



Study of the fracture process of ALHOCEIMA earthquake (24/02/2004, Mw=6.2) from regional and teleseismic data.

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We studied the source time function (STF) and rupture process of the 2004 Alhoceima, Morocco earthquake of $M_w = 6.2$ using teleseismic and regional broad-band data. From regional broad-band data, STF function was determined using three large aftershocks as empirical Green functions. We inverted of body wave forms at teleseismic distances using an extended source model with rupture velocity between 2.5-3.0 km and using as preliminary orientation the fault plane solution derived from 126 P-wave polarities. Results show a complex bilateral rupture formed by four shallow subevents (2-8 km) with a maximum seismic moment release during the first seconds (more than 80% of a total of 1.8×10^{18} Nm) and time duration of 8-10 s. The focal mechanism shows a strike slip motion with a normal component. Nodal planes strike on NNE-SSW and WNW-ESE direction with horizontal pressure axes in NNW-SSE direction. The rupture propagated mainly towards the North. This propagation is in agreement with the damages caused in the epicentral region. The larger aftershocks have been relocated using a master event method. Comparisson of these results with those obtained for the 1994 earthquake shown similar behaviour: complex rupture process and, apparently, no relation of the 1994 nor the 2004 shocks with the Nekor fault, the most important geological feature in the area. The stress pattern derived from focal mechanisms of 1994 and 2004 are in agreement with the regional stress pattern, horizontal compression in NNW-SSE and horizontal extension in E-W direction in the Alboran Sea.