

The Possibility of Earthquake Forecasting: Learning from Nature

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Abstract

We present approach based on physically substantiated short-term precursor's selection to provide the real-time multiparameter monitoring having as a purpose the short-term forecast of earthquakes. Three main principles should be fulfilled: 1. We register natural phenomena for which we have multi-year experience demonstrating their connection with the earthquake preparation process 2. All these phenomena have very high statistical confidence in relation to post-phenomena earthquake occurrence 3. We have the physical explanation of these anomalous phenomena generation and their interrelation within the framework of earthquake preparation process. It is important to note that precursors are registered in different geospheres (lithosphere, atmosphere, ionosphere and magnetosphere) what confirms the fact of geospheres coupling during the earthquake preparation period. For the first time we included in consideration the role of triggers and their relationship with precursors. One of the well confirmed triggers is the Space weather events changing the global atmospheric circulation. The arising large-scale irregularities of atmospheric pressure may serve as earthquake triggers while their linear borders coincide with the active tectonic fault. Another recently revealed effect is existence of earthquake retarders when earthquake happens later (up to month) in comparison with our procedure of earthquake time determination. Complications created by triggers and retarders in developed procedure of short-term earthquake forecast should be resolved in future development of our research. All these ideas are presented in the book which just published by Institute of Physics (IOP) and has the same title as abstract. This work was supported by RSF (project No 18-12-00441)

