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Short Cruise Report Meteor M 87/1

Lisbon - Thorshavn (Leg M87/1A)

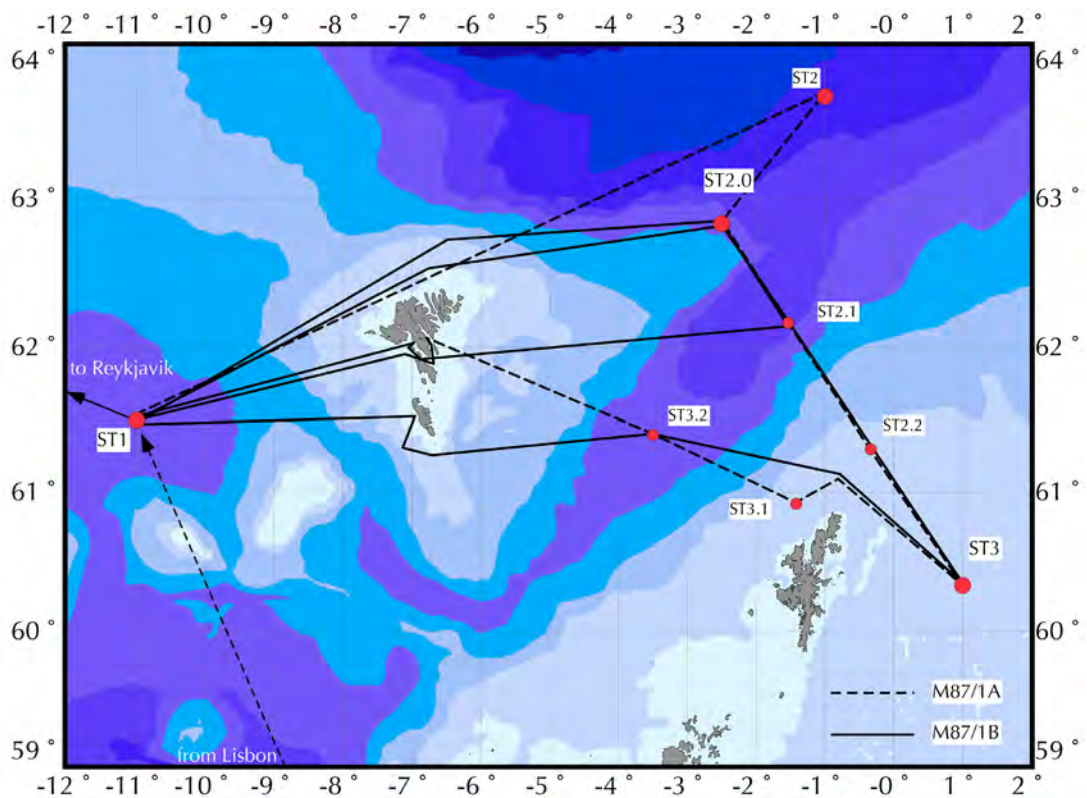
Thorshavn - Reykjavik (Leg M87/1B)

19 March - 02 May 2012

Chief Scientists: Jan O. Backhaus (Leg M87/1A)

Bernd Christiansen (Leg M87/1B)

Captain: Michael Schneider



Objectives

Recent studies suggest that winter convection contributes to a high biomass of phytoplankton in the deep convective layer, which is in contradiction to the classical spring bloom critical depth model of phytoplankton bloom dynamics. In order to investigate the implications of these two regimes for biogeochemical fluxes and ecosystem dynamics, the cruise aimed to study the mechanisms influencing winter phytoplankton production and biomass, to resolve the fate of phytoplankton biomass produced during the winter convective period (i.e. flux to depth), and to examine its impact on exit from diapause of *Calanus finmarchicus*, a key secondary producer in this system.

This cruise focused on the investigation of the following interacting parameters and processes:

- The production and fate of phytoplankton cells entrained in winter convective cells
- The depth of diapause of *Calanus finmarchicus* in relation to deep convection
- Timing of the response of the phytoplankton community to stratification in different hydrographic regimes in the North Atlantic
- The size, structure and taxonomic composition of plankton and particles in relation to the transition period from winter convection to spring stratification, subsequent response of the zooplankton community and particle aggregation
- The vertical distribution, taxonomy and size structure of phytoplankton, zooplankton, and particles during the transition from the winter convective regime to the spring bloom regime
- Individual interactions between zooplankton consumers and sinking particles. In particular encounter feeding rates and residence times of the key zooplankton species on different types of aggregates during the transition from convective regime to spring bloom situation
- Data and parameterizations developed will be employed in coupled 1-D vertical biological-physical models to assess the mechanisms controlling the timing, intensity, duration and fate of phytoplankton biomass in the convective and spring bloom regimes as well as for the development of an adaptive 1-D model of *Calanus finmarchicus* emergence from diapause based on the interaction between abiotic and biotic agents
- Assess the spatial variability in trophic biomass transfer efficiencies in the convective and bloom regimes
- Identify the key predators consuming *C. finmarchicus* during diapause and its ascent to the surface mixed layer
- Assess the potential impacts of climate change on biomass transfer efficiencies and biogeochemical fluxes due to changes in plankton communities

Narrative

METEOR left the port of Lisbon on 19 March, 2012, at 10:00 h and headed north towards the working area around the Faroe Islands. During the transit all groups set up their labs and prepared their equipment. On 21 March a station in international waters at the position 47° N 12° W was conducted, mainly for testing the CTD, adjusting the buoyancy of the ROV and sampling plankton for calibrating the VPR. In addition, the new towing cable on winch W12 was unspooled to a length of 4700 m in order to turn out potential twist.

On 25 March METEOR arrived in the main working area at Station 1 (see map on cover page), which is located to the west of the Faroe Islands at 63°30' N, 011°00' W, south of the Iceland-Faroe Ridge. During the next three days this station was sampled with a variety of different instruments, including CTD, video plankton recorder (VPR), laser optical plankton counter (LOPC), multiple opening-closing nets (MOCNESS, multinet), Bongonet, WP2-net and marine snow catcher. The CTD casts showed the expected deep convection down to 400-600 m. Chl. a was observed in the convection layer, with elevated concentrations in the upper 90 m.

METEOR left Station 1 on 28 March and steamed to Station 2 in the Norwegian Sea, where she arrived in the afternoon of 29 March. Because no convection was found here, and satellite data showed the influence of an eddy field in the region, it was decided, after a CTD cast, VPR and LOPC deployments, to move 60 nm to the SW (Station 2.0, 62°50' N; 002°30' W). Although only weak signs of past convection were found at this location, the routine sampling programme was conducted until the evening of 30 March, when strong wind with gusts of up to 9 Bft forced us to stop station work. Sampling commenced in the morning of 31 March and continued until the morning of 1 April, when METEOR headed towards Station 3 at 60°20' N, 001°00' E in the northern North Sea. On the way, two short stations (2.1 and 2.2) were included with CTD casts, VPR and LOPC deployments.

