

Royal Belgian Institute of Natural Sciences
Management Unit of the North Sea Mathematical Models
MUMM | BMM | UGMM

11th ERVO Meeting Copenhagen 14 – 15th May 2009

Belgium Federal Science Office

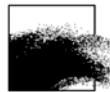
R/V BELGICA Update 2008

Royal Belgian Institute Of Natural Sciences – "RBINS"

Management Unit of the North Sea Mathematical Models – “MUMM”.

www.mumm.ac.be

a.pollentier@mumm.ac.be



RV BELGICA

Built:	1984
Length:	51 m
Beam:	10 m
Draft:	4.8 m
Days at sea:	180/y
Operating cost:	1.850 M€/y



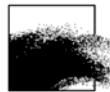
Belgica

- National RV
- Managed by MUMM a department of the Royal Belgian Institute of Natural Sciences – Federal Science Policy Office
- Operated by Navy on behalf/ expense of MUMM
- Mainly Southern Bight North Sea & regional area beyond
- Annual programme ± 190 days at sea/year
- Generally cruises of 1 week, a few 3 up to 6 weeks.



Regional multipurpose research vessel: 15 Navy crew & 16 scientists.





Beam trawl fishing





Sediment transport

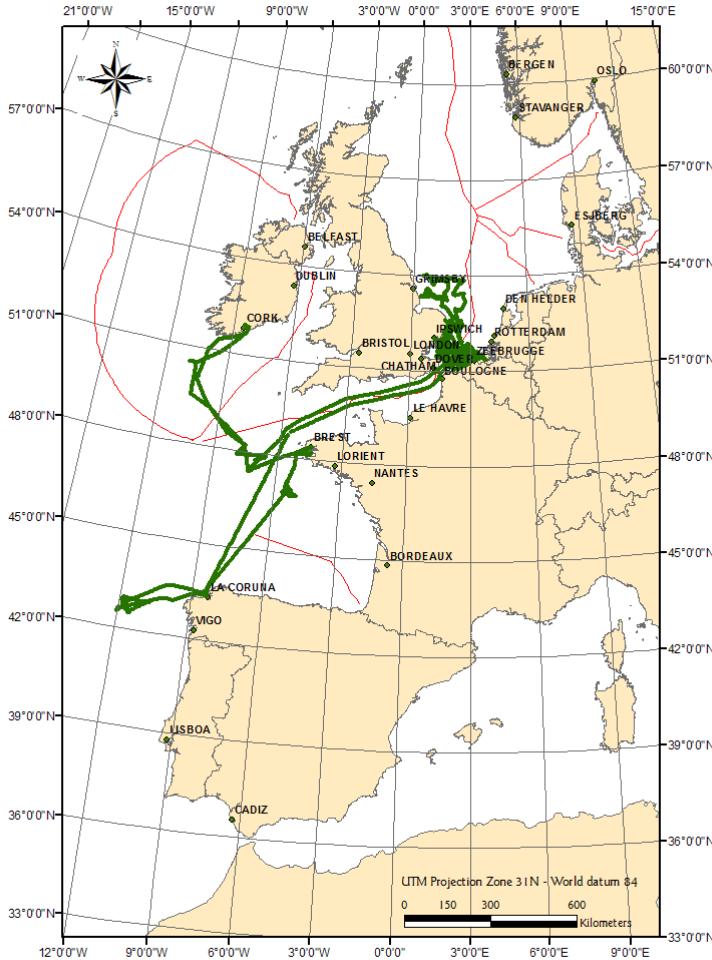
Tripode: LISST, ADCP's,





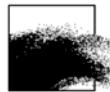
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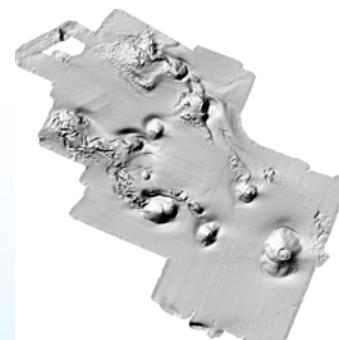
Belgica trajectories 2008

Mainly Southern bight of the
North Sea



2008 cruises overview : only one crew (limiting # days at sea)

