

NOTIFICATION OF PROPOSED RESEARCH CRUISE

GENERAL
ORGANISATION
PART A

1. Name of research ship **BELGICA** Cruise N° **2007/14(T2)**
2. Dates of cruise From **18 June 2007** to **22 June 2007**
3. Operating Authority **Belgian Navy under contract for Belgian Ministry of Science Policy
Management Unit of the North Sea Mathematical Model "M.U.M.M.",
3° & 23° Unieregimentsplein, 8400 Oostende
Tel, 32(0)59 70 01 31, Facsimile 32(0)59 70 49 35
Email : bmmost@mumm.ac.be**
4. Owner **Belgian state represented by Minister for Science Policy**
5. Particulars of ship

Name	Belgica
Nationality	Belgian
Overall length	51 meters
Maximum draught	4,5 meters
Nett tonnage	232 NRT
Propulsion	Diesel
Call Sign	ORGO
Telephone	INMARSAT 00870 76 218 73 27
Facsimile	INMARSAT 00870 32 052 18 12
Email	belgica@mumm.ac.be
6. Crew

Name of master	L. GOUSSAERT, KVK
N° of Crew	15
7. Scientific Personnel

Name and address of scientist in charge :

**Barbara Van Mol
Belgian Royal Institute of Natural Sciences
Management Unit of the North Sea Mathematical Models
"M.U.M.M."
Gulledelle 100 B-1200 Brussels
Telephone : 02/773 21 34 ; facsimile : 02/770 88 72;
email : B.Vanmol@mumm.ac.be**

N° of scientists **15**

(A nominal roll of all personnel other than nationals of the applicant (flag) state is required)

Joung-Je Park (Korea)	Dr. Kevin Ruddick (UK)	Dr. Alberto Borges (Portugal)
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8. Geographical area in which ship will operate (with reference in latitude and longitude).

**Spanish, Portuguese, French and UK continental Shelf and slope
Transect from Cadiz (36° 30.2' N; 6°15.8' W) to Zeebrugge (51°20.3'N; 3°12.2'E)**
9. Brief description of purpose of cruise

**"BELMER" : MERIS water product validation in Belgian waters ; project in the frame of "PROgramme
for the Development of scientific Experiments" (PRODEX) of the European Space Agency (ESA)
"BELCOLOUR-2": Improvement of the quality of existing optical remote sensing products for marine,
coastal and inland waters and development of new products (e.g. pCO2 and primary production) for key
applications such as aquaculture and air-sea CO2 flux quantification ; project in the frame of the
research programme for earth observation "STEREO II" (Support to The Exploitation and Research in
Earth Observation) of the Belgian Science Policy (Belapo).**
10. Port of Call. Dates. Reasons.

Cadiz	18/06/2007	Departure (Start of research cruise)
Zeebrugge	22/06/2007	Arrival (End of research cruise)
11. Any special logistic requirements at ports of call (other than water, fuel provisions, etc.) **N.A.**

NOTIFICATION OF PROPOSED RESEARCH CRUISE

DETAIL
PART B

1. Name of research ship **BELGICA** Cruise N° **2007/14(T2)**
2. Date of cruise From **18 June 2007** To **22 June 2007**
3. Purpose of research and general methods. (If the research work is being taken on behalf of a research institution of a third state, it is the responsibility of that state to obtain prior permission; it is essential that written confirmation that this has been done is obtained and quoted in this application.

The objectives of the BELMER project are:

- to validate the MERIS water products
- to provide a quantitative statement of product accuracy and recommendations for improvements in the scientific algorithms, where appropriate.

In particular the problems reported by the MERIS validation and user communities of turbid water atmospheric correction, case 2 water chlorophyll retrieval, adjacency effects (straylight), moderate sunglint, spatio-temporal variability of specific inherent optical properties and bottom reflectance will be addressed.

The general objective of the BELCOLOUR-2 project is to improve the quality of existing optical remote sensing products for marine, coastal and inland waters based on new knowledge and to develop new products (including primary production and partial pressure of CO₂) for key applications such as aquaculture and air-sea CO₂ fluxes.

