

**NOTIFICATION OF PROPOSED RESEARCH CRUISE**

**PART A: GENERAL**

1. NAME OF RESEARCH SHIP CRUISE NO.  
**R/V Skagerak**
  
2. DATES OF CRUISE                      From: 20 June 2023                      To: 7 July 2023
  
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:	<b>R/V Skagerak</b>
Nationality:	<b>Swedish</b>
Overall length: (in metres)	<b>49,10 m</b>
Maximum draught: (in metres)	<b>3,90 m</b>
Net tonnage:	<b>117</b>
Propulsion e.g. diesel/steam:	<b>Diesel/Electric</b>
Call sign:	<b>SEYD</b>
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:  
Professor Isaac Santos, Department of  
Marine Sciences, University of  
Gothenburg, SE-405 30 Gothenburg,  
Sweden  
Email: [isaac.santos@marine.gu.se](mailto:isaac.santos@marine.gu.se)  
  
Tel/telex/fax no.: Tel. +46-766-183146  
  
No. of scientists: 10
  
8. GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE (with reference to latitude and longitude)  
The ship will operate inside fjords and along the continental shelf region south of Iceland between 65

and 63° N, and between 13 and 20° W.

A second leg if the cruise will start in Reykjavik and do testing closer to the harbour before departing for Greenland.

9. BRIEF DESCRIPTION OF PURPOSE OF CRUISE

Estimate terrestrial carbon fluxes from Eastern Iceland glaciers to the surrounding ocean.  
Investigate submarine groundwater discharge from Eastern Iceland glaciers to the surrounding ocean.  
Determine sediment-water exchange in situ using benthic chamber landers in fjords on eastern Iceland.  
Investigate sediment properties and biogeochemical processes in sediments.

The cruise is sponsored by research grants from the University of Gothenburg and by the Swedish Research Council VR.

A second leg if the cruise will start in Reykjavik and do testing closer to the harbour before departing for Greenland. Tests will mainly be with a Kongsberg Hugin AUV. Test will be operational and no scientific data will be saved from this exercise.

10. DATES AND NAMES OF INTENDED PORTS OF CALL

The vessel will spend the nights doing field work when weather conditions are suitable. If required, the vessel may go Eskifjörður, Reydarfjordur, Djupivogur or Höfn. Plan is to mobilise scientists from Höfn 23,24 or 25 June and demobilise in Höfn 30 June, 1 July or 2 July.  
Reykjavik port 3 – July.

11. ANY SPECIAL REQUIREMENTS AT PORTS OF CALL

Part of the crew will fly to Iceland and will need to be picked up from the coast.  
Two locations seem possible to be decided by the captain. Additional ports might be necessary to go to additional ports for shelter from bad weather.

ESKIFJÖRÐUR (65° 4.288'N, 14° 1.079'W)

REYDARFJORDUR (65° 1.780'N, 14° 13.138'W)

DJUPIVOGUR (64.66 , -14.28)

HÖFN (64.24, -15.204)

REYKJAVIK (N 64° 08' 58.93" - W 021° 52' 12.40".)

## NOTIFICATION OF PROPOSED RESEARCH CRUISE

### 1. PART B: DETAILS

1. NAME OF RESEARCH SHIP CRUISE NO.  
R/V Skagerak
2. DATES OF CRUISE                      From: 20 June 2023                      To: 7 July 2023

3. a) PURPOSE OF RESEARCH

Investigate submarine groundwater discharge from eastern Iceland to the surrounding Atlantic Ocean. Determine sediment-water exchange in situ using benthic chamber landers in fjords on eastern Iceland. Investigate sediment properties and biogeochemical processes in sediments.

Test with AUV will take place before we depart for Greenland. AUV will be on board for the entire cruise, but not used until the very last days of the cruise, and then only for operational tests.

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

Multibeam echosounder and sonars.

Water column sampling using Rosette with water bottles or pumps.

CTD-Rosette profiling of water column.

