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Rapid Waveform Earthquake Location in Italy

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We present an full waveform earthquake location technique and its application to earthquakes recorded by broadband stations in Italy and in the neighbouring regions.
The technique is based on the cross-correlation between pre-determined and processed Greenś functions and similarly processed data. Earthquake locations are found after testing against a grid of potential points. The Greenś functions can be either determined synthetically assuming a velocity-attenuation model, or empirically from small recorded earthquakes. The technique adopts and further develops a methodology introduced by Withers et al. (BSSA, 89, 657-669, 1999). The technique is applied to a set of earthquakes of various magnitudes that have occurred in Italy and that have been recorded by the Italian Digital Seismic Network and the Mediterranean Very Broadband Seismographic Network (MedNet). The results show that it is possible to locate earthquakes as low as M2.0. Our results also show that the technique is applicable to real-time data stream using current servers and it appears appealing for earthquake early warning purposes.