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The 8th June 2008 Mw=6.4 earthquake in NW Peloponnesus: preliminary results from seismic, GPS and field data

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On June 8, 2008 at 12:25 UTC a strong earthquake occurred (M=6.4) in NW Peloponnesus, western Greece. The focal mechanism was determined as strike-slip by several institutions operating in central and eastern Mediterranean. This event is the largest strike-slip earthquake to occur in western Greece during the past 25 years. The hypocentre was located near the village Mihoi in Achaia prefecture (NW Peloponnesus), at a depth of about 18 km. A NOA team conducted field investigation one week after the event. There was no surface rupture. The geology of the area is mostly clastic sedimentary rocks and recent sediments (alluvium). Many rock falls, slides and liquefaction features have been found as is typical for an earthquake of this size. Double-difference relocations of 370 aftershocks show a linear pattern of events and define a clear NE-SW striking main shock fault plane. The aftershock region extends approximately 30 km in length, and the width of the surface projection of the aftershocks is mostly 5 km (max. 10 km). The depth of the aftershocks rarely exceeds 22 km. Analysis of high-rate GPS data from the permanent GPS network of NOA showed that station RLS (Riolos) which is located 12.8 km to the N5°W of the epicentre was displaced co-seismically 7 mm to the North in agreement with right-lateral kinematics of the rupture. Static (Coulomb) stress transfer analysis indicates loading of faults at mid-crustal levels near the towns of Patras (north) and Amaliada (south), respectively. The earthquake put more emphasis on the role of strike-slip faulting in the deformation of western Greece also indicating that seismic strain is partitioned between strike-slip and normal-slip events due to obliquity of the Nubia (Africa) subduction and the N-S extension of the overriding Aegean upper plate.