



## **Detecting coherent changes in peak river flow in Great Britain**

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The recent large repeated floods in Northern England and other parts of the country raise the question of whether the risk of flooding in the United Kingdom is changing. Although climate change projection indicate an increase in peak flows, the evidence for a change in the behaviour of the gauged streamflow data has been largely inconclusive until now. Most studies though focus on the analysis of at-site series, which are hindered by the lack of long flow records. Using annual maximum series of peak flow from 680 gauging stations nationwide an areal hierarchical model which pools the data available at all stations is developed and fitted to data from all stations together. The model structure assumes an overall trend across the country with spatially structured differences in different parts of the country. Once information is shared across stations a statistically significant signal is found for the increase in flood risk across Great Britain. Further, the model clearly identifies areas where the increase has been higher or lower than average, thus providing a way to prioritise intervention.