredge	start dredging
MSM19/1087-1	07.12.11	00:07	41° 50,55' S	12° 55,24' E	3121,1	WSW 2	290,6	-0,1	Dredge	stop dredging
MSM19/1087-1	07.12.11	00:48	41° 50,56' S	12° 55,21' E	3100,6	WNW 4	262,2	-0,1	Dredge	on deck
MSM19/1088-1	07.12.11	06:42	41° 58,08' S	11° 44,15' E	3527,7	SW 17	297,3	1,0	Dredge	surface
MSM19/1088-1	07.12.11	07:54	41° 58,19' S	11° 43,69' E	3159,8	SSW 18	233,9	0,8	Dredge	start dredging
MSM19/1088-1	07.12.11	08:39	41° 58,19' S	11° 43,69' E	3170,1	SSW 15	212,1	0,8	Dredge	stop dredging
MSM19/1088-1	07.12.11	09:29	41° 58,18' S	11° 43,70' E	3160,7	SW 15	356,6	0,7	Dredge	on deck
MSM19/1089-1	07.12.11	10:01	41° 57,57' S	11° 43,58' E	2708,3	SSW 16	153,9	0,2	Dredge	surface
MSM19/1089-1	07.12.11	11:08	41° 57,70' S	11° 43,04' E	2293,7	SSW 18	228,1	0,8	Dredge	start dredging
MSM19/1089-1	07.12.11	12:11	41° 57,70' S	11° 43,05' E	2288,3	SW 16	75,7	1,0	Dredge	stop dredging
MSM19/1089-1	07.12.11	12:44	41° 57,70' S	11° 43,04' E	14,2	SSW 17	241,3	1,0	Dredge	on deck
MSM19/1090-1	07.12.11	17:17	42° 21,37' S	11° 22,03' E	4137,9	SSW 15	256,9	0,7	Dredge	surface
MSM19/1090-1	07.12.11	18:46	42° 21,77' S	11° 21,66' E	3717,4	SSW 15	270,3	0,2	Dredge	start dredging
MSM19/1090-1	07.12.11	19:35	42° 21,77' S	11° 21,66' E	3712,5	SW 19	56,4	0,4	Dredge	stop dredging
MSM19/1090-1	07.12.11	20:22	42° 21,77' S	11° 21,66' E	3715,8	SSW 14	79,6	0,1	Dredge	on deck
MSM19/1091-1	08.12.11	02:00	42° 33,81' S	10° 18,60' E	4228,1	SSW 8	46,4	-0,3	Dredge	surface
MSM19/1091-1	08.12.11	03:18	42° 34,11' S	10° 18,24' E	3848,3	SW 5	207,0	0,2	Dredge	start dredging
MSM19/1091-1	08.12.11	04:08	42° 34,11' S	10° 18,24' E	3854,8	SW 6	95,1	-0,3	Dredge	stop dredging
MSM19/1091-1	08.12.11	04:57	42° 34,11' S	10° 18,24' E	3831,3	SSW 7	10,8	-0,1	Dredge	on deck
MSM19/1092-1	08.12.11	05:34	42° 32,09' S	10° 18,50' E	3625,4	SW 7	18,0	-0,2	Dredge	surface
MSM19/1092-1	08.12.11	06:52	42° 32,25' S	10° 17,97' E	0,0	WNW 6	148,4	-0,0	Dredge	start dredging
MSM19/1092-1	08.12.11	07:36	42° 32,25' S	10° 17,97' E	3284,4	WSW 6	124,4	0,0	Dredge	stop dredging
MSM19/1092-1	08.12.11	08:23	42° 32,25' S	10° 17,97' E	3289,9	W 10	71,1	0,1	Dredge	on deck
MSM19/1093-1	08.12.11	12:39	42° 18,01' S	9° 38,71' E	4712,7	WNW 11	234,8	0,3	Dredge	surface

Station No.	Date	Time [UTC]	Position Lat	Position Lon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Action
MSM19/1093-1	08.12.11	14:14	42° 18,41' S	9° 38,30' E	4417,0	WNW 9	306,1	0,1	Dredge	start dredging
