

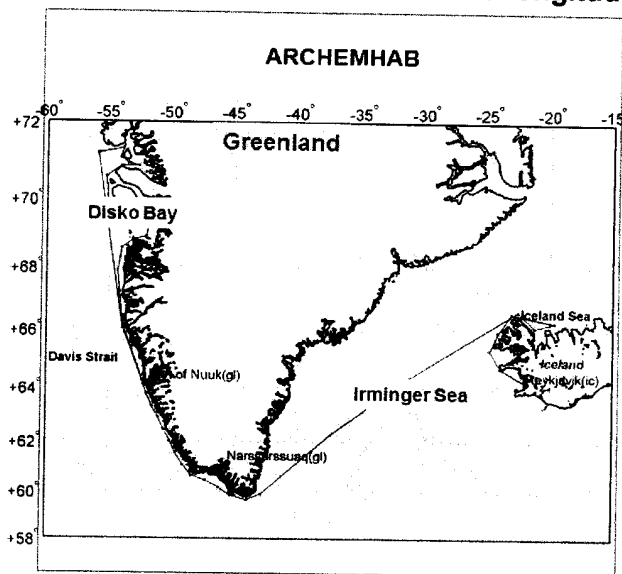
NOTIFICATION OF PROPOSED RESEARCH CRUISE

GENERAL

Part A

01. Name of research ship: **MARIA S. MERIAN** Cruise No. **MSM21/3**
02. Dates of cruise from **26.07.2012** Nuuk to **10.08.2012** Reykjavik
03. Operating Authority **Institut für Meereskunde / University of Hamburg**
Bundesstr. 53, D-20146 Hamburg, Germany
Tel.: +49-40-42838-3974 - Fax: +49-40-42838-46 44
04. Owner (if different from para 3) **Federal State Mecklenburg-Vorpommern, Germany**
-
05. Particulars of ship:
- | | |
|-----------------|------------------------|
| Name | <i>MARIA S. MERIAN</i> |
| Nationality | <i>German</i> |
| Overall length | <i>94.8 metres</i> |
| Maximum draught | <i>6.5 metres</i> |
| Nett tonnage | <i>1750 NRZ</i> |
| Propulsion | <i>Diesel Electric</i> |
| Call sign | <i>D B B T</i> |
06. Crew
- | | |
|----------------|-----------------------|
| Name of master | <i>R. Schmidt</i> |
| No. of crew | <i><u>max. 23</u></i> |
07. Scientific personnel:
- | | |
|---|--|
| Name and address of scientist in charge | <i>Prof. Dr. Allan Cembella
Alfred Wegener Institut für Polar und Meeresforschung
Am Handelshafen 12
27570 Bremerhaven</i> |
| Tel./Fax/Telex No. | <i>+4947148311494</i> |
| E-Mail: | <i>Allan.cembella@awi.de</i> |
| No. of scientists | <i><u>max. 23</u></i> |

**08. Geographical areas in which ship will operate
(with reference in latitude and longitude)**



Proposed cruise track of *R/V Maria S. Merian* during summer 2012 from the West coast of Greenland (Disko Bay) to Reykjavik, Iceland. Start 25-Jul-2012 Nuuk port (64° 11' N- 51° 45' W)-Disco Bay (71° 20,26' N-53° 57,26' W)-Reykjavik 10-Aug-2012 (64° 9' N-21° 56' W). See Appendix for detailed cruise plan and maps.

09. Brief description of purpose of cruise

The mission of the cruise is to gain insights into the ecological chemistry of the west Greenland Sea and Island: 1) investigations on fresh water input from melting glacial on the water chemistry and microbial communities; 2) focus on harmful algal bloom species biogeography, toxicity and dynamics in Greenland and Iceland fjordal systems

The **ARCHEMHAB** expedition will focus on interactions and feedbacks between hydrography, biogeochemistry, plankton composition, with special regard to harmful algae and their toxin composition, and molecular genetic diversity as associated with oceanographic and bio-optical properties in fjords of western Greenland. These fjords differ by their current ice conditions, glacial meltwater discharge and prehistory. The data will provide a basis to evaluate and quantify regional effects induced by accelerated freshwater input. The molecular composition of dissolved organic matter will be used to define ecological and chemical provinces which are determined by the degree of glacial meltwater and the related abundance and distribution of bacterial and algal species. We will focus on key questions regarding population genetics in relation to molecular ecological and the chemically defined provinces. The biogeography of harmful algal species that may be associated with the changing salinity gradient will be related to the biogeochemical and bio-optical regime of the fjords. The total toxin content of individual toxin classes as well as sum parameters for all toxins will be measured in seawater and algal matrices. Disko Bay and the adjacent region vary in their amount of glacial freshwater which offers the possibility to directly compare typical marine waters with systems strongly influenced by glacial meltwater.

10. Dates and names of intended ports of call

Reykjavik, Iceland for four days in a period from 07th to 16th August 2012. Intended so far from 10th of 13th August 2012.

