

NOTIFICATION OF PROPOSED RESEARCH CRUISE

Part A: GENERAL

1. Name of research ship: **R.V. METEOR** Cruise No. **M 201**

2. Dates of cruise **from Reykjavik, Iceland, 09.06.2024**
 to Praia da Vitória, Azores, 18.07.2024

3. Operating Authority **Institute of Geology / Universität Hamburg**
 Bundesstr. 55, D-20146 Hamburg, Germany
 Tel.: +49-40-42838-3640 - Fax: +49-40- 4273-10063

4. Owner (if different from para 3) **Federal Ministry of Education and Research, Germany**

5. Particulars of ship:

Name	METEOR
Nationality	German
Overall length	97,5 metres
Maximum draught	5,60 metres
Net tonnage	1.284 NT
Propulsion	Diesel Electric
Call sign	DBBH
IMO No.	8411279

6. Crew

Name of master	Derk-Ude Apetz
No. of crew	<u>max. 33</u>

7. Scientific personnel:

Name and address of scientist in charge:	Dr. Nico Augustin GEOMAR Helmholtz Centre for Ocean Research Kiel Wischhofstr. 1-3 24148 Kiel, Germany
Phone:	+49 (0) 431 600 2156
Fax:	+49 (0) 431-600 132 256
Email:	naugustin@geomar.de
No. of scientists	<u>max. 30</u>

8. Geographical areas in which the ship will operate (with reference to latitude and longitude):

The primary Working Area is in the Vesturdjup Basin (Irminger Basin) off-coast western Iceland and adjacent areas (see also Figure 1). The exact geographic positions of sampling stations, OFOS tracks, multibeam mapping, and multi-channel seismic profiles should be determined during the cruise and strongly depend on the findings during the expedition. Yet, the preliminary suggested coordinates of the first station are 64°31.65'N, 24°40.08'W. Preliminary suggested coordinates of the last station are 64°04.44'N, 27°50.96'W.

9. Brief description of the purpose of the cruise:

The M201 expedition aims to investigate an apparent volcanic province located offshore western Iceland, which has never been sampled before, and no direct seafloor observations have been conducted. The combination of high-resolution multibeam and seismic reflection mapping, video observations, and rock/sediment sampling will provide a comprehensive dataset to study the age and independence/connectivity of the volcanic system with the nearby Snæfellsnes Flank Volcanic Zone, fault systems, and Iceland hotspot. The Vesturdjup Basin volcanic system provides a globally unique opportunity to study how strongly hotspots influence the seafloor around them and what the nature of hotspot interaction with former rift zones. A short seafloor multibeam mapping activity for the area between Snæfellsnes and Vesturdjup Basin has been planned.

10. Dates and names of intended ports of call:

Reykjavik (Iceland) for four days within the period of 3rd June 2024 and 12th June 2024.
=> Planned so far from 06.06.2024 to 09.06.2024.

11. Any special logistic requirements at ports of call:

Crew change, unloading/loading of equipment, logistics, bunkering.

Part B: DETAIL

1. Name of research ship: *R.V. METEOR* Cruise No. *M 201*
2. Dates of cruise from Reykjavik, Iceland, 09.06.2024
to Praia da Vitória, Azores, 18.07.2024
3. Purpose of research and general operational methods:

The majority of the young (Holocene) volcanic activity on the Iceland Plateau is believed to be confined to the active plate boundary of Iceland, its volcanic flank zones, and the seafloor along Kolbeinsey and Reykjanes Ridges. New multibeam bathymetric mapping ~205 km west of Iceland (Vesturdjúp Basin) showed the presence of 16 previously unknown, steep volcanic cones. Due to high radius-to-height ratios (>1.0), steep slopes, and no signs of erosion or tectonic deformation, it is suggested that they are much younger than the surrounding seafloor (overall >15.0 Ma) and are of Holocene age (<10 ka). The VebVolc expedition aims to investigate this new volcanic flank zone off-shore Iceland, which has never been sampled or directly observed. The combination of high-resolution multibeam (EM122/EM710) and seismic reflection (GI-Guns) mapping, video observations with OFOS (Ocean Floor Observation System), rock/sediment sampling (dredge/gravity coring), and basic physicochemical parameters of seawater will provide a comprehensive dataset to study the age and independence/connectivity of the volcanic system with the nearby Snæfellsnes Flank Zone, fault systems and the Iceland hotspot. The Vesturdjup Basin volcanic system provides a globally unique opportunity to study how strongly hotspots influence the seafloor around them and the nature of hotspot interaction with former rift zones.

