

SEISMIC TOMOGRAPHY IN THE VOLGO-URALS REGION

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The results of seismic tomography method applied in complex heterogeneous media when solving different geological problems are generalized in the paper. Usually seismic tomography is used together with the other geophysical methods; and in complex heterogeneous media data of seismic tomography are sometimes the only tool that allows to predict geological section. The examples of solving of different geological tasks by means of seismic tomography by transient waves and wide-angle reflections in different geological situations are shown. Lithologic difference of volcanic sediments, sediments, intrusive rocks, zones of tectonic faults are mapped. It is worth to particularly mark the correlation between the low-velocity zones and ore bodies (copper, chromites). Within the area of salt tectonics development (Orenburg region) the following results were obtained: boundaries of Sol-Iletsk arch emergence and its conjunctive zones with the large structural elements (Caspian depression and Pre-Uralian trough) are detected; forecast of substantial composition of sediments and crystal basement is made; boundaries of the salt domes are confidently traced. The results of seismic tomographic processing of vertical seismic profiling data on the Urals superdeep borehole are shown. This work is periodically continuing as the borehole deepens. Geological models for the whole crust and for the upper (0-3 km) part of the section along the international profile Urseis'95 are given based on the tomographic reconstruction of the compressional and shear waves velocities.