- **8 (46 days) Environmental monitoring BCS**
- **3 (26 days) Belgian RP “sustainable development”**
- **9 (47 days) Geophysical EC-FP6 Hermes (Hot spot ecosystems Gulf of Biscay, Galicia bank, ..) & Sed. movements (sand & gravel extraction)**
- **4 (29 days) Fisheries research ICES-WG & Belgian NDGP**
- **5 (26 days) Thematic programs eg optical remote sensing products, scientific diving, students, ...**





Belgica programme 2009

januari	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	Zee+ brugge	VER- LOF	Zeebrugge	ONDERHOUD VERLOF / COMPENSATIE				Zeebrugge	ONDERHOUD VERLOF / COMPENSATIE				Zeebrugge	OH	RCMG/DGMR 1 MB/YD		Zeebrugge	ESA + BMM + LPAE 2 VR/t/s + LV/p-PR-SS/o + DDB		Zee+ brugge													
februari	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
	Zee+ brugge	ILVO 3 HP				Zeebrugge	RCMG + BMM + RCMG 4 VVL/q-DVR/s + MF + MB/YD				Zeebrugge	BMM + LPAE 5 LV/s-MF-PR + DDB				Zeebrugge	OH	ILVO + WIV + DCP + BMM 6a KH + JV + KD + SS/g		Zee+ brugge													
maart	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	Zee+ brugge	ILVO + BMM 6b KH + LV/e/m-SS/g				Zeebrugge	DCP + ILVO + BMM 7 KD + KH + SS/g				Zeebrugge	ESA + BMM + OCGE 8 VR/a + MF + LC/s				Zeebrugge	BMM + LPAE 9 SD-PR-MF-SS/o + DDB		Zeebrugge	OH										10			
april	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
	ILVO HP		Zeebrugge	VERLOF				Zeebrugge	VER- LOF	TRG BB	DCP + BMM + LPAE 11 KD + PR-SS/g+DDB				Zeebrugge	ESA + BMM + TRG 12 VR/a + KR + BB		Zeebrugge	BMM 13 LV/p/s-MF-PR														
mei	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	VER- LOF	Zeebrugge	OH+ MOB	RCMG 14a DVR/Gen1				CADIZ 14b LDM/Gen2				RCMG 14c VIGO																					
juni	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
	MARBIO + BMM + ULG/BMM AV/Gen3 + KR TJ/JH				COMPENSATIE				Zeebrugge	OH TRG	BMM + ESA 15 KR + VR/a				Zeebrugge	BMM + DCP+ LPAE+ WIV 16 LV/p/t-PR-SS/o + KD + DDB + JV		Zeebrugge	RCMG+URAP 17 VVL + NF														
juli	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	RCMG DGR MB/YD	DMM 18 MK	Zeebrugge	BMM 19 PR/inram		OH	Vlootdagen Zeebrugge		BMM + LPAE 20 LV/t-PR-MF + DDB		O H Transit	ONDERHOUD - DUINKERKEN																					
augustus	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	ONDERHOUD - DUINKERKEN												VERLOF		OH		BMM + DCP + LPAE 21 LV/s-PR-SS/g+ KD + DDB		Zeebrugge	ILVO 22a BM		CHATHAM 22b											
september	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
	ILVO BM				Zeebrugge	BMM + DCP 23 AN-MF-SS/g + KD		OH	Zeebrugge	OH	BMM + LPAE 24 KR-PR + DDB		Zeebrugge	ILVO + BMM 25a KH + LV/e/m		Zeebrugge	ILVO + 25b KH +		Zeebrugge	ILVO + 25b KH +													
oktober	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	WIV JV		Zeebrugge	DCP+ILVO+BMM+LPAE 26 KD + KH + PR + DDB				OH	Zeebrugge	IMIC	MARBIO + IMIC 27 JV		Zeebrugge	BMM + DCP 28 LV/s-MF + KD		Zeebrugge	DMM + DGL + DCP 29 MK + RM + KD		Zeebrugge	Zee+ brugge													
november	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
	Zee+ brugge	VER- LOF	RCMG + BMM + RCMG 30 VVL/q + MF + MB/YD				Zeebrugge	VERLOF				Zeebrugge	RCMG + BMM + RCMG 31 VVL/q/s + PR-MF + MB/YD		OH	Zeebrugge	OH	Zeebrugge	ILVO 32a HP		LOWE- STOFT 32b												
december	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	ILVO HP				Zeebrugge	BMM + DCP + WIV 33 PR-MF-SS/o + KD + JV				Zeebrugge	RESERVE				Zeebrugge	COMPENSATIE																	



