

# The Role of crystallization and recrystallization of rocks in initiation of the deformatives processes in the earth crust

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In many cases the accumulation of seismic and tectonic stress in the Earth interior is caused by deep metamorphic processes occurring under the influence of external gravitation forces. The enormous dense sedimentary rock masses accumulated in deep depressions are subjected to periodical tension mainly under the influence of lunar-solar tidal forces and experience crystallization and recrystallization effect. The periodical tensions favor the formation and appearance of new fractures, cavities and pores in rocks that are immediately filled with saturated fluids. New minerals are formed in them, and they are gradually filled with growing crystals substance. At the same time, the rocks gradually become softer and its volume grows. The changing rocks pass to the strain-stress state and expand right and left that causes its gradual or steep upheave from very deep horizons. This is the start of orogeny process and, finally, the former depressions transform into huge mountain massifs and mountain ranges. At the same time the depression edges remain in the form of so called "piedmont marginal troughs". The surface of central part of such ranges is dominated by vertical shifts of rock blocks, and at the edges – the blocks uplifted by the gravitation force incline and fall on one side toward piedmont and intermountain depressions; thrust structures appear often.

The reoccurrence of the repeated crystallization and recrystallization of rock in the Earth interior can be daily, monthly, and annual. The periods of daily recrystallization are due to tidal forces of the Moon on the Earth surface and interior when those rise in tidal bulge, and retract from the core part of the Earth. The total amplitude of the one-time uplift of the whole hard geosphere in tidal bulge near the Earth surface does not exceed 0.5 meter. But, the active zones with localized excessive masses of geological medium may have the one-time uplift of the zone site from 1.5-2.5 to 5-8 meters. This process causes the conditions for appearance of the additional expanding spaces inside the rock blocks that are filled immediately with fluids coming from depths and growing crystals. When the tidal effect of the Moon weakens the rock blocks begin to compress and push out fluids from the spaces. However, they cannot compress to its initial state as a part of the space is already filled with growing crystals of rocks. The periods of daily recrystallization occur twice per day with significant action during six hours. The periods of monthly recrystallization depend on the Moon position in the day sky together with the Sun when the total gravitation force of the Moon and the Sun on the Earth interior increases. This also causes the same process of additional retraction of interiors from the core part and appearance of additional expanding space. The periods of annual activation of the interior recrystallization process depend on the periods of the Earth approaching the Sun and increase of its gravitational force on the Earth interior while moving by ellipsoid orbit around the Sun.