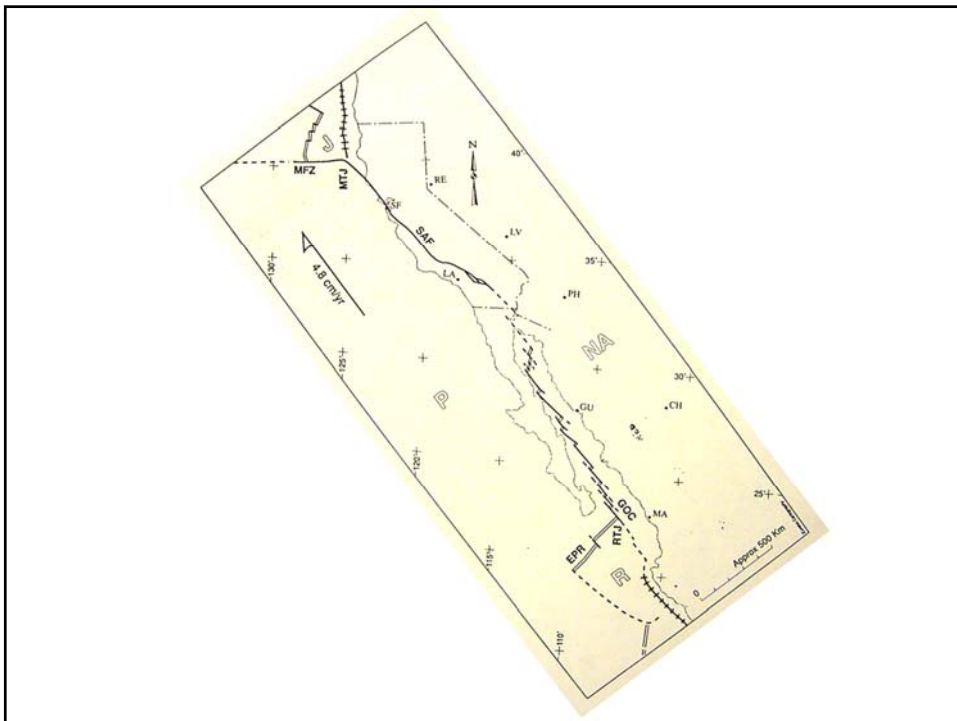
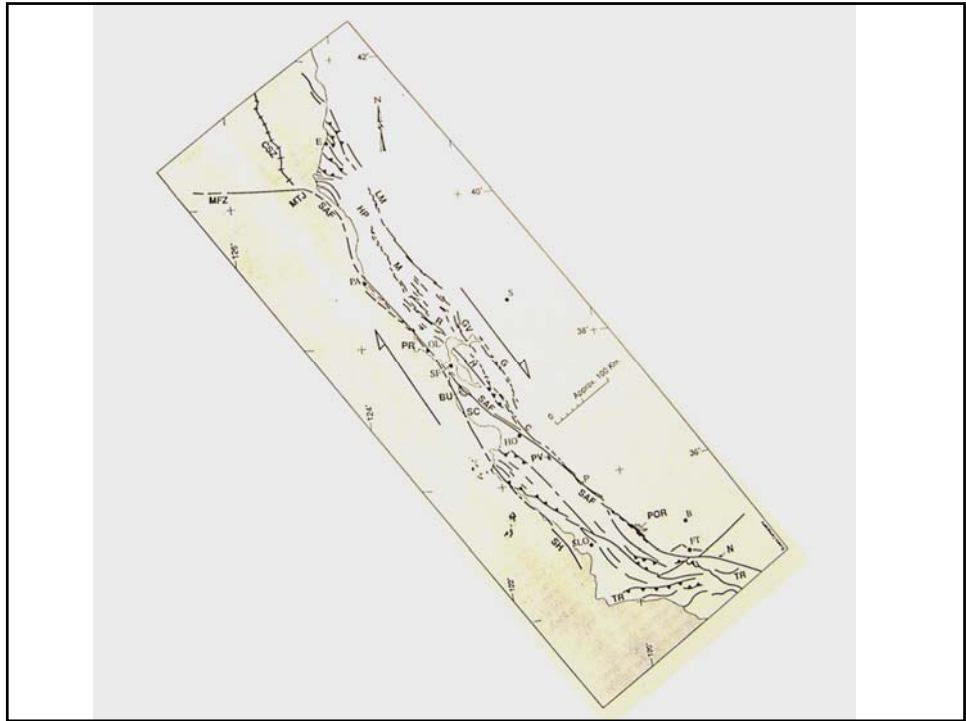
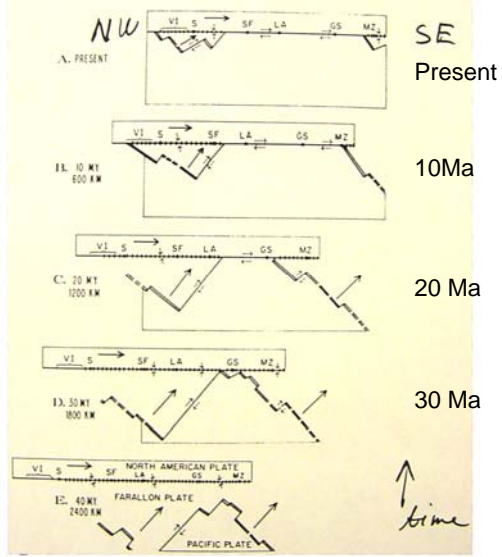


