NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART A: GENERAL

1. Name of research ship **RV BELGICA** Cruise N° **2023/13**

2. Dates of cruise From **26/06/2023** To **11/07/2023**

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 Linieregimentsplein, B-8400 Ostend
✆+ 32(0) 2 7887 739 • ✉ mso@naturalsciences.be
https://odnature.naturalsciences.be/belgica/

4. Owner **Belgian state represented by Minister for Science Policy**

5. Ship Operator
GENAVIR SASU
1625 Route de Sainte Anne
29280 PLOUZANE
✆+ 33(0)2 98 22 4 64 • 🖷: + 33(0)6 75 22 05 69 • ✉ ops@listes.genavir.fr

6. Particulars of ship

Name	**Belgica**
Nationality	Belgian
Overall length	71,4 meters
Maximum draught	4,8 meters
Nett tonnage	1117NRT
Propulsion	Diesel-electric
Call Sign	ORCO
IMO number	9871294
Phone numbers	**T: + 32 59 28 02 37**
	M: +32 475 44 27 37
Email	**rvbelgica@naturalsciences.be**

6. Crew
Name of master **Commander (BeN) Gaetan Motmans**
N° of Crew **14**

7. Scientific Personnel Name and address of scientist in charge :

Dr. Sebastiaan van de Velde
Service Biogéochimie et Modélisation du Système Terre (BGEOSYS)
Université Libre de Bruxelles
Campus du Solbosch - CP 160/02
Avenue F.D. Roosevelt, 50
1050 Bruxelles, Belgium
Operational Directorate Natural Environment (OD Nature)
Royal Belgian Institute of Natural Sciences (RBINS)
Rue Vautier 29
1000 Brussels, Belgium
✆ + +32472763500
✉ Sebastiaan.van.de.velde@ulb.be svandevelde@naturalsciences.be

Prof. Filip Meysman
Department of Biology
University of Antwerp
Campus Drie Eiken
Universiteitsplein 1,
2610 Wilrijk, Belgium
✆ +3232658931
✉ filip.meysman@uantwerpen.be

N° of scientists : **24**

Preliminary list :

Sebastiaan van de Velde (BELGIAN)
Filip Meysman (BELGIAN)
Saheed Puthan Purayil (INDIAN)
Cathrin Wittig (GERMAN)
Cedric Goossens (BELGIAN)
Silvia Hidalgo-Martinez (SPANISH)
Astrid Hylén (SWEDISH)
Philip L ey (GERMAN)

Bui Winter (BELGIAN)
Felipe Sales de Freitas (BRAZILIAN)
Steeve Bonneville (FRENCH)
Per Hall (SWEDISH)
Mikhail Kononets (SWEDISH)
Kate Hendry (BRITISH)
Christian März (GERMAN)
Katrin Wagner (GERMAN)
Armann Höskuldsson (ICELANDIC)
Daníel Þórhallsson (ICELANDIC)
John Paul Balmonte (AMERICAN)
Rebecca James (NEW ZEALANDER)
Sandra Arndt (GERMAN)
Jake Reardon (AMERICAN)
Lotte Verweider (BELGIAN)
Piet Reyniers (BELGIAN)

(A nominall 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 *station list and map are attached in the annex)

Icelandic continental shelf and Hvalfjörður
(See Annexes 1 and 2)

9. Brief description of purpose of cruise

BELSPO Project DE-HEAT
Natural analogues and system-scale modeling of marine enhanced silicate weathering

The aim of the cruise is to collect intact sediment core samples to quantify the rate of basalt dissolution in the seafloor and investigate seafloor iron cycling.

10. Port of Call. Dates. Reasons

Reykjavik	**24/06 pm**	**Arrival in port**
Reykjavik	**25/06**	**Stay in port. Disembarkation and embarkation of scientists. Relaxation of crew RV Belgica**
Reykjavik	**26/06 a.m.**	**Start of RV Belgica research cruise 2023/13**
Reykjavik	**11/07 p.m.**	**End of RV Belgica research cruise 2023/13**
Reykjavik	**11/07 p.m. - 13/07 a.m.**	**Stay in port. Disembarkation and embarkation of scientists. Relaxation of crew RV Belgica**

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

N.A.

