

NEES Program's Support for Tsunami Experimental Research

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The George E. Brown Jr. Network for Earthquake Engineering Simulation

The National Earthquake Engineering Simulation is an NSF-sponsored program that seeks to revolutionize the way in which earthquake engineering research through shared facilities supporting collaborative research at unprecedented scales. A total of 15 state-of-the-art experimental facilities are being linked together with advanced computing and networking technology. Managed by NEES Consortium, Inc., the entire system will open for business on October 1, 2004. A key feature of the NEES program is the new tsunami basin located at Oregon State University. Like the other NEES facilities, it was designed specifically to support distributed, collaborative research. Colleagues, and students can participate remotely in experiments from their own institutions, using a unique, web-based electronic notebook that actually enhance observation through real-time display of sensor data, instant replay, and access to information on experiment design. This is made possible by a comprehensive data archive that also allows other groups to study or reuse data from previous tests as well. The ability to integrate numerical and physical experiments will allow researchers not only to validate their numerical models through experimentation, but also to use numerical methods to steer the course of lab experiments. Finally, it will be possible to design experiments that span physical laboratories, making it possible to tie in factors such as soil liquefaction or landslide-based generation of tsunamis. This presentation will describe the remarkable new capabilities offered by the NEES infrastructure, focusing on examples from the NEES tsunami basin.