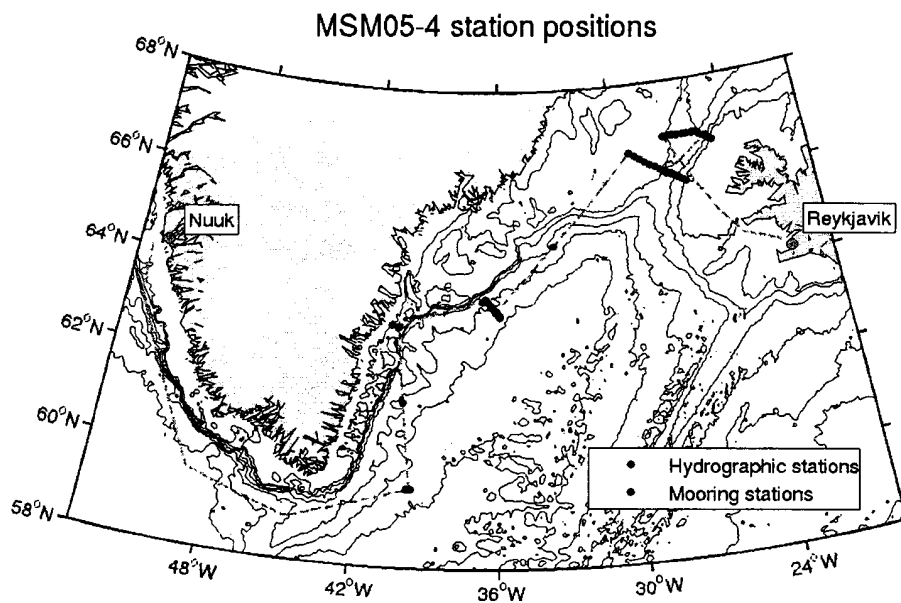


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**Short Cruise Report
RV MARIA S. MERIAN Cruise MSM05-4**

**Nuuk - Reykjavik
5. July – 16. July 2007
Chief Scientist: Detlef Quadfasel
Captain: Klaus Bergmann**



Ship track of RV Maria S. Merian cruise MSM05-4 with locations of moorings and CTD casts marked.

Objectives

RV Maria S. Merian cruise MSM05-4 was carried out jointly by the Institut für Meereskunde at the Centre for Marine and Atmospheric Sciences of the University of Hamburg, IfM-GEOMAR at the University of Kiel and the Lowestoft Laboratory of CEFAS. Scientists and technicians from the Naturinstitut in Nuuk (Greenland), Scripps Institution of Oceanography La Jolla, USA, the Faroese Fisheries Laboratory, Torhavn, the Germanischer Lloyd, Hamburg, and the Institut für Seefahrt Leer also participated in the cruise.

The measurements mainly contributed to three projects:

- the Marine Environment and Security for the European Area (MERSEA), funded by the European Union
- the Arctic Subarctic Ocean Flux Study (ASOF), partly funded by the European Commission under DAMOCLES, and
- the Nordatlantikprojekt, funded by the German Ministry of Education and Research

The main objective of the cruise was to recover and deploy self contained current meter and hydrographic moorings for the above projects. In addition, 47 CTD profiles were acquired at selected locations and underway measurements of meteorological and near surface ocean parameters were made, using the ship board observing system. Additional measurements were carried out to study vibrations of the of the vessel's moon pool structure. Also water samples for studying the CO₂ uptake of Polar waters were taken.

Narrative

RV Maria S Merian sailed from Nuuk at 9 a.m. on July 6th. Already in the fjord several runs with different ship speeds were done to explore vibrations in the ship's moon pool under different conditions. These measurements were carried out by the German Lloyd and showed that only with open moon pools and speeds above 12 knots significant vibrations occurred. More such measurements were done later during the cruise, under normal scientific working conditions.

On Sunday morning (July 8th) the first mooring position was reached in the central Irminger Sea (CIS). This 3000 m long mooring is maintained by IfM-GEOMAR and is equipped with sensors measuring physical (temperature, salinity and currents) and biogeochemical parameters (Chlorophyll, nutrients, pCO₂). Data are transmitted online via a satellite link to the home laboratory. CIS was retrieved in just under three hours and successfully re-deployed in the evening.

During the afternoon of July 9th Merian reached the mooring array on the East Greenland Shelf at 63° N. Here two moorings were recovered, a bottom mounted ADCP and a Microcat string measuring the freshwater content of the water column. Unfortunately the upper and most important part of the Microcat mooring had been ripped off, presumably by one of the many ice bergs passing the area. It was then decided to re-deploy the ADCP only.

