NOTIFICATION OF PROPOSED RESEARCH CRUISE

Part A: GENERAL

1. Name of research ship: ***R.V. MARIA S. MERIAN*** Cruise No. **MSM120**

2. Dates of cruise **from 15.08.2023, St. Johns, Canada**
to 20.09.2023, Nuuk, Greenland

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 State Mecklenburg-Vorpommern, Germany***

5. Particulars of ship:

Name	***MARIA S. MERIAN***
Nationality	***German***
Overall length	***94,8 metres***
Maximum draught	***6,50 metres***
Net tonnage	***1.671 NT***
Propulsion	***Diesel Electric***
Call sign	***DBBT***
IMO No.	***9274197***

6. Crew

Name of master	***Ralf Schmidt***
No. of crew	***max. 23***

7. Scientific personnel:

Name and address of scientist in charge:	**Prof. Dr. Ralph Schneider** **Institute of Geosciences** **Christian-Albrechts-University** **Ludewig-Meyn-Str. 10** **24118 Kiel**
Phone:	**+49 (0) 431 880 1457**
Fax:	**+49 (0) 431 800 1912**
Email:	**ralph.schneider@ifg.uni-kiel.de**
No. of scientists	***max. 23***

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

Hudson Strait, Hudson Bay and Western Labrador Sea, between 66°N and 55°N, see attached map (Figure 1), in Canadian territorial waters and EEZ, partially including the 3nm zone in fjord areas and close to islands.

9. Brief description of purpose of cruise:

Scientific cruise, multibeam swath bathymetry and sediment echosounder surveys, water column and sediment sampling (upper 20 m of seafloor) for paleoclimate research.

10. Dates and names of intended ports of call:

St. John´s (Canada) for four days within the time frame 09th and 18th August 2023

=> Planned from 12th August 2023 to 15th August 2023 so far.

11. Any special logistic requirements at ports of call:

No special requirements, crew and container exchange, bunkering, air freight handling.

Part B: DETAIL

1. Name of research ship: ***R.V. MARIA S. MERIAN*** Cruise No. **MSM120**

2. Dates of cruise **from 15.08.2023, St. Johns, Canada**
to 20.09.2023, Nuuk, Greenland

3. Purpose of research and general operational methods:

Paleoceanographical and sedimentological investigations in Hundson Bay and Hudson Strait as well as in western Labrador Sea. Activities comprise biological and biogeochemical investigations of the plankton and benthic fauna as well as geochemical characterization of sediments, paleoceanographical and paleoclimatological studies. Operational methods include water sampling (in-situ pumps, Rosette water sampler), water properties (CTD), hydroacoustic bottom surveys (swath bathymetry mapping, sediment echosounder), biological sampling of plankton (nets) and benthos (multiple and box corer), sediment geochemistry (gravity corer, 20 m in length).

4. Attach chart 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:

See attached overview map (Figure 1) and detail maps (Figures 2-8), hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

Estimated date of first entry into EEZ of coastal state: 15.08.2023
Estimated last exit from EEZ of coastal state: only if needed 15.09.2023

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
Water / Plankton	**In-situ and ship pump systems, CTD-Rosette**
Geology and Benthos	**Multi-corer and gravity corer deployments only in soft sediments**
Geophysics	**Shipboard mounted Multibeam and Sediment-Echosounder Mapping**
Geochemistry and isotope chemistry	**Water and sediment samples (Multi- and Gravity corer, CTD Rosette)**

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:

MSM45 – August 2015, chief scientist: Prof. Dr. Ralph Schneider
MSM101 – June/July 2021, chief scientist: Prof. Dr. Ralph Schneider
MSM118 – June/July 2023, Nova Scotia, chief scientist: Prof. Dr. Ralph Schneider

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

- **Lochte, A.A, Schneider, R.R., Repschläger, J., Kienast, M., Blanz, T., Garbe-Schönberg, D., Andersen, 2020. Surface and subsurface Labrador Shelf water mass conditions during the last 6,000 years. Climate of the Past, 16, 1127–1143, doi.org/10.5194/cp- 16-1127-2020.**
- **Lochte, A. A., Repschläger, J., Kienast, M.,Garbe-Schönberg, D., Andersen, N., Hamann, C., Schneider, R., 2019a. Labrador Sea freshening at 8.5 ka BP caused by Hudson Bay Ice Saddle collapse. Nature Communications, 10-586**
- **Lochte, A. A., Repschläger, J., Seidenkrantz, M-S., Kienast, M., Blanz, T., Schneider, R.R., 2019b. Holocene water mass changes in the Labrador Current. The Holocene 1-15**

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:

