



Flood Foresight: A pilot project in the Brahmaputra basin provides flood inundation forecasts in response to the summer 2017 floods.

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Forecast and real-time flood data underpins early warning systems, allowing proactive flood risk management before and during peak flood. Flood Foresight (www.floodforesight.com) is an innovative operational system that currently provides flood inundation, depth and impact data for the UK and Ireland. In summer 2017, to demonstrate the global applicability of the Flood Foresight framework for flood risk preparedness and response management, and in view of the devastating monsoon flooding of the Brahmaputra river in South Asia, an offline Flood Foresight pilot system was configured and deployed in India and Bangladesh.

This pilot coupled ensemble streamflow forecasts from the Global Flood Awareness System (GloFAS) with flood hazard data from JBA's Global Flood Maps, producing daily probabilistic forecasts of flood inundation at 30-metre resolution up to 10-days in advance. The resulting flood footprints provide a dynamic picture of the flood event across the entire affected region showing the likelihood and depth of flooding along the main river and tributaries as the flood wave moved downstream. From the generated footprints, a severe flood signal was produced 10 days in advance for districts in Assam region such as Lakhimpur, Jorhat, Golaghat, and Sonitpur. Model outputs were validated against Earth Observation imagery and other available datasets and performance was aggregated per administrative area. The forecast inundation maps are valuable tools for supporting loss estimation, forecast-based financing, response prioritisation and relief distribution. The pilot demonstrated the global scalability of Flood Foresight and highlighted the potential of using simulation library approaches for flood event and impact mapping within flood early warning decision-support systems. Flood Foresight can be complementary to local flood hydrodynamic models, as part of a flexible framework that integrates the best available data for understanding flood events, including flood hazard maps, rainfall forecasts, hydrological models, river levels/flows, and Earth Observation. The system can be deployed to other countries on an on-demand basis.