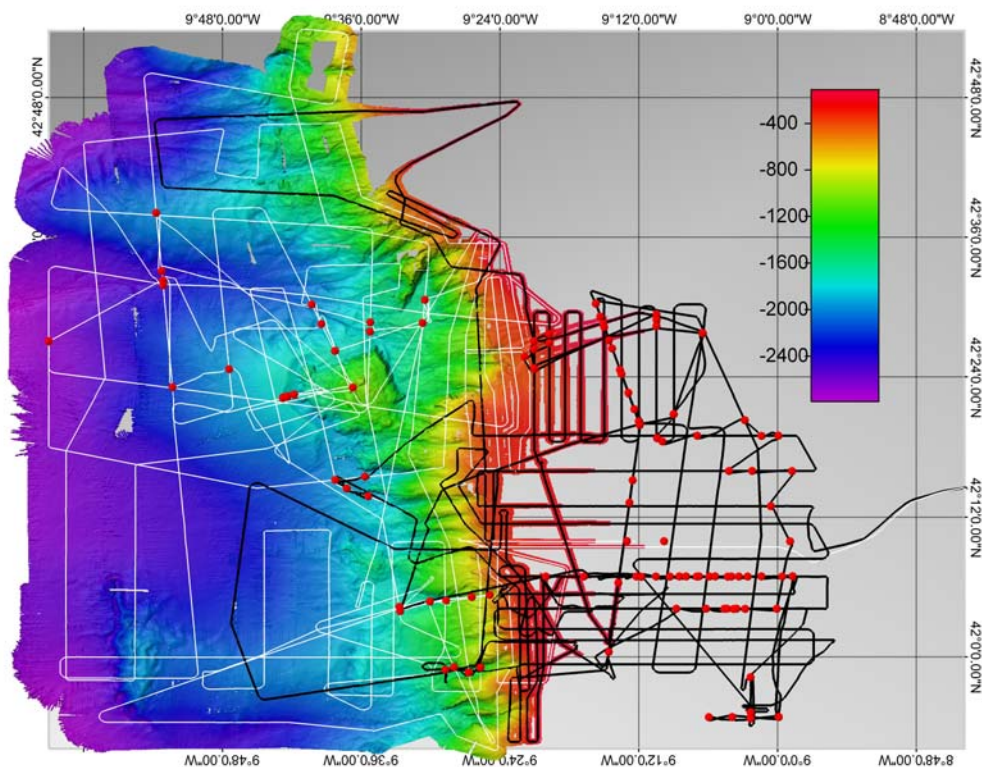


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Short Cruise Report RV METEOR Cruise M84/4 GALIOMAR III

Vigo – Vigo
1st – 28th May, 2011
Chief Scientist: Till Hanebuth
Captain: Thomas Wunderlich



Ship track of RV METEOR cruise M84/4 Galiomar III with seismic/echosounder profiles (1st leg white, 2nd leg black) and sediment sampling/coring stations (red dots).

Objectives

The scientific targets of leg M84/4 with the acronym *GALIOMAR III* were 1) to identify characteristic structures and critical interfaces in sedimentary shelf systems and at the continental slope (as the final source of sediments) and 2) to use the associated deposits to reconstruct transport routes and sediment fluxes. In previous own studies (Pos-342, Pos-366/3), we have reconstructed the sedimentary history and the stratigraphic architecture of the Galician shelf in detail already. Further, we have roughly identified possible pathways of sediment export.

The following hypotheses were, thus, the base for our cruise M84/4:

- a. Several individual transport pathways exist on the shelf which have been alternating active during the past 30 thousand years.
- b. In-situ carbonate production influences the sediment dynamics in a clastic shelf system by changing the overall grain-size spectrum.
- c. The sediment export across the shelf break and down the continental slope is controlled by local morphological and oceanographic elements.
- d. Locally confined deposits at the foot of the continental slope (contouritic, turbiditic) have formed in relation to the sediment pathways on the shelf and record the history of sediment export from the shelf in detail.