MSM19/1093-1	08.12.11	14:59	42° 18,41' S	9° 38,30' E	4414,9	WNW 9	246,0	-0,1	Dredge	stop dredging
MSM19/1093-1	08.12.11	15:55	42° 18,42' S	9° 38,30' E	4452,5	WNW 11	266,1	0,0	Dredge	on deck
MSM19/1094-1	08.12.11	17:28	42° 4,69' S	9° 37,09' E	4403,7	WNW 10	15,2	0,0	Dredge	surface
MSM19/1094-1	08.12.11	18:48	42° 4,81' S	9° 36,56' E	4107,9	W 13	15,1	0,1	Dredge	start dredging
MSM19/1094-1	08.12.11	19:32	42° 4,80' S	9° 37,19' E	4096,6	W 11	87,7	0,0	Dredge	stop dredging
MSM19/1094-1	08.12.11	20:22	42° 4,81' S	9° 37,19' E	4171,5	WNW 10	65,8	-0,3	Dredge	on deck
MSM19/1095-1	08.12.11	22:25	41° 57,55' S	9° 13,84' E	4873,5	WNW 12	350,4	0,3	Dredge	surface
MSM19/1095-1	08.12.11	23:59	41° 57,73' S	9° 13,16' E	4519,8	WNW 14	234,6	0,3	Dredge	start dredging
MSM19/1095-1	09.12.11	00:53	41° 57,73' S	9° 13,16' E	4540,7	WNW 13	221,0	0,2	Dredge	stop dredging
MSM19/1095-1	09.12.11	01:49	41° 57,73' S	9° 13,16' E	4528,3	WSW 10	14,7	0,4	Dredge	on deck
MSM19/1096-1	09.12.11	03:43	41° 59,36' S	9° 14,59' E	4870,5	SW 11	301,6	0,7	Dredge	surface
MSM19/1096-1	09.12.11	04:32	41° 59,36' S	9° 14,59' E	4874,9	SW 10	165,5	0,5	Dredge	information
MSM19/1096-1	09.12.11	05:12	41° 59,36' S	9° 14,59' E	4876,5	WSW 10	5,9	0,8	Dredge	information
MSM19/1096-1	09.12.11	06:20	41° 59,36' S	9° 14,59' E	4878,8	SW 9	11,6	0,2	Dredge	on deck
MSM19/1097-1	09.12.11	08:59	42° 19,15' S	9° 17,51' E	4796,2	SSW 8	282,1	-0,2	Dredge	surface
MSM19/1097-1	09.12.11	10:28	42° 19,04' S	9° 16,94' E	4527,1	SSW 8	67,8	-0,0	Dredge	start dredging
MSM19/1097-1	09.12.11	11:09	42° 19,04' S	9° 16,94' E	4544,7	SSW 7	216,7	-0,1	Dredge	stop dredging
MSM19/1097-1	09.12.11	12:08	42° 19,04' S	9° 16,92' E	4517,6	SSW 8	249,2	-0,2	Dredge	on deck
MSM19/1098-1	09.12.11	12:41	42° 18,38' S	9° 18,22' E	4796,8	SW 7	171,3	-0,1	Dredge	surface
MSM19/1098-1	09.12.11	14:08	42° 18,46' S	9° 17,72' E	4565,3	SSW 9	277,0	0,8	Dredge	start dredging
MSM19/1098-1	09.12.11	14:44	42° 18,47' S	9° 17,72' E	4618,3	SSW 8	234,1	-0,6	Dredge	stop dredging
MSM19/1098-1	09.12.11	15:44	42° 18,47' S	9° 17,72' E	4599,7	S 8	212,4	-0,2	Dredge	on deck
MSM19/1099-1	09.12.11	17:11	42° 30,62' S	9° 14,22' E	4588,4	SSW 7	56,6	-0,4	Dredge	surface
MSM19/1099-1	09.12.11	18:37	42° 31,03' S	9° 13,98' E	4283,5	SSW 6	35,7	-0,3	Dredge	start dredging
MSM19/1099-1	09.12.11	19:20	42° 31,03' S	9° 13,98' E	4298,2	SW 4	244,2	-0,3	Dredge	stop dredging