**2nd Kongsberg
multibeam EM 3002D
Summer 2008**

Kongsberg EM1002 multibeam transducer
installed summer 1999 added pitch compensation in
2001 allowing measurements up to 1000 meters





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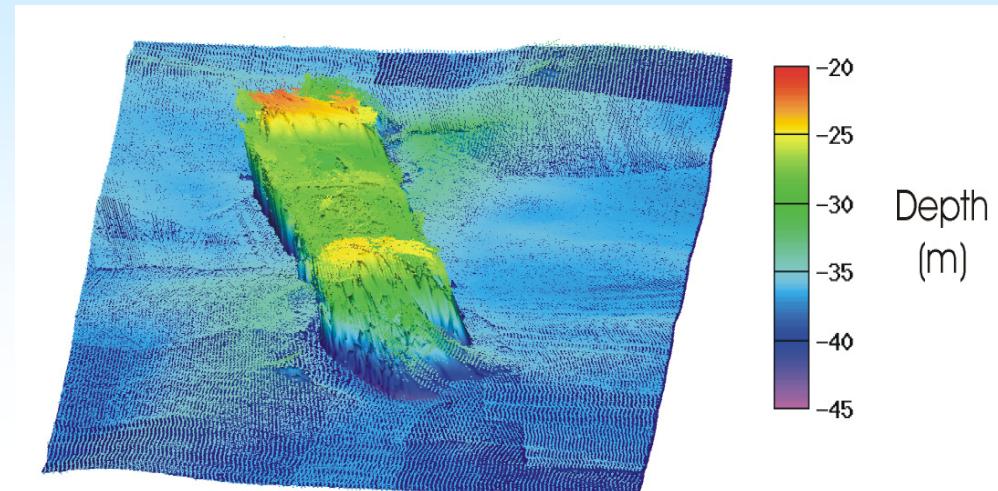


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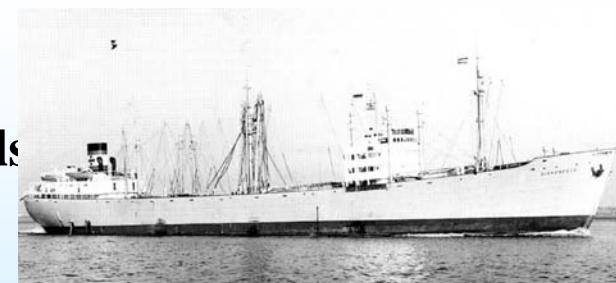
Kwintebank (35 km²)