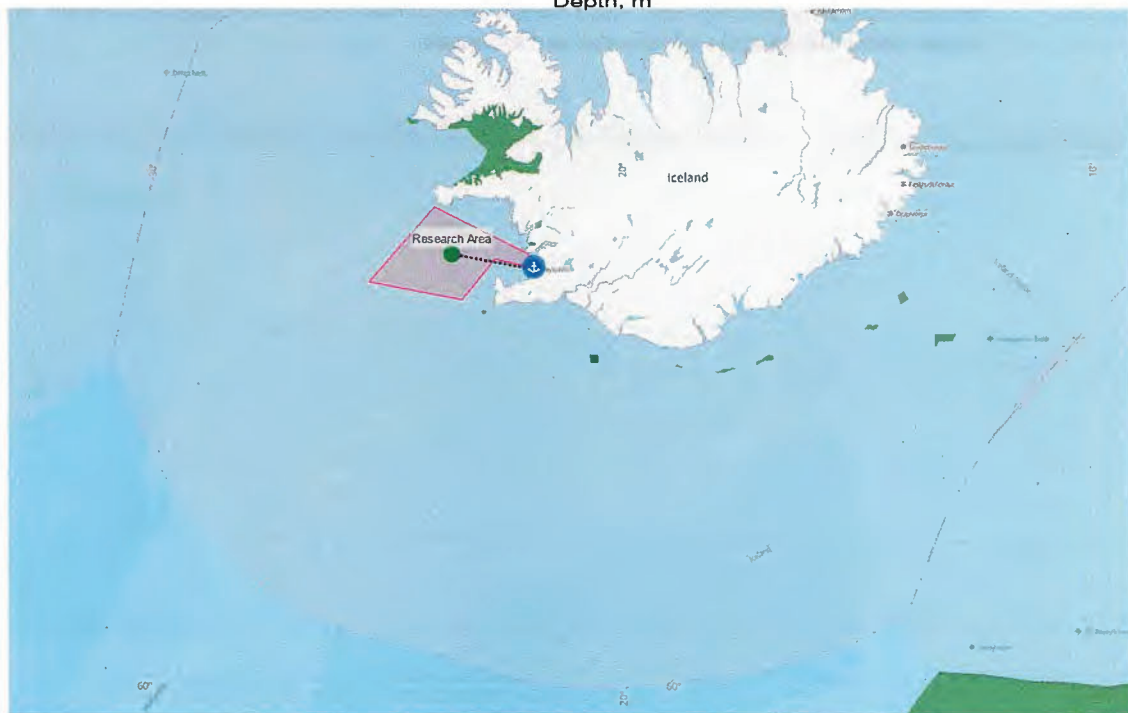
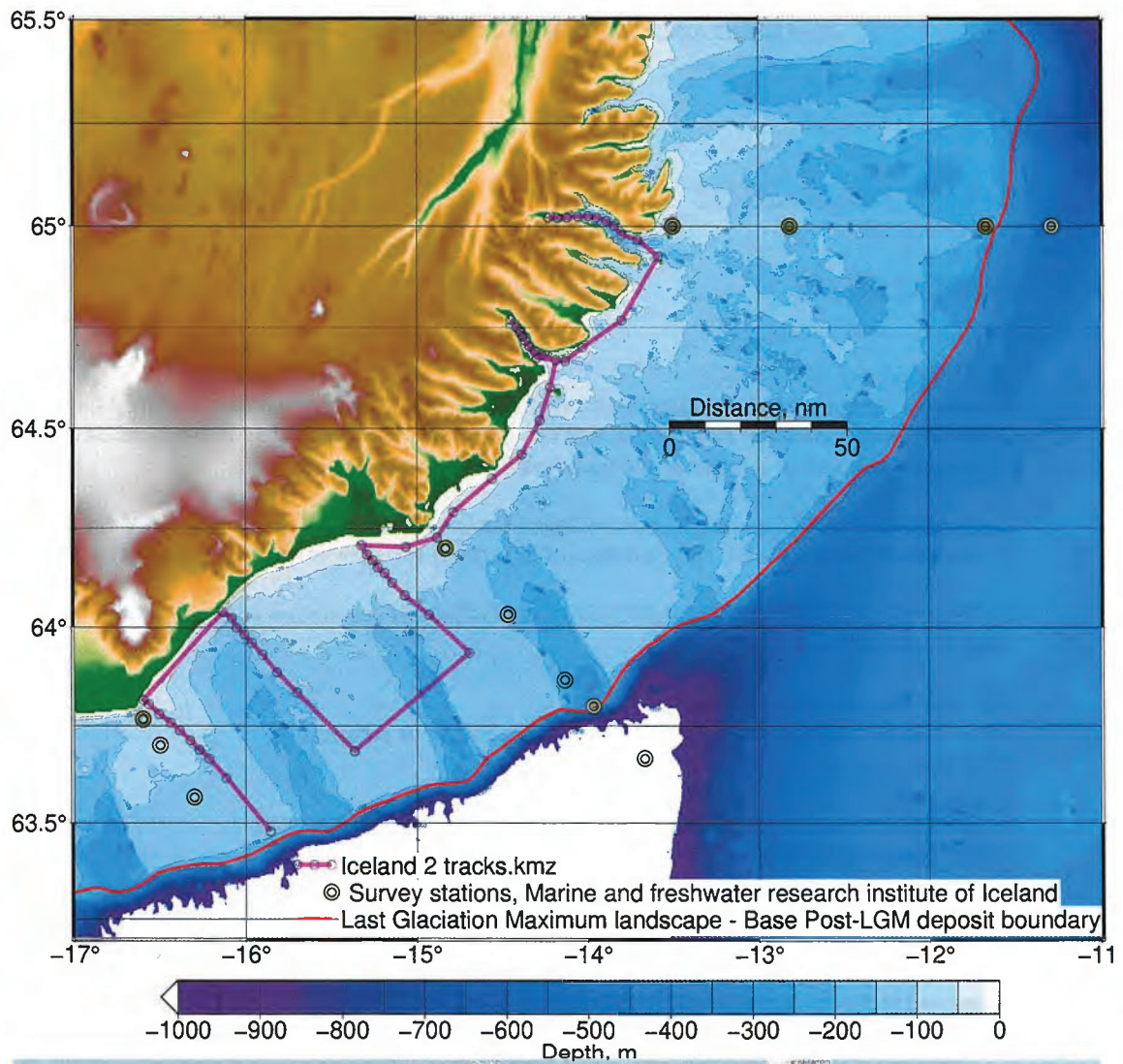
Deployment of benthic chamber landers.

