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EARTHQUAKE EARLY WARNING RESPONSE TO THE MAY 24, 2014 NORTHERN AEGEAN EARTHQUAKE (MW=6.9)

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Combining real time waveform data from Turkish seismic networks (KOERI, TUBITAK, AFAD, KOU) including the Greek stations provide an excellent coverage for precise and fast location of the earthquakes taking place in NW Turkey and Northern Aegean. The seedlink server module of widely known SeisComP3 data acquisition program allows such data exchange. The continuous on-line data from these stations is used to provide real time warning for emerging potentially disastrous earthquakes.

KOERI (Kandilli Observatory and Earthquake Research Institute) operates a seismic network in Marmara Sea region (NW Turkey) consisting of 40 broadband and 30 strong motion inland and OBS stations which has a good topology for regional EEW studies. Besides, 10 strong motion station EEW seismic network is deployed for mainly threshold based studies.

The Virtual Seismologist in SeisComP3 and the PRESTo regional EEW softwares are the two regional EEW algorithms that have been recently setup at KOERI data center to generate the EEW signal. Onsite EEW applications are underway for more than a decade. The early warning signal is communicated to the appropriate servo shut-down systems of the recipient facilities, that automatically decide proper action based on the alarm level.

An earthquake with Mw=6.9 occurred in the Northern Aegean on 24 May 2014 12:25 local time (UTC +3) approximately 30 km north-west of Gökçeada (Imbros) Island resulting in strong ground motion in the region. The earthquake has been felt in Marmara and Aegean regions of Turkey, primarily in Çanakkale, Balıkesir, Edirne and Istanbul. Strong ground shaking was widely felt across Turkey, Greece and Bulgaria including the major cities of Çanakkale, Thessaloniki, Edirne, Plovdiv, İzmir and İstanbul. However, with the exception of Çanakkale no damage has been reported in these cities. The maximum intensity of ground shaking felt on land was VI-VII on the EMS'98 scale. This level of shaking has the potential to cause light damage to buildings and moderate damage to vulnerable structures.

Owing to the dense seismic network the first estimation of the epicenter was done in 35 seconds after the origin time of the earthquake and the information was immediately released supplying about 50 seconds leading time for Istanbul located about 300 km away from the epicenter. Having received the EEW signal from KOERI, ELER (Earthquake Loss Estimation Routine) has been triggered for the Earthquake Hazard and Loss estimation. RT-ELER has automatically produced the intensity map of the event (www.kandilli.info). The first intensity estimation of the event was VII in the epicentral region, VI in the nearby islands and V, IV on the Greek and Turkish coasts.

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