Regional Fault Geometry

From: Marshall et al. (in press JGR)

- Regional fault network is complex
- Most models greatly simplify fault structure
Mechanical Models: Fault Slip Rates

- Long and short term slip rates are compatible

From: Marshall et al. (in press JGR)
Mechanical Models: Slip Distributions

Near-surface slip for Oak Ridge Fault

- Slip distributions are complex
- Planar fault models are not reliable

From: Marshall et al. (2008, BSSA)
Most GPS sites are uncontaminated

From: Marshall et al. (in press JGR)
Persistent Scatterer InSAR Data

- Hydrocarbon Extraction along Ventura Ave anticline produces only localized deformation
- Site P729 appears to be contaminated by anthropogenic motion

From: Marshall et al. (in press JGR)
GPS, InSAR, and Interseismic Deformation

- GPS (relative to CIRX) after removal of SAF interseismic effects

From: Marshall et al. (in press JGR)
GPS, InSAR, and Interseismic Deformation

- GPS and Interseismic Mechanical model Velocities using CFM surfaces

From: Marshall et al. (in press JGR)
• GPS/Model Residual Velocities

From: Marshall et al. (in press JGR)
Model Fits to GPS Data

- Difficult to match both horizontal and vertical GPS
- GPS shows fast localized horizontal strains, but little to no vertical gradients
Strain Rate Maps

- Nearest Neighbor Interpolated Inversion of GPS Velocities
- Showing Max Princ Contraction (Colors) &Dirs (ticks)  

From: Marshall et al. (in press JGR)
Strain Rate Maps

- Distance-weighted or smoothed inversion of GPS velocities
- Showing Max Princ Contraction (Colors) & Dirs (ticks)

From: Marshall et al. (in press JGR)