

Five major stages for Phanerozoic accretionary processes in Japan, related to the arrangement of continents and subduction zones in East and Southeast Asia.

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Japanese Islands are underlain by Phanerozoic accretionary complexes of various ages. These accretionary complexes were formed by subduction of various oceanic plates along the convergent margin of eastern margin of Asian continents. The accretionary complexes are divided into five tectonic stages such as Cambrian to Devonian, Carboniferous to Early Triassic, Middle Triassic to earliest Cretaceous, middle Cretaceous to Paleogene, and Neogene to present. The gaps among these stages were caused by various reasons such as tectonic erosion, subduction of oceanic ridge and oceanic plateau, and change of detrital supply from the provenance. In this study, we discuss the cause of the gap from the viewpoint of arrangement of major continents and subduction system as well as igneous activities in the East and Southeast Asia.

(1) Cambrian to Devonian : South China (Yangtze and Cathaysia) massif and North China massif were detached from different parts of Gondwanaland, and had been moving with oceanic plates as drafting continents. The sites of accretion to form Japanese geologic units are unknown.

(2) Carboniferous to Early Triassic : North China massif and South China massif were separated but located close to each other. Accretionary complexes of this stage were formed along very active volcanic arcs. However, very few igneous rocks are distributed in both of North and South China. The volcanic arcs provided sediments to the accretionary complexes are lost or hidden under the Asian continental shelf.

(3) Middle Triassic to earliest Cretaceous : North China and South China massifs were collided to form a single continental block, beneath which oceanic plate had subducted from east to west. Most of geologic bodies of this stage in Japan are formed in forearc setting, but rocks formed in back arc setting are remained mainly in Asian continents. The accretionary complexes of this stage are not distributed widely but in limited areas of Asia.

(4) middle Cretaceous to Paleogene : Full set of subduction and igneous complexes of this stage were preserved in Japan. The accretionary complexes and arc igneous complexes of this stage are distributed not only in Japan but also in the wide areas along eastern margin of Asian continent from Sikhote Alin to Indonesia. Very active plate subduction occurred in these areas to cause sediment accretion and extensive igneous activities in this stage.

(5) Neogene to present : Island arc setting was settled in Japan by the opening of Japan Sea and Shikoku Basin in Miocene time. Accretionary process started along the Nankai Trough by subduction of the Philippines Sea Plate, while Pacific plate caused tectonic erosion along the Japan Trench.

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