• Role of geology (specifically tremor):
  - Should we be looking at volumes rather than surfaces as sources?
    o Problem w/ “volume:: how to explain sharp slip fronts, planar propagation
  - How would such a body differ from the surrounding rocks - compare to seismic observations, e.g., fluid content, composition, structural fabric, etc.?
  - What would we look for in the geologic record
    o Seismologists give PT conditions, geologists look for field evidence
    o What should geologists look for:
      ▪ size of individual slip surface (cm)
      ▪ domain of multiple slip surfaces (1 km)
      ▪ evidence for pulses of fluid pressure, e.g., fractures, veins
      ▪ how well preserved, tectonic overprinting?
  - Is localized slip only possible source for tremor? Perhaps multiple mechanisms and sources yield similar kinematic response?
  - Do field observations (brittle fracture, slip surfaces, foliations, pseudotachylites) provide any insights into phenomenologic laws, e.g., rate-state friction? If so, what and how?
  - Is there any value comparing to volcanic tremor: frequency content, etc.?

• Role of Geodesy (general)
  - Constrain location and dimensions of region of deformation
    o M 6-7 slip events (and afterslip) denote affected regions 100 km²
    o Tremor occurs in very restricted area
  - Slow slip and tremor occurs over range of depths, perhaps along entire length of fault (subduction zone). Can use to predict PT conditions, but only locally.
  - Creep can occur in many different settings, no obvious geologic correlation – what should be responsible? E.g.,
    o Known serpentine rich regions do not always correspond w/ tremor/slip
• How to Improve Observations and Integration
  (e.g., through EarthScope and Related Programs)
  - Network of 500 strainmeters to improve resolution of observations, i.e. to better constrain the geodetic signal, source, etc.
  - Clear hypotheses to test, justify well-placed experimental arrays and inversions.
  - Need tools to reduce non-uniqueness of geodetic inversions, e.g., compare geodetic and seismologic inversions (integrate geology?)
  - Offshore observations to extend inversions across entire fault – geodetic (e.g., borehole strain meters)
  - Very LONG time-series (e.g., decadal) observations.
  - “Timely comprehensive data distributions”
  - Clearer picture of how fault zones vary along entire length, e.g., frictional changes, controlling properties, contrasts with adjacent rocks. Compare seismology w/ geology of multiple faults (hypothesized to accommodate slip)
  - Strain meter data for low-level slip behavior, e.g., inter-ETS phases, or anomalous (e.g., low-slip) zones along fault strike.
  - Improved vertical GPS (allow tracking of other constellations)

• Data products:
  - Catalog of slip events, that could be used to test ideas. Need data, slip models, displacements, geometry, etc.
  - Similarly, earthquake rupture models for geodetic comparisons
  - Improved “Earth” models, e.g., not half-space, but realistically heterogeneous models – accessible to rest of community
  - Blind tests of source inversions to benchmark different methods