

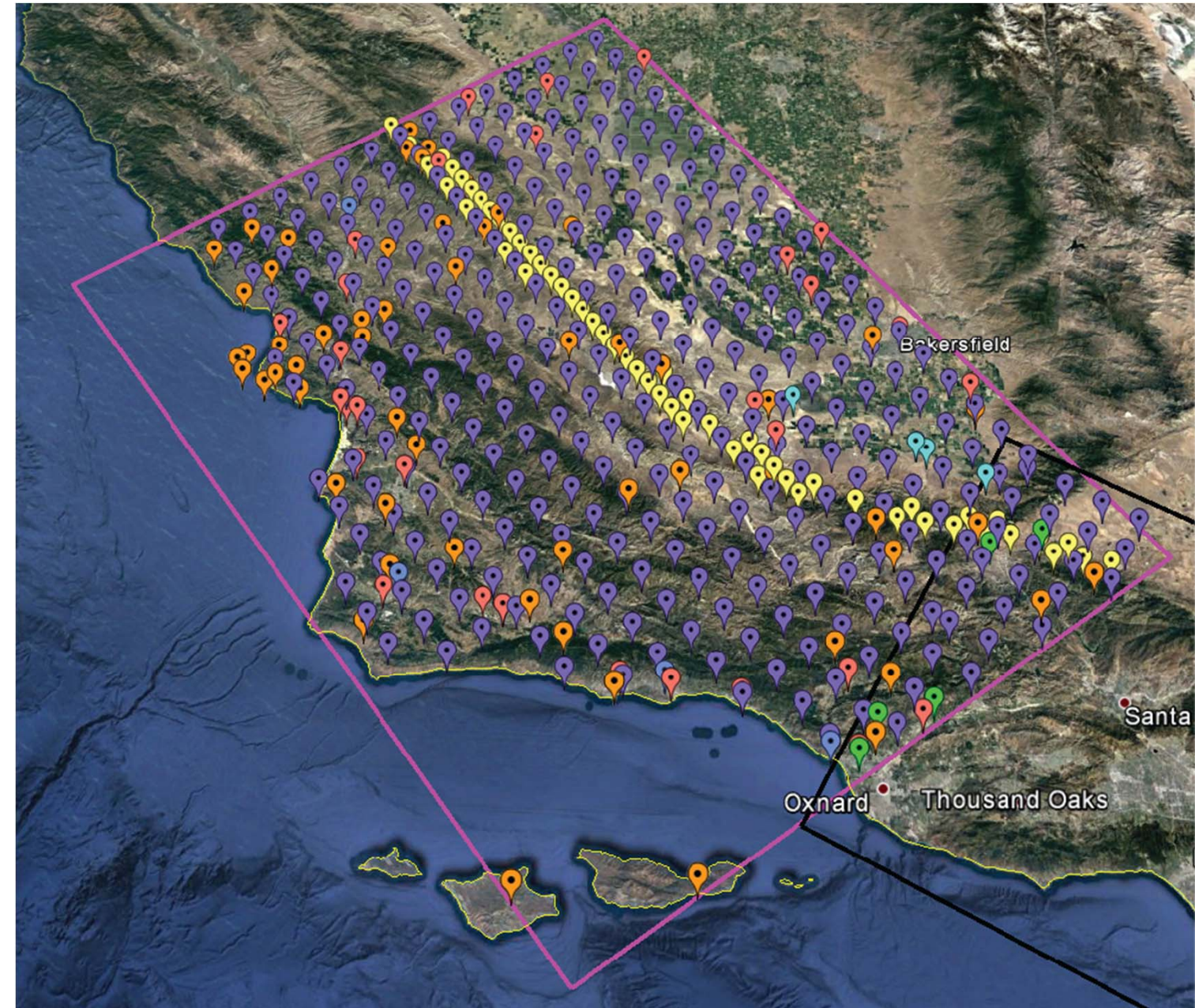
# CyberShake Platform Update

Scott Callaghan

SCEC/PG&E Annual Review Meeting  
November 28, 2017

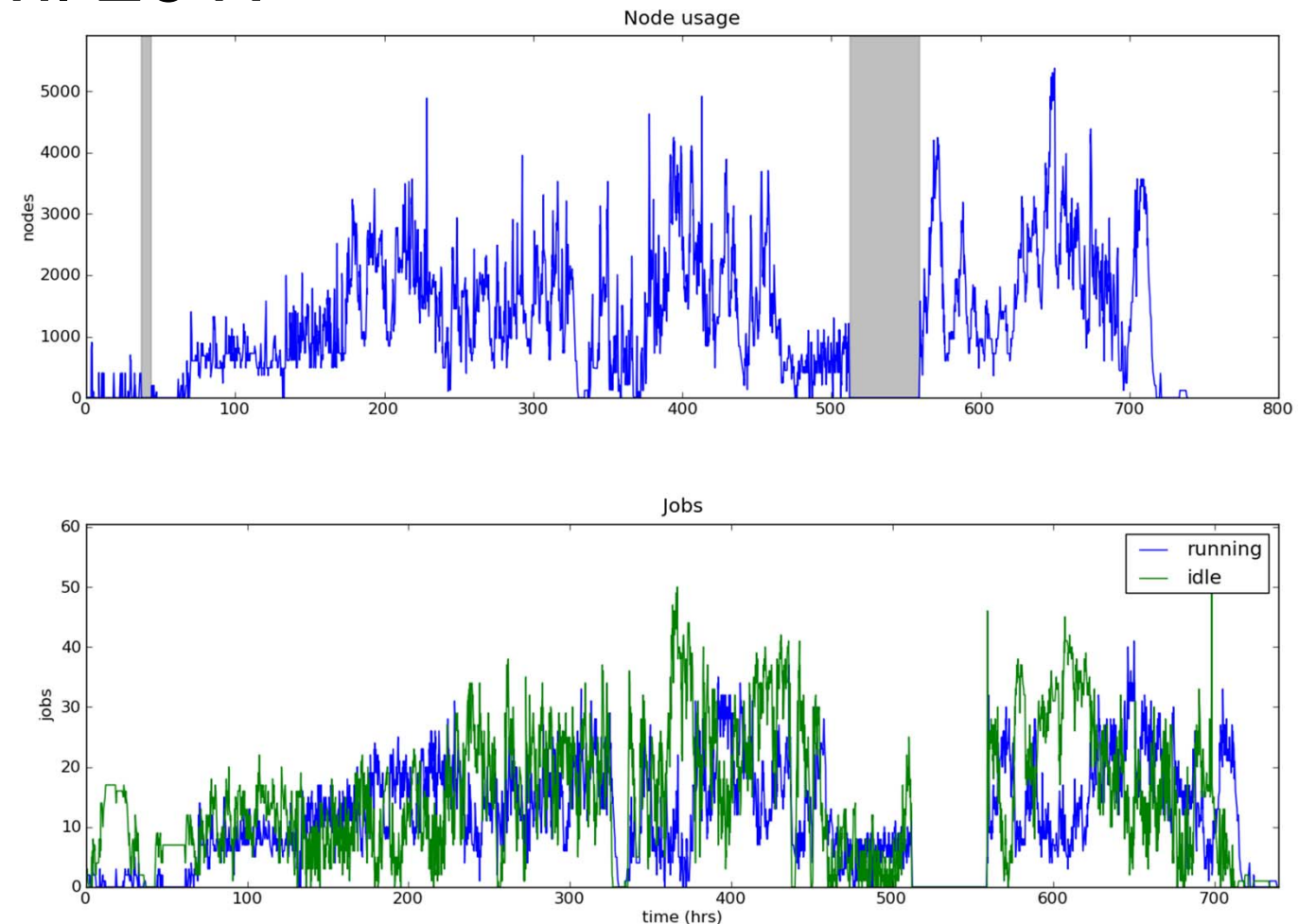
# *Central California CyberShake*

- 438 sites
  - PG&E pumping sites
  - CISN stations
  - Cities from USGS Gazetteer
  - Historic missions
  - 10 km regular grid
- 1.0 Hz
- UCERF 2 forecast
- Graves & Pitarka 2014 rupture generator
- Two velocity models:
  - CCA 1D (1D averaged)
  - CCA-06 (3D tomographic)

