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Sources of the Earth elastic energy and its seismicity

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Analytical expression of elastic energy of the planet tidal deformations induced by external celestial bodies and by rotational motion of planet has been obtained by. The elastic energy is not additive sum of elastic energies of rotation and corresponding pairs “planet-perturbing body” but contains additional terms of the mutual character (Barkin, Ferrandiz, 2004). In the paper we have obtain new mutual terms caused by composition of the rotational deformations of planet and by the luni-solar tides. These additional terms are the more remarkable and determine main variations of the global tension state of the Earth. With various a degree of detailed elaboration we have looked after variations of this energy last decades, and also for hundred years forward. The peak excited conditions of the Earth and condition of active dump of elastic energy were determined in a time-scale since 0 till 2100. The correlation of extreme variations of the elastic tidal energy of the Earth with big earthquakes has been studied. Also we point that discussed here variations of elastic energy of the Earth practically describe variations of the second harmonics of the force functions of the systems of the axisymetric Earth with the Moon and the Sun (considered as material points). With accordance with Barkin’s geology conception (Barkin, 1999, 2002) the part of this energy is spent on realization of the grandiose endogenous processes. It means that the mechanism of the shell-dynamics (perturbed relative oscillations of the core and mantle) renders influence on the elastic state of the Earth in same rhythms as and studied above tides. What from these two mechanisms is more effective energetically? This fundamental problem must be studied in future. Tidal and shell-dynamics interactions of the given celestial body with external celestial bodies lead to variations of their tensional state and as consequence to variations of different planetary processes including variations of seismic activity. It is clearly observed that variations of lunar seismicity have the celestial mechanical nature and depend from the Moon perturbed orbital mo-

tion (Barkin, Ferrandiz, Garcia, 2005). The dates of extreme values of elastic energy present big interest for all-round analysis of the temporal redistribution of the various catastrophic events on the Earth and their possible correlations with variations of elastic energy of the Earth. For analysis can be involved all known data about natural processes, ecology catastrophes and also about biosphere and noosphere processes.