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Effect of channel morphological changes on wetland transformation

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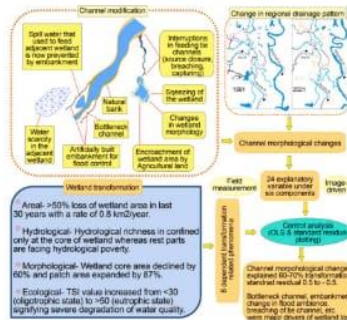
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HIGHLIGHTS

- About 57 % wetland area was lost along with lowering of water supply from rivers.
- Existing wetlands experienced hydrological, morphological and ecological diminution.
- Bottle neck channel, embankment, loss of drainage were major drivers of wetland loss.
- Channel morphological and flood ambience change were detected to play vital role.

GRAPHICAL ABSTRACT



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ABSTRACT

Keeping aside the traditional approaches to investigating floodplain wetland transformation, the current study investigated various aspects of it through changes in river channel morphology and drainage pattern. The study analyzed wetland transformation using satellite image-based machine learning and intensive fieldwork. Ordinary Least Square (OLS) regression was applied to identify dominant influencing factors among 24 contributing factors under six clusters to eight dependent phenomena of transformation. The result showed that 57 % of wetland area lost since 1991, and existing wetland has also experiencing hydrological scarcity. From 1991 to 2021, the area under low water depth (<1 m.) inflated from 18.55 % to 50.54 %, the hydro-period narrowed down, and the appearance of water become inconsistent. The OLS result showed that changes in channel morphology (bottle neck channel, embankment-driven carrying capacity enhancement, etc.), interruptions in river and wetland connecting channels (source closure, breaching the continuity, conversion in to agricultural

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