



## The Predictability of Earthquakes

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The scientific predictability of earthquakes is a hard unsolved problem in the earth sciences. It is a principal function of science. The prediction of the place, magnitude and time of an individual earthquake, on short to long term scale, with a desired high accuracy is today impossible, although many predictions are made, mostly for large and great shallow earthquakes. Only a few successful scientific predictions with variable accuracy were made. The prediction of the time is the most difficult and in reality not good.

An important problem is then if the earthquakes are predictable (Purcaru, 2007). We found that the prediction of an individual earthquake must be based on the existence of stable underlying laws, since scientific observations show that the nature has universally the physical (causal) property and also structures that allow the repeat of events, phenomena and patterns, etc. It is this repeat that gives the ontological basis of the true prediction-laws (causal and phenomenological laws). These laws provide the necessary foundation that earthquakes are predictable. The laws, however, are not sufficient, e.g. due to changes of the initial conditions, etc. that can influence and change the instantiation of these laws. We present some successes, failures, and false alarms for large earthquakes, and an unpredictable earthquake.

G. Purcaru, Are the earthquakes predictable?. 6th Congress of Romanian Mathematicians, June 28-July4, Bucharest, p.133, 2007.