California Seismotectonics



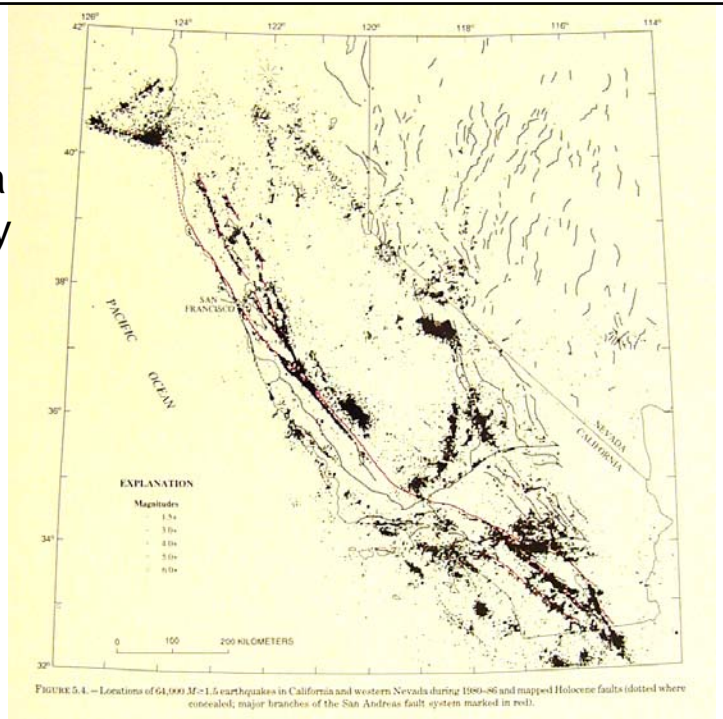


Plateboundary Evolution – Subduction to Transform

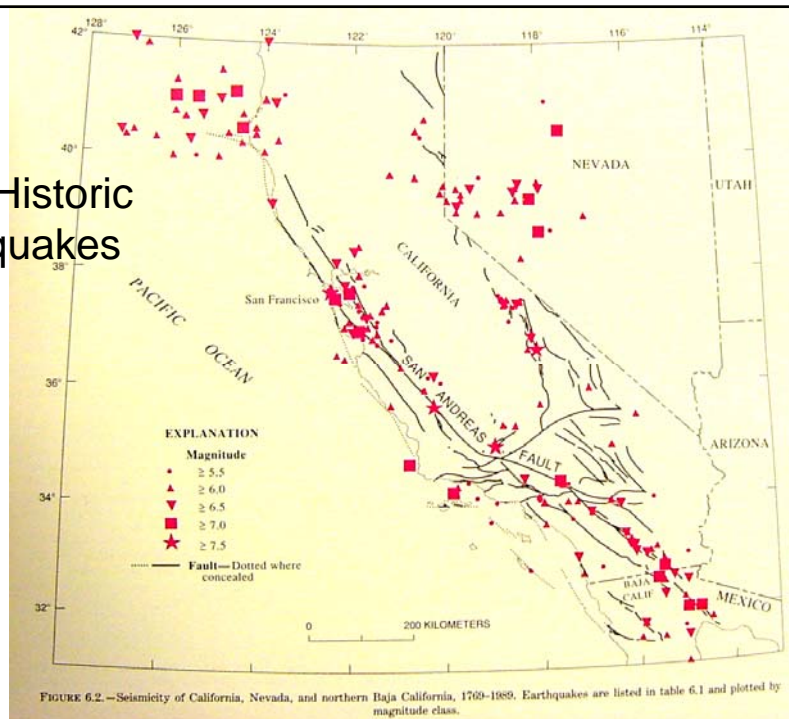


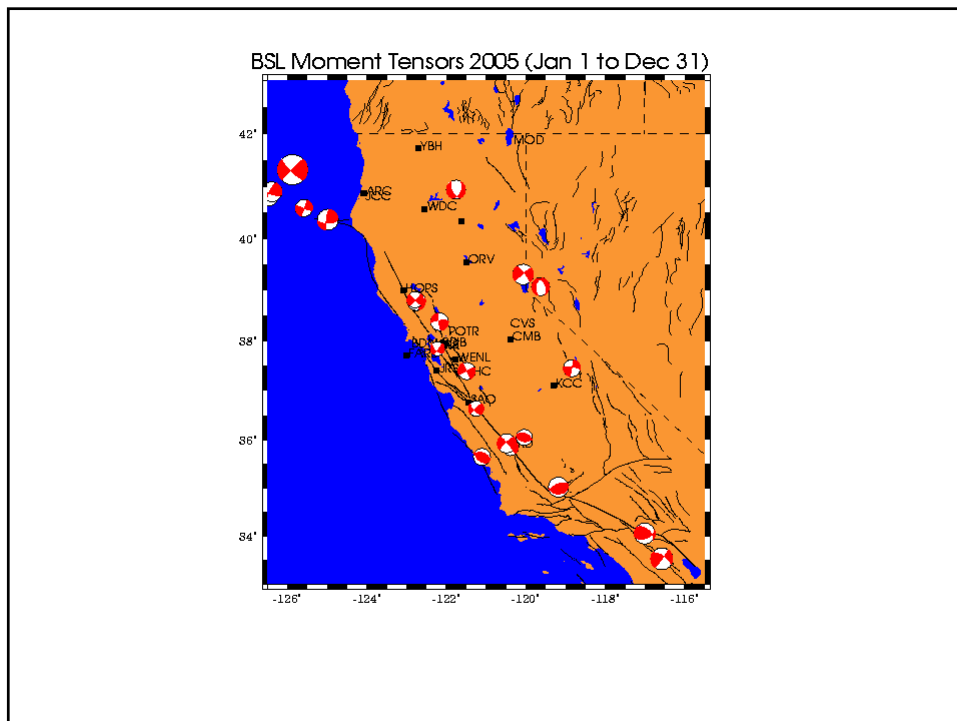
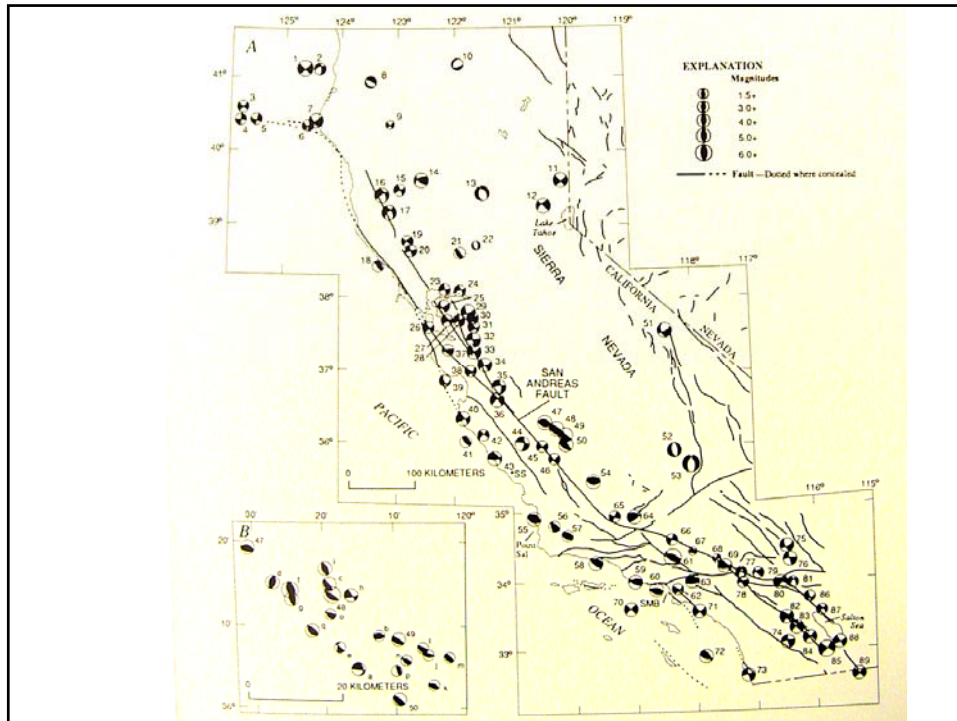
Tanya Atwater

California Seismicity

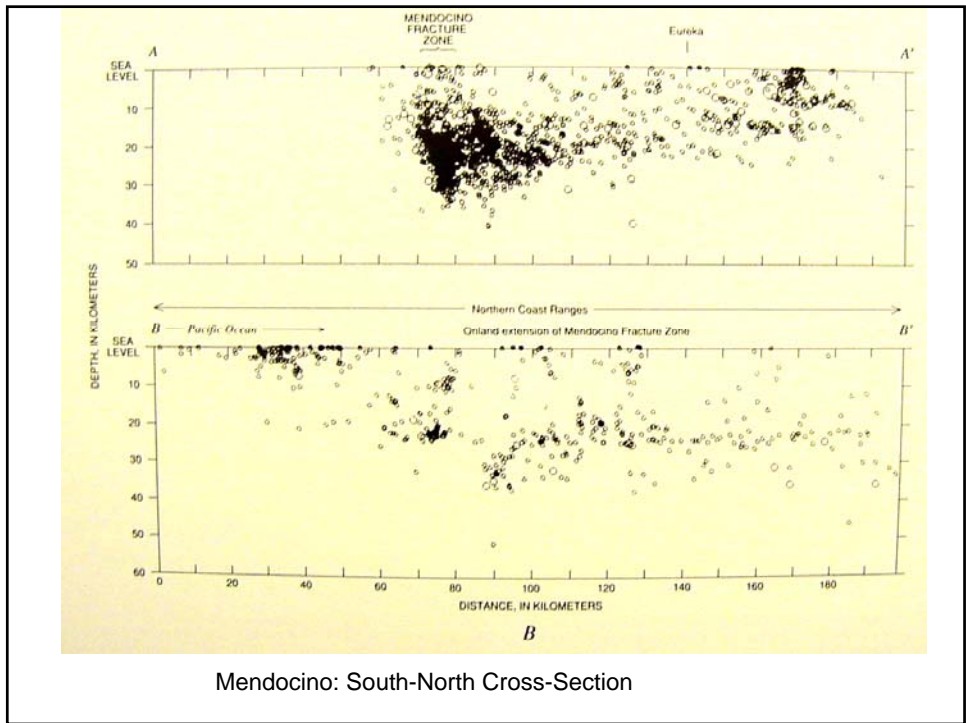
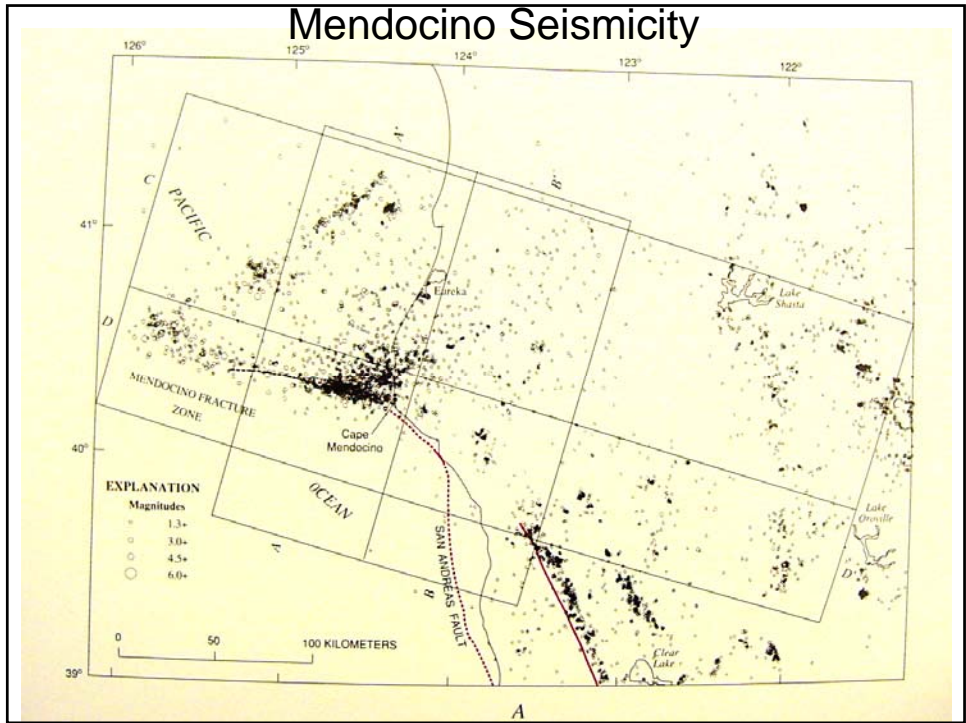


