

**2 4****PALEOENVIRONMENTAL IMPLICATIONS OF CRETACEOUS PALEOSOLS:  
EXAMPLES FROM THE EARLY CRETACEOUS  
HASANDONG FORMATION, SOUTHEASTERN KOREA**

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The Cretaceous Hasandong Formation, Southeast Korea contains various types of paleosols, such as calcic and vertic paleosols. Pedogenic calcretes are associated with these paleosols, and with marked difference in dimensions and macro- and micro-morphological features. Paleosols within the lower Hasandong Formation are classified as ferric Calcisols with pedogenic calcretes showing alpha fabric. Paleosols in the upper Hasandong Formation contain diagnostic vertic features such as pedogenic slickensides, pseudo-anticlines and downward tapering fissures, and pedogenic calcretes having more biogenic-origin features. Specific soil processes, as related to the soil-forming factors, in Hasandong paleosols are referred to calcification, vertization, argilluviation and greization. Such soil processes are attributed to contrasting climate that controlled physicochemical environments under which they formed.

Paleosols can be used as a proxy for paleoenvironment, especially paleolandscape and paleoclimate. Hasandong calcic and vertic paleosols developed on floodplain deposits show stratigraphic and lateral variations in pedogenic features according to changes in paleoenvironment. With respect to channel position, compound pedofacies sequence in the lower Hasandong Formation shows symmetrical development; in contrast, that in the upper Hasandong Formation shows asymmetrical development owing to abrupt channel avulsion. In terms of catenary relationship, as a depositional site becomes away from the active channel, reductive greenish gray coloration and hydromorphic feature such as intersecting slickensides become more prominent. Among soil-forming factors, variations in the diagnostic paleosols and calcretes are attributed to differences in climatic conditions during the Early Cretaceous time (Hauterivian); paleoclimate in the subtropical to warm-temperate regions changed from semi-arid in the lower Hasandong to subhumid in the upper Hasandong time.