METEOR arrived at the shallow Station 3 in the morning of 2 April. Work at this station, which featured a completely mixed water column, was finished in the morning of 3 April, and after two further short stations (3.1 and 3.2) on the Shetland Shelf and in the Faroe-Shetland Channel, METEOR arrived in the port of Tórshavn in the morning of 5 April.

Part of the scientific crew was exchanged in Tórshavn, and on 7 April at 09:00 METEOR left the port and headed again for Station 1, where she arrived shortly before midnight on the same day. The first CTD cast showed that the hydrographic situation at this station was very similar to two weeks before, with convection still reaching down to about 500 m (see Fig. 1 for a time series at this location). After a VPR and a LOPC haul, work had to be interrupted, and was continued in the morning of 9 April with the routine sampling programme including hauls with MOCNESS (Fig. 2), multinet, WP2, jelly net, marine snow catcher, CTD-rosette, VPR imaging (Fig. 3) and LOPC. Despite increasing wind of up to 8 Bft we could successfully finish sampling at Station 1 on 11 April, and headed for Station 2.0, where we arrived in the early afternoon of 12 April. Again, no deep convection was found at this location. The weather staying fair, the complete sampling programme was finished here on 14 April. On the way to Station 3, one CTD cast was conducted at Station 2.1 in the northeastern part of the Faroe-Shetland Channel.

Thanks to favourable weather conditions, sampling at Station 3 could be finished within one day, and, after passing the Shetlands and taking a further CTD cast in the centre of the Faroe-Shetland Channel (Station 3.2), METEOR headed west again towards Station 1. In the afternoon of 17 April the wind had increased to 9 Bft with gusts of 10 Bft, and since we were close to the Faroes,

we decided to seek shelter on the leeward side of the island of Suduroy. The weather improved the next morning, and at noon we arrived at Station 1. Again, the hydrographic situation had not changed markedly, but the phytoplankton was mixed down to 200 m, probably caused by the strong winds, whereas elevated Chl. a concentrations in the upper 80 m indicating a small bloom were found last time.

Strong winds also forced us to interrupt station work in the afternoon of 18 April, but in the morning of 19 April the sampling programme could be continued and finished on 20 April, despite continuous 7 Bft and 3-4 m waves. Caused by strong head winds and high waves, we reached Station 2.0 only in the evening of 22 April. The sampling programme at this station was completed on 25 April, after a delay due to problems with the ship's bowthruster.

Since stormy weather conditions were forecasted for the next days, we decided to skip the third visit of Station 3 and instead steam to Station 1 again, with only one CTD cast on the way at Station 2.1. Taking the route via Tórshavn, we waited in the shelter of the island of Streymoy, Faroes, until the wind decreased in the morning of 27 April and we continued the transit to Station 1, where we arrived in the early afternoon. The final sampling programme at this station was completed on 30 April at 10:00 h, and METEOR headed for the port of Reykjavik, where she arrived on 2 May at 10:00.

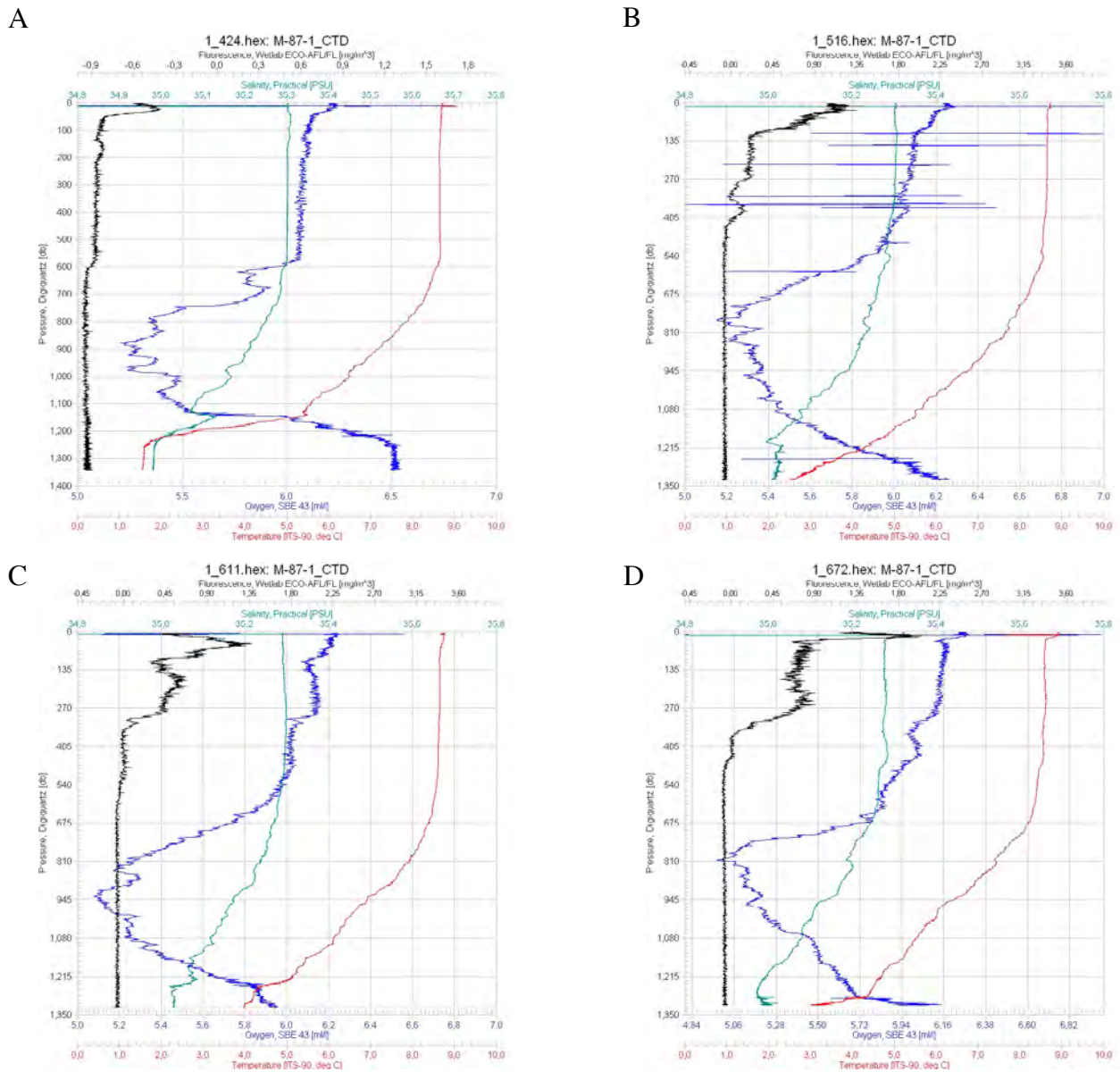


Fig. 1 Temporal variability of water column properties at Station 1. A: 26.03.2012; B: 07.04.2012; C: 18.04.2012; D: 27.04.2012



