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Fast moment magnitude estimation using strong motion data

George Marius Craiu (1), Antonella Gallo (2), Giovanni Costa (2), Alexandru Marmureanu (1), Andreea Craiu (1), Constantin Ionescu (1), and Anton Danet (1)

(1) National Institute for Earth Physics, Bucharest, Romania (gcraiu@infp.ro), (2) University of Trieste, Mathematics and Geoscience Department, Trieste Italy

The seismicity of Romania is significantly affected by earthquakes produced by the Vrancea seismic source with intermediate depth events (3 shocks/century with magnitude Mw greater than 7.0). The seismic activity on the Romanian territory consists of both shallow and intermediate-depth earthquakes. The crustal seismicity is moderate and more scattered in comparison with the intermediate-depth one. The recent upgrade of the seismic network in Romania with high dynamic range accelerometers (114 real time seismic stations equipped with episensors) allows recording of moderate to large magnitude earthquakes at very close epicentral distances (less than 10-20 km). Strong motion data of high quality are also of help in increasing the effective preparation against seismic disasters, and the response during seismic emergencies. The consequent increased ability of a community to quickly recover from the damages of an earthquake thus contributes to lower the seismic risk, usually measured in term of casualties and economic losses. The purpose of this work consists mainly in the estimation of moment magnitude Mw using the strong motion network of NIEP. A stable and automatic method developed by Gallo et al.,2014, has been implemented in the real time data acquisition and processing system (ANTELOPE) to estimate in real time the seismic moment, the moment magnitude and the corner frequency of events recorded by accelerometers, using Andrews (1986) method applied to S waves. The main goal is the independent estimation of seismic moment and corner frequency for all events recorded by the strong motion network.