

Velocity of seismic waves in the earth's crust and upper mantle of the Siberian platform and Baikal folded region according to underground nuclear explosions

During 1976–1987 in the former USSR in the territory of the Eastern Siberia and Yakutia ten peaceful nuclear explosions (PNE) were conducted. PNEs were measured by regional analog seismic stations located in the Baikal rift at distances from 246 to 1407 km. Based on these data the regional velocities of seismic waves in the Siberian platform, Transbaikalian block and Baikal-Patom highland were determined. According to the PNEs records obtained on the Yakutia network, the P and S wave velocities in the crust and upper mantle of the Siberian Craton were calculated [Mackey et al. 2005, Burkhard et al., 2016]. The P and S-wave velocities in the upper mantle obtained in the Baikal region are lower than in Yakutia area, while in the crust, on the contrary, they are higher. Such a spatial distribution of the velocities of seismic waves agrees well with the SibCrust model [Cherepanova et al., 2013]. Low velocities of seismic waves indicate the presence of low-velocity anomalies in the region under the crust. The presence of low velocity anomaly under the Moho in the Baikal rift was noted according to the deep seismic sounding data [Krylov et al. 1981] and seismic Q-factor calculations [Dobrynina et al., 2016].

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