



Riverine environment and its dynamics:

Challenges, issues and sustainable managements

'Riverine environment and its dynamics: Challenges, issues and sustainable managements' is the title of the book and is depicting the challenges of contemporary riverine environment. River is a natural resource that is inevitable to prosper all the civilizations. Such studies are nothing but the engine for analysing economic development including the sustainable environment. Degradation of river-floodplain systems is of serious concern. River and riverine landscape degradation is rapidly exaggerating over time and is becoming a political issue associated with socio-economic implications. This book offers an insight into the basin management i.e., basin morphometric characteristics, water resource, species diversity, land use and land cover changes, and also landscape evolution. Many of the scholars are especially recognized and specialized in the studies of riverine environments and the book is not an exception. As riverine landscapes are depending largely on hydrological conditions and hydraulics of the channel, the studies on morphometry, surface and subsurface ground water storage with seasonal hydrological dynamics are of prime focus to maintain the ecological integrity. The book will be helpful for the researchers, planners and different stakeholders.



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Analyzing the Complex Interaction of Active Tectonics and Basin Scale Geomorphology: A Case Study of Chel River Basin Using GIS Tool

Dr. Debarshi Ghosh¹ & Dr. Snehasish Saha²

Abstract

The channel of Chel expressing a highly dynamic behavior in its entire course especially at the mountain out let by means of sediment-water supply variation. The existing water regime is the expression of highly variable nature of rainfall and structurally controlled river channel. Fluvial dynamics of Chel basin is highly abrupt in nature as the seasonal alterations disclose no steady trend of ongoing channel processes. Dependent on tectonic activity, hydrological regime, and sediment load of certain streams, the characteristics of the mountain front of the Darjeeling sub-Himalaya display a considerable variability. The surface is made up of a variety of alluvial fans from Quaternary sand deposition. The longitudinal profile following the channel thalweg shows distinct fluctuations of height due to such epirogenetic movements and interruption of normal cycle of erosion. The value of Hypsometric integral (48.56) indicates that the fluvial system is approaching to late youthful stage. The reason of tectonic instability and complex cycle of epirogenetic upliftments have been controlling the process of dynamic rejuvenation in this basin.

Key Words: Dynamic equilibrium, Hypsometric integral, Altimetric curve, Co-efficient of Relative Massiveness, Tectonics.

1. Introduction

The features of the landscape frequently vary due to the sensitivity of fluvial systems worldwide. The piedmont tract of North-Bengal Duars is dominated by number of river courses dissecting the base of Darjeeling-Bhutanese sub-Himalaya and reaches the piedmont surface at an elevation varies from 320

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