In the first part of the cruise, we intended to run seismic and acoustic profiles at the upper and lower continental slope accompanied by a number of sediment cores. Aim was to reconstruct the sediment export from the shelf into the deep sea during the late Quaternary times. The sediment-conducting structures (canyons, gullies) and confined depocentres (turbidite deposits, drift bodies) will be in the focus of this activity. These latter sediment successions are intended to be used as archives recording a) the variability of sediment availability from the shelf and b) the alternating prevailing sediment transport modi at the continental slope in high temporal resolution.

During the second part of the cruise and starting from the own preliminary studies at the continental slope, we wanted to map the interactions between siliciclastic and carbonaceous sedimentation patterns on the shelf, and particular depositional features which have formed by the local oceanography (e.g., ripples fields, mud belts). This program would be completed by surface sampling and sediment coring along the main routes of sediment export. Special emphasis would be placed on the shelf break zone as a critical interface for sediment export.

Narrative

The cruise M84/4 was organized in two legs with a 7-hours long technical stop in the harbor of Vigo in the middle of the cruise time.

During the **first leg**, we have worked in the area bound by the shelf break off Galicia in the East and the central part of the Interior Basin which is located between the continental slope and the eastern slope of the Galicia Bank. Targets of the first leg were: a) The series of gullies and channels along the steep continental slope that cut back into the shelf break and might have served as sediment conduits in former times or have this function even

still today. b) A large canyon-channel system on the continental margin off the Arousa region which is characterized by several generations of tributary channel systems as well as associated with numerous side terraces and mass movement bodies. c) Contouritic sediment bodies of which the largest and most conspicuous is surrounding a very prominent structural, to all sides sharp-bounded mount-like height. d) The hemipelagic sediment drape which covers most of the study area but with significantly varying sediment thicknesses which is obviously linked to the local ocean current patterns in interaction with a certain level of terrigenous sediment supply from the eastern side plus the local seafloor topography.

Our strategy was to map the seafloor bathymetry with the shipboard multibeam system around the elements of interest in best possible detail to obtain insight into the morphological organization of the area as well as create a basal map on which the further program of the leg could be organized. Due to frequently rough weather and sea conditions, which were frequently suppressing the deployment of other devices, and the limited dimensions of the study area we have mapped the area with an impressive complete coverage and in best lateral resolution. In a second step, we did sediment-acoustic (PARASOUND) and seismic (GI-GUN) measurements along numerous profiles across all the above mentioned structural and sedimentary elements. As well, we run several long profiles from the shelf break into the Interior Basin and in N/S direction. We are, thus, able now to interpret the origin of most of the morphological elements by their internal 3-dimensional architecture and their regional association with each other. To link acoustic facies with seafloor subbottom material and to understand sources and distribution patterns of sediments, we took series of multicores, box cores and gravity cores in a final step. The material obtained covers all sorts of slope and basin sediments, such as hemipelagic, contouritic, turbiditic sediment, slides, lag deposits and rocky relict surfaces. We had no problems to realize our program, aside from the fact that the weather and wave conditions become generally rougher with distance to the coast.

At the end of this leg, we had a short stop in the harbor of Vigo. We have used this time to disembark the compressor container and the seismic winch, reorganize the containers on the after deck and to configure the electro-magnetic profiling sledge. Also, a limited staff exchange was carried out.

During the **second leg** of cruise M4/4, we have focused our activity on the continental shelf off Galicia. Targets of the part of the cruise were: a) The boundaries and transient sedimentary facies changes from inner to outer shelf and parallel to the shelf break which should reflect the position of important sediment export pathways as well as sediment sorting and distribution patterns. b) The mid-shelf mud belt which's thickness and distribution patterns we have mapped with PARASOUND in good spatial resolution to obtain a data base for sediment budget calculations. c) Local fields of seafloor irregularities which might be related to wave-like deposits superimposing the undulating underlying rock substratum. d) The linkage of the sedimentary shelf system with the gullies on the uppermost slope to understand the role of the shelf break in sediment behavior.

