

Dynamic evolution of accretionary prism in the Nankai Trough

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To evaluate evolution of accretionary prism as well as forearc basin, we analyzed seismic reflection data acquired in the Nankai Trough. On the seismic profiles, the volcanic layer can be identified as strong reflection at the surface of accretionary prism beneath landward edge of the Kumano forearc basin. The accretionary prism beneath the strong reflection was constructed before the deposition of volcanic layer (14-15Ma). The undeformed basin sediment above the volcanic layer indicates that the old accretionary prism has not been much deformed after construction of the forearc basin. The accretionary prism trench-ward of the old prism was constructed at ~6Ma. The age gap of accretionary prism indicates that plate subduction (or accretion process) was halted from 15Ma to 6Ma. Because the trench-ward younger accretionary prism is much deformed, the undeformed older accretionary prism beneath the volcanic layer could work as backstop. We further find a continuous ridge system beneath the Kumano forearc basin sediment and interpret that it was generated by activities of previous splay fault. The previous splay fault develops parallel to the backstop interface as well as the coastline of the Kii peninsula. These observations demonstrate that the evolution of accretion prism including backstop interface is not stable process, but it is strongly influenced by the plate convergence rate and direction.

Keywords: seismic data, accretionary prism, nankai trough, dynamic evolution, backstop