

# **PALAEO HYDROLOGICAL RECONSTRUCTION OF ANCIENT RIVER SYSTEM IN HIMALAYAN FOREDEEP, NORTHERN UP - A NUMERICAL APPROACH**

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Miocene-Pleistocene continental clastic sequence (+6 km thick) has been deposited all along the length of the Himalayan foredeep, forms the Siwalik Supergroup. This paper deals with the paleohydrology of Middle Siwalik Subgroup of rock, deposited in the non-marine basins adjacent to a rising mountain chain during Pliocene time. Well exposed sections of these rocks have provided adequate paleodrainage data for a reconstruction of paleochannel parameters and hydrology of the Pliocene fluvial system.

Crossbedding data were used to estimate bankfull channel depth and sinuosity of Pliocene rivers. Various empirical relationships of modern rivers were used to estimate other paleohydrological attributes, such as channel width, sediment load parameter, channel slope and paleoflow velocity. A paleoflow analysis reveals that the Middle Siwalik sediments were deposited by a system of rivers, which were individually about 500m wide and 5.2-7.3m deep; the river on an average had a low sinuous channels and flowed on a slope (53cm/km). As the 700km long Siwalik river drained an area to the north-northeast of about 42925 sq km, as it flowed generally in south-southwest form part of the Himalayan Oregon. Bed-load about 15% of the total load of this river, whose mean annual discharge was in the neighbouring of 346-1170 cubic meter per second and a mean annual flood of approximately 1854 cubic meter/sec. Flow characteristics in the upper part of the lower regime ( $F_r = 0.22$ ) and a flow velocity between 1.7-1.16 m/sec, resulting in the development of large scale bed configuration.