



The 2006 Kythira (Greece) Earthquake: Observing and modelling sub-millimetre Deformations

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The south-western part of the Hellenic Subduction Zone was struck by a magnitude $M_w = 6.7$ earthquake on Jan. 8, 2006. This earthquake has been recorded by 58 stations of the EGELADOS seismic network operated by the Ruhr-University Bochum and German (GFZ, Uni Hamburg), Greek (NOA, AUTH) and Turkish (ITU) partners. Unclipped broad-band records can be converted to displacement records. Baseline shifts in displacement seismograms up to 1.64 mm are observed. These observations indicate, that static displacements expected in the near-field were recorded by broad-band seismometers from about 100 km and up to about 600 km epicentral distance. Closer stations can not be analysed since the records are clipped due to the large ground motion near the epicentre. The static displacement is modelled numerically (software PSGRN/PSCMP) with a homogeneous layered elastic half-space model. The results are compared to the observed baseline shift.

The observed values are in general smaller (50%–80%) than the modelled ones. Partly this is expected since the full static displacement can not be retrieved from a seismic velocity record with a finite bandwidth. Other reasons include local site effects, the complex setting of the Hellenic Subduction Zone and the simplified model. Nevertheless the results of the forward modelling agree very well with the observations. Most of the stations show static offsets for all 3 components similar in magnitude and direction to the modelled displacement field.