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## Geomorphic connectivity analysis for prioritising floodplain wetlands for restoration and monitoring in the Ramganga basin, India

**Manudeo Singh**<sup>1,2</sup> and Rajiv Sinha<sup>2</sup>

<sup>1</sup>Institute of Geosciences, University of Potsdam, Potsdam, Germany (manudeo.singh@uni-potsdam.de)

<sup>2</sup>Department of Earth Sciences, Indian Institute of Technology Kanpur, Kanpur, India

Floodplain wetlands are an important and integrated component of riverine environment as they perform various ecological and hydrological functions. However, these wetlands are under acute pressure because of changing climate and land-use and require urgent attention. Stakeholders (e.g., wetland management authorities) need a science-based information about wetlands at basin scale for prioritising them for restoration and monitoring. To facilitate the prioritisation of wetlands, we used geomorphic connectivity concept and hypothesise that the best possible connectivity scenario for the existence of a wetland is (a) if that wetland has a high connectivity with its upslope area, and (b) if that wetland has a low connectivity with its downslope region. The first condition ensures flow of water into the wetland and second condition allows longer residence time of water in the wetland. Accordingly, we defined 4 categories of connectivity-based restoration scenarios – good, no impact, bad, worst. We applied the proposed method to 3226 wetlands of Ramganga Basin in north India which were mapped in our previous work (Singh and Sinha, 2022, *Remote Sensing Letters*, 13:1, 1-13). The results show that 676 wetlands are in good category, 1155 show no impact, 831 are in bad category, and 564 in worst category. Further selection criteria such as distance from nearest stream and stream density can be applied to filter the wetlands from different connectivity scenario categories. For example, in present case, there are 112 wetlands within 100 m of any stream and require restoration. Therefore, using connectivity concept, it is possible to identify the wetlands which are easiest to restore and to identify those which are under threat. The proposed method can be applied to any basin for wetland management applications.