Since we wanted to deploy the new electro-magnetic profiling sledge, we first have run long E/W profiles with the shipboard multibeam and PARASOUND systems to be sure that no obstacle (such as wrecks, outcropping rocks etc.) might be barrier for the ground-towed profiler device. In a second step, we have deployed this sledge along these mapped corridors measuring even subtle lithological and physical variations in outstanding lateral

resolution. However, the frequently rough sea conditions, numerous wrecks (or things of similar size and shape), and a enormous fishery activity had strong influence on the sledge program continuously causing great time delays and forcing us to slalom courses. In the final step, we have taken series (1-2 nautical miles distance) of short gravity cores (Rumohrlot) which will enable us to calibrate the physical/magnetic data of the sledge with real sedimentological/geochemical data. Beside this electro-magnetic program, we have mapped the above mentioned sedimentary and erosive structures with PARASOUND to get an idea about the geometries reflecting the formation processes. Sediment coring with the vibro corer which is able to drill into coarse-grained, carbonaceous, dry and even lithified materials. The sedimentary facies recovered by these cores are as manifold as one should expect from such a shelf environment and reflect the original and individual formation processes of each of the investigated elements and bodies. Unfortunately, the vibro corer got lost at the end of the leg in 110 m water depth; two 6-hours lasting endeavors to retrieve this device again were without success.

Acknowledgements

We like to thank captain Thomas Wunderlich, his three officers and crew of RV METEOR for the outstanding collaboration and the great working atmosphere. The ship time was provided by the Deutsche Forschungsgemeinschaft (DFG) within the core program METEOR/MERIAN. Financial support for the backing research projects is provided though the DFG Research Center/Excellence Cluster “The Ocean in the Earth System” at the University of Bremen. We would like to acknowledge our colleagues Guillermo Frances (Vigo) and Gemma Ercilla (Barcelona) for their special support. Finally, we also would like to thank the MARUM logistic group for their efforts.

Cruise Participants

Alekseev	Vasily	Deck technician	MARUM
Andrade Grande	Alba	Surface sampling	UVigo
Baasch	Benjamin	Magnetics	GeoB
Baumann	Karl-Heinz	Water sampling	GeoB
Behrens	Philipp	Surface sampling	MARUM
Bender	Vera B.	Surface sampling	EUROPROX
Dobeneck	Tilo v.	Magnetics	GeoB
dos Santos Marques Alberto	Ana Isabel	Surface sampling	LNEG
Frederichs	Thomas	Magnetics	GeoB
Haberkorn	Julia	Seismics	GeoB
Hanebuth	Till	Cruise leader	MARUM
Hangen	Jannes	Deck technician	MARUM
Hilgenfeldt	Christian	Magnetics	GeoB
Just	Janna	Magnetics	GeoB
Kockisch	Brit	Lab technician	GeoB
Lantzsch	Hendrik	Geolab	GeoB
Lenhart	Antje	Seismics	MARUM
Lipke	Anna	Geolab	MARUM
Lobo Sánchez	Francisco José	Geolab	IACT
Mena Rodríguez	Ángel	Geolab	UVigo
Müller	Hendrik	Magnetics	GeoB
Petrovic	Alexander	Geolab	MARUM
Rodríguez Germade	Isabel	Water sampling	UVigo
Roud	Sophie	Magnetics	GeoB
Schwab	Arne	Seismics	MARUM
Schwenk	Tilmann	Leader seimics	GeoB
Voigt	Ines	Surface sampling	MARUM
Wenau	Stefan	Seismics	GeoB

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GeoB *Faculty of Geosciences, University of Bremen, Germany*

