RV BELGICA ST0602 - CRUISE REPORT

Subscriber:	Dr. Vera Van Lancker (UG-RCMG) Dr. Michael Fettweis (MUMM)
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1. BELGICA CRUISE ST2006-02

1.	Cruise number	2006-02
2.	Date / hour	Zeebrugge TD: 13/02, 11h10 Zeebrugge TA: 13/02, 13h30 Zeebrugge TD, 13/02, 14h30 Zeebrugge TA: 14/02, 24h00
3.	Responsible scientist	Dr. Vera VAN LANCKER Isabelle DU FOUR (assistant chief scientist) (UG-RCMG)
	Participating institutions	UG-RCMG, UG-MARBIO, MUMM

2. PARTICIPANTS

		13-02-2006 – 17-02-2006 (08h00)	17-02-2006 (08h00-13h00)
UG-RCMG	Vera VAN LANCKER	X	X
	Isabelle DU FOUR	X	X
	Kristien SCHELFAUT	X	X
	Isolde BELIEN *	X	X
	Karen FONTIJN *	X	X
	Lies DE MOL *	X	X
	Cilia DERESE *	X	X
	Teodoro CASSOLA	X	X
	Mathias BAEYE	X	X
UG-MARBIO	Guy DE SMET	X	
MUMM	Fritz FRANCKEN		X
	Jean-Pierre DE BLAUWE		X
	Joan BACKERS		X
TOTAL		10	12

* First embarkation

3. PROGRAM OBJECTIVES

PhD research Els Verfaillie: Setting up and validation of a spatial distribution model of marine habitats as a support for the ecological valuation of the seafloor:
One of the aims of this doctoral research is to investigate the ability of acoustical techniques to validate the ecological value of the seafloor. Another aim of this research is to produce high quality and detailed maps of the sedimentology and other physical parameters and this in the context of aggregate extraction, habitat mapping, spatial planning and sediment transport. Additional samples have to be taken in the neighbourhood of the Fairy Bank, the Akkaert Bank, the Bligh Bank and the utmost northern part of the BCS. Protocols and guidelines based on these datasets, are further valorised in the European project MESH (Development of a framework for Mapping European Seabed Habitats, EU-Interreg IIIb (2003-2007)).

MESH (Development of a framework for Mapping European Seabed Habitats) (RCMG)
MESH is an EU Interreg IIIb-funded international marine habitat mapping programme aiming at the development of international standards and protocols for seabed mapping. Partnership: Joint Nature Conservation Committee (JNCC, coordination) (UK); Ghent University (B); IFREMER (FR); Marine Institute (IRL); Alterra-Texel (NL); TNO Environment, Energy and Process Innovation (NL); Centre for Environment, Fisheries and Aquaculture Science (CEFAS) (UK); Department for Agriculture and Rural Development, Northern Ireland (DARD) (UK); English Nature (UK); Envision Mapping Ltd (UK); National Museums and Galleries of Wales (NMGW) (UK); Natural Environment Research Council (British Geological Survey) (BGS) (UK)

MAREBASSE project (RCMG/MUMM/MARBIO/MAGELAS):
The -Marebasse- research project is essentially meant to set-up an integrated assessment framework for marine aggregates. This framework is regarded important to answer management/policy questions on how a sustainable exploitation of marine resources should be viewed and what approaches should be envisaged. This implies that essentially an increase of knowledge is necessary on the level of the sediments themselves and their distribution, but also on the dynamical environment. The project is structured around a three-tiered approach encompassing three spatial scales: broad-based, regional and site-specific. Fieldwork programmes are the focal point of the regional and site-specific research, however with a coupling towards the broad-based approach.

