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Waveform analysis of a key seismic historical event in the southern Apennines: the 1930 Irpinia earthquake

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The July 23, 1930, Irpinia struck the southern Apennines, in an area of a high seismic risk. It caused more that 1400 casualties itself and several large events are reported by the historical record in the region, with the last one, November 23, 1980 (Mw=6.9), representing the strongest and most destructive italian earthquake in the last 99 years. Despite its relevance very little is knowk about the source of the 1930 event. Based on previous studies, some indication exist that this could be significantly different from usual southern Apennines upper crust earthquakes, but important uncertainties still remain about its magnitude, the fault geometry and the rupture extent. In this study, we analyze the available historical data to infer source characteristics in terms of hypocentral location, magnitude, seismic moment and fault mechanism. We also performed a body weveform inversion the retrieve the moment rate function and source directivity. Finally, we attempt an interpretation of its relation with the known tectonic structures.