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART B: DETAIL

1. Name of research ship **RV BELGICA** Cruise N° **2023/13**

2. Dates of cruise From **26/06/2023** To **11/07/2023**

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.

   The research aims to quantify the rates of basalt dissolution and iron cycling in the seafloor. The sampling methods employed are; (i) gravity and piston coring to collect intact sediment cores, (ii) CTD and NISKIN for water column sampling, (iii) multibeam and subbottom profiling for characterisation of seafloor topography and sediment type, and (iv) deployment of benthic chamber landers on the seafloor.
   Sediment on board will be processed by sectioning and seperation of porewater and solid phase. Dissolved constituents will be measured via traditional spectrophotometric methods. Solid phase will be frozen and transported to the home laboratories.

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 (positions) & Annex 2 (Chart)

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

   Intact seafloor samples, water column samples

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

   Gravitiy coring, piston coring, NISKIN bottles, Benthic chamber lander deployments

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
N.A.

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

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.

Ármann Höskuldsson (armh@hi.is)
Nordic Volcanological Center,
Institute of Earth Sciences,
Science Institute University of Iceland
University of Iceland
Sturlugata 7, 102 Reykjavik Iceland

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 : **ICELAND**

(Indicate "YES" or "NO")

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	WITHIN 12 NMS	BETWEEN 12-200 NMS	CONTINENTAL SHELF WORK ONLY BEYOND 200 NM BUT WITHIN THE CONTINENTAL MARGIN
EM2040 multibeam echosounder	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**
TOPAS 9S18 parametric subbottom profiler	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**
Piston corer	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**
Gravity corer	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**
SBE09 CTD + rosette Water Sampler	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**
Benthic Chamber lander (from university of Gothenburg)	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**
EM304 multibeam echosounder	**YES**	**NO**	**YES**	**YES**	**YES**	**NO**

