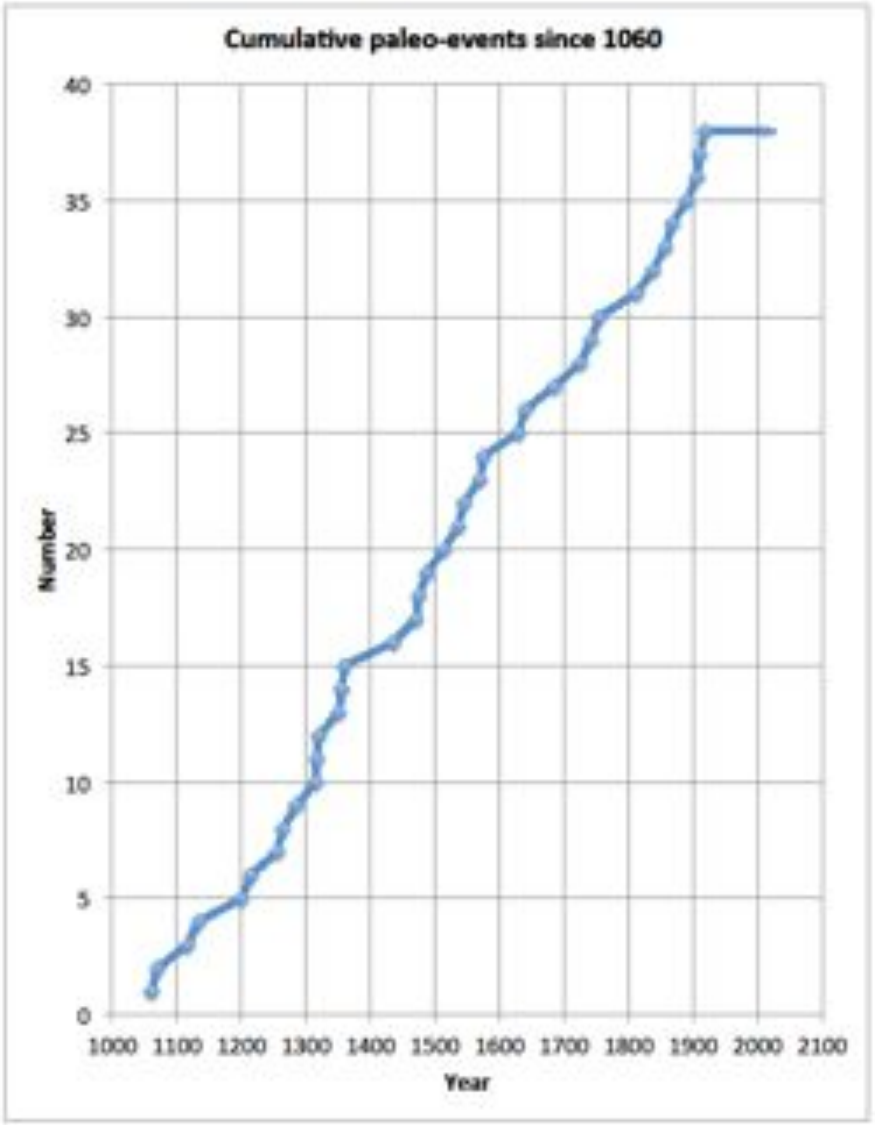
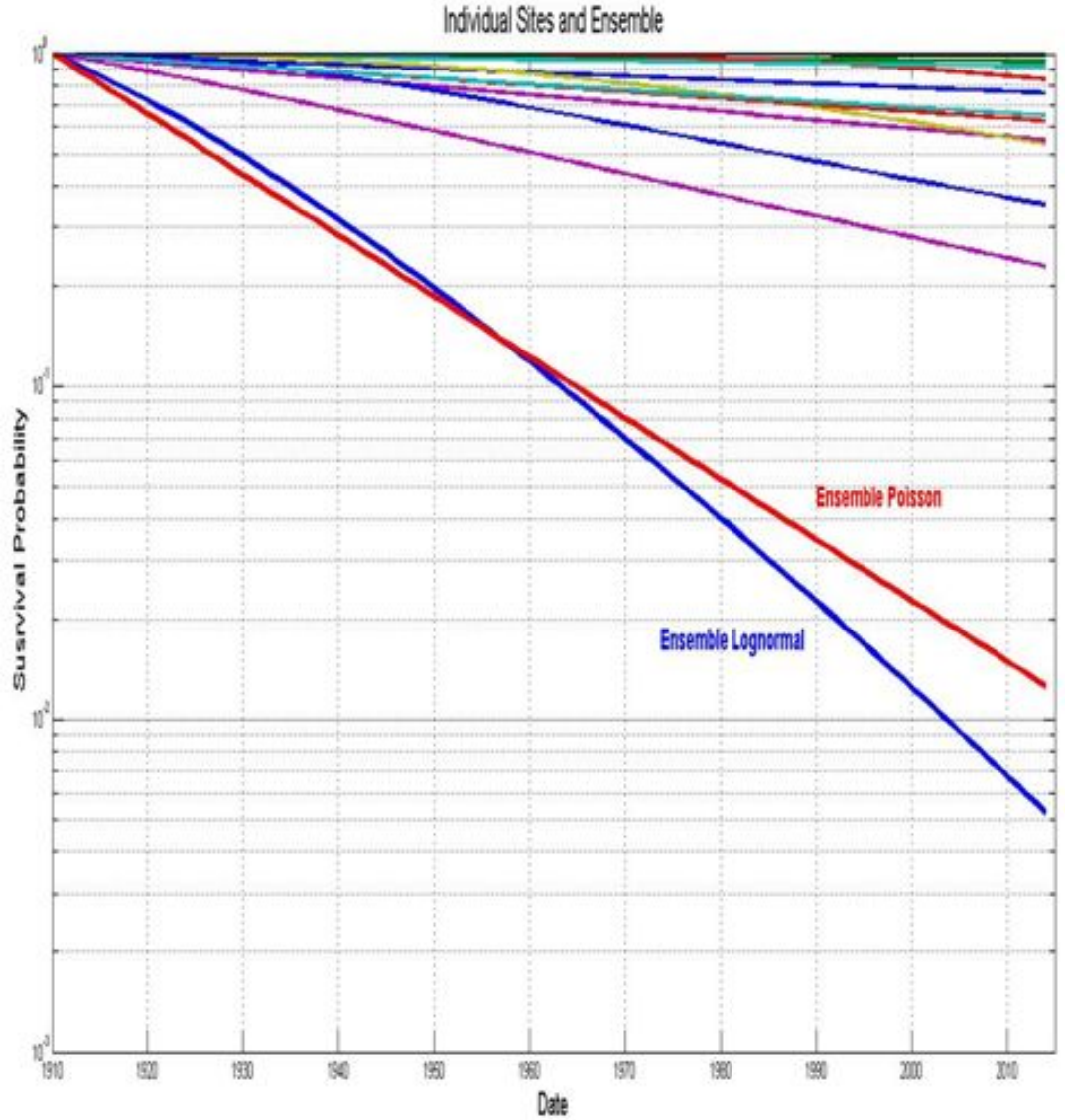
Cumulative paleo events since 1060



