Geophysical Research Abstracts, Vol. 8, 04357, 2006
SRef-ID: 1607-7962/gra/EGU06-A-04357

Deception points of earthquake probability models

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Following the objectivists' viewpoint on probability, an adequate claim on "probabilities" cannot exist without solid evidence in support arising from a long series of "yes/no" outcomes obtained in test of the "black box" version of a forecast/prediction method. Even the advanced tools of Statistics lead to wrong assessments and conclusions when inappropriate probability models are used to describe the phenomenon under study. The (self-) deception could be avoided by an accurate verification of generic probability models on empirical data and in no other way. Seismology is not an exception. Seismic events, including the extreme catastrophic earthquakes, are clustered in time (far from Poisson) and follow fractal (far from uniform) distribution in space. Evidently, such a situation complicates search and definition of precursory behaviors to be used for forecasts/predictions and creates deception points to controversies in earthquake forecast/predction research. For example, recently Gerstenberger et al. started the public web site with forecasts of ground shaking for 'tomorrow' (Nature 435, 19 May 2005), despite the critical evidence of their study, i.e., the 15 years of the best-documented seismic record. This evidence suggests rejecting (with confidence above 97%) "the generic California clustering model" used in automatic computer riding. As a result of the inverted verification, the United States Geological Survey website delivers to the public, emergency planners and the media, a forecast product, which is based on wrong assumptions that violate earthquake statistics in California, which accuracy was not investigated, and which forecasts were not tested in a rigorous way. The 15 years of verification inverted by Gerstenberger et al. contributes to the growing evidence that the longliving Omori law for aftershocks, which is widely used for modelling earthquake sequences and their probabilities, is hardly a well-documented fact but rather a prejudice inherited from early seismological studies.