

## Sedimentary environment of Upper Cretaceous terrestrial deposits (Djadokhta Formation) in Mongolia

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Cretaceous dinosaur-bearing terrestrial strata, which are widely distributed in the Gobi basin, southern Mongolia, record remarkable climatic changes (Jerzykiewicz & Russell, 1991). During Cretaceous time, this region was located in a complete intercontinental setting, thus Cretaceous strata in the Gobi region are thought to represent a rare glimpse of the climate and biota in the interior of a large continent. The climate in this region is considered to be remarkably changed from humid climate in the Early Cretaceous to the Santonian, through semi-arid climate in the Campanian, to humid climate in the Maastrichtian (Jerzykiewicz & Russell, 1991). This change from humid to semi-arid climate is well recorded in the Djadokhta Formation (as former subdivision) in the Ulan Nuur Basin of the central Gobi basin. Therefore, the Djadokhta Formation is a key succession for reconstructing the precise climatic changes in an inland area by detailed stratigraphic and sedimentological studies.

The Djadokhta Formation was considered to be deposited in semi-arid environments in previous studies (Jerzykiewicz & Russell, 1991; Dashzeveg et al., 2005). However, present study revealed that this formation comprises sub-humid fluvial facies in the lower part and semi-arid eolian facies in the upper part (Hasegawa et al., in prep.). The Djadokhta Formation was originally defined as a sequence having semi-arid eolian facies. Thus lower part showing sub-humid fluvial facies is separated from the Djadokhta Formation and newly named as the Alag Teeg Formation (Hasegawa et al., in prep.). The Alag Teeg Formation is characterized by repetition of horizontally bedded sandstone and lenticular mudstone, which was deposited in braid-plain delta environment under sub-humid climate. The Djadokhta Formation (revised subdivision) is further subdivided into two parts. The lower part of the Djadokhta Formation is composed of large-scale cross-stratification, in situ and reworked caliches, and monadelphous mudstone lens lithofacies, suggesting desert environments of predominant broad sand dune and few interdune deposits under semi-arid climate. The upper part of it comprises structureless sandstone with well-developed in situ caliche horizons and few large-sized trace fossils in basal part. This facies implies steppe environments within calcic soil development under semi-arid climate.

This change from sub-humid to semi-arid climate during Campanian time is recorded not only in the Ulan Nuur basin but also in other regions of Mongolia (Jerzykiewicz & Russell, 1991). A similar climatic change also occurred during Early to Middle Campanian time in North America (Jerzykiewicz & Sweet, 1988), and consequently this climate change is thought to be occurred globally in the mid-latitudes in the Northern Hemisphere in middle Late Cretaceous.