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PRELIMINARY RESULTS FOR THE FORWARD MODELLING OF THE 2011 MAY 11 LORCA EARTHQUAKE (M_W=5.2)

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We computed synthetic seismograms to get insights into the 2011 May 11 Lorca earthquake (Mw=5.2). This event was recorded also by twelve accelerometric stations located within a radius of 70 km from the source. One station (LOR) is quite close to the fault plane being located within 5 km on the hanging wall whilst four other accelerometric instruments (ZAR, AHM, AM2) have epicentral distances ranging between 20 and 30 km. Strong directivity effects were observed on the Lorca records whilst path and site effects have been observed at ZAR and AM2 (Santoyo, 2013).
To compute synthetics we use the COMPSYN code (Spudich and Xu, 2003), efficiently employed mainly in the near field, and the pseudo-dynamic approach (Guatteri et al., 2004) to emulate the main features of the fault rupture.
We used 1D velocity models and several finite fault models as found in the literature (i.e. Gonzalez et al., 2012; Martinez et al., 2012; Santoyo, 2013) to compute seismograms at a maximum cut-off frequency of 1 Hz. The different fault models share similar values for directivity, scalar moment, strike and rake. Discrepancies are found for the dip values, ranging between 45° and 70°, and for the slip distributions on the fault.
Preliminary results of simulations show that the fault model by Gonzalez et al. (2012), obtained using geodetic data, better explain the recoded ground motion. The slip distribution has two main asperities; the smallest one is close to the surface at a depth of about 500 m while a deeper high slip area is placed at depths of about 4-5 km.
However some uncertainties could affect our results because of the possible inadequacies of the velocity model employed or the lack of information on site effects. We started investigating about those issues.

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