U3ETAS Simulations:

For upcoming conferences, I'd like to include more UCERF3-ETAS simulations of historic sequences to showcase the new testing capabilities.

(*Eventually*, and just for future reference, rinse and repeat for this list of earthquakes:

- 1999 M7.1 Hector Mine;
- 1989 M6.9 Loma Prieta;
- 1994 M6.7 Northridge;
- 2003 M6.6 San Simeon;
- 1987 6.5 Elmore Ranch;
- 1992 M6.3 Joshua Tree;
- 1986 M6.2 Chalfant Valley;
- 1984 M6.2 Morgan Hill; too early for good catalog?, Probably no, CUSP (Cali USGS seismic processing) came on line ~30 days before event
- 1983 M6.2 Coalinga; (too early for good catalog?)
- 1987 M6.1 Superstition Hills;
- 2014 M6 South Napa;
- 2004 M6 Parkfield;
- 2010 M7.2 El Mayor Cucupah

)

- Green are my selected targets.
- Yellow are questionable.
- Red I think are too early for post-1985 catalog.

How does additional data help with forecast performance?

- Three days after mainshock
- Two-week after mainshock
- Month after mainshock

Simone (Max's student) are developing ETAS and ETAS+Coulomb simulations for El Mayor-Cucapah. Should compare against UCERF-ETAS.

How different are the UCERF3-ETAS catalogs (Felzer) and Comcat in the more recent time periods? Later parts of UCERF3-ETAS catalog are consistent with ANSS (Comcat) at later dates.

Spatial Testing of Stochastic Event Sets

- Binning routines for catalogs using CSEP1 grid results in about 7800 polygons.
- Implemented new algorithm and optimized using parallelism to get computational time. down from several hours to around 20-30 minutes.
- Need to implement strategies to visualize the binned catalogs.
- P-value for N-test result in each bin.
- Discussions of tests on the Gear model. Look at evaluating the spatial distributions of testing.

Distribution-based Testing (M-test)

- Implemented new metric aside from K-S statistic. (Sum of squared residuals)
- Eliminated ECDF approach and computed using binned histograms.
- Need to visualize error as a function of magnitude.
- Bins should be centered at the decimals… ie 4.0, 4.1, where bin edges are [3.95 - 4.05]
- Comcat and UCERF3 should be discretized to the same interval before binning.
- Thinking about sub-sampling from simulated catalogs. Perform a random sample of the observed catalog. At the very least this will show how the tests are sensitive to event counts.

Website accessibility

- Need publicly facing web-page that gives people an idea about how CSEP-Testing operates.