IACT *CSIC-Instituto Andaluz de Ciencias de la Tierra, Granada, Spain*

UVigo *Facultad de Ciencias del Mar, Universidad de Vigo, Spain*

LNEG *Laboratório Nacional de Energia e Geologia, Lisbon, Portugal*

List of Stations

GeoB no.	Ship's station no.	Date	Gear type	Time sea floor (UTC)	Coordinates		Water depth (m)
					Latitude	Longitude	
15601-1	ME 844/351-1	02.05.11	Gaint Box Corer	7:48	42° 5.39' N	9° 24.82' W	867
15602-1	ME 844/352-1	02.05.11	Gaint Box Corer	09:03	42° 5.19' N	9° 26.38' W	1092
15603-1	ME 844/353-1	02.05.11	Gaint Box Corer	10:33	42° 4.89' N	9° 28.60' W	1426
15604-1	ME 844/354-1	02.05.11	Gaint Box Corer	12:18	42° 4.79' N	9° 30.01' W	1598
15605-1	ME 844/356-1	04.05.11	Gaint Box Corer	06:27	42° 30.58' N	9° 30.45' W	1524
15606-1	ME 844/357-1	04.05.11	Niskin Bottles	08:55	42° 26.21' N	9° 38.19' W	1660
15606-2	ME 844/358-1	04.05.11	Multi Corer	09:46	42° 26.21' N	9° 38.21' W	1656
15606-3	ME 844/359-1	04.05.11	Gravity Corer	11:44	42° 26.21' N	9° 38.21' W	1655
15607-1	ME 844/360-1	04.05.11	Gaint Box Corer	13:54	42° 28.53' N	9° 39.39' W	1883
15607-2	ME 844/361-1	04.05.11	Gravity Corer	15:48	42° 28.53' N	9° 39.39' W	1883
15608-1	ME 844/362-1	04.05.11	Gaint Box Corer	18:00	42° 30.20' N	9° 40.23' W	2043
15609-1	ME 844/364-1	05.05.11	Niskin Bottles	05:26	42° 24.65' N	9° 47.35' W	1938
15609-2	ME 844/365-1	05.05.11	Multicorer	06:30	42° 24.65' N	9° 47.35' W	1935
15609-3	ME 844/366-1	05.05.11	Gravity Corer	08:37	42° 24.65' N	9° 47.35' W	1935
15610-1	ME 844/367-1	05.05.11	Gravity Corer	10:58	42° 23.12' N	9° 52.26' W	2214
15610-2	ME 844/368-1	05.05.11	Multicorer	12:54	42° 23.12' N	9° 52.26' W	2215
15611-1	ME 844/369-1	05.05.11	Gaint Box Corer	16:01	42° 32.28' N	9° 53.12' W	2420
15611-2	ME 844/373-1	05.05.12	Gravity Corer	07:49	42° 32.27' N	9° 53.10' W	2415
15612-1	ME 844/370-1	05.05.11	Gaint Box Corer	18:11	42° 31.87' N	9° 53.08' W	2359
15612-2	ME 844/371-1	05.05.11	Gravity Corer	20:37	42° 31.88' N	9° 53.09' W	2359
15613-1	ME 844/374-1	07.05.11	Gravity Corer	11:06	42° 27.05' N	10°03.00' W	2639
15613-2	ME 844/375-1	07.05.11	Multicorer	13:20	42° 27.05' N	10°03.00' W	2639
15613-3	ME 844/376-1	07.05.11	Niskin Bottles	14:42	42° 27.05' N	10°03.00' W	2641
15614-1	ME 844/379-1	10.05.11	Multicorer	04:26	42° 23.08' N	9°36.64' W	1029
15614-2	ME 844/386-1	10.05.11	Gaint Box Corer	18:53	42° 23.08' N	9°36.63' W	1028
15615-1	ME 844/380-1	10.05.11	Multicorer	06:41	42° 22.23' N	9°42.70' W	1709
15615-2	ME 844/385-1	10.05.11	Gravity Corer	16:34	42° 22.22' N	9°42.70' W	1708
15616-1	ME 844/381-1	10.05.11	Gaint Box Corer	08:34	42° 22.34' N	9°42.31' W	1792
15616-2	ME 844/384-1	10.05.11	Gravity Corer	14:36	42° 22.34' N	9°42.31' W	1794
15617-1	ME 844/382-1	10.05.11	Gaint Box Corer	10:22	42° 22.49' N	9°41.72' W	1860
15617-2	ME 844/383-1	10.05.11	Gravity Corer	12:25	42° 22.49' N	9°41.72' W	1859
15618-1	ME 844/387-1	10.05.11	Niskin Bottles	22:45	42° 38.05' N	9°53.67' W	2000
15618-2	ME 844/388-1	11.05.11	Multicorer	00:10	42° 38.05' N	9°53.66' W	2000
15618-3	ME 844/389-1	11.05.11	Gravity Corer	02:30	42° 38.05' N	9°53.66' W	2000
15619-1	ME 844/390-1	11.05.11	Gravity Corer	05:32	42° 33.08' N	9°53.21' W	2356
15619-2	ME 844/391-1	11.05.11	Multicorer	07:41	42° 33.08' N	9°53.21' W	2359
15620-1	ME 844/392-1	11.05.11	Multicorer	11:07	42° 28.66' N	9°35.16' W	1625
15620-2	ME 844/393-1	11.05.11	Gravity Corer	13:02	42° 28.66' N	9°35.16' W	1625
15621-1	ME 844/394-1	11.05.11	Gravity Corer	15:01	42° 27.86' N	9°35.18' W	1740
15621-2	ME 844/395-1	11.05.11	Multicorer	16:51	42° 27.88' N	9°35.19' W	1742
15622-1	ME 844/396-1	11.05.11	Multicorer	18:50	42° 28.61' N	9°30.64' W	1472
15622-2	ME 844/397-1	11.05.11	Gravity Corer	21:04	42° 28.61' N	9°30.64' W	1471
15623-1	ME 844/399-1	12.05.11	Gaint Box Corer	09:30	42° 04.35' N	9°32.65' W	1617
15623-2	ME 844/400-1	12.05.11	Gravity Corer	11:21	42° 04.35' N	9°32.65' W	1619
15624-1	ME 844/401-1	12.05.11	Gravity Corer	13:14	42° 03.97' N	9°32.58' W	1639
15625-1	ME 844/402-1	12.05.11	Gravity Corer	14:58	42° 04.81' N	9°30.02' W	1598
15626-1	ME 844/403-1	12.05.11	Gravity Corer	16:37	42° 05.20' N	9°26.39' W	1089
15627-1	ME 844/406-1	14.05.11	Multicorer	05:11	42° 15.49' N	9°35.64' W	1903

