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## Flood-prone areas delineation in coastal regions using the Geomorphic Flood Index

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Detecting areas exposed to flood inundation in coastal zones is of paramount importance for reducing damages and preventing human and economic losses. In general, the Geomorphic Flood Index (GFI) method, based on a Digital Elevation Model (DEM) and mostly applied to riverine flood, provides a good representation of flood-prone areas with low requirements in terms of data, time and costs. However, the method does not account for inter-basin floodwater transfers and, therefore, performs poorly on coastal basins. The present work addresses this shortcoming by explicitly taking into account these potential inter-basin water transfers. We applied the GFI method with this new feature to a coastal basin located in southern Italy and the outcome was compared with a flood inundation map obtained by a two-dimensional hydraulic simulation for a return period of 300 years. Its transferability was tested in a second adjacent coastal basin using a threshold binary classification and the sensitivity of the methodology to the return period was investigated. Results show that coastal flood-prone areas are successfully delineated with performance metrics above 93%. This achievement represents a step further in the application of the GFI method, that can help stakeholders in flood risk management to rapidly and inexpensively characterize hazard-prone areas.