

Anthropogenic Impact on Migration Process of River Yamuna in Delhi-NCR Using Geospatial Techniques

Authors : Mohd Asim, K. Nageswara Rao

Abstract : The present work was carried out on River Yamuna passing through Delhi- National Capital Region (Delhi-NCR) of India for a stretch of about 130 km to assess the anthropogenic impact on the channel migration process for a period of 200 years with the help of satellite data and topographical maps with integration of geographic information system environment. Digital Shoreline Analysis System (DSAS) application was used to quantify river channel migration in ArcGIS environment. The average river channel migration was calculated to be 22.8 m/year for the entire study area. River channel migration was found to be moving in westward and eastward direction. Westward migration is more than 4 km maximum in length and eastward migration is about 4.19 km. The river has migrated a total of 32.26 sq. km of area. The results reveal that the river is being impacted by various human activities. The impact indicators include engineering structures, sand mining, embankments, urbanization, land use/land cover, canal network. The DSAS application was also used to predict the position of river channel in future for 2032 and 2042 by analyzing the past and present rate and direction of movement. The length of channel in 2032 and 2042 will be 132.5 and 141.6 km respectively. The channel will migrate maximum after crossing Okhla Barrage near Faridabad for about 3.84 sq. km from 2022 to 2042 from west to east.

Keywords : river migration, remote sensing, river Yamuna, anthropogenic impacts, DSAS, Delhi-NCR

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