11. Any special logistic requirements at ports of call

Container handling, Crew change, bunkering

DETAIL

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Part B

01. Name of research ship **MARIA S. MERIAN** Cruise No. **MSM21/3**
02. Dates of cruise from **26.07.2012 Nuuk** to **10.08.2012 Reykjavik**
03. Purpose of research and general operational methods

The research proposed is to explore the ecological chemistry of the Greenland west coast and Island. Investigations will be conducted on fresh water input from melting glacial on the water chemistry and microbial communities, with an additional focus on harmful algal bloom species biogeography, toxicity and dynamics in Greenland and Iceland fjordal systems. In addition to profiling standard oceanographic parameters (temperature, salinity, current velocity), we propose to deploy advanced bio-optical sensing systems based upon both passive (absorbance, turbidity, hyperspectral underwater light field) and active (fluorescence) optical principles to gain insights into the temporal and spatial distribution of biomass, pigments, particulates and coloured dissolved organic matter (CDOM) via in situ fluorescence and EEM-spectroscopy with spectral absorption. The analysis of inorganic nutrients will be conducted by flow-through autoanalyzer. Plankton samples will be obtained by pumping from discrete depths in the euphotic zone, and also by means of plankton net tows and entrapment bottle casts. A limited number of benthic sediment samples will also be collected by core sampling for analysis of the toxic dinoflagellate cyst composition. On board analysis of toxins will be carried out by mass spectrometry coupled with liquid chromatography and DNA sequencing of plankton assemblages will be done on board with pyrosequencing equipment.

04. 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 geographical coordinates for the cruise transect stations and also map of the sampling areas). No moorages, benthic equipment installations or drifters will be deployed.

05. Types of samples required, e.g. Geological / Water / Plankton / Fish / Radio-activity / Isotope

Water and plankton (< 150 µm mesh-size) in the upper water column and **sediments** for isolation of benthic cysts of planktonic stages will be collected. No fish will be collected and stable/ radioactive isotopes will not be part of the sampling regime. Samples will be collected by **pumping, CTD-Rosette-Sampler, Plankton-net and sediment core sampler**.

06. Details of moored equipment:

No deployment needed

D a t e s

Laying	Recovery	Description	Latitude	Longitude
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07. Explosives: *no explosives will be used*

- (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) Position in latitude and longitude
- (h) Dates of detonation

08. Detail and reference of**(a) Any relevant previous / future cruises**

NORCOHAB I (RV Poseidon P0352), **NORCOHAB II** (RV Heincke HE302),

NORCOHAB III (RV Heincke HE358)

**(b) Any previous published research data relating to the proposed cruise.
(Attach separate sheet if necessary.)****Peer-reviewed publications derived from previous relevant cruises:**

Krock, B., Tillmann, U., John, U. and Cembella, A. (2008) LC-MS-MS aboard ship: tandem mass spectrometry in the search for phycotoxins and novel toxigenic plankton from the North Sea. *Anal. Bioanal. Chem.* 392(5), 797-803., doi:10.1007/s00216-008-2221-7.

Krock, B., Tillmann, U., John, U. and Cembella, A. (2009) Characterization of azaspiracids in plankton size-fractions and isolation of an azaspiracid-producing dinoflagellate from the North Sea. *Harmful Algae*, 8, 254-263., doi:10.1016/j.hal.2008.06.003.

Tillmann, U., Elbrächter, M., Krock, B., John, U. and Cembella A. (2009) *Azadinium spinosum* gen. et sp. nov (Dinophyceae) identified as a primary producer of azaspiracid toxins. *European Journal of Phycology*, 44(1): 63-79.

Alpermann, T.J., Tillmann, U., Beszteri, B., Cembella, A.D. and U. John (2010) Phenotypic variation and genotypic diversity in a planktonic population of the toxigenic marine dinoflagellate *Alexandrium tamarense*. *Journal of Phycology*, 46(1), 18-32.

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

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, if requested
- (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
Scientific publication of all data within the following three years

SCIENTIFIC EQUIPMENT

COASTAL STATE: Iceland

List of all major Marine Scientific Equipment it is proposed to use and indicate waters in which it will be deployed	Fisheries Research within Fishing Limits	Research concerning Continental Shelf out to Coastal State's Margin	Within 3 NM	Between 3 - 12 NM	Between 12 - 50 NM	Between 50 - 200 NM
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a) vessel mounted systems: hydroacoustic mapping / measuring (incl. ADCP, Parasound and multibeam)	No	Yes	Yes	Yes	Yes	Yes
permanent surface water sampling / pumping (incl. Thermosalinograph)	No	Yes	Yes	Yes	Yes	Yes
b) mobile equipment:						
Plankton nets (phytoplankton, zooplankton)	No	Yes	Yes	Yes	Yes	Yes
Diaphragm pump	No	Yes	Yes	Yes	Yes	Yes
Rosette sampler with entrapment bottles and biooptical and physical sensors	No	Yes	Yes	Yes	Yes	Yes
Wire-deployed benthic core sampler	No	Yes	Yes	Yes	Yes	No