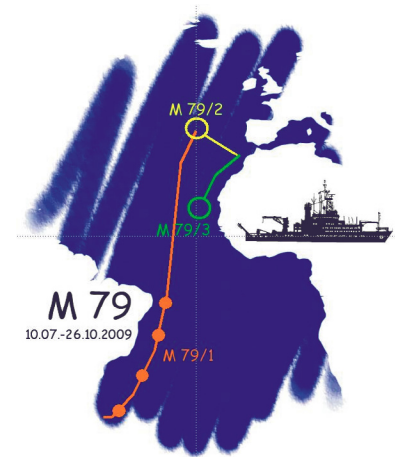


Dr. Bernd Christiansen
Universität Hamburg
Institut für Hydrobiologie und Fischereiwissenschaft
Große Elbstraße 133
D-22767 Hamburg

Tel.: +49 40 42838 6670
Fax: +49 40 42838 6678
email: bchristiansen@uni-hamburg.de



Short Cruise Report
Meteor M 79/3
Las Palmas - Mindelo
24 September - 23 October 2009
Chief Scientist: Bernd Christiansen
Captain: Walter Baschek

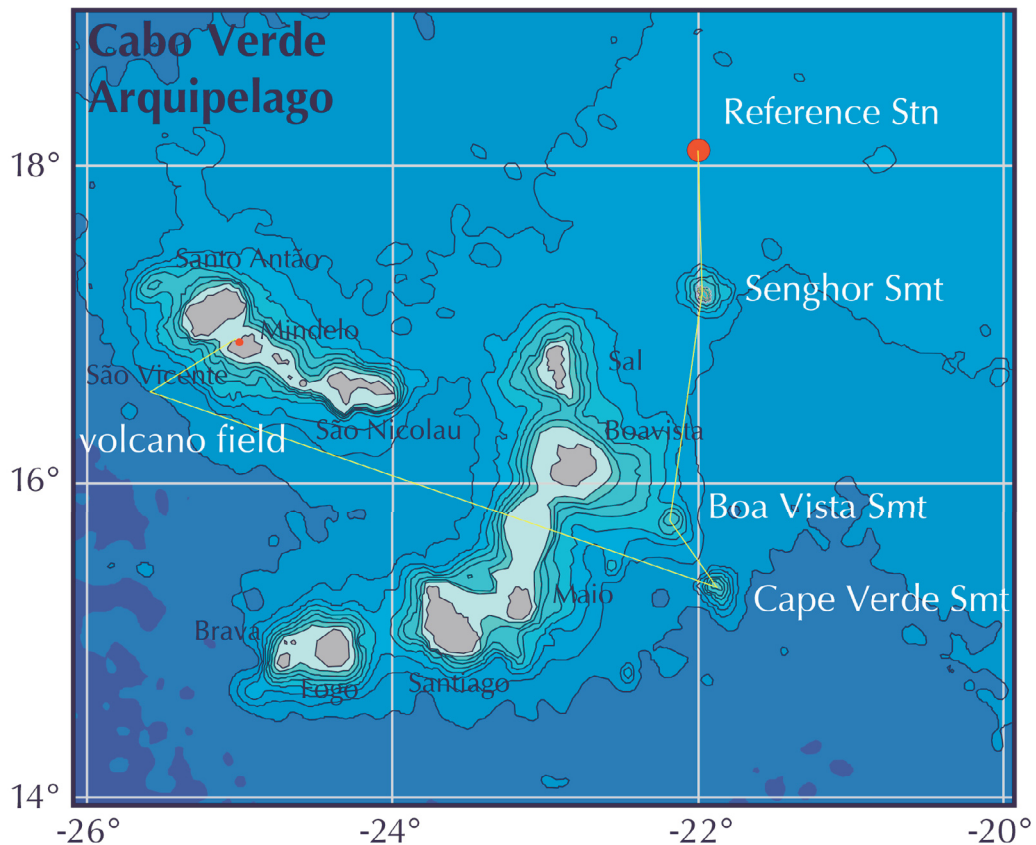


Figure 1: Study sites

Objectives

Seamounts are undersea elevations which rise at least 1000 m above their surrounding. Compared to the flat areas of the deep-sea plains, seamounts have special geological, sedimentological, geochemical and biological features. They affect the flow field of the ocean and are regarded as cause for mesoscale variability in the water column and in the sediment of the deep ocean.

Recent seamount research has shown that seamount ecosystems may be very variable. For example, many results from the EU project OASIS show that the classical picture of seamounts being areas of high productivity has to be modified. The reasons why some seamounts appear to be much more productive than the surrounding ocean, while others do not show conspicuous differences, are still poorly understood. However, concerning the exploitation and management of natural resources at seamounts, a good knowledge of the driving forces and mechanisms in seamount ecosystems is absolutely necessary.

The main aim of the study in the Cape Verde region is the description of a seamount ecosystem in a tropical, more or less oligotrophic region. Compared to seamounts farther north in the temperate NE Atlantic, we expect differences in particular with regard to the dynamics of the current regime, the trophic structure and the biodiversity. The lack of seamount-trapped waves close to the equator could play an important role for the productivity of the seamount, probably coupled with a reduced retention potential, if this is not compensated by other mechanisms like Taylor caps.

In order to reach this goal, the study addresses the influence of the seamount on the current and nutrient regime and on the productivity and the trophic structure of the ecosystem. In addition, the study will enhance the knowledge of the zoogeography of pelagic and benthic organisms in the tropical and subtropical Atlantic. The scientific programme included the following main tasks:

1. To identify and describe the physical forcing mechanisms effecting Senghor Seamount and its surrounding. These are key requirements for an understanding of the biogeochemical and biological processes, and they are essential for the design of an effective biogeochemical and biological sampling strategy. Tasks include measurement and modelling of the 3D flow field and characterization of the main water masses.

