SECOND EUROPEAN CONFERENCE ON EARTHQUAKE ENGINEERING
AND SEISMOLOGY, ISTANBUL AUG. 25-29, 2014

THE STRONG EARTHQUAKE (M_W6.0 & M_W5.9) SEQUENCE OF JANUARY-FEBRUARY 2014 IN CEPHALONIA ISL. (GREECE)

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The strong earthquakes of 26 January 2014 (M_w6.0 and M_w5.4) and of 3 February 2014 (M_w5.9) which ruptured western Cephalonia Isl., Ionian Sea (Greece), caused considerable damage and a variety of ground failures. High-precision relocation of the aftershock sequence implied that the seismogenic layer was of 35 km in length (L), 10 km maximum width and 15 km in thickness. Two aftershock spatial clusters were revealed, the short one (L_1~10 km) at north and the long one (L_2~25 km) at south. However, no temporal correlation with the two strong shocks was found. Fault plane solutions produced by moment tensor inversions indicated that the two strong earthquakes as well as a plenty of aftershocks ($M_w \geq 4.0$) were associated with dextral strike-slip faulting with preferred fault planes striking NNE-SSW as it also comes out from the lateral distribution of aftershocks. Broadband *P*-wave records at teleseismic distances were used to invert for rupture histories of the two strong earthquakes. It was found that the earthquake of 26.1.2014 had a complex source time function with nearly 62 cm maximum slip, source duration of ~12 s and downwards rupture. A small slip patch also appears at the northern part of the fault which is possibly related with the small cluster at the north part of the aftershock cloud. Most of the slip is concentrated on a 13 km x 9 km fault rupture. The earthquake of 3.2.2014 had a relatively simple source time function related with one big patch of slip with maximum slip nearly 45 cm, with 10 s source duration. The rupture was directed upwards which along with the shallow focus (~5 km) of the second earthquake may explain the significantly larger (0.77g) PGA recorded with the second earthquake with respect to the one recorded (0.56g) with the first earthquake. Most of the slip was concentrated on a 12 km x 6 km fault rupture. Maximum seismic intensity of level VII and VIII to VIII+ was felt in Lixouri town and the nearby villages with the first and the second strong earthquakes, respectively. The rupture histories and the increased building vulnerability due to the damage caused by the first shock may account for the larger maximum seismic intensity caused by the second shock. However, the area of the ground failures caused by the second earthquake was nearly half of that of the first earthquake, which is consistent with the stronger attenuation of ground acceleration caused by the later with respect to the former. From that the 2014

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earthquakes ruptured on land western Cephalonia we suggested to revise the Cephalonia Transform Fault (CTF) geometry in the sense that the Lefkada CTF segment does not terminates offshore NW Cephalonia, as suggested by previous authors, but extends towards SSW in western Cephalonia. However, it remains open whether this segment extends further to the off SW Cephalonia or not. On the other hand, the geometry of the Cephalonia segment of CTF needs re-examination.