

Bathymetric Change of Brahmaputra River and Its Influence on Flooding Scenario

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Abstract : The development of physical model of River like Brahmaputra, which finds its origin in the Chema Yundung glacier of Tibet and flows through India and Bangladesh, is always expensive and very much time consuming. With the advancement of computational technique, mathematical modeling has found wide application. MIKE 21C is one such commercial software, developed by Danish Hydraulic Institute (DHI), with the depth-averaged approach and a two-dimensional curvilinear finite-difference model, which is capable of modeling hydrodynamic and morphological processes with some limitations. The main purpose of this study are to generate bathymetry of the River Brahmaputra starting from "Sadia" at upstream to "Dhubri," at downstream stretching a distance of approximately 695 km, for four different years: 1957, 1971, 1977, and 1981 over the grid generated in the MIKE 21C and to carry out the hydrodynamic simulation for these years to analyze the effect of bathymetry change on the surface water elevation. The study has established that bathymetric change can influence the flood level significantly in some of the river reaches and therefore the modification or updating of regular bathymetry is very much essential for the reliable flood routing in alluvial rivers.

Keywords : bathymetry, brahmaputra river, hydrodynamic model, surface water elevation

Conference Title : ICSWRM 2014 : International Conference on Sustainable Water Resources Management

Conference Location : Melbourne, Australia

Conference Dates : December 11-12, 2014