2. To assess the origin, the quality and the dynamics of organic particulate material within the water column and the surface sediments of the seamount. The organisms below the euphotic zone depend, with a few exceptions, on (particulate) organic material that has been produced in the surface ocean. During its descent to the seafloor this material is altered in many ways, for example by ingestion and egestion by pelagic animals, by microbial degradation or aggregate formation. Within the benthic mixed layer, sedimentation and resuspension will strongly influence the availability of this material. All these processes affect the nutritional value of the organic matter for organisms living at or close to the seafloor. This task studies the quality of organic particles, their sources, and exchange processes between sediment and water column.

- 3: To describe aspects of the biodiversity and the ecology of the Senghor Seamount communities, to assess their dynamics and the maintenance of their production. This objective addresses the major faunistic groups (zooplankton, micronecton, benthos and fish) at Senghor Seamount, their composition, distribution and their trophic interactions, with special emphasis on the bottom mixed layer fauna and on the deep scattering layer.

Narrative

R.V. METEOR left the port of Las Palmas at noon on 24 September, 2009. The next two days were used to assemble the equipment, to set up the laboratories and to get used to the hot weather. In the evening of 26 September, we reached the EEZ of the Republic of Cape Verde and started the recording of bathymetric data. Station work started on 27 September with a CTD profile and a lander buoyancy test at the reference site, located at 18°05'N, 022°00'W, with a water depth of 3300 m. During the night, the 1m²-double-MOCNESS was deployed, a multiple opening and closing plankton net system with 20 nets, which fished discrete depth layers. Further MOCNESS hauls followed the next two days. On 28 September, one of the two SAMS landers was deployed for the first time and recovered successfully the following day.

On 30 September, the towing cable was exchanged for the deep-sea wire, and the 45ft otter trawl was deployed for the first time. A total of 9500 m of wire were payed out to reach the seafloor at 3300 m. After a total operation time of 8 hours we recovered a successful catch, with different species of deep-sea fish, in particular large grenadiers, but also various invertebrates like crustaceans, echinoderms and molluscs. Another successful haul followed on 2 October in the same area.

The last two days at the reference site were also used for sediment sampling with box corer and multiple corer and a further lander deployment and recovery. On 2 October METEOR left the area and sailed 60 nm south to the main study site, Senghor Seamount.

After a bathymetric transect, a CTD profile and 2 multinet hauls, the ROV was deployed in the central part of the Senghor Seamount summit at a water depth of ca. 100 m on 3 October. The seafloor was covered with sediment in most parts; ripple marks indicated strong currents. Rocks protruding through the sediment were overgrown with soft corals and sponges and offered shelter for several fish species. On the sedimentary areas we observed brittle stars, sea urchins and a large number of non-identified small crustacea. A second ROV dive to the edge of the summit plateau at a water depth of 320 m on the next day also showed a sediment-covered seafloor, but without ripple marks and without rocky areas. The benthic community appeared poorer than at the other site; only a few typical sediment organisms like brittle stars, holothurians and gobiid-like fish were observed.

During the following days, the routine hydrographic, biogeochemical and biological sampling programme at Senghor Seamount was continued at various locations above the summit and slopes, including CTD/SAPS casts, multinet profiles, multicorer and boxcorer hauls. On October 5th we started a first series of MOCNESS hauls at Senghor Seamount; a second series was performed from 13 - 15 October.

Both SAMS lander systems were deployed at the eastern base of the seamount on 4 October and recovered successfully one day later. They were deployed again at the northern base on 6 October; however, only one lander could be recovered at this site. Despite several attempts to release the ballast weights, the other system did not show up at the surface; a feedback signal from the release transponders could not be received. Later another shipboard unit was used for a further attempt to recover the lander, and the system reported the release of the ballast weights, but the lander did not rise from the seafloor. In the following days, the remaining lander was deployed and recovered successfully in two other areas of the seamount.

Because of the difficult substrate conditions, the large otter trawl could not be used at Senghor Seamount. Instead we employed a 2 m beam trawl to sample fish and epibenthic invertebrates on the summit plateau (4 October). Although the trawl got stuck several times and the net was se-

verely damaged, we recovered a catch of soft corals, sponges and fish. A second haul on the upper slope (12 October) caught a few sponges, corals and molluscs.

In addition to the beam trawl, we used a demersal longline and baited traps to sample fish at various locations on the summit and the upper slopes of the seamount, with mixed results. In a few cases, part of the longline was lost, but in some of the deployments several fish species were captured, including rockfish, seven-gilled shark, lantern shark.

Further ROV dives on 10, 11, 12, 16 and 17 October covered water depths from 100 to 750 m. The video footage shows very diverse habitats and faunal communities, including sparsely populated soft bottom, soft bottom with high densities of brittle stars, sedimentary areas with shallow rocks and a few fish, rocky areas covered with soft corals and sponges and populated by highly diverse fish communities. In addition to the ROV video material, three photographic transects were sampled on 13, 15 and 17 October using the DOS, a towed camera system. The distance to the seafloor was kept at approximately 3 m and was monitored by an altimeter. The system was equipped with a Benthos standard camera with a capacity of 800 frames. These transects covered a depth range from approximately 100 m to 2000 m. On trying to recover the instrument after the last transect, the DOS could only be lifted 10 m above the bottom, then the rope tension rose to more than 5 t and the emergency stop was activated. In the following two hours, several attempts were made to release the sled by moving the ship back and forth and hauling in loose wire, until suddenly the DOS got free and could be hauled on deck. The gear turned out to be largely undamaged except for torn-off cables and some scratches on the frame.

The chainbag dredge was used on 10 October, sampling two crater-like features at the lower western slope of Senghor Seamount. The rocks sampled were very old and generally covered by manganese crust; no indications for young volcanic activity were found. Further dredge samples on 16 October produced similar results.

After a last, unsuccessful attempt to recover the lost lander by dredging, METEOR left the Senghor Seamount area on 18 October heading for Boa Vista Seamounts, ca. 35 nm southeast of the island of Boavista. After a short bathymetric transect and three dredge hauls, METEOR sailed to Cape Verde Seamount, again for a bathymetric survey and rock sampling with the chain bag dredge. The recovered rocks were, similar to Senghor, very old. One sample contained also a variety of deep-sea sponges which were surprisingly well preserved. An attempt to gain sediment samples with the multicorer failed; nearly all tubes were destroyed when the instrument obviously hit rocky bottom.

