

SOLID LUNAR TIDE IS A CAUSE OF ROCKS TECTONIC LAYERING OF THE EARTH CRUST–MANTLE SHELL AND A TRIGGER OF MOST EARTHQUAKES

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1. A wave of solid lunar tide twice a day (already for ~ 4.5 Ga) triggers the mechanism of tectonic layering, which works as a regular oscillatory system of standing waves in a damping mode, leading to the development of nodal points system of standing wave in a rock mass. These nodal points are concentrators of excessively high stresses (potentially dangerous deep areas of tectonic faults development).

2. The mechanism of tectonic layering of the Earth outer shell creates preconditions for a rhythmically organized system of rock horizons formation with an excessively high stress state – potential tectonic boundaries (in accordance with a standing wave nodal points spatial distribution).

3. The mechanism of tectonic layering can be used to calculate the depth of any tectonic boundaries with the construction of layering models for objects of the Earth's crust (as part of the solid Earth shell). An example is the model of the Pechenga block layering as of an oscillatory system (coincidence of the model boundaries with the dynamic section of the Kola Superdeep borehole is 74 %).

4. Postulate on the principle of equivalence of gravitating masses (EGM): the mass of the source of gravitational perturbation is equivalent (equal) to the mass of matter in the area of perturbation. Based on the EGM principle, the tidal influence of lunar gravity on the Earth outer shell (with its subsequent rhythmic tectonic layering) penetrates, on average, to a depth of ~ 1600 km. Calculations from this depth (in accordance with the mechanism of tectonic layering), used in the construction of the corresponding models, showed a close coincidence of the calculated depths with the depths of boundaries in the "classical" models of the Earth's structure (based on other principles).

5. The regularity of the Moon gravitational influence on the Earth outer shell (twice a day) to depths of ~ 1600 km (including the tectonosphere) with the development of tectonic layering boundaries in it provides a basis for calculations related to the time of accumulation of excessively high stresses in rocks. The duration of accumulation period determines the degree of catastrophic destruction of these rocks, causing earthquakes of the corresponding magnitude. An example is the retroprediction of the Great Japan Earthquake, made by counting the number of solid lunar tides since the previous strong earthquake that happened at about the same place 8 years earlier. The error of this retroprediction is ± 6 days (12 tides).

CONCLUSION: gravitational perturbations in the Earth outer shell created by the lunar mass, are the main energy source for the tectonic layering of this shell substance and the trigger of earthquakes. The statistical regularities of the lunar mass gravitational influence on the Earth outer shell can be successfully used as a base in models of the Earth outer shell tectonic layering and in earthquake predictions.