

The origin of the early Cenozoic belt-boundary thrust and the Izanagi-Pacific ridge subduction in the western Pacific margin

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The belt-boundary thrust within the Cretaceous-Tertiary accretionary complex in the Shimanto Belt, SW Japan extends more than ~1,000 km along the Japanese islands. A common understanding of the thrust is an out-of-sequence thrust as a result of continuous accretion since the late Cretaceous period and kinematic reason to keep a critically tapered wedge. The timing of the accretion-gap and thrusting, however, coincides with encounter of the Paleocene-early Eocene Izanagi-Pacific spreading ridge with the trench along the western Pacific margin, which is recently re-hypothesized younger than the previous assumption of Kula-Pacific ridge subduction in the late Cretaceous period. Cessation of magmatic activity along the continental margin, and unconformity in the forearc basin with uplift and subsidence is consistently explained by the ridge subduction hypothesis. This is not only in SW Japan but also more northern Asian margin in Hokkaido and Sakhalin, and Shikote-Alin. This Paleocene-early Eocene ridge subduction hypothesis is also consistent with recently acquired tomographic image beneath the Asian continent. The timing of the Izanagi-Pacific ridge subduction along the western Pacific margin lets to revive the classic hypotheses for a great reorganization of the Pacific plate motion represented as the Emperor-Hawai bend between the ~47 Ma to 42 Ma due to the change in subduction torque balance, and the Oligo-Miocene back-arc spreading following the ridge subduction in the western Pacific margin.