

RELOCATION OF INSTRUMENTALLY RECORDED, HISTORICAL EARTHQUAKES IN THE ITALIAN REGION

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ABSTRACT

Accurate relocations of historical earthquakes using modern techniques can lead to important understanding of the earthquake process, the associated seismotectonics and revaluations of the seismic hazard. This is particularly the case in areas where little or no seismicity has occurred since the last major earthquake. However, these relocation studies rely on historical phase data which often have timing errors or other problems, and often there are only a small number of recording stations. Thus it is fundamental to employ robust location techniques that make use of secondary arrivals, which can identify and exclude outliers, and which provide complete information on the location quality and uncertainty.

To perform historical event relocation while addressing the above difficulties, we employ the fully non-linear earthquake location package NonLinLoc with an equal-differential-time (EDT) misfit function (see Font et al. (Geophysical Research Abstracts, Vol. 5, 11889, 2003)).

In this study, we have used the phase data entered in the archive of the Sismos Project of INGV to investigate various moderate to large size Italian earthquakes that have occurred since early 1900 [i.e., Avezzano, 1915; Capo Vaticano (Calabria), 1928; Irpinia, 1930 and 1980; Gran Sasso, 1950; Belice (Sicily), 1968]. We obtain refined locations, consistent with the macroseismic data, without the application of depth constraints or pre-removal of possible outlier data. To provide a full appraisal of the results, we show application of this technique using different velocity models and show comparisons with locations proposed in the literature.

Poster presentation

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