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# Collisional Tectonics between the Eurasian and Philippine Sea Plates from Tomography Evidences in Southeast China

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The upper mantle structure of Southeast China is important for us to understand the deformation and mantle dynamics process associated with the interaction between the Eurasian plate and Philippine Sea (PHS) slab. We determined a detailed three-dimensional P-wave velocity (Vp) structure of the crust and upper mantle down to 400 km depth beneath Southeast China by applying teleseismic tomography to 6,869 high-quality P-wave arrival times. The data were collected very carefully from the original seismograms of 635 teleseismic events recorded by 65 broadband stations deployed in Southeast China. Our images show that the high-Vp PHS slab subducts toward the north along the Ryukyu trench at the latitude of about 24°N and extends down to 350 km depth and even more. High-Vp anomalies are imaged in the upper mantle under central and southern Taiwan, which represent the subducted Eurasian plate. Break-off Eurasian plate at a big angle subducting eastward are revealed under central Taiwan at depths from the upper mantle to 400 km. While continuous Eurasian plate under South Taiwan is mainly imaged from the Moho down to 400 km depth. A torn mantle window within the Eurasian continent beneath central and northern Taiwan created by the northward motion of the Philippine Sea plate is the upwelling path of the asthenosphere. The tomographic images also show the low-Vp anomalies spread widely under the coastal areas of Mainland China and Taiwan Strait. The structure of the crust and upper mantle suggests that the mountain building process in the central part of Taiwan is mainly attributed to the subduction-collision tectonics at the boundary between the Eurasian continental lithosphere and the subducting oceanic lithosphere of the PHS slab.

**Key words**: Teleseismic tomography， Southeast China， Subducted Eurasian plate， Subducted Philippine Sea slab

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