



Investigations on the Kythira-earthquake (SW Aegean Sea) on 8 January 2006 using the EGELADOS-network

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On 8 January 2006 the island Kythira was strongly affected by an intermediate-depth earthquake with the magnitude of $M_w=6.7$, which was located in the forearc of the western Hellenic Subduction Zone. Although, it was felt in the entire Eastern Mediterranean, buildings were only damaged on the islands of Kythira and Antikythira, in western Crete and in a limited area of southeastern Peloponessus. In this region five intermediate-depth earthquakes with a magnitude >5.5 are known from the instrumental record, four of them occurred in the first four decades of the 20th century. However, five historical events with estimated magnitudes >6.5 were also reported for the area in the 18th and 19th centuries, though their depth is unknown.

The earthquake was recorded by the EGELADOS-network, a temporary broadband seismic network consisting of 65 on- and 24 off-shore stations, which covers the whole Hellenic Subduction Zone. The high density of seismic stations enabled us to determine the source parameters of the main shock, and a large number of aftershocks, which occurred within the first few days after the main shock. The preliminary results confirm a NE-SW trending of the aftershock sequence, in very good agreement with the nodal planes of the reported fault plane solutions and with the general stress-field of the intermediate-depth events of the western Hellenic Subduction Zone.

The preliminary slip distribution of the main shock was used to calculate the deformation and stresses in the Aegean Sea. The calculated deformation at the stations surrounding the epicentre is compared with the registered static displacements. These modellings provide valuable insights in the dynamics of subduction zones.