

**RESULTS OF THE FEBRUARY 12, 2008
UTAH GROUND SHAKING WORKING GROUP MEETING**

Ivan Wong, Facilitator

Members present:

Mark Petersen
Bill Stephenson
Relu Berlacu
Bob Smith
Greg McDonald
Harold Magistrale
Walter Arabasz
Jim Pechmann
James Bay
Kim Olsen
Francis Ashland
Kris Pankow

Guests:

Ralph Archuleta
Bill Lund
Bob Carey
Tyler Knudsen
Daniel Roten
Jamie Farrell
Chris DuRoss
Mike Hylland
Christine Puskas
David Marble
Rich Giraud

ACTION ITEMS

Kim Olsen - Update Mark Peterson on the status of Community Velocity model (CVM) validation prior to NEHRP panel meeting in July 2008

Utah Geological Survey - Submit NEHRP proposal in 2009 for funding to manage future working groups (2010-2012)

Ivan Wong, Kris Pankow, Jim Pechmann, Steve Bartlett, Jim Bay - Form a working sub-group to develop near-surface site-amplification models and submit NEHRP proposal

Jim Pechmann, Kim Olsen, Harold Magistrale, Ralph Archuleta, Greg McDonald - Form a working sub-group to develop/evaluate basin model

PRIORITIES FOR 2009 STUDIES

- Coordinate 2009 working group meetings with EERI Annual Meeting in SLC in February.
- Update CVM with revised site-conditions units and USGS shallow to intermediate-depth data when it becomes available.
- Expand CVM to include basins to west (Tooele and Rush Valleys).

- Transfer CVM to UGS, USGS, and users.

MEETING SUMMARY

PRESENTATIONS AND SPEAKERS:

- 1) Update on USGS Utah Valley P-wave minivibe transect and preliminary results of SPAC microtremor survey in Salt Lake and Utah Counties; *Bill Stephenson, USGS*
- 2) Changes in and remaining issues for the 2007 National Seismic Hazard Maps; *Mark Petersen, USGS*
- 3) Analysis of site amplification and depth to bedrock from ANSS data; *Jim Pechmann, UUSS*
- 4) Update on earthquake site-conditions map; *Greg McDonald, UGS, and James Bay, USU*
- 5) Analysis of earthquake source, path, and site parameters; *Ivan Wong, URS, and Jim Pechmann, UUSS*
- 6) Normal fault earthquake strong ground motion simulations; *Ralph Archuleta, UCSB*
- 7) Wasatch Front CVM update; *Harold Magistrale; SDSU*
- 8) Wasatch Front CVM validation update; *Kim Olsen; SDSU*

DISCUSSION ITEMS:

National Seismic Hazard Maps – 2007 update

- Planned release - March 2008
- Incorporated most WSSPC BRPEWG recommendations (slip-rate uncertainties, multi-segment rupture, revised fault dips with uncertainties)
- Remaining issues for future updates:
 - Develop geodetic models for Wasatch Front; Evaluate differences with geologic data/determine appropriate weighting factor (e.g., 0.5 for Cal.).
 - Evaluate normal fault hanging-wall effects due to dynamic rupture (Archuleta, Smith – work in progress).
 - Hanging-wall effects in NGA relationships has increased slightly PGA values along the Wasatch Fault in draft maps.

USGS Geophysical Investigations

- Utah Valley minivibe transect shows shallow, high-velocity units and buried faults in hanging wall west of the Wasatch fault.
- Preliminary results of SPAC surveys in Salt Lake and Utah Valleys compare well with results from other methods.

- Plan to release USGS results by the end of 2008.

Community Velocity Model

- Basin models very simplistic, especially outside SLV (evaluation/reprocessing of gravity data not funded last year).
- CVM updated to include Wasatch fault dip model for Salt Lake segment (Bruhn).
- R2 is treated as depth to basement given velocities; R3 is passive.
- Consider expanding CVM to include basins to west (Tooele and Rush Valleys); however, very little data are available.
- Updated Wasatch Front site-conditions map needs to be incorporated into CVM (will require additional funding).
- Evaluate V_s/V_p ratios for shallow data (Tinsley, other?).
- Evaluate need for more V_s30 data (Weber, Davis, and Utah Counties).
- Final technical report to USGS will be submitted in 2008.

Community Velocity Model Validation

- Initial results indicate that there are differences between modeled ground motions and observed motions from M3 to M4 events.
- Kim/Daniel will continue to work on validation as their time allows (NEHRP funding is spent).
- Will concentrate initially on evaluating sources (focal mechanisms) of recorded earthquakes for use in validation.
- Key issue for Mark is whether CVM is ready for validation by other teams.

Wasatch Front Urban Seismic Hazard Maps

- Working sub-groups should be formed to develop site-amplification and basin models.
- If several smaller subgroups are formed, guidelines should be established and periodic meetings held to ensure continuity.
- Develop simple first version of Wasatch Front urban hazard maps that can be expanded/improved upon.