15628-1	ME 844/407-1	14.05.11	Multicorer	07:20	42° 15.21' N	9°38.20' W	1961
15628-2	ME 844/412-1	14.05.11	Gravity Corer	17:58	42° 15.21' N	9°38.20' W	1965
15629-1	ME 844/408-1	14.05.11	Multicorer	09:19	42° 14.47' N	9°37.20' W	1885
15629-2	ME 844/407-1	14.05.11	Gravity Corer	15:48	42° 14.47' N	9°37.19' W	1885
15630-1	ME 844/409-1	14.05.11	Gaint Box Corer	11:45	42° 13.81' N	9°35.35' W	1891
15630-2	ME 844/410-1	14.05.11	Gravity Corer	13:43	42° 13.81' N	9°35.35' W	1891
15631-1	ME 844/415-1	15.05.11	Multicorer	13:13	41° 54.90' N	9° 02.42' W	102
15631-2	ME 844/420-1	15.05.11	Gravity Corer	16:26	41° 54.91' N	9° 02.42' W	101
15632-1	ME 844/416-1	15.05.11	Multicorer	13:40	41° 55.40' N	9° 02.42' W	103
15632-2	ME 844/419-1	15.05.11	Gravity Corer	15:52	41° 55.41' N	9° 02.42' W	103
15633-1	ME 844/417-1	15.05.11	Multicorer	14:23	41° 58.41' N	9° 02.43' W	110
15633-2	ME 844/418-1	15.05.11	Gravity Corer	15:03	41° 58.41' N	9° 02.43' W	109
15634-1	ME 844/430-1	18.05.11	Gaint Box Corer	18:41	42° 06.99' N	9° 16.74' W	179
15635-1	ME 844/431-1	18.05.11	Gaint Box Corer	19:42	42° 06.97' N	9° 11.80' W	160
15636-1	ME 844/432-1	18.05.11	Grab Sampler	20:36	42° 06.99' N	9° 09.35' W	147
15637-1	ME 844/433-1	18.05.11	Grab Sampler	21:07	42° 07.01' N	9° 07.96' W	143
15638-1	ME 844/434-1	18.05.11	Grab Sampler	21:36	42° 07.01' N	9° 06.85' W	141
15639-1	ME 844/435-1	18.05.11	Multicorer	22:11	42° 07.01' N	9° 05.46' W	135
15640-1	ME 844/436-1	18.05.11	Multicorer	23:08	42° 07.00' N	9° 04.07' W	132
15641-1	ME 844/437-1	19.05.11	Multicorer	00:08	42° 07.00' N	9° 02.67' W	128
15642-1	ME 844/438-1	19.05.11	Multicorer	01:08	42° 07.00' N	8° 59.71' W	110
15643-1	ME 844/439-1	19.05.11	Multicorer	02:12	42° 07.00' N	8° 58.81' W	105
15644-1	ME 844/440-1	19.05.11	Multicorer	03:47	41° 55.01' N	9° 00.00' W	87
15644-2	ME 844/445-1	19.05.11	Gravity Corer	07:38	41° 55.02' N	9° 00.01' W	83
15645-1	ME 844/441-1	19.05.11	Multicorer	04:30	41° 55.01' N	9° 04.01' W	117
15645-2	ME 844/444-1	19.05.11	Gravity Corer	06:48	41° 55.01' N	9° 04.00' W	116
15646-1	ME 844/442-1	19.05.11	Multicorer	05:15	41° 55.00' N	9° 06.01' W	122
