

## NOTIFICATION OF PROPOSED RESEARCH CRUISE

### PART A: GENERAL

1. NAME OF RESEARCH SHIP  
**RV Árni Friðriksson** CRUISE NO.
2. DATES OF CRUISE From **4 August 2026** To **16 August 2026**
3. OPERATING AUTHORITY: **Hafrannsóknastofnun, Fornubúðum 5, 220 Hafnarfjörður**  
TELEPHONE: **+354 575 2000**  
TELEFAX: **+354 575-2001**  
TELEX: **N/A**
4. OWNER (if different from no. 3)
5. PARTICULARS OF SHIP:

|                                                             |                                      |
|-------------------------------------------------------------|--------------------------------------|
| Name:                                                       | <b>RV Árni Friðriksson</b>           |
| Nationality:                                                | <b>Icelandic</b>                     |
| Overall length: (in metres)                                 | <b>69,90 m</b>                       |
| Maximum draught: (in metres)                                | <b>6,80 m</b>                        |
| Net tonnage:                                                | <b>Gross tonnage is 2.233 tonnes</b> |
| Propulsion e.g. diesel/steam:                               | <b>Diesel electric</b>               |
| Call sign:                                                  | <b>TFNA</b>                          |
| Registration port and number (if registered fishing vessel) | <b>Reykjavik</b>                     |
6. CREW

|                 |                                         |
|-----------------|-----------------------------------------|
| Name of master: | <b>Heimir Örn Hafsteinsson, Captain</b> |
| Number of crew: | <b>16</b>                               |
7. SCIENTIFIC PERSONNEL

|                                          |                                                                                                                                          |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Name and address of scientist in charge: | <b>Timothy Patrick Lane</b><br><b>Department of Geoscience Aarhus University</b><br><b>Høegh-Guldbergs Gade 2, 80000 Aarhus, Danmark</b> |
| Tel/telex/fax no.:                       | <b>+45 20781754</b>                                                                                                                      |
| No. of scientists:                       | <b>9</b>                                                                                                                                 |
8. GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE (with reference to latitude and longitude)

Ship will transit from home port of Hafnarfjörður (64.067363, -21.966867) to East Iceland. Research activities will predominantly take place in East and Northeast Iceland, on the continental shelf. Specific working areas are:

- Seyðisfjarðardjúp – from continental shelf edge (65.399974, -11.362430) to mouth of Seyðisfjörður (65.309288, -13.716055)
- Bakkaflóadjúp – from continental shelf edge (66.639705, -12.696002) to mouth of Bakkaflói (66.057870, -15.056404)
- Skeiðarárdjúp (63.342361, -16.717792)

Specific areas are shown on chart below.

### 9. BRIEF DESCRIPTION OF PURPOSE OF CRUISE

This project will collect data constraining the retreat of the east and northeast Iceland Ice Sheet during its most recent deglaciation. Multi-proxy analyses of marine sediment cores will be used to study ocean-ice interactions, including the potential leading role of warm water masses on ice retreat, and the subsequent impacts on the marine realm of deglaciation. Ocean reconstructions will include physical parameters such as sea ice concentration and temperature, as well as responses of planktic and benthic ecosystems.

Specifically, during this cruise we will collect:

- Bathymetric data on the Icelandic shelf from Seyðisfjarðardjúp and Bakkaflóadjúp to map glacial landforms.
- Box and gravity sediment cores of maximum 6 meters length from select locations to date the onset of deglaciation and develop Holocene palaeoenvironmental records.

10. DATES AND NAMES OF INTENDED PORTS OF CALL

We will not make any ports of call during the cruise.

11. ANY SPECIAL REQUIREMENTS AT PORTS OF CALL

Not applicable

## NOTIFICATION OF PROPOSED RESEARCH CRUISE

### **PART B: DETAILS**

1. NAME OF RESEARCH SHIP CRUISE NO.  
**RV Árni Friðriksson** **TBA**
2. DATES OF CRUISE From: **5 August 2026** To: **16 August 2026**
3. a) PURPOSE OF RESEARCH

There has been very little work reconstructing the extent of the Iceland Ice Sheet at the Last Glacial Maximum, the timing and style of ice sheet retreat and the drivers behind it. Geomorphological mapping based on coarse resolution OLEX bathymetry has identified troughs, streamlined ridges, and moraines across the continental shelf. However, beyond this, little is known about the retreat of the ice sheet and potential oceanographic drivers for this retreat. This project will address this knowledge gap and provide the first data of its kind constraining the retreat of the east and northeast Iceland Ice Sheet during its most recent deglaciation.

