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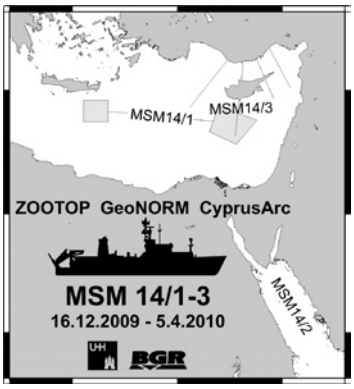

Short Cruise Report

Maria S. Merian MSM 14/1

Limassol - Limassol

17 December 2009 - 14 January 2010

Chief Scientist: Bernd Christiansen

Captain: Friedhelm von Staa

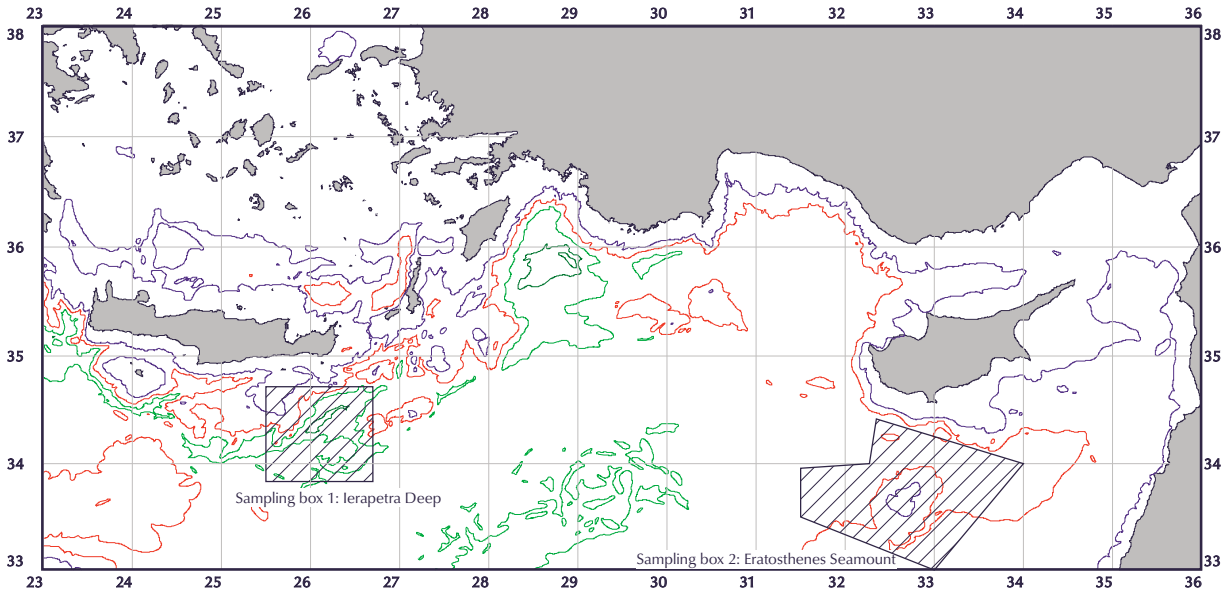

Figure 1: Study sites

Objectives

Leg 1 of cruise MSM 14 addressed two different topics. Topic 1 focussed on the ecology of Eratosthenes Seamount south of Cyprus. The studies at Eratosthenes Seamount address the question whether a seamount ecosystem in an oligotrophic region with a warm deep water sphere is comparable to similar topographic features in the Northeast Atlantic, with respect to their influence on the surrounding flow field and the nutrient regime, their productivity and the trophic structure of their food web. Furthermore, the interaction between the seamount and the persisting gyres, eddies and frontal systems, and their effect on the food supply of the seamount communities are addressed. In addition to the seamount-specific goals, the results from the cruise will further our knowledge of the zoogeography of pelagic and benthic organisms in the eastern Mediterranean.

The studies at Eratosthenes Seamount include the following questions::

- Does Eratosthenes Seamount have a greater influence on the surrounding water mass than seamounts in the NE Atlantic because of the interaction with the quasi-permanent eddies in the eastern Mediterranean?
- Is the productivity at the seamount affected by the missing upwelling at the surrounding eddies, or are Taylor caps generated with upwelling areas at the outer margins, like at many oceanic seamounts? Are there asymmetric distribution patterns in the sediment and in the communities?
- Can the impoverishment in nutrients of the eastern Mediterranean be compensated by local effects at the seamount (Taylor caps, upwelling, permanent fronts)?
- What is the role of the zooplankton in the trophic system of the seamount? Can vertically migrating zooplankton contribute to the food supply of the seamount communities, as indicated at some Atlantic seamounts?
- Can Eratosthenes Seamount be regarded a biodiversity hotspot, like many seamount of the open ocean, or does it mirror the generally impoverished fauna of the eastern Mediterranean, caused by the isolation, the warm deep water and the oligotrophic conditions?

