



## **Evolution of fluvio-lacustrine systems in the Cretaceous Gyeongsang Basin, Korea**

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The Cretaceous Gyeongsang Basin in southeastern Korea is a nonmarine sedimentary basin formed in an active continental margin caused by the subduction of the Paleo-Pacific (Izanagi) Plate beneath the East Asian continent. The basin fill of the Cretaceous Gyeongsang Basin, Korea comprises mainly fluvial to lacustrine deposits with minor alluvial-fan deposits. It is subdivided into three groups: from the base up the Sindong, Hayang, and Yucheon groups. The fluvio-lacustrine system of the Sindong and Hayang groups in the Gyeongsang Basin is characterized by the cyclic deposition of fluvial deposit below and lacustrine deposit above. The Sindong Group is consisted of the alluvial fan-fluvial Nakdong and Hasandong formations and lacustrine Jinju Formation, and the Hayang Group is consisted of the fluvial Chilgok, Silla, and Haman formations and lacustrine Jindong Formation. The fluvio-lacustrine system of the Sindong Group is represented by the development of meandering to braided streams and lacustrine deltas, whereas that of the Hayang Group is represented by a wide sandflat to mudflat setting which was contiguous to a shallow lake. In general, the floodplain deposits of both groups are composed of red beds. The Sindong Group floodplain deposits contain coal layers in the lower part and well-developed paleosols including abundant pedogenic carbonates in the middle to upper parts, whereas the Hayang Group floodplain deposits contain sparse pedogenic carbonates. Such difference in the fluvio-lacustrine systems during the evolution of the Gyeongsang Basin can be accounted for by the changing climatic conditions, with increasing aridity through time. The possible cause of increasing aridity seems to be related to the development of topographically high arc platform during the Hayang Group deposition.