



## **MSM67 - SEGMENT**

### **Structure and evolution of the NE Greenland continental margin in relation to the conjugate margin**

**(Reykjavik – Longyearbyen, 31.08.-04.10.2017)**

#### **Weekly report #3**

Since the beginning of last week, we have acquired reflection seismic and additional geophysical data across the East Greenland shelf and slope. Seismic data is already under processing to determine an accurate placement of the ocean-bottom seismometers for our planned seismic refraction experiment. Bad weather encountered during the night from Tuesday to Wednesday necessitated some maintenance on the outboard instruments. On Wednesday the weather improved, and our colleagues responsible for the outboard geophysical instruments did a great job in repairing the devices. There was, in fact, ample work for a third person on deck.

There were three sightings of humpback whales, with the closest approach being 700m from the center of the seismic airgun array. Therefore, no mitigation action was necessary on this occasion. There were no acoustic detections this week. Due to the increased sea state and high winds, sighting conditions have been moderate to poor with choppy seas and some swell. The passive acoustic monitoring system is comprised of a 250 m towed cable with four omnidirectional hydrophones and a signal processing unit sampling 2 channels at 48 ks/s and 2 channels at 500 ks/s. The signals are displayed on a suite of spectrograms with detectors for frequency modulated tonal and transient pulse sounds and is also available over a headset which is monitored continually during the hours of darkness and poor visibility/ sighting conditions.

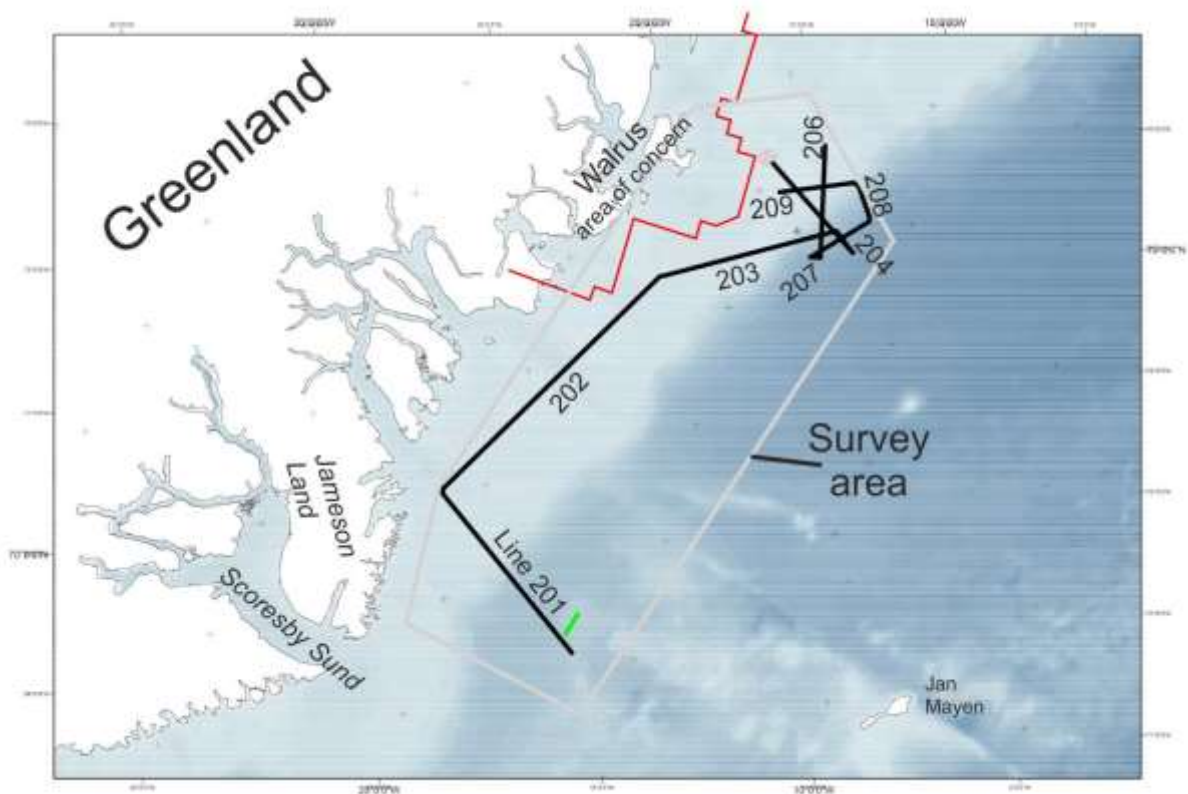
In addition to reflection seismics, we perform magnetic measurements with a towed and ship-based system, and gravity measurements by using a marine gravity device KSS32, along all profiles. Close to the pole, where we are sailing, there are large temporal variations in the Earth's magnetic field, thus we are using a gradient magnetometer. This allows to correct the daily variations by extensive processing subsequent to an integration of the magnetic gradient. However, distinct differences between the magnetic signals of continental or oceanic crust can be recognized already in pre-processed data. During this cruise a single scientist is responsible for both, potential field data acquisition and processing. This works only due to the support by scientists from other disciplines. It is worth noting the optimal support from the vessel's leadership and crew during all our activities.

Profiling was interrupted on early Thursday morning due to drift ice. Strong winds over the last days had shifted the sea ice far south and the streamer end buoy was snapped off after contact. To recover the buoy, again all outboard equipment had to be taken in during Thursday morning. Around midnight we redeployed all instruments and restarted measurement. As the drift ice has since extended throughout the northern survey area, we will skip the investigation of this region. So far we acquired about 1000 line-kilometers geophysical data.

Medical circumstances required again to drop one scientist in the port. Therefore, after retrieving the equipment, we are heading towards Longyearbyen/Spitsbergen since Saturday afternoon.

On behalf of the 19 members of the scientific crew with kind regards from R/V MARIA S. MERIAN

Dieter Franke  
Chief Scientist



Geophysical profiles acquired until 17.09.2017