Specifically, during this cruise we will collect:

- Bathymetric data on the Icelandic shelf from Seyðisfjarðardjúp and Bakkaflóadjúp to map glacial landforms.
- Box and gravity sediment cores from select locations from Seyðisfjarðardjúp, Bakkaflóadjúp, and on the south coast to date the onset of deglaciation and develop Holocene palaeoenvironmental records.

Multi-proxy analyses of marine sediment cores will be used to study ocean-ice interactions, including the potential leading role of warm water masses on ice retreat, and the subsequent impacts on the marine realm of deglaciation. Ocean reconstructions will include physical parameters such as sea ice concentration and temperature, as well as responses of planktic and benthic ecosystems.

The data generated during this cruise will be essential for several MSc projects at Aarhus University and University of Iceland and is part of a currently pending application for a PhD project at Aarhus University, in collaboration with Ívar Örn Benediktsson at University of Iceland. The data will also be used as part of an ongoing EU funded project – SEA-Quester – which members of the scientific party are part of.

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

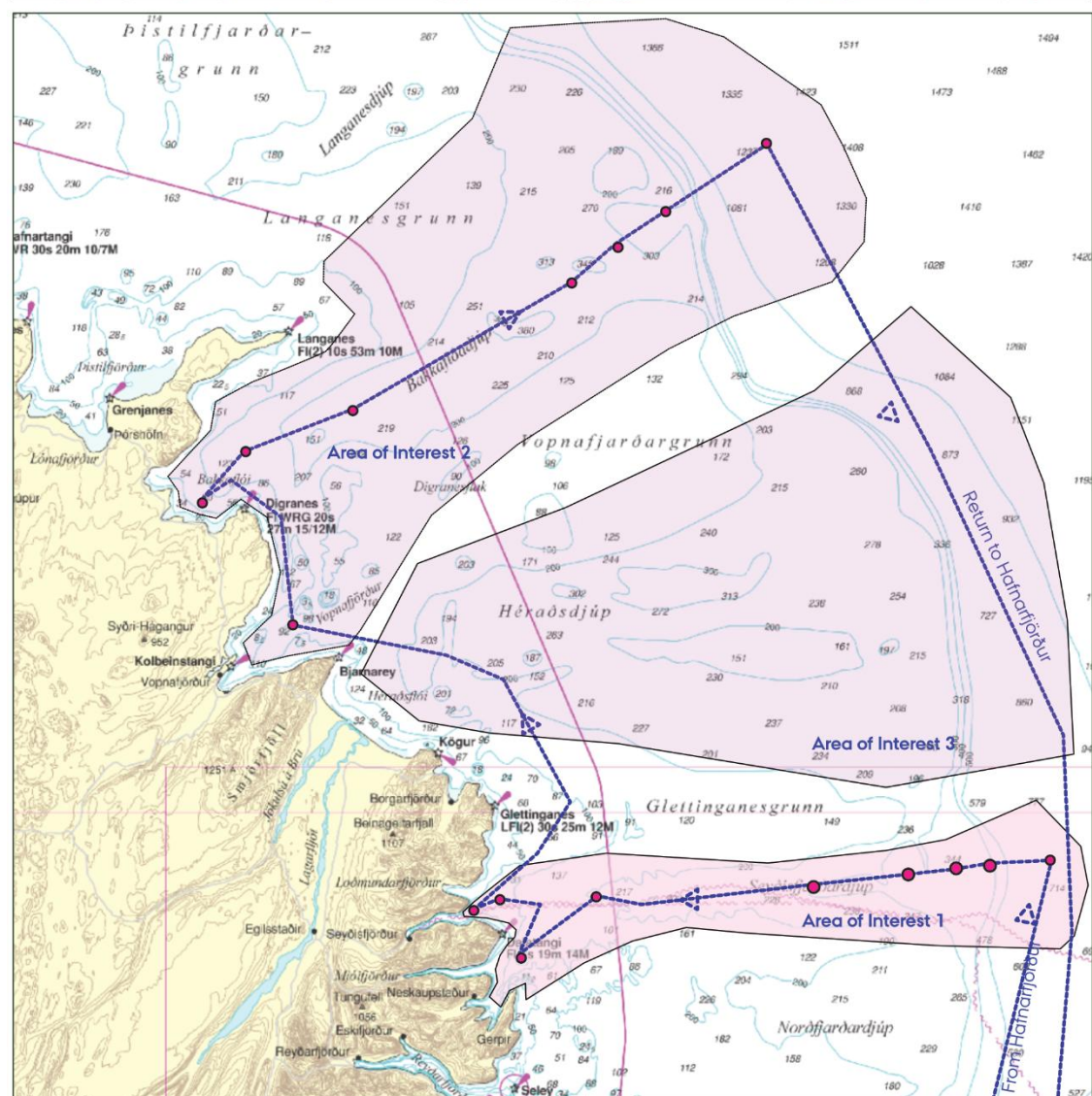
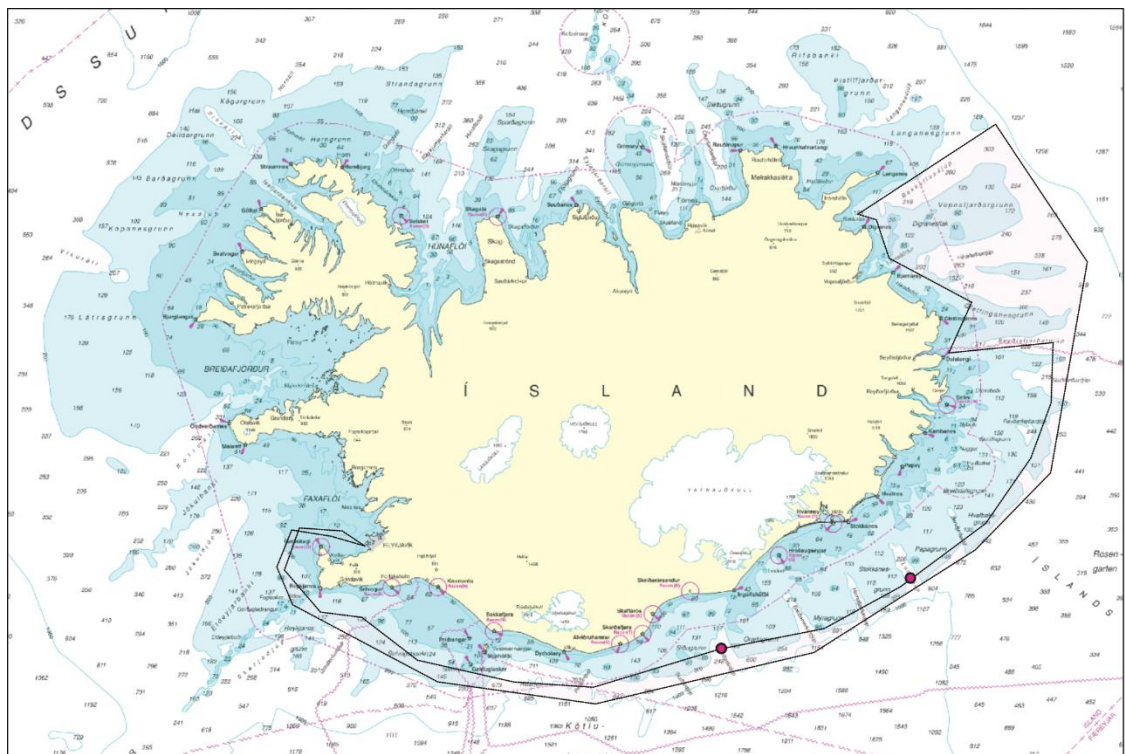
During the cruise, we will be collecting two main types of data/samples.