Topic 2 aims at a continuation of the time series analysis of planktic communities in the deep basins of the eastern Mediterranean. From the late 1980s to early 1990s, the hydrographic regime of the deep water masses of the eastern Mediterranean Basins changed significantly, probably caused by a shift in climatic conditions. The former inflow of deep waters from the Adriatic Sea into the deep cavities of the eastern Mediterranean was replaced by inflow of deep warm and saltier water from the Aegean Sea, resulting in changes of the temperature and salinity distribution of the deep waters and in an elevation of the nutricline. This large-scale regime shift was called the Eastern Mediterranean Transient (EMT). At the same time, significant changes in the zooplankton community structure were observed, including, e.g., mass occurrences of the copepod Calanus helgolandicus in the deep waters of the Levantine Basin. From 1995, the inflow of Aegean water decreased and Adriatic water became more important again.

The deep-sea working group at the IHF Hamburg owns the only data set from the eastern Mediterranean, which has monitored the changes in abundance and composition of zooplankton since the beginning of the EMT in 1987. The continuation of this time series will allow for a better understanding of the effects of climate change on pelagic ecosystems in the eastern Mediterranean basins.

Narrative

R.V. MARIA S. MERIAN left the port of Limassol at noon on December 17th, 2009. After leaving the shelter of the Akrotiri peninsula, a rough sea made the preparation of the equipment difficult, but when we reached our first station on the summit plateau of Eratosthenes Seamount at 18:00 h, we could start station work with a CTD cast, multinet hauls, a multicorer series and a lander buoyancy test. During the next weeks, CTD, multicorer and multinet were routinely employed at various locations on the seamount summit plateau, at the rim of the summit plateau, above the slope and at the base of the seamount.

The bottom chamber lander of the Scottish Association for Marine Science was deployed for the first time at the southern base on December 19th. The next day, the profiler lander was deployed at the same location. Both landers were recovered successfully on December 21st, but it turned out that the profiler lander did not function properly, so at the next location at the eastern base of the seamount, only the chamber lander was deployed and recovered two days later.

On December 22nd the demersal longline was moored on the summit plateau at a water depth of ca 800 m. The longline carried 80 hooks, which were baited with squid, and one additional trap. The longline was left on the bottom for 8 hours and captured a total of 25 fish, most of them sharks (blackmouth catshark, *Galeus melastomus*, and lantern shark, *Etmopterus spinax*). One unidentified eel was captured in the trap.

Two further longline deployments were made on December 26th and 28th, respectively, both on the summit plateau at water depths between 900 and 1000 m. Part of the second longline was lost, and only a few hooks and the trap with two sharks and an eel were recovered. The third longline was deployed over night and recovered successfully with 43 fishes, including, besides catsharks and lantern sharks, also one gulper shark.

Epibenthic megafauna and demersal fish were supposed to be sampled with a 2 m beam trawl. A first tow on the summit plateau on December 22nd yielded a very poor catch of a few small fish and decapod crustaceans. During a second tow at the rim of the plateau on December 26th, water depth 1000 m, the trawl got stuck and the net was damaged; most of the catch was lost.

After the underwater electronics could be repaired, the 1 m^2-double-MOCNESS was deployed for the first time on Christmas Eve. This instrument is a towed multiple opening and closing plankton net system with 20 nets, which can be opened and closed sequentially and were used to fish discrete depth layers. Further MOCNESS hauls followed the next days and complimented the vertical multinet hauls, which focused on the small-scale zooplankton distribution pattern.

In the evening of December 24th, crew and scientists met in the hangar and on the main deck to celebrate Christmas Eve with a festive barbecue. Although temperatures were all but winterly, even Santa Claus showed up (but without reindeer!) and handed over Christmas presents to all (Fig. 2). Meanwhile we performed a bathymetric track following roughly the 1500 m contour.

During the following days, the routine hydrographic, biogeochemical and biological sampling programme

at Eratosthenes Seamount was continued at various locations above the summit and slopes, with CTD casts, multinet profiles, multicorer and MOCNESS hauls, and lander deployments.

Because the megafauna and demersal fish densities in the area were so low that the 2 m beam trawl obviously was too small for a significant catch, we decided to give a 45 ft otter trawl a try. This gear was used on MARIA S. MERIAN for the first time. The otter trawl (Fig. 3) was towed on a single warp with a 62 m bridle. A first tow was performed on the summit plateau on New Years Eve with a bottom time of about one hour. The catch was very small with a few specimens of the spider fish *Bathypterois* sp., one lantern shark and some decapod crustaceans (*Polycheles* sp.), confirming the extreme scarcity of megafauna at this site. Another successful haul followed on the deep-sea plain to the north of Eratosthenes Seamount at a water depth of 2530 m on January 4th. Here we caught another species of spider fish, probably the tripod fish *Bathypterois grallator*, several specimens each of Macrouridae (*Chalinura* sp.) and Bythitidae (*Cataetyx laticeps*), again *Polycheles* sp., shrimps and two crabs (Fig. 4). In addition, the catch contained a large amount of rubbish, including bottles, cans, plastics, etc. (Fig. 4). Some metal items were probably aircraft fragments. To our amazement, a plastic bag full of unidentifiable black, stinking waste contained tubes of vestimentiferan worms (Fig. 5)!

We finished the sampling programme at Eratosthenes with a CTD grid in the northeastern part of the seamount on January 4th and 5th, aiming at the permanent eddy in the vicinity of the seamount. Led by model predictions and information from gliders in the area, we could successfully sample from the margin to the core of the eddy.

