



# Seismos



News from the George E. Brown Jr., Network for Earthquake Engineering Simulation

January | February 2009

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NEES Consortium Inc.  
<http://www.nees.org/>

NEES Cyberinfrastructure Center  
<http://it.nees.org/>

National Science Foundation  
<http://nsf.gov/>

National Earthquake Hazards  
Reduction Program  
<http://www.nehrp.gov/>

## From the CEO



Since our last Seismos, we have been very busy at the NEES World Headquarters. Just a few weeks ago, we had an excellent meeting among US and Japanese researchers, and NSF and MEXT, regarding E-Defense and NEES cooperation over the next five years. The interconnection of the two experimental facilities has been extraordinary, and, due to a common vision for cooperative work and sharing of resources, we have been able to accomplish a great deal. We are now working to ensure that both NEES and E-Defense will continue along the lines that have been established. There are a number of projects that will be testing in Miki City in the next few months including projects led by Drs. Greg Deirlein and John Van de Lindt.

We are also pleased to announce the 2009 NEES REU Program. This year's REU sites include: Lehigh, Buffalo, UCSD/SDSC, UCLA and UIUC, and offer a wide range of research opportunities. Interested students should visit the REU website (<http://www.nees.org/Education/NEESreu/2009/index.php>). Remember, we are an equal opportunity Program. Student backgrounds can range from Computer Science or Engineering to Mechanical or Civil Engineering.

On February 13, proposals for the new NEES OPS Manager will be submitted to NSF. The selection should be made in a few months. We continue to work closely with NSF to ensure that the transition to the new manager will be as transparent and smooth as possible. For now, please continue your 2009 NEESR proposal work as usual using the existing NEESinc policies and procedures. Our plan is to work with the new manager closely for the remainder of FY09 and into FY10. Remember, ensure that your NEESR budgets are as accurate as possible; this requires close communication with the NEES site(s) that you intend to use. NSF will not provide supplemental funds to aid active projects with budgets that are flawed. It would be good to avoid these kinds of issues, so review your budgets carefully.

As you work on your proposals, we can connect you with potential NEESR teammates. Oak Ridge Associated Universities (ORAU) is working with NEESinc to make connections between our community and their 100+ minority and undergraduate schools. These schools have faculty with very solid credentials and students eager to participate. To learn more about opportunities for collaboration, please contact Cathy Fore at ORAU ([Cathy.Fore@orau.org](mailto:Cathy.Fore@orau.org)).

Along these lines, the Association of Jesuit Colleges and Universities includes a number of undergrad institutions with engineering schools, including Santa Clara, Gonzaga and Seattle Universities, where members of our community reside. These also can be partner schools as required by NEESR and have outstanding faculty and students. Visit: <http://www.ajcunet.edu/index.aspx> for additional information.

Lastly, the NEES 7th Annual Meeting (N7AM) conference and registration information will be released soon. The N7AM will be combined with the CMMI researchers meeting and will be held June 23-25 in Honolulu, Hawaii. The Program will have an interesting group of sessions completely integrated within the larger CMMI meeting. I hope to see you there.

- Steven L. McCabe



SDSC



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

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## NEES 7<sup>th</sup> Annual Meeting: *Seismic Mitigation in a Flat World*

June 23-25, 2009 - Honolulu, Hawaii

The NEES 7th Annual Meeting (N7AM) will be held as part of the National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation (CMMI) Research and Innovation Conference: *Research and Education in a Flat World*. This will provide an excellent opportunity for the NEES community to interact with researchers from other sectors of the NSF CMMI Division and showcase the impact of NEES on seismic mitigation. The 7th Annual Meeting will provide an occasion for researchers, practitioners, and policymakers to discuss NEES research – past, present and future – with a special focus on broadening and expanding our scope and impact.

