Establishing a Tsunami Warning Center in Turkey

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ABSTRACT

Historical and instrumental studies reveal the complex nature of plate interactions and crustal deformation in and around Turkey, which are mainly presented by devastating earthquakes as tsunami sources, massive land movements, such as in the case of the Erzincan event around 1600 BC or the Santorini event in 1600 AD, and tsunamis generated by events offshore. In cooperation with TÜRKEL (a major GSM company in Turkey), KOERI is enlarging its strong-motion network to promote real-time seismicity and to extend Earthquake Early Warning System throughout the country. In the framework of the project, 30 strong-motion seismometers are being installed at base Transmitter Station Sites in coastal regions.

DECISION SUPPORT SYSTEM FOR TWC

The Decision Support System (Fig.2) proposed for the TWC relies primarily on the initial earthquake data, from which the tsunamiogenic potential of the earthquake can be assessed based on the [Draft] Decision Matrix (Fig.3) proposed by ICG/HEMTWS. The type of the Tsunami Message will also be determined based on the same matrix in connection with the Decision Support System Matrix (Fig.12).

AGREEMENT WITH CTBTO

In cooperation with UNESCO, CTBTO began providing real-time and continuous data on a test basis in March 2005 to four Tsunami Warning Centers in Australia, Hawaii, Japan and Malaysia. Based on the success of this test phase, CTBTO has now entered into formal tsunami warning agreements and arrangements with Japan, Australia, the Philippines, the United States, Indonesia, Thailand, Malaysia, and France. Turkey concluded an agreement in February 2011 to accomplish a better azimuthal coverage and real time data from 6 primary and 10 auxiliary WS stations would be transmitted to CTBTO.

STRONG MOTION NETWORK

KOERI is starting a new era in its observational capabilities by establishing a new network of mobile strong-motion instruments to facilitate real-time seismology and to extend Earthquake Early Warning System countrywide. Within the scope of this project, 30 strong motion sensors are being installed at base Transmitter Station Sites in coastal regions.

SEISMOLOGICAL NETWORK

KOERI is enlarging its strong-motion network to promote real-time seismology and to extend Earthquake Early Warning System throughout the country. In the framework of the project, 30 strong-motion seismometers are being installed at base Transmitter Station Sites in coastal regions.

SEISMIC MONITORING

Seismic stations with real time data transmission to KOERI

KOERI’s seismic network comprises 116 broadband and 22 short period seismometers operated by National Earthquake Monitoring Center (NCDC) and satellite systems are being used for the communication since 2004. KOERI is also receiving real-time data from 72 stations from 10 networks in SeisComp3 compiled by GFZ. In 2006, KOERI has expanded its network with an additional 12 stations and it is now able to monitor earthquakes within 2 minutes in Turkey and within 30 minutes to 15 minutes for earthquakes in its surrounding region according to the event magnitude and distance.

TSUNAMI FORECAST POINTS

The model database will enable TWC to assess the tsunami height at predetermined Tsunami Forecast Points, upon which the type of the warning message will be determined based on the [Draft] NEAMTWS Decision Support Matrix (Fig.12). Locations of Tsunami Forecast Points are selected based on the criteria received from Disaster and Emergency Management Presidency such as locations of ports, shipyards, marinas, (future) nuclear power plants, thermoelectric power plants, oil refineries, coastal airports, touristic destinations, demarcated populated beaches; together with locations affected from historical tsunamis, and existing tide-gauge stations. Prof. Ahmet Cevdet Yalciner has revised the list with reference to tsunami modeling requirements.

REFERENCES


CONTACT

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