On January 6th, MARIA S. MERIAN sailed to our oceanic reference station at 33° 39.0' N, 31° 31.5' E. We started with a MOCNESS tow to a depth of 2300 m, followed by the deployment of the benthic lander and the routine sampling programme with CTD, multinet, multicorer and further MOCNESS tows.

We left the area on January 8th at noon, heading for the last sampling site, the Ierapetra Deep south of Crete, where we arrived on the next day. After a CTD profile, we sampled the zooplankton of the deep water layers in the Basin down to 4300 m with a multinet; the layers between the surface and 3000 m were fished with the MOCNESS. A box corer deployment failed because the sediment was so soft that the corer sank too deep into the mud, but the multicorer produced very good sediment cores. After a short CTD transect across another semipermanent eddy south of Crete and a multicorer haul south of the deep trench at 2900 m, we finished the sampling programme on January 12th, 22:00 h. On the way back to Limassol we tried to locate a lost Italian glider operating in the area for a project jointly with the Oceanography Centre of the University of Cyprus, but we did not receive any radio signals from the instrument.

MARIA S. MERIAN arrived in the port of Limassol in the morning of January 14th.

Acknowledgements

We thank captain F. von Staa and his crew for their excellent support throughout the cruise. The shiptime was provided by the Deutsche Forschungsgemeinschaft.

Figure 2: Santa Claus and his helpers. Photograph by D. Solovyov

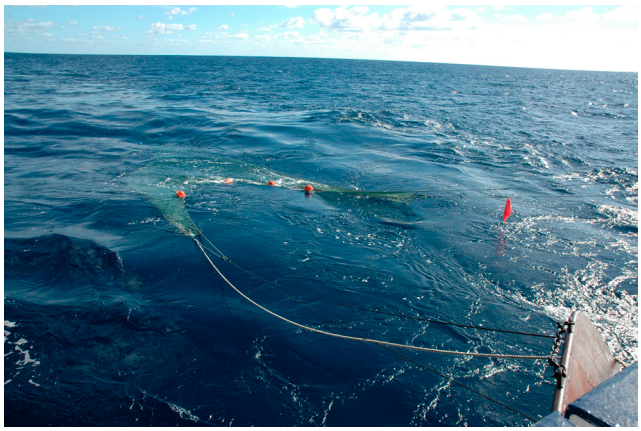

Figure 3: Deployment of the otter trawl. Photograph by S. Christiansen

Figure 4: Fish and crustacean (left) and rubbish (right) from 2300 m depth. Photograph by B. Christiansen

Figure 5: Vestimentiferan worm from 2300 m depth. Photograph by P. Lamont

List of participants

No	Surname	First name	Institution	Function
1	Christiansen	Bernd	UHH-IHF	Chief scientist/deep-sea fish
2	Brand	Tim	SAMS	Biogeochemistry/nutrients
3	Christiansen	Henrik	UHH-IHF	Zooplankton
4	Christiansen	Svenja	UHH-IHF	Zooplankton
5	Denda	Anneke	UHH-IHF	Zooplankton/trophic relationships
6	Fischer	Antje	DZMB	Benthos/meiofauna
7	Hoffmann	Sven	DZMB	Benthos/meiofauna
8	Kalogeropoulou	Vasiliki	HCMR	Benthos, microbiology
9	Kesselring	Tina	UHH-IHF	Zooplankton
10	Lamont	Peter	SAMS	Benthos/makrofauna
11	Lampadariou	Nikolaos	HCMR	Benthos, microbiology
12	Martin	Bettina	UHH-IHF	Zooplankton/deep-sea fish
13	Montgomery	John	SAMS	Biogeochemistry/lander
14	Peine	Florian	URO	Biogeochemistry/POC
15	Schneehorst	Anja	UHH-IFM	Physical oceanography
16	Schuster	Anne	URO	Biogeochemistry/POC
17	Solovyov	Dmytro	OC-UCY	Physical oceanography
18	Stahl	Hendrik	SAMS	Biogeochemistry/lander
19	Tiedtke	Josephine	URO	Zooplankton
20	Turnewitsch	Robert	SAMS	Biogeochemistry/stable isotopes
21	Unger	Katrin	vTI	Fish
22	Isaias	Evagoras	OC-UCY	Physical oceanography

Participating institutions

DZMB	Senckenberg am Meer, Abtlg. DZMB, Wilhelmshaven, Germany
HCMR	Hellenic Centre for Marine Research, Dept. of Deep-Sea Ecology, Heraklion, Greece
SAMS	The Scottish Association for Marine Science, Oban, Scotland, UK
UHH-IFM	Universität Hamburg, Institut für Meereskunde, Hamburg, Germany
UHH-IHF	Universität Hamburg, Institut für Hydrobiologie und Fischereiwissenschaft, Hamburg, Germany
OC-UCY	Oceanography Centre, University of Cyprus, Nicosia, Cyprus
URO	Universität Rostock, Biowissenschaften, Rostock, Germany
vTI	Johann Heinrich von Thünen-Institut, Institut für Fischereiökologie, Hamburg, Germany

