

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART A: GENERAL

1. NAME OF RESEARCH SHIP CRUISE NO. 2508
R/V Skagerak
2. DATES OF CRUISE From: 2025-08-09 To: 2025-08-31
3. OPERATING AUTHORITY:
Northern Offshore Services
Saltholmsgatan 44
SE-426 76 Västra Frölunda
Sweden

TELEPHONE:
+46 31-3100200

TELEFAX:

TELEX:
4. OWNER (if different from no. 3)
Department of Marine Sciences
University of Gothenburg (UGOT)
Box 461, SE-405 30 Gothenburg
Sweden
5. PARTICULARS OF SHIP:

Name:	R/V Skagerak
Nationality:	Swedish
Overall length: (in metres)	49,10 m
Maximum draught: (in metres)	3,90 m
Net tonnage:	117
Propulsion e.g. diesel/steam:	Diesel/Electric
Call sign:	SEYD
Registration port and number (if registered fishing vessel)	
6. CREW

Name of master:
Joakim Edvardsson /
Richard Olsson

Number of crew:
7 persons
7. SCIENTIFIC PERSONNEL

Name and address of scientist in charge:
Julia Muchowski
Polarforskningssekretariatet | Swedish
Polar Research Secretariat
c/o Luleå tekniska universitet, SE-971 87
Luleå, Sweden

Email: julia.muchowski@polar.se

Tel/telex/fax no.: Tel. +46 76 115 74 24

No. of scientists: 10
8. GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE (with reference to latitude and

longitude)

Research Area, box coordinates

1. 33.79° W, 68.84° N
2. 27.38° W, 68.4° N
3. 28.566° W, 64.077° N
4. 41.48° W, 65.35° N

9. BRIEF DESCRIPTION OF PURPOSE OF CRUISE

Anchored mooring maintenance as part of a UK-funded science project (KANG-GLAC) and an Early Career Researcher (ECR) cruise for training and capacity building that is a joint effort between the University of Gothenburg, the British Antarctic Survey, and the Swedish Polar Research Secretariat. The intention is to bring on board Early Career Researchers from the UK, Sweden, Greenland and Iceland.

10. DATES AND NAMES OF INTENDED PORTS OF CALL

Reykjavik, Iceland for mobilisation maximum from earliest 8 to latest 16 August 2025 and again for demobilisation earliest 20 August and latest 25 August.

11. ANY SPECIAL REQUIREMENTS AT PORTS OF CALL

NO

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1. PART B: DETAILS

1. NAME OF RESEARCH SHIP CRUISE NO.
R/V Skagerak 2508

2. DATES OF CRUISE From: 2025-08-09 To: 2025-08-31
7 days of research will take place during the period.

3. a) PURPOSE OF RESEARCH
This cruise consist of two separate projects, the first being an international multidisciplinary Early Career Researcher cruise, where one spot on board will be available for a local Greenland or Denmark researcher. The second part is a follow-up cruise to a 2024 cruise to Greenland for maintenance and (re-) deployment of moorings,.

This research forms part of the UK-funded KANG-GLAC project. Its overall goals are to assess the impacts of ocean-forced tidewater glacier change on marine primary productivity and circulation around Greenland, and also to determine whether the present-day decay of the Greenland Ice Sheet has passed a climatic “tipping point” by comparing detailed modern observations to previous warm periods.

b) GENERAL OPERATIONAL METHODS (including full description of any fish gear, trawl type, mesh size, etc.)

We plan to run 24-hour science operations during the research cruise. We will operate water-column (ADCP) and seafloor echosounders (multibeam, sub-bottom profiler) and ferrybox almost continuously during the cruise and then stop to take CTD casts for water sampling along the way.

Sediment samples, plankton nets might be part of the ECR cruise.

4. ATTACH CHART showing (on an appropriate scale) the geographical area of intended work, positions of intended stations, tracks of survey lines, positions of moored/seabed equipment, areas to be fished

We apply to collect multibeam, sub-bottom profiler data and CTD casts in the Icelandic EEZ within the large red box on Figure 1 on the way to our Greenland locations.

