



Seismic and aeromagnetic investigations of the north-western Yermak Plateau

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The separation of Northeast Greenland and Svalbard is the result of large-scale strike slip movements during Cainozoic times. Geological evidence for these movements can be found onshore both on North Greenland and Svalbard. However, the role of the submarine Yermak Plateau in this process is quite speculative. New multi-channel seismic (10 km spacing) and aeromagnetic data (7.5 km spacing) across the north-western part of the plateau show that the acoustic basement strikes in similar direction as the geological units onshore Svalbard do. A prominent fault zone separates these most likely continental structures in the west from a more N-S extended transitional crustal block in the eastern part of the plateau. This north-eastern part of the plateau is characterized by strong magnetic anomalies, which at least indicate highly intruded, and stretched continental or even oceanic crust. Furthermore, the seismic data show, that the plateau-like bathymetry is quite young. During most of its Cainozoic history the Yermak Plateau had a rough topography, similar to the recent topography onshore Spitsbergen. Thus, the paleo-bathymetry might have played already an important role for the water exchange between the Arctic Ocean and the North Atlantic prior to the opening of the Fram Strait, which is today the main path way for the water masses.