Join us to hear the latest developments, to share your experiences and accomplishments, and to connect with peers from across the nation and around the world. N7AM will be held at the Hawaii Convention Center and will feature high profile plenary sessions, informative breakout sessions, and extensive networking opportunities. Plenary session topics include:

- **NEES in a Multi-Hazard World** will examine the role of NEES and the earthquake engineering community in researching the effects of a multi-hazard environment on engineered systems, and how these effects can be mitigated.
- **NEES Success Stories and Innovations** will provide a highlight reel of significant contributions to the advancement of earthquake engineering research, cyberinfrastructure and education that would not have been possible without NEES.
- **NEES in a Flat World** will highlight international NEES collaborations as well as independent international earthquake engineering research programs that complement NEES research.
- **NEES without Borders** will build on the global theme by looking forward and focusing on the potential impact of NEES around the world.
- **NEES: Advancing Performance and Resiliency Worldwide** will highlight current NEES research with the potential to significantly contribute to seismic resiliency.
- **Emerging Frontiers in Research** will provide an interactive opportunity for attendees to discuss seismic research needs, innovative mitigation strategies and investigation methods with a panel of NEES researchers.

### Additional Conference Information:

<http://www.cmmigranteeconference.org>



NEES 7<sup>th</sup> Annual Meeting:  
*Seismic Mitigation in a Flat World*

June 23 – 25, 2009

[http://www.nees.org/Education/  
AnnualMeeting/index.php](http://www.nees.org/Education/AnnualMeeting/index.php)

## N7AM Call for Abstracts

### Poster Presentations

In keeping with the format of NSF CMMI Conferences, the NEES Poster Session will be a high profile opportunity for NEES sites, NEESR projects and other earthquake engineering researchers and practitioners to showcase their innovative work.

Each current NEESR project is required to present a poster and posters from other projects related to earthquake engineering are encouraged. Abstracts may be submitted on a broad spectrum of topics related to design, research, EOT and IT.

### Oral Presentations

NEES is currently seeking presentations of original research, experimental and computational innovations, IT and EOT advances, and diverse issues related to earthquake engineering practice. Presentations should discuss findings and the potential or actual impact of the research. Abstracts may be submitted to the following breakout sessions:

- Emerging Frontiers in Earthquake Engineering and Multi-Hazard Experimentation
- Seismic Performance of Non-Ductile Buildings
- Lifelines and Critical Infrastructure
- Hydrodynamic Effects of Tsunamis and Hurricanes
- Connecting the World through Hybrid Simulation
- Publishing and Sharing Earthquake Engineering Data
- The Broad Impact of EOT

Abstracts should be submitted electronically using the following link:

[http://www.surveymonkey.com/s.aspx?  
sm=AW\\_2fQzHimVETX1zDKCeulRw\\_3d\\_3d](http://www.surveymonkey.com/s.aspx?sm=AW_2fQzHimVETX1zDKCeulRw_3d_3d)

**Abstracts must be submitted by  
February 16, 2009**



## NEEScentral Releases 1.8.3, 1.8.4 & 1.8.5 Offer Enhancements Based on User Feedback

NEEScentral (<https://central.nees.org/>) is a web-based centralized data repository for managing, sharing, storing, and publishing data. Release highlights include several user interface enhancements based on feedback from the NEES IT Road Shows as well as the ability to:

- **Create a Project Group:** The Project Group serves as a “Super Project” allowing users to group together their projects (structured and unstructured) and associated metadata. Individual sub-projects (either newly created or existing) can also be associated to the project group.
- **Clone a Project**
- **Create a Project Report**
- Share public files at the Experiment level
- Upload multiple files simultaneously for Simulation Models

Get started with the NEEScentral Hands-On Self Paced Tutorial (<https://central.nees.org/help/NEEScentralTutorial.pdf>)

Access the full release notes at:

- NC 1.8.4 | 1.8.5 (<http://it.nees.org/about/announcements/index.php#000641>)
- NC 1.8.3 (<http://it.nees.org/about/announcements/index.php#000640>)



## Data Turbine Utilities 3.1 Release

Data Turbine (<http://it.nees.org/software/dataturbine/index.php>) provides high performance time-synchronized data streaming services for both static and dynamic data.

Data Turbine Utilities (DTU) provides additional functionality to interface Data Turbine. The new features of DTU 3.1 include:

- Separate DTU installer
- Support for Panasonic brand cameras
- Support for a command-line interface similar to Data Turbine
- Smaller disk footprint

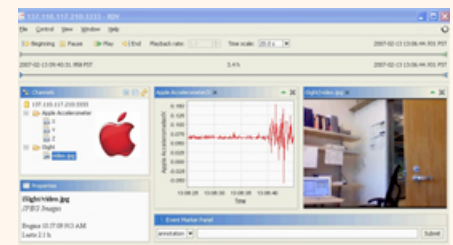
NEESit is focused on working closely with our users to extend telepresence capabilities and improve the overall experience of the researcher.