15646-2	ME 844/443-1	19.05.11	Gravity Corer	06:05	41° 55.00' N	9° 06.01' W	122
15647-1	ME 844/446	19.05.11	Niskin Bottles	09:20	42°07.022'N	8°58.814'W	98,5
15648-1	ME 844/447	19.05.11	Rumohr Corer	10:03	42°07.011'N	9°01.494'W	115,7
15648-2	ME 844/448	19.05.11	Rumohr Corer	10:29	42°07.012'N	9°01.495'W	115,7
15648-3	ME 844/449	19.05.11	Rumohr Corer	10:43	42°07.014'N	9°01.493'W	116,2
15649-1	ME 844/450	19.05.11	Rumohr Corer	11:25	42°07.00'N	9°03.43'W	126
15650-1	ME844/451	19.05.11	Rumohr Corer	12:15	42°06.999'N	9°04.386'W	129,9
15651-1	ME844/452	19.05.11	Rumohr Corer	12:58	42°07.00'N	9°05.96'W	135
15652-1	ME844/453	19.05.11	Rumohr Corer	13:35	42°07.00'N	9°07.05'W	138
15653-1	ME844/454	19.05.11	Niskin Bottles	14:15	42°07.01'N	9°08.54'W	144
15653-2	ME844/455	19.05.11	Rumohr Corer	14:47	42°07.01'N	9°08.54'W	144
15654-1	ME844/456	19.05.11	Rumohr Corer	15:21	42°07.00'N	9°10.55'W	149,8
15654-2	ME844/457	19.05.11	Rumohr Corer	15:35	42°07.004'N	9°10.556'W	149,8
15655-1	ME844/458	19.05.11	Rumohr Corer	16:08	42°07.007'N	9°12.229'W	160
15656-1	ME844/459	19.05.11	Niskin Bottles	17:21	42°06.991'N	9°20.001'W	220,8
15656-2	ME844/460	19.05.11	Rumohr Corer	17:30	42°06.991'N	9°20.002'W	220,5
15657-1	ME844/465	20.05.11	Niskin Bottles		41°59.17'N	9°25.67'W	1328,5
15657-1	ME844/466	20.05.11	Giant Box Corer	05:08	41°59.177'N	9°25.649'W	1327,8
15657-2	ME844/474	20.05.11	Gravity Corer	18:27	41°59.198'N	9°25.629'W	1327,6
15657-3	ME844/475	20.05.11	Gravity Corer	19:51	41°59.200'N	9°25.629'W	1326,9
15658-1	ME844/467	20.05.11	Giant Box Corer	06:36	41°58.731'N	9°26.660'W	1389,4
15658-2	ME844/473	20.05.11	Gravity Corer	16:45	41°58.726'N	9°26.650'W	1393,6
15659-1	ME844/468	20.05.11	Giant Box Corer	08:17	41°59.200'N	9°27.927'W	1406,2
15659-2	ME844/472	20.05.11	Gravity Corer	15:05	41°59,184'N	9°27.916'W	1406,3
15660-1	ME844/470	20.05.11	Giant Box Corer	11:21	41°58.980'N	9°28.681'W	1402,8
15660-2	ME844/471	20.05.11	Gravity Corer	13:00	41°58.980'N	9°28.681'W	1402,9
15661-1	ME844/479	21.05.11	Giant Box Corer	12:40	42°20.248'N	9°12.022'W	145