Stations

Station	Date	Time	Latitude	Longtude	Depth (m)	Gear.
MSM14/1065-01	17.12.09	16:35	33° 37.30‘ N	32° 38.61‘ E	807.3	CTD/RO
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MSM14/1065-04	17.12.09	19:59	33° 37.29‘ N	32° 38.60‘ E	808.3	MUC
MSM14/1065-05	17.12.09	21:07	33° 37.29‘ N	32° 38.60‘ E	808.2	MUC
MSM14/1065-06	17.12.09	22:20	33° 37.29‘ N	32° 38.60‘ E	807.9	MN
MSM14/1065-07	17.12.09	23:07	33° 37.29‘ N	32° 38.60‘ E	808.1	MN
MSM14/1065-08	18.12.09	00:23	33° 37.29‘ N	32° 38.60‘ E	808.1	MN
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Station	Date	Time	Latitude	Longtude	Depth (m)	Gear.
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MSM14/1085-04	24.12.09	00:22	33° 37.73‘ N	32° 23.09‘ E	1533.1	MN
MSM14/1085-05	24.12.09	01:53	33° 37.73‘ N	32° 23.09‘ E	1532.5	CTD/RO

Station	Date	Time	Latitude	Longtude	Depth (m)	Gear.
MSM14/1085-06	24.12.09	03:44	33° 37.73‘ N	32° 23.09‘ E	1532.5	CTD/RO
MSM14/1085-07	24.12.09	03:59	33° 37.73‘ N	32° 23.09‘ E	1532.7	CTD/RO
MSM14/1086-01	24.12.09	07:44	33° 27.78‘ N	32° 52.89‘ E	1989.2	MOC-D
MSM14/1087-01	24.12.09	14:03	33° 39.86‘ N	33° 0.14‘ E	1985.5	EM120
MSM14/1088-01	25.12.09	04:06	33° 35.60‘ N	32° 59.00‘ E	2042.3	MUC
MSM14/1089-01	25.12.09	07:06	33° 35.59‘ N	32° 58.99‘ E	2044.2	MN
MSM14/1089-02	25.12.09	07:34	33° 35.59‘ N	32° 58.99‘ E	2044.2	MN
MSM14/1089-03	25.12.09	08:49	33° 35.59‘ N	32° 58.99‘ E	2044.2	MN
MSM14/1089-04	25.12.09	09:17	33° 35.59‘ N	32° 58.99‘ E	2044.2	MN
MSM14/1090-01	25.12.09	12:00	33° 32.85‘ N	32° 42.07‘ E	1046.6	BEAM
MSM14/1091-01	25.12.09	15:26	33° 27.92‘ N	32° 52.90‘ E	1984.5	MOC-D
MSM14/1092-01	26.12.09	00:04	33° 37.80‘ N	32° 18.01‘ E	1961.6	CTD/RO
MSM14/1092-02	26.12.09	02:19	33° 37.80‘ N	32° 18.00‘ E	1963.6	CTD/RO
MSM14/1092-03	26.12.09	02:43	33° 37.80‘ N	32° 18.00‘ E	1963.6	CTD/RO
MSM14/1093-01	26.12.09	04:46	33° 37.74‘ N	32° 17.99‘ E	1976.6	BL_C
MSM14/1093-01	28.12.09	05:41	33° 37.89‘ N	32° 18.06‘ E	1977.6	BL_C
MSM14/1094-01	26.12.09	05:54	33° 37.11‘ N	32° 31.63‘ E	943.4	LLT
MSM14/1095-01	26.12.09	07:26	33° 38.11‘ N	32° 32.62‘ E	942.5	MN
MSM14/1095-02	26.12.09	07:53	33° 38.11‘ N	32° 32.62‘ E	942.6	MN
MSM14/1095-03	26.12.09	09:06	33° 38.11‘ N	32° 32.62‘ E	942.6	MN