Fig. 2 Deployment of the 1m²-double-MOCNESS

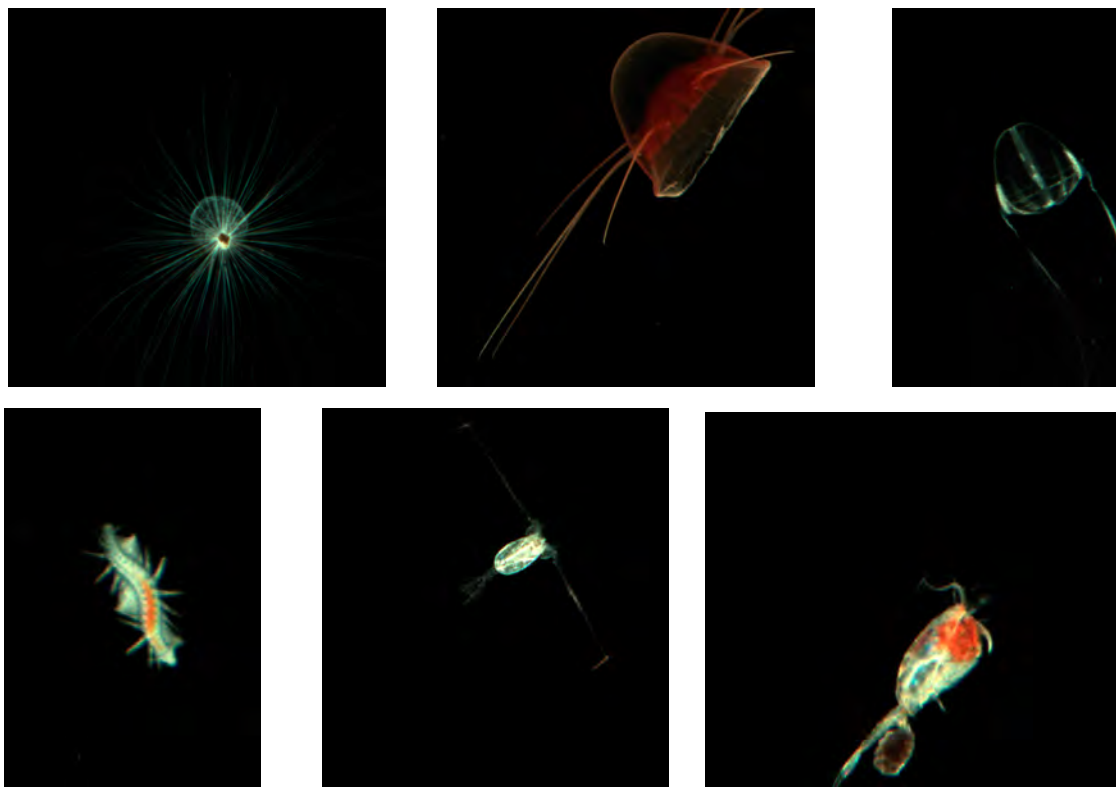


Fig. 3 Selection of images from the Video Plankton Recorder (VPR). Upper row: radiolarian (left), medusa (centre), ctenophore (right); lower row: polychaete (left), copepods (centre and right)

Acknowledgements

We thank Captain Schneider and his crew for their excellent support throughout the cruise. The shiptime was provided by the Deutsche Forschungsgemeinschaft. Financial support was provided by the EU Framework Programme 7 (EURO-BASIN, contract No 264933), the Universität Hamburg and the Deutsche Forschungsgemeinschaft.

List of participants/Leg M87/1A

Name	Role	Institution
Backhaus, Jan	chief scientist	UHH-IFM
Agersted, Mette Dalgaard	krill	DTU Aqua
Basedow, Sünnje	Zooplankton	UiN
Bellerby, Richard	CO2	Uni Research
Daniels, Chris	phytoplankton	NOCS
Davis, Cabell	zooplankton	WHOI
de Lange, Tor	CO2	Uni Research
Denda, Anneke	zooplankton	UHH-IHF
Eckardt, André	technical support	UHH-IHF
Esposito, Mario	nutrients	NOCS
Giering, Sari	zooplankton/export	NOCS
Grenvald, Julie Cornelius	zooplankton	DTU Aqua
Holste, Linda	zooplankton	UHH-IHF
Janßen, Silke	technical support	UHH-IHF
Koppelman, Rolf	zooplankton	UHH-IHF
Lindemann, Christian	phytoplankton	DTU Aqua
Martin, Bettina	zooplankton	UHH-IHF
Möller, Klas	zooplankton	UHH-IHF
Morison, Françoise	protist grazing	URI
Pankoke, Lene Maussion	zooplankton	DTU Aqua
Paulsen, Maria Lund	bacteria, virus, HNF	DTU Aqua
Reichelt, Theresa	physics	UHH-IFM
Riisgaard, Karen	microzooplankton	DTU Aqua
Silva, Teresa	krill	MRI
St. John, Michael	physical/biological interaction	DTU Aqua
Walter, Bettina	phytoplankton	UHH-IHF

List of participants/Leg M87/1B

Name	Role	Institution
Christiansen, Bernd	chief scientist	UHH-IHF
Basedow, Sünnje	zooplankton	UiN
Blackett, Mike	gelatinous zooplankton	SAHFOS
Bohata, Karolina	zooplankton	UHH-IHF
Buchholz, Cornelia	krill	AWI
Buchholz, Friedrich	krill	AWI
Daniels, Chris	phytoplankton	NOCS
Denda, Anneke	zooplankton	UHH-IHF
Esposito, Mario	nutrients	NOCS
Giering, Sari	zooplankton/export	NOCS
Grenvald, Julie Cornelius	zooplankton	DTU Aqua
Jacob, Katharina Juliane	zooplankton	UHH-IHF
Jacob, Juliane	nutrients (nitrite)	HZG
Jeansson, Emil	CO ₂	Uni Research
Koski, Marja	zooplankton	DTU Aqua
Lindemann, Christian	phytoplankton	DTU Aqua
Möller, Klas	zooplankton	UHH-IHF
Morison, Françoise	protist grazing	URI
Naumann, Ann Kristin	meteorology/aerosol	MPI Met
Nondal, Gisle	CO ₂	Uni Research
Pankoke, Lene Mausson	zooplankton	DTU Aqua
Paulsen, Maria Lund	bacteria, virus, HNF	DTU Aqua
Reichelt, Theresa	physics	UHH-IFM
St. John, Michael	physical/biological interaction	DTU Aqua
Walter, Bettina	phytoplankton	UHH-IHF