In the evening of 21 October METEOR arrived at the last study site of the cruise, a young volcano field south of the island of Santo Antao. Complementary bathymetric surveys and a couple of hauls with the chain bag dredge, revealing young volcanic rocks, completed the sampling programme.

METEOR arrived in the port of Mindelo in the morning of 23 October, 2009.

Acknowledgements

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



Figure 2: Reference site. Ottertrawl: fish (left) and invertebrates (right) from 3300 m



Figure 3: Senghor Seamount. Summit plateau at 118 m; rocks with soft corals and fish

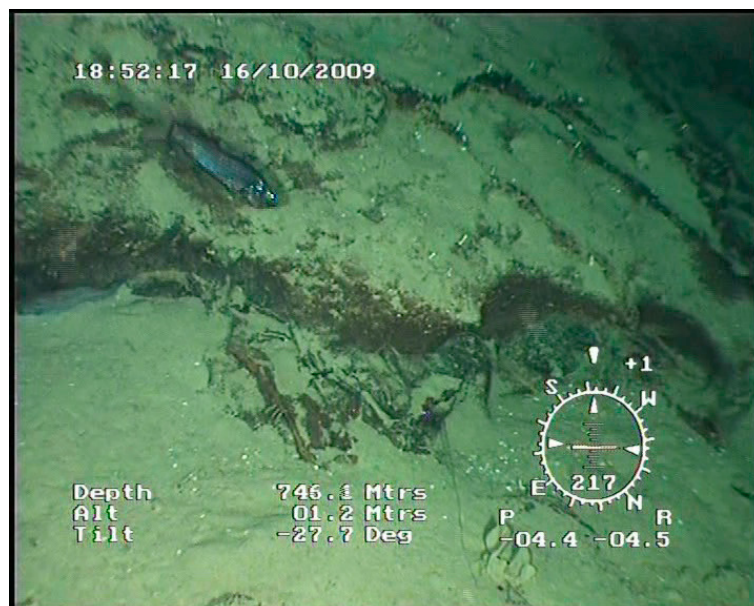


Figure 4: Senghor Seamount. Slope at 746 m; rocky outcrops with fish

List of participants

Name	Task	Institution
Christiansen, Bernd	chief scientist/seafloor photography	UHH-IHF
Brand, Tim	biogeochemistry/nutrients	SAMS
Büntzow, Marco	benthos: meiofauna	DZMB
Busecke, Julius	physical oceanography	UHH-IHF
Coelho, Rui	fish	UALg
Correia, Sandra	fish/observer	INDP
Denda, Anneke	zooplankton/trophic relationships	UHH-IHF
Diniz, Tânia	phytoplankton	UL
Jung, Sarina	zooplankton	UHH-IHF
Kaufmann, Manfred	phytoplankton	UMA
Kieneke, Alexander	meiofauna	DZMB
Kiriakoulakis, Kostas	biogeochemistry	JMU
Koppelman, Rolf	zooplankton	ROV
Kuhnert, Jutta	zooplankton	UHH-IHF
Kwasnitschka, Tom	vulcanology	IFM-GEOMAR
Lamont, Peter	macrofauna	SAMS
Martin, Bettina	zooplankton	UHH-IHF
Montgomery, John	lander technology	SAMS
Peine, Florian	biogeochemistry/POM	URO
Piedade, Alberto	phytoplankton/observer	UNICV
Reichelt, Theresa	physical oceanography	UHH-IFM
Rieger, Verena	zooplankton	EMAU
Schmidt, Alexander	bathymetry	IFM-GEOMAR
Stahl, Henrik	biogeochemistry/landers	SAMS
Tiedtke, Josephine	biochemistry/particle flux	URO
Truscheit, Thorsten	weather observatory	DWD
Turnewitsch, Robert	biogeochemistry/stable isotopes	SAMS
Unger, Katrin	fish	vTI
Vogel, Sandra	zooplankton	UHH-IHF
Warneke-Cremer, Cornelia	nekton: cephalopoda	UHH-ZIM

Participating institutions

DWD	Deutscher Wetterdienst, Geschäftsfeld Seeschifffahrt, Hamburg/Germany
DZMB	Senckenberg am Meer, Abteilung DZMB, Wilhelmshaven/Germany
EMAU	Ernst-Moritz-Arndt-Universität Greifswald, Zoologisches Institut und Museum, Greifswald/Germany
IFM-GEOMAR	Leibniz-Institut für Meereswissenschaften IFM-GEOMAR, Kiel, Germany
INDP	Instituto Nacional de Desenvolvimento das Pescas, Mindelo, Republic of Cape Verde
JMU	John Moores University, Liverpool, UK
SAMS	Scottish Association for Marine Science, Oban/Scotland/UK
UALg	Universidade do Algarve, FCMA/CCMAR-CIMAR, Faro, Portugal
UHH-IHF	Universität Hamburg, Inst. für Hydrobiologie und Fischereiwiss., Hamburg/Germany
UHH-ZIM	Universität Hamburg, Zoologisches Institut und Museum, Hamburg/Germany
UL	Universidade de Lisboa, Faculdade de Ciências, Lisbon, Portugal
UMA	Universidade da Madeira, Estação de Biologia Marinha do Funchal, Funchal/Madeira, Portugal
UNICV	Universidade de Cabo Verde, Departamento de Engenharias e Ciências do Mar, Mindelo, Republic of Cape Verde
URO	Universität Rostock, Institut für Aquatische Ökologie - Meeresbiologie, Rostock/Germany
vTI	Johann Heinrich von Thünen-Institut, Institut für Fischereiökologie, Hamburg, Germany