MSM19/1099-1	09.12.11	20:14	42° 31,03' S	9° 13,98' E	4288,3	SSW 5	240,2	-0,2	Dredge	on deck
MSM19/1100-1	09.12.11	21:56	42° 29,51' S	8° 51,76' E	4304,3	SW 5	228,6	0,5	Dredge	surface
MSM19/1100-1	09.12.11	23:24	42° 29,48' S	8° 51,07' E	3945,9	SW 5	253,6	0,0	Dredge	start dredging
MSM19/1100-1	10.12.11	00:15	42° 29,48' S	8° 51,07' E	3913,5	WSW 2	1,7	-0,1	Dredge	stop dredging
MSM19/1100-1	10.12.11	01:06	42° 29,49' S	8° 51,05' E	3943,9	W 6	243,8	-0,1	Dredge	on deck
MSM19/1101-1	10.12.11	03:05	42° 45,87' S	8° 41,30' E	3644,7	W 3	105,1	0,0	Dredge	surface
MSM19/1101-1	10.12.11	04:21	42° 46,20' S	8° 40,90' E	3228,6	NW 3	243,5	0,3	Dredge	start dredging
MSM19/1101-1	10.12.11	05:15	42° 46,20' S	8° 40,90' E	3226,3	W 5	74,8	0,2	Dredge	stop dredging
MSM19/1101-1	10.12.11	05:57	42° 46,20' S	8° 40,90' E	3222,7	W 5	28,1	0,2	Dredge	on deck
MSM19/1102-1	10.12.11	08:12	43° 4,61' S	8° 56,41' E	3085,6	WNW 5	125,5	0,1	Dredge	surface
MSM19/1102-1	10.12.11	09:26	43° 4,38' S	8° 55,87' E	2524,5	WNW 6	252,8	0,2	Dredge	start dredging
MSM19/1102-1	10.12.11	09:50	43° 4,38' S	8° 55,87' E	2532,5	WNW 6	96,0	0,4	Dredge	information
MSM19/1102-1	10.12.11	10:00	43° 4,40' S	8° 55,91' E	2592,1	NW 6	79,7	-0,1	Dredge	information
MSM19/1102-1	10.12.11	11:00	43° 4,63' S	8° 56,44' E	3060,1	NW 6	19,1	0,4	Dredge	information
MSM19/1102-1	10.12.11	11:43	43° 4,63' S	8° 56,42' E	3094,9	NW 7	331,5	0,4	Dredge	on deck
MSM19/1103-1	10.12.11	12:40	43° 0,93' S	9° 5,94' E	3412,0	WNW 6	1,2	0,3	Dredge	surface
MSM19/1103-1	10.12.11	13:56	43° 0,76' S	9° 5,32' E	3011,9	NW 7	260,4	0,4	Dredge	start dredging
MSM19/1103-1	10.12.11	14:58	43° 0,76' S	9° 5,32' E	3055,9	NW 8	75,2	0,0	Dredge	stop dredging
MSM19/1103-1	10.12.11	15:31	43° 0,76' S	9° 5,32' E	3059,8	NW 9	68,7	0,2	Dredge	on deck
MSM19/1104-1	10.12.11	17:00	43° 10,31' S	9° 14,62' E	3001,9	NW 9	347,8	-0,2	Dredge	surface
MSM19/1104-1	10.12.11	18:15	43° 9,94' S	9° 14,20' E	2488,1	NW 8	39,3	0,1	Dredge	start dredging
MSM19/1104-1	10.12.11	19:08	43° 9,94' S	9° 14,20' E	2496,1	NW 8	306,0	0,3	Dredge	stop dredging
MSM19/1104-1	10.12.11	19:39	43° 9,94' S	9° 14,20' E	2487,8	NW 10	191,6	0,3	Dredge	on deck
MSM19/1105-1	10.12.11	20:22	43° 11,19' S	9° 19,56' E	3797,1	NW 9	58,8	0,0	Dredge	surface
MSM19/1105-1	10.12.11	21:40	43° 10,92' S	9° 19,03' E	3334,2	NNW 9	301,5	0,8	Dredge	start dredging
