



## **Estimation of radiated energy for the 2010 Spanish very deep earthquake (Mw=6.2)**

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The occurrence of very deep earthquakes ( $h \approx 650$  km) in south Spain is a characteristic of the seismicity in this region and consequence of its complex seismotectonics. Several deep shocks have occurred between the first recorded in 1954 ( $M_w=7.0$ ) and that in 2010 ( $M_w=6.2$ ), but their origin still remains an open question. A key element to understand the rupture process for these earthquakes is an accurate estimation of the radiated seismic energy. In this study we estimate the radiated energy for the 2010 event using two different methods. The first is by direct integration of observed waveforms and the second by integration of the Moment Rate Function. We use seismograms recorded at teleseismic (14 stations) and regional distances (20 stations). The instrumental response has been removed and the data have been corrected by the geometrical spreading, anelastic attenuation and free surface effect. We have obtained energy values ranging from  $9 \times 10^{12}$  J to  $9 \times 10^{13}$  J, with an average value of  $2.5 \pm 0.2 \times 10^{13}$  J in agreement with the value obtained by integration of the Moment Rate Function. These values correspond to an  $E_r/M_0$  relation of  $\approx 10^{-5}$ . From this energy value the estimated stress drop is 1.5 MPa.