**Title:**

**Comparison of SHmax orientations from stress inversions of focal mechanisms with 17 different stress rate models determined from GPS data in southern California: Contribution to the SCEC stress model**

Using 170,000 earthquake focal mechanisms (1981–2010), Yang and Hauksson (2013) inverted for the state of stress in the southern California crust. They also determined the regional variations in the maximum horizontal compressive stress (*S*Hmax) from the stress field. The *S*Hmax is best resolved where seismicity rates are high and sufficient data are available to constrain the stress field.

We compare the regional variations in *S*Hmax trends across southern California with 17 different published stress rate models determined from GPS data. In general there is a -5 degree average rotation between the strain models and *S*Hmax. A typical standard deviation is 15 degrees.

The detailed regional variations in the *S*Hmax trends are very similar to the pattern of the GPS-measured maximum shortening axes of the surface strain rate tensor field although the strain field tends to be smoother, and possibly appears to capture some of the upper-mantle deformation field.

We will also compare the second invariant of rate with the rate of seismicity across southern California with the strain rate in these 17 different models. Preliminary, result suggest that most seismicity occurs in regions of average strain rate.

We will also explore these data sets in the context of the nascent SCEC community stress model.