Participating institutions

AWI	Alfred Wegener Institute for Polar and Marine Research, Germany
DTU Aqua	Technical University of Denmark, National Institute of Aquatic Resources, Denmark
HZG	Helmholtz-Zentrum Geesthacht, Institute for Coastal Research, Germany
MPI Met	Max Planck Institut für Meteorologie, Germany
MRI	Marine Research Institute, Iceland
NOCS	National Oceanography Centre Southampton, UK
SAHFOS	Sir Alister Hardy Foundation for Ocean Science, UK
UHH-IFM	Universität Hamburg, Institut für Meereskunde, Germany
UHH-IHF	Universität Hamburg, Institut für Hydrobiologie und Fischereiwissenschaft, Germany
UiN	University of Nordland, Department of Biosciences and Aquaculture, Norway
Uni Research	University of Bergen, Bjerknes Centre for Climate Research, Norway
URI	University of Rhode Island, Graduate School of Oceanography, USA
WHO	Woods Hole Oceanographic Institution, USA

Station list

Times and positions refer to beginning of station

Gear abbreviations:

CTD/RO	Seabird CTD with 24 bottle rosette	BONGO	Bongo-net
VPR	video plankton recorder	MSN	multinet
MOC-D	1m ² -double-MOCNESS	LOPC	laser optical plankton counter
DAVPR	autonomous video plankton recorder	FT	FastTracka
SC	marine snow catcher	JN	jelly net
WP2	WP2-net	MOC	1m ² -MOCNESS

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/412-1	25.03.2012	08:40	61° 30,02' N	11° 00,01' W	1344.1	CTD/RO
ME871/413-1	25.03.2012	09:18	61° 30,00' N	10° 59,99' W	1346	CTD/RO
ME871/414-1	25.03.2012	11:18	61° 29,94' N	11° 00,04' W	1344.2	VPR
ME871/415-1	25.03.2012	16:58	61° 30,00' N	11° 00,00' W	1343.3	SC
ME871/416-1	25.03.2012	17:43	61° 30,00' N	10° 59,99' W	1348.7	MSN
ME871/417-1	25.03.2012	20:58	61° 30,00' N	10° 59,99' W	1347.9	WP2
ME871/418-1	25.03.2012	21:51	61° 29,69' N	11° 00,28' W	1347.3	MOC-D
ME871/419-1	26.03.2012	01:57	61° 30,05' N	10° 59,95' W	1343.8	CTD/RO
ME871/420-1	26.03.2012	02:28	61° 29,93' N	11° 00,04' W	1343.5	BONGO
ME871/421-1	26.03.2012	03:43	61° 30,02' N	10° 59,99' W	1344.6	CTD/RO
ME871/422-1	26.03.2012	05:25	61° 30,00' N	11° 00,00' W	1343.8	LOPC
ME871/423-1	26.03.2012	11:07	61° 30,00' N	11° 00,00' W	1345.6	SC
ME871/424-1	26.03.2012	12:23	61° 30,00' N	11° 00,00' W	1344.8	CTD/RO
ME871/425-1	26.03.2012	13:54	61° 29,90' N	11° 00,07' W	1342.8	MOC-D
ME871/426-1	26.03.2012	17:04	61° 30,00' N	10° 59,98' W	1343.8	WP2
ME871/427-1	26.03.2012	19:49	61° 30,00' N	11° 00,00' W	1344.8	DAVPR
ME871/428-1	27.03.2012	01:27	61° 30,02' N	10° 59,98' W	1345	BONGO
ME871/429-1	27.03.2012	02:08	61° 28,86' N	11° 01,42' W	1444.1	BONGO
ME871/430-1	27.03.2012	04:01	61° 30,05' N	10° 59,92' W	1344	MSN
ME871/431-1	27.03.2012	06:42	61° 29,97' N	11° 00,18' W	1352.3	VPR
ME871/432-1	27.03.2012	09:22	61° 30,01' N	10° 59,98' W	1348	SC
ME871/433-1	27.03.2012	10:00	61° 30,01' N	10° 59,98' W	1345.3	FT
ME871/434-1	27.03.2012	10:46	61° 30,01' N	10° 59,99' W	1345.4	CTD/RO
ME871/435-1	27.03.2012	12:21	61° 30,01' N	10° 59,99' W	1345.6	LOPC
ME871/436-1	27.03.2012	16:00	61° 30,00' N	11° 00,00' W	1345.5	WP2
ME871/437-1	27.03.2012	18:18	61° 29,88' N	11° 00,32' W	1359.2	MOC-D
ME871/438-1	27.03.2012	22:30	61° 30,00' N	10° 59,99' W	1343.5	LOPC
ME871/439-1	28.03.2012	02:28	61° 30,00' N	10° 59,99' W	1344.3	SC
ME871/440-1	28.03.2012	04:06	61° 30,00' N	10° 59,99' W	1344.1	CTD/RO
ME871/441-1	28.03.2012	06:09	61° 30,01' N	11° 00,09' W	1348.6	MOC-D
ME871/442-1	28.03.2012	09:02	61° 30,41' N	11° 10,79' W	1134.8	DAVPR
ME871/443-1	28.03.2012	11:20	61° 30,41' N	11° 10,80' W	1135	DAVPR
ME871/444-1	29.03.2012	17:56	63° 39,81' N	01° 00,15' W	2425.4	CTD/RO
ME871/445-1	29.03.2012	19:45	63° 39,81' N	01° 00,15' W	2424.2	LOPC
ME871/446-1	29.03.2012	20:30	63° 39,81' N	01° 00,15' W	2425	DAVPR
ME871/447-1	30.03.2012	04:03	62° 50,01' N	02° 29,99' W	1299.6	CTD/RO
ME871/448-1	30.03.2012	06:00	62° 50,10' N	02° 30,21' W	1294.8	MOC-D
ME871/449-1	30.03.2012	09:30	62° 49,99' N	02° 29,97' W	1297.9	CTD/RO

