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The 5th July 1930 earthquake at Montilla (S Spain). Use of regionally recorded smoked paper seismograms

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On the night of 5th July 1930 a damaging earthquake struck the town of Montilla (near Córdoba, S-Spain) and its surroundings. Magnitude estimation for this earthquake is M=5, and its epicentral intensity has been evaluated as VIII (MSK). Even it is an earthquake of moderate size, it is the largest one in-strumentally recorded in this region. This makes this event of interest for a better definition of the regional seismicity. For this reason we decided to study a new its source from the analysis of the available contemporary seismograms and related documents. A total of 25 seismograms from 11 seismic stations have been collected and digitized. Processing of some of the records has been difficult because they were obtained from microfilm or contemporary reproductions on journals. Most of them are on smoked paper and recorded at regional distances. This poses a good opportunity to test the limits of the use of such low frequency - low dynamics recorded seismograms for the study of regional events.

Results are promising: Using such regional seismograms the event has been relocated, its magnitude recalculated (Mw 5.1) and inversion of waveforms to elucidate its focal mechanism has been performed. We present the results of this research and its consequences for the regional seismicity and we compare them with present smaller earthquakes occurred in the same place and with the results obtained for earthquakes of similar size occurred more to the East on 1951.