- UCERF3 employed paleo-seismic data to infer rates at 32 sites. The latest event at any of those sites was in 1910.
- Some quakes reach more than one site, so to identify double counting I estimated lower limit rate using 12 sites on separate faults
- Rate estimate was 0.04 events per year. Poisson prob of no events in 100 years is about 1% (upper limit)

Survivor function for 12 active paleoseis sites in California



Implications

- If hiatus is just **rare luck**, all is fine. Rate of future fault-rupturing rates should be as estimated from past data, e.g. 0.04 paleo-events per year if Poissonian. For lognormal model, long term average rate would be similar, but current rate would be higher because more faults are overdue. But, you would have to accept 1% probability of rejection. If so, shouldn't 1% be the standard of rejection for all data? Then uncertainties would be huge.

- If **unmodeled clustering** caused the hiatus, then future earthquake probabilities would be subject to the same effects. Would the hiatus be over soon, or continue for another century or more? Most (all?) our modelling of recurrence would go out the window.

- **Data errors**, and in particular mistaken identity of non-seismic effects as earthquakes, may have caused over-estimation of past rates before the age of instrumental seismology. If so, then both the event rates and the inferred recurrence properties, including quasi-periodic recurrence, would be out the window.

- **Got a better idea? Email me, and please explain the numbers!**
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