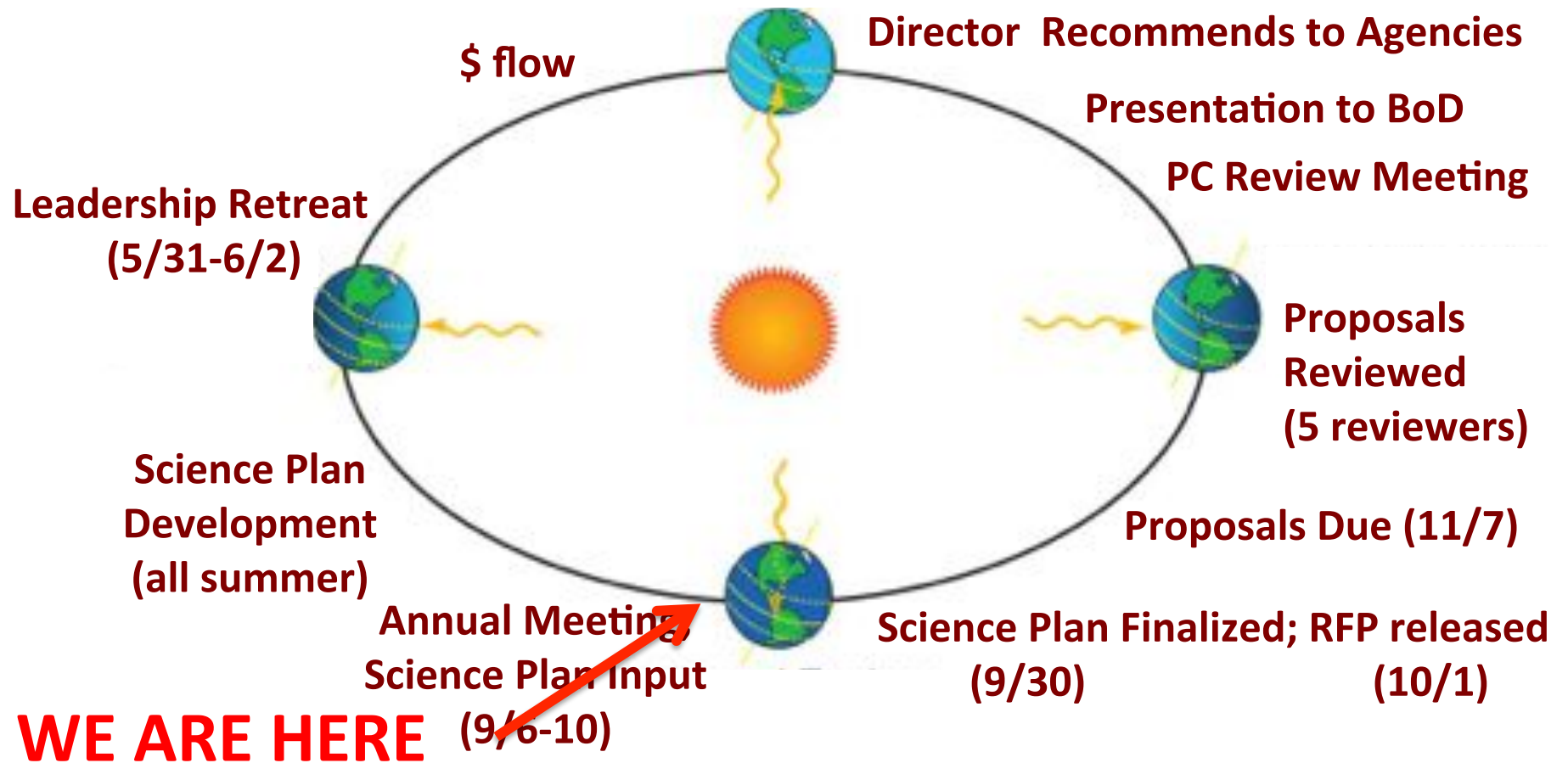


# SCEC4 Science Collaboration Planning

**Greg Beroza (Co-Director)**