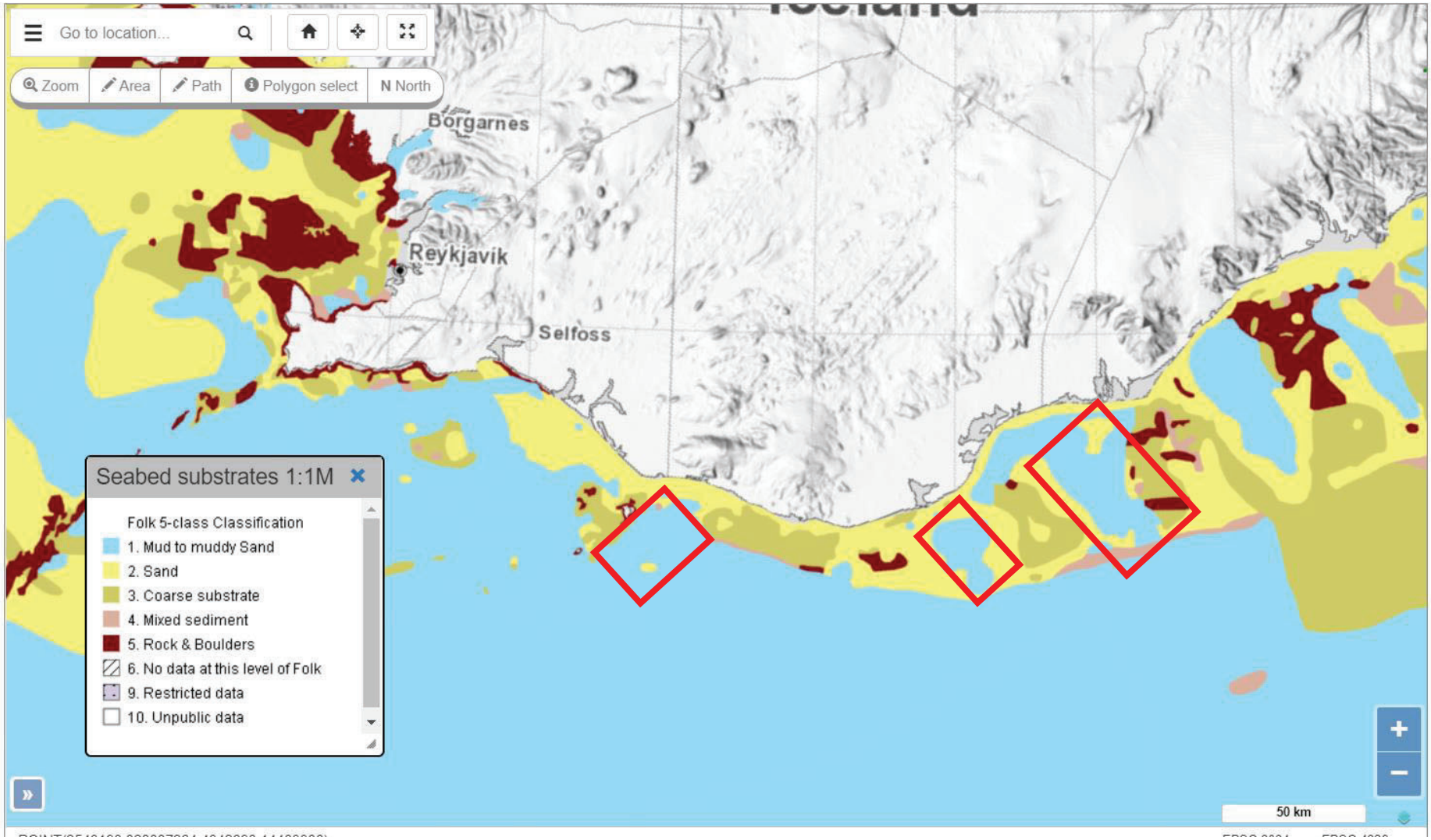
Annex 1

Belgica campaigns 2023/13

Hvalfjörður represents a transect (4 sites will be samples, coordinates are approximate)
The area of the continental shelf indicates 3 areas from which a transect will be sampled from near the coast to just beyond the shelfbreak. Exact locations will be determined based on TOPAS subbottom profiles which will be collected during the campaign.

