2006 Fall Meeting
Search Results

Cite abstracts as **Author(s) (2006), Title, *Eos Trans. AGU*, *87*(52), Fall Meet. Suppl., Abstract xxxxx-xx**

Your query was:
meltzer

HR: 16:30h
AN: **T54C-03**

The Mantle Structure beneath SE Asia from P-wave Tomograpy

AU: *** Li, C**
EM: *changli@mit.edu*
AF: *Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, MA 02139 United States*
Sun, R
EM: *sunrm@mail.iggcasac.cn*
AF: *Institute of Geology and Geophysics, Chinese Academy of Sciences, Dewai Qijiahuozi Beituchengxilu 19, Beijing, 100029 China*
van der Hilst, R
EM: *hilst@mit.edu*
AF: *Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, MA 02139 United States*
Meltzer, A
EM: *ameltzer@lehigh.edu*
AF: *Earth and Environmental Sciences, Lehigh University, 31 Williams Drive, Bethlehem, PA 18015 United States*
Engdahl, R
EM: *engdahl@iaspei.org*
AF: *Department of Physics, University of Colorado, Campus Box 390, Boulder, CO 80309 United States*

AB: Southeastern Asia is a tectonically diverse and active area. In the west, the continental collision and post- collision conversion between Indian and Eurasian plat have created the Tibetan Plateau. The retreating western Pacific slabs in the east have generated the extensional basins in China. These two systems have set up a large-scale dynamic clockwise rotation in the southeastern Asia, controlling the evolution of the tectonic settings inside. With high resolution models of the mantle beneath southeastern Asia we can understand this large-scale mantle system better. P-wave travel time data from more than 1000 stations of Chinese Seismological Network from 1964 to 2004 and from several temporal seismic arrays in and near the Tibetan plateau were combined with data from the International Seismological Centre. We nonlinearly relocated the earthquake hypocenters and generated new EHB dataset (Engdahl et al., 1998). The spectacular (dense and more uniform) data coverage ensures unprecedented resolution of P-wave velocity perturbations in the upper mantle beneath southeastern Asia. Following

Li et al (PEPI, 2006) we corrected for crustal structure and used an adaptive grid to assure the high resolution when the dense data coverage is available. The model reveals high velocity anomaly roots of the Archaean Ordos and Sichuan basins down to at least 250 km depth. These tectonically stable structures influence the deformation of the eastward Tibetan plateau. Slow wave propagation marks the shallow mantle beneath eastern Tibet and beneath the Red River fault system (all the way to the South China Sea). These anomalies are separated by a zone of high wavespeeds between the Sichuan basin and the Burma ranges, which may mark a transition in tectonic regime from collision controlled in the NW to Pacific (subduction) controlled to the SE. A fast velocity anomaly structure is located along the Himalayan Frontal Thrust down to 400 km depth, indicating the subduction of Indian lithospheric mantle. In the eastern part of the collision, this high velocity anomaly structure remains South of the Yarlun-Zangbo suture (~30N), implying the most of mantle beneath central and eastern Tibet is of Eurasian origin. The retreating western Pacific slabs subducting from the Japan and Izu Bonin trenches are deflected in the transition zone beneath the Korea and Northeast and eastern coast of China. These stagnant slabs shape upper mantle circulation beneath SE Asia and might be related to volcanism in Korea and NE China (such as the Changbai volcanic area).

DE: 7203 Body waves
DE: 7208 Mantle (1212, 1213, 8124)
DE: 7240 Subduction zones (1207, 1219, 1240)
DE: 8120 Dynamics of lithosphere and mantle: general (1213)
DE: 8180 Tomography (6982, 7270)
SC: Tectonophysics [T]
MN: 2006 Fall Meeting

New Search