MSM19/1105-1	10.12.11	22:36	43° 10,92' S	9° 19,02' E	3340,7	NNW 10	246,4	0,2	Dredge	stop dredging

Station No.	Date	Time [UTC]	Position Lat	Position Lon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Action
MSM19/1105-1	10.12.11	23:21	43° 10,91' S	9° 19,01' E	3318,9	NW 10	227,6	0,0	Dredge	on deck
MSM19/1106-1	11.12.11	03:23	43° 17,53' S	8° 20,81' E	2931,8	NW 11	54,2	-0,0	Dredge	surface
MSM19/1106-1	11.12.11	04:30	43° 17,26' S	8° 20,30' E	2352,9	NW 10	48,5	-0,0	Dredge	start dredging
MSM19/1106-1	11.12.11	05:26	43° 17,26' S	8° 20,30' E	2338,5	NW 11	227,7	0,1	Dredge	stop dredging
MSM19/1106-1	11.12.11	05:57	43° 17,26' S	8° 20,30' E	2337,8	NW 11	212,6	0,1	Dredge	on deck
MSM19/1107-1	11.12.11	08:46	43° 41,87' S	8° 16,64' E	4443,8	NW 11	257,4	0,3	Dredge	surface
MSM19/1107-1	11.12.11	10:11	43° 41,47' S	8° 16,40' E	4105,1	NW 12	49,5	0,7	Dredge	start dredging
MSM19/1107-1	11.12.11	10:56	43° 41,47' S	8° 16,40' E	4109,7	NW 12	223,5	0,7	Dredge	stop dredging
MSM19/1107-1	11.12.11	11:50	43° 41,46' S	8° 16,37' E	4110,0	NW 12	39,9	0,4	Dredge	on deck
MSM19/1108-1	11.12.11	18:18	43° 40,51' S	6° 54,14' E	4000,7	NNW 16	194,7	0,4	Dredge	surface
MSM19/1108-1	11.12.11	19:39	43° 40,17' S	6° 53,71' E	3573,1	NNW 18	299,1	0,4	Dredge	start dredging
MSM19/1108-1	11.12.11	20:24	43° 40,17' S	6° 53,71' E	3571,5	NW 17	320,3	0,4	Dredge	stop dredging
MSM19/1108-1	11.12.11	21:12	43° 40,17' S	6° 53,71' E	3570,3	WNW 16	228,9	0,3	Dredge	on deck
MSM19/1109-1	12.12.11	05:08	44° 3,69' S	5° 57,00' E	3922,7	S 17	39,8	-0,0	Dredge	surface
MSM19/1109-1	12.12.11	06:32	44° 4,18' S	5° 56,98' E	3512,6	S 16	109,1	0,4	Dredge	start dredging
MSM19/1109-1	12.12.11	07:33	44° 4,18' S	5° 56,98' E	3524,7	S 12	217,0	-0,2	Dredge	stop dredging
MSM19/1109-1	12.12.11	08:22	44° 4,18' S	5° 56,98' E	3506,7	SSW 11	72,9	-0,3	Dredge	on deck
MSM19/1110-1	12.12.11	16:54	44° 21,62' S	4° 59,23' E	2453,1	S 12	116,3	0,4	Dredge	surface
MSM19/1110-1	12.12.11	17:52	44° 22,02' S	4° 59,34' E	1927,7	S 12	195,0	0,3	Dredge	start dredging
MSM19/1110-1	12.12.11	18:48	44° 22,01' S	4° 59,34' E	1943,6	S 9	73,2	-0,2	Dredge	stop dredging
MSM19/1110-1	12.12.11	19:13	44° 22,01' S	4° 59,34' E	1947,9	SSW 11	204,5	-0,0	Dredge	on deck
MSM19/1111-1	13.12.11	00:53	45° 3,84' S	4° 47,97' E	3289,5	S 8	241,1	-0,1	Dredge	surface
MSM19/1111-1	13.12.11	02:11	45° 4,39' S	4° 47,99' E	2697,6	SSW 7	297,3	0,2	Dredge	start dredging