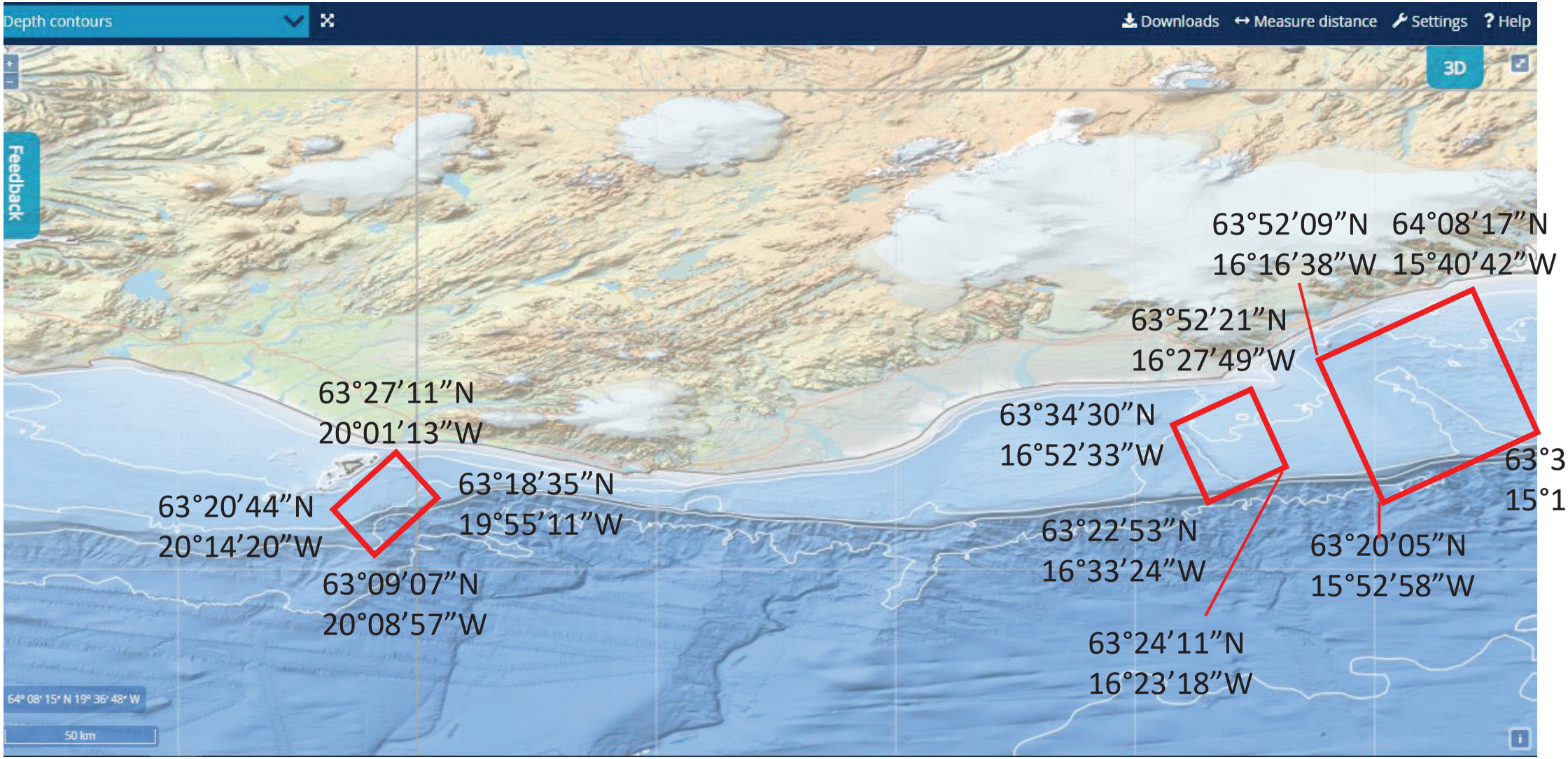
Country	Site	coordinates
Iceland	continental shelf 1	63°27’11”N
		20°01’13”W
	continental shelf 1	63°18’35”N
		19°55’11”W
	continental shelf 1	63°09’07”N
		20°08’57”W
	continental shelf 1	63°20’44”N
		20°14’20”W
	continental shelf 2	63°52’21”N
		16°27’49”W
	continental shelf 2	63°34’30”N
		16°52’33” W
	continental shelf 2	63°22’53”N
		16°33’24” W
	continental shelf 2	63°24’11”N
		16°23’18” W
	continental shelf 3	63°52’09”N
		16°16’38” W
	continental shelf 3	64°08’17”N
		15°40’42” W
	continental shelf 3	63°35’09”N
		15°16’24” W
	continental shelf 3	63°20’05”N
		15°52’58” W
Iceland	Hvalfjörður	64°15’36”N
		21°58’43” W
	Hvalfjörður	64°17’27”N
		21°53’02” W
	Hvalfjörður	64°22’05”N
		21°41’19” W
	Hvalfjörður	64°22’40”N
		21°29’43” W