# SCEC Science Planning Cycle



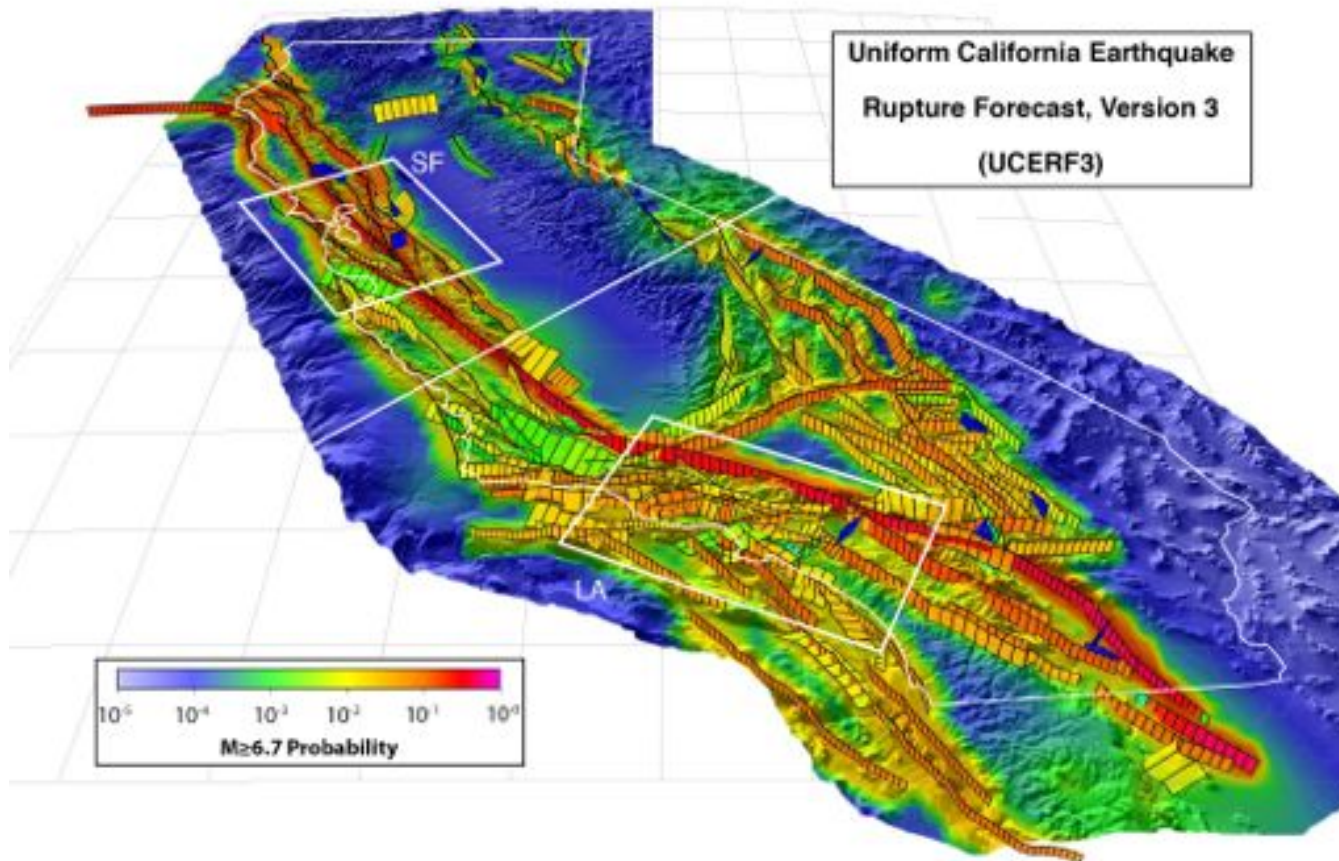
# **What's New in the Collaboration Plan?**