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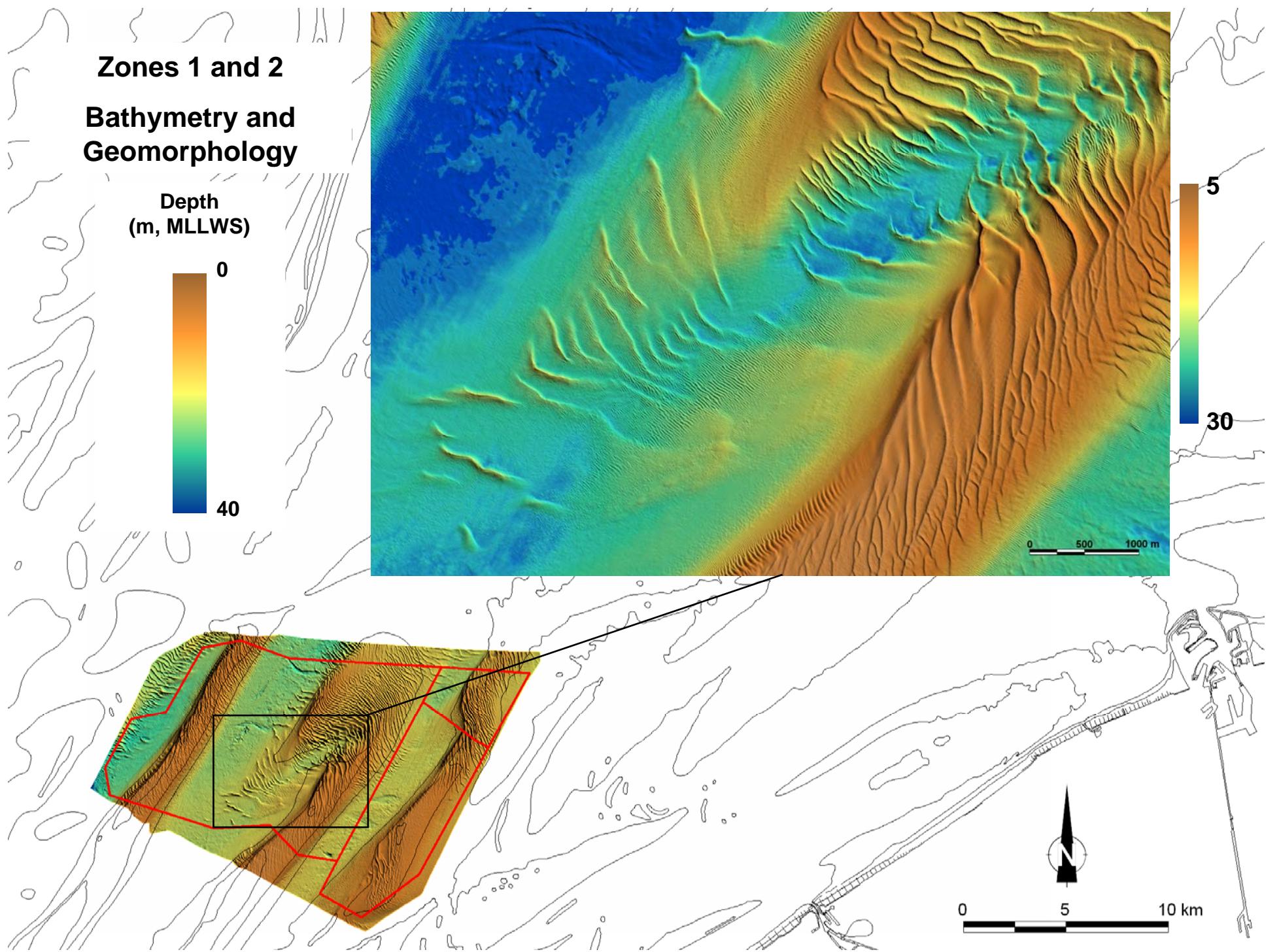
Kongsberg EM 1000 Multibeam bathymetry



Scientific diving
at the Birkenfels



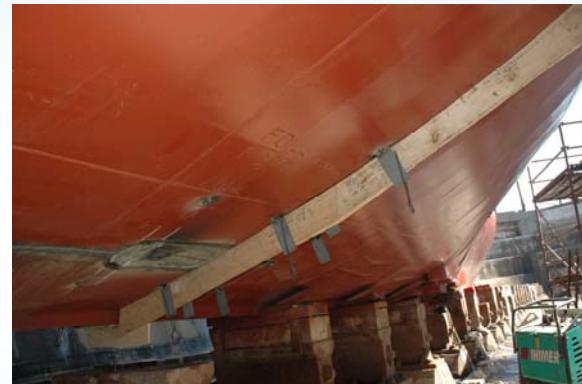
<http://www.mumm.ac.be/>





Belgica drydock 2008

1. New Kongsberg EM3002D shallow water multibeam system





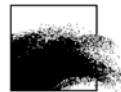
Belgica drydock 2008

2. New Kongsberg EA 400 Echosounder
with additional 38 kHz 7° Transducer



PS Blister I: 100 kHz transducer: navigation echosounder
 38 kHz 7° transducer: scientific echosounder

SB Blister II: 33 kHz transducer: scientific (former ATLAS)
 210 kHz transducer: scientific (former ATLAS)



Belgica 25 years old

2008

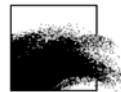
**Inquiry among the Belgian scientific community
Science missions next decade(s)**

Working groups: (Bio-)Chemical, biological, geophysics, fisheries,

Feb. – Oct. 2009

Feasibility study (1st approach).

