

Slow anomalies under the subducting Pacific slab constrained by local and global tomography

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We determined a high-resolution 3-D P-velocity model down to 500 km depth under Japan using a large amount of data from local, regional and teleseismic events recorded by the J-array seismic network. Beneath the Pacific slab under central Japan, a prominent slow (3-4) anomaly is imaged at depths of 260-500 km and it has a lateral extent of over 100 km. We also used the ISC data sets to conduct global tomographic inversions for the whole mantle structure. The global tomographic model also revealed the slow anomaly under the Pacific slab and shows it extending continuously down to about 1800 km depth. The tomographic results and other evidence indicate that the slow anomaly under the Pacific slab may represent a small-scale mantle plume rising from the lower mantle.