



Rupture process of the 2000 and 2008 Ölfus (Iceland) earthquakes

Társilo Girona (1), Carmen Pro (2), Elisa Buforn (1), Sophie Peyrat (3), and Ragnar Sigbjörnsson (4)

(1) Dept. de Geofísica y Meteorología, Universidad Complutense, Madrid, Spain (tarsilo.girona@fis.ucm.es), (2) Dept. de Física, Universidad de Extremadura, Mérida, Spain, (3) Dept. de Geofísica, Universidad de Chile, Santiago, Chile, (4) Earthquake Engineering Research Centre, University of Iceland, Iceland

We have studied the rupture process of three earthquakes occurred in 2000 (17-06, Mw=6.5 and 21-06, Mw=6.4) and 2008 (29-05, Mw=6.2) in Iceland, with epicentres very close. We have estimated focal mechanism from inversion of body waves at teleseismic distances (30°-90°) using the algorithm developed by Kikuchi and Kanamori for a kinematic source. In a second step, the slip distribution over the fault-plane has been estimated. The rupture velocity and direction of the rupture have been estimated from Rayleigh waves using the directivity function. The obtained results show similar focal mechanism for the three earthquakes corresponding to strike-slip motion. The rupture plane is oriented in all cases in NS direction, which agrees with tectonics of the area. The slip distribution obtained for the three shocks, shows a single process that starts at shallow depth (5 to 7 km), with the rupture propagating to the south and parallel to the surface. The rupture velocity estimated from body waves and Rayleigh waves is very low: 1.5 km/s. In order to confirm these low values, we have estimated the rupture process using strong motion data recorded by Icelandic Strong-Motion Network. Accelerograms were converted to displacement by double integration and filtered. We have carried out a kinematic inversion of these data in order to constraint the rupture velocity.