

**NOTIFICATION OF PROPOSED RESEARCH CRUISE****PART A: GENERAL**

1. Name of research ship **RV BELGICA** Cruise N° **2018/09**
2. Dates of cruise From **10 April** to **20 April 2018**
3. Operating Authority **Belgian Navy under contract for Belgian Ministry of Science Policy  
Royal Belgian Institute for Natural Sciences (RBINS)  
Operational Directorate Natural Environment, Measurement Services Ostend  
3de en 23ste Linierregimentsplein, B-8400 Ostend  
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[odnature.naturalsciences.be/belgica](http://odnature.naturalsciences.be/belgica)**
4. Owner **Belgian state represented by Minister for Science Policy**
5. Particulars of ship
- |                 |  |                   |
|-----------------|--|-------------------|
| Name            | <b>Belgica</b>   |                   |
| Nationality     | Belgian  |                   |
| Overall length  | 51 meters  |                   |
| Maximum draught | 4,5 meters   |                   |
| Nett tonnage    | 232 NRT  |                   |
| Propulsion      | Diesel   |                   |
| Call Sign       | ORGQ   |                   |
| Phone numbers   | Voice GSM  | +32 475 44 27 37  |
|                 | Voice VSAT:  | +31 108 08 00 68  |
|                 | Voice Fleet 77:  | +870 76 463 27 41 |
| Fax numbers:    | Fax harbor:  | +32 50 54 59 79   |
|                 | Fax Fleet 77 (at sea):   | +870 76 463 27 43 |
| Email           | <a href="mailto:rvbelgica@naturalsciences.be">rvbelgica@naturalsciences.be</a> |                   |
6. Crew
- |                |  |
|----------------|--|
| Name of master | <b>Lieutenant Commander (BeN) Bernard TABUREAU</b> |
| N° of Crew     | <b>15</b>  |
7. Scientific Personnel
- Name and address of scientists in charge :
- Mr. Maikel DE CLERCQ / Dr. David GARCIA Moreno  
Ghent University, Faculty of Sciences  
Department of Geology  
Renard Centre of Marine Geology  
Sterre Campus, building S8  
Krijgslaan 281  
B-9000 Gent  
☎ +32-9-264 45 84  
✉ [maikel.declercq@ugent.be](mailto:maikel.declercq@ugent.be) / [David.GarciaMoreno@ugent.be](mailto:David.GarciaMoreno@ugent.be)  
[www.rcmg.ugent.be](http://www.rcmg.ugent.be) ; [www.earthweb.ugent.be](http://www.earthweb.ugent.be)**

N° of scientists **15**

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

8. Geographical area in which ship will operate (with reference in latitude and longitude).

**The survey will be carried out across the British and Dutch continental shelves; in between geographic longitudes 1°58'E – 3°52' and latitudes 52°26'N – 54°32'N (see Table 1 and Figure 1 in annexes).**

9. Brief description of purpose of cruise

Seeking for a last Glacial proglacial lake in the southern North Sea and its possible outflow towards the Dover Strait. This survey is intended to perform a first geophysical reconnaissance of the area where the possible Last Glacial proglacial lake may have outflowed into the southern North Sea. The exact morphology and location of the outflow is currently unknown. For this first survey, we have therefore selected a large survey area across the British and Dutch continental shelves in order to identify potential targets for future, more detailed surveys.

10. Port of Call. Dates. Reasons.

**Zeebrugge 10/04/2018**    **Departure homeport. Start of research cruise RV Belgica 2018/09.**

**Zeebrugge 20/04/2018**    **Arrival homeport. End of research cruise RV Belgica 2018/09**

11. Any special logistic requirements at ports of call (other than water, fuel provisions, etc.)                    **N.A.**

**NOTIFICATION OF PROPOSED RESEARCH CRUISE****PART B: DETAIL**

1. Name of research ship **RV BELGICA** Cruise N° **2018/09**
2. Date of cruise From **10 April** To **20 April 2018**
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.