MSM19/1111-1	13.12.11	03:14	45° 4,39' S	4° 47,99' E	2720,8	S 6	244,9	0,1	Dredge	stop dredging
MSM19/1111-1	13.12.11	03:46	45° 4,39' S	4° 47,99' E	2702,4	S 5	186,8	0,0	Dredge	on deck
MSM19/1112-1	13.12.11	08:19	45° 28,16' S	4° 58,64' E	0,0	SSE 5	72,2	0,0	Dredge	surface
MSM19/1112-1	13.12.11	09:28	45° 28,63' S	4° 58,70' E	2243,1	S 5	175,1	1,3	Dredge	start dredging
MSM19/1112-1	13.12.11	10:14	45° 28,63' S	4° 58,70' E	2240,4	S 4	90,3	0,1	Dredge	stop dredging
MSM19/1112-1	13.12.11	10:46	45° 28,65' S	4° 58,70' E	2240,1	SSE 5	154,0	0,1	Dredge	on deck
MSM19/1113-1	13.12.11	11:38	45° 27,06' S	5° 4,94' E	3284,7	SSE 4	106,9	-0,1	Dredge	surface
MSM19/1113-1	13.12.11	12:56	45° 27,59' S	5° 5,07' E	2901,6	S 4	301,5	0,3	Dredge	start dredging
MSM19/1113-1	13.12.11	13:48	45° 27,59' S	5° 5,07' E	2924,3	S 3	286,6	0,1	Dredge	stop dredging
MSM19/1113-1	13.12.11	14:24	45° 27,59' S	5° 5,07' E	2877,0	S 3	149,9	-0,1	Dredge	on deck
MSM19/1114-1	13.12.11	23:12	44° 36,32' S	3° 50,90' E	3224,5	WNW 5	224,8	0,2	Dredge	surface
MSM19/1114-1	14.12.11	00:25	44° 36,70' S	3° 50,48' E	2875,3	WNW 5	237,5	-0,0	Dredge	start dredging
MSM19/1114-1	14.12.11	01:09	44° 36,70' S	3° 50,48' E	2874,2	NW 7	206,6	-0,1	Dredge	stop dredging
MSM19/1114-1	14.12.11	01:46	44° 36,71' S	3° 50,46' E	2872,6	NW 8	52,5	0,4	Dredge	on deck
MSM19/1115-1	14.12.11	15:22	43° 11,51' S	1° 23,77' E	2625,1	NW 16	323,0	-0,0	Dredge	surface
MSM19/1115-1	14.12.11	16:27	43° 11,18' S	1° 23,44' E	2175,8	NW 15	128,1	0,4	Dredge	start dredging
MSM19/1115-1	14.12.11	17:25	43° 11,18' S	1° 23,44' E	2184,1	NW 16	37,4	-0,2	Dredge	stop dredging
MSM19/1115-1	14.12.11	17:53	43° 11,18' S	1° 23,43' E	2144,1	WNW 13	277,0	0,3	Dredge	on deck
MSM19/1116-1	14.12.11	22:49	42° 51,73' S	0° 34,91' E	2360,5	WSW 14	256,7	-0,2	Dredge	surface
MSM19/1116-1	14.12.11	23:51	42° 52,00' S	0° 34,41' E	1899,1	SW 15	124,3	-0,2	Dredge	start dredging
MSM19/1116-1	15.12.11	00:40	42° 52,00' S	0° 34,42' E	1892,0	SW 13	292,1	-0,5	Dredge	stop dredging
MSM19/1116-1	15.12.11	01:05	42° 52,00' S	0° 34,42' E	1893,1	SW 13	277,1	-0,3	Dredge	on deck
MSM19/1117-1	15.12.11	12:15	43° 32,41' S	1° 2,79' W	1431,7	WSW 14	256,0	0,6	Dredge	surface
MSM19/1117-1	15.12.11	13:10	43° 32,48' S	1° 3,44' W	1036,8	W 12	254,3	0,9	Dredge	start dredging
MSM19/1117-1	15.12.11	13:33	43° 32,48' S	1° 3,44' W	1046,6	W 16	236,1	0,6	Dredge	information
MSM19/1117-1	15.12.11	13:50	43° 32,47' S	1° 3,33' W	1055,1	W 14	80,8	0,3	Dredge	information
