The Antiphysical Review

Founded and Edited by M. Apostol **240** (2023)

ISSN 1453-4436

The best prediction is about the present

M. Apostol
Department of Theoretical Physics, Institute of Atomic Physics,
Magurele-Bucharest MG-6, POBox MG-35, Romania
email: apoma@theory.nipne.ro

The magnitude M of some (correlated) foreshocks, occurring at time t before the occurrence time t_{ms} of a mainshock with magnitude M_0, is

$$M = \frac{1}{b} \ln \frac{t_{ms} - t}{\tau_0} \ , \tag{1}$$

where $b = 3.45$ is the Hanks-Kanamori constant, the small threshold time τ_0 is given by

$$\tau_0 = rt_0 e^{-b(1-r)M_0} \ , \tag{2}$$

and r and t_0 are the parameters of the background seismicity; for Vrancea $r = 0.65$ and $-\ln t_0 = 11.32$ years; the time t varies from some value smaller than t_{ms} ($M < M_0$) up to $t_{ms} - \tau_0$. By fitting equation (1) to a set of correlated foreshocks, we get the fitting parameters t_{ms} and τ_0, such that we are able to predict the occurrence time and the magnitude of the mainshock.

The function $M(t)$ given by equation (1) has an abrupt variation for t near t_{ms}. The errors are

$$\delta M = \frac{\delta t_{ms}}{b(t_{ms} - t)} + (1 - r)\delta M_0 \ . \tag{3}$$

These errors are very large for t close to t_{ms}. In order to minimize the errors, and to get a "more exact" parameter t_{ms} (small δt_{ms}), we need a good fit, *i.e.* many data near t_{ms}. These would be microtremors (*i.e.*, earthquakes with small magnitudes), as Omori's law shows indeed for accompanying seismic events. When these microtremors occur, we are already at the moment t_{ms}, which we want to predict (the so-called nucleation phase of the mainshock); while performing the fit, we are already experiencing an ongoing mainshock. Our prediction is already fulfilled: it is precisely that "present" moment of time. The best prediction is precsiely the realization of the event. The true science is living it.