



# Dynamics of Manas-Beki River for Assessment of Erosion in Assam using Geospatial Techniques

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### Abstract

The credit line erosion of Manas-Beki River has become a serious problem especially for Barpeta and Baksa districts of Assam because the river is characterized by rapid changes in its morphological dynamics.

### Keywords

Erosion, Manas-Beki River, Geospatial Techniques.

## Introduction

About 75km stretch of Manas-Beki River ranging from the foothills of Bhutan has been studied using geospatial techniques [1]. Digital IRS LISSIII data of your time frame has been analyzed in GIS environment for identifying erosional and depositional areas along the bank of Manas-Beki River. Sinuosity index, channel length, channel width and plan form index are studied to understand the erosion and deposition processes that happened over seven years. it's observed that a complete area was deposited, indicating dominance of abrasion processes with Although heavy rainfall, associated flooding, landslides in upper reaches, excessive siltation and braiding channel are primary causes, another possible reason might be sudden flooding thanks to water release from Kurichu dam in Bhutan during this era. Information on river dynamics and erosional activity along the bank of Manas-Beki River, which may be utilized for designing and implementation of drainage development programs and erosion control schemes [2]. River bank erosion related to channel migration is one of the main geological hazards in north-east India causing loss of adjoining valuable land, which might be either agricultural land, forest land, tea plantations or human settlements or associated infrastructure. It is reported that total land loss per annum thanks to erosion of Brahmaputra River is around bank erosion has exhausted quite and including sites of cultural heritage and tea gardens affecting

people, forced to migrate and relocate themselves and are bereft of their basic livelihood [3]. It is observed that after forced human migration thanks to bank erosion, displaced people face economic insecurity thanks to loss of agricultural land and become unemployed. The victims also suffer from social insecurity thanks to deprivation of civic rights, health insecurity thanks to lack of basic infrastructure, etc. All these insecurities caused by forced displacement cause deprivation, destitute, fragility and increased vulnerability of the families". Study of erosion-deposition processes around Majuli island, Assam supported study of Survey during a Geographical data system (GIS) environment revealed average annual rate of abrasion and deposition respectively, indicating significant rate of abrasion than the deposition.

Analysis of temporal Landsat data for time-frame of the Subansiri river in its highly dynamic and unstable lower 100 km stretch, lying in Assam revealed that about land [4]. To identify Bankline erosion, after due co-registration of LISS-III images, the proper and left banks of the river were GIS environment using ERDAS Imagine and ArcMap image processing and GIS software available at NESAC. After overlaying the bank lines of both years, bank lines were visually compared to spot the erosion and deposition sites. To quantitatively calculate the quantity of abrasion and deposition, the study area was divided into seven reaches. The entire area covered by erosion and deposition was calculated. When erosion and deposition occur, they are accompanied by changes within the width of the channel. The shifting of the bank lines indicates the occurrence of abrasion and deposition [5].

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**Citation:** Martin C (2021) *Dynamics of Manas-Beki River for Assessment of Erosion in Assam using Geospatial Techniques*. *Geoinfor Geostat: An Overview* 9:6.

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Received: July 01, 2021 Accepted: July 15, 2021 Published: July 22, 2021

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