Geophysical Research Abstracts
Vol. 14, EGU2012-7595, 2012
EGU General Assembly 2012


# Towards a nationwide Early Warning System in Romania

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The need to use early warning methods to reduce natural risks in modern societies is related to their unprecedented dependence upon technology. The strong deep events originating from Vrancea-Romania (Mw =7.5) area and shallow events originating from Banat-Romania or Shabla-Bulgaria areas can generate destructive effects in Romania and neighbor countries, and may seriously affect high risk manmade structures.
EWS for deep Vrancea earthquakes uses the time interval (28-32 sec.) between the moment when the earthquake is detected by the local seismic network installed in the epicenter area (Vrancea) and the arrival time of the seismic waves in the protected area (Bucharest) to send earthquake warning to users. For the shallow events several methodologies to rapidly estimate earthquake magnitude are under testing.
NIEP developed an early warning system that is able to evaluate rapidly earthquake magnitude after detection in the epicenter. In the last years, NIEP upgraded its seismic network in order to cover better the seismic zones of Romania. The early warning system consists of seismic stations that allow rapid communication of data, several software modules developed at NIEP and a communication network. The system allows estimation of earthquake magnitude and permits to send earthquake alarm very fast to users. The early warning software modules minimize communication latencies present in other communication protocols in order to have a rapid magnitude determination. This software was developed by NIEP and is running in present at our institute in real time.