Stations

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME793/800-1	26/09/2009	23:41	18° 18.84' N	21° 39.26' W	3194.2	MB
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ME793/802-1	27/09/2009	11:46	18° 5.02' N	21° 59.99' W	3294.2	BL_C
ME793/803-1	27/09/2009	13:42	18° 4.97' N	21° 59.96' W	3294	CTD/SAPS
ME793/804-1	27/09/2009	19:10	18° 5.01' N	21° 59.99' W	3294.6	BL_C
ME793/805-1	27/09/2009	21:51	18° 0.40' N	21° 55.79' W	3280.5	MOC-D
ME793/806-1	28/09/2009	09:25	18° 5.02' N	22° 0.02' W	3293.9	BL_C
ME793/807-1	28/09/2009	10:06	18° 5.48' N	21° 59.54' W	---	MOC-D
ME793/808-1	28/09/2009	16:30	18° 5.03' N	22° 0.04' W	2739.9	CTD/SAPS
ME793/809-1	28/09/2009	18:06	18° 5.02' N	21° 59.87' W	2740.3	MOC-D
ME793/810-1	29/09/2009	06:03	18° 4.83' N	22° 0.14' W	---	BL_C
ME793/811-1	29/09/2009	09:40	18° 5.31' N	21° 59.85' W	3295.1	MOC-D
ME793/812-1	29/09/2009	16:12	18° 4.92' N	22° 0.09' W	3294.6	CTD/SAPS
ME793/813-1	29/09/2009	22:12	18° 5.00' N	21° 59.99' W	3295.2	CTD
ME793/814-1	29/09/2009	23:07	18° 5.00' N	21° 59.99' W	3294.5	MSN
ME793/815-1	30/09/2009	00:06	18° 5.01' N	21° 59.99' W	3293.8	MSN
ME793/816-1	30/09/2009	01:50	18° 5.00' N	22° 0.04' W	3294.6	MSN
ME793/817-1	30/09/2009	02:28	18° 4.99' N	22° 0.00' W	3293.9	MSN
ME793/818-1	30/09/2009	05:40	18° 5.00' N	22° 0.00' W	3294.4	BL_C
ME793/819-1	30/09/2009	06:53	18° 5.00' N	21° 59.50' W	---	BL_C
ME793/820-1	30/09/2009	09:20	17° 51.98' N	22° 14.64' W	3310.2	BT
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ME793/822-1	30/09/2009	23:10	18° 4.99' N	22° 0.19' W	3295	GKG
ME793/823-1	01/10/2009	01:25	18° 5.00' N	22° 0.20' W	3294.3	MUC
ME793/824-1	01/10/2009	03:36	18° 5.00' N	22° 0.20' W	3294.6	MUC
ME793/825-1	01/10/2009	05:49	18° 5.00' N	22° 0.20' W	3293.9	MUC
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ME793/828-1	01/10/2009	10:22	18° 5.00' N	22° 0.20' W	3295	MSN
ME793/829-1	01/10/2009	10:54	18° 5.02' N	22° 0.22' W	3295	MSN
ME793/830-1	01/10/2009	12:30	18° 5.08' N	22° 0.21' W	3294.5	BL_C
ME793/831-1	01/10/2009	13:56	18° 4.82' N	21° 59.77' W	3300	BL_C
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ME793/834-1	01/10/2009	19:49	18° 5.00' N	22° 0.00' W	3294.6	MUC
ME793/835-1	01/10/2009	22:00	18° 5.00' N	22° 0.00' W	3294.4	MUC
ME793/836-1	02/10/2009	00:17	18° 5.00' N	22° 0.00' W	3294.9	MUC
ME793/837-1	02/10/2009	02:40	18° 5.00' N	22° 0.00' W	3294.6	GKG
ME793/838-1	02/10/2009	07:55	17° 57.99' N	22° 6.01' W	3300	BT
ME793/839-1	02/10/2009	22:09	17° 20.68' N	22° 5.12' W	3243.8	MB
ME793/840-1	03/10/2009	07:36	17° 11.29' N	21° 57.20' W	104	CTD/SAPS
ME793/841-1	03/10/2009	11:26	17° 11.30' N	21° 57.18' W	102.2	MSN
ME793/842-1	03/10/2009	11:49	17° 11.28' N	21° 57.19' W	102	MSN
ME793/843-1	03/10/2009	12:42	17° 11.28' N	21° 57.20' W	101.3	ROV
ME793/844-1	03/10/2009	16:56	17° 11.31' N	21° 57.20' W	101.8	CTD
ME793/845-1	03/10/2009	17:37	17° 11.31' N	21° 57.20' W	102.9	GKG