Environmental considerations: The scientific work will strictly adhere to the Code of Conduct for Responsible Marine Research in the Deep Seas and High Seas of the OSPAR Maritime Area. Seismic, sampling, and acoustic measurements will be restricted solely to methods and areas being essential to conduct the research. Mitigation procedures will be accordant to the Code of Conduct which has been designed for the German Research Fleet. The seismic sources will have a primary volume of 90 cubic inches only, which is 60% of what is considered as low energy / low impact source.

4. Attached are charts showing (on an appropriate scale) the geographical area of the intended working areas, positions of intended stations, tracks of survey lines, and positions of moored / seabed equipment:

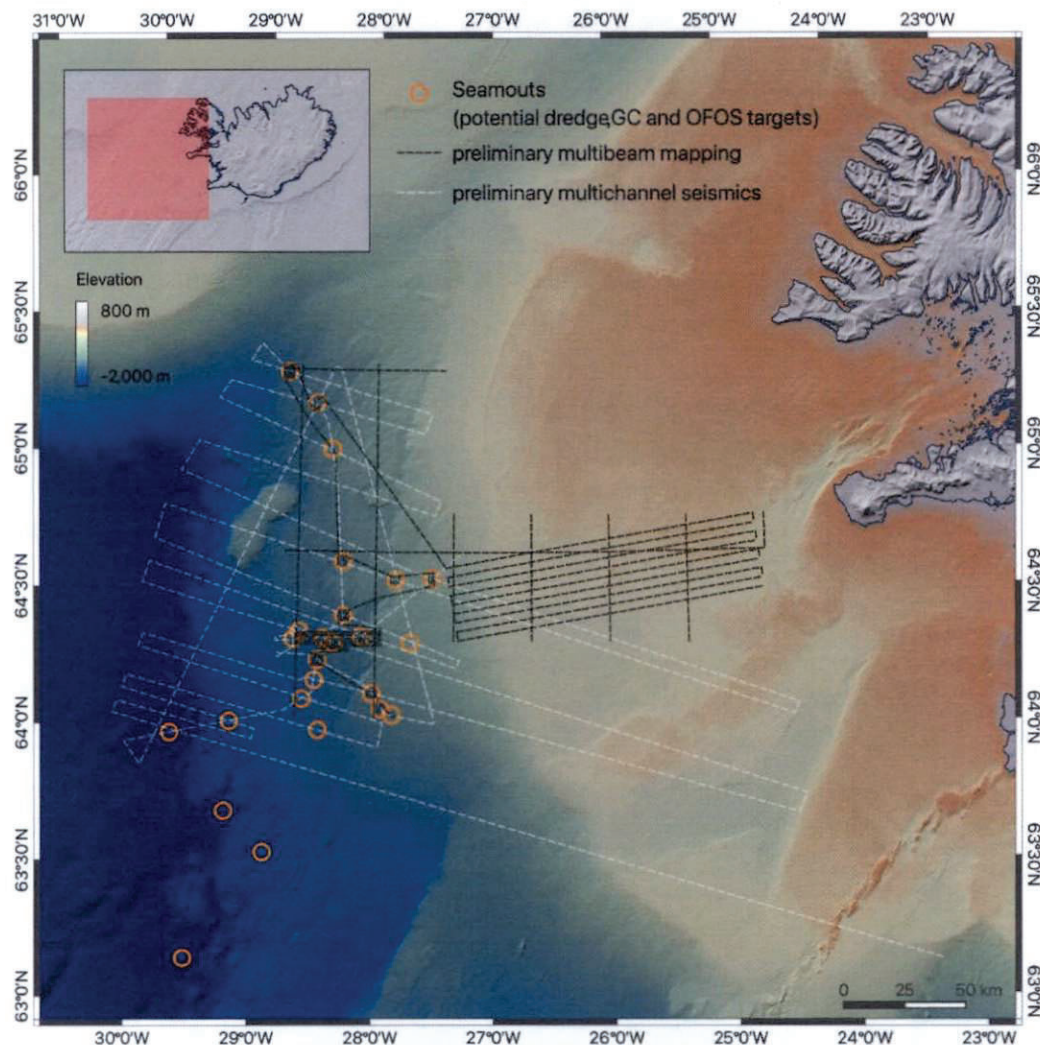


Figure 1: Overview of the working area and the preliminary position of dredges, gravity cores, and OFOS (at the seamounts) and preliminary survey lines for multibeam mapping and multi-channel seismics. Please note that the exact positions of the profiles strongly depend on the findings during the expedition, and details might be adapted within the general working area, e.g., covering some more southern seamounts.

