



Establishing a Tsunami Warning Center in Turkey

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Historical and instrumental studies reveal the complex nature of plate interactions and crustal deformation in an around Turkey, that are mainly presented by devastating earthquakes accompanied sometimes by catastrophic tsunamis. In addition to earthquakes as tsunami sources, massive land movements, such as in the case of the Santorini event around 1600 BC or the Fatsa Tsunami triggered by the Erzincan (Turkey) earthquake in 1939 gives a clear indication that the entire region surrounding Turkey is prone to tsunami events. Therefore, it is evident that a Tsunami Warning System needs to be put in place especially covering the Eastern Mediterranean, since tsunamis in the future could be even more harmful than the past events, when considering increased economic activity and the population density in the coastal zones.

To address the needs of a Tsunami Warning System, KOERI has taken the lead to set up a Tsunami Warning Center, which is expected to act also as a regional center under the UNESCO IOC – ICG/NEAMTWS initiative. The project is fully supported by relevant national institutions and agencies. KOERI is responsible for the operation of the National Earthquake Monitoring Network for Turkey consisting 108 broadband and 22 short period seismometers. KOERI is also in the process of enhancing its observational capabilities with the deployment of 5 sea bottom observation systems in the Sea of Marmara, including broadband seismometers and differential pressuremeters, pressure transducer, strong-motion sensor, hydrophone, temperature measurement device and flow meter. The deployment phase is finalized in December 2010 and the system is fully operational. The seismic component of the sea-bottom observation system will improve the spatial distribution of the existing seismic network, especially after the integration with the land-based stations. Existing seismological network is being improved especially in the coastal regions and bilateral agreements were concluded with several neighboring countries to exchange seismological data. A Protocol with the responsible national agency for sea level monitoring has been concluded and currently three tide-gauge stations are transmitting data to IOC Sea Level Station Monitoring Facility. In addition, KOERI is considering to set-up its own tide gauge network consisting of 10 stations. NAMI DANCE Tsunami Simulation - Visualization Code has been installed in KOERI and some of the tsunami scenarios have already been simulated. The near-future goal is to create a tsunami model database based on deterministic approaches (scenarios) and to derive tsunami hazard and risk maps for Turkey. KOERI is currently functioning as the de facto National Tsunami Warning Center and is expected to operate as the Regional Tsunami Watch Centre in 2012, providing coverage to Eastern Mediterranean, Aegean and Black Seas.