

A comprehensive analysis of the tectonic fault according to ground-based observations

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The paper presents the results of complex geology-geophysical studies aimed at identifying the zone of intense deformation and determining its mechanical characteristics.

The object under study is an exhumed from a depth of 10 - 18 km section of the Promorskiy fault of the Baikal Rift zone. Field studies were conducted for 2 weeks and included: (i) geological examination of the central part of fault zone with sampling of tectonites and their petrophysical description, (ii) deformation monitoring of the principal slip zone, (iii) seismic monitoring of the exhumed section of fault zone.

Petrographic analysis tectonite showed that the most intense shear strains in a narrow zone width of about 5 cm. There is graphitization of rocks and there are signs of dynamic effects on the minerals that occurred in the previous stages of the evolution of a fault zone in this zone .

According to the deformation monitoring at the present stage of the fault inherent rake-slip deformation. The average velocity of the fault slip is 2 mm / year, with a large number of relatively fast slippage. Also revealed 2 large slow slippage lasting more than 1 day, in which the accumulated deformation was $3E-5$ and $6E-5$, respectively. Using the method of cross-correlation of seismic noise in the analysis of microseismic noise allowed to estimate the fault stiffness, which was 100 MPa / m.

The conducted studies indicate that the Primorsky fault at the present stage is a tectonically active geological structure, and the selected set of methods allows to fully describe the geomechanical model of the investigated area of the Primorsky fault.

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