- **Dr. Anne de Vernal, Université du Québec á Montréal, Centre GEOTOP CP888, Québec Montréal, Canada H3C 3P8**
- **Prof. Stephanie Kienast, Dalhousie University, Department of Oceanography, LSC Ocean Wing, 1355 Oxford Street, Halifax, Nova Scotia, Canada B3H 4R2**
- **Dr. Guillaume St-Onge, ISMER, Chaire de recherche du Canada en géologie marine, Université du Québec à Rimouski, GEOTOP**
- **Dr. Patrick Lajeunesse, Département de géographie, Pavillion Abitibi –Price, 2405, rue de la Terrasse, local 3109, Université Laval, Québec G1VA6**

10. State:

(**a**) Whether visits to the ship in port by scientists of the coastal state concerned will be acceptable:
Yes, in coordination with the chief scientist, shipping company and captain as well as with the coordination office for German research vessels, well in advance of the cruise schedule.

(**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, already 7 berths are allocated to Canadian scientists to participate in the cruise, see lists of contacts above.

All persons on board must be both fully vaccinated and boosted against COVID-19 with a WHO-approved vaccine.
Embarkation: St. John's, 14th August 2023
Disembarkation: Nuuk, 20th September 2023

(**c**) When research data from 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.**
- **Post cruise research projects based on bilateral cooperation between German and Canadian scientists**
- **Scientific publication within the following five years.**

-

Part C: SCIENTIFIC EQUIPMENT COASTAL STATE: **CANADA**

11. Complete the following table - (indicate 'YES' or 'NO'):
Please add in "b" the equipment you will bring to the vessel and complete the table with yes or no. Note that forgotten equipment can led to restrictions in research.

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**	**Yes**	**Yes**	**Yes**	**Yes**
Multibeam echosounder	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Sub-bottom profiler Parasound P70	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Permanent surface water sampling / analysis (incl. Thermosalinograph)	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
b. mobile equipment						
XSV Expendable Sound Velocimeter	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Meteorological Sensors	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
CTD/Rosette water sampler	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
In-situ water pumps	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Multi-(Frahm-)Corer	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Gravity Corer	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Tab. 1 General station planning in work areas (for maps see Fig. 1 and subset figures 2 to 8). Site locations will depend on hydroacoustic profiling results; CTD-Rosette, GC- 15 to 20-m gravity coring; MUC / BC / FC – (Multi/Box/Frahm-) Corer deployments. Hydroacoustic profiling with PARASOUND P70, Kongsberg Multibeam EM120.

Station	Lat./Long	Water depth (m)	Operations
Western Hudson Strait			
Work area A	Hydroacoustic profiling in box: 63°54.30´N, 75°28.92´W 63°07.44´N, 72°26.76´W 62°32.52´N, 73°05.10´W 63°10.68´N, 76°16.38´W	c. 400	2 sites: CTD (in-situ pump); MUC/BC/FC, GC (16 m)
Foxe Basin / Trough			
Work area B	Hydroacoustic profiling in polygon: 64°42.72´N, 81°57.66´W 65°35.40´N, 82°46.56´W 65°42.12´N, 79°35.52´W 64°35.52´N, 79°43.92´W	c. 100-400	2 sites: CTD (in-situ pump); MUC/BC/FC, GC (16 m)
Central Hudson Bay			
Work area C	Hydroacoustic profiling in box: 60°02.52´N, 85°19.50´W 60°23.64´N, 85°19.08´W 60°24.42´N, 84°41.58´W 60°03.18´N, 84°43.68´W	c. 250	2 sites: CTD (in-situ pump); MUC/BC/FC, GC (16 m)
Winisk Trough			
Work area D	Hydroacoustic profiling in box: 58°15.30´N, 83°43.32´W 58°09.60´N, 83°09.30´W 57°51.54´N, 83°20.28´W 57°57.30´N, 83°54.18´W	c. 250	2 sites: CTD; MUC/BC/FC, GC (16 m)
Great Whale River / Nastapoka Sound			
Work area E	Hydroacoustic profiling in sea area of polygon: 57°10.37´N, 76°59.47´W 56°04.63´N, 77°11.16´W 55°13.71´N, 78°45.30´W 55°01.29´N, 78°25.36´W 55°16.49´N, 77°44.29´W 55°39.77´N, 77°07.26´W 56°02.29´N, 76°42.22´W 56°22.48´N, 76°31.72´W 56°41.01´N, 76°32.14´W 57°11.03´N, 76°34.73´W	100-160	4 sites: CTD; MUC/BC/FC, GC (16 m)
Coats and Mansel Fan			
Work area F	Hydroacoustic profiling in box: 63°06.90´N, 81°09.00´W 62°42.96´N, 79°28.50´W 62°11.88´N, 80°30.72´W 62°32.04´N, 81°56.10´W	200-300	2 sites: CTD; MUC/BC/FC, GC (16 m)

