

NSF RAPID: Post-Earthquake Monitoring of Buildings in Chile Using NEES@UCLA Resources: NSF RAPID CMMI-1040574

- **Intellectual merits**

- This project involved rapid deployment of NEES post-earthquake building monitoring equipment to Chile following the February 27, 2010 M_w 8.8 earthquake.
- The vast majority of buildings over five stories in Chile are constructed using reinforced concrete shear walls, a system that also is very common in the US.
- Chilean and US Seismic design requirements are very similar, and design of RC buildings in Chile is based US ACI 318-95, with only minor modifications.
- Installation of monitoring equipment in buildings provided a unique opportunity to collect data on both damaged and undamaged buildings subjected to significant shaking levels.
- The project provided an excellent opportunity to assess shipping, logistical, and legal issues associated with deploying NEES@UCLA equipment to foreign countries following a large earthquake.

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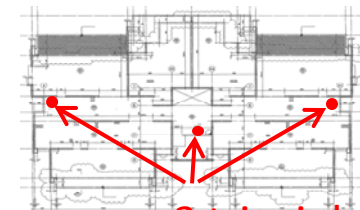
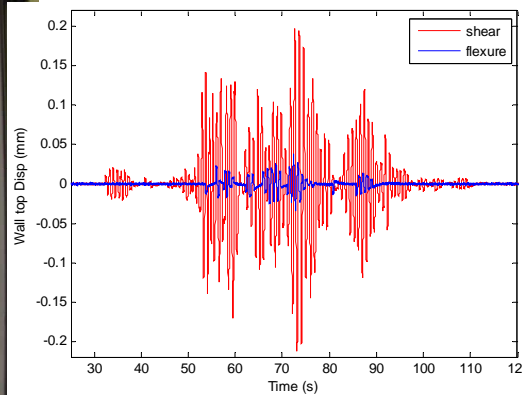
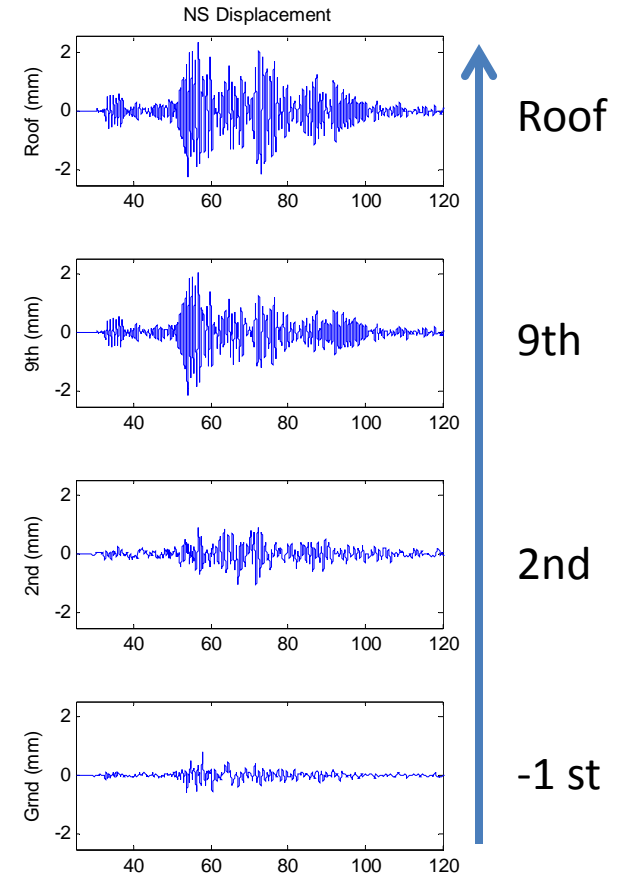
Ambient Vibration
2 Aftershocks



Ambient Vibration
30 Aftershocks



Ambient Vibration
4 Aftershocks



3 triaxial sensors

UCLA PIs: J. W. Wallace and R. L. Nigbor

Joy Pauschke, NSF Program Director

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- **Broader impacts**

- Building drawings and data collected will be archived in the NEES Data Repository and widely available for future studies.
- This project, along with a similar effort in Istanbul, Turkey, have provided the NEES@UCLA Equipment Site with valuable experience, increasing the potential that unique and valuable structural response data will be collected by NEES in future earthquakes, either in the US or abroad.
- The project provided an excellent opportunity for the US to assist and support a foreign country and collaborate with their engineering community following a major crisis.
- The project funds supported researchers and faculty from under-represented groups.

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- **Statement of Significant Result(s) and Explanation**

- Two, 24-channel monitoring NEES@UCLA monitoring systems arrived in Chile 14 days after the earthquake and were deployed in buildings within four days. One of the 24-channel systems remained in Chile for two months. No significant issues occurred related to shipping the equipment to and from Chile, but much was learned about such logistics that can be applied to future NEES deployments.
- Strong collaboration with universities in Chile enabled the equipment to be deployed in four different buildings over a period of two months. Graduate students from Pontificia Universidad Católica de Chile were trained to use the equipment.
- Building drawings and data collected are being prepared to be archived in the NEES Data Repository.
- Results of the effort were presented in a Special Session at the October 2010 NEES/PEER Quake Summit held in San Francisco.
- A peer-reviewed paper that summarizes project results is being prepared for the EERI Special Issue scheduled to be published in 2011.