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Time-dependent occurrence of large eartquakes in Italy

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The purpose of this work is to set up a double branching forecasting model for large earthquakes in Italy. The model proposed is time-dependent, since it assumes that each earthquake can generate, or is correlated to, other earthquakes, through different physical mechanisms. In a recent paper we have shown that the model, applied to two worldwide catalogs in different time-magnitude windows, shows a good fit to the data, and its earthquake forecasting performances are superiors to what obtained by ETAS (single branching model) and by Poisson model. Remarkably, the model can be tested in a forward perspective, which is the most straightforward way to evaluate the reliability of any forecasting model. Here, we apply this model to the Italian historical seismicity of the last four centuries, with magnitude Mw $\geq$ 5.5, and we compare its forecasting capability with the one provided by a spatially-variable stationary Poisson process, actually used in Italy for Seismic Hazard Assessment. Finally, a map of the probability of occurrence for following 50 years (2008-2058) is provided.