Salluit Fjord			
Work area G	Hydroacoustic profiling in sea area of polygon: 62°26.68´N, 75°40.66´W 62°17.73´N, 75°41.89´W 62°16.71´N, 75°37.28´W 62°14.49´N, 75°40.89´W 62°11.63´N, 75°49.34´W 62°09.96´N, 75°54.18´W 62°09.50´N, 75°51.20´W 62°07.56´N, 75°46.26´W 62°11.09´N, 75°43.82´W 62°12.43´N, 75°38.25´W 62°15.17´N, 75°31.35´W 62°16.32´N, 75°30.63´W 62°17.16´N, 75°26.10´W 62°17.81´N, 75°24.81´W 62°18.77´N, 75°22.81´W 62°25.95´N, 75°21.43´W	c. 150	2 sites: CTD; MUC/BC/FC, GC (16 m)
Labrador Sea			
Work area H	Hydroacoustic profiling in box: 62°07.74´N, 61°28.51´W 61°23.10´N, 61°28.51´W 61°23.10´N, 57°39.91´W 62°07.74´N 57°39.91´W	c. 2600	2 sites: CTD; MUC/BC/FC, GC (16 m)

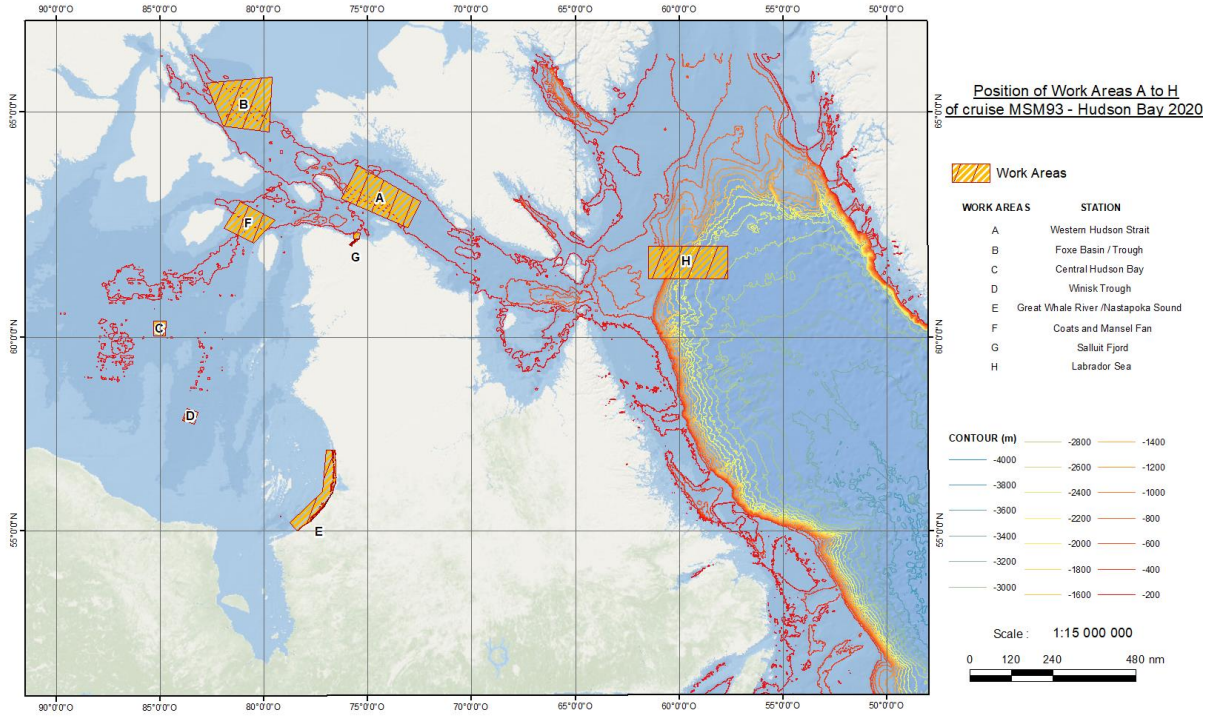

Figure 1 Schematic illustration of working areas (yellow boxes) in Hudson Bay (Areas A – F) and Labrador Sea (Area H) with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

