Nonlinear Processes in Geophysics

Discussions

Interactive comment on "Recent seismic activity at Cephalonia island (Greece): a study through candidate electromagnetic precursors in terms of nonlinear dynamics" *by* S. M. Potirakis et al.

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ïČŸ The standard approach to earthquake (EQ) prediction (both pro-active and retrospective) is to investigate, whether the physical quantity accepted as a precursor (here signatures of critical, as well as tricritical, dynamics) is statistically significant, namely, it should be estimated how often the anomaly considered as a precursor is observed in seismically quiet periods (false alarms), really preceded EQ (hits) and was absent before strong EQ (misses). As it is very difficult to meet all these criteria it would be sufficient at this stage to estimate probability of false alarms, i.e. to show that critical dynamics features are absent in quiet periods.

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ïČŸ One of the first papers devoted to criticality as a precursory sign are: T.Chelidze. Percolation and fracture. Physics of the Earth and Planetary Interiors. 1982, 28, 93 – 101. T.Chelidze, Yu. M. Kolesnikov. Percolation Modell des Bruchprozesses. Gerlands Beitr. Geophysik. Leipzig. 1982, 91, 35 – 44. more recents are: T.Chelidze, Yu. Kolesnikov, T.Matcharashvili. Seismological criticality concept and percolation model of fracture // Geophysical Journal International. 2006,164,125-136. J. Wanliss, V. Muñoz, D. Pastén, B. Toledo, and J. A. Valdivia. Critical behavior in earthquake energy dissipation. Nonlin. Processes Geophys. Discuss., 2, 619–645, 2015 John B. Rundle, James R. Holliday, William R. Graves, Donald L. Turcotte, Kristy F. Tiampo, and William Klein. Probabilities for large events in driven threshold systems. PHYSICAL REVIEW E 86, 021106 (2012) Inclusion of some of these papers into references seems to be desirable.

ïČŸ Authors' belief that the natural time approach extracts maximum possible information from a given time series seems to be a bit exaggerated: for example I am not sure that NTM permits proper analysis of scaling in waiting times' distribution between events in a given time series as in NTM the time scale is homogenized.

Interactive comment on Nonlin. Processes Geophys. Discuss., 2, 1587, 2015.