**The Collaboration Plan is not greatly changed from last year.**

**There are a number of small changes and suggestions throughout the document.**

# What's New in the Collaboration Plan?

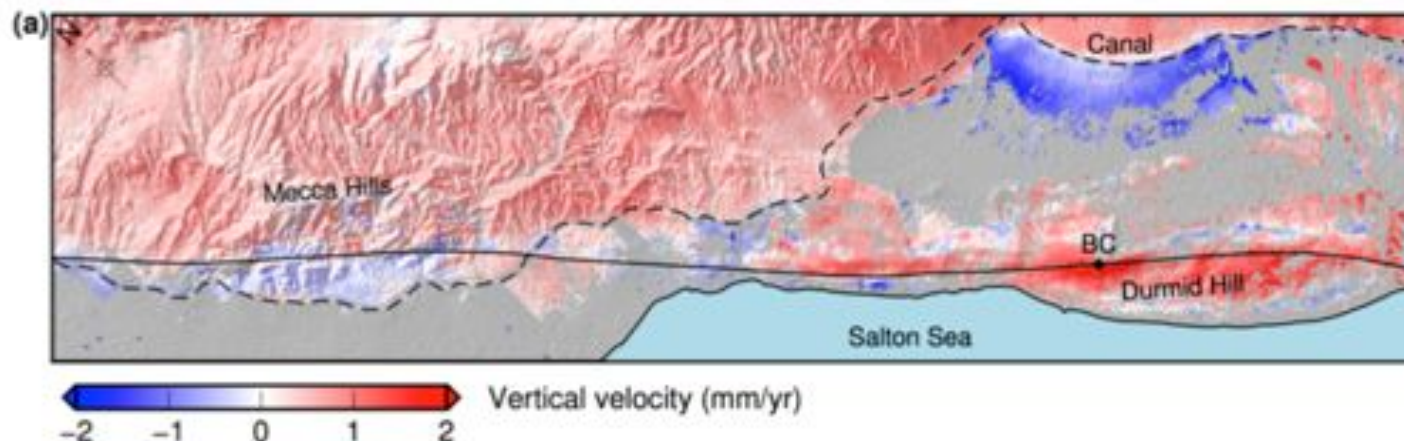
An explicit call for simulations of ruptures such as those defined in UCERF3.



# What's New in the Collaboration Plan?

More detailed description of collaboration with the engineering community in validating ground motion simulations and physics-based PSHA.

**InSAR-only and GPS-only geodetic models are now encouraged, particularly if they include a plan for assessing whether their results are in agreement or conflict with other data types.**



# What's New in the Collaboration Plan?

A pathway for inclusion of operational transient detection algorithms into a testing framework. .

A call for new approaches for assimilating real-time high-rate GPS, seismic data, and other potential observations into rapid source characterization.

A call by the Computational Science group for requests for allocations of resources, where appropriate.

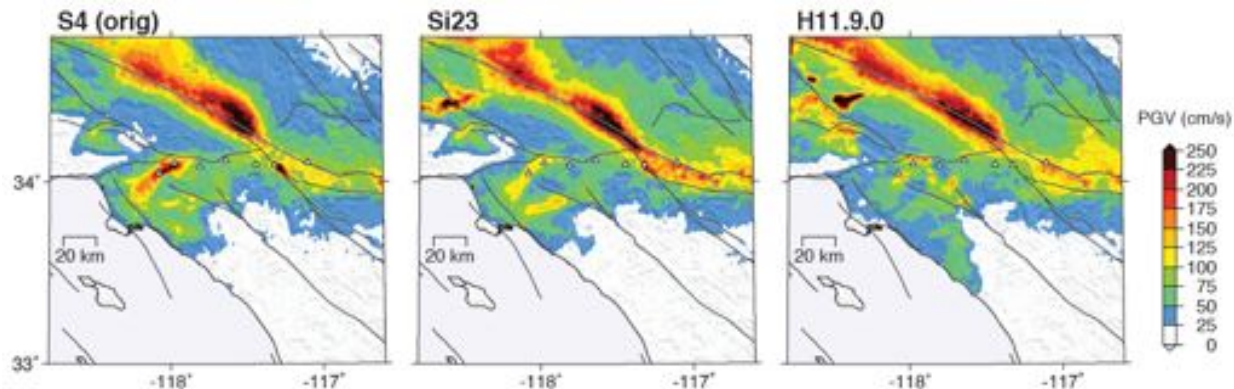


# What's New in the Collaboration Plan?

**A call to incorporate new data into the CVMs with validation for ground-motion prediction.**

**In several more attention to plasticity and its effect on rupture and wave propagation.**

**More emphasis on ground motion validation at high frequencies, for basin effects, and on the impact of distributed ground motions.**



