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Investigating potential future changes in surface water flooding hazard and impact

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Increasingly, data from Regional Climate Models (RCMs) are being used to drive hydrological models in order to investigate the potential water-related impacts of climate change, particularly on floods and droughts. Traditionally these climate change assessments have focussed on fluvial flooding, commensurate with coarse resolution (>12km) RCMs. However, high-resolution (1.5km), convection-permitting RCMs are now becoming available and allow impact assessments of Surface Water Flooding (SWF) to be considered. At the same time there has been an increasing demand for more robust and timely real-time forecast and alert information for SWF. In the UK, within the Natural Hazards Partnership (NHP, http://www.naturalhazardspartnership.org.uk/) a real-time Hazard Impact Model (HIM) framework has been developed that includes SWF as one of the hazards chosen for real-time pre-operational trials. The SWF HIM system uses 1km gridded surface runoff estimates from the Grid-to-Grid (G2G) hydrological model to estimate the SWF hazard and links this to detailed inundation model outputs to assess impacts on property, people, transport and infrastructure using a pre-computed Impact Library. Here, a set of Met Office Hadley Centre high resolution (1.5 and 12km) RCM runs have been used to drive the G2G for southern Britain. Results investigating the potential future changes in SWF hazard and property impacts will be presented, including the assessment of the added-value of high-resolution climate model data for hydrological modelling.
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