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME793/846-1	03/10/2009	18:07	17° 11.31' N	21° 57.20' W	102.6	GKG
ME793/847-1	03/10/2009	18:33	17° 11.31' N	21° 57.20' W	102.3	GKG
ME793/848-1	03/10/2009	19:16	17° 11.31' N	21° 57.20' W	101.3	MUC
ME793/849-1	03/10/2009	20:14	17° 11.31' N	21° 57.20' W	102	MUC
ME793/850-1	03/10/2009	20:40	17° 11.31' N	21° 57.20' W	102.4	MUC
ME793/851-1	03/10/2009	21:18	17° 11.31' N	21° 57.20' W	102.9	MSN
ME793/852-1	03/10/2009	21:34	17° 11.30' N	21° 57.20' W	102.1	MSN
ME793/853-1	03/10/2009	22:20	17° 12.60' N	21° 57.40' W	282	MSN
ME793/854-1	03/10/2009	23:48	17° 12.60' N	21° 57.40' W	250.9	MSN
ME793/855-1	04/10/2009	00:18	17° 12.60' N	21° 57.40' W	279.8	MSN
ME793/856-1	04/10/2009	01:15	17° 11.29' N	21° 56.21' W	274.3	MSN
ME793/857-1	04/10/2009	01:44	17° 11.29' N	21° 56.20' W	275.5	MSN
ME793/858-1	04/10/2009	02:58	17° 12.29' N	21° 53.60' W	1547.1	CTD/SAPS
ME793/859-1	04/10/2009	08:08	17° 13.42' N	21° 42.63' W	3431.4	MUC
ME793/860-1	04/10/2009	10:23	17° 13.40' N	21° 42.60' W	3433.8	BL_C
ME793/862-1	04/10/2009	12:22	17° 12.68' N	21° 57.45' W	282	ROV
ME793/863-1	04/10/2009	16:45	17° 10.63' N	21° 57.13' W	103.4	KURRE
ME793/864-1	04/10/2009	17:56	17° 12.29' N	21° 57.69' W	132.4	MUC
ME793/865-1	04/10/2009	19:06	17° 12.30' N	21° 57.70' W	383.2	MUC
ME793/866-1	04/10/2009	20:02	17° 12.30' N	21° 57.70' W	133.6	MUC
ME793/867-1	04/10/2009	20:57	17° 12.30' N	21° 57.70' W	133.3	MUC
ME793/868-1	04/10/2009	21:43	17° 11.29' N	21° 58.20' W	253.2	MSN
ME793/869-1	04/10/2009	22:15	17° 11.30' N	21° 58.16' W	229.6	MSN
ME793/870-1	04/10/2009	23:26	17° 11.00' N	22° 0.71' W	960.3	MSN
ME793/871-1	04/10/2009	23:58	17° 11.00' N	22° 0.70' W	954.7	MSN
ME793/872-1	05/10/2009	00:52	17° 11.00' N	22° 0.70' W	969.9	MSN
ME793/873-1	05/10/2009	01:40	17° 10.99' N	22° 0.68' W	827.6	MSN
ME793/874-1	05/10/2009	02:08	17° 10.98' N	22° 0.69' W	865.6	MB
ME793/875-1	05/10/2009	04:02	17° 11.00' N	22° 1.60' W	1519.1	CTD/SAPS
ME793/876-1	05/10/2009	08:25	17° 11.40' N	21° 57.69' W	96.2	LL
ME793/877-1	05/10/2009	11:47	17° 12.51' N	21° 42.83' W	---	BL_C
ME793/878-1	05/10/2009	13:20	17° 13.21' N	21° 42.86' W	3300	BL_C
ME793/879-1	05/10/2009	14:22	17° 13.40' N	21° 42.76' W	3425.5	MB
ME793/880-1	05/10/2009	16:56	17° 11.39' N	21° 57.96' W	123	LL
ME793/881-1	05/10/2009	18:02	17° 13.00' N	21° 59.22' W	472.2	MB
ME793/882-1	05/10/2009	19:37	17° 8.69' N	22° 0.00' W	1076	CTD/RO
ME793/883-1	05/10/2009	21:18	17° 8.88' N	21° 59.78' W	956.1	MOC-D
ME793/884-1	06/10/2009	01:40	17° 14.02' N	21° 55.04' W	1284.2	ADCP
ME793/885-1	06/10/2009	04:00	17° 15.20' N	21° 57.02' W	1573.4	CTD/SAPS
ME793/886-1	06/10/2009	08:22	17° 12.99' N	21° 58.00' W	325.5	LL
ME793/887-1	06/10/2009	09:53	17° 7.97' N	22° 1.12' W	1848.8	MOC-D
ME793/888-1	06/10/2009	15:28	17° 13.03' N	21° 58.25' W	361.9	LL
ME793/889-1	06/10/2009	17:09	17° 21.80' N	21° 57.89' W	---	BL_C
ME793/890-1	06/10/2009	17:19	17° 21.90' N	21° 57.82' W	753.1	BL_C
ME793/891-1	06/10/2009	18:20	17° 14.30' N	21° 59.40' W	704.6	CTD/RO
ME793/892-1	06/10/2009	21:02	17° 8.42' N	21° 59.78' W	1074.9	MOC-D
ME793/893-1	07/10/2009	01:26	17° 10.18' N	21° 57.21' W	231.6	MSN