Large Historic Earthquakes

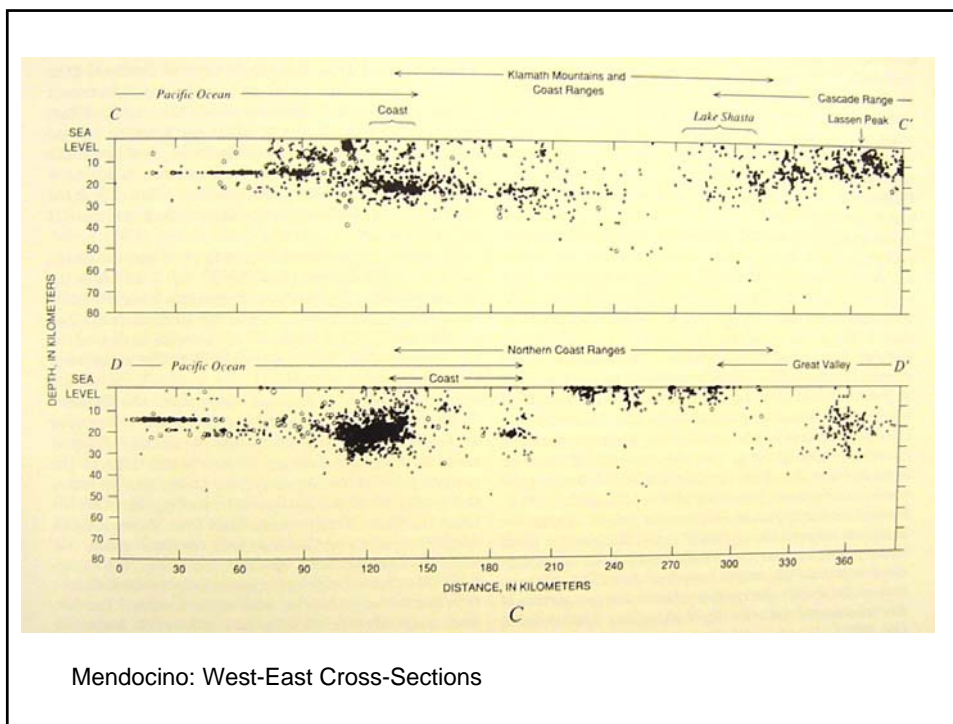




Mendocino Seismicity

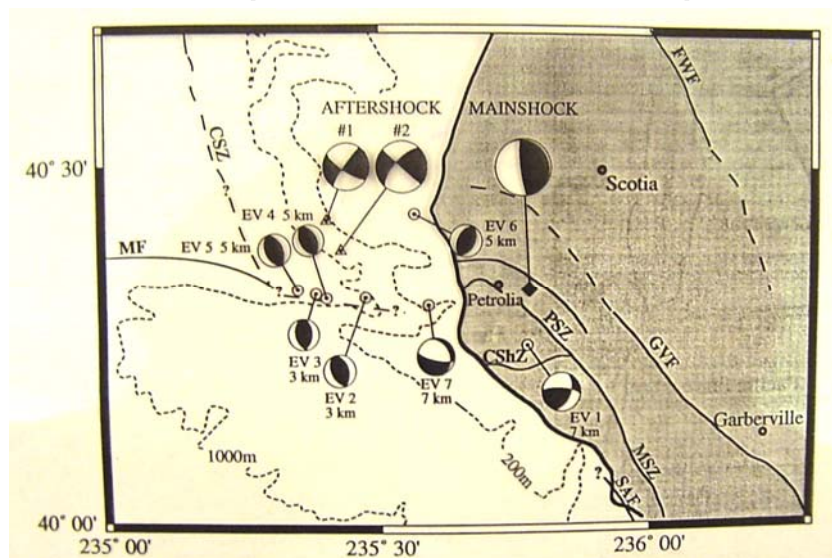


Mendocino: South-North Cross-Section

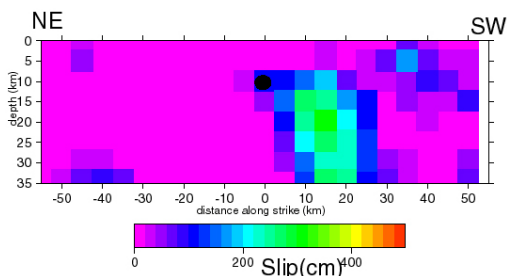
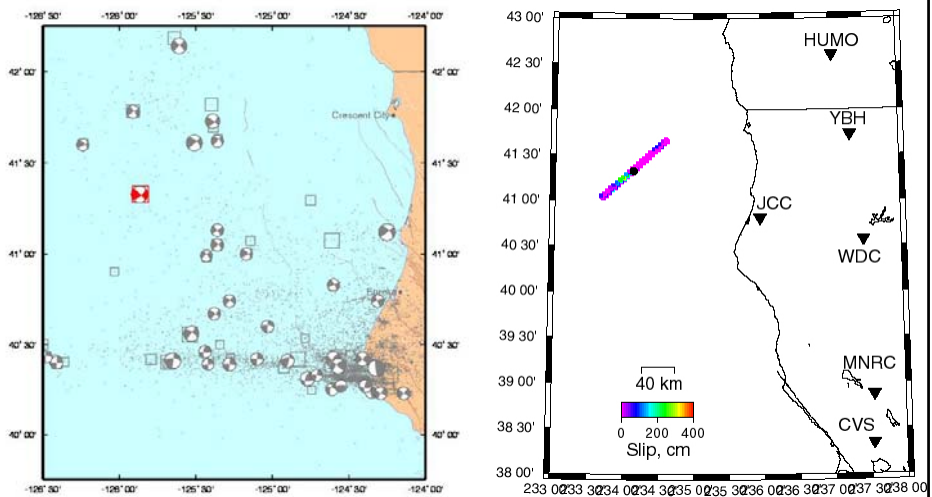


