

**Striations, duration, migration and tidal response in deep tremor**

Satoshi Ide

The University of Tokyo

ide@eps.s.u-tokyo.ac.jp

Deep tremor in subduction zones is considered as small repeating shear slip events on the plate interface with significant slow components. It occurs at a depth of about 30 km and provides valuable new information on deep plate motion and shallow stress accumulation on the fault plane of megathrust earthquakes. Tremor has been suggested to repeat at a regular interval, migrate at various velocities and be modulated by tidal stress. Here we show that some time-invariant interface property controls tremor behavior, using precise location of tremor sources with event duration in western Shikoku in the Nankai subduction zone, Japan. In areas where tremor duration is short, tremor is more strongly affected by tidal stress and migration is inhibited. Where tremor lasts longer, diffusive migration occurs with a constant diffusivity. The control property may be the ratio of brittle to ductile areas, perhaps determined by the influence of mantle wedge serpentinization on the plate interface. The spatial variation of the controlling property may be characterized by striations in tremor source distribution, which follows either the current or previous plate subduction directions. This suggests that the striations and corresponding interface properties are formed through the subduction of inhomogeneous structure, such as seamounts, for periods as long as 10 million years.