

## **STRAIN ANATOMY OF TWO SEISMIC CATASTROPHES: GEOPHYSICAL WEAPON OR THE NATURAL EVENTS?**

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**Abstract.** Preparation and occurrence of two strong earthquakes (Armenia, Spitak, 1988 and Iran, Rudbar-Manjil, 1990) are analyzed based on newly elaborated methodology of the Regional Hydrogeodeformatics. Various materials, including maps of the deformation field in Caucasus region, maps of deformation speed changes, regional deformograms, acceleration-time curves and graphs of seismic events chronology have been analyzed. As a result, objective information on strong interrelation between deformed state changes of geological massifs and seismic events has been obtained. It was shown that during seismically quiet intervals of time gravity variations have the main impact on evolution of the HydroGeoDeformation (HGD) field of the Earth. In the periods of geodynamic activation the cosmogenic impact on strain field behavior of geological massifs is suppressed by the stress of endogen origin. Combined strain-stress analyses conducted for Caucasus (over 320 000 sq. km) and California (Parkfield) covering period of August 1988 – July 1990 indicate that earthquakes in Spitak and Rudbar-Manjil region became the result of fast developing processes of geodynamic activation within the Global Endo-Drainage System (GEDS). Establishing the HGD monitoring polygons in “sensitive” areas of the Earth is proposed as well as some criteria for assessing level of geodynamic hazard is discussed. These criteria are based on the analysis of speed and acceleration of deformation processes.

**Keywords:** Spitak earthquake, Rudbar-Manjil earthquake, Caucasus, California, Regional Hydrogeodeformatics, deformogram, strain hodograph, acceleration-time curve, gravity variations, HGD field variations.