**Comments/Suggestions?**



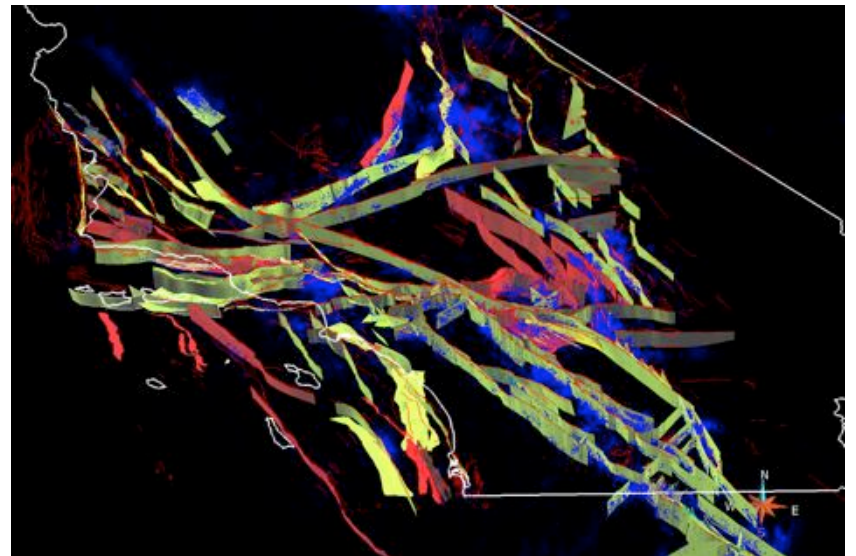
# SCEC4 Community Models

**Community Stress Model**

**Community Geodetic Model**

Community Velocity Models

Community Fault Model



# Technical Activity Groups (TAGs)

Develop and test critical methods for solving specific forward and inverse problems.

**Dynamic Rupture Code Verification**

**Aseismic Transient Detection**

**Source Inversion Validation**

**Earthquake Simulators**

**Ground Motion Simulation Validation**

# Earthquake Response Planning

From: ens@ens.usgs.gov (USGS ENS)  
Subject: 2015-08-15 01:07:32 (M7.6) SOUTHERN CALIFORNIA 64.6 -17.5 (1e5c8)  
Date: August 18, 2015 at 6:19:40 PM PDT  
To: beroza@stanford.edu  
Reply-To: <ens@ens.usgs.gov>

