

Solid Earth Physics Seminar, Harvard University

**Wednesday 25 January 2017, 1:30 pm
Geological Museum, Room 310, 24 Oxford Street**

***Estimating the Locations of Past and Future Large
Earthquake Ruptures in California using Recent $M \geq 4$
Events***

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Abstract:

Although most aftershock activity dies away within months or a few years of a mainshock, there is evidence that aftershocks still occur decades or even centuries after mainshocks, particularly in areas of low background seismicity such as stable continental regions. There also is evidence of long-lasting aftershock sequences in California. New work to study the occurrences of recent $M \geq 4$ earthquakes in California shows that these events occur preferentially at the edges of past major ruptures, with the effect lessening with decreasing magnitude below $M4$. Prior to several California mainshocks, the $M \geq 4$ seismicity was uniformly spread along the future fault ruptures without concentrations at the fault ends. On these faults, the rates of the $M \geq 4$ earthquakes prior to the mainshocks were much greater than the rates of the recent $M \geq 4$ earthquakes. These results suggest that the spatial patterns and rates of $M \geq 4$ earthquakes may help identify which faults are most prone to rupturing in the near future. Using this idea, speculation on which faults in California may be the next ones to experience major earthquakes is presented. The results of these analyses also indicate that the locations of recent $M \geq 4$ earthquakes may be useful for determining the spatial extents of historic and paleoseismic earthquake ruptures.