MSM19/1117-1	15.12.11	14:30	43° 32,47' S	1° 3,33' W	1056,4	WNW 13	219,5	0,1	Dredge	stop dredging
MSM19/1117-1	15.12.11	14:50	43° 32,47' S	1° 3,33' W	1086,0	W 13	48,8	-0,1	Dredge	on deck
MSM19/1118-1	15.12.11	20:15	43° 58,24' S	1° 27,23' W	1472,1	NW 18	73,3	0,1	Dredge	surface
MSM19/1118-1	15.12.11	21:03	43° 57,93' S	1° 27,59' W	1100,0	NW 19	285,8	0,9	Dredge	start dredging
MSM19/1118-1	15.12.11	21:53	43° 57,93' S	1° 27,59' W	1100,1	WNW 20	87,9	1,0	Dredge	stop dredging

Station No.	Date	Time [UTC]	Position Lat	Position Lon	Depth [m]	Windstrength [m/s]	Course [°]	Speed [kn]	Gear	Action
MSM19/1118-1	15.12.11	21:55	43° 57,93' S	1° 27,59' W	1100,2	NW 18	306,8	0,4	Dredge	information
MSM19/1118-1	15.12.11	22:32	43° 57,85' S	1° 27,74' W	1084,2	WNW 19	54,6	1,2	Dredge	on deck
MSM19/1119-1	16.12.11	09:48	43° 27,10' S	2° 32,41' W	3396,5	WSW 9	319,8	0,3	Dredge	surface
MSM19/1119-1	16.12.11	11:05	43° 26,88' S	2° 32,97' W	2944,9	WSW 11	3,3	0,3	Dredge	start dredging
MSM19/1119-1	16.12.11	12:01	43° 26,88' S	2° 32,97' W	2930,3	WSW 8	228,3	0,4	Dredge	stop dredging
MSM19/1119-1	16.12.11	12:42	43° 26,88' S	2° 32,98' W	2934,7	WSW 8	110,8	0,2	Dredge	on deck
MSM19/1120-1	16.12.11	13:28	43° 22,20' S	2° 34,49' W	2493,1	W 6	57,5	0,0	Dredge	surface
MSM19/1120-1	16.12.11	14:32	43° 22,52' S	2° 34,96' W	2162,7	W 6	161,8	0,6	Dredge	start dredging
MSM19/1120-1	16.12.11	15:34	43° 22,52' S	2° 34,96' W	2161,8	W 4	42,4	-0,2	Dredge	stop dredging
MSM19/1120-1	16.12.11	16:00	43° 22,52' S	2° 34,96' W	2164,9	WSW 4	202,4	0,2	Dredge	on deck
MSM19/1121-1	16.12.11	19:11	43° 4,29' S	2° 28,13' W	2265,9	WSW 7	158,7	0,6	Dredge	surface
MSM19/1121-1	16.12.11	20:13	43° 4,07' S	2° 28,69' W	1834,7	WSW 10	79,2	0,2	Dredge	start dredging
MSM19/1121-1	16.12.11	21:02	43° 4,08' S	2° 28,69' W	1829,4	WSW 9	36,0	0,4	Dredge	stop dredging
MSM19/1121-1	16.12.11	21:27	43° 4,08' S	2° 28,70' W	1836,7	WSW 11	126,6	0,7	Dredge	on deck
MSM19/1122-1	17.12.11	03:19	42° 40,66' S	1° 25,54' W	1456,0	W 13	116,7	0,4	Dredge	surface
MSM19/1122-1	17.12.11	04:02	42° 40,73' S	1° 25,96' W	1100,2	WSW 10	202,5	-0,1	Dredge	start dredging
MSM19/1122-1	17.12.11	04:42	42° 40,73' S	1° 25,95' W	1102,2	WSW 14	272,7	-0,3	Dredge	stop dredging
MSM19/1122-1	17.12.11	04:59	42° 40,73' S	1° 25,95' W	1114,1	WSW 11	282,7	0,0	Dredge	on deck
MSM19/1123-1	17.12.11	15:18	42° 23,11' S	0° 56,60' E	2915,0	WSW 12	347,2	0,2	Dredge	surface