MSM14/1095-04	26.12.09	09:31	33° 38.11‘ N	32° 32.62‘ E	942.9	MN
MSM14/1095-05	26.12.09	10:51	33° 38.11‘ N	32° 32.62‘ E	942.5	MUC
MSM14/1095-06	26.12.09	11:50	33° 38.11‘ N	32° 32.62‘ E	942.6	MUC
MSM14/1095-07	26.12.09	12:47	33° 38.11‘ N	32° 32.62‘ E	942.7	MUC
MSM14/1096-01	26.12.09	17:17	33° 55.82‘ N	32° 39.82‘ E	1865.3	MOC-D
MSM14/1097-01	27.12.09	00:55	33° 37.70‘ N	32° 23.10‘ E	1528.7	MUC
MSM14/1097-02	27.12.09	02:15	33° 37.69‘ N	32° 23.10‘ E	1529.5	MUC
MSM14/1097-03	27.12.09	03:28	33° 37.69‘ N	32° 23.10‘ E	1528.7	MUC
MSM14/1097-04	27.12.09	04:51	33° 37.69‘ N	32° 23.09‘ E	1528.9	MUC
MSM14/1098-01	27.12.09	07:29	33° 23.49‘ N	32° 34.43‘ E	1497.2	CTD/RO
MSM14/1099-01	27.12.09	09:51	33° 33.61‘ N	32° 38.03‘ E	889.1	MN
MSM14/1099-02	27.12.09	10:25	33° 33.60‘ N	32° 38.04‘ E	889.8	MN
MSM14/1099-03	27.12.09	11:38	33° 33.61‘ N	32° 38.03‘ E	889.4	MN
MSM14/1099-04	27.12.09	12:09	33° 33.61‘ N	32° 38.03‘ E	889.5	MN
MSM14/1100-01	27.12.09	14:43	33° 47.13‘ N	32° 46.11‘ E	905.7	MUC
MSM14/1101-01	27.12.09	16:00	33° 49.82‘ N	32° 47.79‘ E	989.3	MN
MSM14/1101-02	27.12.09	17:09	33° 49.82‘ N	32° 47.79‘ E	989.3	MN
MSM14/1101-03	27.12.09	17:38	33° 49.82‘ N	32° 47.79‘ E	989.4	MN
MSM14/1101-04	27.12.09	18:50	33° 49.82‘ N	32° 47.79‘ E	989.4	MN
MSM14/1102-01	27.12.09	20:58	33° 38.12‘ N	32° 32.60‘ E	942.7	MN
MSM14/1102-02	27.12.09	21:24	33° 38.12‘ N	32° 32.60‘ E	942.6	MN
MSM14/1102-03	27.12.09	22:34	33° 38.12‘ N	32° 32.60‘ E	942.7	MN
MSM14/1102-04	27.12.09	23:08	33° 38.12‘ N	32° 32.60‘ E	942.6	MN
MSM14/1103-01	28.12.09	01:02	33° 38.11‘ N	32° 39.00‘ E	789.3	CTD/RO
MSM14/1103-02	28.12.09	02:32	33° 38.11‘ N	32° 39.00‘ E	784.9	CTD/RO
MSM14/1104-01	28.12.09	06:33	33° 37.73‘ N	32° 23.12‘ E	1526.7	MN
MSM14/1104-02	28.12.09	07:48	33° 37.73‘ N	32° 23.12‘ E	1527.5	MN
MSM14/1104-03	28.12.09	08:14	33° 37.73‘ N	32° 23.12‘ E	1528.3	MN
MSM14/1104-04	28.12.09	09:27	33° 37.73‘ N	32° 23.12‘ E	1526.7	MN
MSM14/1105-01	28.12.09	10:48	33° 38.00‘ N	32° 31.10‘ E	986.4	CTD/RO
MSM14/1106-01	28.12.09	12:50	33° 44.21‘ N	32° 41.11‘ E	1016.3	CTD/RO
MSM14/1107-01	28.12.09	14:13	33° 42.46‘ N	32° 41.11‘ E	890.8	LLT
MSM14/1108-01	28.12.09	17:19	33° 54.64‘ N	32° 50.31‘ E	1482.4	MUC

