

AOB Seminar

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Date : June 26, 2009 (14:00-15:30)

**Place: Research Center for Earthquake and Volcanic
Eruption, Annex Bldg, Meeting Room #1**

**Title: Tremor-tide correlations and near-lithostatic
pore pressure on the deep San Andreas fault**

Abstract

Since their initial discovery, nonvolcanic tremors remain one of the most arresting topics in seismology because they provide information about a region of the earth that was previously thought incapable of generating seismic radiation. Additionally, a thorough explanation of the geologic process responsible for tremor generation has yet to be determined. Due to their location on the plate interface, temporal correlation with geodetically measured slow-slip events, and dominant shear wave energy, tremor observations in SW Japan have been interpreted as a superposition of many low-frequency earthquakes that represent slip on a fault surface. Fluids may also be fundamental in the failure process in subduction zone environments, as tidal modulation of tremor in Cascadia and Japan and high Poisson ratios in both source regions are indicative of pressurized pore fluids. Our analysis identifies a robust coupling between extremely small, tidally induced shear stress parallel to the San Andreas fault and nonvolcanic tremor activity near Parkfield, CA, suggesting that tremor represents shear failure on a critically-stressed fault in the presence of near-lithostatic pore pressure. There are a number of similarities between tremor in subduction zone environments, such as Cascadia and Japan, and those on transform faults, like the deep San Andreas, suggesting that the results presented here may also be applicable in alternative tectonic settings.

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