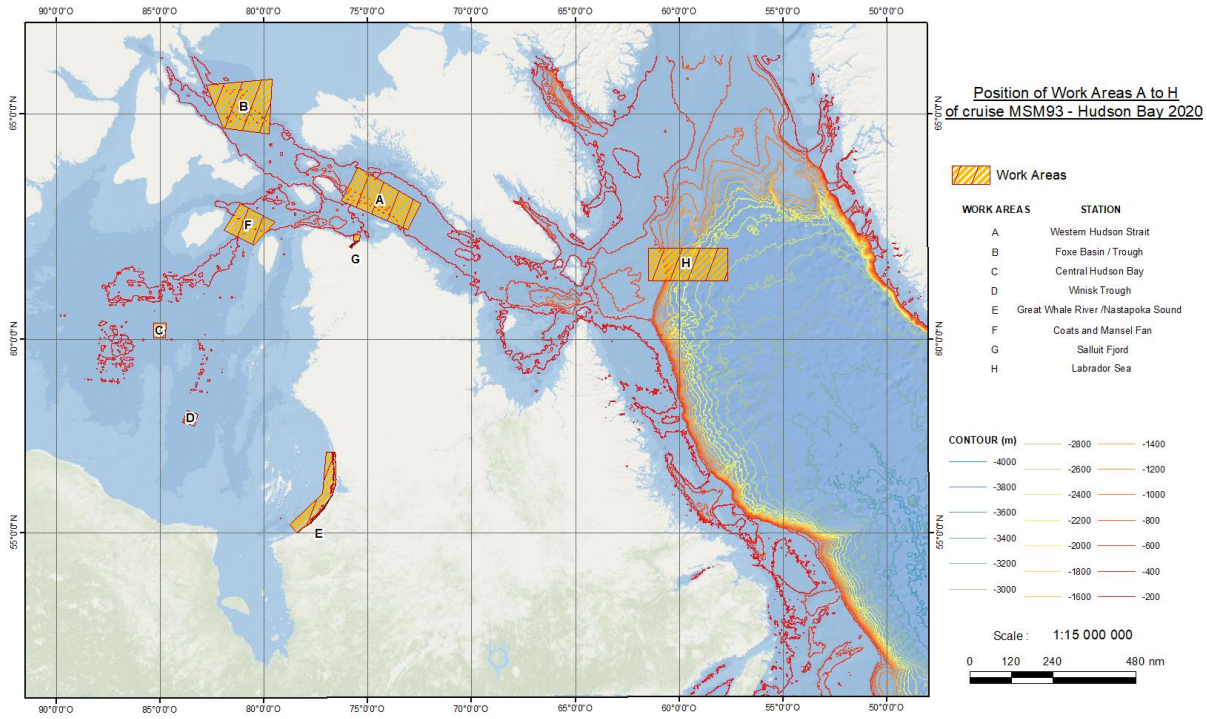

Figure 1 Schematic illustration of working areas (yellow boxes) in Hudson Bay (Areas A – F) and Labrador Sea (Area G) with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

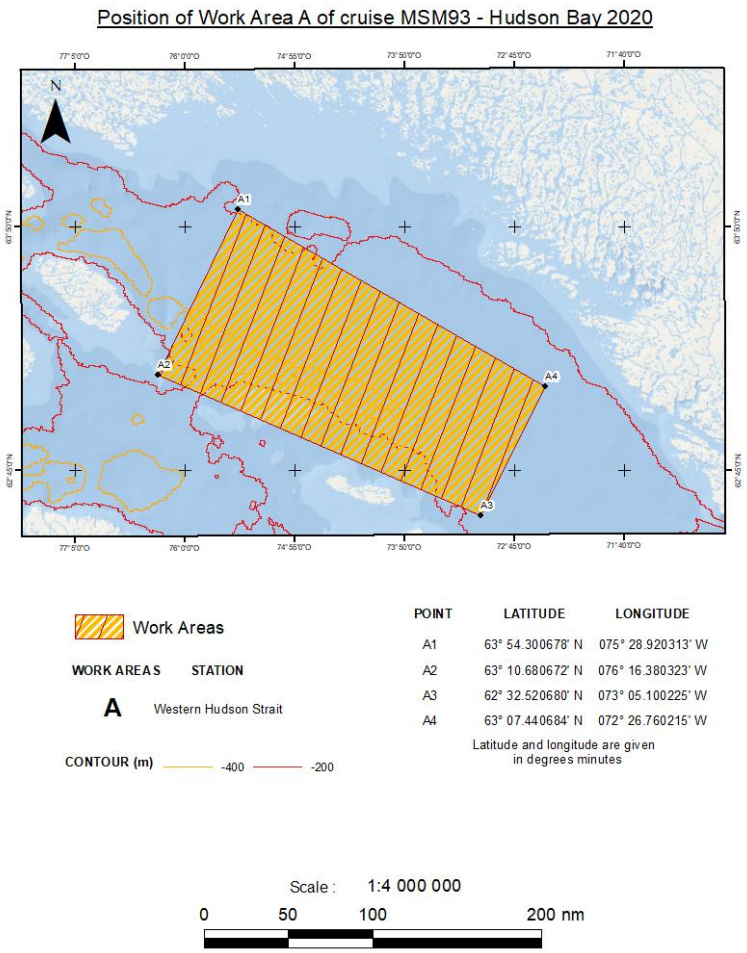

Figure 2 Schematic illustration of working area A (yellow box) in Western Hudson Strait with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