Mendocino: West-East Cross-Sections

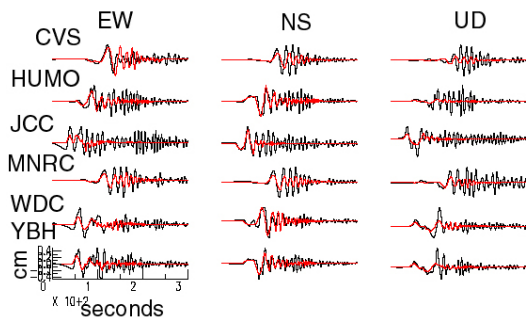
1991 Cape Mendocino Sequence



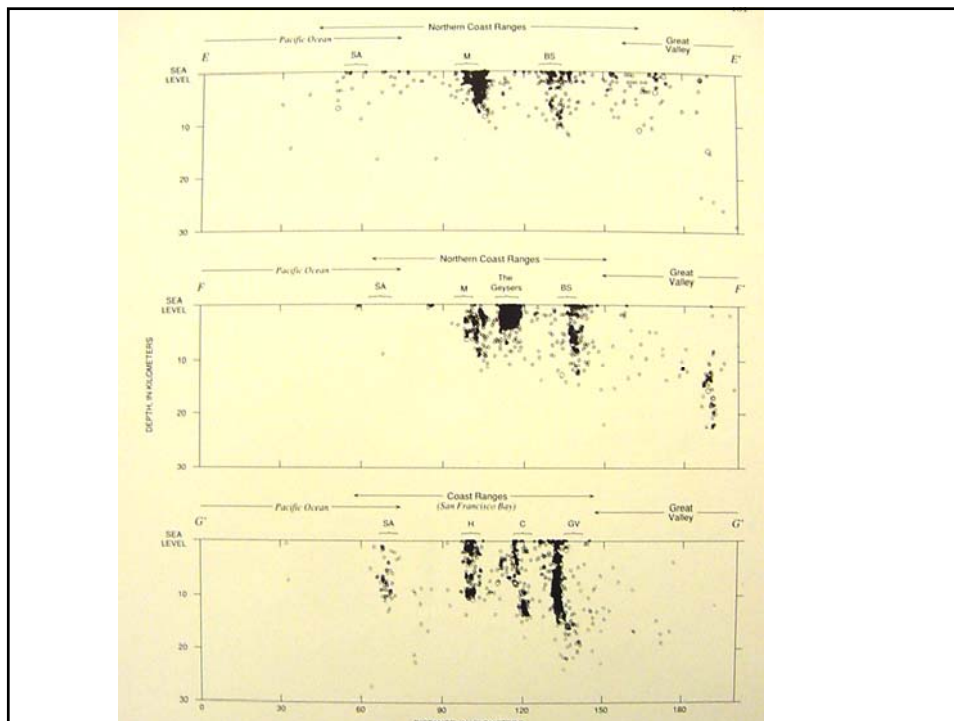
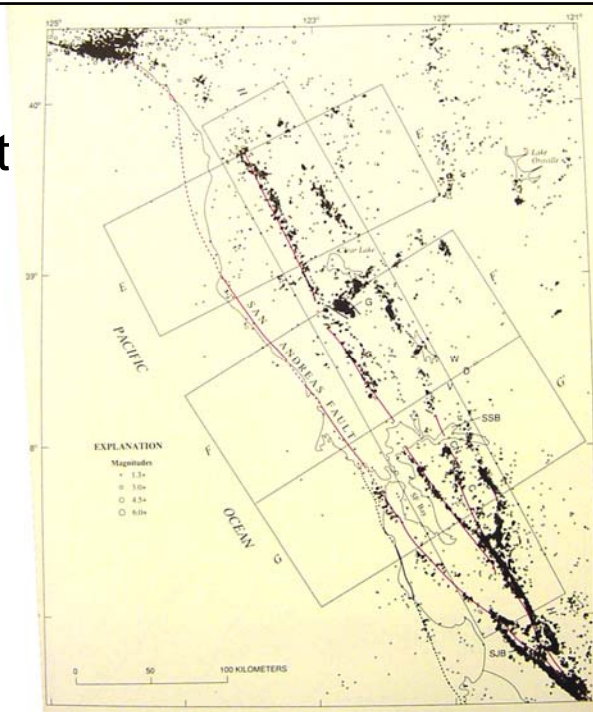
2005 Mw7 Gorda Plate



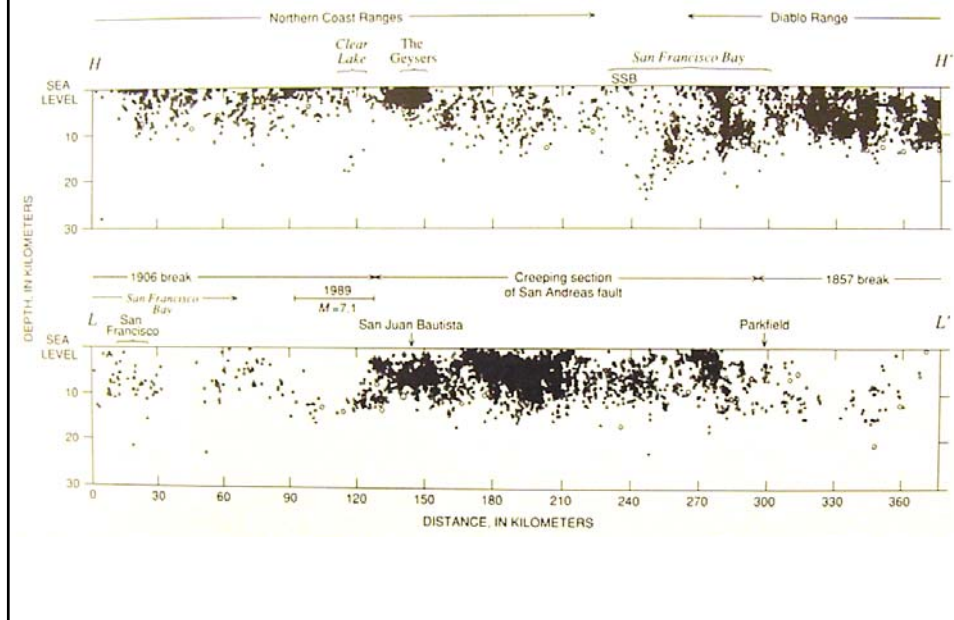
Strike=228, dip=81, rake=15
 $M_0=6.2e+26$; $M_w=7.16$



