



MSM67 - SEGMENT

Structure and Evolution the NE Greenland continental margin in relation to the conjugate margin

(Reykjavik – Longyearbyen, 31.08.-04.10.2017)

Weekly report #1

According to the schedule of the German research vessel MARIA S. MERIAN, the vessel laid alongside in Reykjavik harbor on Monday morning (Sep, 28th). Members of the scientific crew of MSM67 arrived on the same day to discuss the loading of scientific equipment and mobilisation onboard with the ship's crew. There were 6 containers of BGR, plus one container each of both partners Geomar and GEUS (Geological Survey for Denmark and Greenland), all containing scientific equipment for our planned survey. All containers were already transported to the pier and placed in front of the vessel ready for loading.

The project SEGMENT aims on acquiring new marine-geophysical data to gain a better understanding of the deep geological structures along the East Greenland continental margin north of Jan Mayen Island. This data will contribute and help to clarify whether the opening of the North Atlantic 50-60 Mio years ago was segmentally prograding from the North or South. This joint project of Federal Institute of Geosciences and Natural resources (BGR), Geomar, GEUS and AWI Bremerhaven comprises of marine geophysical profile measurements by seismic, magnetics and gravity methods.

Processing of our application for research permission by the Greenland authorities took longer than expected. The survey license was finally granted with some requirements three days prior departure. Among others, we are requested not to commence our activities in Greenland waters before Sep 10th not to interfere with other research activities in the area. This means we must plan for an alternative survey program for the first 10 days of the cruise. However, we were prepared for this situation and had already elaborated an alternative survey program for the area around Norwegian Jan Mayen Island situated 500 km east of Greenland. An appropriate application for research permission was submitted to the Norwegian authorities well in advance and approved within very short time. We are therefore able to spend the allocated ship time in total for our research goals. By Wednesday evening all installations of our equipment onboard R/V MARIA S. MERIAN were completed and the vessel departed from Reykjavik Aug 31st as scheduled. The vessel started heading north.

After 550 nautical miles of transit we arrived in the working area south of Jan Mayen Island early morning of Sep 2nd. Here we plan for a seismic crustal transect in area of unknown crustal nature. The results will contribute to the question of how far the Jan Mayen microcontinent, which was separated from Greenland only 26 Mio years ago, extends, partly under a cover of volcanic rocks. Older sediment basins in this area experienced the same geological evolution comparable to the Greenland margin. This crustal investigations perfectly complement our planned activities for the Greenland margin.

Starting in the night from Friday to Saturday 20 ocean bottom seismometers (OBS) of GEUS and 10 OBS of Geomar were deployed along a 260 km long W-E line. After deploying airguns, magnetic sensors and a hydrophone for passive acoustic monitoring (PAM) since early Sunday

morning, we now acquire refraction seismic data along this first profile. After completing this line on Monday morning all OBS will be retrieved and we will continue with multichannel seismic data acquisition along the same line with our 4500 m streamer cable.

Two marine biologists from Seiche Ltd (UK) are among us and in charge of marine mammal observations during all survey activities. This helps us to meet the regulatory frameworks concerning marine fauna mitigation in the area and precaution measures of the Norwegian authorities but also do complete our survey in compliance with BGR's implemented best practice regime to protect the marine environment during seismic surveying.

On behalf of the 20 members of the scientific crew with kind regards from R/V MARIA S. MERIAN

Volkmar Damm
Chief Scientist



Left: An OBS of the Danish project partner GEUS will be deployed

Bottom: The seismic sources are lowered into the sea

