

MIS002-02

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Stochastic estimation of temporal and spatial lithofacies distribution from outcrop data of a continental basin

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Field-based estimation of lithofacies distribution in continental sedimentary basins provides basic knowledge about geometry of subsurface aquifer rocks prior to detailed geophysical exploration such as borehole loggings and seismic surveys. As a case study based on detailed field investigation, we conducted stochastic estimation of lithofacies distribution on a regional scale of the Lower Cretaceous fluvio-lacustrine sequence (the Sindong Group) of the Gyeongsang Basin, Southeast Korea. The degree of sandstone dominance (S value) of a fluvio-lacustrine sequence was calculated by weighting lithological types in measured columnar sections. The S values can be graphically demonstrated in columnar sections, which shows kilometer-ordered channel distribution and channel migration patterns in time and space. Volume of channel sandstone bodies characterized by $S > 70$ tends to decrease up sequence, representing decreasing volume of channel sandstone bodies in the upper part of the Sindong Group. This result is coincident well with a previous interpretation that fluvial plain existed in the lower to middle parts of the Sindong Group became to lacustrine environments in the upper part.

Keywords: geostatistics, outcrop data, lithofacies distribution, fluvio-lacustrine sequence, continental basin, Korea