



Earthquake activity in space and time and its importance for seismic risk assessment

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In my study the main intention is to show essentials of release of earthquake energy along the Earth radius and surface. For this purpose a global earthquake catalogue of seismic events $M \geq 7.0$ was in use for the time interval lasting from 1950 to 2012.

1) The depth distribution of earthquake energy generation is bimodal. There is a sharp maximum at the depth ~ 30 km (90% of the total earthquake energy budget) and another extremity exists at 620-640 km, just above the lower boundary of the transition zone (410–660 km) ($\sim 10\%$ of the total earthquake energy budget). The mutual position of the shallow and deep earthquake energy sources in a given subduction region allows to conclude that they are connected with the same slab. The existence of deep earthquake energy source is connected with the collision of slabs with the lower mantle. It is remarkable that crossing of the upper border of the transition zone at level 410 km does not generate significant seismic energy release.

2.) No correlation was found for the distribution of earthquake energy release along latitudes with the distribution of subduction structures and with the number of earthquakes. In the same time a clear axial co-ordination of radiated seismic energy was demonstrated with maxima at latitudes close to critical ($\pm 45^\circ$), what speaks about presence of external sources in seismological activity. This external factor is most probably the despinning of the Earth axial rotation caused by tidal friction - first of all due to the Moon.