Sediment sampling using multiple corer, box-corer and/or GEMAX corer.

AUV, Kongsberg Hugin

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

Water and sediment samples will be taken along the track shown on the map. Coordinates of specific sampling locations are shown below. The sampling strategy involves transects starting as close to the shoreline as logistically safe. Each transect will extend to the continental shelf edge. We expect to take about 100 samples of seawater and sediments.



Lat	Long
65,023394	-14,051075
63,477681	-15,851572
63,813383	-16,598277
63,809266	-16,579562
63,802529	-16,561969
63,795417	-16,544003

63,785685	-16,523416
63,77483	-16,495343
63,763226	-16,460532
63,747131	-16,41599
63,728416	-16,367704
63,708203	-16,31867
63,686119	-16,266267
63,660292	-16,20488
63,625481	-16,132639
63,586179	-16,060023
63,544631	-15,981793
63,506826	-15,911798
64,038108	-16,132639
64,032844	-16,117433
64,029335	-16,098717
64,024072	-16,081757
64,012375	-16,062456
63,990735	-16,036138
63,980792	-16,001047
63,960322	-15,970049
63,940437	-15,934373
63,918798	-15,881151
63,895404	-15,830269
63,860312	-15,762426
63,829315	-15,690489
63,793639	-15,613288
63,757963	-15,523805
63,712929	-15,426134
63,682516	-15,3618
64,206546	-15,32203
64,198358	-15,309163
64,184907	-15,299806
64,176719	-15,276996
64,160343	-15,240735
64,142212	-15,198041
64,125836	-15,169968
64,103612	-15,126104
64,083727	-15,071712
64,057993	-15,016151
64,038108	-14,945383
64,013544	-14,882219
63,982547	-14,808527
63,956228	-14,741269
63,930495	-14,685123
64,768915	-14,449335
64,765321	-14,444544
64,758374	-14,429212
64,762447	-14,436878
64,749032	-14,413641
64,739928	-14,39783
64,72843	-14,38154
64,717889	-14,366209
64,705911	-14,343451
64,691059	-14,308475
64,6798	-14,258887
64,671415	-14,200196
64,676446	-14,232296
64,68531	-14,28428
64,69609	-14,32237
64,666827	-14,173375
64,665658	-14,126587
65,018195	-14,226792
65,025473	-14,196639
65,021314	-14,168566
65,019235	-14,142573

