Recent Development of the Earthquake Precursor and Early Warning Systems in Taiwan

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Abstract

Taiwan is a small island with dense population and urbanization. The high raise buildings, important lifelines, transportation system, and important industry are under the threat and challenge of large-scale earthquakes. If those critical buildings, infrastructures, and facilities are subjected to catastrophic earthquakes, the induced damages and losses may cause the instability of country. Therefore, it is essential to promote the earthquake precursor and early warning (EEW) systems in Taiwan.

Recently, Central Weather Bureau, Central Geological Survey, Academia Sinica, Water Resources Agency, and some Universities have earthquake precursor observation projects. Include borehole strain-meter observation, geochemistry observation, underground water level variation, and many precursors analysis. To promote the EEW system in Taiwan, some important tasks and issues should be taken into consideration. The detailed items in the following aspects will be illustrated: (1) The promotion mechanism and policy; (2) Improvement of the accuracy of EEW message; (3) Development of communication technology; (4) Education and deployment. A trial system will be established and applied for some governmental and academic institutions using the current communication system. After the system is verified by some pilot tests, the application will be gradually expanded. Through the collaboration among the government, academy, and private sectors, a comprehensive earthquake early warning system may be established to reduce the possible damages and impact induced by catastrophic earthquakes.

Bibliography

K. L. Wen received his Ph.D. in strong motion seismology from the National Central

University, Taiwan in 1988. He worked on the Institute of Earth Science, Academia Sinica for 18 years (1981.9-1999.7) before returning to the National Central University , where he currently holds the Professor in Institute of Geophysics (1999.8-present). His interests are primarily in the areas of site effects analysis, engineering seismology, and seismic hazard mitigation. He is the Deputy Director of National Center for Research on Earthquake Engineering, Deputy Division Head of Seismic Hazard Mitigation Division, National S&T Center for Disaster Reduction, and Associate Editor of the SCI Journal, Terr. Atmos. Ocean. Sci..