

FS Maria S. Merian

Reise MSM102 (GPF 20-1-31)

23.07. – 09.09.21, Emden – St. John's - Emden

Weekly Report No. 1, 23.07. – 25.07.2021

Sediment Transport in the Northwest Atlantic Mid-Ocean Channel (NAMOC), Labrador Sea



Maria S. Merian-Cruise MSM102 will investigate the Northwest Atlantic Mid-Ocean Channel (NAMOC) by means of acoustic and sedimentological methods. The NAMOC is the longest known deep sea channel in the World located between Greenland and Canada. The channel extends over 4000 km from offshore Hudson Strait, through the Labrador Sea, circumnavigating the Grand Banks of Newfoundland and terminating at the northern limit of the Sohm Abyssal Plain. It was a major sediment transport pathway during Quaternary glacial cycles, directing sediment from the subaerial to the deep-sea environment. NAMOC exhibits features similar to fluvial systems with tributaries, channel meanders, levees, point bars, Yazoo channels, and a prominent thalweg. The detailed morphologies and morphometrics of the system, however, are not known. The objective of Cruise MSM102 is to enable the quantitative reconstruction of fundamental flow properties of turbidity currents (e.g. thickness, speed and concentration) that created and maintained NAMOC. This understanding is critical for estimation of the role that this sedimentary pathway had in directing sediment and nutrients from the land to the deep sea in response to deglaciation of the northeastern North American and Greenland ice sheets. To achieve these objectives, we will realize a detailed mapping and coring campaign of the NAMOC.



View from RV Maria S. Merian in the English Channel
(Photo: S. Krastel)

For the work, 14 scientists from Kiel University and a scientist from the German Development Institute are on board. During a stopover for bunkering in St. John's, another scientist from the Geological Survey of Canada/Bedford Institute of Oceanography will come on board. In addition, we will be supported from shore by colleagues from GEOMAR, the Geological

Survey of Denmark and Greenland, and the University of Liverpool, who are not able to participate personally due to the pandemic.

We left the port of Emden for Cruise MSM102 on July 23 at 8:30h. The long transit through the English Channel across the Atlantic Ocean towards Canada began after passing the sea lock in Emden. We are making good progress in very calm seas so far. We are using the time for testing our equipment and setting up the labs. After leaving the exclusive economic zone of Ireland tomorrow, we will start to collect ADCP (Acoustic Doppler Current Profiler), multibeam echosounder and sediment echosounder data for the DAM (German Alliance for Marine Research) project "Unterwegs Daten". We will additionally deploy floats for the international ARGO program for ocean observations while being on transit.

Everyone is well onboard and looking forward to the long voyage on the Maria S. Merian, where we – as always - received a very warm welcome.

With best regards from RV Maria S. Merian

Sebastian Krastel
(Kiel University)
At Sea, 50°00'N, 008°50'W



Preparation of seismic equipment (Photo: S. Krastel)