Iceland continental shelf



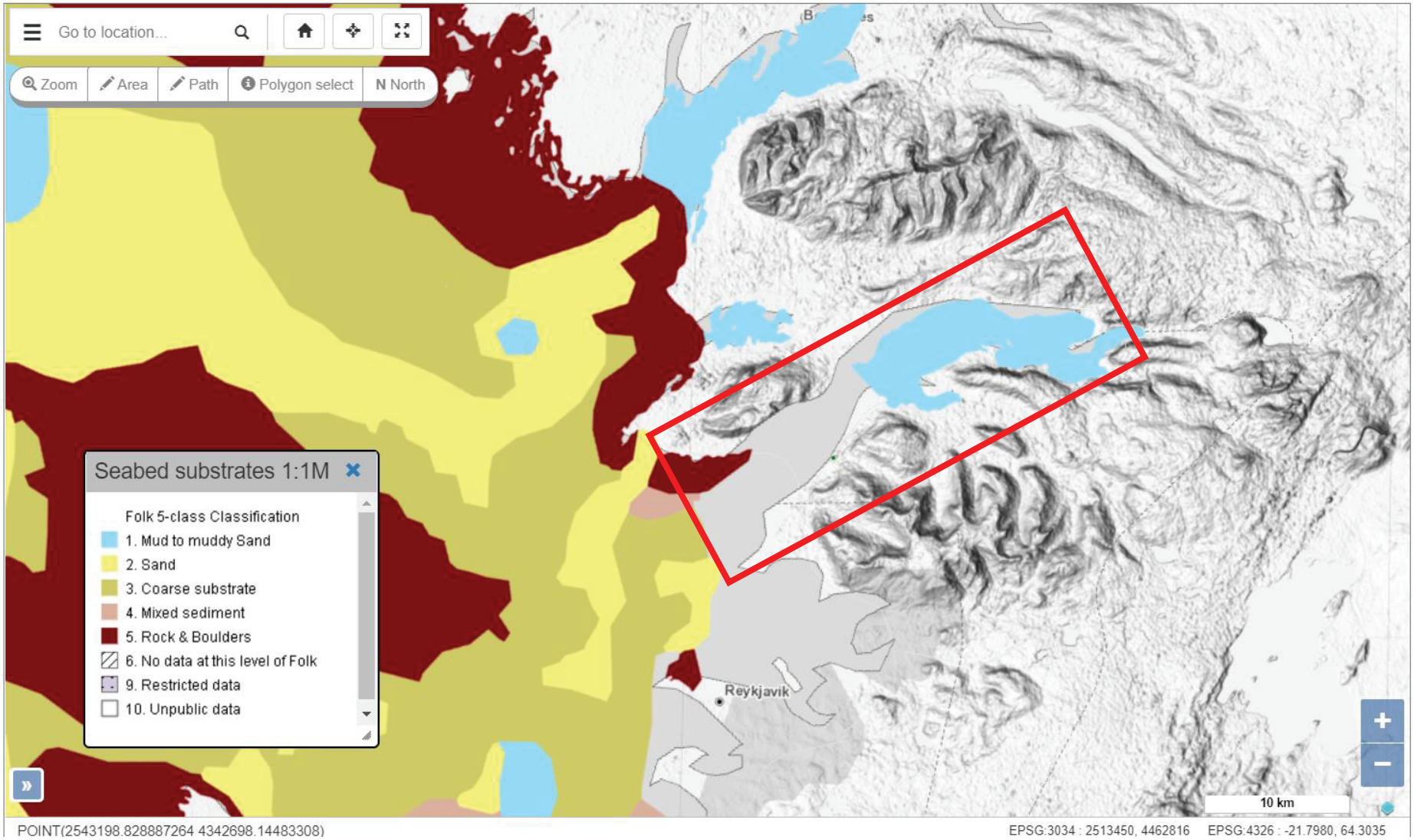
https://www.emodnet-geology.eu/map-viewer/?p=seabed_substrate