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/450-1	30.03.2012	10:33	62° 50,00' N	02° 29,98' W	1300.6	FT
ME871/451-1	30.03.2012	11:11	62° 50,00' N	02° 29,98' W	1299.8	SC
ME871/452-1	30.03.2012	12:27	62° 50,00' N	02° 29,98' W	1297.3	WP2
ME871/453-1	30.03.2012	12:40	62° 50,00' N	02° 29,98' W	1295.8	WP2
ME871/454-1	30.03.2012	13:01	62° 50,00' N	02° 29,98' W	1298.2	WP2
ME871/455-1	30.03.2012	13:20	62° 50,00' N	02° 29,98' W	1297.6	LOPC
ME871/456-1	30.03.2012	13:31	62° 50,00' N	02° 29,97' W	1293.8	LOPC
ME871/457-1	30.03.2012	14:40	62° 50,00' N	02° 29,98' W	1297.9	LOPC
ME871/458-1	30.03.2012	18:04	62° 50,00' N	02° 29,98' W	1296.9	WP2
ME871/459-1	30.03.2012	18:12	62° 50,00' N	02° 29,98' W	1297.6	WP2
ME871/460-1	31.03.2012	03:32	62° 48,10' N	02° 33,48' W	1179.6	CTD/RO
ME871/461-1	31.03.2012	05:02	62° 48,07' N	02° 33,54' W	1180.7	MSN
ME871/462-1	31.03.2012	06:29	62° 48,07' N	02° 33,54' W	1179.5	SC
ME871/463-1	31.03.2012	06:56	62° 48,07' N	02° 33,53' W	1178.4	WP2
ME871/464-1	31.03.2012	07:34	62° 48,04' N	02° 33,65' W	1179.3	DAVPR
ME871/465-1	31.03.2012	09:35	62° 48,04' N	02° 33,65' W	1183	DAVPR
ME871/466-1	31.03.2012	11:10	62° 48,04' N	02° 33,65' W	1181.3	CTD
ME871/467-1	31.03.2012	12:46	62° 48,04' N	02° 33,65' W	1179.3	LOPC
ME871/468-1	31.03.2012	16:11	62° 48,04' N	02° 33,65' W	1179.9	CTD/RO
ME871/469-1	31.03.2012	17:33	62° 48,04' N	02° 33,65' W	1178.6	DAVPR
ME871/470-1	31.03.2012	19:20	62° 48,04' N	02° 33,65' W	1179.5	DAVPR
ME871/471-1	31.03.2012	21:48	62° 48,19' N	02° 33,88' W	1178	MOC-D
ME871/472-1	01.04.2012	00:24	62° 50,95' N	02° 42,71' W	1225.1	BONGO
ME871/473-1	01.04.2012	01:18	62° 52,33' N	02° 45,30' W	1284.7	BONGO
ME871/474-1	01.04.2012	02:13	62° 53,74' N	02° 47,35' W	1335.6	WP2
ME871/475-1	01.04.2012	07:41	62° 10,18' N	01° 31,99' W	1589.5	CTD/RO
ME871/476-1	01.04.2012	09:19	62° 10,18' N	01° 32,00' W	1585.9	DAVPR
ME871/477-1	01.04.2012	10:54	62° 10,18' N	01° 31,99' W	1588.9	DAVPR
ME871/478-1	01.04.2012	12:17	62° 10,18' N	01° 32,00' W	1590.7	WP2
ME871/479-1	01.04.2012	18:31	61° 17,97' N	00° 20,03' W	164.2	CTD/RO
ME871/480-1	01.04.2012	19:18	61° 18,00' N	00° 20,00' W	161.8	DAVPR
ME871/481-1	01.04.2012	20:30	61° 18,53' N	00° 20,22' W	161.9	LOPC
ME871/482-1	02.04.2012	03:43	60° 19,95' N	00° 59,95' E	164.4	CTD/RO
ME871/483-1	02.04.2012	04:38	60° 20,00' N	01° 00,00' E	164.9	DAVPR
ME871/483-1	02.04.2012	06:50	60° 20,00' N	01° 00,00' E	167.8	DAVPR
ME871/484-1	02.04.2012	07:54	60° 20,13' N	00° 59,99' E	162.5	MOC-D
ME871/485-1	02.04.2012	09:08	60° 19,99' N	01° 00,00' E	165	LOPC
ME871/486-1	02.04.2012	10:04	60° 19,99' N	01° 00,00' E	163.3	SC
ME871/487-1	02.04.2012	10:46	60° 19,99' N	01° 00,00' E	164	CTD/RO
ME871/488-1	02.04.2012	11:30	60° 19,99' N	01° 00,00' E	163.1	FT
ME871/489-1	02.04.2012	11:51	60° 19,99' N	01° 00,00' E	164.1	DAVPR
ME871/490-1	02.04.2012	14:05	60° 19,99' N	01° 00,00' E	161.9	WP2
ME871/491-1	02.04.2012	14:28	60° 19,99' N	01° 00,00' E	164.1	WP2
ME871/492-1	02.04.2012	14:45	60° 19,99' N	01° 00,00' E	162.9	MSN
ME871/493-1	02.04.2012	15:33	60° 19,99' N	01° 00,00' E	166	CTD/RO
ME871/494-1	02.04.2012	16:12	60° 19,99' N	01° 00,00' E	163.1	LOPC
ME871/495-1	02.04.2012	17:27	60° 19,99' N	01° 00,00' E	164.8	SC
ME871/496-1	02.04.2012	17:43	60° 19,99' N	01° 00,00' E	164.5	WP2

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/497-1	02.04.2012	17:51	60° 19,99' N	01° 00,00' E	163.4	WP2
ME871/498-1	02.04.2012	18:01	60° 19,99' N	01° 00,00' E	162.9	WP2
ME871/499-1	02.04.2012	18:21	60° 19,99' N	00° 59,99' E	164.7	CTD/RO
ME871/500-1	02.04.2012	20:06	60° 20,03' N	00° 59,99' E	165.6	MOC-D
ME871/501-1	02.04.2012	21:21	60° 19,99' N	01° 00,00' E	164.4	DAVPR
ME871/502-1	02.04.2012	23:42	60° 19,99' N	00° 59,99' E	162.6	WP2
ME871/503-1	03.04.2012	00:35	60° 19,99' N	01° 00,00' E	162.8	SC
ME871/504-1	03.04.2012	02:35	60° 19,99' N	01° 00,00' E	164.1	SC
ME871/505-1	03.04.2012	03:14	60° 19,99' N	01° 00,00' E	163.9	CTD/RO
ME871/506-1	03.04.2012	04:19	60° 19,99' N	01° 00,00' E	165.3	LOPC
ME871/507-1	03.04.2012	05:25	60° 19,99' N	00° 59,99' E	163.6	SC
ME871/508-1	03.04.2012	14:37	60° 54,99' N	01° 25,07' W	109.1	CTD/RO
ME871/509-1	03.04.2012	15:08	60° 54,99' N	01° 25,01' W	109.2	DAVPR
ME871/510-1	03.04.2012	23:10	61° 18,65' N	03° 26,74' W	1217.2	MOC-D
ME871/511-1	04.04.2012	01:47	61° 24,04' N	03° 30,01' W	1265.2	DAVPR
ME871/512-1	04.04.2012	04:21	61° 24,87' N	03° 31,21' W	1269.6	WP2
ME871/513-1	04.04.2012	04:50	61° 25,16' N	03° 31,60' W	1271.2	WP2
ME871/514-1	04.04.2012	05:53	61° 25,53' N	03° 32,33' W	1270.4	CTD/RO
ME871/515-1	04.04.2012	07:42	61° 25,86' N	03° 33,15' W	1265.9	LOPC
ME871/516-1	07.04.2012	21:36	61° 30,02' N	11° 00,02' W	1348.6	CTD/RO
ME871/517-1	07.04.2012	23:28	61° 30,02' N	11° 00,02' W	1346.1	DAVPR
ME871/518-1	08.04.2012	06:34	61° 29,99' N	11° 00,00' W	1346	LOPC
ME871/519-1	09.04.2012	05:23	61° 30,00' N	10° 59,99' W	1346.3	CTD/RO
ME871/520-1	09.04.2012	06:23	61° 30,00' N	10° 59,99' W	1346.5	WP2
ME871/521-1	09.04.2012	07:17	61° 30,00' N	10° 59,99' W	1349.1	JN
ME871/522-1	09.04.2012	08:28	61° 30,00' N	11° 00,29' W	1360.2	MOC-D
ME871/523-1	09.04.2012	12:35	61° 30,01' N	10° 59,84' W	1339.9	CTD/RO
ME871/524-1	09.04.2012	14:01	61° 30,00' N	10° 59,95' W	1341.9	WP2
ME871/525-1	09.04.2012	14:56	61° 30,00' N	10° 59,95' W	1341.2	WP2
ME871/526-1	09.04.2012	16:07	61° 30,00' N	10° 59,99' W	1345.9	SC
ME871/527-1	09.04.2012	16:58	61° 30,00' N	10° 59,99' W	1345.3	JN
ME871/528-1	09.04.2012	17:28	61° 30,00' N	10° 59,99' W	1345.7	JN
ME871/529-1	09.04.2012	18:11	61° 30,00' N	11° 00,00' W	1346	MSN
ME871/530-1	09.04.2012	20:00	61° 30,00' N	11° 00,00' W	1348.1	LOPC
ME871/531-1	10.04.2012	00:06	61° 30,00' N	11° 00,43' W	1375.7	MOC
ME871/532-1	10.04.2012	02:42	61° 29,98' N	11° 00,00' W	1346.5	CTD/RO
ME871/533-1	10.04.2012	04:10	61° 30,00' N	11° 00,01' W	1346.9	SC
ME871/534-1	10.04.2012	04:41	61° 30,00' N	11° 00,05' W	1349.9	WP2
ME871/535-1	10.04.2012	04:50	61° 29,98' N	11° 00,04' W	1347.5	WP2
ME871/536-1	10.04.2012	05:09	61° 29,97' N	11° 00,03' W	1345.7	JN
ME871/537-1	10.04.2012	05:39	61° 30,01' N	10° 59,98' W	0	JN
ME871/538-1	10.04.2012	06:13	61° 29,98' N	11° 00,08' W	1351.2	DAVPR
ME871/539-1	10.04.2012	10:50	61° 30,00' N	11° 00,00' W	1346.2	SC
ME871/540-1	10.04.2012	12:00	61° 29,99' N	11° 00,02' W	1347.4	WP2
ME871/541-1	10.04.2012	12:45	61° 29,95' N	11° 00,06' W	1346.8	CTD/RO
ME871/542-1	10.04.2012	13:55	61° 29,99' N	11° 00,00' W	1344.1	LOPC
ME871/543-1	10.04.2012	15:06	61° 29,99' N	11° 00,00' W	1344	LOPC
ME871/544-1	10.04.2012	16:21	61° 29,99' N	11° 00,01' W	1343.5	LOPC