## M7.6 - SOUTHERN CALIFORNIA

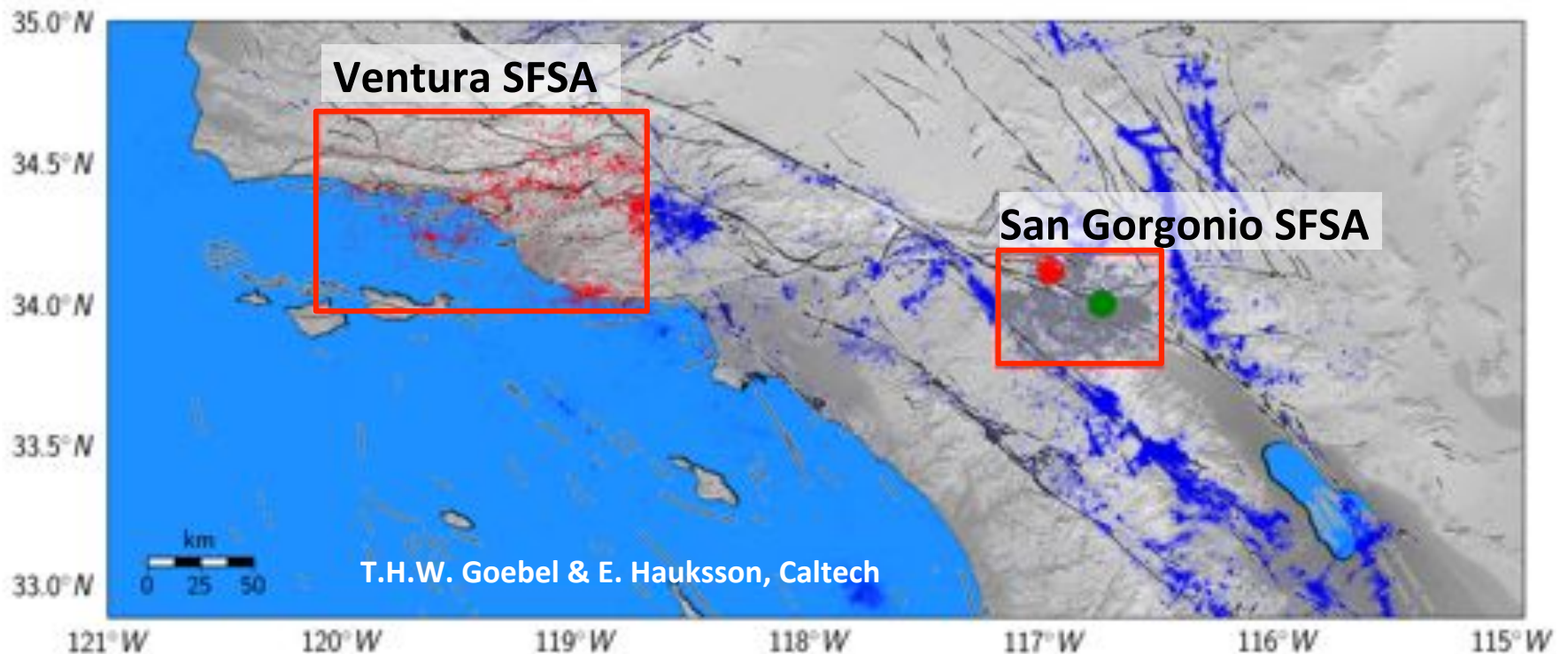
### Preliminary Earthquake Report

Magnitude	7.6
Date-Time	<ul style="list-style-type: none"><li>• 18 Aug 2015 01:07:32 UTC</li><li>• 18 Aug 2015 01:07:32 near epicenter</li><li>• 18 Aug 2015 17:07:32 standard time in your timezone</li></ul>
Location	35.191N 119.793W
Depth	10 km

[www.iris.edu/hq/wavefields](http://www.iris.edu/hq/wavefields)

