

GCOE&AOB Seminar

Prof. Stephen Kirby

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Date: April 7, 2009 (14:00-15:30)

Place: Meeting Room #1, AOB Anex

Title:

**プレートが沈み込みはじめると... :
アウターライズ・海溝外側斜面にみられる
褶曲構造と地震発生様式について**

“ Getting subduction started:

**Flexure and seismic deformation in the outer-rise/
outer-trench-slope region worldwide ”**

--- Abstract ---

Flexural deformation seaward of oceanic trenches was first recognized in the 1960's based on seismic reflection profiles and later by first-motion focal mechanisms of earthquakes in the region. During the more than 40 years since these discoveries, satellite altimetry of the sea surface and the resulting inferences about Earth's gravity field and marine bathymetry together with high-resolution multibeam sonar imaging of the seafloor have provided insights into the level of flexural stresses and deformation in this zone of bending. Such insights include a better appreciation of the roles of seafloor-spreading fabric in governing the bending resistance of oceanic plates. Recent assessments of radiated energies, E_o , from earthquake just ocean-ward of trenches indicate the ratio of radiated energy-to-scalar-moment, E_o/M_o , ratio is about average for shallow normal-faulting earthquakes, but with clear exceptions depending on the specific tectonic setting. In this presentation, we review these observational data in light of satellite gravity and marine bathymetry across trenches and the theory of thin-plate flexure. Lastly, we consider the earthquake and tsunami hazards implications of these data and the insights that flow from them.