ROUTINE REGIONAL MOMENT TENSOR INVERSION FOR EARTHQUAKES IN GREECE AND THE SOUTHEASTERN MEDITERRANEAN, THE NATIONAL OBSERVATORY OF ATHENS (NOA) PROJECT

Apostolos AGALOS[1], Stelios KOUTRAKIS[1], Areti PLESSA[1], Maria ZIAZIA[1], Eleni ATHANASIOU[1], Eleni DASKALAKI[1], Anna FOKAEFS[1], Christos EVANGELIDIS[1]

Broadband waveforms from the Hellenic Unified Seismic Network (HUSN) and strong motion records from the National Observatory of Athens (NOA) network are used for rapid determination of moment tensors for earthquakes (M>3.6) that occur in Greece and the surrounding areas. The inclusion of strong motion stations/records at local distances provides reliable solutions for large and moderate events (e.g. Cephalonia January-February 2014 events).

Since 2012, the NOA team uses the ISOLA software (Sokos and Zahradnik, 2008) that is based on a multiple point-source representation with an iterative deconvolution inversion approach and the discrete wavenumber method of Bouchon (1981) to compute synthetics for local and regional events.

In order to compute accurate synthetics several local velocity models are used. The deviatoric moment tensor inversion procedure calculates the moment magnitude, the nodal planes and the centroid depth as the result of grid searching both in space (trial source positions) and time (time shifts relative to origin time).

More than 220 earthquakes have been processed during the time period from September 2012 to March 2014. These results complement more than 750 solutions that have been calculated from 2005 to September 2012, using a similar approach (Konstantinou et al., 2010), resulting in the most complete moment tensor catalogue in Greece.

In the dedicated webpage of NOA at http://bbnet.gein.noa.gr/HL/seismicity/moment-tensors we provide the entire catalogue with details for the selected inversion parameters, figures and references.

The preliminary solutions are also rapidly provided to the EMSC-CSEM (http://www.emsc-csem.org/). Most of the calculated solutions are of high quality as they are characterized by high values of variance reduction (0.5 to 1), high correlation values (0.7 to 1) and high percentage of the moment tensor's double couple component (DC).

REFERENCES

Bouchon M (1981) "Discrete wave number representation of Elastic Wave Fields in Three-space Dimensions", *J. Geophys. Res.*, 84, 3609-3614

Konstantinou KI, Melis NS and Boukouras K (2010) "Routine regional moment tensor inversion for earthquakes in the Greek region: the national Observatory of Athens (NOA) database (2001–2006)", *Seismological Research Letters Volume 81*, Number 5 September/October 2010, 750-760

[1] National Observatory of Athens Geodynamic Institute, Athens, aagalos@noa.gr, stelios@noa.gr, a.plessa@noa.gr, mziazia@noa.gr, athanael@noa.gr, edaskal@noa.gr, anna@noa.gr, cevan@noa.gr

Sokos EN and Zahradník J (2008) "ISOLA a Fortran code and a Matlab GUI to perform multiple-point source inversion of seismic data", *Computers and Geosciences*, 34, 967-977