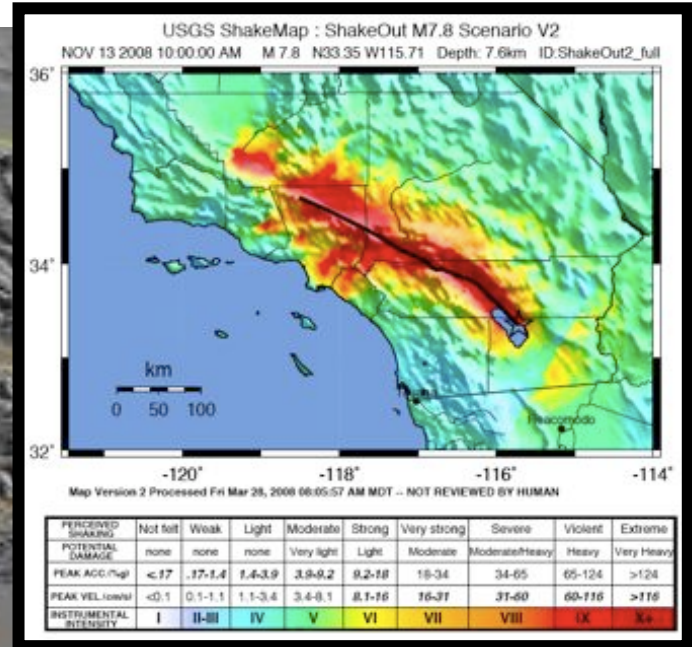
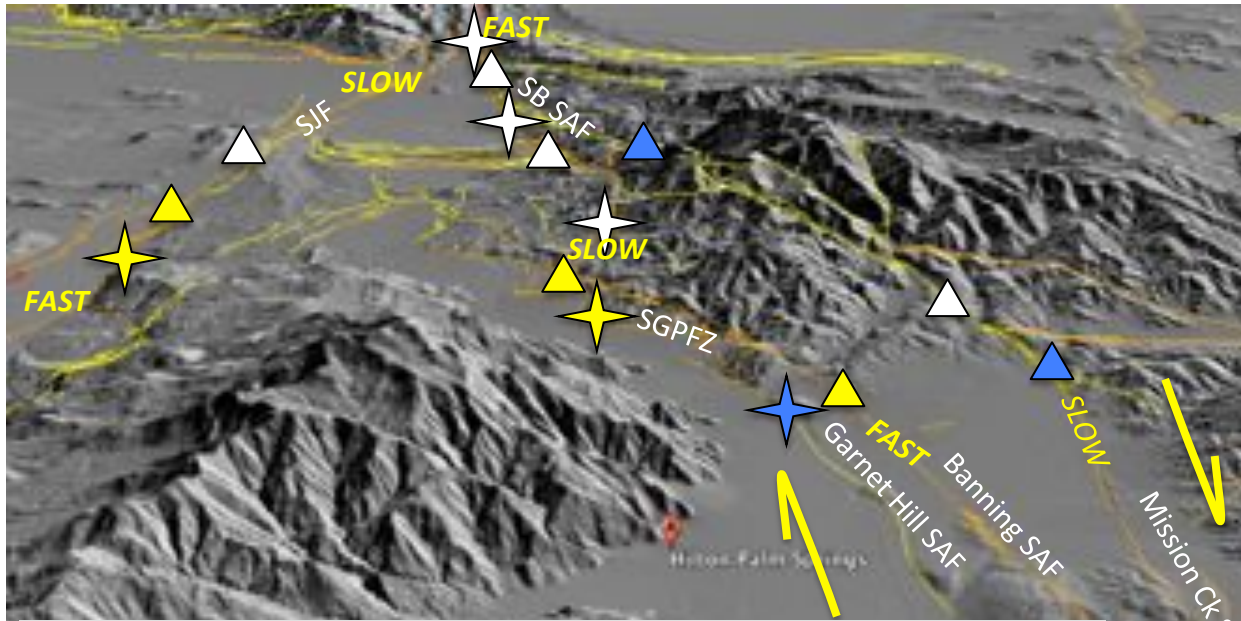
# SCEC4 Special Fault Study Areas

Integrated, multi-disciplinary projects focused on areas of complex fault behavior. Involve coordinated teams of researchers with diverse expertise.



Are we going to get to where we need to be?

# San Gorgonio Pass – Special Fault Study Area



What is probability of a through-going San Andreas rupture?

- What is the earthquake potential in the San Gorgonio Pass?
- What is the subsurface geometry of active faulting through the San Gorgonio Pass?

June 2012 workshop – 35 participants

Sept 2014 workshop – 55 participants

USGS  
GSCO  
NDAA

Google earth

# Status of the Ventura SFSA

- Dolan et al. and Rockwell document large (5-6 m) coseismic uplift across Ventura-Pitas Point fault
- Geodesy shows high localized shortening rates across Ventura Basin. Vertical geodetic data (InSAR, leveling, GPS, tide gauge) are being analyzed for uplift signals.
- Regional crustal deformation models are establishing distribution of slip throughout western Transverse Ranges
- Earthquake catalogs are being refined. Stress drop estimates suggest uniform, low  $\sim 1$  MPa events.
- Searching for evidence for paleotsunamis. Sims et al. find high-energy deposits at Carpinteria Slough.
- Acquiring and reprocessing off-shore seismic reflection data to image fault and sedimentary growth structure.
- Tsunami and dynamic rupture modeling is underway. Preliminary models suggest bathymetry is primary control on path.