This campaign will focus on the collection of data simultaneous with MERIS and MODIS as well as satellite overpasses to calibrate and validate optical remote sensing products.

4. Attach chart(s) showing (on an appropriate scale) the geographical area of the intended work, positions of intended stations, tracks of survey lines, positions of moored / seabed equipment.

See chart in Annex 1

5. Types of samples required, e.g. Geological / Water / Plankton / Fish / Radioactivity / Isotope

Water

and methods by which samples will be obtained (including dredging/coring/drilling).

Niskin bottle, in situ measurements (SCTD, Secchi disk...),
spectroradiometric measurements (above water)

6. Details of moored equipment : **N.A.**

Dates				
Laying	Recovery	Description	Latitude	Longitude

7. Explosives : **N.A.**

- | | |
|-------------------------------------|-----------------------------|
| (a) Type and Trade Name | (b) chemical content |
| (c) Dept of trade class and stowage | (d) Size |
| (e) Depth of detonation | (f) Frequency of detonation |
| (g) Dates of detonation | |

8. Details and reference of

a) Any relevant previous/future cruises

Project BELCOLOUR : Belgica cruise 2005/13

b) Any previous published research data relating to the proposed cruise (attach separate sheet if necessary)

See Annex 2

9. Names and addresses of scientist of the coastal state in whose waters the proposed cruise takes place with whom previous contact has been made.

BELCOLOUR-2 - NL

Dr Steef Peters, Instituut voor Milieuvraagstukken, Vrije Universiteit Amsterdam, De Boelelaan 1115, 1081 HV, Amsterdam, Netherlands
Tel: ++31 20 444 9555, Fax: +31 20 444 9553, Email: Steef.Peters@ivm.vu.nl

BELCOLOUR-2 - FR

Dr Hubert Loisel, Laboratoire ELICO, UMR -CNRS/ULCO 8013, Maison de la Recherche en Environnement Naturel, 32 Avenue Foch, 62930 Wimereux, France
email: loisel@mren2.univ-littoral.fr Tél : 03 20 33 81 89 ; Fax : 03 21 99 64 01

Dr David Doxaran, Marine Optics and Remote Sensing Lab, Laboratoire d'Océanographie de Villefranche, B.P. 8, Quai de la Darse, 06298 Villefranche-sur-Mer, CEDEX, France
email: david.doxaran@obs-vlfr.fr Tél : +33 (0)4 93 76 37 18; Fax : +33 (0)4 93 76 38 73.

BELCOLOUR-2 - UK

Dr. Gavin Tilstone, Remote Sensing Group, Plymouth Marine Laboratory, Prospect Place, West Hoe, PLYMOUTH PL1 3DH, UK, Tel : +44 1752 633 406; facsimile +44 1752 633 101; email : ghti@pml.ac.uk

10. State :

(a) Whether visits to the ship in port by scientists of the coastal state concerned will be acceptable.

YES

(b) Whether it will be acceptable to carry on board an observer from the coastal state for any part of the cruise and dates and ports of embarkation / disembarkation.

Yes, Cadiz Cfr. part A § 10

(c) When research data from intended cruise is likely to be made available to the coastal state and if so by what means. (If the final report is likely to be delayed beyond 12 months, interim progress reports are required.

- Cruise report available within 2 months (on request)

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PART C: SCIENTIFIC EQUIPMENT

COASTAL STATE:

SPAIN

INDICATE "YES" OR "NO"

LIST SCIENTIFIC WORK BY FUNCTION				DISTANCE FROM COAST		
				WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK (ONLY) BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
eg. MAGNETOMETRY ; GRAVITY DIVING : SEISMICS: BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING : WATER SAMPLING U/W T.V. : MOORED INSTRUMENTS: TOWED INSTRUMENTS :	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERIES RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS			
Niskin water bottles	YES	NO	YES	YES	YES	NO
in situ measurements (SCTD, ... and optical properties)	YES	NO	YES	YES	YES	NO
spectroradiometer Trios	YES	NO	NO	YES	YES	NO
Sacchi disk	YES	NO	NO	YES	YES	NO

