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Session Report
CLOSURE STATEMENT OF SPECIAL THEME SESSION SB:
NEAR-FIELD AND ARRAY OBSERVATIONS

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The world wide effort in strong ground motion measurement has been continuing since the 1978 Hawaii Workshop on Strong-Motion Measurement convened by the International Association for Earthquake Engineering. In two state-of-art reports, the strong motion instrumentation programs established in the last 20 years were outlined and the accomplishments in the development and deployment of new instruments were reviewed. In particular, the California Strong Instrumentation Program has established dense strong-motion array networks in California, following the 1971 San Fernando earthquake. The state-of-art reporters stressed the importance of challenging in the areas of increased data utilization and an ongoing commitment to the maintenance and expansion of strong-motion installations throughout the seismically active regions of the world. The data utilization projects should be internationally initiated to increase the application of the data recorded to the reduction of earthquake hazard.

In the first session, papers on the measurement and analysis of strong ground motions from large earthquakes were presented in Japan, USA, India, Mexico, Iran, and New Zealand. Emphasis in the reports was put on the improvements made in instrumentation and in particular in the computing facilities currently available to seismologists and earthquake engineers. A new strong-motion accelerograph network installed in Ashigara Valley, Kanagawa, Japan, has a wide dynamic-range of 108 db and a telemetric data acquisition system available for quick response to warnings and maintenances. A broad-band, wide-dynamic range, strong-motion array near Parkfield, California, USA, provides on-scale measurements of volumetric strain as well as ground acceleration and velocity. High fidelity measurements of strong ground motions in near fields and arrays are important for the source process studies of earthquakes as well as for anti-seismic engineering purposes.

In the second session, a separation of source and site effects in strong ground motion and some analytical as well as numerical methods to estimate local site conditions were reported. It was pointed out that it was very important to take surface geology and topography into account, particularly when strong ground motions for large earthquakes are simulated. During discussion, it was emphasized that the application of numerical methods for predicting the seismic response of local soil deposits should be based on good-quality geological, geophysical and geotechnical data and in particular, on in situ measurements of

S wave velocities.

The strong ground motion records have been accumulated in various parts of the world. However, there is still a scarcity of near field data, having strong shaking levels enough for giving rise to ground failure and damaging structures. Also, there is a scarcity of ground motion data in horizontal and vertical array needed to enable us to understand complex site effects due to irregular surface and subsurface structure.

Recently the IASPEI/IAEE Joint Working Group on " Effects of Surface Waves on Seismic Motion" was formed. The purpose of this group is to coordinate the establishment of an international series of test areas designed to provide a data base for comparing and testing contemporary methods, and developing new methods. This international program will provide an opportunity to exchange information on data and ideas on calculation methods between scientists and engineers and to establish a seismic hazard assessment method involving local site conditions.