NGA-East SSHAC Workshop 3C Introduction

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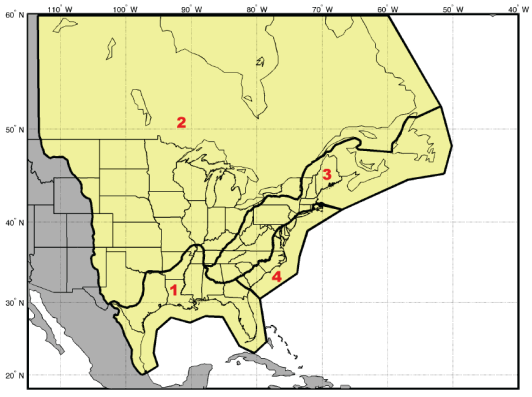
Input to Seismic Hazard Analyses (SHA)

- Deterministic and Probabilistic SHA requires two main pieces:
  - Seismic Source Characterization (CEUS SSC)
  - Ground Motion Characterization (NGA-East GMC)



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The NGA-East Project

A science/development phase
AND a SSHAC Level 3 project
Objective – to develop GMC model:

- Ground-Motion Models (GMMs)/GMPEs
  - Median
  - Standard Deviation "Sigma" (aleatory variability)
- Logic trees (epistemic uncertainty)
- For:
  - Average horizontal ground motions (5%-damped PSA for *f*=0.1-100Hz), for
  - Hard rock sites (V_S=3000 m/s, κ=0.006 s) located up to 1,200 km from
  - Future earthquakes in CENA **M**4.0-8.2

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NGA-East – a hybrid project

- Multi-disciplinary **science** project with working groups focused on specific research tasks
- **SSHAC** Level 3 project for evaluation and integration of ground-motion models

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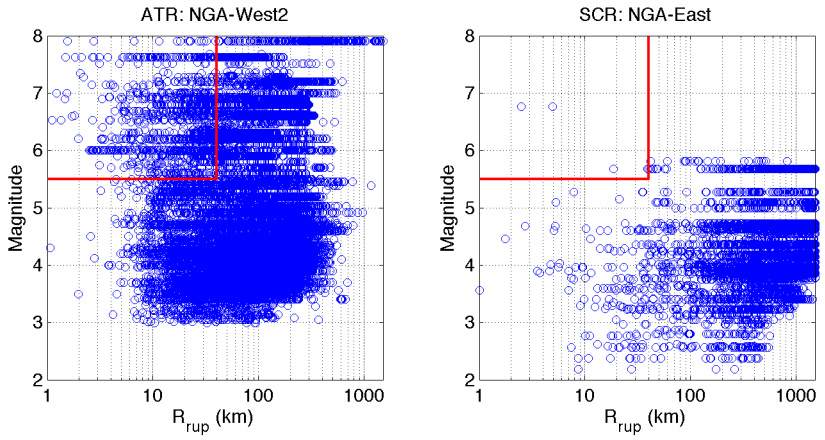
The NGA-East Challenge: developing GMC model with limited data



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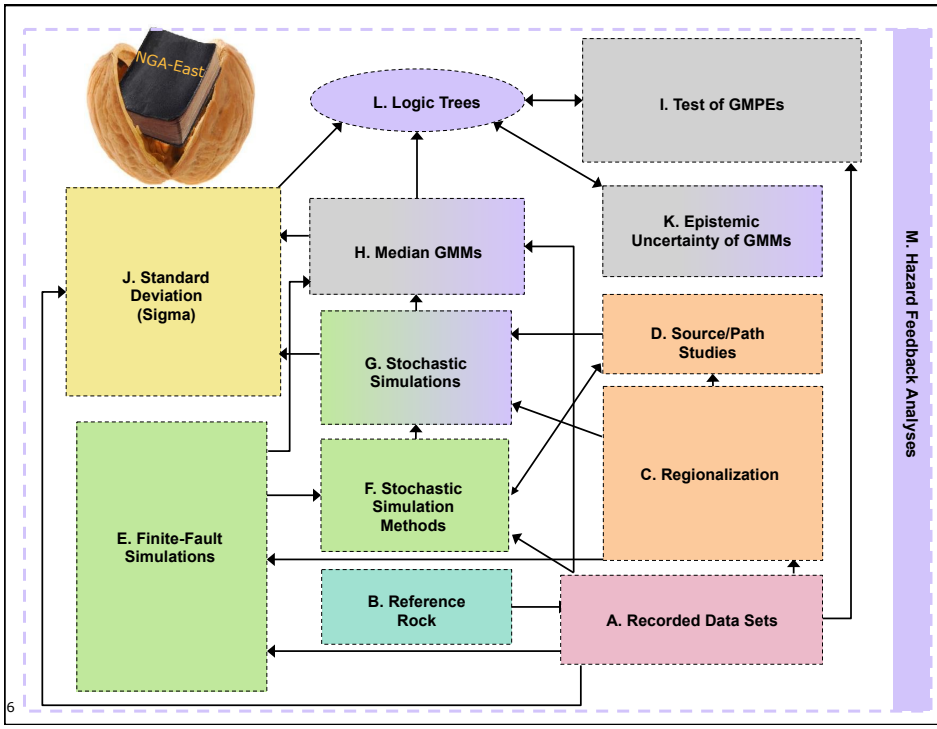