PART C: SCIENTIFIC EQUIPMENT

COASTAL STATE:

PORTUGAL

INDICATE "YES" OR "NO"

LIST SCIENTIFIC WORK BY FUNCTION				DISTANCE FROM COAST		
				WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK ONLY BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
eg. MAGNETOMETRY: GRAVITY DIVING: SEISMICS: BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING: WATER SAMPLING U/W T.V.: MOORED INSTRUMENTS: TOWED INSTRUMENTS:	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERIES RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS			
Niskin water bottles	YES	NO	YES	YES	YES	NO
In situ measurements (SCTD, ... and optical properties)	YES	NO	YES	YES	YES	NO
spectroradiometer Trlos	YES	NO	NO	YES	YES	NO
Secchi disk	YES	NO	NO	YES	YES	NO

PART C : SCIENTIFIC EQUIPMENT

COASTAL STATE :

FRANCE

INDICATE "YES" OR "NO"

LIST SCIENTIFIC WORK BY FUNCTION				DISTANCE FROM COAST		
				WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK ONLY) BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
eg. MAGNETOMETRY : GRAVITY DIVING : SEISMICS: BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING : WATER SAMPLING U/W T.V. : MOORED INSTRUMENTS: TOWED INSTRUMENTS :	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERIES RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS			
Niskin water bottles	YES	NO	YES	YES	YES	NO
in situ measurements (SCTD, .. and optical properties)	YES	NO	YES	YES	YES	NO
spectroradiometer Trios	YES	NO	NO	YES	YES	NO
Secchi disk	YES	NO	NO	YES	YES	NO

