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SAFE-Taipei: A Project for Strong Motions, Active Faults,and Earthquakes in Taipei Metropolitan Area

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Strong collision between the Eurasian and Philippine Sea Plates causes high seismicity in the Taiwan region. Hence, this region is often attacked by large earthquakes. Several cities, including three mega-cities, i.e., Taipei, Taichung, and Kaoshung, have been constructed on western Taiwan, where is lying on thick sediments. These cities, with a high population density, are usually a regional center of culture, economics, and politics. Historically, larger-sized earthquakes, e.g., the 1935 Hsingchu-Taichung earthquake and the 1999 Chi-Chi earthquake, caused serious damages on the cities. Hence, urban seismology must be one of the main subjects of Taiwan's seismological community. We have launched project, funded by Academia Sinica, to investigate seismological problems in several large cities. The first target is, of course, the Taipei Metropolitan Area, which is lying on the Taipei Basin.

This project will be performed in two three-year periods: the first one from 2005 to 2007 and the second one from 2008 to 2010. The main goals of the first period of this program project will focus on studies of (1) the underground 3-D velocity and Q structures of the area, (2) the development and test of several computational methodologies, and (3) the deployment of the Taipei Down-hole Seismic Array (TDSA). The second period of the program will concentrate on the strong-ground-motion prediction and earthquake rupture probability estimate in the area. In addition to academic goals of urban seismology, the results obtained from the program will be useful for seismic hazard mitigation in the Taipei Metropolitan Area. The experience learned from the area will help us to develop a whole-island project for urban seismology.