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME793/894-1	07/10/2009	01:54	17° 10.21' N	21° 57.22' W	213.4	MSN
ME793/895-1	07/10/2009	02:40	17° 8.75' N	21° 55.14' W	1082.6	CTD
ME793/896-1	07/10/2009	04:03	17° 7.27' N	21° 56.89' W	1634.2	CTD/SAPS
ME793/897-1	07/10/2009	09:03	17° 8.50' N	21° 59.71' W	1011.4	MOC-D
ME793/898-1	07/10/2009	13:32	17° 14.53' N	21° 57.56' W	1117.7	MSN
ME793/899-1	07/10/2009	14:05	17° 14.52' N	21° 57.53' W	1129.7	MSN
ME793/900-1	07/10/2009	15:28	17° 14.50' N	21° 57.49' W	1121.6	MSN
ME793/901-1	07/10/2009	16:00	17° 14.49' N	21° 57.48' W	1107.6	MSN
ME793/902-1	07/10/2009	17:37	17° 14.30' N	21° 57.40' W	1043.3	CTD/RO
ME793/903-1	07/10/2009	19:07	17° 11.29' N	21° 59.29' W	716.6	CTD/RO
ME793/904-1	07/10/2009	20:30	17° 8.21' N	22° 3.19' W	---	MOC-D
ME793/905-1	08/10/2009	00:51	17° 13.75' N	21° 57.26' W	824.2	CTD
ME793/906-1	08/10/2009	02:04	17° 14.50' N	21° 57.65' W	1120	MSN
ME793/907-1	08/10/2009	02:41	17° 14.52' N	21° 57.65' W	1147.1	MSN
ME793/908-1	08/10/2009	04:03	17° 14.55' N	21° 57.64' W	1177.6	MSN
ME793/909-1	08/10/2009	04:36	17° 14.50' N	21° 57.59' W	1139.6	MSN
ME793/910-1	08/10/2009	06:22	17° 12.60' N	21° 57.49' W	209.9	MSN
ME793/911-1	08/10/2009	07:33	17° 13.76' N	21° 57.26' W	832.7	CTD/RO
ME793/912-1	08/10/2009	09:20	17° 8.63' N	22° 3.01' W	2145.2	MOC-D
ME793/913-1	08/10/2009	13:56	17° 21.43' N	21° 58.09' W	3300	BL_C
ME793/914-1	08/10/2009	16:20	17° 21.74' N	21° 57.94' W	3300	BL_C
ME793/915-1	08/10/2009	18:15	17° 21.82' N	21° 57.93' W	---	MUC
ME793/916-1	08/10/2009	20:19	17° 21.80' N	21° 57.94' W	3241	MUC
ME793/917-1	08/10/2009	22:26	17° 21.80' N	21° 57.94' W	3242.3	MUC
ME793/918-1	09/10/2009	00:44	17° 21.75' N	21° 58.00' W	3240.5	CTD
ME793/919-1	09/10/2009	04:50	17° 21.75' N	21° 57.86' W	3240.7	MB
ME793/920-1	09/10/2009	06:04	17° 16.30' N	22° 4.00' W	2804.4	CTD
ME793/921-1	09/10/2009	08:53	17° 10.99' N	22° 1.61' W	1528.5	CTD/SAPS
ME793/922-1	09/10/2009	09:51	17° 11.29' N	21° 58.20' W	254.5	MSN
ME793/923-1	09/10/2009	10:16	17° 11.29' N	21° 58.20' W	254.7	MSN
ME793/924-1	09/10/2009	11:14	17° 11.32' N	21° 56.29' W	244	MSN
ME793/925-1	09/10/2009	11:39	17° 11.32' N	21° 56.29' W	246.3	MSN
ME793/926-1	09/10/2009	12:29	17° 12.56' N	21° 56.10' W	533.5	LL
ME793/927-1	09/10/2009	13:34	17° 11.60' N	21° 54.80' W	1034.2	MSN
ME793/928-1	09/10/2009	14:39	17° 11.61' N	21° 54.80' W	1042	MSN
ME793/929-1	09/10/2009	15:30	17° 11.60' N	21° 54.75' W	1054.4	MSN
ME793/930-1	09/10/2009	16:02	17° 11.62' N	21° 54.77' W	1050.7	MSN
ME793/931-1	09/10/2009	17:45	17° 12.78' N	21° 56.45' W	528.8	LL
ME793/932-1	09/10/2009	18:42	17° 12.98' N	21° 56.36' W	576.5	MUC
ME793/933-1	09/10/2009	19:13	17° 12.98' N	21° 56.36' W	574.1	MUC
ME793/934-1	09/10/2009	19:55	17° 12.94' N	21° 56.37' W	565.2	MUC
ME793/935-1	09/10/2009	21:06	17° 12.93' N	21° 56.36' W	564	MUC
ME793/936-1	09/10/2009	22:22	17° 11.56' N	21° 54.32' W	1206.6	MSN
ME793/937-1	09/10/2009	23:02	17° 11.56' N	21° 54.32' W	1204.6	MSN
ME793/938-1	10/10/2009	00:27	17° 11.56' N	21° 54.32' W	1201.1	MSN
ME793/939-1	10/10/2009	01:00	17° 11.56' N	21° 54.31' W	1216.2	MSN
ME793/940-1	10/10/2009	03:00	17° 12.31' N	21° 50.11' W	2412.6	CTD

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME793/941-1	10/10/2009	05:21	17° 12.30' N	21° 53.71' W	1491.9	CTD/SAPS
ME793/942-1	10/10/2009	06:13	17° 12.30' N	21° 53.72' W	1489.4	CTD/SAPS
ME793/943-1	10/10/2009	08:50	17° 8.08' N	21° 57.11' W	1098.6	MSN
ME793/944-1	10/10/2009	09:23	17° 8.10' N	21° 57.11' W	1095.9	MSN
ME793/945-1	10/10/2009	10:43	17° 8.10' N	21° 57.11' W	1095.7	MSN
ME793/946-1	10/10/2009	11:13	17° 8.10' N	21° 57.11' W	1097	MSN
ME793/947-1	10/10/2009	13:41	17° 12.98' N	21° 56.42' W	565.5	ROV
ME793/948-1	10/10/2009	17:10	17° 13.00' N	21° 56.46' W	571.7	CTD
ME793/949-1	10/10/2009	18:24	17° 11.41' N	22° 4.73' W	2257.4	DRG_C
ME793/950-1	10/10/2009	22:06	17° 9.58' N	22° 7.19' W	---	DRG_C
ME793/951-1	11/10/2009	02:16	17° 11.03' N	22° 1.45' W	1449.3	CTD
ME793/952-1	11/10/2009	03:40	17° 11.03' N	22° 1.44' W	1440.5	MUC
ME793/953-1	11/10/2009	04:42	17° 11.03' N	22° 1.42' W	1431	MUC
ME793/954-1	11/10/2009	05:52	17° 10.98' N	22° 1.42' W	1414.6	MUC
ME793/955-1	11/10/2009	07:44	17° 9.66' N	21° 53.12' W	1656.5	MUC
ME793/956-1	11/10/2009	10:11	17° 11.05' N	22° 1.29' W	1359	MSN
ME793/957-1	11/10/2009	10:46	17° 11.05' N	22° 1.29' W	1359.5	MSN
ME793/958-1	11/10/2009	12:07	17° 11.05' N	22° 1.29' W	1371.4	MSN
ME793/959-1	11/10/2009	12:41	17° 11.05' N	22° 1.29' W	1361.8	MSN
ME793/960-1	11/10/2009	14:32	17° 11.28' N	21° 57.91' W	121.9	ROV
ME793/961-1	11/10/2009	18:17	17° 13.69' N	21° 56.41' W	697.3	LL
ME793/962-1	11/10/2009	19:15	17° 13.80' N	21° 57.30' W	830.8	GKG
ME793/963-1	11/10/2009	20:04	17° 13.80' N	21° 57.30' W	835.6	GKG
ME793/964-1	11/10/2009	20:47	17° 13.80' N	21° 57.30' W	831.8	GKG
ME793/965-1	11/10/2009	21:42	17° 13.80' N	21° 57.30' W	831.6	GKG
ME793/966-1	11/10/2009	22:59	17° 13.80' N	21° 57.30' W	836.9	MUC
ME793/967-1	11/10/2009	23:42	17° 13.80' N	21° 57.30' W	837.1	MUC
ME793/968-1	12/10/2009	00:17	17° 13.80' N	21° 57.30' W	836.1	MUC
ME793/969-1	12/10/2009	01:02	17° 13.80' N	21° 57.30' W	837	MUC
ME793/970-1	12/10/2009	02:15	17° 16.63' N	21° 54.75' W	2438.6	MB
ME793/971-1	12/10/2009	08:01	17° 13.90' N	21° 56.66' W	757.6	LL
ME793/972-1	12/10/2009	10:06	17° 3.07' N	21° 56.93' W	3207.8	MUC
ME793/973-1	12/10/2009	12:11	17° 3.07' N	21° 56.92' W	3208.6	MUC
ME793/974-1	12/10/2009	14:14	17° 3.07' N	21° 56.93' W	3209.9	BL_C
ME793/975-1	12/10/2009	15:52	17° 11.27' N	21° 56.64' W	104.1	ROV
ME793/976-1	12/10/2009	18:35	17° 12.33' N	21° 56.74' W	359.9	KURRE
ME793/977-1	12/10/2009	20:20	17° 15.58' N	21° 59.98' W	1540.3	CTD
ME793/978-1	12/10/2009	21:18	17° 15.57' N	21° 59.97' W	1550.7	GKG
ME793/979-1	12/10/2009	22:50	17° 15.57' N	21° 59.97' W	1552.7	MUC
ME793/980-1	13/10/2009	00:04	17° 15.57' N	21° 59.97' W	1551.8	MUC
ME793/981-1	13/10/2009	01:16	17° 15.57' N	21° 59.97' W	1541.8	MUC
ME793/982-1	13/10/2009	02:51	17° 11.03' N	22° 0.74' W	1050.9	MSN
ME793/983-1	13/10/2009	03:22	17° 11.04' N	22° 0.74' W	1055.3	MSN
ME793/984-1	13/10/2009	04:45	17° 11.06' N	22° 0.75' W	1058.4	MSN
ME793/985-1	13/10/2009	07:01	17° 6.79' N	21° 56.60' W	1855	MUC
ME793/986-1	13/10/2009	12:23	17° 5.25' N	21° 58.36' W	2488.4	MOC-D
ME793/987-1	13/10/2009	16:40	17° 2.80' N	21° 57.03' W	3235.6	BL_C