Station	Date	Time	Latitude	Longtude	Depth (m)	Gear.
MSM14/1108-02	28.12.09	18:32	33° 54.64‘ N	32° 50.30‘ E	1482.4	MUC
MSM14/1108-03	28.12.09	19:47	33° 54.63‘ N	32° 50.30‘ E	1482.4	MUC
MSM14/1108-04	28.12.09	21:00	33° 54.63‘ N	32° 50.30‘ E	1482.3	MUC
MSM14/1109-01	28.12.09	23:06	34° 2.02‘ N	32° 53.41‘ E	2240.6	CTD/RO
MSM14/1109-02	29.12.09	01:15	34° 2.02‘ N	32° 53.41‘ E	2241	CTD/RO
MSM14/1109-03	29.12.09	01:36	34° 2.02‘ N	32° 53.41‘ E	2241.8	CTD/RO
MSM14/1110-01	29.12.09	04:09	33° 54.62‘ N	32° 50.30‘ E	1482.4	BL_C
MSM14/1110-01	31.12.09	04:53	33° 54.74‘ N	32° 50.42‘ E	1483.5	BL_C
MSM14/1111-01	29.12.09	04:20	33° 54.63‘ N	32° 50.55‘ E	1481.9	BL_P
MSM14/1112-01	29.12.09	07:59	33° 37.48‘ N	32° 46.53‘ E	874.4	MN
MSM14/1112-02	29.12.09	08:26	33° 37.48‘ N	32° 46.53‘ E	875.2	MN
MSM14/1112-02	29.12.09	08:57	33° 37.48‘ N	32° 46.53‘ E	874.8	MN
MSM14/1112-03	29.12.09	09:33	33° 37.48‘ N	32° 46.53‘ E	874.8	MN
MSM14/1112-04	29.12.09	10:42	33° 37.48‘ N	32° 46.53‘ E	874.7	CTD/RO
MSM14/1112-05	29.12.09	11:24	33° 37.48‘ N	32° 46.53‘ E	874.7	CTD/RO
MSM14/1112-06	29.12.09	12:25	33° 37.48‘ N	32° 46.53‘ E	874.5	MUC
MSM14/1112-07	29.12.09	13:22	33° 37.48‘ N	32° 46.53‘ E	874.3	MUC
MSM14/1112-08	29.12.09	14:18	33° 37.47‘ N	32° 46.53‘ E	874.2	MUC
MSM14/1113-01	29.12.09	17:11	34° 0.04‘ N	32° 50.88‘ E	2694.9	MOC-D
MSM14/1114-01	30.12.09	01:18	34° 1.99‘ N	32° 53.41‘ E	2240.5	MUC
MSM14/1114-02	30.12.09	03:06	34° 1.99‘ N	32° 53.40‘ E	2240.5	MUC
MSM14/1114-03	30.12.09	04:57	34° 2.01‘ N	32° 53.40‘ E	2242.8	MUC
MSM14/1115-01	30.12.09	08:07	33° 57.93‘ N	33° 6.60‘ E	2363.2	MOC-D
MSM14/1116-01	30.12.09	15:35	33° 49.92‘ N	32° 47.82‘ E	1002.2	CTD/RO
MSM14/1117-01	30.12.09	17:33	33° 54.64‘ N	32° 50.35‘ E	1482.2	MN
MSM14/1117-02	30.12.09	18:01	33° 54.64‘ N	32° 50.36‘ E	1482.4	MN
MSM14/1117-03	30.12.09	19:11	33° 54.64‘ N	32° 50.36‘ E	1482.4	MN
MSM14/1117-04	30.12.09	19:37	33° 54.64‘ N	32° 50.36‘ E	1482.3	MN
MSM14/1118-01	30.12.09	21:47	34° 1.98‘ N	32° 53.41‘ E	2240.6	MN
MSM14/1118-02	30.12.09	22:23	34° 1.98‘ N	32° 53.41‘ E	2239.2	MN
MSM14/1118-03	30.12.09	23:39	34° 1.98‘ N	32° 53.41‘ E	2238.2	MN
MSM14/1118-04	31.12.09	00:11	34° 1.98‘ N	32° 53.41‘ E	2238.3	MN
MSM14/1119-01	31.12.09	01:42	34° 2.05‘ N	32° 52.98‘ E	2250	IKMT
MSM14/1120-01	31.12.09	06:40	33° 49.99‘ N	32° 52.73‘ E	2165	OT
MSM14/1121-01	31.12.09	11:10	33° 49.79‘ N	32° 47.83‘ E	988.8	MN
MSM14/1121-02	31.12.09	11:40	33° 49.79‘ N	32° 47.80‘ E	988.9	MN
MSM14/1121-03	31.12.09	12:56	33° 49.80‘ N	32° 47.80‘ E	989.4	MN
MSM14/1121-04	31.12.09	13:27	33° 49.79‘ N	32° 47.80‘ E	989.3	MN
MSM14/1122-01	31.12.09	16:00	33° 57.82‘ N	32° 46.81‘ E	1779.7	EM120
MSM14/1123-01	01.01.10	06:41	34° 2.04‘ N	32° 53.43‘ E	2243.9	BL_C
MSM14/1123-01	03.01.10	07:31	34° 2.19‘ N	32° 54.16‘ E	2221.7	BL_C
MSM14/1124-01	01.01.10	06:55	34° 2.05‘ N	32° 53.83‘ E	2241	BL_P
MSM14/1125-01	01.01.10	07:15	34° 2.01‘ N	32° 53.01‘ E	2244.6	MUC
MSM14/1126-01	01.01.10	11:02	33° 41.02‘ N	32° 37.96‘ E	863.2	MOC-D
MSM14/1127-01	01.01.10	14:44	33° 49.83‘ N	32° 47.82‘ E	990	MUC
MSM14/1127-02	01.01.10	15:40	33° 49.83‘ N	32° 47.82‘ E	990.5	MUC
MSM14/1127-03	01.01.10	16:37	33° 49.83‘ N	32° 47.82‘ E	991.1	MUC
MSM14/1128-01	01.01.10	18:47	33° 40.88‘ N	32° 36.96‘ E	863.6	MOC-D
MSM14/1129-01	02.01.10	00:19	33° 54.61‘ N	32° 50.31‘ E	1483.1	CTD/RO
MSM14/1129-02	02.01.10	02:14	33° 54.60‘ N	32° 50.30‘ E	1483.7	CTD/RO
MSM14/1129-03	02.01.10	02:38	33° 54.59‘ N	32° 50.30‘ E	1483.6	CTD/RO
MSM14/1129-04	02.01.10	05:00	33° 54.60‘ N	32° 50.30‘ E	1483.4	MN
MSM14/1129-05	02.01.10	06:12	33° 54.60‘ N	32° 50.30‘ E	1483.5	MN

