

東アジア地域下の太平洋スラブの年齢について

Mapping the age of the subducting Pacific slab beneath East Asia

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We map the age of the subducting Pacific slab beneath East Asia using a high-resolution model of P-wave tomography and paleo-age data of ancient seafloor. Our results show that the subducting oceanic lithosphere becomes younger from the Japan Trench (~130 Ma) to the slab's western tip (~90 Ma) beneath East Asia. Such a feature indicates that the flat (stagnant) slab now in the mantle transition zone (MTZ) beneath East Asia is the subducted Pacific slab rather than the Izanagi slab which should have already sunk into the lower mantle. The subduction age of the Pacific slab ranges from 0 Ma at the present-day trench to ~30 Ma at the western tip of the flat slab in the MTZ beneath central China. The stagnant duration of the flat Pacific slab in the MTZ is no more than ~10-20 million years, much shorter than the age of the big mantle wedge (BMW) beneath East Asia (>110 million years). It is the present Pacific slab that has contributed to the Cenozoic lithosphere destruction, extensive intraplate volcanism, and back-arc spreading in East Asia, whereas the destruction of the North China Craton during the Early Cretaceous (~140-110 Ma) was caused by the subduction of the Izanagi (or the Paleo-Pacific) plate.

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