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Date & Time: January 7, 2011 on Friday 14:00 - 15:30
Place: Research Center for Earthquake and Volcanic Eruption Annex Bldg. #1 Meeting Room
Title: Triggering and Interaction of repeating sequences at Parkfield

Abstract:

Knowledge of what governs the timing of repeating earthquakes is essential to understanding the nature of the earthquake cycle and to determining earthquake hazard, yet the variability and controls of earthquake recurrences are not well established. Several unsolved problems regarding the recurrence properties of natural earthquake sequences remain: How do the repeating sequences respond to static and dynamic stress perturbations associated with nearby earthquakes? To what degree does fault interaction influence the timing of repeating earthquakes? Do spatially adjacent repeating sequences communicate with each other in a way that is clearly evident in similar occurrence times or recurrence patterns?

Here we use a large population of small, characteristically repeating earthquakes at Parkfield provides to study how the interaction of nearby earthquakes affects their recurrence properties. We analyze 114 M^{-0.4} ~ 3.0 repeating earthquake sequences (RES) to examine the triggering effect from nearby microseismicity. We find that close-by-events influence RES's timing in a matter of minutes or hours by short-term triggering. Events that occurred within less than 1 day of an RES often imposed or experienced high stress changes. A stress increment of 10 kPa appears to be needed to produce such effectively immediate triggering.