

Impacts of Aquaculture Farms on the Mangroves Forests of Sundarbans, India (2010-2018): Temporal Changes of NDVI

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Abstract : Sundarbans Reserve forest of India has been undergoing major transformations in the recent past owing to population pressure and related changes. This has brought about major changes in the spatial landscape of the region especially in the western parts. This study attempts to assess the impacts of the Landcover changes on the mangrove habitats. Time series imageries of Landsat were used to analyze the Normalized Differential Vegetation Index (NDVI) patterns over the western parts of Indian Sundarbans forest in order to assess the health of the mangroves in the region. The images were subjected to Land use Land cover (LULC) classification using sub-pixel classification techniques in ERDAS Imagine software and the changes were mapped. The spatial proliferation of aquaculture farms during the study period was also mapped. A multivariate regression analysis was carried out between the obtained NDVI values and the LULC classes. Similarly, the observed meteorological data sets (time series rainfall and minimum and maximum temperature) were also statistically correlated for regression. The study demonstrated the application of NDVI in assessing the environmental status of mangroves as the relationship between the changes in the environmental variables and the remote sensing based indices facilitate an efficient evaluation of environmental variables, which can be used in the coastal zone monitoring and development processes.

Keywords : aquaculture farms, LULC, Mangrove, NDVI

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