The Role of Fluid-Generating Processes in Geodynamic Destabilization of the Earth's Interior

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The results of numerous investigations show that rock transformations occurring in the earth's interior are often accompanied by formation, separation and removal of fluids (H_2O, CO_2, H_2S, hydrocarbons and others). The scales of this phenomenon can be large; its consequences are various (e.g. increase of ground-water amounts; developments of sand and clay diapirism; mud volcanism; formation of clastic dikes; transport, often impulsive, of vast amounts of fluids, etc.).
The report discusses one of the consequences of fluid generation – loss of mass and volume of a rock in the course of generation by the latter of migratable components (a defect of geological space). It is shown that some of sediments possess an increased fluid mother-potential, the release of which in the course of lithogenesis can be accompanied by a high loss of mass and volume of these sediments. In such areas the deformations, caused by a rock volume reduction and the induced adaptation of overlying strata, can lead to a multiple change of the stress-strain state of rocks, their deformation up to formation of fissure and rupture dislocations with different morphology, involvement of overlying rocks into descending movement, formation of subsided zones over the zones of metamorphism, manifestations of small-focused earthquakes, etc. The factors determining irregularity in deformational changes along the cross-section are considered.