

Final Revision on: “Enriching the GEOFON seismic catalogue with automatic energy magnitude estimations” by Dino Bindi, Riccardo Zaccarelli, Angelo Strollo, Domenico Di Giacomo, Andres Heinloo, Peter Evans, Fabrice Cotton, and Frederik Tilmann

The authors provided an explanation for each questions raised and added details and corrections to the manuscript that made some findings clearer, making it certainly suitable for publication. I would just like to ask the authors, if possible, to also include the two explanations (in blue) below in the manuscript before proceeding to publication. Thanks.

Eq. 2 allows to calculate M_e from M_w , what is the error on M_e ?

The standard deviation of 0.246 for the between-event residuals (random effects) can be used to quantify the uncertainty of M_e from equation 2. It is important to note that due to the simplicity of the linear model and the large population of data used for the regression (~750000 data points), the uncertainty of the median model defined by c_1 and c_2 is very low. When evaluating the uncertainty of the median model using:

$$\text{var} [M_e]_{M_w} = J_o^T [\text{varCov}] J_o \text{ (eq_a)}$$

which includes the Jacobian matrix (J_o) and the variance-covariance matrix (varCov), the standard deviation of the variance of M_e regression in (eq_a) for $M_w=6$ and 9 is 0.007 and 0.039, respectively.

The scaling of the obtained M_e against SPUD $M_e(\text{HF})$ seems to be close to 1:1. A simple statistical test (Student's t-test) could be useful to show if there is a significant difference from 1 of the slope for $M_e(\text{HF})$ and also for $M_e(\text{BB})$. For $M_e(\text{HF})$, a Student's t-test shows that the null-hypothesis that the slope is 1 cannot be rejected at 95% confidence (slope=1.0019, SE=0.0331, DF=363); for $M_e(\text{BB})$, the null hypothesis can be rejected (slope=0.8958, SE=0.0271, DF=363).