PART C: SCIENTIFIC EQUIPMENT

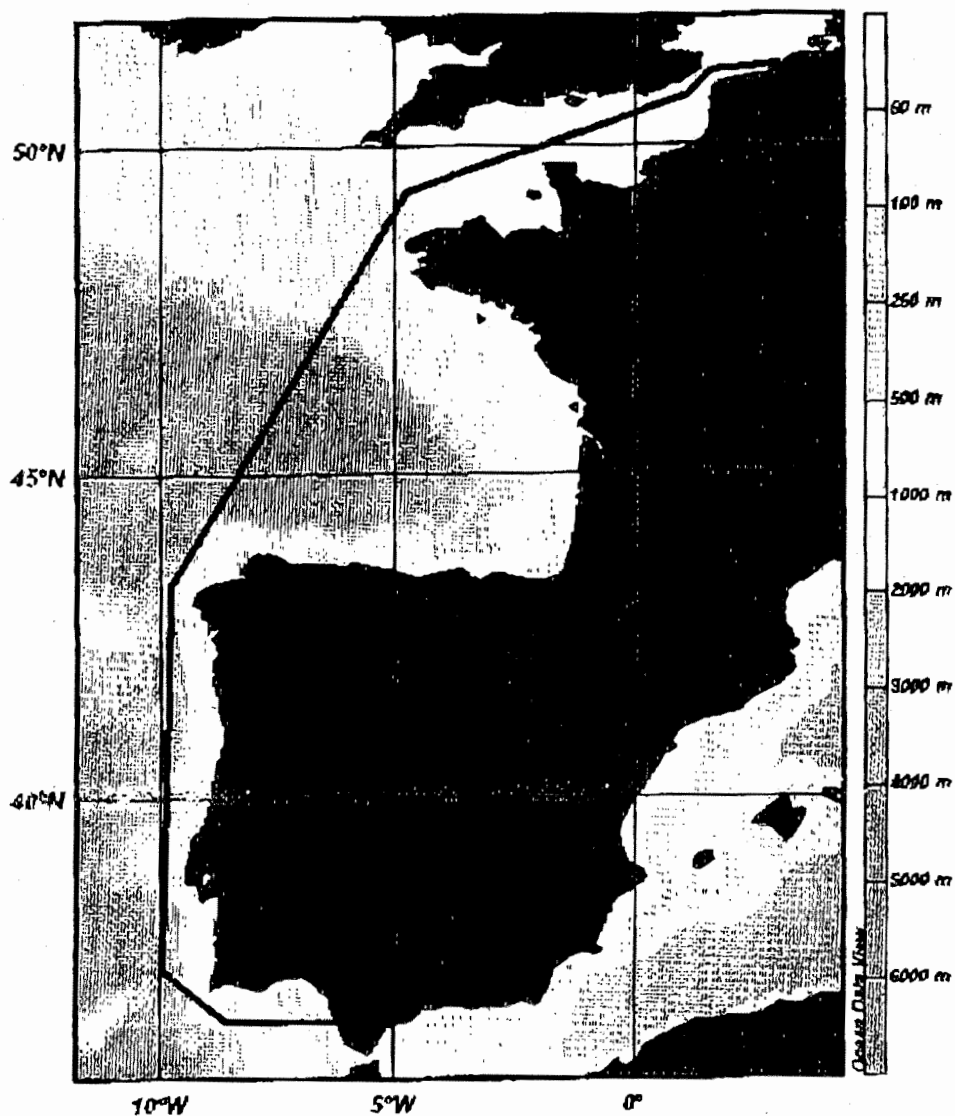
COASTAL STATE: UNITED KINGDOM

INDICATE "YES" OR "NO"

LIST SCIENTIFIC WORK BY FUNCTION				DISTANCE FROM COAST		
				WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK (ONLY) BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
eg. MAGNETOMETRY : GRAVITY DIVING : SEISMICS: BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING : WATER SAMPLING U/W T.V. : MOORED INSTRUMENTS: TOWED INSTRUMENTS :	WATER COLUMN INCLUDING SEDIMENT SAMPLING OF THE SEABED	FISHERIES RESEARCH WITHIN FISHING LIMITS	RESEARCH CONCERNING THE NATURAL RESOURCES OF THE CONTINENTAL SHELF OR ITS PHYSICAL CHARACTERISTICS			
Niskin water bottles	YES	NO	YES	YES	YES	NO
in situ measurements (SCTD, .. and optical properties)	YES	NO	YES	YES	YES	NO
spectroradiometer Trios	YES	NO	NO	YES	YES	NO
Secchi disk	YES	NO	NO	YES	YES	NO

Annex 1

Chart – Transect Cadiz-Zeebrugge



Annex 2. Références

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De Cauwer, V., K. Ruddick, Y. Park, B. Nechad, and M. Kyramarios, Optical remote sensing in support of eutrophication monitoring in the Southern North Sea. *EARSeL eProceedings*, 2004. 3(2): p. 208-221.

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Gons, H.J., M. Rijkeboer, S. Bagheri and K.G. Ruddick, 2000. Optical teledetection of chlorophyll-a in estuarine and coastal waters. *Environmental Science and Technology*, 34(24): 5189-5192.

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Ruddick K., V. De Cauwer, Y. Park and G. Moore. Seaborne measurements of near infrared water-leaving reflectance – the similarity spectrum for turbid waters. In *Limnology and Oceanography*. *Limnology and Oceanography*. 51: p.1167-1179, March 2006.

Ruddick, K., V. De Cauwer and B. Van Mol Use of the near infrared similarity reflectance spectrum for the quality control of remote sensing data Proceedings of the SPIE International Symposium on "Optics and Photonics: Remote sensing of the coastal oceanic environment" held in San Diego, USA, 31st July - 1st August 2005

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Ruddick, K., G. Lacroix, Y. Park, V. Rousseau, V. De Cauwer, W. Debruyn, and S. Sterckx. Overview of Ocean Colour: theoretical background, sensors and applicability for the detection and monitoring of harmful algae blooms (capabilities and limitations). Submitted to the Proceedings of the HABWATCH Workshop. in HABWATCH Workshop. 2003. Villefranche-sur-mer.

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Ruddick, K.G., F. Ovidio, A.P. Vasilkov, C. Lancelot, and V. Rousseau, 1999. Optical remote sensing in support of eutrophication monitoring in Belgian waters. In "Operational remote sensing for sustainable development", edited by Vaughan and Molenaar, Balkema, Rotterdam, p445-452.

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