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME793/988-1	13/10/2009	20:40	17° 11.30' N	21° 57.79' W	113.2	DOS
ME793/989-1	13/10/2009	23:33	17° 5.24' N	21° 58.35' W	2501	MOC-D
ME793/990-1	14/10/2009	03:07	17° 11.29' N	21° 57.29' W	100.8	MSN
ME793/991-1	14/10/2009	03:29	17° 11.29' N	21° 57.28' W	100.3	MSN
ME793/992-1	14/10/2009	05:04	17° 12.21' N	22° 6.47' W	2874	MOC-D
ME793/993-1	14/10/2009	11:46	17° 21.83' N	21° 57.94' W	3246.3	BL_C
ME793/994-1	14/10/2009	13:42	17° 8.11' N	21° 57.11' W	1083	MSN
ME793/995-1	14/10/2009	14:17	17° 8.10' N	21° 57.10' W	1083.2	MSN
ME793/996-1	14/10/2009	15:40	17° 8.09' N	21° 57.09' W	1079.9	MSN
ME793/997-1	14/10/2009	16:14	17° 8.10' N	21° 57.10' W	1096.2	MSN
ME793/998-1	14/10/2009	17:47	17° 7.27' N	21° 56.94' W	1646.5	CTD
ME793/999-1	14/10/2009	19:23	17° 7.26' N	21° 56.93' W	1638.1	CTD/SAPS
ME793/1000-1	14/10/2009	22:49	17° 14.49' N	22° 7.23' W	2951	MOC-D
ME793/1001-1	15/10/2009	06:17	17° 11.04' N	22° 1.62' W	1537.5	CTD
ME793/1002-1	15/10/2009	07:30	17° 11.04' N	22° 1.62' W	1533.6	CTD/SAPS
ME793/1003-1	15/10/2009	09:42	17° 9.80' N	22° 9.79' W	3187.4	BL_C
ME793/1004-1	15/10/2009	11:20	17° 13.66' N	21° 56.28' W	688.2	LL
ME793/1005-1	15/10/2009	13:16	17° 13.15' N	21° 54.10' W	1046.2	MSN
ME793/1006-1	15/10/2009	13:48	17° 13.15' N	21° 54.11' W	1050.7	MSN
ME793/1007-1	15/10/2009	15:10	17° 13.15' N	21° 54.11' W	1043.1	MSN
ME793/1008-1	15/10/2009	15:41	17° 13.15' N	21° 54.11' W	1047.5	MSN
ME793/1009-1	15/10/2009	17:47	17° 13.53' N	21° 56.55' W	669	LL
ME793/1010-1	15/10/2009	18:52	17° 12.63' N	21° 57.46' W	243.8	MSN
ME793/1011-1	15/10/2009	19:16	17° 12.63' N	21° 57.47' W	241.5	MSN
ME793/1012-1	15/10/2009	19:55	17° 13.30' N	21° 57.34' W	467.7	DOS
ME793/1013-1	16/10/2009	00:03	17° 8.15' N	21° 59.13' W	1110.8	DRG_C
ME793/1014-1	16/10/2009	03:00	17° 6.43' N	22° 0.64' W	2105.1	DRG_C
ME793/1015-1	16/10/2009	08:23	17° 9.79' N	22° 9.64' W	3110.6	MUC
ME793/1016-1	16/10/2009	10:31	17° 9.80' N	22° 9.64' W	---	MUC
ME793/1017-1	16/10/2009	12:34	17° 9.80' N	22° 9.64' W	3196.6	MUC
ME793/1018-1	16/10/2009	14:36	17° 9.57' N	22° 9.96' W	3200	BL_C
ME793/1019-1	16/10/2009	17:03	17° 13.76' N	21° 57.27' W	838.1	ROV
ME793/1020-1	16/10/2009	21:33	17° 15.19' N	21° 57.07' W	1556.6	CTD
ME793/1021-1	16/10/2009	23:06	17° 15.19' N	21° 57.07' W	1556.8	CTD/SAPS
ME793/1022-1	17/10/2009	02:10	17° 8.10' N	21° 57.09' W	1078.5	MSN
ME793/1023-1	17/10/2009	02:42	17° 8.10' N	21° 57.09' W	1085.1	MSN
ME793/1024-1	17/10/2009	04:02	17° 8.10' N	21° 57.09' W	1085.8	MSN
ME793/1025-1	17/10/2009	04:32	17° 8.10' N	21° 57.09' W	1086	MSN
ME793/1026-1	17/10/2009	06:25	17° 9.68' N	21° 53.10' W	1659.8	MUC
ME793/1027-1	17/10/2009	07:32	17° 9.71' N	21° 53.09' W	1651.5	MUC
ME793/1028-1	17/10/2009	09:01	17° 12.27' N	21° 53.69' W	1485.6	CTD
ME793/1029-1	17/10/2009	10:19	17° 12.28' N	21° 53.68' W	1503.8	CTD/SAPS
ME793/1030-1	17/10/2009	12:17	17° 12.59' N	21° 57.49' W	195.3	MSN
ME793/1031-1	17/10/2009	12:42	17° 12.59' N	21° 57.49' W	203.4	MSN
ME793/1032-1	17/10/2009	13:28	17° 10.18' N	21° 57.30' W	268.6	MSN
ME793/1033-1	17/10/2009	13:52	17° 10.19' N	21° 57.30' W	259.3	MSN
ME793/1034-1	17/10/2009	14:30	17° 11.10' N	21° 58.14' W	288.9	ROV

