

The tectonic evolution of the Northeast Asia including Korea and Japan from Permian to Cretaceous

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The Permo-Triassic collision between the North and South China Cratons (NCC and SCC) occurred in the Korean Peninsula (KP). The tectonic model in which the collision was considered to occur along the Hongseong-Odesan collision belt in the Gyeonggi Massif (GM), is most suitable one because it can explain most recent new geological findings and Korea-China correlation. During the collision, the subduction began along the south margin of the SCC. Another Permo-Triassic collision between the NCC and Khangka Block occurred along the Dumangang belt in the northeast KP. Whereas the subduction zone was maintained in the east coast of the northern KP, forming the Paleozoic-Triassic subduction complex which is now the Paleozoic subduction complex in the southwest Japan. During the Permo-Triassic time, the collision and post collision related igneous activities occurred in the northern GM, Nangrim Massif and Kwanmo Massif, whereas the subduction related igneous activities occurred along the southern margin of the KP. During Jurassic before 190 Ma, the subduction related igneous activities occurred in the southern and eastern margins of the KP and the Hida and Oki belts in Japan. After 190-180 Ma, the subduction related igneous activities stopped in Japan and the southeastern and eastern margins of the KP, representing movement of arc front towards west and northwest with decreasing subduction angle. During 180~150 Ma, the igneous activities occurred regionally in the northeast China and inner part of the Korean Peninsula, representing a flat subduction under the Northeast Asia which continued until 145 Ma. After 145 Ma, the Cretaceous igneous activities moved southeastwards from Beijing through Shandong and Liaoning areas to KP until 80 Ma. The Cretaceous igneous activities occurred due to the mantle uplift caused by slab roll-back. The southeastwards movement occurred due to the movement of location where mantle uplift with destruction of flat subducted oceanic slab. On the other hand, the subduction related Cretaceous igneous activities occurred from 128 Ma in Japan, which is not coincide with a southeastwards trend of decreasing age of the Cretaceous igneous activities. These data indicate that the subducted slab below Japan was disconnected from that under the KP at 128 Ma due to extension tectonic regime in the Northeast Asia and then began to subduct separately under Japan. The extensional regime was stopped at 80 Ma with stopping of mantle upwelling related igneous activities in the KP and was changed into compressional regime with subduction related igneous activities occurred along the southern margin of the KP and in Japan.

Key words; Permo-Triassic collision, Jurassic flat subduction, Cretaceous slab roll-back, Northeast Asia

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