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Recent movements and deformations in Central Sakhalin

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Abstract **PDF ENG** **PDF RUS** **Full text** **PDF RUS**

Abstract. Based on the interseismic velocities of GNSS points, the horizontal deformations in Central Sakhalin were studied. The research area is characterized by the predominance of uniaxial compression conditions, however, the spatial distribution of deformations in the vicinity of the trans-regional lithospheric faults (Central-Sakhalin and Hokkaido-Sakhalin) is heterogeneous. The maximum reduction of the earth's surface in the NW-SE direction occurs in the Hokkaido-Sakhalin fault zone. The area of intensive deformations of right-lateral slip and minimal dilatation rates is confined to the Central Sakhalin fault zone and its nearest surroundings. Overall, the kinematics of the region indicate the compression of the island at the rate of 2 mm/year and the right-lateral slip of 2.5 mm/year, which corresponds to the recent tectonic regime of the region. The right-lateral slip in the Central Sakhalin fault zone (1 mm/year) confirms its kinematics according to geological and geomorphological studies. Signs of a right-lateral slip in the Hokkaido-Sakhalin fault zone (~0.4 mm/year) appear only within the limits of their determination errors. Based on GNSS observations, the first estimates of secular vertical movements in the investigation area were obtained. The absolute vertical movements in Central Sakhalin are inherited in relation to neotectonic structures. West-Sakhalin and East-Sakhalin uplifts elevate at the rate of ~3 mm/year. A slight sinking of the earth's surface occurs in Tym-Poronaysk depression.

Keywords:
recent geodynamics, GNSS observations, deformations, Sakhalin Island

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