Station	Date	Time	Latitude	Longtude	Depth (m)	Gear.
MSM14/1129-06	02.01.10	06:40	33° 54.60‘ N	32° 50.30‘ E	1483.8	MN
MSM14/1129-07	02.01.10	07:54	33° 54.60‘ N	32° 50.30‘ E	1483.9	MN
MSM14/1130-01	02.01.10	09:25	34° 2.01‘ N	32° 53.44‘ E	2240.3	MN
MSM14/1130-02	02.01.10	09:52	34° 2.01‘ N	32° 53.44‘ E	2240.5	MN
MSM14/1130-03	02.01.10	11:11	34° 2.01‘ N	32° 53.44‘ E	2239.9	MN
MSM14/1130-04	02.01.10	11:42	34° 2.01‘ N	32° 53.44‘ E	2239.8	MN
MSM14/1131-01	02.01.10	14:52	33° 44.94‘ N	33° 4.96‘ E	1993.4	MOC-D
MSM14/1132-01	02.01.10	23:44	33° 47.08‘ N	32° 46.14‘ E	906.1	MN
MSM14/1132-02	03.01.10	00:18	33° 47.08‘ N	32° 46.14‘ E	905.9	MN
MSM14/1132-03	03.01.10	01:37	33° 47.08‘ N	32° 46.14‘ E	905.9	MN
MSM14/1132-04	03.01.10	02:07	33° 47.08‘ N	32° 46.14‘ E	905.8	MN
MSM14/1133-01	03.01.10	09:59	33° 41.03‘ N	32° 41.04‘ E	0	MOC-D
MSM14/1134-01	03.01.10	13:10	33° 38.10‘ N	32° 39.00‘ E	783.2	MN
MSM14/1134-02	03.01.10	13:42	33° 38.10‘ N	32° 39.00‘ E	783.5	MN
MSM14/1135-01	03.01.10	16:08	33° 47.08‘ N	32° 46.63‘ E	928.5	BL_C
MSM14/1135-01	05.01.10	12:35	33° 47.15‘ N	32° 46.66‘ E	937.6	BL_C
MSM14/1136-01	03.01.10	16:30	33° 47.32‘ N	32° 46.69‘ E	936.5	BL_P
MSM14/1137-01	03.01.10	17:31	33° 40.99‘ N	32° 40.95‘ E	874.2	MOC-D
MSM14/1138-01	03.01.10	19:07	33° 40.18‘ N	32° 38.20‘ E	2772.3	IKMT
MSM14/1139-01	03.01.10	22:34	33° 47.10‘ N	32° 46.12‘ E	905.5	CTD/RO
MSM14/1139-02	03.01.10	23:55	33° 47.09‘ N	32° 46.10‘ E	904.8	CTD/RO
MSM14/1139-03	04.01.10	00:27	33° 47.10‘ N	32° 46.10‘ E	904.9	CTD/RO
MSM14/1139-04	04.01.10	01:42	33° 47.10‘ N	32° 46.10‘ E	904.6	MUC
MSM14/1139-05	04.01.10	02:43	33° 47.10‘ N	32° 46.10‘ E	904.9	MUC
MSM14/1139-06	04.01.10	03:54	33° 47.10‘ N	32° 46.11‘ E	905	BC
MSM14/1139-07	04.01.10	05:00	33° 47.10‘ N	32° 46.11‘ E	905.1	MN
MSM14/1139-08	04.01.10	06:08	33° 47.10‘ N	32° 46.11‘ E	905.2	MN
MSM14/1139-09	04.01.10	06:35	33° 47.10‘ N	32° 46.11‘ E	905	MN
MSM14/1139-10	04.01.10	07:42	33° 47.10‘ N	32° 46.11‘ E	905.3	MN
MSM14/1140-01	04.01.10	10:49	34° 5.65‘ N	33° 13.02‘ E	2248.2	OT
MSM14/1141-01	04.01.10	17:04	34° 3.60‘ N	32° 55.32‘ E	3348.9	IKMT
MSM14/1142-01	04.01.10	19:45	34° 4.98‘ N	33° 0.04‘ E	2556.6	CTD/RO
MSM14/1143-01	04.01.10	21:37	33° 57.28‘ N	33° 0.01‘ E	1837.4	CTD/RO
MSM14/1144-01	05.01.10	00:51	33° 49.98‘ N	33° 30.01‘ E	0	CTD/RO
MSM14/1145-01	05.01.10	03:30	33° 49.98‘ N	33° 20.03‘ E	2254.3	CTD/RO
MSM14/1146-01	05.01.10	05:12	33° 49.99‘ N	33° 10.03‘ E	2242.4	CTD/RO
MSM14/1147-01	05.01.10	06:56	33° 50.00‘ N	33° 0.01‘ E	1503.2	CTD/RO
MSM14/1148-01	05.01.10	08:38	33° 49.99‘ N	32° 50.00‘ E	1031.6	CTD/RO
MSM14/1149-01	05.01.10	10:17	33° 49.99‘ N	32° 40.00‘ E	1312.7	CTD/RO
MSM14/1150-01	05.01.10	14:58	33° 42.99‘ N	33° 0.00‘ E	1750.7	CTD/RO
MSM14/1151-01	05.01.10	16:35	33° 35.72‘ N	32° 59.98‘ E	2061.7	CTD/RO
MSM14/1152-01	05.01.10	20:01	33° 37.69‘ N	32° 23.11‘ E	1528.6	CTD/RO
MSM14/1153-01	05.01.10	22:11	33° 37.79‘ N	32° 18.01‘ E	1959	MUC
MSM14/1154-01	06.01.10	03:01	33° 25.09‘ N	31° 44.84‘ E	2042.8	MOC-D
MSM14/1155-01	06.01.10	09:22	33° 38.15‘ N	31° 31.45‘ E	2378.6	BL_C
MSM14/1155-01	08.01.10	10:40	33° 38.19‘ N	31° 31.57‘ E	2330	BL_C
MSM14/1156-01	06.01.10	09:40	33° 39.02‘ N	31° 31.58‘ E	2419.4	MUC
MSM14/1156-02	06.01.10	11:26	33° 39.02‘ N	31° 31.59‘ E	2419.9	MUC
MSM14/1157-01	06.01.10	15:14	33° 25.18‘ N	31° 44.78‘ E	3051.8	MOC-D
MSM14/1158-01	06.01.10	21:35	33° 39.03‘ N	31° 31.58‘ E	2419.5	MN
MSM14/1158-02	06.01.10	22:13	33° 39.03‘ N	31° 31.58‘ E	2419.8	MN
MSM14/1158-03	06.01.10	22:43	33° 39.03‘ N	31° 31.58‘ E	2419.8	MN
MSM14/1158-04	07.01.10	00:02	33° 39.02‘ N	31° 31.58‘ E	2419.8	MN

