

Interactive comment on “Short-term volcano-tectonic earthquake forecasts based on a MRT algorithm: the El Hierro seismo-volcanic crisis experience” by A. García et al.

Anonymous Referee #2

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First of all, please accept my apologies for being a bit late.

In my opinion, in this paper there is a major problem, that makes the present results completely unreliable. The problem is the use of the Least Squares Regression estimation of the Gutenberg-Richter parameters (GRP), in particular of the b-value. This estimator produces STRONGLY BIASED b-values, and there is no justification in its use for this purpose, as its major assumptions are violated. This problem has been previously recognised and discussed in other papers (Page 1968, Bender 1893), among which one that the authors cite (Marzocchi and Sandri, 2003). In other words, Least Square regression produces fake variations (in space and/or in time) in the b-value, that are not real. Because of this, I cannot trust the results obtained, as they are based

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on a method to analyse the data that cannot be trusted. Another major problem is how the GRL are determined. If I understand correctly (Line 125) their determination is based on the cumulated form of the GRL. This produces further biases in the results.

I encourage the authors in re-building their algorithm by: 1) using the not-cumulated GRL (that is: $N(M)$ should be the number of events with magnitude equal to M) 2) using only the MLE to determine b and a -values (as regards b -value, they can also use Bender 1983, or Tinti and Mularia 1987, while for the a -value still Bender 1983 offers an option) 3) careful checking equation 1 (I do not understand it... Isn't MRT the inverse of $N(T)/\Delta T$? If so, I do not understand equation 1. If I misunderstood what MRT is, please explain better)

Once these steps are carried out, if the authors still find a significant forecasting ability in their algorithm, I encourage them to re-submit the paper.

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