



New multichannel seismic reflection data along the eastern part of Lomonosov Ridge, Arctic Ocean

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During the RV Polarstern cruise ARK XXVIII/4 in summer 2014, multichannel seismic reflection data were collected along the eastern part of the Lomonosov Ridge with the aim to provide an appropriate database for an IODP drilling proposal as well as to enhance the knowledge of sedimentary and tectonic processes in this area. Depending on the sea ice conditions and required resolution of the data, four survey set-ups with different streamer settings (300 m, 600 m, 3000 m) and airgun clusters (3, 4 G-Guns, 2 GI-Guns) were used. The dataset contains more than 3000 km of seismic profiles, including one transect along as well as several profiles across the ridge and two detailed networks close to the proposed drilling sites.

An erosional unconformity, whose presence has been confirmed first by Moran et al. (2006) by scientific drilling at the Lomonosov Ridge in 2004, is visible in the entire seismic dataset as a continuous prominent reflector band. In the seismic data, this unconformity can be found over the entire length of the investigated ridge. Below, the strata show folded and slightly disturbed Mesozoic sediments, which are lying on top of the basement with intensive faulting. These structures might be created by two past rifting events which are significant for the evolution of the Arctic Ocean. The basement faults might be as old as the Mesozoic formation of the Amerasia Basin, and may have been overprinted during the subsequent unconformity-forming event that initiated the Amundsen Basin and the final ridge's break-up.

Within the southern seismic survey additional data were gathered around the primary IODP drilling location. Aim of the drilling program is to reach layers of Oligocene and older sediment. Although, the Miocene sediment cover in this area has an almost constant thickness, at the northern end of a topographic channel the seismic data imaged a 500 m high slide scarp where the entire sedimentary column is exposed down to the proposed Oligocene. This location might be easily accessible by offset drilling.

The seismic dataset as well as preliminary results will be presented.