## Transient Soils Between Thar Desert and Gangetic Plains: Interplay of Aeolian and Fluvial Environments During Holocene

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The frequent climatic changes that occurred during the Late Quaternary had a great impact on the development of soils. Aeolian regions are marked by its high sensitivity that any minor changes ultimately affect the geomorphology and ecology as well on an amplified scale, proceeded by morphological evidence such as ephemeral flash floods, pedogenic features, flow regimes, etc.

This study provides an evidence for the interplay of two geomorphic systems related to climate change from the eastern margin of Thar desert and the western part of Gangetic Plains.Three representative surface soils (1.Maham; 2.Nonand; 3.Bamnikhera) studied from this area show distinctive variation in the sedimentological and pedological features.Present study suggest that surface soils from Maham and Nonand show predominance of aeolian activity whereas Bamnikherea soils is dominated by fluvial processes. In Maham and Nonand, it is marked by rapid depositional events in response to varying strength of prevailing wind and possible intervention of fluvial activity by local stream as minor flood event. While Bamnikhera represents a single depositional events of sand rich sediments from a river. The differences in terms of frequents discontinuities in Maham and Nonand and absence of any discontinuity in Bamnikhera suggest westward shifting of eolian activity during the Holocene

The surface soils from Maham and Nonand are marked by weak pedogenesis, little or no weathering and are similar to entisols of the aggrading surfaces of the Gangetic Plains. While predominance of fine sand with weakly developed pedogenic feature in Bamnikhera shows weakly weathered mineral soil fraction, showing weak pedogenesis that correspond to inceptisols of the Gangetic Plains. The variation in depth and occurrence of pedogenic carbonate from nodular (Maham and Nonand) to powdery (Bamnikhera), suggest a possible formation due to climatic gradient, formed during intervening dry climate.

Thus, this study provides a good agreement between aeolian process of the semi-arid part (Maham and Nonand) and fluvial process of the semi-humid part (Bamnikhera), indicating a very systematic climatic shift in the entire region. This support from the previous work, suggesting a westward shifting of aeolian activities in view of its geographical position and fluctuating Quaternary climate change ,where the Thar desert moved or shifted westwards.

Keywords: Surficial sediments; Pedogenesis; Climate change; Thar desert; Gangetic Plains;