Joint inversion for earthquake locations and 2D-velocity structure beneath a seismic array at southern Tibet

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A 32-station temporary broadband seismic array was operated from July 2004 to July 2005 near Tingri—Xigaze of southern Tibet, which was a part of the international HI-CLIMB project. Total of 422 local earthquakes occurred during the operation of the array were located by JHD method. The lateral variation of the seismic P- and S-wave velocities within the crust beneath the array was imaged simultaneously. The synthetic seismograms are used to confirm whether some events really occurred around the Moho.

We report the following preliminary findings. (1) While earthquakes are scattered within the array, more than 100 earthquakes clustered within a small area like a swarm, at a distance of 50 km north of Indus-Yelong suture. (2) There is obviously an earthquake belt with a NNE trend crossing Xietongmen. Another earthquake belt with almost EW strike is along MCT. (3) About 21 mid-depth events (60-70km deep) occurred beneath the array, and no earthquakes occurred at the depth between 30km $\sim$50km consistent with a ductile lower crust. The result has been further confirmed by comparing the observed and synthetic seismograms. (4) Images of P-wave station corrections show that the P-wave velocity at the southern part of our array is apparently lower than that at the north, and P-wave velocity at the eastern part is lower than that at the west. (5) Images of the S-wave station corrections show that the S-wave velocity at the eastern part is lower than that at the west.