



Oblique opening and mantle exhumation in the western Eurasia Basin, Arctic Ocean

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Based on multichannel seismic data acquired north of Svalbard we study the Paleocene formation and the basement configuration of the slow-spreading Eurasia Basin, Arctic Ocean. An initial strike-slip movement of the Lomonosov Ridge along the North Barents Sea Margin and subsequent near-orthogonal opening of the Nansen Basin is supposed to have brought mantle material to the surface, which was serpentized during this process. Continuous spreading thinned the serpentized mantle and subsequent normal faulting produced distinct basement blocks. Gravity modeling supports the assumption of exhumed and serpentized mantle as basement rocks. Also, the Gakkel spreading ridge in northern prolongation of the seismic lines is characterized by an amagmatic or sparsely magmatic segment. From the structural similarity between the basement close to the ultra-slow spreading ridge and our study area, we conclude that the basement in the Eurasia Basin is predominantly formed by exhumed and serpentized mantle with some magmatic additions and propose that mantle exhumation has likely been active since the opening of the Eurasia Basin.