

Development of remote sensing based method for the rapid reconstruction of time series of formative water discharges of the Ganga and Bramaputra rivers in the Himalayan foreland

Abstract:

The project proposal aims to develop a generalized regime relation (Width-discharge) based on field measurements and physical understanding of the process that governs the geometry of alluvial rivers. This regime equation will then be used to estimate discharge by measuring the channel's width on satellite images. As the regime equation is expected to be generalized and independent of any specific location, therefore in a given river, it can be used to estimate discharge at any location by just measuring the channel width on satellite images. In rivers, this would further allow to track along stream variation in discharge. To test this approach, it is proposed to use the Corona and Landsat images of the Ganga (Kanpur to Allahabad & Kurshela to Farakka) and Brahmaputra River (Guwahati to Goalpara). At the end of this project, the project is expected to deliver, (a) a generalized methodology to estimate river discharge from satellite images, (b) trends of variation in discharge in the Brahmaputra and the Ganga rivers from 1960 to the present, and (c) a web based application that will enable users to extract the rivers width from satellite images and estimate their discharges.