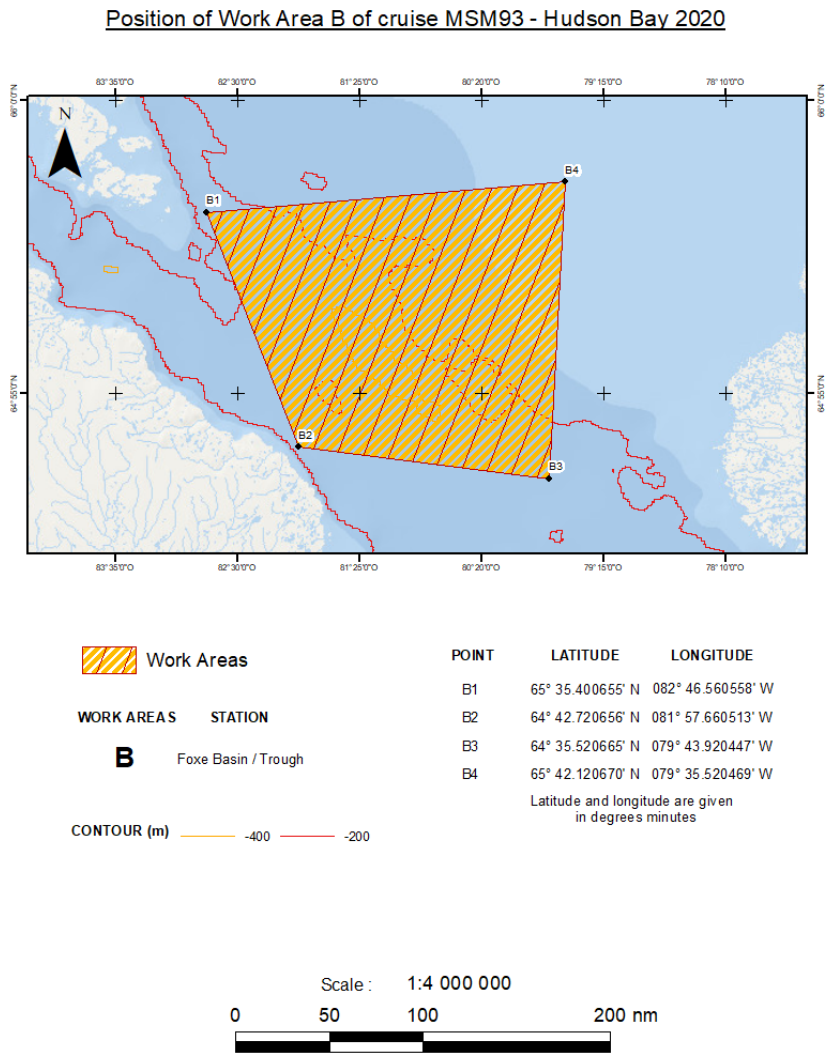

Figure 3 Schematic illustration of working area B (yellow box) in Foxe Basin/Trough with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

