

# Supporting Field Research with NHERI Community Resources: Interdisciplinary Coordination through CONVERGE

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# The Natural Hazards Center

**Mission**: We are the National Science Foundation-designated information clearinghouse for the **societal** dimensions of hazards and disasters. We are dedicated to reducing disaster harm through:

- 1. translating and sharing hazards and disaster research and information;
- building connections between researchers, non-profit and private sector professionals, the media, policy makers, and local, state, and federal officials;
- 3. advancing social science and interdisciplinary knowledge, with a special emphasis on the most vulnerable populations and places; and
- 4. training and mentoring the diverse next generation of hazards and disaster professionals.





# CONVERGE

CONVERGE is a new National Science Foundation-Natural Hazards Engineering Research Infrastructure (NSF-NHERI) facility dedicated to:

- identifying researchers;
- educating and training researchers;
- setting a convergence research agenda that is problem-focused and solutions-based;
- connecting researchers and coordinating functionally and demographically diverse research teams; and
- supporting and funding convergence research, data collection, data sharing, and solutions implementation.







# CONVERGE

- In 2020 we published an article on CONVERGE in Frontiers in Built Environment
- This article synthesizes 20 years of convergence research in an effort to bring that framework to the natural hazards field
- Access the article for free online at:

https://www.frontiersin.org/articles/10.3389/fbuil.2020.00110/full



ORIGINAL RESEARCH
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#### A Framework for Convergence Research in the Hazards and Disaster Field: The Natural Hazards Engineering Research Infrastructure CONVERGE Facility

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#### Specialty section

This article was submitted to Earthquake Engineering, a section of the journal Frontiers in Built Environment

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#### Cita

Pook L, Tobin J, Adams FIM, Wu H and Mathews MC (2020) A Framework for Convergence Research in the Hazards and Disaster Floid: The Natural Hazards Engineering Research Infrastructure CONVERGE Facility. Front. Built Environ. 6:110. doi: 10.3898/buil.2020.00110 The goal of this article is twofold; to clarify the tenets of convergence research and to motivate such research in the hazards and disaster field. Here, convergence research is defined as an approach to knowledge production and action that involves diverse teams working together in novel ways - transcending disciplinary and organizational boundaries - to address vexing social, economic, environmental, and technical challenges in an effort to reduce disaster losses and promote collective well-being. The increasing frequency and intensity of disasters coupled with the growth of the field suggests an urgent need for a more coherent approach to help guide what we study, who we study, how we conduct studies, and who is involved in the research process itself. This article is written through the lens of the activities of the National Science Foundation-supported CONVERGE facility, which was established in 2018 as the first social science-led component of the Natural Hazards Engineering Research Infrastructure (NHERI). Convergence principles and the Science of Team Science undergird the work of CONVERGE, which brings together networks of researchers from geotechnical engineering, the social sciences, structural engineering, nearshore systems, operations and systems engineering, sustainable material management, and interdisciplinary science and engineering. CONVERGE supports and advances research that is conceptually integrative, and this article describes a convergence framework that includes the following elements: (1) identifying researchers; (2) educating and training researchers; (3) setting a convergence research agenda that is problem-focused and solutions-based; (4) connecting researchers and coordinating functionally and demographically diverse research teams; and (5) supporting and funding convergence research, data collection, data sharing, and solutions implementation

Keywords: convergence research, natural hazards, disasters, interdisciplinary, transdisciplinary, training, Science of Team Science, research coordination networks