Station	Date	Time	Latitude	Longtude	Depth (m)	Gear.
MSM14/1158-05	07.01.10	00:32	33° 39.03‘ N	31° 31.58‘ E	2419.4	MN
MSM14/1158-06	07.01.10	01:57	33° 39.03‘ N	31° 31.58‘ E	2419.4	CTD/RO
MSM14/1158-07	07.01.10	04:01	33° 39.02‘ N	31° 31.58‘ E	2419.8	CTD/RO
MSM14/1158-08	07.01.10	04:36	33° 39.03‘ N	31° 31.58‘ E	2419.4	CTD/RO
MSM14/1158-09	07.01.10	06:28	33° 39.03‘ N	31° 31.58‘ E	2419.4	MN
MSM14/1158-10	07.01.10	06:55	33° 39.03‘ N	31° 31.58‘ E	2420.2	MN
MSM14/1158-11	07.01.10	08:07	33° 39.03‘ N	31° 31.58‘ E	2419.8	MN
MSM14/1158-12	07.01.10	08:35	33° 39.03‘ N	31° 31.58‘ E	2419.4	MN
MSM14/1158-13	07.01.10	09:53	33° 39.03‘ N	31° 31.58‘ E	2419.8	MUC
MSM14/1158-14	07.01.10	11:42	33° 39.03‘ N	31° 31.58‘ E	2420.2	MUC
MSM14/1159-01	07.01.10	14:24	33° 35.00‘ N	31° 22.15‘ E	2389.6	MOC-D
MSM14/1160-01	07.01.10	21:56	33° 39.01‘ N	31° 31.58‘ E	2418.7	CTD/RO
MSM14/1160-02	07.01.10	23:08	33° 39.01‘ N	31° 31.58‘ E	2419	CTD/RO
MSM14/1161-01	08.01.10	03:02	33° 34.96‘ N	31° 22.13‘ E	2387.6	MOC-D
MSM14/1162-01	09.01.10	10:49	34° 24.61‘ N	26° 7.50‘ E	4352.6	CTD/RO
MSM14/1162-02	09.01.10	13:50	34° 24.61‘ N	26° 7.50‘ E	4350.8	MN
MSM14/1162-03	09.01.10	18:57	34° 24.61‘ N	26° 7.49‘ E	4318.8	MN
MSM14/1163-01	10.01.10	00:28	34° 27.90‘ N	26° 10.04‘ E	3937.6	MOC-D
MSM14/1164-01	10.01.10	10:45	34° 24.59‘ N	26° 7.56‘ E	4352.7	BC
MSM14/1165-01	10.01.10	14:16	34° 23.97‘ N	26° 14.01‘ E	3545	MOC-D
MSM14/1166-01	11.01.10	01:32	34° 23.99‘ N	26° 14.15‘ E	3549.1	MOC-D
MSM14/1167-01	11.01.10	11:26	34° 24.59‘ N	26° 7.55‘ E	4352.8	MUC
MSM14/1168-01	11.01.10	15:08	34° 23.99‘ N	26° 14.00‘ E	3554.3	MOC-D
MSM14/1169-01	12.01.10	00:37	34° 24.57‘ N	26° 7.50‘ E	4344.4	MUC
MSM14/1169-02	12.01.10	03:38	34° 24.60‘ N	26° 7.52‘ E	4352.7	MUC
MSM14/1170-01	12.01.10	07:38	34° 24.19‘ N	25° 55.36‘ E	3044.5	CTD/RO
MSM14/1171-01	12.01.10	10:07	34° 23.69‘ N	25° 43.24‘ E	1846.4	CTD/RO
MSM14/1172-01	12.01.10	12:36	34° 23.32‘ N	25° 30.74‘ E	2217.8	CTD/RO
MSM14/1173-01	12.01.10	17:32	33° 54.49‘ N	26° 8.82‘ E	2919.5	MUC

CTD/RO	Seabird CTD with 24 bottle rosette
LLT	demersal longline with trap
MOC-D	1m^2-double-MOCNESS
MUC	multiple corer
BC	box corer
OT	bottom trawl (45' otter trawl)
BEAM	2m- beam trawl
BL_C	bottom chamber lander
BL_P	bottom profiler lander
MN	multinet
EM120	multibeam profile
IKMT	Isaac-Kidd-Midwater-Trawl