

PALEOENVIRONMENTAL RECONSTRUCTIONS OF THE LATE QUATERNARY LOESS-PALEOSOL SEDIMENTS OF KASHMIR VALLEY

Ishtiaq Ahmad¹ and Rakesh Chandra²

¹*Department of Higher Education, J&K Govt. India*

²*University of Kashmir, Srinagar, J&K, India*

E-mail: khishtiaqahmad@gmail.com

Abstract

Loess is the most areally-extensive surficial deposit in Kashmir Valley and its depositional history extends as far back as ~0.2 million years. Three loess-paleosols sections, representative of the entire Kashmir Valley, were chosen for a detailed study to understand the prevalent climatic conditions in Kashmir Valley during the recent past. Various geochemical indices were used to determine the paleoclimatic conditions prevailing in the dust source regions as well as the depositional areas. Analysis of major, trace and REE data provides evidence of a weak intensity of weathering. Various paleoclimatic indices indicate subtle climatic changes, affecting the relative rates of material supply and weathering and the paleosol profiles were formed when both the loess deposition and pedogenic processes were taking place simultaneously. All these paleoclimatic proxies rule out sharp glacial or interglacial conditions during the development of these paleosols. Four periods of relatively higher precipitation and temperature conditions occurred in the Kashmir Valley. These periods of relatively higher precipitation and temperature conditions do not represent the complete interglacial period. The paleosols DS3, KS4 and BS4 are relatively well developed and record maximum thickness, which may represent one full interglacial period. The loess horizon DL1 and the paleosols DS1, KS1 and BS1 probably represent the Last Glacial Maximum (LGM) in Kashmir Valley. The Last Glacial was interrupted by arid and warm semi-arid intervals when the BS3 and BS2 paleosol profiles and their stratigraphic equivalent were formed. Also the lower part of the sections below DL2 and KL1, is interpreted as a fluctuation probably within the last interglacial period. Overall the climate in the Valley for most of the time fluctuated between cold arid to warm semi-arid during the recent past.

Keywords: Loess-paleosols, Kashmir, Karewa Group, Geochemistry, paleoclimate