[EE] Evening Poster | S (Solid Earth Sciences) | S-IT Science of the Earth's Interior & Tectonophysics

[S-IT28]The lithosphere and the asthenosphere

convener:Catherine Rychert(University of Southampton), Hitoshi Kawakatsu(Earthquake Research Institute, University of Tokyo), Samer Naif(共同), Jessica M Warren (University of Delaware)
Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
The lithosphere-asthenosphere boundary (LAB) separates Earth's rigid tectonic plates from the underlying convecting mantle. The LAB is fundamental to our understanding of plate tectonics and mantle dynamics, although its depth and defining mechanism are highly debated. How it varies among tectonic environments and its relationship to the Moho, MLD, and anisotropy are also poorly understood. Ocean bottom seismic data is particularly important for constraining the young plate with relatively simple history, although this data is difficult to attain and rare. We will focus on the lithosphere, the asthenosphere, and the lithosphere-asthenosphere system in a variety of settings including but not limited to continents, oceans, margins, rifts, ridges, hotspots, plumes, and subduction zones. We welcome research contributions from diverse fields, including but not limited to seismology, magnetotellurics, petrology/mineralogy, dynamical modelling, and mineral physics.

[SIT28-P06]A probabilistic approach to surface waves tomography of the upper mantle and lithosphere/asthenosphere boundary characterization

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Keywords:Seismology, Tomography, Surface waves, Probabilistic inversion, Lithosphere/asthenosphere boundary

We have developped a non-linear, stochastic inversion procedure to generate 3-D upper mantle models from surface waves dispersion data.
This probabilistic approach is based on the parametrization of models using a (regional of global) optimized basis of smooth functions constructed by principal component analysis of a homogenized reference model.
It provides a reduced and optimized parameter space for the Bayesian inversion of an ensemble of seismic models.
The appraisal of the output ensemble of models allows for lateral regularization and probabilistic characterization of geological features within the model.
We have applied this inversion procedure using CUB (Shapiro &Ritzwoller 2002) as a starting model with an emphasis on the lithosphere/asthenosphere boundary properties.