MOMO project (MUMM):
MOMO stands for the monitoring and modelling of cohesive sediment transport and the evaluation of the effects on the marine ecosystem due to dredging and dumping operations. The primary objective of the project is the study of the cohesive sediments on the Belgian Continental Shelf (BCS) using numerical models and field measurements. The combination of monitoring and modelling will provide information on the transport processes of this fine fraction and is therefore fundamental to answer questions on composition, origin and residence of it on the BCS, the change in characteristics of this sediment due to dredging and dumping operations, the effects of the natural variability, the impact on the marine ecosystem especially due to alterations of habitats, the estimation of the net input of hazardous substances in the marine environment and the possibilities to reduce these last two items.

4) MEASUREMENTS

MOMO (MUMM)

Normally the MUMM personnel would have deployed the tripode and ADCP during the campaign ST0601. Due to bad weather conditions the deployment was postponed to the beginning of this campaign.

MAREBASSE / MESH / PhD research Els Verfaillie (UG-VAN LANCKER, RCMG)

1/ Northern part of the BCP

Boxcore sampling was originally planned in the Sierra Ventana region (see planning). However due to the predicted bad weather conditions from Wednesday onwards, it was decided to go directly to the northern part of the Belgian continental shelf (BCP). Multibeam measurements were only done in the first box, with the following coordinates (see planning).

Point	Easting (wgs84)	Northing (wgs84)	NB (wgs84)	OL (wgs84)
SW	459784	5733502	51 45.058	2 25.045
NW	469359	5746132	51 51.908	2 33.300
NE	477876	5737840	51 47.459	2 40.754
SE	467573	5727107	51 41.639	2 31.851

Van Veen samples were taken in this zone to refine the new sedimentological map of the Belgian shelf. All Van Veen samples with priority 1 (28) were taken (see planning). The coordinates can be found in annex. At each location two Van Veen samples were taken, one for sedimentological analyses and the other for marcrobenthos studies. The biological samples were sieved on board using the Wilson Autosiever instead of doing it manually. The results were very satisfying (see paragraph 10). The weather didn't allow video recordings.
During the transit to the Sierra Ventana region, 5 Van Veen samples for sedimentological purpose only (NBCP_29/30/31/32/33) were taken in the zone of the Bligh Bank in view of the refinement of the new sedimentological map of the Belgian shelf. Their coordinates can be found in annex.

3/ Sierra Ventana region

Due to the weather conditions only 3 lines of multibeam were sailed. The lines cross the new dumping site S1 and further to the north-east the Belgian-Dutch border. They have the following coordinates.

Line	Point	Easting (wgs84)	Northing (wgs84)	NB (wgs84)	OL (wgs84)
1	SW	500622	5698116	51 26.05	3 0.54
	NO	511416	5707779	51 31.26	3 9.87
2	SW	500247	5699039	51 26.55	3 0.21
	NO	510716	5708565	51 31.69	3 9.27
3	SW	498916	5699241	51 26.66	2 59.06
	NO	509938	5709297	51 32.08	3 8.60

5. OPERATIONS

All times are given in local time.

Monday, February 13th

09h00 Embarkation of UG-RCMG, UG-MARBIO and MUMM personnel

11h00 Sail off from Zeebrugge

Transit to N 51 21.591 E 003 07.1932

11h24 Deployment of the tripode

Transit to N 51 21.548 E 003 07.2296

12h12 Deployment of the ADCP

Transit to Zeebrugge

13h30 Touch & Go at Zeebrugge. Disembarkation of MUMM team. Embarkation of UG-RCMG and UG-MARBIO teams.

