The Spatio-Temporal Change of the South Bank Erosion and Accretion of Meghna River (1980-2019), Bangladesh

Introduction: Meghna River is one of the principal river of Bangladesh, changing continuously due to erosion and accretion over the past decades. This analysis evaluates the south Bank erosion and accretion between 1980 to 2019 for Meghna River. The Meghna is showing adventurous and violent behavior by its bank erosion rate. The erosion has significant impact on differential population change on rotated human occupancy and bank line settlements of displaces .The erosion and accretion values fluctuated from place to place. The changing trend of Riverbank is creating many socio-economic problems in the proximate areas.

Objective:
1. to evaluate spatial and temporal dynamics of erosion and accretion for different points of Meghna River.

Study Area:
The present area was conducted at Chadpur (23°13.768'N, 90°38.58'E), Barisal ((22°41.962'N, 90°22.524'E), Bhola (22°37.153'N, 91°07.013'E), Hatiya (22°24.459'N, 91°07.013'E) and Sandwip (22°29.319'N, 91°25.668'E) during monsoon and post monsoon season.

Analysis:
1. to evaluate spatial and temporal dynamics of erosion and accretion for different points of Meghna River.

Findings:
1. Accretion of Meghna river is 238.833 sq.km area from 1980 to 2011
2. Accretion of Meghna river is 234.4563 sq.km area from 1980 to 2019
3. Erosion of Meghna river is 295.6833 sq.km area from 1980 to 2019
4. Erosion of Meghna river is 187.9677 sq.km area from 1980 to 2011

Methodology
1. Landsat 3 image of 1980
2. Landsat 5 image of 2011
3. Landsat 7 image of 2019
4. NDWI of 1980
5. NDWI of 2011 & 2019
6. Land use Change in Meghna River

Sensor:
1. Landsat thematic mapper 1,5, & 8
2. Band and spatial resolution :30 m
3. Temporal resolution
4. And bit:16 days and 8

Index:
NDWI = normalized difference water index
= [(Green – NIR)/(green+ NIR)]

Land use Change in Meghna River:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unchanged land</td>
<td>1753.074</td>
<td>1807.05</td>
<td>1645.3584</td>
</tr>
<tr>
<td>Accretion (sq.km)</td>
<td>238.833</td>
<td>115.34</td>
<td>234.4563</td>
</tr>
<tr>
<td>Erosion (sq.km)</td>
<td>295.6833</td>
<td>96.48</td>
<td>259.683</td>
</tr>
<tr>
<td>Unchanged Water</td>
<td>367.5402</td>
<td>528.54</td>
<td>371.9169</td>
</tr>
</tbody>
</table>

Submitted By: Md. Nazmul Hasan Fahad