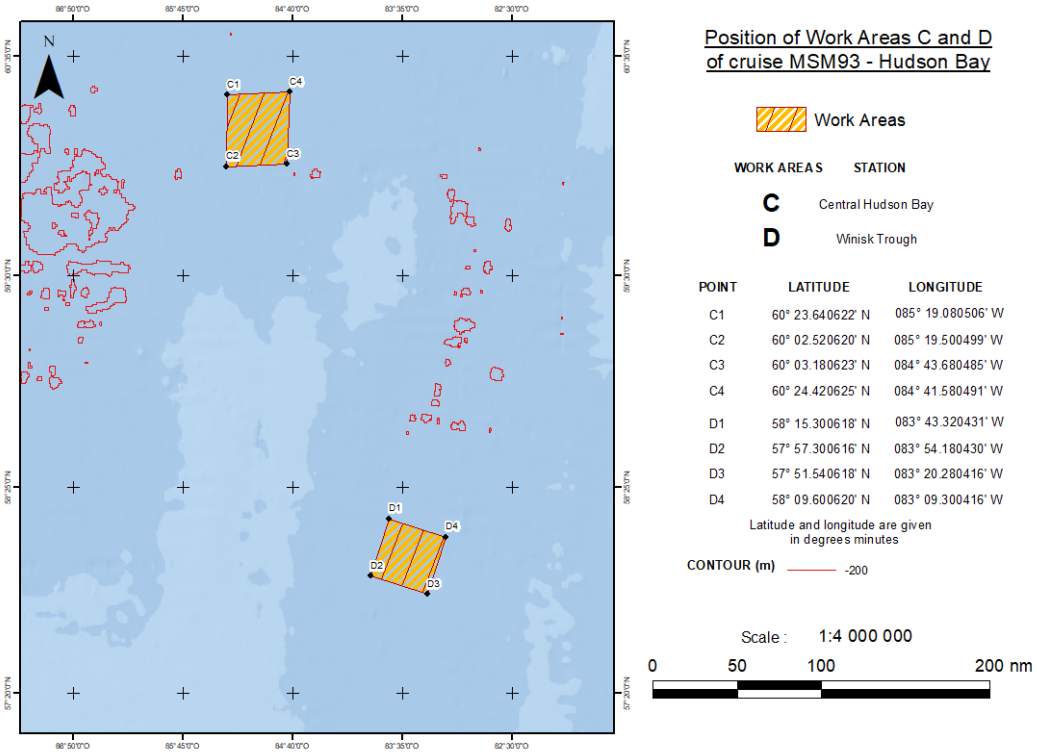

Figure 4 Schematic illustration of working area C and D (yellow boxes) in Central Hudson Bay and Winisk Trough with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

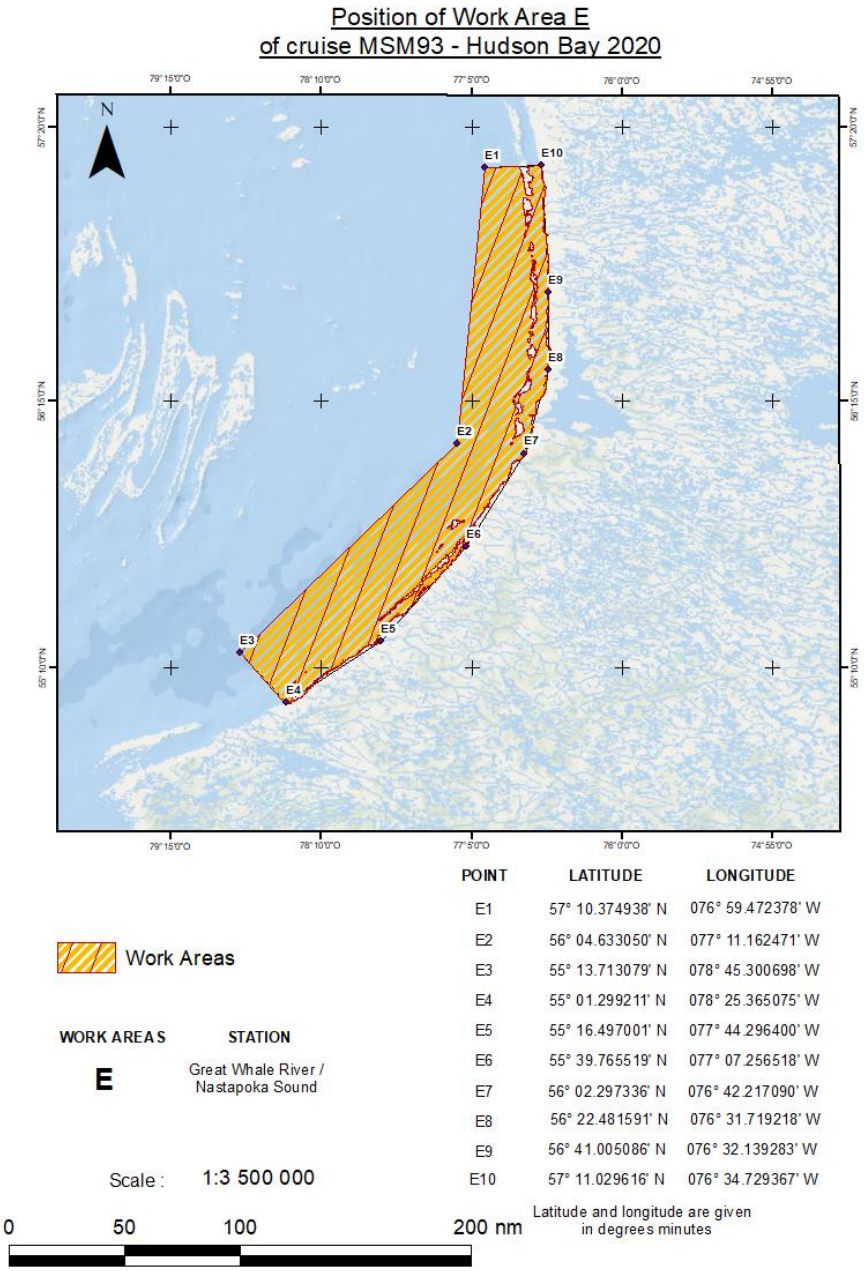

Figure 5 Schematic illustration of working area E (yellow box) Great Whale River/Nastapoka Sound with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

