

A Spatio-Temporal Analysis and Change Detection of Wetlands in Diamond Harbour, West Bengal, India Using Normalized Difference Water Index

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Abstract : Wetlands are areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres. The rapidly expanding human population, large scale changes in land use/land cover, burgeoning development projects and improper use of watersheds all has caused a substantial decline of wetland resources in the world. Major degradations have been impacted from agricultural, industrial and urban developments leading to various types of pollutions and hydrological perturbations. Regular fishing activities and unsustainable grazing of animals are degrading the wetlands in a slow pace. The paper focuses on the spatio-temporal change detection of the area of the water body and the main cause of this depletion. The total area under study (22°19'87" N, 88°20'23" E) is a wetland region in West Bengal of 213 sq.km. The procedure used is the Normalized Difference Water Index (NDWI) from multi-spectral imagery and Landsat to detect the presence of surface water, and the datasets have been compared of the years 2016, 2006 and 1996. The result shows a sharp decline in the area of water body due to a rapid increase in the agricultural practices and the growing urbanization.

Keywords : spatio-temporal change, NDWI, urbanization, wetland

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