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Source process of the 14 February 2008 M6.7 Earthquake Offshore South Peloponnese (Greece)

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We investigate the rupture process of the 14 February 2008, **M**6.7 earthquake sequence that occurred offshore the westernmost tip of the Peloponnese peninsula in southern Greece. The sequence occurred close to the western boundary of the subducting African lithosphere with the overlying Aegean crust. Three were the strongest events of the sequence: 14 Feb 2008 **M**6.7 depth 30 km, low-angle (10^o) thrust, its strongest aftershock on the same day and two hours later of **M**6.1 depth 33km, again low angle thrust and on 20 Feb 2008 **M**6.0 a strike-slip event at shallow 10 km depth. The operation of the low-angle thrust, at $\sim$30 km and just above it, at 10 km, of the strike-slip structure, was nearly simultaneous. We used the **M**6.1 aftershock as empirical Green's function (EGF) to invert for the slip distribution of the strongest **M**6.7 event of the sequence. We were able to identify the low-angle plane (strike 288^o, dip 10^o and rake 73^o) as the fault plane, in accordance with previous knowledge. The slip model is dominated by two distinct slip patches, which extend to the SSE of the hypocenter thus implying rupture directivity toward that direction. This result is further supported by both the teleseismic waveform inversion results and the shapes of the computed source time functions at different azimuths around the epicentral area. Maximum slip is estimated at $\sim$270 cm, while average slip on the ruptured area (34$\times$22 km) was $\sim$70 cm. Optimum values for the rise time for this event are estimated around 1.5 sec, i.e. larger that what would be expected based on empirical relations. This is believed to be another factor, apart from the offshore location of the epicentre, for the low levels of strong ground motion observed in the mezoseismal area.