



Syntectonic volcanic activities in the Miocene Eoil Basin, SE Korea: Implication for differential basin geometries of the basin floor

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Syntectonic volcanic activities in the sedimentary basins are crucial for understanding the complex interplay of volcanism, tectonism, and basin evolution. The Miocene Eoil Basin in SE Korea, formed during backarc opening of the East Sea, is filled with abundant volcanic deposits intercalated with fluviolacustrine deposits. The volcanic deposits of the basin are divided into two types: poorly degraded volcanic deposits (Paljori Tuff and Eoil Basalt) and highly degraded volcanic deposits (Maegok and Gidu diatremes and Jeonchon tuff cone). The former, basin-wide occurrence with sheet-like geometry, is resultant from instant large volcanic material input, and interpreted as results of high-volume eruptions during rift climax of the basin. Because of high basin subsidence and short eruption time of volcanoes, the deposits are rapidly buried by following sedimentary deposits without enough time for degradation, resulting in well-preservation of their initial geometries. Whereas the latter, local occurrence along the basin faults, is interpreted as results of low-volume eruptions during weak and local fault activities, forming vertical edifices (tuff cones/rings). This caused serious degradation of the deposits after deposition and resulting presently in exposure of its subsurface structure (Gidu diatremes) or partial rimbeds (Jeonchon tuff cone). Although the Maegok diatreme formed in the southeastern basin margin during the rift climax, its serious erosion of the deposits is interpreted to be related with its location where continual uplift of the basin floor by post-depositional tilting.