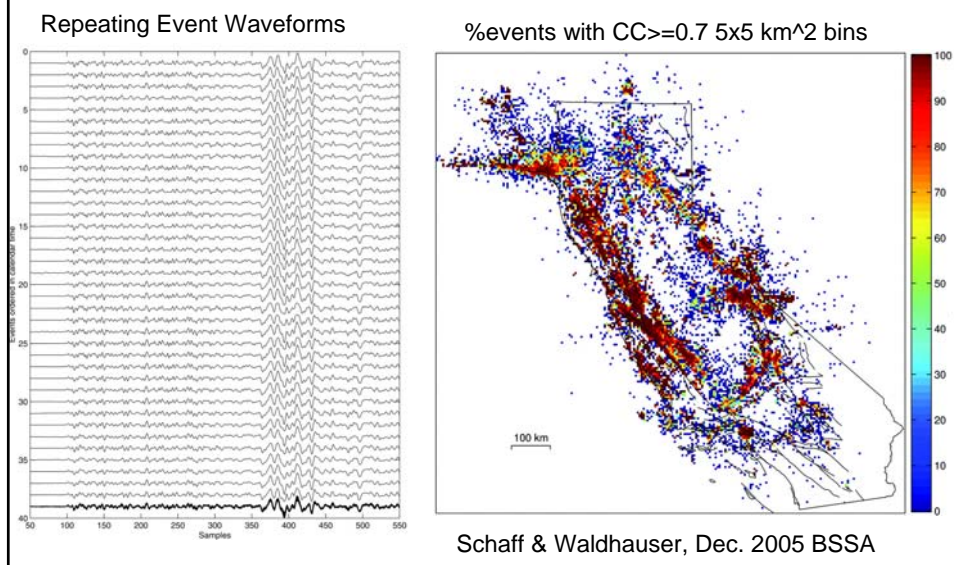
North Coast Region



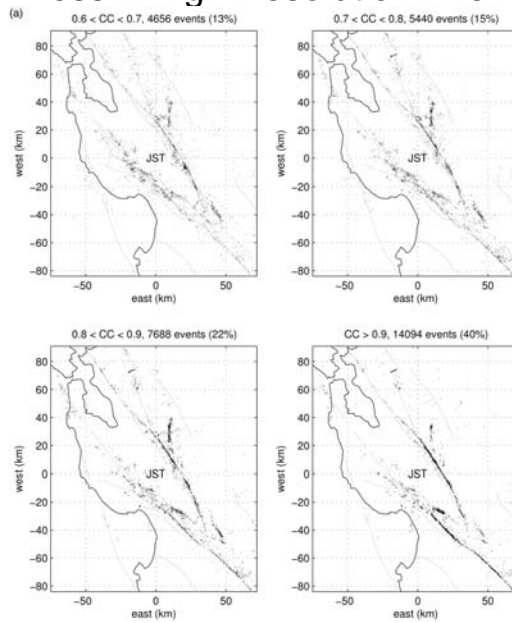
Peninsula Segment SAF



Hot off the Press – High Resolution Event Locations

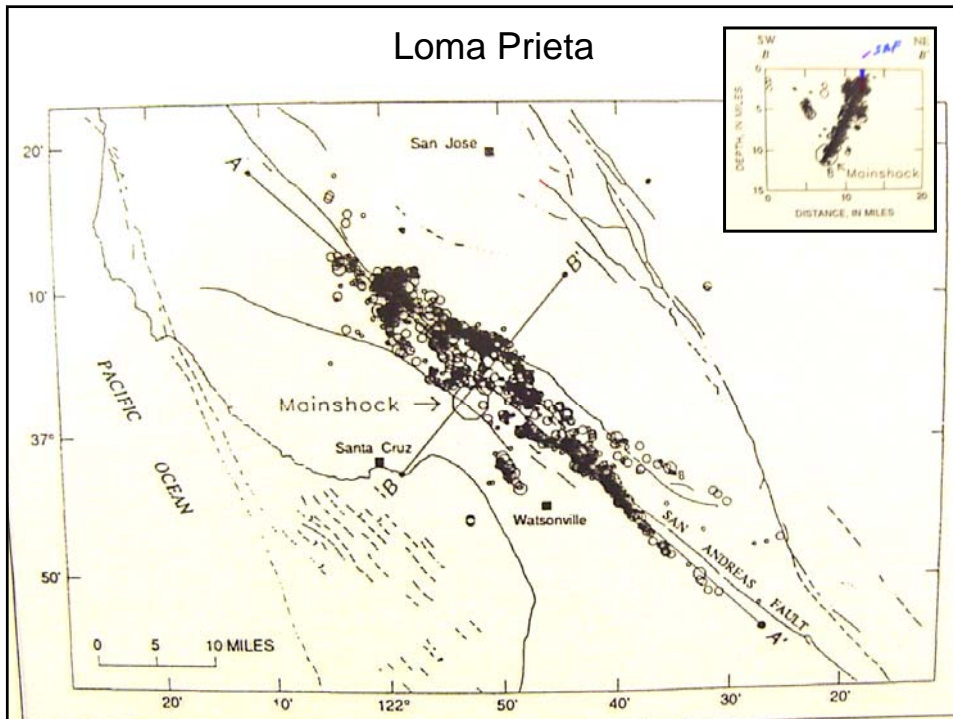


Hot off the Press – High Resolution Event Locations



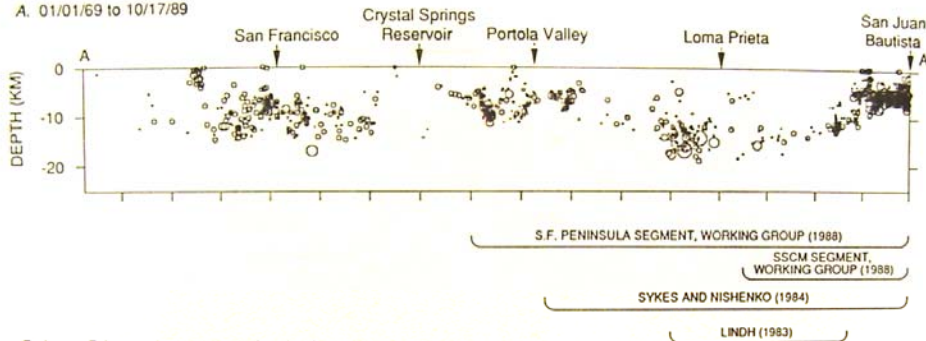
Schaff & Waldhauser, Dec. 2005 BSSA

Loma Prieta

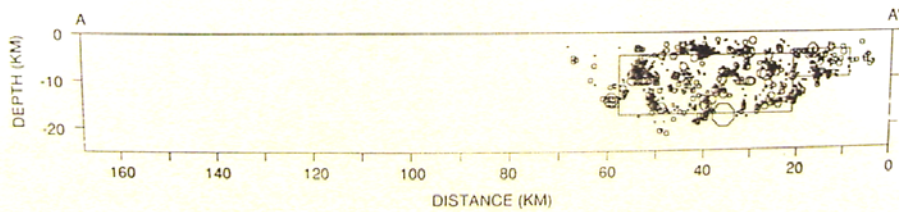


Loma Prieta

A. 01/01/69 to 10/17/89

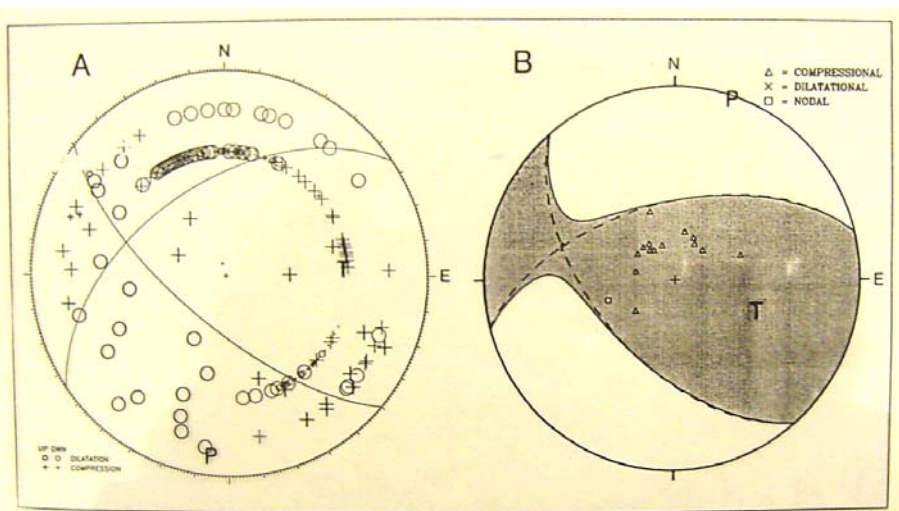


B. Loma Prieta mainshock and aftershocks



P-wave first motions

Teleseismic waveforms



1868

Bay Area Earthquake Recurrence

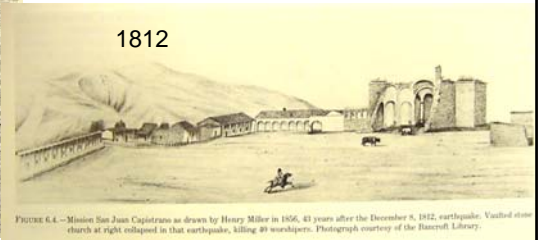
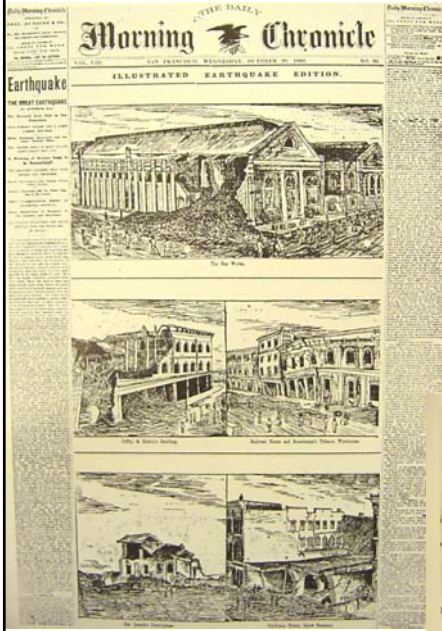
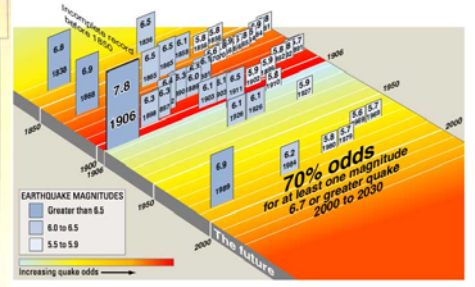
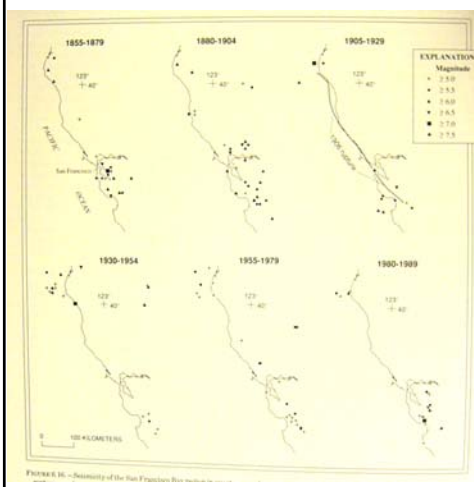
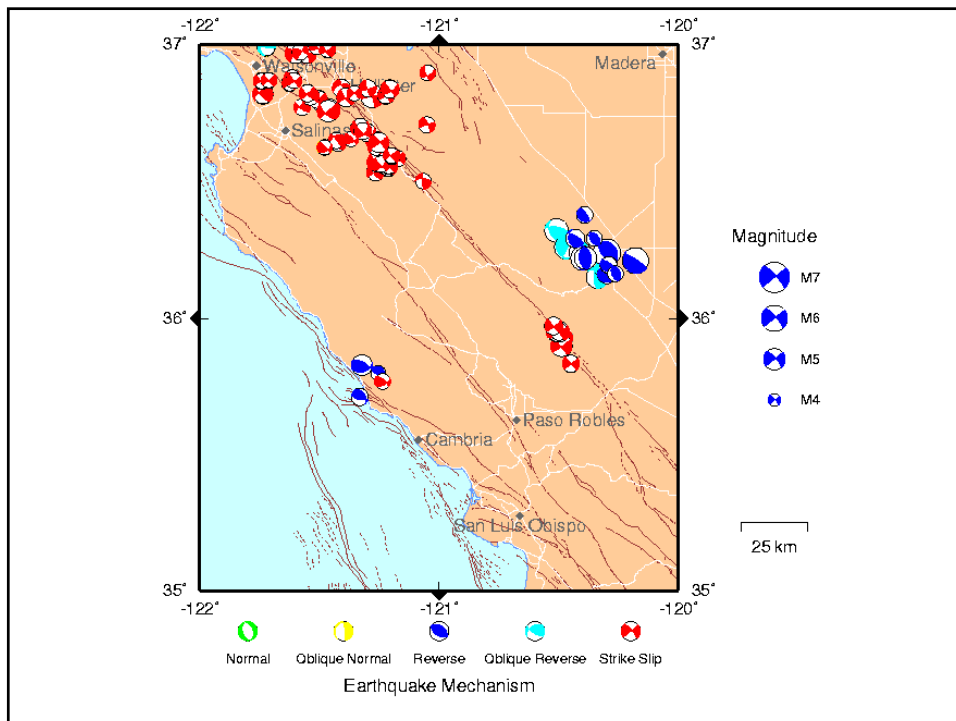
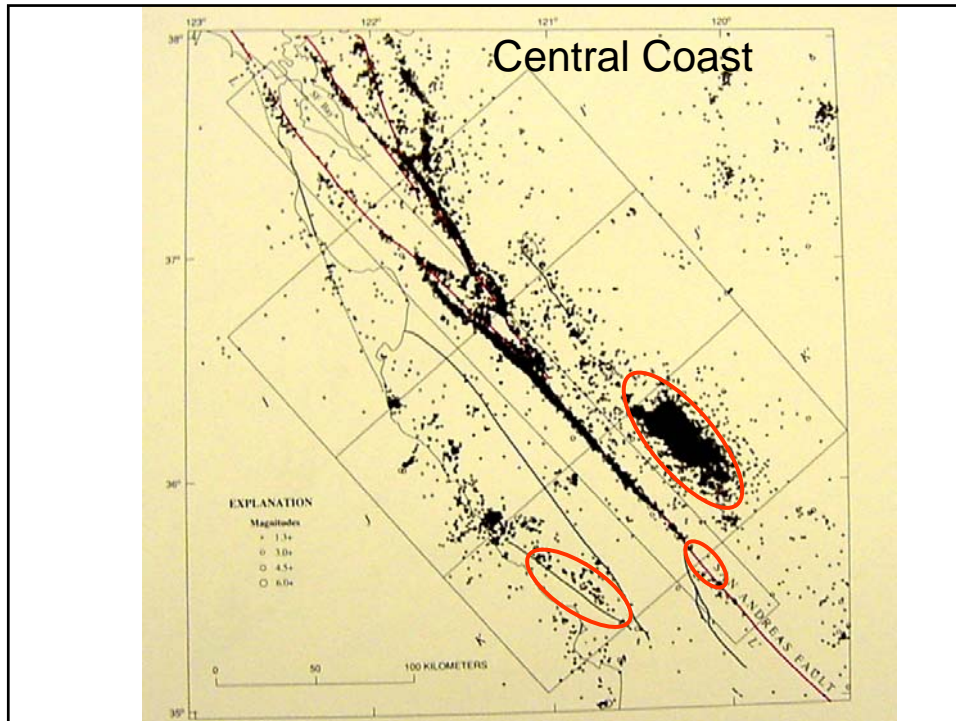
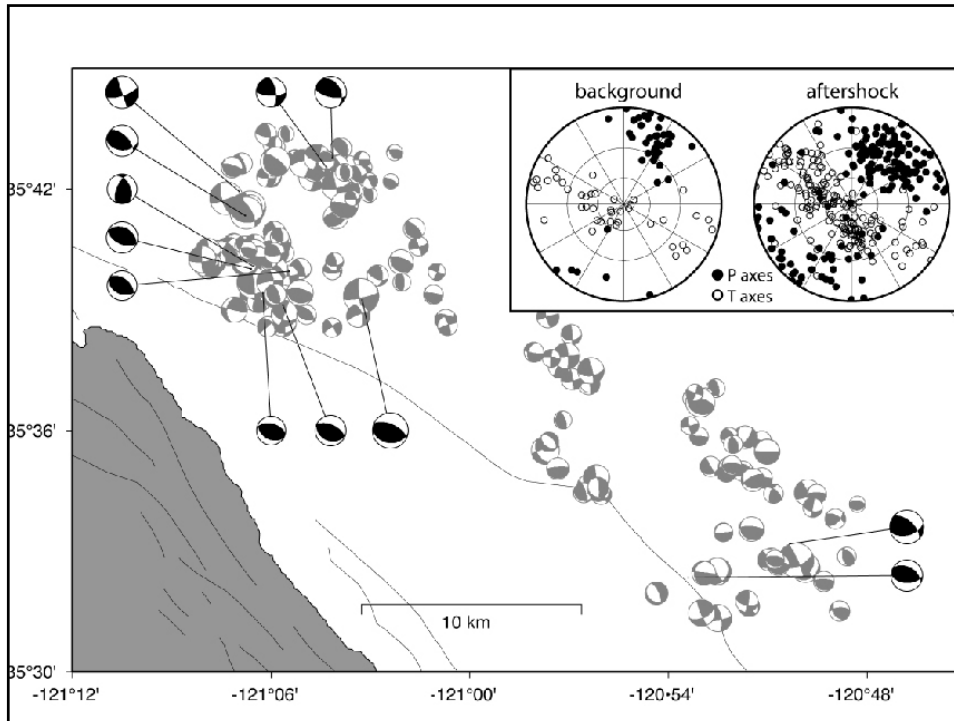


