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Strong earthquakes in the recent fracturing zone of the lithosphere in the Baikal rift system

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In the Baikal rift system (BRS), areas of long-term concentration of earthquake epicenters are studied and mapped. In combination with other geological and structural data, they provide a basis to identify the recent fracturing zone of the lithosphere of the BRS. It is considered as an active tectonic structure comprised of faults which are variable in ranks and none synchronically reactivated in the real time scale and thus predetermine the spatial and temporal distribution of earthquake epicenters. Regularities in the distribution of strong earthquakes are revealed relative to the axis of the recent fracturing zone of the lithosphere; those of the weaker seismic events are viewed in relation to this zone's fragments and others local faults. Spatial and temporal lateral-transverse oscillations of strong earthquake foci are established in relation to the axial line of the recent fracturing zone of the lithosphere. The discreteness and migration of seismic event and their rank association with active faults of various hierarchic levels reflect general regularities in the lithosphere fracturing under the rift regime. Relationships between fault tectonics and seismicity should be assessed at comparable levels of the lithosphere fracturing: rare strong events refer to stages in the development of the fracturing zone as a whole, whereas weak events refer to those of separate fragments of the zone. Therefore, strong seismic events in the BRS may be predicted on the basis of the revealed regularities in the temporal migration of strong events relative to the axis of the recent fracturing zone, and weak events are predictable from regularities in their temporal migration relative to the zone's fragments. The available database and knowledge provide for designing tectonophysical models of seismic processes which accompany the lithosphere fracturing in the regions under different geodynamic regimes. Such models will ensure that more sophisticated geological and geophysical criteria for the intermediate time scales prediction of seismicity will be developed.

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