

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

1. Name of research ship **RV BELGICA** Cruise N° **2020/10**
2. Dates of cruise From **31 March** To **10 April 2020**
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
☎ + 32(0)59 70 01 31 • 📠 + 32(0)59 70 49 35 • ✉ mso@naturalsciences.be
odnature.naturalsciences.be/belgica**
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 | 232NRT |
| Propulsion | Diesel |
| Call Sign | ORGQ |
| Telephone | INMARSAT 00870 76 218 73 27 |
| Facsimile | INMARSAT 00870 32 052 18 12 |
| Email | rvbelgica@naturalsciences.be |
6. Crew
- | | |
|----------------|--------------------------------------|
| Name of master | Commander (BeN) Ludwig Damman |
| N° of Crew | 15 |
7. Scientific Personnel
- Name and address of scientist in charge :
- Dr. Tine Missiaen
Flanders Marine Institute (VLIZ)
Seascapes Past and Future
Wandelaarkaai 7, 8400 Ostend, Belgium
☎ +32-474-512 021 • ✉ tine.missiaen@vliz.be
<http://www.vliz.be/en/research-topic-seascapes-past-future>**

N° of scientists : **10**

(A nominall roll of all personnel other than nationals of the applicant (flag) state is required)
Scientists from the Netherlands and UK will join in the survey. The exact names are not known yet.

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 longitude 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

Mapping the buried paleolandscapes of the late Quaternary in the southern/central North Sea: river systems, proglacial lake(s) and their possible outflow towards the Dover Strait. After a first reconnaissance survey in 2018 which largely focused on the Brown Bank area this follow-up survey in 2019 intends to further map the surrounding region as well as to perform detailed mapping of certain targeted areas with archaeological potential.

10. Port of Call. Dates. Reasons

| | | |
|------------------|-------------------|--|
| Zeebrugge | 30/03/2020 | Departure homeport. Start of research cruise RV Belgica 2020/10 |
| Zeebrugge | 10/04/2020 | Arrival homeport. End of research cruise RV Belgica 2020/10 |

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° **2020/10**

2. Dates of cruise From **30 March 2020** To **10 April 2020**

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.

In April 2018 and May 2019 seismic surveys were carried out on RV Belgica in the wider Brown Bank area with the following objectives: (1) to map the palaeo-fluvial systems and the presence of large proglacial lake, and (2) to model the late Quaternary palaeolandscape and link with human occupation/presence. These surveys generated a unique dataset of unprecedented quality and targeted sampling in May 2019 resulted in the discovery of old prehistoric landsurface, among others a forst, as well as several pieces of worked flint. Due to the vastness of the study area, further seismic/geophysical investigations are necessary. The main aims of the 2020 RV Belgica survey are to (1) fill up data gaps for geomorphologic/palaeogeographic study, (2) investigate the further link with the drowned 'Doggerland', and (3) perform detailed seismic investigations in well-chosen sub-areas for archaeological studies.

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 chart with list of positions (+ geographical references)

See Annex 1 (Chart)

See Annex 2 (Coordinates)

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

Geological

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

High resolution marine seismic (sparker, single channel streamer, parametric echosounder), high resolution multibeam, dredging of seafloor over short distances (< 500m), shallow grab sampling, video-imaging of seafloor.

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

RV Belgica cruises 2018/09 (10-20/04/2018); 2019/13 (07-17/05/2019)(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.****De Clercq, M., T., Missiaen, T., Wallinga, J., Zurita Hurtado, O., Versendaal, A., Mathys, M. & De Batist, M. 2018. A well-preserved Eemian incised-valley fill in the southern North Sea Basin, Belgian Continental Shelf - Coastal Plain: implications for northwest European landscape evolution. Earth Surface Processes and Landforms, 43, 1913-1942.****De Clercq, M., García-Moreno, T., Missiaen, & De Batist, M. Submitted. Evidence of Late Pleistocene coastal environments and GLOFs on the Middle-Outer Belgian Continental Shelf, southern North Sea Basin: implications for northwest European landscape evolution. Earth Surface Processes and Landforms.****Gupta, S., Collier, J.S., García-Moreno, D., Oggioni, F., Trentesaux, A., Vanneste, K., De Batist, M., Camelbeeck, T., Potter, G., Van Vliet Lanoe, 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 debuttressing: Evidence from the North Sea. Geology. 44, 355–358.**

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; S.Fitch@bradford.ac.uk)**THE NETHERLANDS:****Dr. Sytze Van Heteren**, TNO, Princetonlaan 6, 3584 CB Utrecht, The Netherlands ([syitze.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 EQUIPMENTCOASTAL STATE :**UNITED KINGDOM***(Indicate "YES" or "NO")*

| <u>LIST SCIENTIFIC WORK BY FUNCTION</u> | | | | 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: YES 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 | | | |
| Seismics/Multibeam bathymetry | YES | NO | NO | NO | YES | NO |
| Dredging (Beam trawl or Gilson dredge) * | YES | NO | NO | NO | YES | NO |
| Grab sampling (van Veen) ** | YES | NO | NO | NO | YES | NO |