15661-2	ME844/482	21.05.11	Vibro Corer	15:24	42°20.244'N	9°12.025'W	146,02
15662-1	ME844/480	21.05.11	Giant Box Corer	13:22	42°21.267'N	9°12.403'W	150,8
15662-2	ME844/481	21.05.11	Vibro Corer	14:26	42°21.268'N	9°12.403'W	151,8
15663-1	ME844/483	21.05.11	Niskin Bottles	17:19	42°30.225'N	9°15.711'W	505 (????)
15663-2	ME844/484	21.05.11	Giant Box Corer	17:52	42°30.224'N	9°15.711'N	126
15664-1	ME844/488	23.05.11	Rumohr Corer	07:12	42°04.255'N	9°08.800'W	139,6
15665-1	ME844/489	23.05.11	Rumohr Corer	07:53	42°04.255'N	9°06.245'W	132,5
15666-1	ME844/490	23.05.11	Rumohr Corer	08:27	42°04.249'N	9°04.673'W	130
15667-1	ME844/491	23.05.11	Rumohr Corer	08:55	42°04.253'N	9°04.456'W	129
15668-1	ME844/492	23.05.11	Rumohr Corer	09:27	42°04.231'N	9°03.887'W	126
15669-1	ME844/493	23.05.11	Rumohr Corer	09:58	42°04.255'N	9°03.630'W	125
15670-1	ME844/494	23.05.11	Rumohr Corer	10:36	42°04.24'N	9°02.889'W	122,7
15671-1	ME844/495	23.05.11	Rumohr Corer	11:21	42°04.244'N	9°00.176'W	104,6
15672-1	ME844/496	23.05.11	Rumohr Corer	12:13	42°09.997'N	8°59.028'W	102
15672-2	ME844/497	23.05.11	Gravity Corer	12:48	42°09.998'N	8°59.027'W	103,4
15673-1	ME844/498	23.05.11	Gravity Corer	13:44	42°12.998'N	9°00.679'W	111,5
15673-2	ME844/499	23.05.11	Rumohr Corer	14:18	42°12.998'N	9°0.680'W	112,1
15674-1	ME844/500	23.05.11	Rumohr Corer	15:00	42°15.990'N	8°58.864'W	95,5
15675-1	ME844/501	23.05.11	Rumohr Corer	15:34	42°16004'N	9°02.290'W	116,5
15675-2	ME844/502	23.05.11	Rumohr Corer	15:49	42°16.004'N	9°02.290'W	117,3
15676-1	ME844/503	23.05.11	Rumohr Corer	16:18	42°15.998'N	9°04.277'W	123,9
15677-1	ME844/504	23.05.11	Rumohr Corer	17:05	42°19.012'N	9°00.033'W	95,3
15678-1	ME844/505	23.05.11	Rumohr Corer	17:41	42°18.993'N	9°01.486'W	106,9
15679-1	ME844/506	23.05.11	Rumohr Corer	18:18	42°20.334'N	9°02.920'W	112
15680-1	ME844/507	23.05.11	Rumohr Corer	19:05	42°19.007'N	9°07.002'W	135
15681-1	ME844/508	23.05.11	Rumohr Corer	19:45	42°18.524'N	9°09.999'W	143
15682-1	ME844/509	23.05.11	Rumohr Corer	20:15	42°18.798'N	9°10.457'W	145
15683-1	ME844/510	23.05.11	Rumohr Corer	21:13	42°20.840'N	9°09.041'W	138,6
15683-2	ME844/529	24.05.11	Vibro Corer	07:18	42°20,846'N	9°09,013'W	138,2
15683-3	ME844/530	24.05.11	Vibro Corer	07:58	42°20,845'N	9°09,014'W	138,5
15684-1	ME844/511	23.05.11	Rumohr Corer	22:18	42°27.689'N	9°06.512'W	97,7
15684-2	ME844/531	24.05.11	Vibro Corer	09:16	42°27,719'N	9°06,545'W	98,5
15685-1	ME844/512	23.05.11	Rumohr Corer	23:30	42°28.303'N	9°10.502'W	114,3
15685-2	ME844/524	24.05.11	Gravity Corer	09:11	42°28.32'N	9°10.51'W	114,3
15685-3	ME844/534	24.05.11	Vibro Corer	12:22	42°28,303'N	9°10,501'W	114
15686-1	ME844/513	23.05.11	Rumohr Corer	23:59	42°28.849'N	9°10.500'W	109,7
15686-2	ME844/525	24.05.11	Gravity Corer	09:40	42°28.86'N	9°10.50'W	111,2
15686-3	ME844/533	24.05.11	Vibro Corer	11:19	42°28,851'N	9°10,496'W	111
15687-1	ME844/514	24.05.11	Rumohr Corer	00:25	42°29.297'N	9°10.502'W	100,6
15687-2	ME844/526	24.05.11	Grab Sampler	10:23	42°29.311'N	9°10.502'W	100,4
15687-3	ME844/527	24.05.11	Gravity Corer	10:46	42°29.310'N	9°10.501'W	100,8
15687-4	ME844/532	24.05.11	Vibro Corer	10:30	42°29,302'N	9°10,503'W	101
15688-1	ME844/515	24.05.11	Rumohr Corer	01:59	42°24.641'N	9°21.000'W	328,3
15688-2	ME844/522	24.05.11	Gravity Corer	07:10	42°24.651'N	9°21.008'W	326
15688-3	ME844/523	24.05.11	Niskin Bottles	07:52	42°24.709'N	9°20.991'W	325
15689-1	ME844/516	24.05.11	Rumohr Corer	02:53	42°27.099'N	9°21.005'W	300,4
15690-1	ME844/517	24.05.11	Rumohr Corer	03:32	42°27.633'N	9°19.711'W	251,9
15691-1	ME844/518	24.05.11	Rumohr Corer	04:12	42°26.862'N	9°19.715'W	275,3
15692-1	ME844/519	24.05.11	Rumohr Corer	04:55	42°26.332'N	9°21.002'W	324,8
15693-1	ME844/520	24.05.11	Rumohr Corer	05:30	42°25.700'N	9°21.841'W	106.7!?
15693-2	ME844/521	24.05.11	Rumohr Corer	05:55	42°25.700'N	9°21.840'W	350,5
15694-1	ME844/536	05.25.11	Rumohr Corer	20:10	42°29,13'N	9°15,33'W	134,1
15695-1	ME844/537	05.25.11	Rumohr Corer	20:43	42°28,508'N	9°15,073'W	139,8
15696-1	ME844/538	05.25.11	Rumohr Corer	21:09	42°28,226'N	9°14,991'W	136,8

