

Radio wave diagnostics of tectonic disturbances of the earth's crust in the Baikal rift zone

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The relevance of the work is determined by the fact that within the Baikal rift zone (BRZ), there have been almost no targeted studies of tectonic disturbance zones and their geoelectric sections by radio wave methods. The purpose of the research is to identify and study zones of tectonic disturbances of the earth's crust in the MF-LF and HF ranges of radio waves as measured by radio-impedance and GPR sounding methods. The results of the complexing of the the MF-LF and HF methods of radiowave diagnostics of the zones of tectonic disturbances of the seismically active Baikal rift zone in the areas of the Tunkinskaya depression, southern Baikal and Kotokel lake in a wide range of radio waves (from tens of kilohertz to gigahertz units) are considered. Radioimpedance profiling and sounding in the MF-LF ranges allowed to detect and localize faults in the earth's crust by changing the impedance and the geoelectric profile. The geo-radiolocation of fault structures in the VHF range made it possible to differentiate the fine structure of tectonic disturbance up to individual seismic dislocations in sedimentary and crystalline rocks and to determine the kinematics of movements in the fault zone. The methods used complement each other and allow objectively and quantitatively describe the object of study. Integration of various methods of radio wave diagnostics provides more detailed information on the structure of the zone of tectonic disturbances. The results obtained and the developed methods of radioimpedance and GPR sounding and profiling of the heterogeneous underlying environment can be used in seismological and engineering-geological surveys in the eastern and northern regions of Russia.