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The prediction and validation of spatial variation of storm tide height along the coastline of North Somerset, U.K. during extreme events typical of coastal flooding using Synthetic Aperture Radar.

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Inundation modellers are faced with the problem of determining coastal flood risk in a future climate in order to aid planners, policy makers and engineers. Current research suggests a major source of uncertainty is the water-level height along the coastline which is used to force 2D inundation models of the region studied. Recent research has indicated that the spatial variation of the water-level during a storm (storm tide) has a predictable spatial relationship based upon historical storm events, however, this new proposed method needs to be validated.

Detailed observations of a storm tide along a coastline are very rare, but it is believed that Synthetic Aperture Radar (SAR) can be employed with the "water-line method" to provide this detailed dataset of observed water heights.

This project is accessing the degree to which current space-borne SAR imagery can be used to determine detailed water-level heights along a coastline during an extreme water-level event typical of a coastal flood, and then employing this dataset to validate a new spatial storm tide variation prediction method.

Future inundation risk models may benefit from this research with an improved and more accurate forcing condition, but also oceanographers and coastal scientists can employ the SAR imagery-derived water level approach developed within this work to aid storm surge and coastal inundation research.