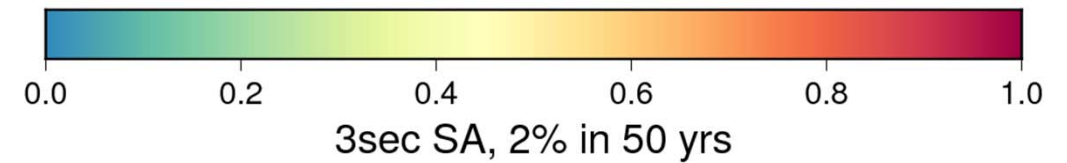
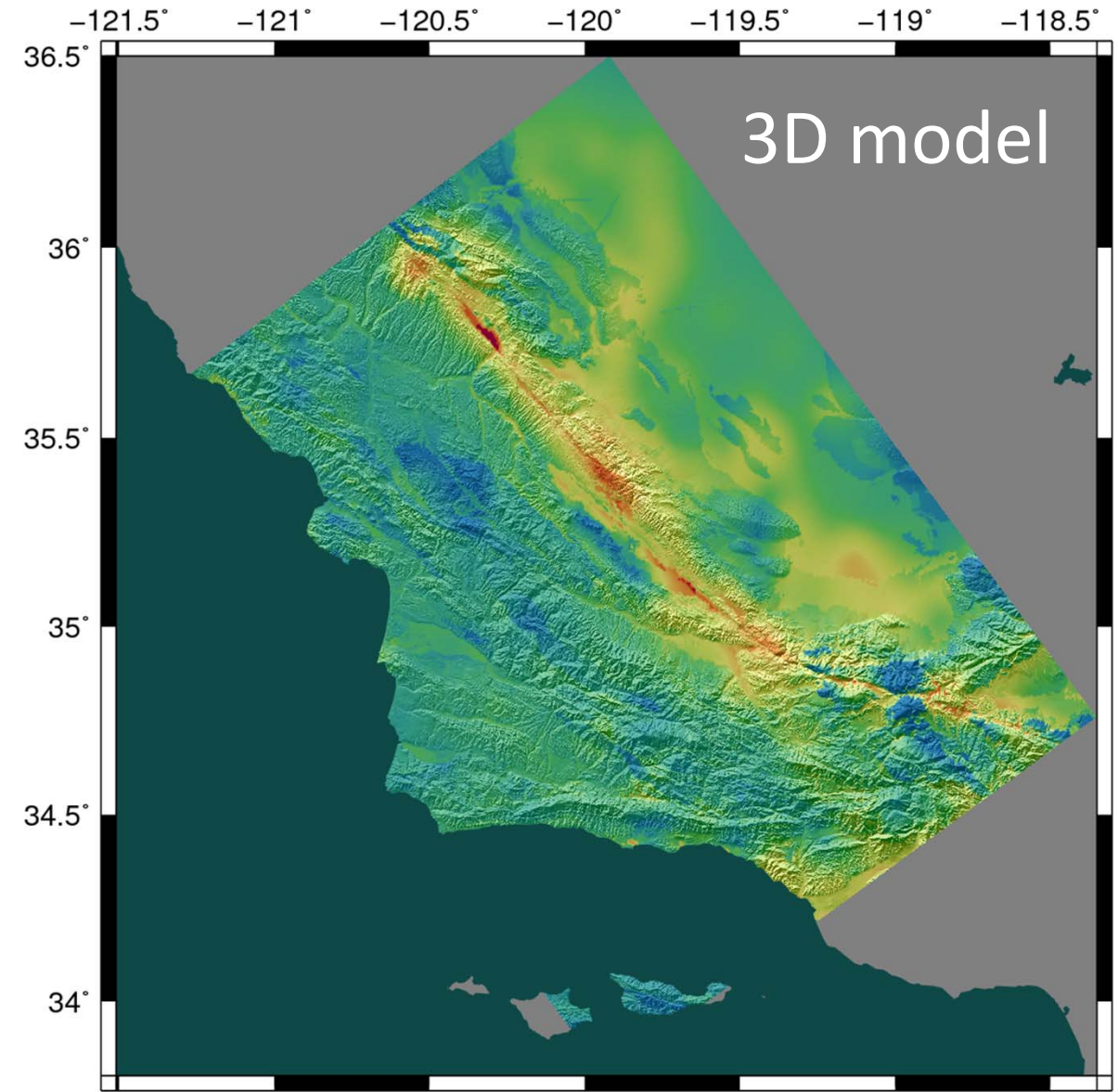