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#### **PURDUE UNIVERSITY**

Network Coordination NSF Award #1612144



Social science / Interdisciplinary resources NSF Award #1841338



UC BERKELEY
Computational Simulation
NSF Award #1612843

#### UNIVERSITY OF WASHINGTON

Post-disaster RAPID Research NSF Award # 1520817



UNIVERSITY OF TEXAS, AUSTIN Community Cyberinfrastructure NSF Award #1520817

#### OREGON STATE UNIVERSITY

Wave Basin and Flume NSF Award # 1519679



FLORIDA INTERNATIONAL UNIVERSITY

Wind Simulation NSF Award #1520853

#### UNIVERSITY OF TEXAS, AUSTIN

Portable Earthquake Simulation NSF Award #1520808



UNIVERSITY OF FLORIDA

Wind Simulation NSF Award #1520843

UC DAVIS

Geotechnical Centrifuges NSF Award #1520581



Large Outdoor Shake Table NSF Award #1520904 LEHIGH UNIVERSITY

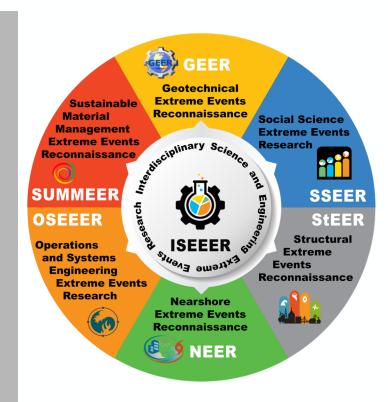
Hybrid Simulation NSF Award #1520765





# NSF Extreme Events Reconnaissance / Research (EER) Networks

- 1. Geotechnical Engineering (GEER)
- 2. Social Sciences (SSEER)
- 3. Structural Engineering (StEER)
- 4. Nearshore Systems (NEER)
- Operations and Systems Engineering (OSEEER)
- 6. Sustainable Material Management Engineering (SUMMEER)
- 7. Interdisciplinary Science and Engineering (ISEEER)







# **CONVERGE** Training Modules

- Free, online courses designed to accelerate the training of diverse hazards and disaster researchers, including students and early career researchers
- 30-60 minutes to complete and includes quiz and certificate of completion



SOCIAL VULNERABILITY AND DISASTERS



DISASTER MENTAL HEALTH



CULTURAL COMPETENCE IN HAZARDS AND DISASTER



INSTITUTIONAL REVIEW BOARD (IRB) PROCEDURES AND EXTREME EVENTS RESEARCH







UNDERSTANDING AND ENDING GENDER-BASED VIOLENCE IN FIELDWORK



BROADER ETHICAL CONSIDERATIONS FOR HAZARDS AND DISASTER RESEARCHERS





## **Check Sheets and Briefing Sheets**





**ABOUT** 

RESEARCH NETWORKS

RESOURCES

DATA

COMMUNICATIONS

CONTACT

#### **CONVERGE Extreme Events Research Check Sheets Series**

These short, graphical check sheets are meant to be used as researchers design their studies, prepare to enter the field, conduct field research, and exit the field. The series, which is currently in development, will offer best practices for extreme events research and consist of 1-2 page check sheets.

A list of planned check sheets follows:

#### Now Available





PART I: CONDUCTING A SYSTEMATIC LITERATURE REVIEW



PART II: SYSTEMATIC LITERATURE REVIEW TABLE



DON'T FORGET: A CHECKLIST OF THINGS TO BRING TO THE FIELD

NSF Award #1841338





### Data Ambassadors

#### **CONVERGE Data Ambassadors**

CONVERGE Data Ambassadors have completed a National Science Foundation-supported Publish Your Data! training session. As Data Ambassadors, they have committed to publishing their own data and instruments on DesignSafe, to learning about the CONVERCE and RAPID facilities and their resources, and to sharing their newly attained knowledge with other social and behavioral scientists and colleagues from other allied disciplines in the hazards and disaster field. CONVERGE Data Ambassadors will help usher in a culture shift toward data publication and data and instrument sharing across disciplines.

The following page includes a list of instruments, reports, protocols, and other research materials published by the CONVERGE Data Ambassadors via the DesignSafe Cyberinfrastructure.



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We envision a just and equitable world where knowledge is applied to ensure that humans live in harmony with nature.



Contact Us at: converge@colorado.edu
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