Exploring wetland transformations in moribund deltaic p of India

Satyajit Paul & Swades Pal

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Abstract

Moribund deltaic part of Ganga–Padma region possesses hydro-ecologically precious dynamic wetlands of different kinds. The present paper endeavours to map, monitor wetlands and assess the changing hydro-ecological states of these in the moribund deltaic plain. Multi-temporal Landsat images since 1987–2016 are used for mapping and monitoring the wetlands. Normalized Difference Water Index (NDWI), Water Presence Frequency (WPF) approaches are applied for time series water body extraction and integration of water body maps for making frequency continuum of wetlands. The fragmentation analysis is done to show the transformation pattern of wetland landscape. Total wetland areas are 46.66 and 88.55 km^2 in pre- and postmonsoon seasons respectively. Out of the total wetlands area of pre and postmonsoon seasons 18.21 km^2 (54.09%), 35.83 km^2 (62.14%) areas respectively have witnessed transformation from phase I (1987–1996) to phase III (2006–2016). The Fragmentation statistics shows that 35% of medium and large core wetlands have been changed into smaller one and numerous small wetlands have been lost. Different landscape ecological indices like Shannon's diversity index (SHDI) and Simpson's diversity index (SIDI) depict disaggregated pattern of wetlands. Maintenance of ecologically relevant channel flow and inundation is highly essential for minimizing transformation.