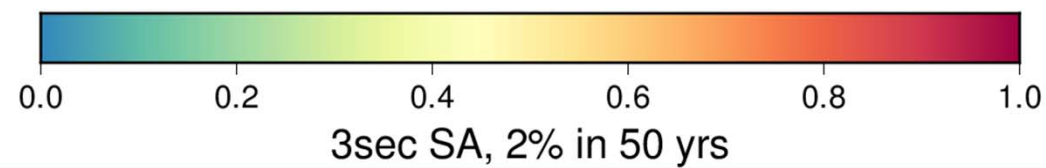
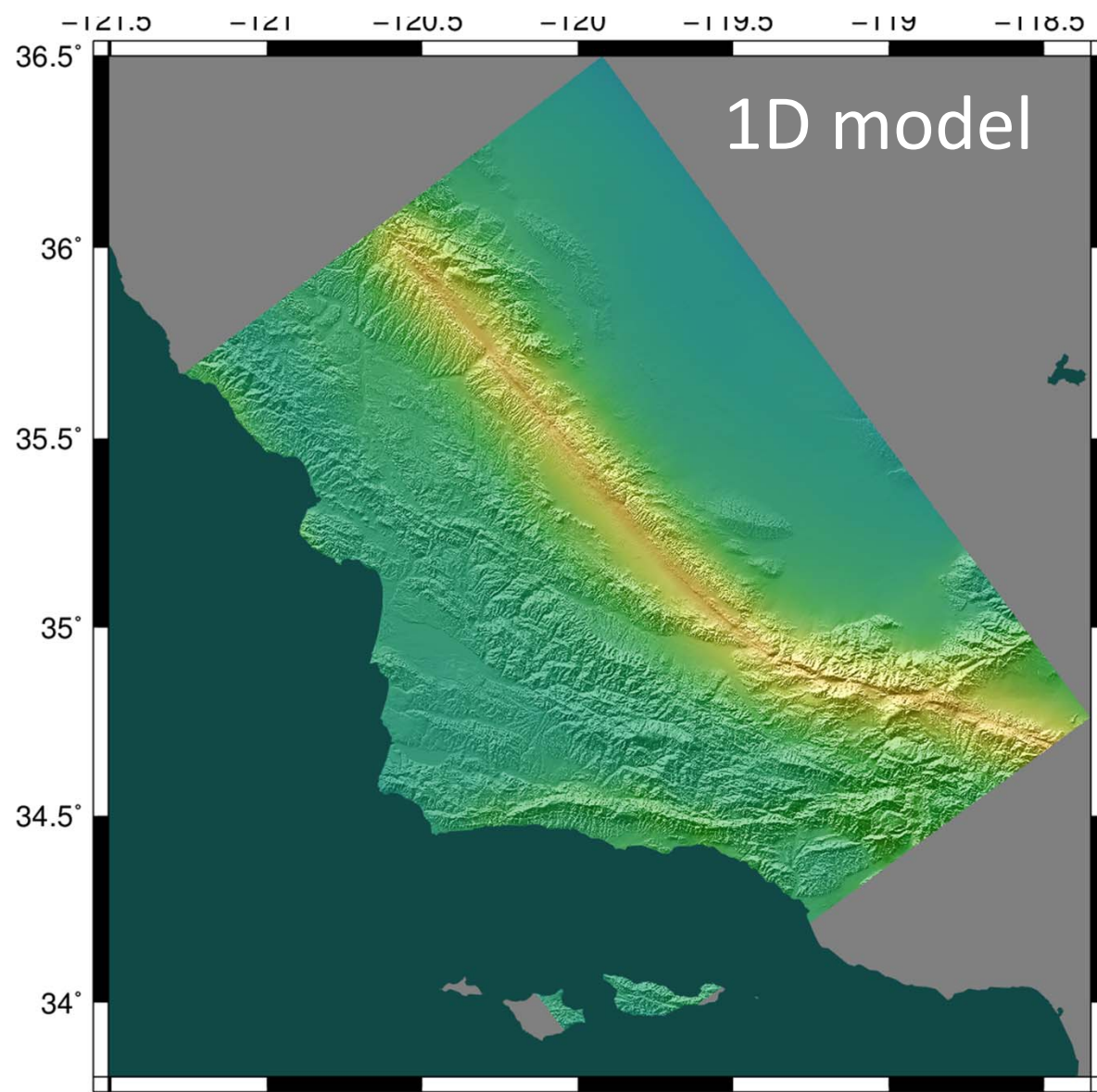