Download Data Turbine Utilities 3.1 at:  
[http://it.nees.org/software/dataturbine/dtu310\\_installer.jar](http://it.nees.org/software/dataturbine/dtu310_installer.jar)

## iSeismograph 1.1: Making Software Installation Easier for Researchers, Educators and Students

iSeismograph is a software package that turns any Apple MacBook or MacBook Pro laptop into a digital Seismograph.

The software takes advantage of the MacBook/Pro's embedded accelerometer and onboard camera to record and visually display local seismic activity in real-time. Users can also play back earlier data in TiVo-like fashion.



New release features include:

- Easy installation guide for on any MacBook or MacBook Pro; a single click on the installation jar file will immediately bring up an install wizard to guide you through the process
- iSeismograph no longer requires an external Data Turbine or RDV installation
- Software is easily removed by simply dragging the Application/iSeismograph folder in the trash
- The disk space for installation has dropped from approximately 50 MB to 11 MB

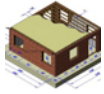
NEESit hopes these modifications will go a long way towards making any MacBook/Pro an on-demand iSeismograph, thereby enhancing it as an educational and demonstration tool.

Download iSeismograph at:  
<http://it.nees.org/software/iSeismograph/index.php>

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## NEESR Researchers Develop Performance-Based Design for Masonry Structures at University of California, San Diego

Excerpt from "Performance-Based Design of Masonry and Masonry Veneer: Full-Scale Testing January 26, 2009"

For the past two years, the masonry industry has been working with university researchers under the National Science Foundation's NEES program to develop performance-based design provisions for masonry and masonry veneer. On January 25-27, 2009, this research culminate(d) with the seismic testing of a full-size wood-stud frame. In March 2009, a similar structure of load-bearing concrete masonry will be tested. Both structures will be clad with clay masonry veneer and will be tested to failure on the NEES large outdoor shaking table of the University of California at San Diego. Pictures of these structures are shown in Figure 1 and Figure 2 ...

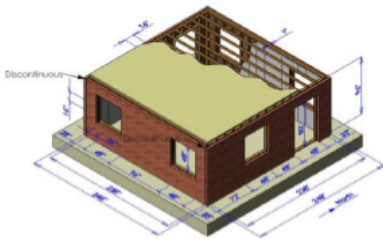


Figure 1. Full-size, wood-stud frame structure with sheathing, ties and clay masonry veneer, gypboard inside

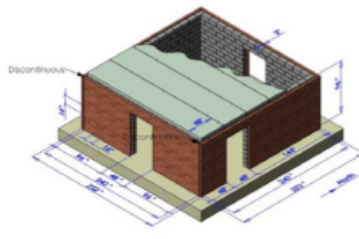


Figure 2. Full-size CMU structure with clay masonry veneer

Access the full article at: ([http://www.nees.org/About\\_NEES/Announcements/pdfs/NSF\\_NEES\\_masonry\\_press\\_release\\_2008-12-26\\_rek.pdf](http://www.nees.org/About_NEES/Announcements/pdfs/NSF_NEES_masonry_press_release_2008-12-26_rek.pdf))



## PEER | NEESit Host OpenSees Days 2008 at UC Berkeley Richmond Field Station

OpenSees (<http://opensees.berkeley.edu/index.php>) is a software framework for structural and geotechnical simulation applications in earthquake engineering using finite element methods. The framework has been developed as an open-source, object oriented software framework.

In September 2008, PEER and NEESit hosted OpenSees Days 2008 at the UC Berkeley Richmond Field Station. The Program offered 2 workshops designed for beginner and advanced users.

- Day 1: **OpenSees User Workshop** introduced OpenSees to new users, research academics as well as industry practitioners.
- Day 2: **OpenSees Modeling Workshop** presented more advanced applications of OpenSees by users and developers outside of the core OpenSees Development Team at UC Berkeley.

Of the 81 participants in attendance, 9% indicated that they were associated with a NEESR project, 25% with NEES and 16% with PEER.