15697-1	ME844/539	05.25.11	Rumohr Corer	21:46	42°27,098'N	9°14,588'W	144,9
15698-1	ME844/540	05.25.11	Rumohr Corer	22:30	42°26,41'N	9°14,31'W	150,4
15699-1	ME844/541	05.25.11	Rumohr Corer	23:19	42°24,576'N	9°13,636'W	148,9
15801-1	ME844/542	05.25.11	Rumohr Corer	00:01	42°24,221'N	9°13,507'W	152,9
15802-1	ME844/543	05.25.11	Rumohr Corer	00:50	42°22,622'N	9°12,918'W	153,8
15803-1	ME844/544	05.25.11	Rumohr Corer	01:42	42°19,921'N	9°11,933'W	151,2
15804-1	ME844/545	05.25.11	Rumohr Corer	02:36	42°15,207'N	9°12,550'W	159,8
15804-2	ME844/546	05.25.11	Rumohr Corer	02:51	42°15,208'N	9°12,551'W	160,1
15805-1	ME844/547	05.25.11	Rumohr Corer	03:25	42°13,297'N	9°12,824'W	170,1
15806-1	ME844/548	05.25.11	Rumohr Corer	04:26	42°06,452'N	9°13,779'W	159,8
15807-1	ME844/549	05.25.11	Rumohr Corer	05:22	42°00,572'N	9°14,599'W	147,4
15808-1	ME844/550	05.25.11	Rumohr Corer	07:02	42°10,01'N	9°09,85'W	147,1
15809-1	ME844/551	05.25.11	Rumohr Corer	07:41	42°10,02'N	9°13,04'W	170,8