# CyberShake Study 17.3

- Conducted over 31 days in March-April 2017
- 2 velocity models at 438 sites
- Used two top-5 supercomputers
- Consumed 21.6 million core-hrs
  - Averaged 31,000 core-hrs continually
- 777 TB of data managed
  - 10.7 TB archived on SCEC disks
- Generated 285 million two-component seismograms
  - 43 billion intensity measures
  - 5 billion duration measures

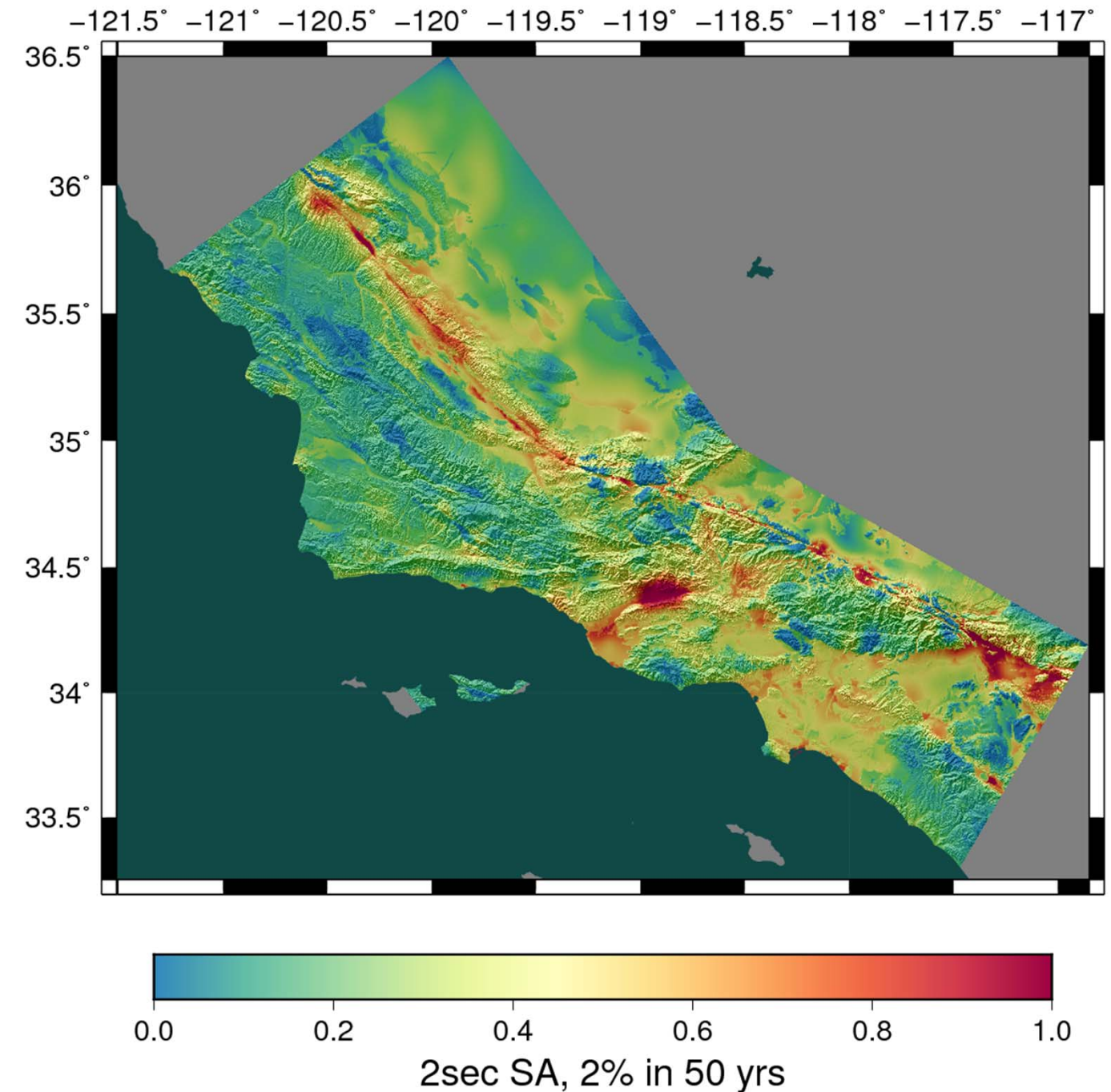


# Study 17.3 Results



# Combined Results

- Study 17.3 combined with Southern California CyberShake (Study 15.4)
- Represents 50 million core-hrs