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/545-1	10.04.2012	17:38	61° 29,99' N	11° 00,00' W	1344.4	JN
ME871/546-1	10.04.2012	18:06	61° 29,99' N	11° 00,01' W	1343.7	JN
ME871/547-1	10.04.2012	18:40	61° 29,99' N	11° 00,00' W	1348.2	WP2
ME871/548-1	10.04.2012	19:24	61° 29,99' N	11° 00,01' W	1348.1	SC
ME871/549-1	10.04.2012	20:55	61° 25,16' N	11° 07,05' W	1451.9	MOC-D
ME871/550-1	11.04.2012	00:07	61° 30,00' N	11° 00,02' W	1347.6	WP2
ME871/551-1	11.04.2012	00:43	61° 30,00' N	11° 00,02' W	1347	CTD/RO
ME871/552-1	11.04.2012	02:15	61° 30,00' N	11° 00,02' W	1343.7	WP2
ME871/553-1	12.04.2012	13:58	62° 49,98' N	02° 30,01' W	1299.2	CTD/RO
ME871/554-1	12.04.2012	15:46	62° 50,00' N	02° 30,00' W	1299.8	JN
ME871/555-1	12.04.2012	16:15	62° 50,00' N	02° 30,00' W	1298	JN
ME871/556-1	12.04.2012	16:54	62° 49,94' N	02° 30,41' W	1287.2	MSN
ME871/557-1	12.04.2012	18:49	62° 50,00' N	02° 30,01' W	1296.8	DAVPR
ME871/558-1	13.04.2012	00:43	62° 50,01' N	02° 29,98' W	1295.9	LOPC
ME871/559-1	13.04.2012	05:26	62° 50,01' N	02° 29,99' W	1298.1	JN
ME871/560-1	13.04.2012	05:56	62° 50,01' N	02° 29,98' W	1295.9	JN
ME871/561-1	13.04.2012	06:41	62° 50,01' N	02° 29,98' W	1298.4	SC
ME871/562-1	13.04.2012	07:20	62° 49,91' N	02° 30,88' W	1285.6	MOC-D
ME871/563-1	13.04.2012	10:45	62° 49,99' N	02° 30,02' W	1293.9	JN
ME871/564-1	13.04.2012	11:38	62° 50,02' N	02° 30,11' W	1302.2	CTD/RO
ME871/565-1	13.04.2012	12:44	62° 49,99' N	02° 30,05' W	1294.8	WP2
ME871/566-1	13.04.2012	13:07	62° 50,00' N	02° 30,08' W	1296.8	WP2
ME871/567-1	13.04.2012	13:32	62° 50,03' N	02° 30,15' W	1297.5	LOPC
ME871/568-1	13.04.2012	19:18	62° 50,03' N	02° 30,14' W	1299.5	SC
ME871/569-1	13.04.2012	20:50	62° 41,15' N	02° 26,60' W	1002.2	MOC-D
ME871/570-1	13.04.2012	23:47	62° 46,27' N	02° 29,19' W	1160.2	MOC
ME871/571-1	14.04.2012	01:40	62° 50,01' N	02° 30,02' W	1300.3	JN
ME871/572-1	14.04.2012	02:42	62° 50,01' N	02° 30,05' W	1298.7	CTD/RO
ME871/573-1	14.04.2012	03:53	62° 50,01' N	02° 30,05' W	1295.1	WP2
ME871/574-1	14.04.2012	04:17	62° 50,01' N	02° 30,05' W	1296.8	JN
ME871/575-1	14.04.2012	04:48	62° 50,01' N	02° 30,05' W	1295.4	JN
ME871/576-1	14.04.2012	05:27	62° 50,01' N	02° 30,05' W	1298.5	SC
ME871/577-1	14.04.2012	06:30	62° 50,01' N	02° 30,05' W	1298.8	DAVPR
ME871/578-1	14.04.2012	11:43	62° 50,00' N	02° 30,80' W	1293.3	CTD/RO
ME871/579-1	14.04.2012	12:59	62° 50,00' N	02° 30,50' W	1291.7	WP2
ME871/580-1	14.04.2012	13:38	62° 50,01' N	02° 30,66' W	1291.6	SC
ME871/581-1	14.04.2012	13:59	62° 50,01' N	02° 30,62' W	1292.6	CTD/RO
ME871/582-1	14.04.2012	19:58	62° 09,97' N	01° 32,00' W	1584.4	CTD/RO
ME871/583-1	15.04.2012	09:26	60° 19,96' N	01° 00,00' E	163.8	CTD/RO
ME871/584-1	15.04.2012	10:32	60° 20,00' N	01° 00,01' E	164.9	LOPC
ME871/585-1	15.04.2012	11:45	60° 20,00' N	01° 00,01' E	161.8	SC
ME871/586-1	15.04.2012	12:03	60° 20,00' N	01° 00,01' E	163.4	CTD/RO
ME871/587-1	15.04.2012	12:33	60° 20,00' N	01° 00,01' E	162.9	WP2
ME871/588-1	15.04.2012	12:51	60° 20,00' N	01° 00,01' E	164.9	WP2
ME871/589-1	15.04.2012	13:23	60° 20,00' N	01° 00,01' E	163.6	DAVPR
ME871/590-1	15.04.2012	15:53	60° 20,00' N	01° 00,01' E	163.2	JN
ME871/591-1	15.04.2012	16:17	60° 20,00' N	01° 00,01' E	164.3	JN
ME871/592-1	15.04.2012	16:44	60° 20,00' N	01° 00,00' E	162.6	MSN
ME871/593-1	15.04.2012	17:14	60° 20,00' N	01° 00,00' E	163.7	LOPC