**Major refit of the existing Belgica or newbuild taking into
account the outcome of the science missions inquiry (Strategy and
cost estimate)**



Casco Insurance BELGICA renewed on a yearly basis

Incidents come in series of 3 (or 4) every 6 years

- Year 2006 – 2007 : still 2 of 4 claims running
 - 1. Illegal Gillnet incident, Bantry Bay Irish Waters
 - 2. Subsequent harmfull vibration – one blade badly repaired.
- 3. PS Main Generator Incident
- 4. Shore supply incident during maintenance period at ships repair yard (claim versus ship yard as well)

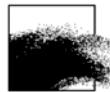


Casco Insurance

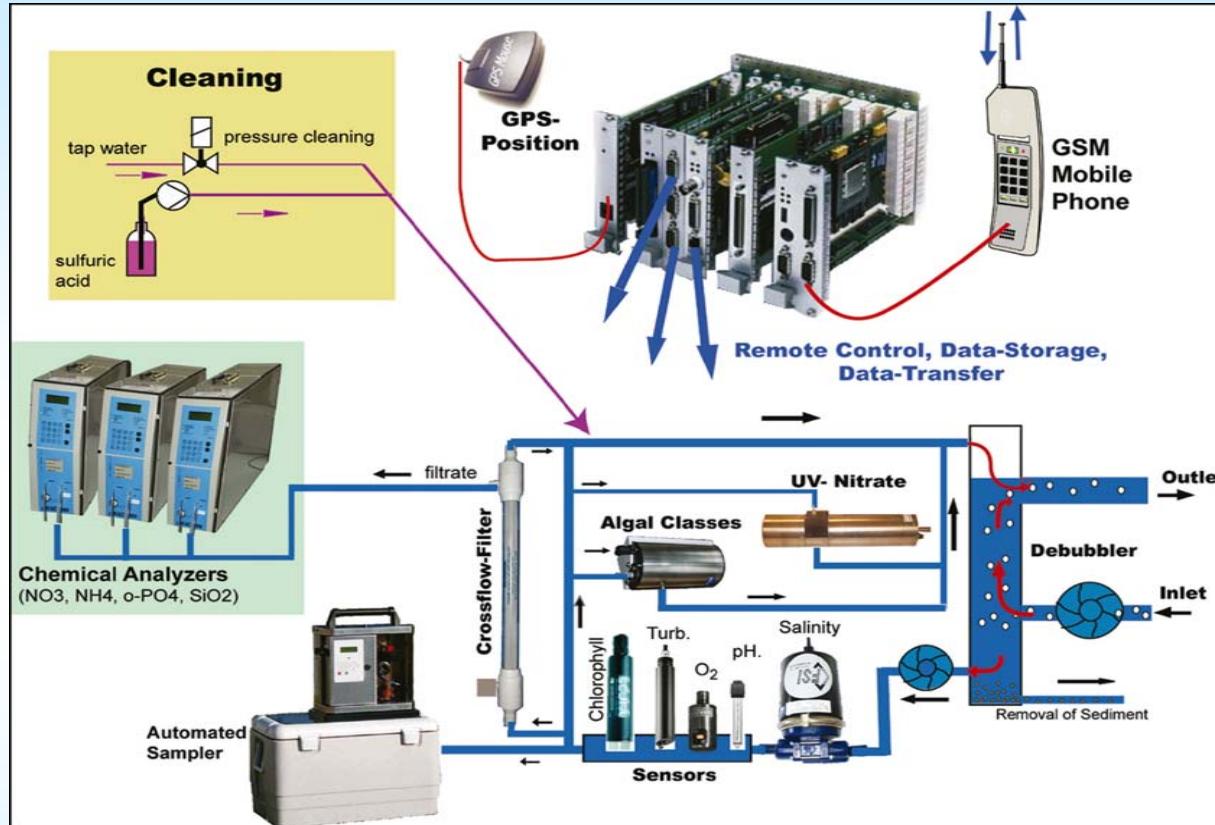
1. Illegal Gillnet incident : estimated at 250 000 euro



**2nd drydock
needed due to
harmfull vibrations
after repair of
propeller blades**



FerryBox 'underway' measurement system



Measured parameters:

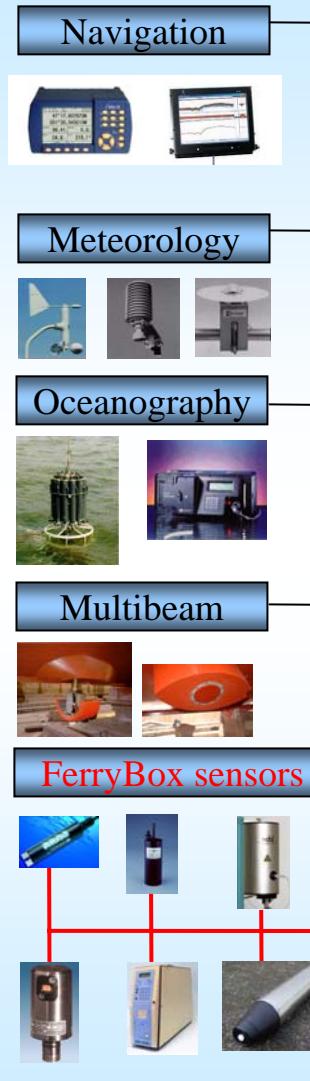
- temperature
- salinity
- chlorophyll a
- pH
- nutrients
- pCO₂
- downwelling radiation
- PAR

Main Features:

- running autonomously
- controlled by GPS position
- self cleaning (after each cruise)
- **automatic water sampler for further lab analysis**



Data acquisition with the R/V BELGICA



ODASIII

- The oceanographic data acquisition system ODASIII collects, processes, stores navigational, oceanographic, meteorological and hydrographical data.
- The data can be displayed in real-time or off-line at different client stations all over the vessel.

Data collection, processing
and distribution
HP rx2660 UNIX workstation

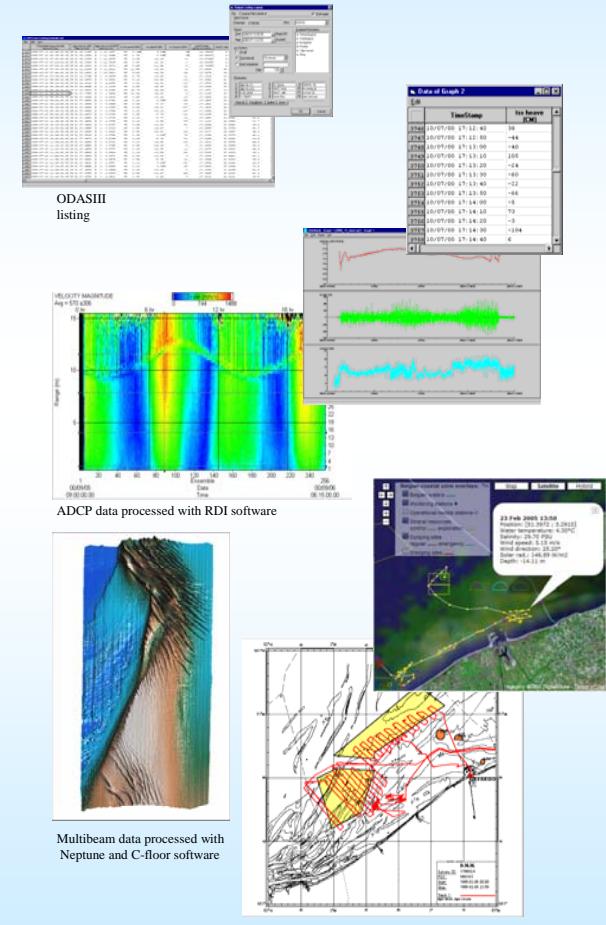
- The R/V BELGICA is equipped with a Kongsberg-Simrad EM1002 and a EM3002D multibeam echo sounder