- Demonstrates CyberShake can be migrated outside of Southern California



# *Improving Velocity Model*

- Integration of Shaw and Plesch CCA basins into velocity model
- Work currently underway to bring basins into CCA-06 model for use with CyberShake

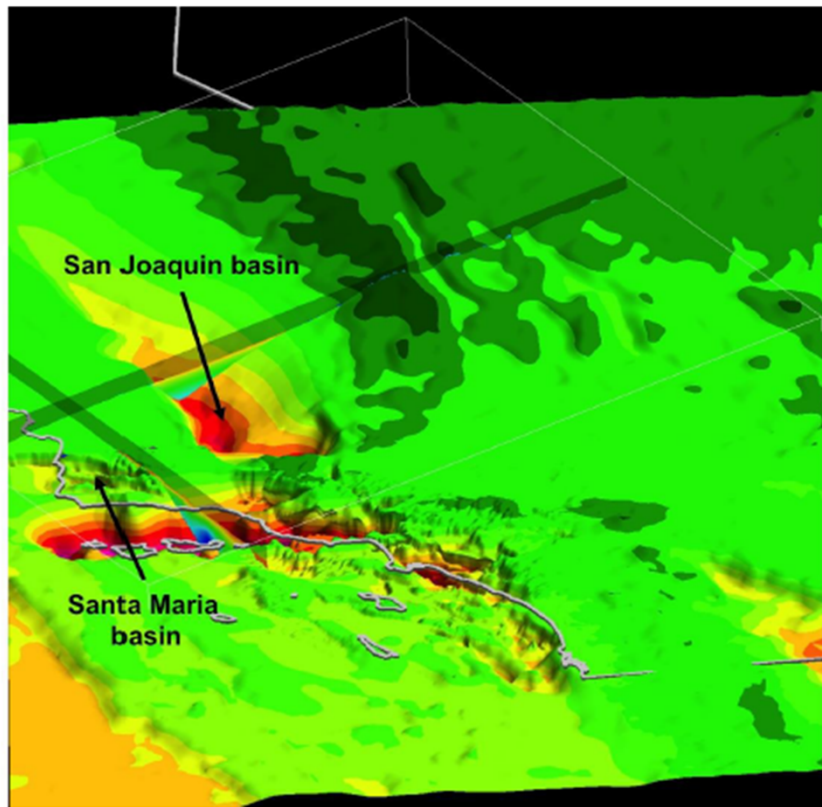


Figure 1: Perspective view looking north at the top basement horizon developed to represent crustal velocity structure in the CCSP Unified Structural Representation (USR). The surface is colored contoured by depth (green, shallow; red, deep), which ranges from 4,000 to -10,000 meters.