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/594-1	15.04.2012	19:05	60° 20,00' N	01° 00,01' E	163.5	DAVPR
ME871/595-1	15.04.2012	21:42	60° 16,07' N	01° 01,92' E	165.3	MOC-D
ME871/596-1	16.04.2012	00:18	60° 20,01' N	01° 00,00' E	164.2	LOPC
ME871/597-1	16.04.2012	01:37	60° 20,02' N	01° 00,00' E	164.7	JN
ME871/598-1	16.04.2012	02:00	60° 20,01' N	01° 00,00' E	163.3	JN
ME871/599-1	16.04.2012	02:33	60° 20,01' N	01° 00,00' E	166.2	WP2
ME871/600-1	16.04.2012	02:56	60° 20,01' N	01° 00,00' E	165	CTD/RO
ME871/601-1	16.04.2012	03:37	60° 20,01' N	01° 00,00' E	165.1	DAVPR
ME871/602-1	16.04.2012	05:44	60° 20,01' N	01° 00,00' E	165.2	JN
ME871/603-1	16.04.2012	06:10	60° 20,01' N	01° 00,00' E	165.1	JN
ME871/604-1	16.04.2012	06:40	60° 20,01' N	01° 00,00' E	163.1	DAVPR
ME871/605-1	16.04.2012	08:40	60° 20,01' N	01° 00,00' E	165.8	CTD/RO
ME871/606-1	16.04.2012	09:25	60° 19,95' N	01° 00,00' E	161.2	WP2
ME871/607-1	16.04.2012	09:55	60° 20,00' N	01° 00,01' E	163.3	WP2
ME871/608-1	16.04.2012	10:27	60° 20,00' N	01° 00,01' E	165.2	CTD/RO
ME871/609-1	16.04.2012	11:08	60° 20,14' N	00° 59,98' E	161	MOC-D
ME871/610-1	17.04.2012	01:03	61° 24,03' N	03° 30,06' W	1261	CTD/RO
ME871/611-1	18.04.2012	12:19	61° 29,96' N	11° 00,06' W	1341.7	CTD/RO
ME871/612-1	18.04.2012	13:49	61° 30,00' N	11° 00,03' W	1347.3	WP2
ME871/613-1	18.04.2012	14:15	61° 29,99' N	11° 00,03' W	1345.6	WP2
ME871/614-1	18.04.2012	15:13	61° 30,00' N	11° 00,03' W	1344.8	CTD/RO
ME871/615-1	18.04.2012	17:13	61° 30,00' N	11° 00,04' W	1344.9	LOPC
ME871/616-1	18.04.2012	21:27	61° 25,91' N	11° 10,52' W	1307.5	MOC-D
ME871/617-1	19.04.2012	00:33	61° 29,99' N	11° 00,01' W	1342.9	WP2
ME871/618-1	19.04.2012	01:07	61° 29,99' N	11° 00,01' W	1343.1	CTD/RO
ME871/619-1	19.04.2012	02:40	61° 30,00' N	11° 00,01' W	1343.9	JN
ME871/620-1	19.04.2012	03:44	61° 29,99' N	11° 00,01' W	1343.6	SC
ME871/621-1	19.04.2012	04:32	61° 29,99' N	11° 00,01' W	1343.8	JN
ME871/622-1	19.04.2012	05:04	61° 29,99' N	11° 00,01' W	1344.3	JN
ME871/623-1	19.04.2012	05:40	61° 30,00' N	11° 00,01' W	1343.5	DAVPR
ME871/624-1	19.04.2012	10:40	61° 30,01' N	10° 59,94' W	1340.6	CTD/RO
ME871/625-1	19.04.2012	12:08	61° 30,13' N	10° 59,63' W	1335.1	MOC-D
ME871/626-1	20.04.2012	06:17	61° 30,00' N	11° 00,00' W	1343.9	SC
ME871/627-1	20.04.2012	07:08	61° 30,07' N	10° 59,87' W	1342.5	LOPC
ME871/628-1	20.04.2012	10:55	61° 31,23' N	10° 57,12' W	1325.5	MOC
ME871/629-1	20.04.2012	15:20	61° 29,99' N	11° 00,20' W	1352.3	MSN
ME871/630-1	20.04.2012	16:58	61° 30,01' N	11° 00,01' W	1344.4	JN
ME871/631-1	20.04.2012	17:30	61° 30,16' N	11° 00,05' W	1354.2	JN
ME871/632-1	20.04.2012	18:03	61° 30,36' N	11° 00,09' W	1368.5	WP2
ME871/633-1	20.04.2012	19:15	61° 30,83' N	11° 00,37' W	1411.4	LOPC
ME871/634-1	20.04.2012	23:30	61° 29,99' N	11° 00,10' W	1344.6	WP2
ME871/635-1	21.04.2012	00:48	61° 30,26' N	11° 00,16' W	1366.3	DAVPR
ME871/636-1	21.04.2012	05:51	61° 31,61' N	11° 00,82' W	1368.4	SC
ME871/637-1	21.04.2012	06:10	61° 31,70' N	11° 00,88' W	1363.5	WP2
ME871/638-1	21.04.2012	07:38	61° 32,17' N	11° 01,17' W	1342.7	CTD/RO
ME871/639-1	21.04.2012	09:24	61° 32,80' N	11° 01,69' W	1337	SC
ME871/640-1	21.04.2012	09:38	61° 32,86' N	11° 01,76' W	1333.8	WP2
ME871/641-1	22.04.2012	19:40	62° 50,00' N	02° 30,04' W	1298.7	CTD/RO
ME871/642-1	22.04.2012	21:24	62° 50,00' N	02° 30,04' W	1299.1	DAVPR