14h30 Sail off from Zeebrugge

Transit to the Northern part of the BCP

18h30 – 19h30 Multibeam calibration: roll and outerbeam calibration

19h30 – Multibeam measurements

Thuesday, February 14th

– 03h00 Multibeam measurements

03h00 – 18h30 Van Veen sampling

Transit to the Sierra Ventana region

20h00 – 23h00 Multibeam measurements

Transit to Zeebrugge

24h00 Arrival at Zeebrugge

Wednesday, February 15th

09h00 Disembarkment of scientific personnel

- End of campaign ST0602 –

6. LABORATORY SPACE USED

BRIDGE:	Multibeam operations
WET LAB:	Samplings
CHEMISTRY LAB:	Filtration of water samples
MICROBIOLOGY LAB:	Storage of instruments (sampling equipment, sound velocity probe)
BIOCHEMISTRY LAB:	Storage of instruments

FISHERIES LAB:

7. INFRASTRUCTURE USED

Continuous measurements
- Thermosalinograph SCTD-SBE21
- Turner fluorometer
- Sea water pump

Navigation / Meteorology / Bathymetry
- Friedrichs meteo
- DGPS Thales Aquarius
- Atlas Deso 20
- Tss 320B heave compensator
- RoxAnn bottom discriminator *(not working)*
- Kongsberg-Simrad EM1002S multibeam

In-water instruments
- ADCP
- Tripode

Sediment sampling
- Van Veen grab

Biological sampling
- Wilson Autosiever (VLIZ)

Laboratories equipment
- Milli-Q water purification system with provision tank
- Freezer and refrigerator for the storage of the samples
- Filtration set
- Oven
- ph meter

8. ANALYSIS CARRIED OUT ON BOARD

Sieving of samples for macrobenthos

9. AUTOMATIC DATA ACQUISITION

Parameters that were acquired:

N°	Parameters	Acquisition rate 0.5 sec	Acquisition rate 10 sec
13	PT/ST SPEED		*
14	DEPTH SPEED		*
15	FO/AF SPEED		*
16	REL. WINDDIR		*
17	REL. WINDSPD		*
19	HUMIDITY_HR		*
20	ATM PRESSURE		*
24	SEATEMP_1		*
30	SOL-RAD		*
34	AIRTEMP.DRY		*
35	AIRTEMP.WET		*

36	SHIP HEADING	*	*
120	IN-WIND DIR		*
121	IN-WINDSPD		*
122	IN-WINDSPD.BF		*
123	CUMUL.DIST	*	*
182	HUMIDITY_DW		*
184	TSS DEPTH-L	*	*
185	TSS DEPTH-H	*	*
186	TSS HEAVE	*	*
191	SBE21 TEMP.	*	*
192	SBE21 SALIN.	*	*
193	SBE21 SIGTH.	*	*
195	TURNER FLUO.	*	*
197	DGPS LAT.N/S	*	*
198	DGPS LONG.E/W	*	*
199	DGPS HG_MSL	*	*
200	DGPS UTCTIME	*	*
201	DGPS SPEED	*	*
202	DGPS COURSE	*	*
203	DGPS QUALITY	*	*
214	MGN DGPS LAT	*	*
215	MGN DGPS LON	*	*
219	ROXANN DEPTH	*	*
220	ROXANN ROUGH	*	*
221	ROXAN HARD	*	*

10. REMARKS ON THE MEASUREMENTS, INSTRUMENTS AND ON THE OPERATIONAL COURSE OF THE CAMPAIGN

The **Wilson Autosiever** is a semi-automated sieving table for reducing benthic sediment samples offshore in a routing and controlled manner. The instrument was used for the first time on the Belgica. The MARBIO-team was very satisfied with the results. Moreover the instrument is user-friendly, reduces the process time and reduces the number of personnel required for benthic processing.

Processing of a Van Veen sample

Sample result

The officers and crew of the Belgica are greatly acknowledged for their cooperation. MUMM is thanked for the logistics support and VLIZ for the use of the Wilson Autosiever.

