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: 14:10h
AN: **T53F-03**
TI: Crust and Upper Mantle Structure Beneath Southeastern Tibet from Ambient Seismic Noise Tomography and Surface Wave Two-Station Analysis
AU: ***Yao, H**
EM: *hjyao@mit.edu*
AF: *Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139 United States*
Van der Hilst, R D
EM: *hilst@mit.edu*
AF: *Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139 United States*
Beghein, C
AF: *School of Earth and Space Exploration, Arizona State University, Tempe, AZ 85287 United States*
Meltzer, A
AF: *Department of Earth and Environmental Sciences, Lehigh University, Bethlehem, PA 18015 United States*
AB: In 2003 and 2004 MIT-CIGMR (Chengdu Institute of Geology and Mineral Resources) operated a 25 station array (3-component, broad band seismometers) on the southeastern Tibetan plateau, in Sichuan and Yunnan provinces, SW China; in the same period, Lehigh University and CIGMR operated a 50 station array in SE TIbet. In order to obtain high resolution images of the thick crust and underlying upper mantle beneath the plateau proper and the eastern plateau edge, we have developed a novel surface-wave array tomography that combines empirical Green's functions estimated from ambient seismic noise with measurements from a traditional surface wave two-station analysis (Yao et al., GJI 2006). Short period (10-30 s) Rayleigh-wave phase velocity dispersion data was estimated from the inter-station empirical Green's functions and intermediate to longer periods (20-120 s) dispersion data were obtained from classical two-station analysis. The inferred phase velocity dispersion between 10-120 s was used to estimate heterogeneity in the crust and the underlying continental lithosphere. Beneath SE Tibet, short and intermediate period (10-80 s) phase velocities are prominently low. The lateral resolution of phase velocity maps ranges from about 100 km at 10 s to 300 km at 120 s. The neighborhood algorithm was used to invert shear wave velocity

structure in the crust and upper mantle beneath array area. Compressional wave velocity and density are related to shear wave velocity through some empirical relationship. As a reference, we used crustal thicknesses constrained from teleseismic receiver function analysis. The inversion results show that middle to lower crust and upper mantle is characterized by low shear wave velocity structure in most of the MIT array area. Preliminary results will be shown for eastern Tibet, using data from the Lehigh array. The tomographic images of the crust and upper mantle provide important new insight into the regional tectonics of SE Tibet and nearby regions.

DE: 7218 Lithosphere (1236)
DE: 7255 Surface waves and free oscillations
DE: 7270 Tomography (6982, 8180)
DE: 7294 Seismic instruments and networks (0935, 3025)
DE: 8038 Regional crustal structure
SC: Tectonophysics [T]
MN: 2006 Fall Meeting

New Search