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The 2017 Ischia Earthquake (Southern Italy): Source Mechanism and Rupture Model From the inversion of a Near-Source Strong Motion Record

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With the aim to investigate the rupture complexity and the radiated wave field of 2017, Mw 3.9, Ischia earthquake, south-west of Naples (Italy), we used finite-fault modeling to invert the near-source (<1-km epicentral distance) horizontal component velocity records of the accelerometric station (IOCA)
and searched for the best-fit kinematic rupture parameters. This analysis showed that the rupture nucleated at about 600 m west of IOCA and 1.1-km depth, along a 1 km, NW-SE striking fault (i.e., thrust with right-lateral component), with a rupture velocity of about 0.7 km/s. The retrieved rupture model coupled with multipath reverberations effects related to a thin, low-velocity near-surface volcanic sedimentary layer, well explains the observed long ground motion duration and the large amplitudes recorded all over the island. Finally, the apparent source time function (STF), obtained from inverse modeling using a theoretical Green' function (GF), is validated by implementing an empirical GF (EGF) analysis.