Multibeam data processing
and storage workstations

+ FerryBox + watersampler



Presentation



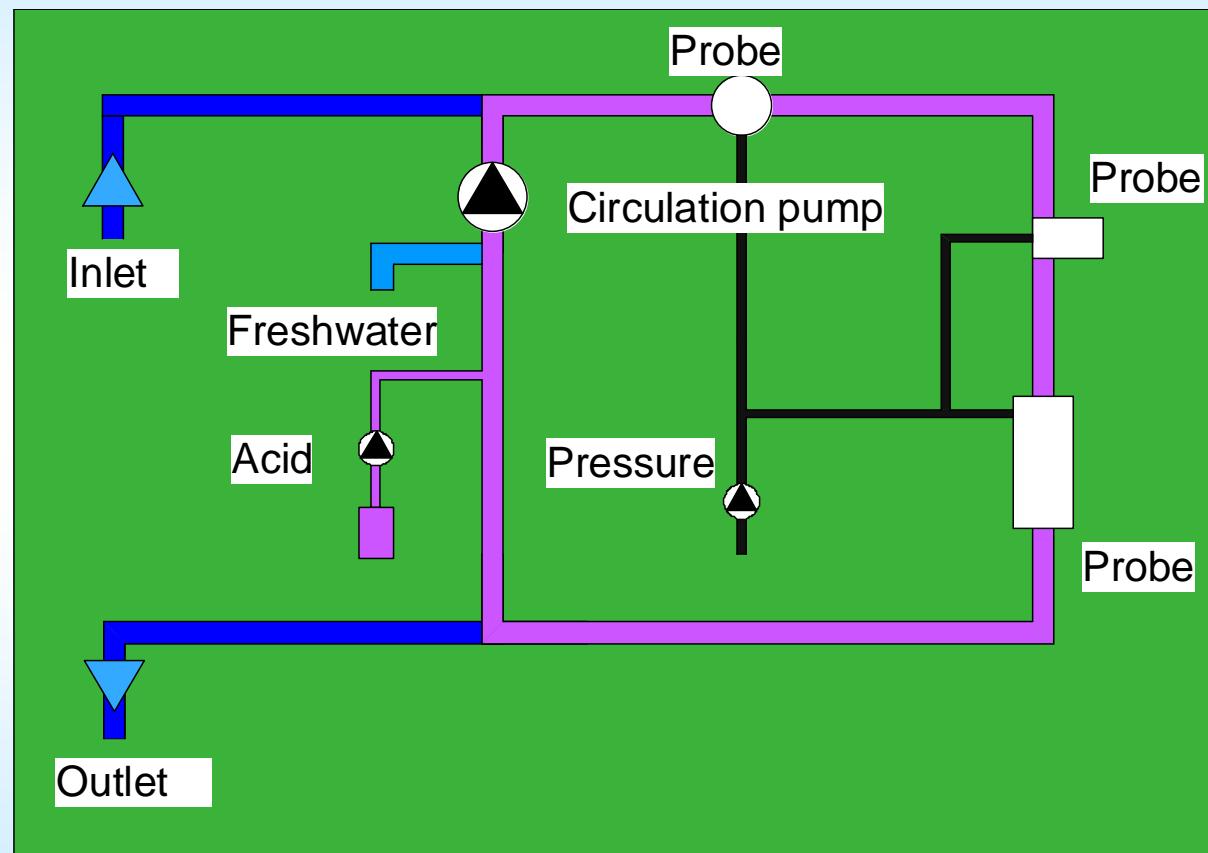


Antifouling concept

Principle of the watersystem

Antifouling:

1. Freshwater
2. Acid
3. High pressure
4. Chlor





Belgica: All underway acquired data is transmitted to the shore
(twice/day using Inmarsat Fleet77 or more when in range of GPRS network)

Detailed scientific cruise programs, trajectories and underway data of key parameters are on MUMM's website
<http://www.mumm.ac.be>

The screenshot shows a Microsoft Internet Explorer window. The title bar reads "BMM | BELGICA OADS - Microsoft Internet Explorer". The main content area displays a map of the North Sea and parts of France and Germany, showing the trajectory of the ship "BELGICA" from July 4 to July 5, 2007. A legend at the top left of the map area identifies various geographical features and monitoring stations. To the left of the map is a navigation sidebar with a tree view of monitoring data from 2004 to 2007. At the bottom of the page, there is a footer with links to "Documenten", "Gedownloaden", and "Nederlands (België)".

The screenshot shows an "Outlook Express 2000" window titled "Belgica@belgium.ac.be [Standalone]". The inbox contains several messages from "A. Fabre" and "J. Fischer" regarding the Belgica cruise. The messages discuss ADCP data, monitoring reports, and the status of the ADCP. On the right side of the interface, there are buttons for "Start Messaging", "Connect to Mailbox", and "Compose Message". A tooltip at the bottom right says "Click on the button below to receive the incoming message".



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end