* Dredging (with small beam trawl or Gilson dredge) only along short transects (< 500m) and on a limited number of locations

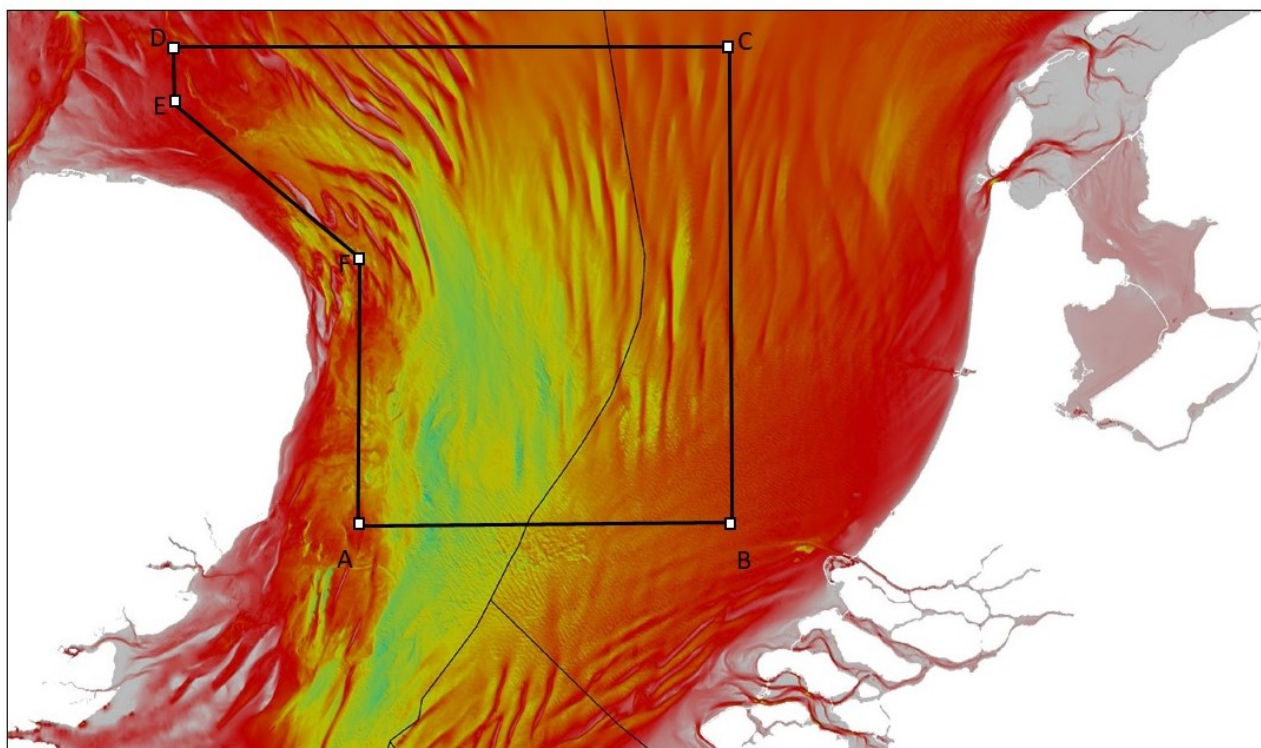
** Seafloor grab sampling only on a limited number of locations

Part C: SCIENTIFIC EQUIPMENTCOASTAL STATE :**THE NETHERLANDS***(Indicate "YES" or "NO")*

| <u>LIST SCIENTIFIC WORK BY FUNCTION</u> | | | | 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 | | | |
| Seismics/Multibeam bathymetry | YES | NO | NO | NO | YES | NO |
| Dredging (Beam trawl or Gilson dredge) * | YES | NO | NO | NO | YES | NO |
| Grab sampling (van Veen) ** | YES | NO | NO | NO | YES | NO |

* Dredging (with small beam trawl or Gilson dredge) only along short transects (< 500m) and on a limited number of locations

** Seafloor grab sampling only on a limited number of locations

Annex 1:**Belgica campaign 2020/10: chart**

ANNEX 2**Table 1 : coordinates of survey area (WGS84 UTM m and LAT/LONG dec degrees)**

| Corner | X | Y | LONG | LAT |
|--------|--------|---------|-----------|-------------|
| A | 436814 | 5769670 | 2.078069E | 52.074002N |
| B | 540993 | 5769670 | 3.598143E | 52.076089N |
| C | 540993 | 5904962 | 3.614994E | 53.292285N |
| D | 374312 | 5904962 | 1.114876E | 53.27897N |
| E | 374312 | 5891465 | 1.120194E | 53.15771N |
| F | 436814 | 5850344 | 2.062808E | 52.799189 N |

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