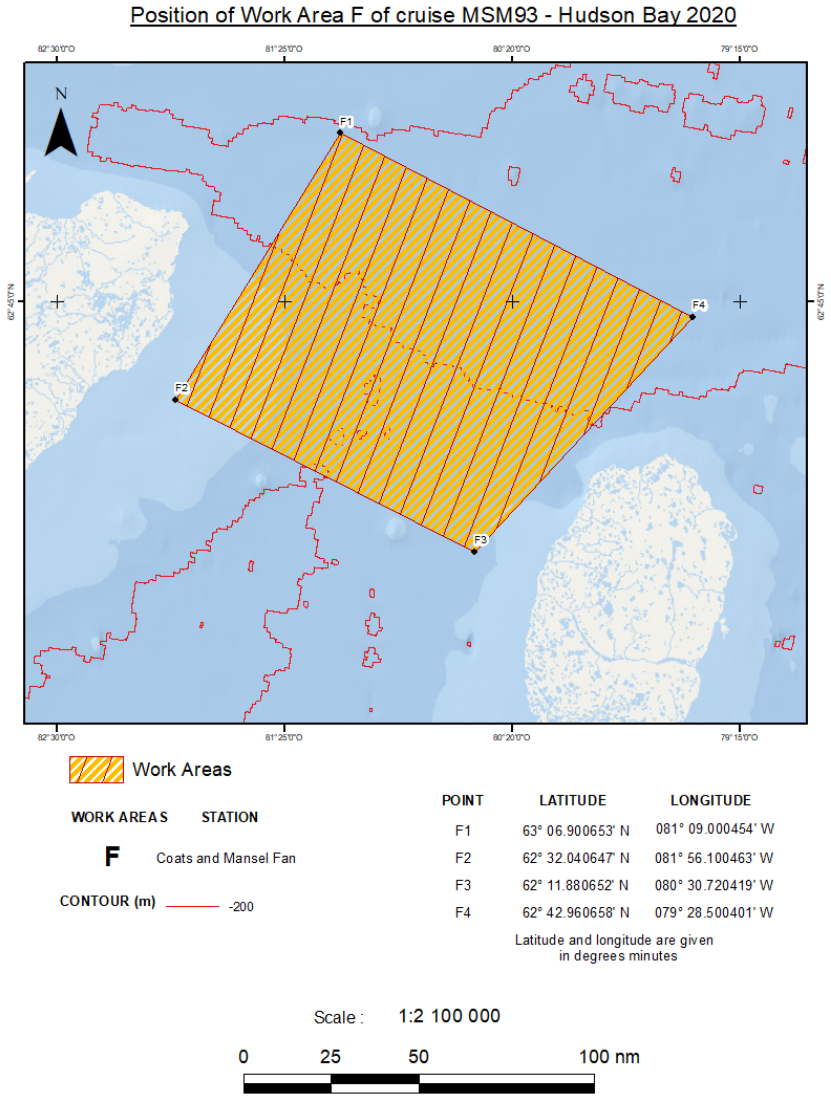

Figure 6 Schematic illustration of working area F (yellow box) Coats and Mansel Fan with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