FIGURE 6.4—Mission San Juan Capistrano as drawn by Henry Miller in 1856, 41 years after the December 8, 1812, earthquake. Vaulted stone church at right collapsed in that earthquake, killing 49 worshippers. Photograph courtesy of the Bancroft Library.

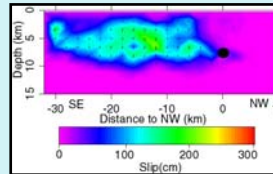
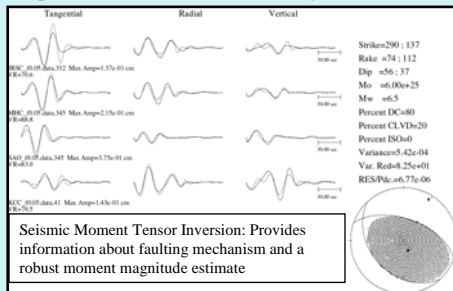
Bay Area Earthquake Recurrence



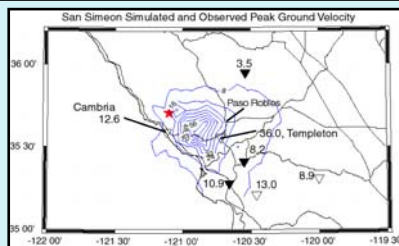




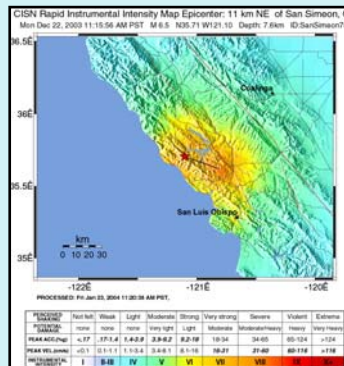
December 22, 2003 Mw6.5 San Simeon, CA Earthquake - Berkeley Seismological Laboratory Response (www.seismo.berkeley.edu)



Finite-source models describe distribution of fault slip. The above figure shows that the San Simeon earthquake ruptured unilaterally to the SE from the hypocenter (black circle). The SE rupture elevated ground motions in that direction leading to the damage incurred in Paso Robles. At the Berkeley Seismological Laboratory we perform both automated and rapidly reviewed finite-source studies to support emergency responses.