Estimated date of first entry into EEZ of coastal state:	10.06.2024
Estimated last exit from EEZ of coastal state:	13.07.2024
Multiple EEZ entries/exits during the research cruise?	NO

5. Types of samples required (e.g., Geological / Water / Plankton / Fish / Radioactivity / Isotope) and (b) methods by which samples will be obtained (including dredging / coring / drilling/ fishing etc.).

(a) Type of samples	(b) Method
Bathymetry	Multibeam echosounder EM122/EM710
High-resolution multi-channel seismics	Two low-impact GI-sources (45 cubic inch primary volume each) and a digital 144-channel streamer or 100 m analog streamer.
Sub-Bottom-Profiler	Parametric sediment echosounder Parasound P70
Rock samples	Chain bag dredge
Sediments	Gravity corer
Seafloor video	OFOS, towed camera
Physico-chemical parameters of seawater	Miniature Autonomous Plume Recorder
Magnetic data	Gradio-/Magnetometer

6. Details of moored equipment: **No equipment will be moored.**

7. Explosives: **No explosives.**

8. Detail and reference of

(a) Any relevant previous / future cruises:

None.

(b) Any previous published research data relating to the proposed cruise. (Attach separate sheet if necessary.):

None.

9. Names and addresses of scientists of the coastal state in whose waters the proposed cruise takes place with whom previous contact has been made:

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Steinunn H. Ólafsdóttir, PhD, Hafrannsóknastofnun |Marine and Freshwater Research Institute, Botnlífrikkissvið, Demersal Division, Skúlagata 4, 121 Reykjavík, Iceland, Tel. +354 575 2000, eMail: steinunn.hilma.olafsdottir@hafogvatn.is

10. State:

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

Yes, after discussion.

- (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, after discussion.

Embarkation: Reykjavik, June 8, 2024

Disembarkation: Praia da Vitória, July 18, 2024

- (c) When research data from the intended cruise is likely to be made available to the coastal state and if so by what means:

- ***Cruise Report three months after finishing the research cruise.***
- ***Scientific publication within the following three years.***

Part C: SCIENTIFIC EQUIPMENT

COASTAL STATE: Iceland

11. Complete the following table - (indicate 'YES' or 'NO'):

List of all major marine scientific equipment it is proposed to use.	Fisheries research within fishing limits	Research concerning continental shelf out to State's margin	Waters in which equipment will be deployed			
			within 3 NM	between 3-12 NM	between 12-50 NM	between 50-200 NM
a. vessel mounted systems						
ADCP current profiler	NO	YES	NO	NO	YES	YES
USBL underwater positioning	NO	YES	NO	NO	YES	YES
Multibeam echosounder	NO	YES	NO	NO	YES	YES
Sub-bottom profiler Parasound P70	NO	YES	NO	NO	YES	YES
Permanent surface water sampling / analysis (incl. Thermosalinograph)	NO	YES	NO	NO	YES	YES
b. mobile equipment						
Sound velocity probe	NO	YES	NO	NO	YES	YES
Meteorological Sensors	NO	YES	NO	NO	YES	YES
Dust Collector	NO	YES	NO	NO	YES	YES
Ceilometer	NO	YES	NO	NO	YES	YES
Gravity corer	NO	YES	NO	NO	YES	YES
Two low-impact GI-sources (45 cubic inch primary volume each) with digital 144-channel streamer or 16-channel 100 m streamer	NO	YES	NO	NO	YES	YES
Chain Bag Dredge	NO	YES	NO	NO	YES	YES
OFOS (towed camera)	NO	YES	NO	NO	YES	YES
Miniature Autonomous Plume Recorder	NO	YES	NO	NO	YES	YES
Gradio-/Magnetometer	NO	YES	NO	NO	YES	YES

Hamburg, 27.11.2023

Date

Universität Hamburg
 CEN Centrum für Erdsystemforschung und Nachhaltigkeit
 Leitstelle Deutsche Forschungsschiffe
 Bundesstr. 55
 D-20146 Hamburg
 Germany

(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