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Development of an operational, risk-based approach to surface water flood forecasting

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Title: Development of an operational, risk-based approach to surface water flood forecasting

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Abstract:
Surface water flooding occurs regularly across England and Wales, especially during the summer months. It is widely acknowledged that surface water flooding presents a particular challenge to forecasters because of the difficulties inherent in forecasting intense localised rainfall and the highly complex runoff and drainage processes which operate at the surface, particularly in urban areas.

The Flood Forecasting Centre (FFC) has a responsibility to provide guidance on the risk of surface water flooding to Category 1 and 2 responders across England and Wales. Consequently, there is the requirement for improved methods for forecasting surface water flood risk and the FFC is currently involved in developing and trialling a novel surface water flood forecasting system, the Surface Water Flooding Hazard Impact Model (SWF HIM).

The SWF HIM offers significant advances over existing surface water flood forecasting methods used by the FFC, including provision of a risk-based approach. The SWF HIM links probabilistic runoff forecasts from the Centre for Ecology & Hydrology's Grid-to-Grid model with a library of pre-calculated surface water impact information compiled by the Health and Safety Laboratory. These probabilistic runoff forecasts are combined with impact information to provide a forecast of surface water flood risk at a 1km2 resolution across England and Wales.

This presentation outlines the methodology together with some initial results from the trial. The work has been undertaken as part of the UK's Natural Hazards Partnership (NHP) and also benefits from the close working relationship between the Environment Agency and the Met Office through the FFC.