**Recent studies (Sejrup et al., 2016) suggest that an ice-marginal lake may have formed in part of the German–Dutch continental shelf during the Last Glacial maximum. The presence of that lake is consistent with investigations carried out by our team (Garcia-Moreno, 2017), which have found evidence of a major river systems running southward from the position of that possible lake. With the present geophysical investigation, we aim to prove the existence of that lake and to characterise the nature of its outflow into the southern North Sea, as well as to identify any possible indication of high-magnitude flood flows produced by it. Our previous investigations (Garcia-Moreno, 2017) suggest indeed that there may be a relationship between that lake and extreme erosional features identified in the Dover Strait (Gupta et al., 2017). Incidentally, the acquisition of new geophysical data in the proposed study area may also shed some light on how the Doggerland became an island and, so, help to better understand Human migrations in that area during Late Pleistocene – Early Holocene Epochs.**

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. Attach table with list of positions (+ geographical reference)

**See Annex 1: chart  
See Table 1**

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

**Geophysical**

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

- **High-resolution seismic profiling: sparker sources, single channel streamer, parametric echo sounder source (optional)**
- **Multibeam bathymetry**

6. Details of moored equipment :

**No moorings will be deployed.**

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

**García-Moreno, 2017. Origin and geomorphology of Dover Strait and southern North Sea palaeovalleys and palaeo-depressions. PhD thesis, Ghent University, Ghent, Belgium.**

**Gupta, S., Collier, J.S., García-Moreno, D., Oggioni, F., Trentesaux, A., Vanneste, K., De Batist, M., Camelbeeck, T., Potter, G., Van Vliet Lanoë, B., and Arthur, J.C.R., 2017. Making Britain: Two-stage catastrophic opening of the Dover Strait. Nat. Commun. 8, doi: 10.1038/ncomms15101.**

**Sejrup, H. P., Clark, C. D., and Hjelstuen, B. O., 2016. Rapid ice sheet retreat triggered by ice stream debuitressing: Evidence from the North Sea. Geology. 44, 355–358.**

**Toucanne, S., Zaragosi, S., Bourillet, J. F., Marieu, V., Cremer, M., Kageyama, M., Van Vliet-Lanoë, B., Eynaud, F., Turon, J-L, and Gibbard, P. L., 2010, The first estimation of Fleuve Manche palaeoriver discharge during the last deglaciation: evidence for Fennoscandian ice sheet meltwater flow in the English Channel ca 20–18ka ago, Earth and Planetary Science Letters, v. 290, v. 459–473.**

**Toucanne, S., Soulet, G., Freslon, N., Jacinto, R. S., Dennielou, B., Zaragosi, S., Eynaud, F., Bourillet, J-F., and Bayon, G., 2015. Millennial-scale fluctuations of the European Ice Sheet at the end of the last glacial, and their potential impact on global climate. Quaternary Science Reviews, 123, 113-133.**

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.

**UNITED KINGDOM :**

**Prof. Vince Gaffney and Dr. Simon Fitch**, School of Archaeological Sciences, University of Bradford, Richmond Road, Bradford BD7 1DP, UK ([V.Gaffney@bradford.ac.uk](mailto:V.Gaffney@bradford.ac.uk); [S.Fitch@bradford.ac.uk](mailto:S.Fitch@bradford.ac.uk))

**THE NETHERLANDS:**

**Dr. Sytze Van Heteren**, TNO, Princetonlaan 6, 3584 CB Utrecht, The Netherlands ([sytze.vanheteren@tno.nl](mailto:sytze.vanheteren@tno.nl)).

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, 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 within 1 month by request to the chief scientist**

## PART C: SCIENTIFIC EQUIPMENT

COASTAL STATE : **UNITED KINGDOM***INDICATE "YES" OR "NO"*

<u>LIST SCIENTIFIC WORK BY FUNCTION</u>	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	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..						
<b>Seismics/Multibeam bathymetry</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>

**PART C: SCIENTIFIC EQUIPMENT****COASTAL STATE : THE NETHERLANDS***INDICATE "YES" OR "NO"*

<u>LIST SCIENTIFIC WORK BY FUNCTION</u>	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	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..						
<b>Seismics/Multibeam bathymetry</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>