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/643-1	23.04.2012	02:22	62° 50,00' N	02° 30,04' W	1298.3	JN
ME871/644-1	23.04.2012	03:30	62° 50,00' N	02° 30,04' W	1299.7	SC
ME871/645-1	23.04.2012	04:21	62° 50,01' N	02° 30,04' W	1297.8	WP2
ME871/646-1	23.04.2012	04:50	62° 50,00' N	02° 30,03' W	1298.4	JN
ME871/647-1	23.04.2012	05:21	62° 50,00' N	02° 30,03' W	1299	JN
ME871/648-1	23.04.2012	05:58	62° 50,00' N	02° 30,04' W	1298.1	LOPC
ME871/649-1	23.04.2012	10:16	62° 50,00' N	02° 30,03' W	1297	CTD/RO
ME871/650-1	23.04.2012	11:39	62° 50,00' N	02° 30,03' W	1297.7	WP2
ME871/651-1	23.04.2012	12:05	62° 50,00' N	02° 30,04' W	1296.7	WP2
ME871/652-1	23.04.2012	13:05	62° 50,13' N	02° 29,69' W	1307.7	MOC-D
ME871/653-1	23.04.2012	16:38	62° 50,00' N	02° 30,12' W	1298.4	SC
ME871/654-1	23.04.2012	17:03	62° 50,01' N	02° 30,01' W	1297.2	JN
ME871/655-1	23.04.2012	17:33	62° 50,00' N	02° 30,01' W	1301.9	JN
ME871/656-1	23.04.2012	18:06	62° 49,99' N	02° 30,00' W	1301.4	DAVPR
ME871/657-1	23.04.2012	21:27	62° 45,52' N	02° 38,35' W	1054.9	MOC-D
ME871/658-1	24.04.2012	00:03	62° 49,19' N	02° 32,00' W	1252.3	MOC
ME871/659-1	24.04.2012	10:18	62° 50,00' N	02° 30,02' W	1299.9	CTD/RO
ME871/660-1	24.04.2012	11:53	62° 50,00' N	02° 30,02' W	1297.1	WP2
ME871/661-1	24.04.2012	12:23	62° 50,00' N	02° 30,02' W	1301.3	DAVPR
ME871/662-1	24.04.2012	16:51	62° 50,00' N	02° 30,02' W	1297.7	SC
ME871/663-1	24.04.2012	17:13	62° 50,00' N	02° 30,02' W	1294.6	MSN
ME871/664-1	24.04.2012	20:05	62° 47,53' N	02° 35,09' W	1150	MOC
ME871/665-1	24.04.2012	21:52	62° 50,01' N	02° 30,01' W	1298.7	LOPC
ME871/666-1	25.04.2012	01:25	62° 50,01' N	02° 30,01' W	1301.3	WP2
ME871/667-1	25.04.2012	01:51	62° 50,01' N	02° 30,01' W	1297.2	CTD/RO
ME871/668-1	25.04.2012	03:30	62° 50,01' N	02° 30,01' W	1298.5	SC
ME871/669-1	25.04.2012	04:03	62° 50,01' N	02° 30,01' W	1297.8	LOPC
ME871/670-1	25.04.2012	07:38	62° 50,01' N	02° 30,01' W	1299.4	SC
ME871/671-1	25.04.2012	12:30	62° 09,95' N	01° 32,06' W	1591.5	CTD/RO
ME871/672-1	27.04.2012	15:23	61° 30,05' N	10° 59,98' W	1345.5	CTD/RO
ME871/673-1	27.04.2012	17:10	61° 30,00' N	11° 00,00' W	1347	MSN
ME871/674-1	27.04.2012	18:58	61° 30,00' N	11° 00,00' W	1344.7	SC
ME871/675-1	27.04.2012	20:57	61° 27,12' N	10° 49,39' W	1216.3	MOC-D
ME871/676-1	27.04.2012	23:55	61° 30,00' N	10° 59,94' W	1343.1	LOPC
ME871/677-1	28.04.2012	03:36	61° 30,00' N	10° 59,98' W	1346.4	SC
ME871/678-1	28.04.2012	04:14	61° 30,00' N	10° 59,98' W	1344.3	DAVPR
ME871/679-1	28.04.2012	09:49	61° 29,99' N	10° 59,98' W	1343.9	CTD/RO
ME871/680-1	28.04.2012	11:51	61° 29,99' N	10° 59,98' W	1344.8	WP2
ME871/681-1	28.04.2012	12:45	61° 29,99' N	10° 59,98' W	1344.6	WP2
ME871/682-1	28.04.2012	13:47	61° 29,99' N	10° 59,98' W	1342.2	LOPC
ME871/683-1	28.04.2012	17:22	61° 29,99' N	10° 59,98' W	1345.2	JN
ME871/684-1	28.04.2012	17:50	61° 29,99' N	10° 59,98' W	1343.2	JN
ME871/685-1	28.04.2012	18:29	61° 29,99' N	10° 59,98' W	1343.6	SC
ME871/686-1	28.04.2012	18:57	61° 29,99' N	10° 59,98' W	1346.4	CTD/RO
ME871/687-1	28.04.2012	20:11	61° 29,99' N	10° 59,98' W	1343.9	DAVPR
ME871/688-1	29.04.2012	01:07	61° 29,99' N	10° 59,97' W	1347.6	JN
ME871/689-1	29.04.2012	02:07	61° 29,99' N	10° 59,98' W	1345.6	CTD/RO
ME871/690-1	29.04.2012	03:49	61° 30,00' N	10° 59,98' W	1344.9	WP2
ME871/691-1	29.04.2012	04:23	61° 29,99' N	10° 59,98' W	1344.5	SC

Station	Date	Time	Latitude	Longitude	Depth (m)	Gear.
ME871/692-1	29.04.2012	04:38	61° 29,99' N	10° 59,98' W	1344.3	JN
ME871/693-1	29.04.2012	05:09	61° 29,99' N	10° 59,98' W	1344.9	JN
ME871/694-1	29.04.2012	05:48	61° 29,99' N	10° 59,98' W	1345.4	CTD/RO
ME871/695-1	29.04.2012	08:11	61° 30,00' N	10° 59,98' W	1346.3	LOPC
ME871/696-1	29.04.2012	11:58	61° 29,91' N	11° 00,48' W	1377.7	CTD/RO
ME871/697-1	29.04.2012	13:20	61° 29,94' N	11° 01,06' W	1443.3	MOC-D
ME871/698-1	29.04.2012	16:53	61° 30,01' N	10° 59,97' W	1345.5	SC
ME871/699-1	29.04.2012	17:18	61° 30,00' N	11° 00,00' W	1345.4	LOPC
ME871/700-1	29.04.2012	21:12	61° 29,89' N	11° 02,36' W	1408.7	MOC
ME871/701-1	30.04.2012	00:55	61° 30,01' N	11° 00,12' W	1352	LOPC
ME871/702-1	30.04.2012	03:24	61° 30,03' N	11° 00,28' W	1365.3	CTD/RO
ME871/703-1	30.04.2012	05:13	61° 30,03' N	11° 00,28' W	1363.9	DAVPR
