



CSEP/USGS/GEM Workshop:

Next Steps for Testing Operational Earthquake Forecasts and Seismic Hazard Models

6 September 2014

SCEC Annual Meeting, Palm Springs

Organizers:

Max Werner (Bristol), Danijel Schorlemmer (GFZ Potsdam),

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Morgan Page (USGS), Marco Pagani (GEM)

Goals and Objectives

- Improve CSEP infrastructure to support OEF
 - Assess the needs for CSEP-based testing of OEF models
 - Assess adequacy of CSEP infrastructure for testing OEF models
- Strengthen CSEP testing methodology
 - Define testing methods for new global experiment
 - Address epistemic uncertainties
- Extend evaluation of seismic hazard maps & ground motion forecasts
 - Assess needs for CSEP-based testing of hazard models
 - Evaluate current testing; design new experiments
- Develop strategies for wider community participation, e.g. via
 - Designing new prediction experiments for induced seismicity
 - testing probabilities implied by paleo-data or simulators

Expected Outcomes

1. Recommendations for a more “OEFable” CSEP
2. List of OEF & CSEP requirements for real-time data products a consideration for data providers (ComCat)
3. Strategy for improving testing and evaluation metrics
4. Design of a new global experiment
5. Experiment blueprint for regions of induced seismicity
6. Blueprint for testing earthquake probabilities implied by paleo-seismic data

Agenda

Morning

Overview of OEF & CSEP

10.10 – 11.35 CSEP & OEF Updates from around the world

11.35 – 12.05 Discussion

How adequate is CSEP's infrastructure for evaluating OEF models?

12.05 – 12.30 Real-time forecasting & real-time earthquake catalogs

12.30 – 1.00 Panel Discussion

How should real-time data uncertainties be handled in OEF models and their evaluation?

What are the data requirements for OEF?

Afternoon

GEM, Global Experiments and Ground Motion

2.00 – 2.40 GEM overview, global experiments & GEM's GEAR models

2.40 – 3.10 Panel Discussion

How should global experiments be conducted?

How can CSEP's testing methodology be improved?

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- 11.35 – 12.05 Discussion (Moderator: P. Maechling Reporter: M. Liukis)
How adequate is CSEP's infrastructure for evaluating OEF models?
- 12.05 – 12.30 Real-time forecasting & real-time earthquake catalogs
- 12.30 – 1.00 Panel Discussion (Moderator: L. Jones Reporter: N. van der Elst)
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- 2.40 – 3.10 Panel Discussion (Moderator: W. Marzocchi Reporter: M. Page)
How should global experiments be conducted?
How can CSEP's testing methodology be improved?

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3.10 – 3.40 Focal mechanisms, ground motions & hazard models

3.40 – 4.10 Discussion

How should GEM and USGS ground motion forecasts be evaluated?

Is CSEP ready to evaluate seismic hazard maps?

Retrospective Canterbury Experiment

4.20 – 4.40 Overview of experiment, models & results

4.40 – 5.00 Panel Discussion

How are physics-based models performing?

How can retrospective experiments help evaluate OEF models?

New Directions

5.00 – 5.30 CSEP & induced seismicity

5.30 – 5.55 CSEP & paleo- and simulator-based earthquake rupture probabilities

5.55 – 6.00 Wrap-up

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- 3.40 – 4.10 Discussion (Moderator: B. Ellsworth Reporter: M. Gerstenberger)
How should GEM and USGS ground motion forecasts be evaluated?
Is CSEP ready to evaluate seismic hazard maps?

Retrospective Canterbury Experiment

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- 4.40 – 5.00 Panel Discussion (Moderator: J. Hardebeck Reporter: A. Strader)
How are physics-based models performing?
How can retrospective experiments help evaluate OEF models?

New Directions

- 5.00 – 5.30 CSEP & induced seismicity
(Moderator: R. Stein Reporter: M. Segou)
- 5.30 – 5.55 CSEP & paleo- and simulator-based earthquake rupture probabilities
(Moderator: B. Shaw Reporter: D. Harte)
- 5.55 – 6.00 Wrap-up