



Current seismic hazard estimation for South Baikal basin (Baikal rift system, Siberia) using seismicity and GPS data

V.A. SANKOV and A.A. Dobrynina

Institute of the Earth's Crust of SB RAS, Irkutsk, Russian Federation (sankov@crust.irk.ru)

We estimated the current seismic hazard for South Baikal basin (Baikal rift system, Siberia) using the historical and instrumental seismic catalogue and 13 years data of GPS measurements. This basin provides an example of practically pure crustal extension excepting its southwestern part demonstrated the transtensional conditions. The present day velocity rate of Siberian and Trans-Baikal blocks divergence perpendicular to its border structures is 3.2 ± 0.7 mm/yr (Sankov et al., 2009, in press). The most seismic activity concentrates along major fault within the basin. The scalar moment rates for earthquakes catalogue over 1742-2008 agree, within uncertainties, with the deformation rate of the South Baikal basin determined by space geodesy. Seismic-moment rate have been estimated from an earthquakes catalogue complete for $M \geq 5$. We use Anderson's (1979) formulation to translate the geodetic strain rate into rate of energy release. On the plot of cumulative seismic-moment release with time one can recognize two stages of activation – in 1742 ($M_s = 7.7$) and in 1862 ($M_s = 7.5$). The last period of strain accumulation exceeds the previous one at the moment. The energy release deficit reaches 2.37×10^{27} dyne*cm. It is equal to $M_w \approx 7.5$ – a proposed upper bound of current seismic hazard for the region. The largest for Central Baikal rift system during instrumental period 27.08.2008 Kultuk earthquake ($M_w = 6.2$) occurred in the southern part of the South Baikal basin has possibly opened a new stage of seismic activation.

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