Of the four deep moorings covering the overflow plume on the continental slope off Angmagssalik deployed during the previous summer only two could be recovered. Since no acoustic contact to the releasers could be made, we made three attempts to drag for the moorings, unfortunately without success. A few CTD profiles were run during the night to map the hydrographic structure of the overflow plume, to calibrate the Microcats

and to test the acoustic releasers. All four moorings were re-deployed using spare instrumentation. Work here finished on July 12th in the morning.

After steaming about 200 miles Merian reached Denmark Strait on July 13th. A hydrographic section over the strait's sill was occupied, covering the northward flowing Irminger Current in the east and the southward flowing East Greenland Current in the west. On July 14th two ADCP moorings were deployed on the sill. A second section was then run about 70 miles north of the sill and an inverted echo sounder deployed on the eastern flank of the strait. After finishing the CTD section on Sunday, July 15th at 9:30 a.m. Merian sailed towards Reykjavik, where she went alongside in the old harbour on Monday, July 16th at 10 a.m.

Acknowledgements

We like to thank captain Klaus Bergmann, his officers and crew of RV Maria S. Merian for their support of our measurement programme and for creating a very friendly atmosphere on board. We also appreciate that Thor was in a good mood during the first half of July and provided us with weather allowing an efficient use of the cruise time.

The ship time of Merian was provided by the Deutsche Forschungsgemeinschaft within the core program METEOR/MERIAN. Financial support for the different projects carried out during the cruise was provided through the EU-Projects MERSEA and DAMOCLES and the German Ministry of Education and Research (Nordatlantik Programm). We also benefited from financial contributions by the research institutes involved. We gratefully acknowledge all this support.

Mooring recoveries:

MERSEA:	CIS-06:	59° 40.05' N	39° 43.36' W	2808 m
		Released:	08.07.2007	10:34 Z
		On deck:		13:34 Z
ASOF:	ADCP-06	63° 01.05' N	40° 30.95' W	220 m
		Released:	09.07.2007	15:55 Z
		On deck:		17:20 Z
ASOF:	TUBE-28	63° 00.22' N	40° 32.73' W	305 m
		Released:	09.07.2007	18:06 Z
		On deck:		18:52 Z
ASOF:	F1/2	63° 35.48' N	36° 39.26' W	1717 m
		Released:	10.07.2007	09:12 Z
		On deck:		10:04 Z
ASOF:	UK1-06	63° 29.01' N	36° 17.98' W	1988 m
		10.07.2007	10:14 Z	
		No acoustic contact, later dragging not successful		
ASOF:	G1-06	63° 22.10' N	36° 04.37' W	2160 m
		10.07.2007	12:45 Z	
		No acoustic contact, later dragging not successful		
ASOF:	UK2-06	63° 16.92' N	35° 52.09' W	2358 m
		Released:	10.07.2007	14:45 Z
		On deck:		15:38 Z

Mooring deployments

MERSEA:	CIS-07	59° 40.03' N 39° 42.71' W	2812 m	
		Top Buoy in water: 08.07.2007	18:13 Z	
		Anchor released:	21:32 Z	
ASOF:	ADCP-07	63° 02.43' N 40° 51.39' W	282 m	ADCP
		63° 02.45' N 40° 51.69' W	250 m	anchor
		ADCP released:09.07.2007	23:07 Z	
ASOF:	F1/2-07	63° 35.53' N 36° 38.93' W	1714 m	
		Top Buoy in water: 11.07.2007	13:34 Z	
		Anchor released:	14:39 Z	
ASOF:	UK1-07	63° 29.03' N 36° 17.96' W	1989 m	
		Top Buoy in water: 11.07.2007	16:26 Z	
		Anchor released:	17:17 Z	
ASOF:	G1-07	63° 23.13' N 36° 04.24' W	2194 m	
		Top Buoy in water: 11.07.2007	19:02 Z	
		Anchor released:	19:50 Z	
ASOF:	UK2-07	63° 16.89' N 35° 51.97' W	2361 m	
		Top Buoy in water: 11.07.2007	21:16 Z	
		Anchor released:	22:10 Z	
NA:	HHDS1-07	66° 04.72' N 27° 04.89' W	667 m	
		Top Buoy in water: 14.07.2007	08:42 Z	
		Anchor released:	08:44 Z	
NA:	HHDS2-07	66° 07.25' N 27° 16.21' W	577 m	
		Top Buoy in water: 14.07.2007	09:31 Z	
		Anchor released:	09:33 Z	
NA :	HHDS3-07	66° 45.19' N 25° 00.08' W	703 m	
		Released: 14.07.2007	21:10 Z	