Access workshop presentations at: <http://opensees.berkeley.edu/workshop/OpenSeesDays2008/OpenSeesDays2008.html>

Network for Earthquake Engineering Simulation  
**Upcoming Researcher Workshops**

Please contact equipment sites directly for exact dates and schedule.

<p><b>Geotechnical and Structural Facilities</b></p> <p>The Fourth Annual (FY08) Seismic Testing Workshop at Lehigh University will include a site overview and review of facilities and research capabilities. Hands-on activities, and an overview of other resources will also be presented.</p> <p>The NEES geotechnical site at RPI and UC Davis will present their 20th Annual Geotechnical Workshop on the Davis shaking table. This 3-day workshop highlights hands-on model preparation and instrumentation and participation during an actual earthquake test. Presentations include updates from both facilities and future developments.</p> <p><b>FIELD and MOBILE FACILITIES</b></p> <p>In a NEESit online presentation, the University of Texas at Austin will introduce their NEESit capabilities to researchers at several mobile research projects and explain the use of SingleShot for NEESit-central data entry.</p> <p>The University of California at Santa Barbara Center for Earthquake Engineering and Seismology will highlight the site's telepresence, instrumentation and event data access tools. With the use of a mobile shaker, participants will see NEESit research data generated in real-time.</p> <p><b>SHAKE TABLE FACILITIES</b></p> <p>A joint, 3-day researcher workshop on NEESit should also take place in November by NEESit staff from the University of Buffalo and the University of Illinois at Urbana.</p> <p>The workshop includes lectures, a facility tour, demonstrations and hands-on application exercises.</p> <p>The University of California at San Diego will host its existing telepresence, instrumentation, methods for calibration to ISO standards, remote operation of public domain methods used by the site and dissemination requirements will be covered.</p>	<p><b>When: Summer 2009</b> Where: NEES@Lehigh Contact: Cary Heibel <a href="mailto:caryh@lehigh.edu">caryh@lehigh.edu</a> <a href="http://www.nees.org">http://www.nees.org</a></p> <p><b>When: June 2009</b> Where: NEES@UC Davis Contact: Dan Kishenblatt <a href="mailto:kishenblatt@ucdavis.edu">kishenblatt@ucdavis.edu</a> <a href="http://www.nees.org">http://www.nees.org</a></p> <p><b>When: March 2009</b> Where: NEES@UTexas Contact: Farnush Mirza <a href="mailto:fmirza@utexas.edu">fmirza@utexas.edu</a> <a href="http://www.nees.org">http://www.nees.org</a></p> <p><b>When: Spring/Summer 2009</b> Where: NEES@UCSB Contact: James Neale (UCSB) Nathan Rogers (UCSB) <a href="mailto:jneale@ucsb.edu">jneale@ucsb.edu</a> <a href="mailto:nrogers@ucsb.edu">nrogers@ucsb.edu</a> <a href="http://www.nees.org">http://www.nees.org</a></p> <p><b>When: May 18th-19th, 2009</b> Where: NEES@Buffalo Contact: Tom Alkhorazaji (UB) David Eberhart (UIUC) <a href="mailto:alkhorazaji@buffalo.edu">alkhorazaji@buffalo.edu</a> <a href="mailto:deberhart@uiuc.edu">deberhart@uiuc.edu</a> <a href="http://www.nees.org">http://www.nees.org</a></p> <p><b>When: Spring 2009</b> Where: NEES@UCSD Shaking Table Contact: Dan Kishenblatt <a href="mailto:kishenblatt@ucsd.edu">kishenblatt@ucsd.edu</a> <a href="http://www.nees.org">http://www.nees.org</a></p>
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www.nees.org  
These activities are supported by the National Science Foundation (NSF) Grant #EEC-0540432.

## NEES Facilities Researcher Workshops Winter | Spring 2009

[http://www.nees.org/Research\\_Sites/ESOResources/NEES%20FY09%20Researcher%20Workshops.pdf](http://www.nees.org/Research_Sites/ESOResources/NEES%20FY09%20Researcher%20Workshops.pdf)



## NEHRP's SeismicWave Features a NEESR Project at the NEES@MN MAST Lab

The National Earthquake Hazards Reduction Program (NEHRP) recently published its January issue of *SeismicWave* which featured Dr. Gustavo Parra-Montesinos' NEESR project at the NEES@Minnesota MAST Laboratory.

