

Introduction

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INTRODUCTION TO THE SESSION

Local site effects have played an important role in recent destructive earthquakes. As a result, increasing attention has been devoted to the development and application of methods for predicting the effects of surface geology on strong ground motion. These methods are more or less routinely applied to the determination of site specific seismic ground motion for the design of important structures. However, it has not been until very recently that there has been adequate experimental data with which to compare and evaluate the accuracy of various prediction methods.

The need for better understanding of the methods used to predict effects of surface geology was a major motivating factor for the creation of the International Experiment on the Effects of Surface Geology. This experiment has been guided by the Joint Working Group on the Effects of Surface Geology which was formed jointly by the International Association for Earthquake Engineering (IAEE) and the International Association of Seismology and Physics of the Earth's Interior (IASPEI). The Joint Working Group has fostered a set of "blind" prediction experiments in which participants predict the ground motion at one or more test stations based on measured "input" motion at other reference stations. The measured motion at the test station is not revealed until after the predictions are submitted. Complete geological and geotechnical data for the test site is provided to all participants.

The initial blind experiment was conducted at Turkey Flat in California. The prediction phase of this experiment has so far involved only weak recorded ground motions. A second experiment involving both weak and strong-motion data was conducted at the Ashigara Valley test site in Japan. This Special Theme Session reviews the results of these two blind experiments with special emphasis on the strong-motion experiment conducted at Ashigara Valley.

The papers that follow contain discussions of the conduct of the blind experiments, the geological, geotechnical, and ground motion data obtained, the ground motion prediction methodologies employed,

and the overall accomplishments of the experiments. Details of the Ashigara Valley experiment which involved over 40 participants are described in the Proceedings of the International Symposium on the Effects of Surface Geology on Seismic Motion (ESG-92) which was held in Odawara, Japan, March 25-27, 1992.

The organizers of the Special Theme Session wish to thank the participants for their worthwhile contributions. The insights gained from this session should increase the usefulness of the data obtained from past experiments and improve the conduct of any future experiments.