



The Yermak Plateau in the Arctic Ocean in the light of reflection seismic data – implication for its tectonic and sedimentary evolution

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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. The compilation of available multi-channel reflection and wide-angle seismic data give new insights into the sedimentary and crustal structure and evolution of the plateau. The flat surface of the present-day plateau is a quite young feature. Up to 2 km of Cenozoic sediments cover a rough basement, which show similarities to the rough topography and strike of geological structures of Spitsbergen Island. In some basins more than 4 km of sedimentary rocks could be mapped. The most pronounced structure is the Sverdrup Bank, which is formed by a coherent crustal block. P wave velocities of about 4.5 km/s derived from sonobuoy data indicate that its uppermost part is most probably formed by sedimentary or volcanic rocks. Even if difficult, we made a correlation of previously defined seismic units across the Yermak Plateau and provide first indication of the sedimentation history of the area. The previously existing graben structures on the plateau might have provided early shallow pathways for water exchange between the Arctic and the Atlantic Oceans. A chaotic sedimentary apron east of the Sverdrup Bank and bright reflections near the Mosby Seamount interpreted as magmatic sills provide hints for tectonic and magmatic events during the Miocene.