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# Uncertainty Estimations for Moment Tensor Source Parameters of 2016 Central Italy Mainshocks

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The Central Italy seismic sequence that began on 24 August 2016 has been marked by three mainshocks occurred in the first two months and culminated with the 30th October 2016 Mw 6.5 event. Location, depth and prevalent normal faulting mechanisms indicate that the sequence originated in the shallow crust of the Apennine chain where the current extensional regime overprints contractional structures. Structural complexity plays a major role in fault segmentation and interaction in this region, with important consequences on seismic behavior and mechanics of earthquake faulting. This complexity is evidenced by the co-existence of fault planes with heterogeneous focal mechanisms in the same area.
In this study we investigate the stability and the uncertainties of the moment tensor solutions for the three mainshocks of the sequence by studying the effects of the number and azimuthal distribution of the considered stations and of the employed wave speed model (1D and 3D) with the goal of providing more reliable estimates of the source parameters (strike, dip, rake and Mw) and the corresponding uncertainties. Performing the bootstrap analysis on hundreds of solutions that will be computed by varying number and distribution of stations and 1D and 3D velocity models, will allow us to estimate the uncertainty of the moment tensor solutions due to the station selection procedure and the approximated sampling of the Earth.
We believe that the estimate of uncertainties associated to the computed focal planes and Mw for the three mainshocks as well as the realization of a complete moment tensor catalogue will contribute to explain the complexity of the seismogenic processes active in the Central Apennines and help in understanding the main feature of this seismic sequence.