

The early opening of the Eurasian Basin – geophysical data from the Yermak Plateau

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The submarine Yermak Plateau north of the Svalbard archipelago is located at the junction between the Eurasian Basin in the Arctic Ocean and the Norwegian - Greenland Sea Basin of the North Atlantic. The NE Yermak Plateau and northern Barents Sea continental margins are poorly investigated areas because of a nearly permanent ice cover hampering investigation activities by seismic operations. The knowledge about the deeper structure of the area so far is based on the interpretation of magnetic and gravity data. Major open question related to the Yermak Plateau focus on the nature of the crust, the verification of suspected collision-related structures that may have developed in conjunction with the Paleogene Eurekan deformation, and crustal features that allow to analyse how the Lomonosov Ridge was separated from the Barents-Kara shelf, i.e. the early opening of the Eurasia Basin in the Arctic Ocean. It has been thought for a long time that the Eurasian Basin is the extension of the North Atlantic seafloor into the Arctic. Based on reflection seismic data we put this concept into question and propose Late Cretaceous to Paleocene rifting between the Yermak Plateau-Morris Jesup Rise in the west and the Lomonosov Ridge in the east, oblique to the present-day seafloor spreading system in the Eurasian Basin. The rift may have extended along the NE edges of the Yermak Plateau and the Morris Jesup Rise. We suggest that the opening of the Eurasian Basin and the detachment of the elongated and narrow continental splinter that forms the Lomonosov Ridge developed along a strike-slip fault offsetting this early rift.