

**Holocene landform and evolution of the western Gangetic plains:
Implications of neotectonics and climate**

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ABSTRACT

Based on the degree of development, soils of the western Gangetic Plains have been grouped into five members of a soil-chronoassociation, QGN1 to QGN5, with probable ages of <500 B.P., >500 B.P., >2500 B.P., 8000 B.P. and 10000 B.P. Distribution of geomorphological features and soils helped to delineate six tectonic blocks bound by faults viz. Solani, Khoh, Ganga-Solani, Upper Ganga-Yamuna, Lower Ganga-Yamuna and Ganga-Ramganga Blocks. Neotectonic movements of these blocks have affected morphogenesis and pedogenesis significantly. A block subsided and became sites of deposition by rivers; got slightly uplifted or tilted so that the rivers shifted away and the soil development took place; and/or strongly uplifted so as to be subjected to erosion. These tectonic movements took place at different times for varied periods. Soil development increases from north to south in the region west of the Ganga river and is related to a decrease in the overall rate of sedimentation and subsidence from north to south. Similarly the degree of soil development decreases in direction of tilting in the region east of the Ganga river. Accumulation of pedogenic salts and calcrete took place from Early Holocene to about 6000 B.P. during a dry and cold climate. Subsequently warm and wetter climate and improved drainage leached down salts and carbonate from certain areas forming "relict soils".