The primary objective of the research was to evaluate using fiber-reinforced concrete in slab-column connections. Some of the testing results call into question current practice on the design of connections in flat plate construction in earthquake-prone regions.

Access the full article at: (<http://nehrrp.gov/pdf/SeismicWavesJan09.pdf>)



## 14WCEE in Beijing, China Showcases NEES Research Activities

Held in October 2008, the theme of the 14th World Conference on Earthquake Engineering (14WCEE) was "Innovation, Practice, Safety". The Conference served as an international forum where researchers, government officials and NGO representatives in earthquake engineering and relevant fields exchanged the latest research results and technologies and strived to promote innovation, practice and safety in reducing the impact of earthquakes on our society and natural environment.

The breadth of NEES Research Activities was showcased in several official Conference sessions, including:

- NEES Special Sessions: NEES Collaboratory Research Advances
- NEES Special Sessions: NEES Collaboratory Innovations in Research Methods
- Emerging Technologies in Earthquake Engineering
- 12 Experimental Studies
- Tsunami

For additional information about 14WCEE, visit: (<http://www.14wcee.com/>).  
Download the program at: (<http://www.14wcee.com/14WCEE%20Program.pdf>).

## PROGRAMS & EVENTS

NEES@Texas On-line Workshop  
**Mar 3, 2009 – 3:00-5:00 pm CST**  
<http://nees.utexas.edu/Workshop.shtml>

NSF CAREER Proposal Writing Workshop  
**Mar 12 – 13, 2009**  
[http://www.k-state.edu/career/2009/09\\_CAREER.htm](http://www.k-state.edu/career/2009/09_CAREER.htm)

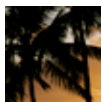
UB-UNR NEES Seismic Workshop  
**May 18 – 19, 2009**  
Contact: [tma1@buffalo.edu](mailto:tma1@buffalo.edu)

NSF | Multiscale Science Based-Modeling  
and Simulation and Experimental  
Validation on Enabling Materials  
**May 27 – 30, 2009**  
[http://www.nees.org/About\\_NEES/Announcements/pdfs/Course\\_Multiscale\\_2009.pdf](http://www.nees.org/About_NEES/Announcements/pdfs/Course_Multiscale_2009.pdf)

NEES 7<sup>th</sup> Annual Meeting  
**Jun 23 – 25, 2009**  
<http://www.nees.org/Education/AnnualMeeting/index.php>

The George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) is a national, networked, simulation resource that includes geographically distributed, shared-use, next-generation experimental research Equipment Sites built and operated to advance earthquake engineering research and education through collaborative and integrated experimentation, theory, data archiving, and model-based simulation.

NEES IS SUPPORTED BY THE  
NATIONAL SCIENCE FOUNDATION  
UNDER COOPERATIVE AGREEMENT  
NO. CMMI-0402490



## NEES@UCLA Featured at the Great Southern California ShakeOut Drill

On November 13 2008, millions of people throughout Southern California participated in the Great Southern California ShakeOut (<http://www.shakeout.org/>), the largest earthquake preparedness activity in U.S. history.

As part of the ShakeOut Drill, the NEES Experimental Facility at University of California, Los Angeles (NEES@UCLA) was invited to conduct a laboratory demonstration to illustrate improvements made to design requirements for reinforced concrete structures in the past few decades. Professors John W. Wallace, PI and Bob Nigbor, Co-PI of NEES@UCLA gave an overview of the demonstration for field trip participants of the Los Angeles International Earthquake Conference, including LA Councilmen Greig Smith.

The test, held at the UCLA Structures Lab, simulated the effect of an earthquake on two, approximately one-half scale reinforced concrete columns - one representative of 1950s construction, and one for newer codes. The columns being tested had identical external dimensions, but different internal steel reinforcement. The reinforcement in one column will be designed based on old code requirements, the other with more modern requirements set forth by the American Concrete Institute (ACI). In UCLA's state-of-the-art Structures Laboratory, a cyclic lateral load will be applied simultaneously to both specimens. This simulated earthquake will demonstrate the increased capacity of the column designed with modern requirements to withstand earthquake loading.

View an identical test UCLA performed for KCET, Community Television of Southern California/PBS, at: ([http://nees.ucla.edu/View\\_kcet.html](http://nees.ucla.edu/View_kcet.html))