Research Area for ECR cruise, box coordinates

5. 33.79° W, 68.84° N
6. 27.38° W, 68.4° N
7. 28.566° W, 64.077° N
8. 41.48° W, 65.35° N

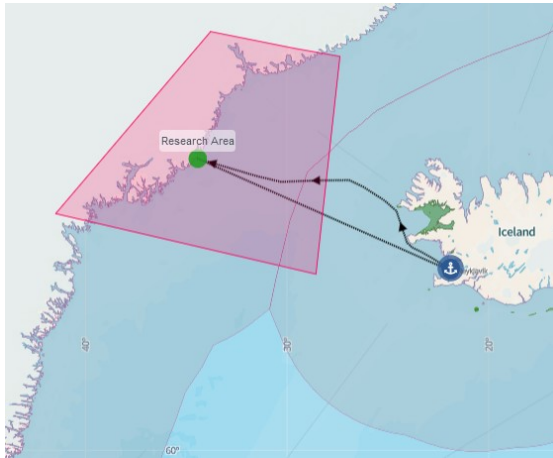


Figure 1. The maximum research area including likely transit routes, along which measurements with CTD, multibeam, sub-bottom profiler, ferrybox, sediment samples and plankton nets will be used.

a) TYPES OF SAMPLES REQUIRED (e.g., geological/water/plankton/fish/radionuclide)

5.

Seawater (surface and throughout the water column) water samples for salinity and dissolved oxygen calibration and training purposes.

b) METHODS OF OBTAINING SAMPLES (e.g., dredging/coring/drilling/fishing, etc. When using fishing gear, indicate fish stocks being worked, quantity of each species required, and quantity of fish to be retained on board).

Example

- **Acoustic echo sounders** to survey the seafloor and water column and select optimal sites to achieve our scientific aims: EM2040 for bathymetry (operational frequencies 200-400 kHz); TOPAS sub-bottom profiler to image seafloor sediment layers (secondary frequency 3.5 kHz); These instruments will be operational for the majority of the cruise but broken into specific blocks as data is required.
- **ADCP systems** to measure current speeds and directions. We will use the hull-mounted ADCP with operational frequencies 150/600 kHz continuously during the cruise.
- **Water sampling** for salinity and dissolved oxygen calibration and for ECR training using the CTD rosette. Maximum number of casts: 20. In situ measurements of water temperature, salinity, pressure, oxygen, fluorescence, turbidity in the entire water column and visual imaging
- **1 x biological/oceanographic bottom-anchored mooring:** to include ADCP, sediment trap, pH sensor, current meter with oxygen optode, and temperature/conductivity/pressure/oxygen logger will be recovered and then re-deployed during the cruise. It will then stay in the fjord for 12 more months with final recovery in summer 2026.
- **2 x profiling floats:** with conductivity/temperature/pressure, chlorophyll fluorometer, turbidity sensor, and dissolved oxygen optode, to be deployed on the innermost continental shelf. The profiling floats will also be recovered in 2026.

6. DETAILS OF MOORED EQUIPMENT

<u>Dates</u> <u>Laying</u>	<u>Recovery</u>	<u>Description</u>	<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>
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7. ANY HAZARDOUS MATERIALS (chemicals/explosives/gases/radioactives, etc.)
(Use separate sheet if necessary)

a) Type and trade name

- See Table 1.

b) Chemical content (and formula)

- See Table 1.

c) IMO IMDG code (reference and UN no.)

Chemical	Volume / weight / Qty	IMDG UN-number	Hazard Class	Packing group
Formaldehyde (CH ₂ O) 4% solution	0.5 L	UN 1198	3	III
Sulphuric acid (H ₂ SO ₄), 5 M	0.5 L	UN 2796	8	II
Sodium hydroxide solution (alkaline iodide), 4 M	0.5 L	UN 1824	8	II
Manganous Chloride (MnCl ₂)	0.5 L	Not classed as dangerous goods		
Potassium iodate 0.01 N or 0.00167M	0.5 L	Not classed as dangerous goods		
Lithium metal batteries contained in equipment (profiling floats)	360 kg gross, 20 kg net.	UN 3091	9	II
Lithium metal batteries (batteries for mooring instruments)	3 kg net	UN 3090	9	II

Commented [JM1]: I assume all items in this table are requested by colleagues for the moorings?

Table 1. List of hazardous materials to be used on board RV *Skagerak* during the cruise.

d) Quantity and method of storage on board

- Will be stored on board according to international safety standards. Chemicals will only be used when we have arrived in Greenland fjords.

e) If explosives give dates of detonation

- Method of detonation
- Position of detonation
- Position of detonation
- Frequency of detonation
- Depth of detonation
- Size of explosive charge in kg.

8. DETAIL AND REFERENCE OF

a) Any relevant previous/future cruises

No previous cruises have been performed or are planned with this consortium. Final recovery of the anchored mooring and profiling floats will be done from either the RRS *Sir David Attenborough* or the Danish vessel HDMS *Lauge Koch* in August 2026.

b) Any previously published research data relating to the proposed cruise

No research papers have yet been published by the KANG-GLAC project. Research data from the 2024 cruise are stored with the UK Polar Data Centre (<https://www.bas.ac.uk/data/uk-pdc/>) but are currently under embargo.

