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Crustal structure of the Mendeleev Rise by ocean bottom seismometers data

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During high-latitude combined geological and geophysical expedition "Arctic-2012", wide-angle seismic surveys with ocean bottom seismometers were carried out in the Arctic Ocean along the line 740 km long, crossing the Mendeleev Rise, at about 77º N. Crustal and upper mantle Vp-velocity and Vp/Vs-ratio models were constructed. Crustal section comprises: (1) sedimentary cover (Vp from 1.6-1.9 km/s in the upper part to 4.8-5.6 km/s at the bottom, Vp/Vs from 1.9 to 2.8); (2) intermediate (metasedimentary) complex (Vp 4.6-6.0 km/s, Vp/Vs 1.9-2.0); (3) upper crystalline crust (Vp from 6.0-6.3 km/s in the upper part to 6.7 km/s in the lower part, Vp/Vs 1.70-1.73); (4) lower crystalline crust (Vp 6.8-7.3 km/s, Vp/Vs 1.74-1.78) (5) upper mantle (Vp 7.8-8.0 km/s). Crustal thickness within the Mendeleev Rise is about 32 km; almost 20 km falls on the lower crust. In general, velocity parameters and crustal thickness on the Mendeleev Rise are typical of continental crust. Increased thickness of the lower crust may be related to magmatic underplating, which in turn led to intraplate mafic volcanism and HALIP formation in this part of the Arctic.