Seismological studies in the Altai–Sayan mountain region

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Abstract The paper provides a brief overview of seismological studies in the Altai-Sayan mountain region. The development of a network of seismological stations and experiments with temporary stations in the epicentral zones of large earthquakes is described. It is shown that the background seismicity of the region is ordered over time into structures with a hierarchy in the rate of occurrence. Large earthquakes in some cases occur in places that do not match with the areas of increased background seismicity. Major earthquakes in Eastern Tuva (Busingol, Belin-Biy-Khem, etc.) occur as shifts and rotations of blocks near rift depressions. Large earthquakes of the Western Sayan Ridge and the Academician Obruchev Ridge (Tuvan First and Second earthquakes, Sayan earthquake) are associated with faults transverse to these structures and are the result of the uneven extension of blocks of the Tuva hollow and the Tuva highlands to the north. Studies in the Altai Mountains found that after a long period (about 10 years) of the aftershock process of the Chui earthquake dominating the seismicity, a period of seismic activation of adjacent (60-80 km) and distant (within a radius of approximately 260-280 km) structures occurred. The center of seismic activity shifted from the epicenter of the 2003 Chui earthquake to the epicenter of the 2019 Aigulak earthquake. Experimental work with powerful vibrators has determined the capabilities of a network of seismological stations in vibroseismic monitoring of the Earth's crust.

Keywords Seismology, earthquakes, seismic networks, Altai-Sayan mountain region.

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