

# Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

©2011. Japan Geoscience Union. All Rights Reserved.



SCG058-17

会場:302

時間:5月22日 16:30-16:45

## スロース地震発生域の構造 Seismic structures in source areas of slow slips

加藤 愛太郎<sup>1\*</sup>

Aitaro Kato<sup>1\*</sup>

<sup>1</sup> 東京大学地震研究所

<sup>1</sup>ERI University of Tokyo

We show fine-scale variations of seismic velocities and converted teleseismic waves that reveal the presence of zones of high-pressure fluids released by progressive metamorphic dehydration reactions in the subducting Philippine Sea plate in Tokai district, Japan. These zones have a strong correlation with the distribution of slow earthquakes, including long-term slow slip (LTSS) and low-frequency earthquakes (LFEs). Overpressured fluids in the LTSS region appear to be trapped within the oceanic crust by an impermeable cap rock in the fore-arc, and impede intraslab earthquakes therein. In contrast, fluid pressures are reduced in the LFE zone, which is deeper than the centroid of the LTSS, because there fluids are able to infiltrate into the narrow corner of the mantle wedge, leading to mantle serpentinization. The combination of fluids released from the subducting oceanic crust with heterogeneous fluid transport properties in the hanging wall generates variations of fluid pressures along the downgoing plate boundary, which in turn control the occurrence of slow earthquakes.