



Seismic criticality concept and large Caucasian earthquakes

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The model of criticality has been applied to large Caucasian earthquakes. Besides, we used criticality approach in the analysis of reservoir induced seismicity.

Large reservoirs, especially located in seismically active zones, often are considered as a source of triggered or induced earthquakes. During impoundment or after it with a delay of several months (years) the number and magnitude of earthquakes around reservoir significantly increases. This increase is related to the complex impact of the of water lake on the earth crust under the reservoir and is explained by the changes in ambient stress condition due to the load of the water or, respectively, to the increase of interstitial pore pressure in the rock matrix beneath the reservoir due to downward percolation of fluid.

In the present study we investigated the influence of the water level variations in the Enguri reservoir located in Western Georgia, Caucasus on the daily release of the regional seismic energy. As a model of the natural seismic process we have performed acoustic energy emission measurements during a stick-slip experiment. Stick-slip experiments are commonly considered as a model of the natural seismic process. The influence by the water level variations on the seismic process has been modelled by a weak external periodic forcing during the stick-slip process.