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Progress Since March Workshop

- Refined median GMMs
- Finalized "sigma" models
- Assigned weights to median and sigma models
- Developed models for Gulf Coast
- Developed a model for source-depth effects
- Documentation and data dissemination
  - NGA-East GMM report published 2015/04
  - NGA-East Sigma report published 2015/07
  - NGA-East GMM Adjustment report 90% draft
  - SSHAC report: draft in progress

NGA-East Science: PEER Reports

What is SSHAC?

- A set of **procedural guidelines** for seismic hazard analyses
- Procedures defined by the **S**enior **S**eismic **H**azard **A**nalysis **C**ommittee (SSHAC)
- Implementation in constant evolution
- Level qualifies complexity (1-4)
- NGA-East is a SSHAC Level 3 project
- Details in SSHAC NUREG/CR-6372 and NUREG-2117

See PEER NGA-East page for link to these documents:

http://peer.berkeley.edu/ngaeast/

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Goals of SSHAC process

To carry out properly and document completely the activities of evaluation and integration

- **Evaluation**: The consideration of the complete set of data, models, and methods proposed by the larger technical community that are relevant to the hazard analysis.
- **Integration**: Representing the center, body, and range of technically defensible interpretations in light of the evaluation process (**CBR of the TDIs**).

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Other Key Features of SSHAC process

- Clearly defined **roles** for all participants.
- Structured interactions among participants, including technical challenge of positions, in **formal workshops** (themes 1-3).
- **Rigorous peer review** of the entire process and **thorough documentation.**

SSHAC Workshop theme 3: Feedback

- Goals
  - To present and discuss the preliminary GMC model
  - To ensure that no significant issues have been overlooked (discussions and PPRP feedback)
  - To provide hazard-informed focus on finalizing the model (hazard feedback)
- Key participants
  - **Technical Integration Team**: Norm Abrahamson, Christine Goulet, Linda Al Atik, Gail Atkinson, Rob Graves, Bob Youngs
  - **Participatory Peer Review Panel**: Gabriel Toro, John Adams, Jon Ake, John Ebel, Jeff Kimball, Rich Lee
  - **Proponent and Resource Experts**

This is a formal SSHAC workshop!

- presenters show results from **collective work**
- interactions are structured: **Resource** and **Proponent Experts** and **PPRP** can participate in the discussions
- members of public can attend workshop as **Observers**
- comments from Observers are made possible at the **end of the day,** as time allows
- comments on workshop issues can be provided in writing: goulet@berkeley.edu
- recorded, to be posted as part of the SSHAC documentation
  - Use the microphone
  - Use the ReadyTalk chat window to contact us

Today's meeting

- In-person and web/phone attendees
- ALL participants on-site need to use the **microphones** and **announce their name**
- Remote attendees, "raise your hand" or use chat on ReadyTalk to send a question or send an e-mail to: sahar.der@berkeley.edu
- Agenda and additional info at
  - http://peer.berkeley.edu/ngaeast/events/

Agenda overview

- Day 1 Wednesday
  - Median ground motions
  - Standard deviation of ground motions
- Day 2 Thursday
  - Hazard feedback analyses
  - Adjustment to median models
    - Gulf Coast/Mississippi Embayment region
    - Source-depth effects
    - Hanging-wall effects
  - Summary of everything...