

Fault Displacement Hazard Analysis Workshop: “Moving Forward” Panel Discussions



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Norm: Key Issues for Current Methods

- Non-Ergodic
- Site Effects
- Secondary Ruptures
- Physical constraints from analytical models
- Statistical Assumptions

Tentative Timeline

- Years 1-2
 - Empirical data base
 - Collect/compile new rupture data
 - Collect site condition information for past rupture data sets
 - Analytical simulations
 - Testing of dynamic rupture methods for secondary ruptures
 - Application of validated methods for constraining scaling in empirical model
 - Comparison with distributions from seismological approaches for slip models (full fault, not just the surface)
 - Statistical Methods
 - Evaluation of statistical distributions for surface rupture
 - Include effects of spatial correlations in statistical methods
 - Space and wavenumber domains
- Year 3
 - Develop surface rupture models for both primary and secondary ruptures

Input from audience on adding/deleting topics

- Non-Ergodic
- Site Effects
- Secondary Ruptures
- Physical constraints from analytical models
- Statistical Assumptions
- ...

Transparency and quality of the program

- Consistent with other research programs such as NGA in the last 15 years
- Fully transparent program
- Database will be available to the public
 - Researchers and practitioners will use the data and models as they wish
 - Like NGA ground motion database and models
- QA process, especially for database by multiple working groups
- Documentation for each working group will be publically available

Path forward

- Create an “Executive Committee” to:
 - Draft a tentative work plan
 - Distribute the work plan to a larger group to get comments
 - Approach various potential funding agencies
 - Once a critical mass on funding is reached:
 - Tentatively organize working groups,
 - Organize a workshop to share the work plan and get feedback from all of you

Potential partners for funding

- PG&E
- CGS
- USGS
- CA High-Speed Rail
- Caltrans
- Southern CA Edison
- Other utilities
 - SF-PUC
 - LA DWP
 - EBMUD
- ???

PG&E Research Interests Related to Fault-Displacement Hazard



- Important Issue for PG&E Infrastructure
- Fits Geoscience's Department Goal to Broaden Support for Company-Wide Hazard Characterization & Risk Reduction
- Provides Community-Wide Benefits
- Proactive R&D

Example Technical Priorities – Fault Characterization “Nodes”

- Multiple (Linked) Fault Rupture Events
- Activity Assessments
- Creep versus Tectonic Rupture
- Emerging Survey Applications (e.g. LiDAR, InSAR, Drones)
- Rupture Attenuation at Fault Ends and Stepovers (“Slip Tapering”)
- Primary versus Triggered slip
- Volcanic Terrane

Contact: Jeff Bachhuber, Bill Page, Chris Madugo

Vehicles for Research

Funding Programs

- Line of Business Projects
- PG&E Long Term Seismic Program
- Enterprise Risk Program

Contracting & Teaming

- CRADA
- SCEC
- Collaborative Research
- University Grants

Input from Participants, Discussions