65,023394 -14,096824  
65,024434 -13,966856  
65,015076 -13,894074  
65,003639 -13,855604  
64,983884 -13,821292  
64,964128 -13,779703  
64,967248 -13,728755  
64,955811 -13,694444  
64,945787 -13,648737  
64,934475 -13,609476  
64,925824 -13,584189  
64,897876 -13,62345  
64,85795 -13,676019  
64,802719 -13,753875  
64,747488 -13,865003  
64,716878 -13,970142  
64,686933 -14,057979  
64,606457 -14,216394  
64,530556 -14,27358  
64,466092 -14,350521  
64,400588 -14,489846  
64,349641 -14,623973  
64,298694 -14,751861  
64,258144 -14,84024  
64,210315 -14,985803  
64,205117 -15,138646  
64,205117 -15,24262  
63,911853 -14,747483  
63,853367 -14,920198  
63,796709 -15,060929  
63,731827 -15,237299  
63,856109 -16,521239  
63,916422 -16,392388  
63,991356 -16,241605  
63,991356 -16,241605

AUV testing area with corners (second picture):

64,7254 -24,0105  
64,0174 -25,3948  
63,8484 -23,4392  
63,3774 -22,5194

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

5.

Seawater (surface and bottom) and shallow sediment samples (up to 50 cm penetration into sediments).  
Water samples also for natural geochemical tracers, nutrients, carbon, and heavy metals.

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).

Water sampling using a CTD-Rosette sampler and pumps available on the vessel including the engine cooling pump).

Sediment sampling using multiple corer, box-corer and/or GEMAX corer.

Deployment of benthic chamber landers to determine sediment-water exchange in situ.

6. DETAILS OF MOORED EQUIPMENT

<u>Dates Laying</u>	<u>Recovery</u>	<u>Description</u>	<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>
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None

7. ANY HAZARDOUS MATERIALS (chemicals/explosives/gases/radioactives, etc.)  
(Use separate sheet if necessary)

- a) Type and trade name
- 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.

No hazardous materials or explosives to be used.

8. DETAIL AND REFERENCE OF

a) Any relevant previous/future cruises

R/V Skagerak has not visited this area previously.  
There are no plans at present for R/V Skagerak to visit this area again in the near future.

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

No.

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

No contacts have yet been made with such scientists.

10. STATE

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

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

No such arrangements have been made so far. No biological samples will be taken.

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

Spring of 2024 – raw data made available on public international repositories such as Pangea.  
2025 – fully available scientific publications and all data available open access online.

**PART C. SCIENTIFIC EQUIPMENT**

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

Coastal state: Iceland

Port of call: Höfn, Reydarfjordur, Reykjavik

Dates: 20 June to 1 July 2023

Indicate "YES" or "NO"

<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  YES, its physical characteristics (seawater and sediment carbon biogeochemistry)	DISTANCE FROM COAST		
				Within 3 nm	Between 3-12 nm	Between 12-200 nm
	YES	NO		YES	YES	YES
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	YES	YES	YES	YES
Bathymetry	NO	NO	NO	NO	NO	NO
Trawling	NO	NO	NO	NO	NO	NO
Echo sounding	YES	NO	YES	YES	YES	YES
Water sampling	YES	NO	YES	YES	YES	YES
U/W TV	NO	NO	YES	NO	NO	NO
Moored instr.	NO	NO	YES	YES (overnight lander)	YES	NO
Towed instr.	NO	NO	NO	NO	NO	NO



*Trace M. S.*

Dated 6 February 2023

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(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