# How to reduce the old data uncertainty? The 1917 Monterchi (Italy) earthquake case

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# How to reduce the old data uncertainty? The 1917 Monterchi (Italy) earthquake case.

**Josep Batlló, Marco Caciagli, Thomas Braun**

Who works with old seismic data knows that "is faced with a treasure of knowledge hidden in a sea of uncertainties". Synchronization of the historical observatories' internal clocks, instrumental characterizations, bad conservation of original seismograms, geometrical correction and/or assumptions concerning the analogical-to-digital processing are only some of the main sources of uncertainty that conditions the reliability of an earthquake location and/or a well-constrained seismic parameter estimation. These uncertainties are often intrinsic in the historical data and their treatment and propagation into the final seismic parameter estimations are necessary and provide an objective estimate of the quality of the data used.

We present our recently published results concerning the M5.8 historical earthquake that struck the high Tiber valley (central Italy) on April, 26, 1917 and discuss the methodological approaches used for the seismic analysis of coeval seismic data. This earthquake, occurred during the World War I, lends itself as a case study to discuss how a good uncertainty estimation and a multidisciplinary approach permit to solve the hard challenge by analyzing a data set affected also by the wartime socio-economical context.