

Coastal Flood Mapping of Vulnerability Due to Sea Level Rise and Extreme Weather Events: A Case Study of St. Ives, UK

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Abstract : Coastal floods have been identified as an important natural hazard that can cause significant damage to the populated built-up areas, related infrastructure and also ecosystems and habitats. This study attempts to fill the gap associated with the development of preliminary assessments of coastal flood vulnerability for compliance with the EU Directive on the Assessment and Management of Flood Risks (2007/60/EC). In this context, a methodology has been created by taking into account three major parameters; the maximum wave run-up modelled from historical weather observations, the highest tide according to historic time series, and the sea level rise projections due to climate change. A high resolution digital terrain model (DTM) derived from LIDAR data has been used to integrate the estimated flood events in a GIS environment. The flood vulnerability map created shows potential risk areas and can play a crucial role in the coastal zone planning process. The proposed method has the potential to be a powerful tool for policy and decision makers for spatial planning and strategic management.

Keywords : coastal floods, vulnerability mapping, climate change, extreme weather events

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