



The Parkfield Tremors: Slow and Fast Ruptures on the Same Asperity

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A number of tremor sources have been burst into low-frequency earthquakes (LFEs) in the deep extension of the San Andreas Fault in the last decade. Among the tremor sources, a particular LFE family near Parkfield exhibited doubling recurrence intervals alternating between about three and six days. A simple physical model producing successive slow and fast ruptures on the same asperity can explain the doubling recurrence intervals (manuscript accepted by *Nature*, 2016), but the source characteristics of the LFEs may not be fully explained by this simple model. The source characteristics show that tremor bursts containing more LFEs and lasting longer are associated with lower-amplitude ground motion. We find that the number of LFEs per burst is controlled by peak velocity of the modeled slip event. However, the duration of the tremor burst is not directly controlled by the duration of the underlying slip. The findings imply that the LFEs occur contemporaneous with the underlying slow and fast ruptures successively. Our results bring a better understanding of the mechanics of tectonic tremors associated with underlying slow-slip events.