Extreme Events Reconnaissance: Social Science and Interdisciplinary Research in the Disaster Aftermath

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We envision a just and equitable world where knowledge is applied to ensure that humans live in harmony with nature.
How can we collaborate even more effectively as social scientists and in interdisciplinary teams to reduce the harm and suffering caused by disaster?
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This map denotes the approximate location for each of the 16 billion-dollar weather and climate disasters that impacted the United States during 2017.
What if “the big one” strikes tomorrow?

How will the social science and interdisciplinary hazards and disaster research communities respond?
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How will the hazards engineering and disaster social science research communities respond?
Purpose

To establish a platform and network for all-hazards Social Science Extreme Events Reconnaissance (SSEER) and Interdisciplinary Science and Engineering Extreme Events Reconnaissance (ISEEER)
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http://www.geerassociation.org/

https://dr2.nlm.nih.gov/
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Vision

For hazards and disaster researchers to be prepared to carry out extreme events reconnaissance research that is coordinated, comprehensive, coherent, ethical, and scientifically rigorous.
A New Approach for Rapid Reconnaissance Research is Urgently Needed
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Challenges to the Advancement of Extreme Events Reconnaissance

1. Lack of Identification and Coordination of Researchers

2. Inadequate Guiding Research Frameworks and Insufficient Catalog of Research Approaches

3. Over-Emphasis on Large-Scale, Sudden-Onset Extreme Events

4. Cross-Sectional Data Collection, Time Scale Deviations, and Lack of Replication

5. Lack of Interdisciplinary Integration in Rapid Reconnaissance Teams
1. Lack of Identification and Coordination of Researchers
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• Duplication of effort

If engineers go off “like cowboys riding on their own, you end up with five reports on the same building collapse” – Tracy Kijewski-Correa, Univ. of Notre Dame
1. Lack of Identification and Coordination of Researchers

• Duplication of effort
• Ethical issues
  – researchers with limited knowledge of affected areas, no time for literature reviews, lack of cultural competence
  – negative impacts for researchers in affected communities and emergency response operations

• **Opportunity:** Identifying and mapping core, periodic, or situational researchers in the field
• Ethics training in advance for all
2. Inadequate Guiding Research Frameworks and Insufficient Catalog of Research Approaches
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- Research approaches at present: inductive and exploratory, small scale, convenience samples
- No systematic inventory of research instruments and standardized scales and measures leads to “homemade scales”
- No catalogue of publically accessible and privately available secondary data sets and sources
- **Opportunity:** create multi-scale frameworks
- Inventory and catalog standardized validated scales and measures
3. Over-Emphasis on Large-Scale, Sudden-Onset Extreme Events
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- “Paradigm of the Extreme”
  - Large scale
  - Urban
  - Developed nations

- **Opportunity:** Learn from chronic, small-scale, repetitive loss events to test theoretical and conceptual applicability of prior rapid reconnaissance studies
4. Cross-Sectional Data Collection, Time Scale Deviations, and Lack of Replication
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• Engineers and social scientists need to enter and exit the field at different moments post-disaster

• Data Collection
  – Short-term, single point in time, completed within one year of event

• Opportunity: prepare to enter the field, sync up time scales, encourage long-term studies, replicate studies
5. Lack of Interdisciplinary Integration in Rapid Reconnaissance Teams

Scheduled Meetings, Tues, Nov 29

10am  Duke Energy  
       (@ hotel)  
       (Networks Team)  
       John, Ken, Hana, Jenn H, Jen T-G

1pm  Public Works  
      (including water, wastewater)  
      (Networks Team)  
      John, Ken, Hana, Jenn H, Jen T-G

2pm  Recovery Coordination Meeting  
      Robeson County Offices  
      (Social Science Team)  
      Jen T-G, Maria, Judy, Dergy, 
      GE Engineer

Advance Team: Jamie + Network Team

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<tr>
<th>Mixed Team 1</th>
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L-complete Clusters 11 & 13 (~1 hr max)
5. Lack of Interdisciplinary Integration in Rapid Reconnaissance Teams

- Interdisciplinary work is difficult and time consuming – rapid reconnaissance studies, by their very nature, necessitate rapid team formation and deployment

- **Opportunity**: establish interconnected platforms, take a systemic and measured approach, advance the field
Responding to Rapid Reconnaissance Challenges

Interdisciplinary Science and Engineering (ISEEER)

Geotechnical (GEER)

Disaster Research Response (DR2)

Social Science (SSEER)

Structural (STEER)

NHERI RAPID Facility
Science of Team Science
Science of Team Science

• Examines the processes by which scientific teams organize, communicate, and conduct research

• Micro-level processes and macro-level conditions

• Helps to understand how teams collaborate to achieve scientific breakthroughs that would not be attainable through either individual efforts or a sequence of additive contributions
Next Steps

1. Establish Social Science and Engineering Advisory Committees
2. Convene a Meeting of Science of Team Science and Rapid Reconnaissance Team Leaders
3. Identify and Coordinate SSEER Researchers
4. Identify and Coordinate ISEEER Researchers
5. Establish Scientific Frameworks for Rapid Reconnaissance Research
6. Catalog Research Instruments and Data Sets
7-9. Convene Meetings of SSEER and ISEEER Researchers and Widely Disseminate Project Deliverables
Thank you!

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