

# Modeling the modern geotectonic processes of the Siberian platform and its margins

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According to geological data, the Yenisei Ridge and the Yakutsk-Vilyui large igneous province differ significantly in both geology and the development of geotectonic processes in them. If deformations of compression-shear predominate in the area of the Yenisei Ridge, then tension-shear is pronounced in the Yakutsk-Vilyui igneous province, which is caused, among other things, by volcanism.

We modeled the tectonic flows in these areas, taking into account the peculiarities of their geological structure. The type of state of stress and strain in these areas was estimated based on calculations of global tectonic flows in Central Asia as a result of collision processes at the boundaries of the Eurasian plate (Indian subcontinent, Arabia in the south, North American plate in the north-east). Also, we carried out the calculation of local modern tectonic flows in these regions caused by the peculiarities of their geological structure.

For a more detailed study of the type of state of stress and strain in the Yenisei Ridge, calculations were carried out for geological cross sections along the “Batolit-1982” and “Shpat” geological sections. The results obtained showed the presence of regions of localized inelastic deformation in the overstep region of the Yenisey shear-thrust belt. Also, in both sections, the bands of localized inelastic strain propagate to the surface of the mountain group precisely in the region of the location of the large Siberian rivers Yenisei and Velmo. The maximum values of negative horizontal stress are concentrated in the region of the Moho boundary. The general picture of the stress state in both profiles is significantly affected by the heterogeneity of the physical-mechanical properties and the curvature of the layers of the earth’s crust.

Noticeable tension-shears were revealed in the Yakutsk-Vilyui igneous province due to their geological structure and features of the regional type of state of stress and strain.

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