ANNEX: coordinates of Van Veen sampling stations

Identification	Timestamp (UTC)	Bio/Geo
ST0602_NBCP_12	2006-02-14 02:18:30	bio
ST0602_NBCP_12		geo
ST0602_NBCP_03	2006-02-14 02:39:00	bio
ST0602_NBCP_03		geo
ST0602_NBCP_02	2006-02-14 03:05:00	bio
ST0602_NBCP_02		geo
ST0602_NBCP_13	2006-02-14 03:31:10	bio
ST0602_NBCP_13		geo
ST0602_NBCP_16	2006-02-14 03:57:50	bio
ST0602_NBCP_16		geo
ST0602_NBCP_22	2006-02-14 04:30:00	bio
ST0602_NBCP_22		geo
ST0602_NBCP_24	2006-02-14 04:54:10	bio
ST0602_NBCP_24		geo
ST0602_NBCP_24	2006-02-14 04:54:40	bio
ST0602_NBCP_24		geo
ST0602_NBCP_23	2006-02-14 05:16:20	bio
ST0602_NBCP_23		geo
ST0602_NBCP_27	2006-02-14 05:37:40	bio
ST0602_NBCP_27		geo
ST0602_NBCP_26	2006-02-14 05:58:00	bio
ST0602_NBCP_26		geo
ST0602_NBCP_28	2006-02-14 06:27:00	bio
ST0602_NBCP_28	2006-02-14 6:28:06	geo
ST0602_NBCP_25	2006-02-14 7:02:06	bio
ST0602_NBCP_25	2006-02-14 7:05:14	geo
ST0602_NBCP_21	2006-02-14 7:23:13	bio
ST0602_NBCP_21	2006-02-14 7:26:16	geo
ST0602_NBCP_20	2006-02-14 7:49:53	bio
ST0602_NBCP_20	2006-02-14 7:53:02	geo
ST0602_NBCP_17	2006-02-14 8:20:45	bio
ST0602_NBCP_17	2006-02-14 8:23:55	geo
ST0602_NBCP_04		bio
ST0602_NBCP_04	2006-02-14 09:00:40	geo
ST0602_NBCP_05	2006-02-14 9:24:48	bio
ST0602_NBCP_05	2006-02-14 9:27:22	geo
ST0602_NBCP_06	2006-02-14 9:51:11	bio
ST0602_NBCP_06	2006-02-14 9:54:52	geo
ST0602_NBCP_07	2006-02-14 10:15:22	bio
ST0602_NBCP_07	2006-02-14 10:18:05	geo
ST0602_NBCP_01	2006-02-14 11:37:15	bio
ST0602_NBCP_01	2006-02-14 11:40:30	geo
ST0602_NBCP_14	2006-02-14 11:56:33	bio
ST0602_NBCP_14	2006-02-14 11:59:50	geo
ST0602_NBCP_15	2006-02-14 12:16:20	bio
ST0602_NBCP_15	2006-02-14 12:22:22	geo
ST0602_NBCP_18	2006-02-14 13:00:32	bio
ST0602_NBCP_18	2006-02-14 13:03:35	geo
ST0602_NBCP_10	2006-02-14 13:19:10	bio
ST0602_NBCP_10	2006-02-14 13:24:25	geo

Identification	Timestamp (UTC)	Bio/Geo
ST0602_NBCP_19	2006-02-14 13:40:42	bio
ST0602_NBCP_19	2006-02-14 13:43:49	geo
ST0602_NBCP_9	2006-02-14 13:58:29	bio
ST0602_NBCP_9	2006-02-14 14:01:18	geo
ST0602_NBCP_11	2006-02-14 14:28:40	bio
ST0602_NBCP_11	2006-02-14 14:32:10	geo
ST0602_NBCP_08	2006-02-14 15:11:30	bio
ST0602_NBCP_08	2006-02-14 15:14:36	geo
ST0602_NBCP_29	2006-02-14 15:46:50	geo
ST0602_NBCP_31	2006-02-14 16:03:51	geo
ST0602_NBCP_30	2006-02-14 16:23:09	geo
ST0602_NBCP_32	2006-02-14 17:09:47	geo
ST0602_NBCP_33	2006-02-14 17:34:37	geo