



An Earthquake Disaster Information system for the Marmara region in Turkey (EDIM)

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The Turkish mega-city Istanbul is located in the direct vicinity of the western continuation of the North Anatolian Fault Zone, which is one of the most active faults in the world. The closest distances of the fault segments in the Marmara Sea to the city range between 15 and 25 km. Since the city exhibits a high seismic risk, earthquake early warning is an important task concerning the safety of millions of people living in and around Istanbul.

In April 2007, the research project EDIM (Earthquake Disaster Information system for the Marmara region, Turkey) will start. Its purpose is to extend the already existing Istanbul Earthquake Rapid Response and Early Warning System (IERREWS) to regional scale, i.e. the Marmara region.

EDIM is a consortium of research and commercial organisations consisting of the Geophysical Institute of Karlsruhe University, the GeoForschungsZentrum Potsdam, the Computer Science Department of the Humboldt-University of Berlin, the lat/lon GmbH in Bonn, and the DELPHI InformationsMusterManagement GmbH in Potsdam. The Turkish partner is the Kandilli Observatory and Earthquake Research Institute (KOERI) of the Bogazici University in Istanbul.

The approach of EDIM is an interdisciplinary cooperation to improve the real-time information before, during and after an earthquake. Seismology will provide algorithms for the rapid detection of earthquakes and their source parameters as well as for the calculation of near-real-time shakemaps for the region. The innovative technology of self-organising networks will be developed and applied in a proto-type fashion. The technical environment of IERREWS serves as a good test site for this purpose. Additionally, a dynamic geo-information infrastructure will be established to link the

various user groups and to provide them with all necessary information.

As a basis for the real-time early warning system, the PreSEIS methodology (Pre-SEISmic shaking, Boese 2006) will be used and presented here. It was developed for the Marmara Sea and shows a combination of a regional and an on-site early warning system based on neural networks. Similar to regional warning, PreSEIS takes all information from a small seismic network, but it does not require the arrival of seismic waves at all sensors before a warning is issued. In contrast, it also includes the information of non-triggered sensors. With the availability of first source parameter estimates only 0.5 seconds after triggering of the first sensor, PreSEIS is as fast as an on-site warning system.