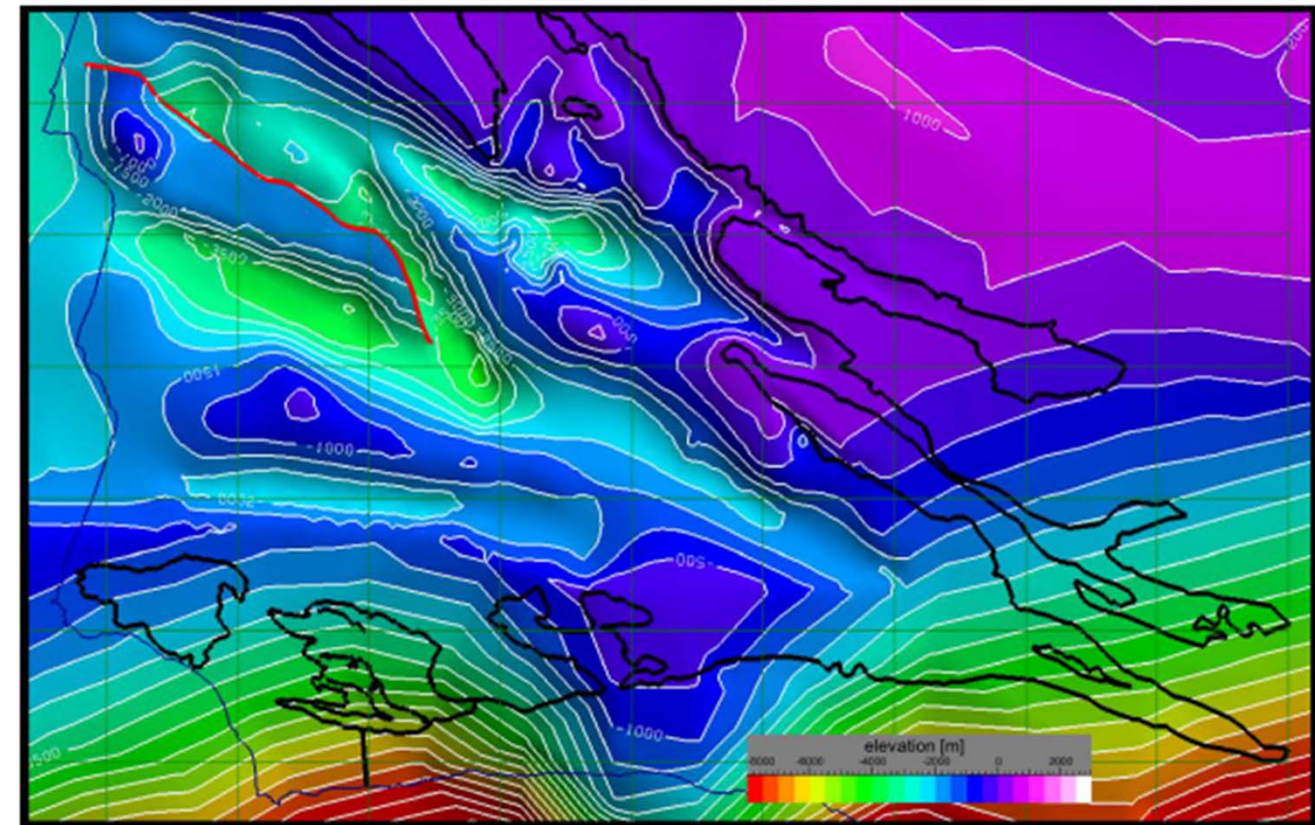


Figure 4: Contour map (500 m interval) of the basement surface in the Santa Maria basin. The bold black line is the outcrop of the surface. The red line is the hanging wall cut-off at the blind Orcutt reverse fault.