Geophysical Research Abstracts,
Vol. 11, EGU2009-4088, 2009
EGU General Assembly 2009

On the validation process of CSEP/RELM experiments

W. Marzocchi (1) and A.M. Lombardi (2)

(1) Istituto Nazionale di Geofisica e Vulcanologia, Seismology and Tectonophysics, Roma, Italy (marzocchi@ingv.it), (2) Istituto Nazionale di Geofisica e Vulcanologia, Seismology and Tectonophysics, Roma, Italy (lombardi@ingv.it)

The validation of earthquake forecasting/prediction models is the main rationale behind some recent international efforts like RELM and CSEP. The validation process consists of two steps: 1) to run simultaneously all codes to forecast future seismicity in well defined testing regions; 2) to compare the forecasts through a suite of tests. The tests are mostly based on the likelihood score and they evaluate both the time and space performances. All these tests rely on some basic assumptions that have never been deeply discussed and analyzed. In particular, it is assumed that any model is expected to produce in each spatio-temporal bin a number of earthquakes according to a Poisson distribution (with the rate estimated by the forecasting model), and independent from adjacent bins.
The aim of this work is to analyze in details these assumptions. At this purpose, we check how these tests perform on synthetic catalogs produced by a stationary Poisson process and a stationary ETAS model. In particular, we verify the reliability of the assumptions through the analysis of the number of rejections of the tests. If the tests (and therefore the assumptions that stand behind them) are appropriate, we expect to see a number of rejections comparable to the significance level adopted. All discrepancies will be carefully examined and discussed from a theoretical point of view.