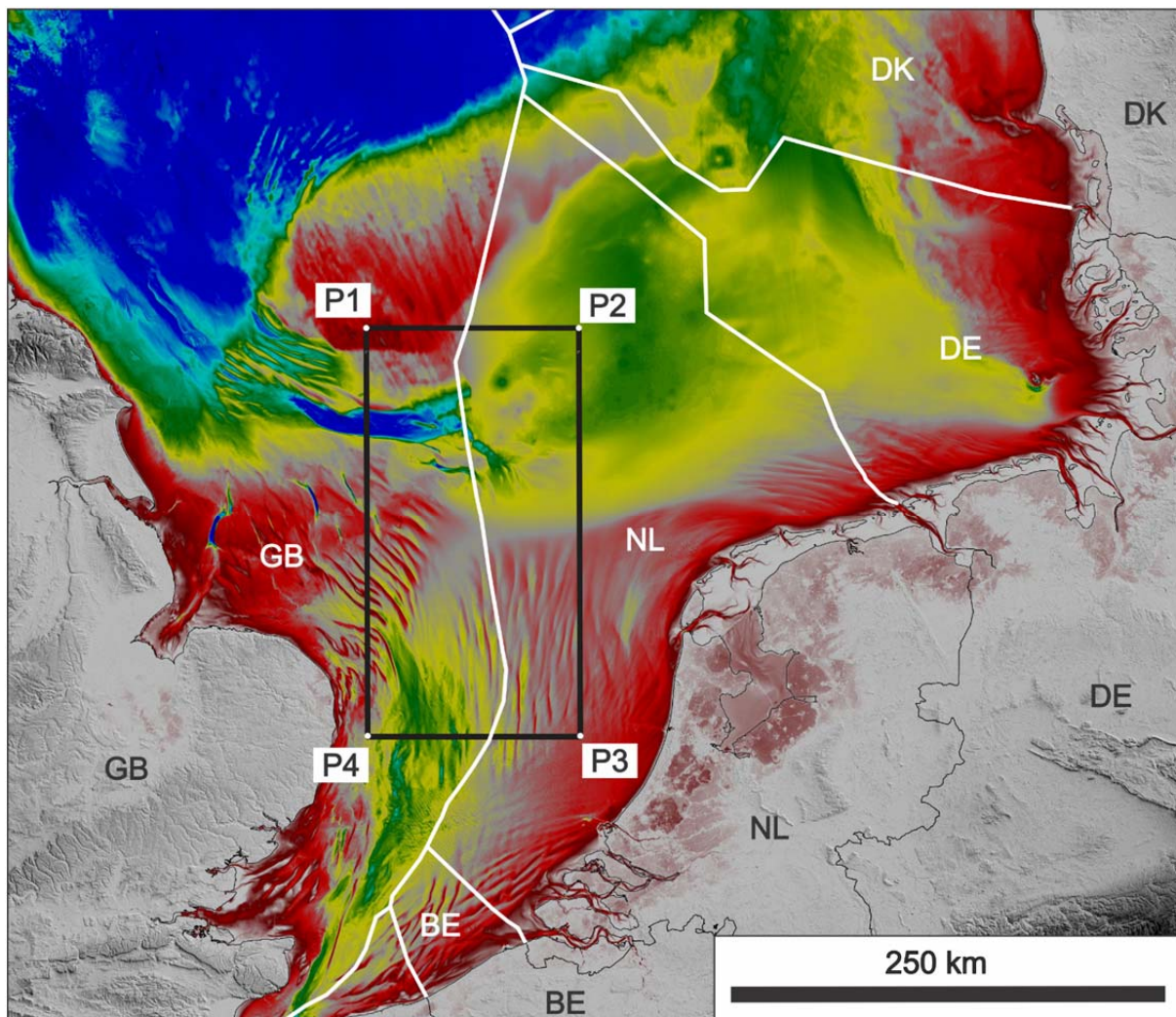
**ANNEX 1:****RV BELGICA research cruise 2018/09: chart**

Figure 1. Proposed survey area (black rectangle). White lines: offshore national borders. Bathymetry: EMODnet dataset (230 m cell size). Topographic information: SRTM worldwide elevation data (3-arc-second resolution).

TABLE 1:

Corner	LONG (dd°mm.mm')	LAT (dd°mm.mm')	LONG (dd.dd)	LAT (dd.dd°)
P1	1° 57.78' E	54° 31.98' N	1.96° E	54.53° N
P2	3° 51.84' E	54° 31.98' N	3.86° E	54.53° N
P3	3° 51.84' E	52° 26.39' N	3.86° E	52.43° N
P4	1° 57.78' E	52° 26.39' N	1.96° E	52.43° N

Table 1: Geographic coordinates of corners defining the survey area proposed for this study.