GEO-ENGINEERING EXTREME EVENTS RECONNAISSANCE

Turning Disaster into Knowledge

Opportunities and Challenges

Breakout Session B: Lessons learned from Post-Earthquake Reconnaissance

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Reconnaissance Team Selection

- By way of SC/AP input, team leader should understand and convey to recon team important data gaps that should be targeted by the recon team.
- Team Members balance should mix expert capabilities that address research targets, with new faculty & grad students that address the educational component.

Reconnaissance Assessment

- Assess effectiveness of each reconnaissance effort to identify areas of needed improvement.
- How can we do a better job?

Reconnaissance

- PRE-RECON: [1] Mine the real-time data stream generated from on-the-scene experts, USGS, EERI, etc. Primarily experts, with student assistance.
- RECON – Phase 1 – Overview to identifying areas of significance and defining major issues. Primarily experts, in the field.
- RECON – Phase 2 – with goal of collecting critical transient data. Experts and students.
- Develop deliverable product consistency (Web report structure, PDF, Google Earth Map)
- In an Executive Summary, identify the most significant case histories documented worthy of follow-on GEER effort.

Improve Education Emphasis

- More student involvement - at the site and at the home campus.
- Develop and disseminate teaching module products from events (PPT, GE fly-though, YouTube videos). New page on GEER web site & USUCGER.
- New funding mechanisms for sending students that does not burden GEER [PEER, Private Sector scholarship, ASCE Student Chapters, ASCE, NSF Int'l Programs, University Alumni Donations, etc.]
- GEER Student Fellowship-fund recon travel or GEER training day

Training

- GEER should promote field work preparedness training as a workshop-course at national meetings (AGU, ASCE G-I annual convention).
- Practitioners get PDHs, CEUs.
- Motivation is to develop ‘career skill’ capabilities in field methods, promote safety. Could be prerequisite for students on field reconnaissance.
- Develop and disseminate training modules on GEER web site.

Safety

- Some EQ localities are generally safe for foreigners, some are not. Events may pose large safety risks, given inherent chaos following catastrophic disaster.
- First Responder training required.
- Because high-tech equipment may make recon more susceptible to some risk factors, large groups may provide an added level of safety.
- Safety guidance needed for variety of risks, natural and man-made.

Communication

- Nightly clearinghouse meetings are critical for efforts of all sizes.
- FTP exchange critical for data transfer & updates.
- Smart phones or locally based cell phones preferred with SMS texting.
- Satellite phones needed in very remote locales.
- Cell phone GPS tracking [Google Maps “Latitude” or iPhone ‘Loopt’] should work well for real-time tracking of team members.

Data Gap Targets

- Update and restructure EERI LFE sections.

	Discipline			
Hazard	Geologic	Seismologic	Geotechnical	Engineering
Strong Ground Motion Effects (e.g. Directivity, PGA, Peak Velocity…)	How do geologic deposits influence patterns of ground motion amplification?	Did rupture directivity produce difference in damage pattern or distribution?		
Permanent Ground Deformation (e.g., Fault Rupture, Tilting, Folding, Secondary Fault Rupture)	What is distribution of deformation across fault strike? What is pattern of secondary deformation and how does this compare with previous examples?	Did energy pulses produce difference in the fault rupture pattern or distribution?	How did geotechnical characteristics influence the pattern of primary and/or secondary surface deformation?	How were structures affected by surface rupture or secondary deformation? What is the threshold displacement or tilting for significant damage? How does the pattern of PGD affect setback zonation policies?
Slope Instability (e.g., Liquefaction, Landsliding, Debris Flows)	What geologic conditions controlled landslide distribution and severity?	Are landslide patterns related to rupture directivity or epicentral location?	How does soil texture influence liquefaction patterns?	
Tsunami Effects (e.g., Scour, Wave Runup, Backwater Deposition)	How do historical tsunamigenic deposits compare with possible paleo-tsunami deposits?			How did the pattern of runup affect engineered structures? Is there informatioin on flow patterns or hydraulic controls that would help mitigation design?
Seiche Effects (e.g., Dam Breaks, Wave Runup, Erosion)	What are the geologic controls on seiche-induced landsliding and/erosion?			

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