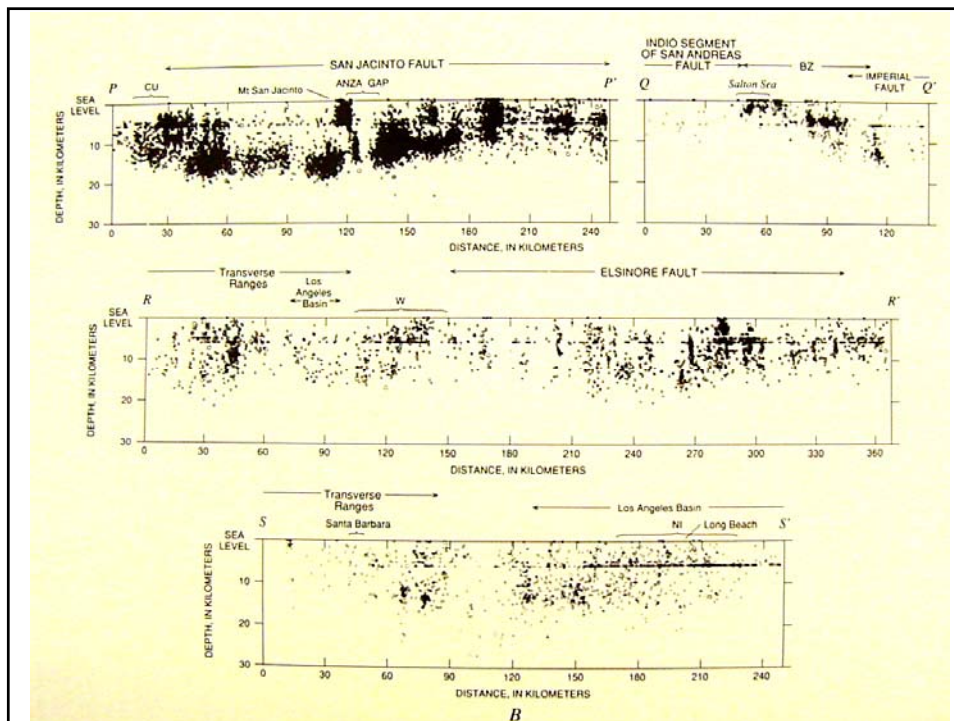
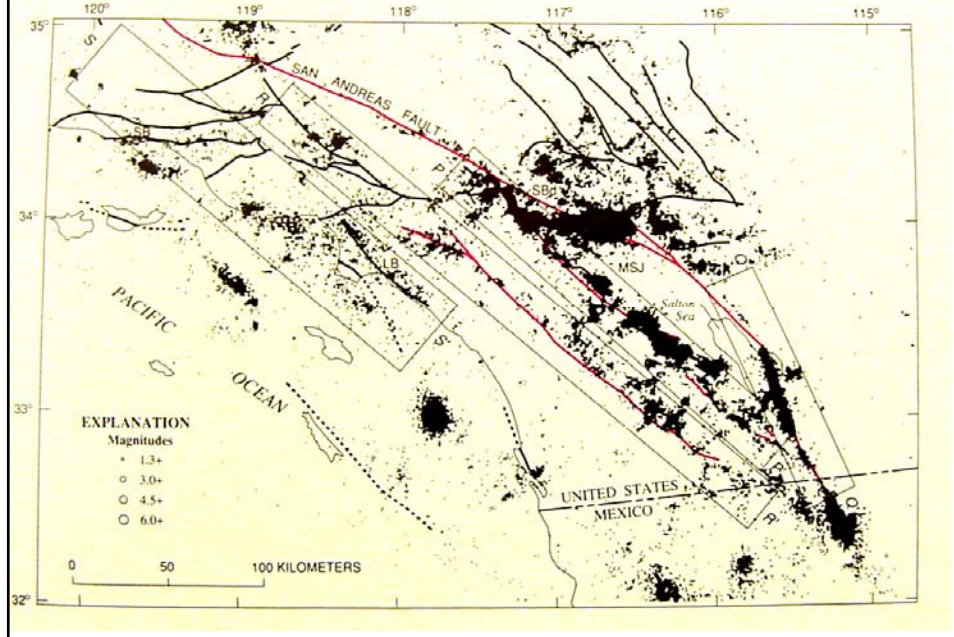


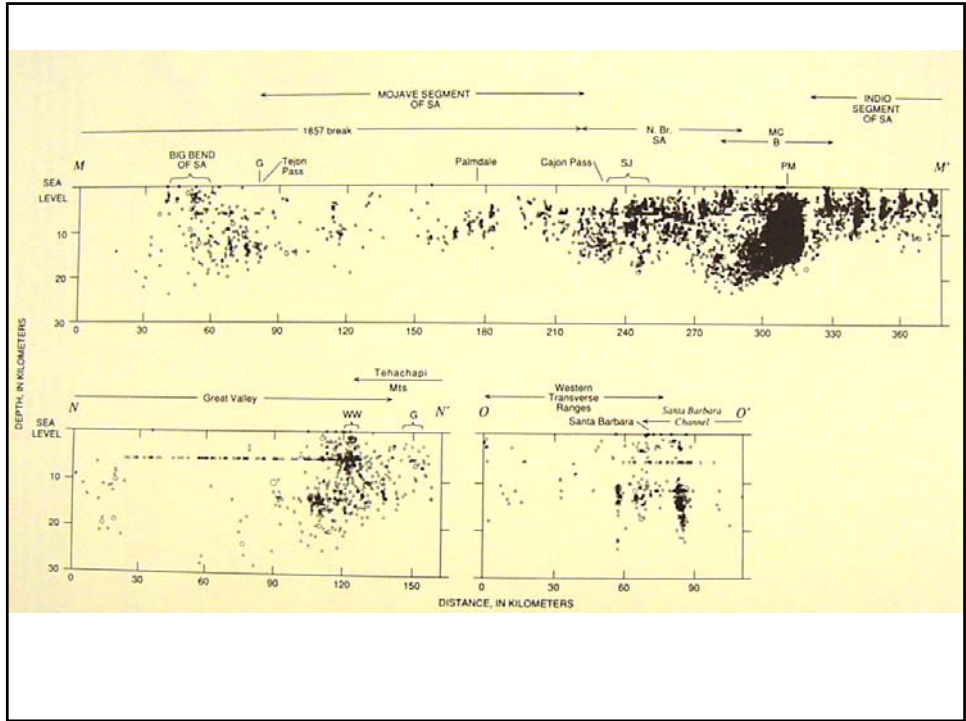
Simulated peak ground velocity (contours, cm/s) are compared to observations (numbers, cm/s). Note the good agreement between model and observed at Cambria and Templeton the two closest stations to the earthquake. The map shows the distributed nature of peak ground motions with respect to the epicenter (red star).



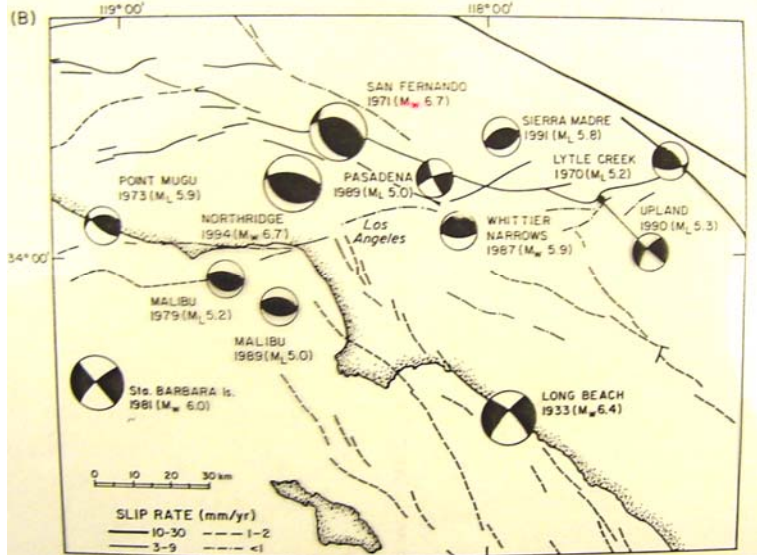
CISN instrumental intensity ShakeMap (left). This map accounts for the 20+ km of SE rupture (line) and shows the elevated nature of ground motions in the Paso Robles region.

Southern California

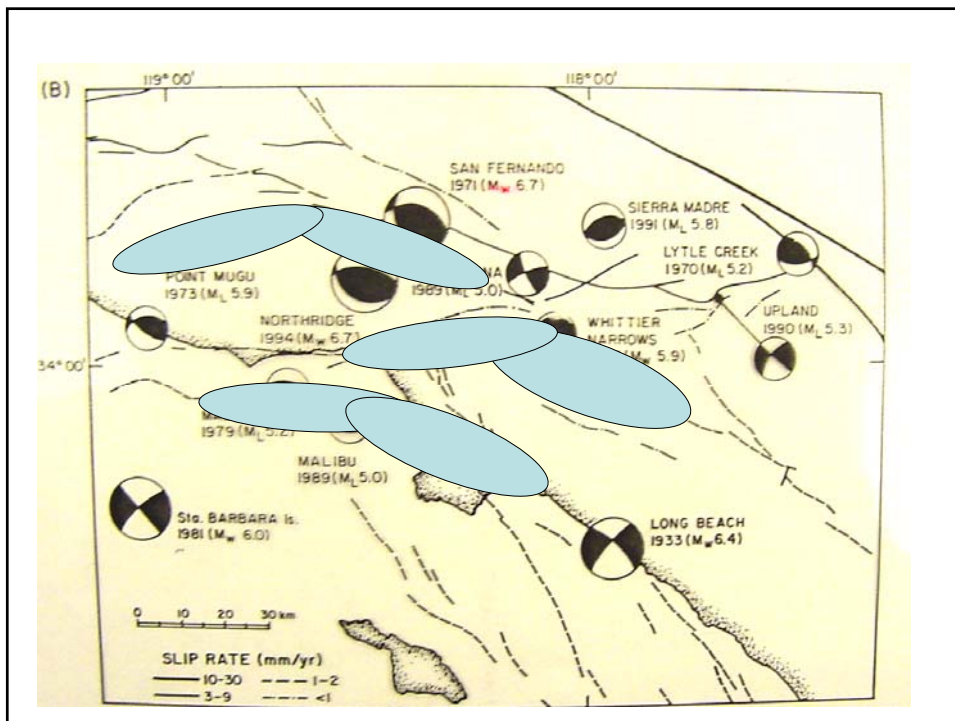
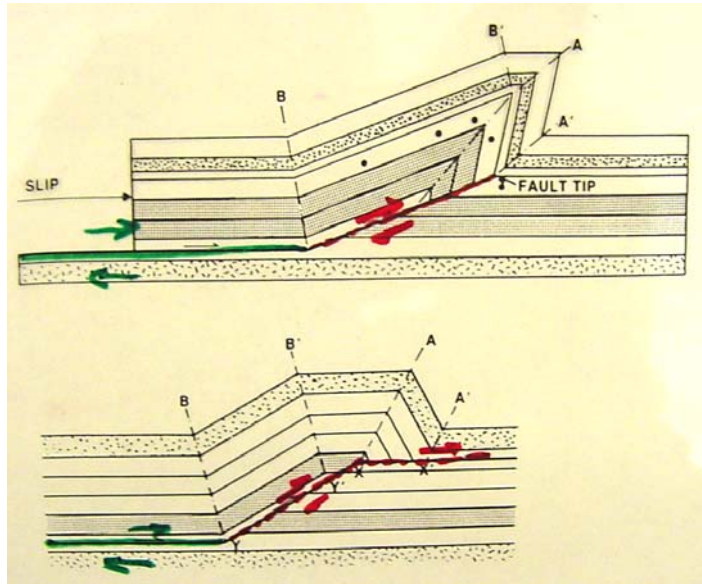