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME793/1035-1	17/10/2009	17:24	17° 12.60' N	21° 57.20' W	335.6	IKMT
ME793/1036-1	17/10/2009	19:05	17° 14.33' N	21° 56.43' W	931.9	DOS
ME793/1037-1	18/10/2009	02:12	17° 15.73' N	21° 55.00' W	1828.6	MSN
ME793/1038-1	18/10/2009	02:58	17° 12.60' N	21° 57.22' W	328	IKMT
ME793/1039-1	18/10/2009	04:40	17° 15.20' N	21° 57.05' W	1572.2	CTD/SAPS
ME793/1040-1	18/10/2009	07:02	17° 21.59' N	21° 57.70' W	3241.2	RECOV
ME793/1041-1	18/10/2009	14:51	17° 13.07' N	21° 58.03' W	353.1	CTD
ME793/1042-1	18/10/2009	15:38	17° 10.62' N	21° 56.84' W	103.1	MUC
ME793/1043-1	18/10/2009	16:18	17° 10.62' N	21° 56.82' W	102.4	MUC
ME793/1044-1	18/10/2009	16:51	17° 10.62' N	21° 56.82' W	102.7	MUC
ME793/1045-1	18/10/2009	17:21	17° 9.79' N	21° 56.30' W	297.8	CTD
ME793/1046-1	18/10/2009	18:03	17° 7.51' N	21° 55.50' W	1545	MUC
ME793/1047-1	18/10/2009	19:13	17° 7.50' N	21° 55.50' W	1546.2	MUC
ME793/1048-1	18/10/2009	22:53	16° 45.01' N	22° 6.03' W	3377.1	CTD/SAPS
ME793/1049-1	19/10/2009	02:26	16° 45.00' N	22° 6.01' W	3376.1	MUC
ME793/1050-1	19/10/2009	09:49	15° 51.27' N	22° 15.75' W	2320.6	MB
ME793/1051-1	19/10/2009	13:50	15° 45.40' N	22° 12.71' W	1356.3	DRG_C
ME793/1052-1	19/10/2009	17:36	15° 47.55' N	22° 12.70' W	1558.1	DRG_C
ME793/1053-1	19/10/2009	20:34	15° 46.80' N	22° 12.92' W	1812.1	DRG_C
ME793/1054-1	19/10/2009	23:37	15° 48.11' N	22° 8.24' W	1108.4	MB
ME793/1055-1	20/10/2009	08:34	15° 16.43' N	21° 50.45' W	1997	DRG_C
ME793/1056-1	20/10/2009	11:33	15° 17.04' N	21° 52.92' W	1407.9	DRG_C
ME793/1057-1	20/10/2009	14:04	15° 17.13' N	21° 52.67' W	1083.6	MSN
ME793/1058-1	20/10/2009	14:45	15° 18.19' N	21° 51.96' W	1229	DRG_C
ME793/1059-1	20/10/2009	17:36	15° 17.90' N	21° 54.57' W	1226.2	DRG_C
ME793/1060-1	20/10/2009	21:33	15° 20.26' N	21° 52.83' W	718.2	MUC
ME793/1061-1	20/10/2009	22:20	15° 20.28' N	21° 52.83' W	718.5	MB
ME793/1062-1	21/10/2009	21:23	16° 38.27' N	25° 29.60' W	3720.4	MB
ME793/1063-1	21/10/2009	23:31	16° 44.36' N	25° 30.50' W	3239.9	DRG_C
ME793/1064-1	22/10/2009	03:18	16° 43.01' N	25° 29.20' W	3228.7	DRG_C
ME793/1065-1	22/10/2009	06:40	16° 41.22' N	25° 30.13' W	3304.8	DRG_C
ME793/1066-1	22/10/2009	10:45	16° 42.62' N	25° 35.90' W	3405.1	DRG_C
ME793/1067-1	22/10/2009	14:32	16° 42.07' N	25° 31.87' W	3591.5	DRG_C
ME793/1068-1	22/10/2009	18:18	16° 42.85' N	25° 29.82' W	3357.4	DRG_C
ME793/1069-1	22/10/2009	22:39	16° 46.29' N	25° 33.86' W	3328.9	MB

CTD	Seabird CTD with 24 bottle rosette	KURRE	2m- beam trawl
SAPS	stand alone pumping system	ROV	remotely operated vehicle
LL	longline	BL-C	bottom lander
MOC-D	1m ² -double-MOCNESS	MSN	multinet
DOS	camera sled (seafloor photography)	MB	multibeam profile
MUC	multiple corer	DRG-C	chainbag dredge
GKG	box corer	IKMT	Isaac-Kidd-Midwater-Trawl
BT	bottom trawl (45 ' otter trawl)	ADCP	38 kHz ADCP profile