**1. Bathymetric and sub-bottom profile data.** We will utilise Árni Friðriksson's Kongsberg Maritime EM302 multibeam system, and Kongsberg Maritime TOPAS PS18 sub-bottom profiler system during the cruise to collect bathymetric and sub-bottom profile data. These will be used to produce sea-floor bathymetric maps to characterise landforms, and to understand sea floor sediment distribution to understand where to core. These will be supplemented by CTD measurements using Árni Friðriksson's CTD system, to calibrate multibeam bathymetry measurements by calculating sound speed profiles in varying water masses. The data will be collected in key areas, aligned with (a) locations of known glacial geomorphology e.g. shelf-edge moraines, and (b) locations at which we intend to take sediment cores. This allows characterisation of the sediment before sampling.

**2. Sediment cores.** We will bring Aarhus University's box and gravity coring systems. These will be deployed from Árni Friðriksson's winches and cranes to sample sediment from the sea floor at locations deemed to be valuable for environmental reconstruction.

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

See below chart for intended cruise track (dependent on weather and permissions), two key areas of interest (pink polygons) and proposed sediment coring locations (pink circles). We will be carrying out bathymetric and sub-bottom profiler surveys within the areas of interest. We also have a proposed pilot coring location on the south coast to test procedures and equipment and to collect sediment cores related to jökulhlaup history. A proposed back up area of interest (AoI3) is also identified.



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

During the research cruise, the only samples we will take will be sediment samples, from the broad regions shown in the above chart. We have identified the proposed sites for sediment cores, but this is highly dependent on initial imagery from the sub-bottom profile data, which will help to guide coring locations. As a result, we have identified key areas as well as specific locations from which we aim to retrieve sediment cores.

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).

Sediment coring methods are outlined above but repeated here in detail for clarity. We will bring Aarhus University's box and gravity coring systems to use on board. These will be deployed from Árni Friðriksson's winches and cranes to sample sediment from the sea floor. The box coring system is lowered to the sea floor and takes a sample of the uppermost sediments, which are then subsampled when returned to the ship. The gravity coring system includes a 6-metre pipe with weights on the top, which is driven into the seafloor and then returned to the ship. The PVC tube is then removed and subsampled into 1 m sections. All coring devices rely on gravity to penetrate in the sediments and don't involve any drilling.

6. DETAILS OF MOORED EQUIPMENT

| <u>Dates</u> | <u>Recovery</u> | <u>Description</u> | <u>Depth</u> | <u>Latitude</u> | <u>Longitude</u> |
|--------------|-----------------|--------------------|--------------|-----------------|------------------|
|--------------|-----------------|--------------------|--------------|-----------------|------------------|

7. ANY HAZARDOUS MATERIALS (chemicals/explosives/gases/radioactives, etc.)

(Use separate sheet if necessary)

a) Type and trade name

**No hazardous material will be used.**

b) Chemical content (and formula)

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

d) Quantity and method of storage on board

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 other relevant cruises have been undertaken in the proposed study area by the science team.

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

None

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

Ívar Örn Benediktsson, [ivarben@hi.is](mailto:ivarben@hi.is), Askja, Sturlugata 7 102 Reykjavík

10. STATE

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

The ship will not be making port visits during the research cruise, but if required they can join yes.

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

Yes 4 – 16 August 2026, from Hafnarfjörður

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

Data will be collected in direct collaboration with scientists from the coastal state (Iceland) and will therefore be made immediately available through data sharing. Additionally, following return, all data

will be shared during publication, and on open access databases following FAIR principles. This is a requirement of the funding partner (EU POLARIN).

### **PART C. SCIENTIFIC EQUIPMENT**

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

Coastal state Iceland

Port of call Hafnarfjörður

Dates 5 August – 15 August 2026

Indicate "YES" or "NO"

|                                                 |                                                        |                                          |                                                                                                    | DISTANCE FROM COAST |                 |                   |
|-------------------------------------------------|--------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------|-----------------|-------------------|
| <u>List scientific work by function</u><br>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 |
| Seabed sampling                                 | YES                                                    | NO                                       | YES                                                                                                | YES                 | YES             | YES               |
| Bathymetry                                      | NO                                                     | NO                                       | YES                                                                                                | YES                 | YES             | YES               |
| Echo sounding                                   | NO                                                     | NO                                       | YES                                                                                                | YES                 | YES             | YES               |
| Water sampling                                  | YES                                                    | NO                                       | YES                                                                                                | YES                 | YES             | YES               |



(On behalf of the Principal Scientist)

Dated 19-03-2026

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