Previous work in the area of Kangerlussuaq Fjord by KANG-GLAC scientists include:

Commented [JM2]: Not sure if this is information is needed for Iceland. The mooring information was taken out in the description further above. If we keep this sentence, I would keep the half-sentence I added further up on mooring maintenance.

Dowdeswell, J.A. et al., 2010. Submarine landforms and shallow acoustic stratigraphy of a 400 km-long fjord-shelf-slope transect, Kangerlussuaq margin, East Greenland. <https://doi.org/10.1016/j.quascirev.2010.06.006>

Christoffersen, P. et al., 2011. Warming of waters in an East Greenland fjord prior to glacier retreat: Mechanisms and connection to large-scale atmospheric conditions. <https://doi.org/10.5194/tc-5-701-2011>

Fenty, I. et al., 2016. Oceans Melting Greenland: Early results from NASA's ocean-ice mission in Greenland. <https://www.jstor.org/stable/24862283>

Inall, M. et al, 2014. Oceanic heat delivery via Kangerdlugssuaq Fjord to the south-east Greenland ice sheet, <https://doi.org/10.1002/2013JC009295>

White et al., 2016. Tracking the provenance of Greenland-sourced, Holocene aged, individual sand-sized ice-rafted debris using the Pb-isotope compositions of feldspars and $^{40}\text{Ar}/^{39}\text{Ar}$ ages of hornblendes. <https://doi.org/10.1016/j.epsl.2015.10.054>

9. NAMES AND ADDRESSES OF SCIENTISTS OF THE COASTAL STATE(S) IN WHOSE WATERS THE PROPOSED CRUISE TAKES PLACE WITH WHOM PREVIOUS CONTACT HAS BEEN MADE

10. STATE

a) Whether visits to the ship in port by scientists of the coastal state concerned will be acceptable
(Yes/No)

Yes. We will invite one Early Career Researcher from Greenland and one from Iceland to participate in the cruise.

b) Participation of an observer from the coastal state for any part of the cruise together with the dates and the ports for embarkation and disembarkation

c) When research data from the intended cruise are likely to be made available to the coastal state and by what means

A full cruise report detailing cruise activities and scientific samples will be submitted to the UK's Polar Data Centre (PDC; <https://www.bas.ac.uk/data/uk-pdc/>) and British Oceanographic Data Centre (BODC; <https://www.bodc.ac.uk/>), where they are publicly available, within 6 months of the end of the cruise date.

All research data from the cruise will be archived at the UK-PDC after the cruise and made publicly available after a scientific moratorium period of 2 years from the end of the cruise. CTD data will be archived at UK-BODC as is common practice for these datasets.

The cruise report will be sent to the coastal state after 6 months, as well as a copy of the raw marine datasets after 2 years, via the Geological Survey of Greenland and Denmark (GEUS) who archive marine geological datasets around Greenland. The Kang-Glac project includes a collaborator from GEUS (Dr. Camilla Andresen) thus facilitating data transfer. Access to the datasets before the 2-year moratorium can be agreed on a case-by-case basis by contacting the Chief Scientist (Kelly Hogan, British Antarctic Survey, kelgan@bas.ac.uk).

PART C. SCIENTIFIC EQUIPMENT

Complete the following table
using a separate page for
each coastal state

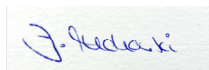
Coastal state: Iceland

Port of call: Reykjavik

Dates: 2025.08.09 – 2025.08.31

Indicate "YES" or "NO"

				DISTANCE FROM COAST		
<u>List scientific work by function</u> e.g.	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	Within 3 nm	Between 3-12 nm	Between 12-200 nm
Magnetometry	No	No	No	No	No	No
Gravity	No	No	No	No	No	no
Diving	No	No	No	No	No	No
Seismics	No	No	No	No	No	No
Seabed sampling	YES	No	No	YES	YES	YES
Bathymetry	YES	No	YES	YES	YES	YES
Trawling	No	No	No	No	No	no
Echo sounding	YES	No	No	YES	YES	YES
Water sampling	YES	No	No	YES	YES	YES
U/W TV	No	No	No	No	No	no
Moored instr	YES	No	No	YES	YES	YES
Towed instr	No	No	No	No	No	No



, 11.03.2025

Dated

(On behalf of the Principal Scientist)

NB IF ANY DETAILS ARE MATERIALLY CHANGED REGARDING DATES/AREA OF OPERATION AFTER THIS FORM HAS BEEN SUBMITTED, THE COASTAL STATE AUTHORITIES MUST BE NOTIFIED IMMEDIATELY