MSM19/1123-1	17.12.11	16:22	42° 23,22' S	0° 56,10' E	2517,4	WSW 7	325,0	0,5	Dredge	start dredging
MSM19/1123-1	17.12.11	17:11	42° 23,22' S	0° 56,10' E	2517,1	WSW 9	13,7	0,4	Dredge	stop dredging
MSM19/1123-1	17.12.11	17:43	42° 23,22' S	0° 56,10' E	2512,1	WSW 10	347,7	0,3	Dredge	on deck
MSM19/1124-1	17.12.11	22:08	42° 31,77' S	1° 45,98' E	2355,0	SW 11	354,6	-0,1	Dredge	surface
MSM19/1124-1	17.12.11	23:13	42° 31,95' S	1° 45,34' E	1943,9	SW 17	244,4	-0,3	Dredge	start dredging
MSM19/1124-1	18.12.11	00:04	42° 31,95' S	1° 45,34' E	1952,3	SW 11	141,5	-0,4	Dredge	stop dredging
MSM19/1124-1	18.12.11	00:33	42° 31,96' S	1° 45,31' E	1942,2	SW 9	179,6	-0,8	Dredge	on deck
MSM19/1125-1	18.12.11	04:37	42° 12,31' S	2° 22,16' E	1711,1	SW 13	292,5	0,2	Dredge	surface
MSM19/1125-1	18.12.11	05:26	42° 12,63' S	2° 22,06' E	1337,5	SW 7	224,5	-0,3	Dredge	start dredging
MSM19/1125-1	18.12.11	06:12	42° 12,63' S	2° 22,06' E	1332,7	WSW 9	106,5	0,2	Dredge	information
MSM19/1125-1	18.12.11	06:45	42° 12,43' S	2° 22,12' E	1398,3	WSW 10	49,6	-0,2	Dredge	information
MSM19/1125-1	18.12.11	07:10	42° 12,41' S	2° 22,13' E	1567,3	WSW 12	118,5	-0,0	Dredge	on deck
MSM19/1126-1	18.12.11	10:59	41° 43,25' S	2° 5,46' E	2192,3	W 12	219,5	-0,5	Dredge	surface
MSM19/1126-1	18.12.11	11:59	41° 43,26' S	2° 4,92' E	1613,1	W 11	65,8	-0,4	Dredge	start dredging
MSM19/1126-1	18.12.11	12:15	41° 43,26' S	2° 4,92' E	1598,6	W 13	277,4	-0,5	Dredge	information
MSM19/1126-1	18.12.11	13:13	41° 43,24' S	2° 5,49' E	2191,3	W 13	156,7	-0,6	Dredge	information
MSM19/1126-1	18.12.11	13:44	41° 43,24' S	2° 5,46' E	2188,4	W 14	180,2	-0,5	Dredge	on deck
MSM19/1127-1	18.12.11	14:09	41° 42,79' S	2° 5,05' E	2012,3	WNW 14	251,5	-0,1	Dredge	surface
MSM19/1127-1	18.12.11	15:03	41° 42,85' S	2° 4,51' E	1546,7	WNW 15	264,8	0,9	Dredge	start dredging
MSM19/1127-1	18.12.11	15:54	41° 42,85' S	2° 4,50' E	1544,2	WNW 17	254,5	-0,1	Dredge	stop dredging
MSM19/1127-1	18.12.11	16:15	41° 42,85' S	2° 4,50' E	1549,4	W 17	247,9	0,1	Dredge	on deck
MSM19/1128-1	18.12.11	17:13	41° 47,94' S	2° 7,45' E	2509,9	WNW 18	55,1	0,6	Dredge	surface
MSM19/1128-1	18.12.11	18:18	41° 47,87' S	2° 6,84' E	2136,3	WNW 18	254,9	1,2	Dredge	start dredging
MSM19/1128-1	18.12.11	19:04	41° 47,87' S	2° 6,83' E	2145,9	WNW 16	63,9	0,3	Dredge	stop dredging
MSM19/1128-1	18.12.11	19:34	41° 47,87' S	2° 6,84' E	2132,3	WNW 17	87,2	0,3	Dredge	on deck