Iceland continental shelf



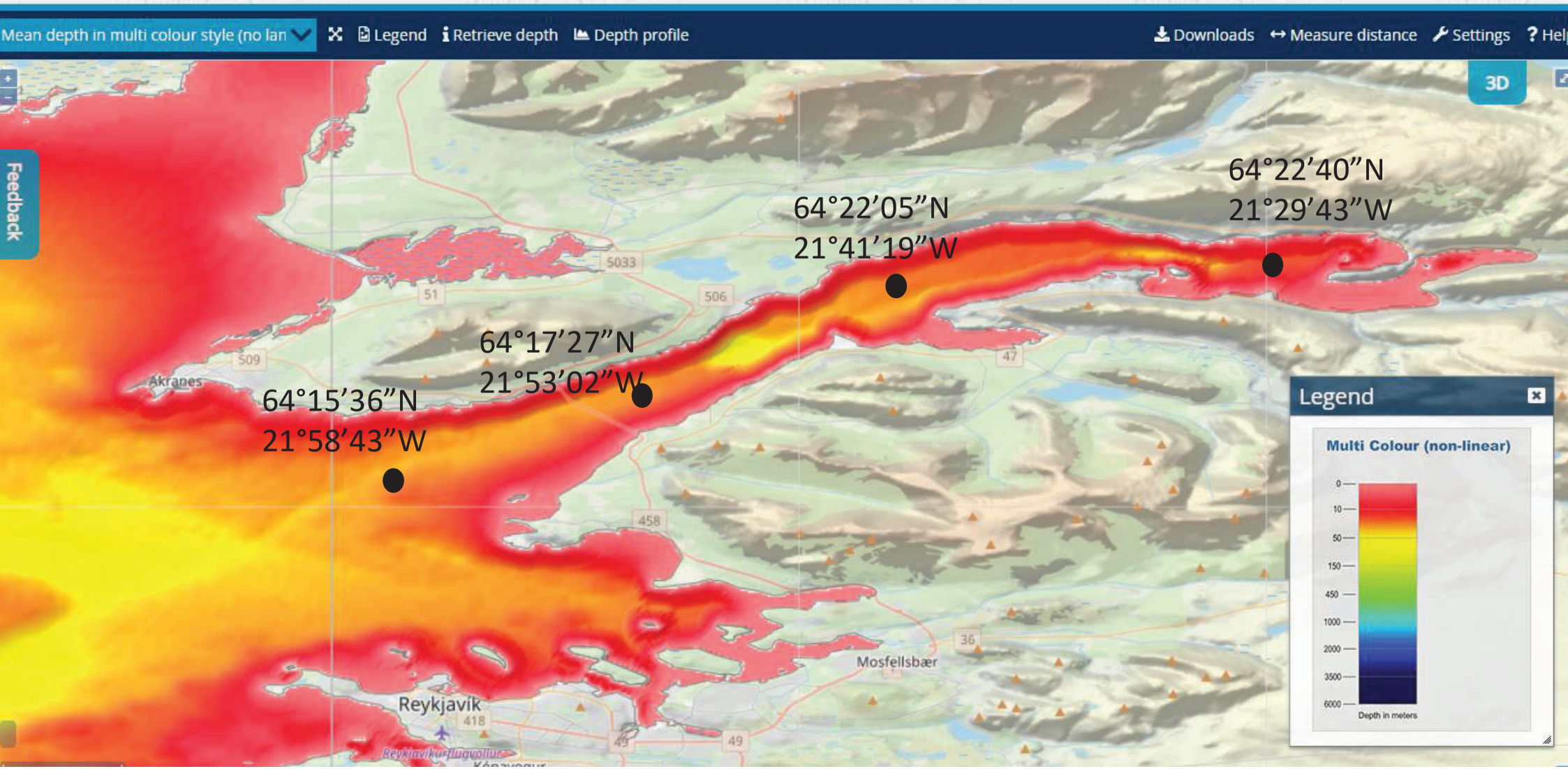
https://portal.emodnet-bathymetry.eu/?menu=19

Hvalfjörður



https://www.emodnet-geology.eu/map-viewer/?p=seabed_substrate

Hvalfjörður



https://portal.emodnet-bathymetry.eu/?menu=19