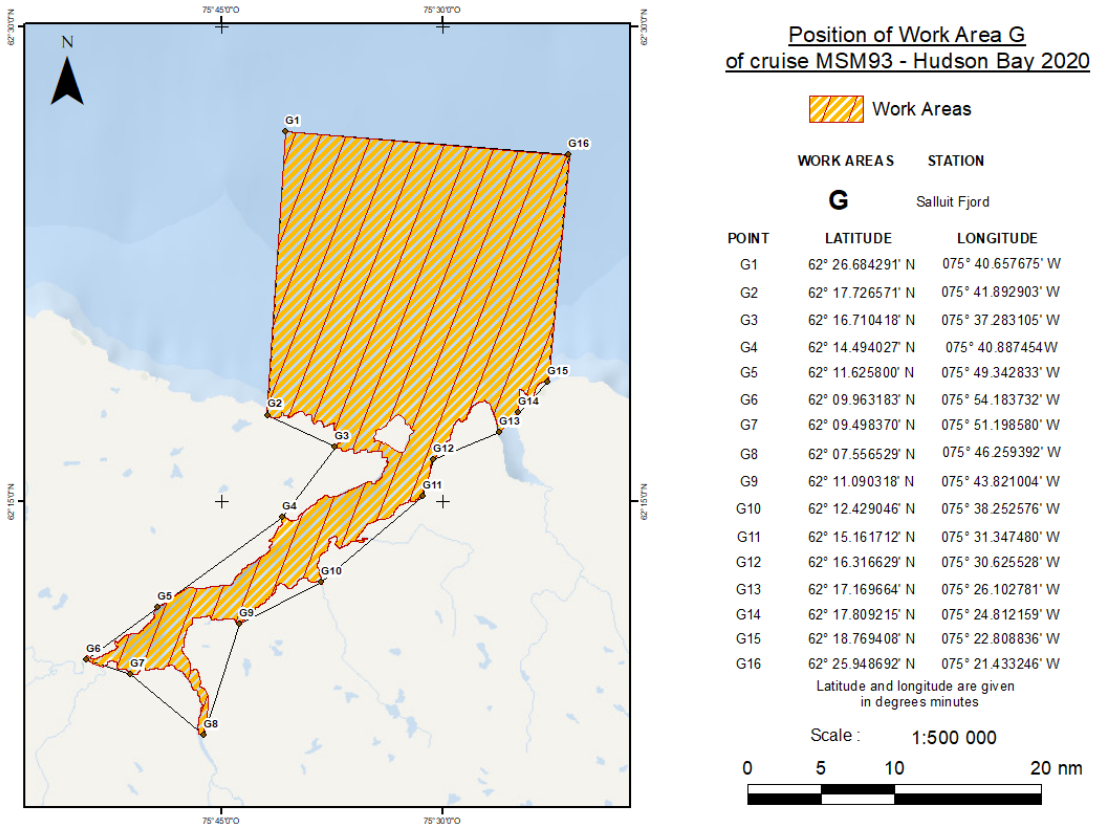

Figure 7 Schematic illustration of working area G (yellow box) in Salluit Fjord with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

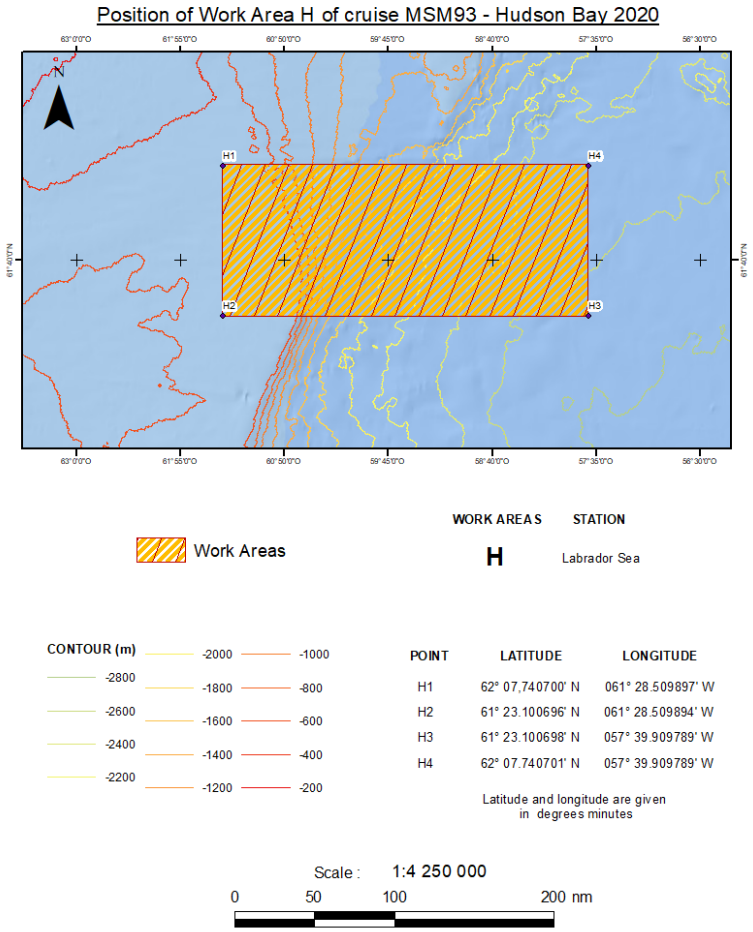

Figure 8 Schematic illustration of working area H (yellow box) in Labrador Sea with bathymetric survey for plankton and geological sampling, hatched boxes outline hydro-acoustic survey areas with preliminary identified boxes where water column and sediment sampling should take place.

Hamburg, 01.02.2023

Date

(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