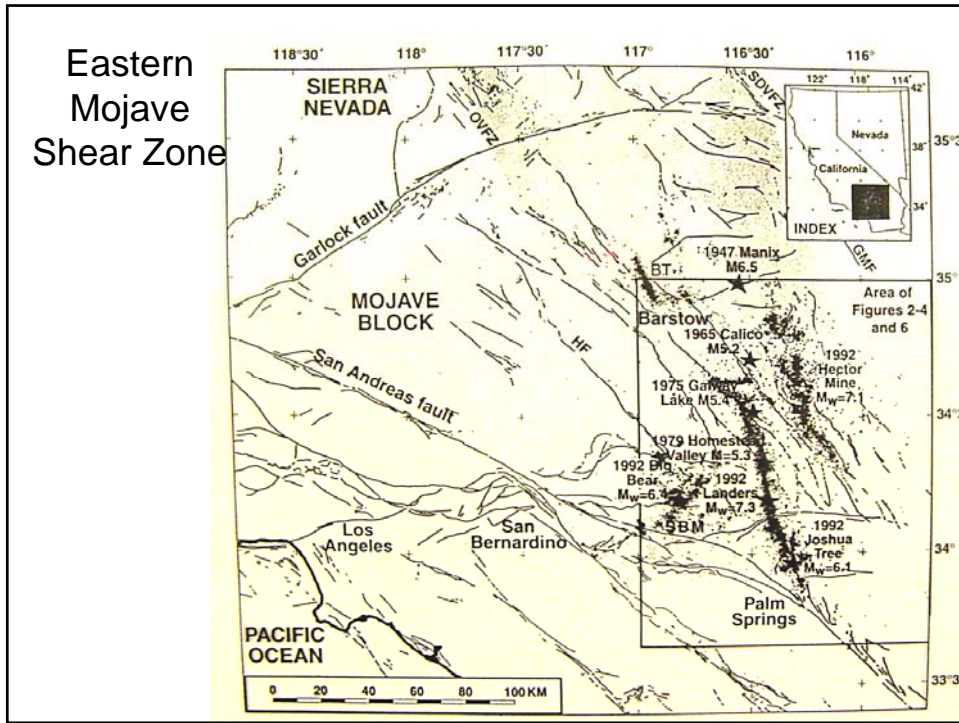
Southern California Focal Mechanisms



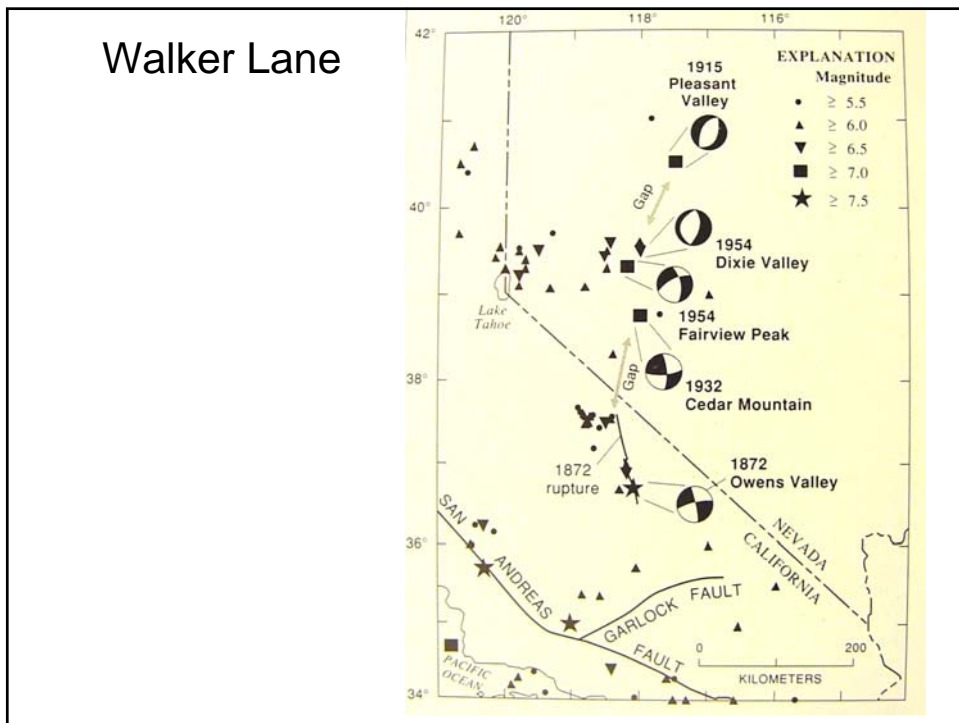
Blind Thrust Faults

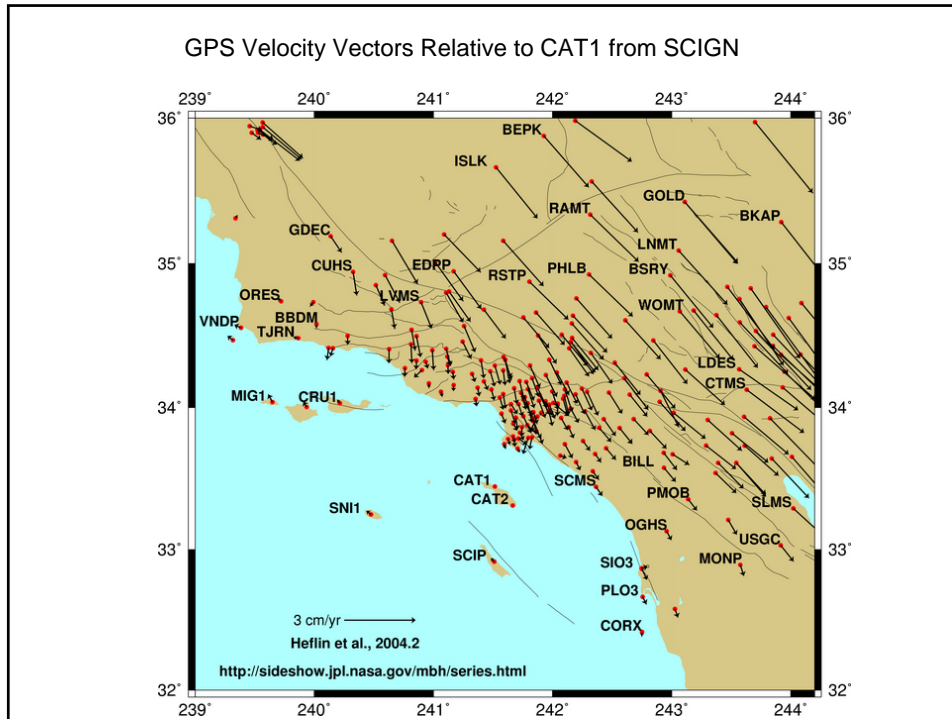


Eastern Mojave Shear Zone



Walker Lane





For Next Time

- Status of earthquake prediction
- Combine information on earthquake location and recurrence intervals to develop earthquake forecasts and probabilistic statements concerning ground motions.
- Read sections in Chapter 11 on earthquake forecasting and prediction