

Overview

National scale flood maps are available in many countries, describing the risk of flooding from rivers, sea and intense rainfall.

Global scale maps are also available, typically developed for the private re/insurance market so that large scale risk can be evaluated. These report the extent or depth of inundation for a given return period event. The events they describe are therefore hypothetical, making them useful for planning and evaluating long-term flood risk, but not for understanding how a forecast event might unfold.

Flood Foresight is a suite of tools aimed at the insurance, government and utilities sectors providing geographical information before, during and after flood events.

Rainfall Screening

- Forecast daily rainfall data
- Maximum rainfall return period exceeded – by grid or catchment
- T+0 - T+7 day forecasts

Flood Forecasting

- Forecast daily flood extents and depths for UK and Ireland
- Input data: flows from rainfall-runoff model
- T+0 - T+10 day forecasts
- Trans-national extents; globally scalable

Flood Monitoring

- Near real-time sub-daily flood extents and depths (and other countries with open real-time flow data). 3-hourly in GB.
- Input data: telemetered river gauges

Methodology

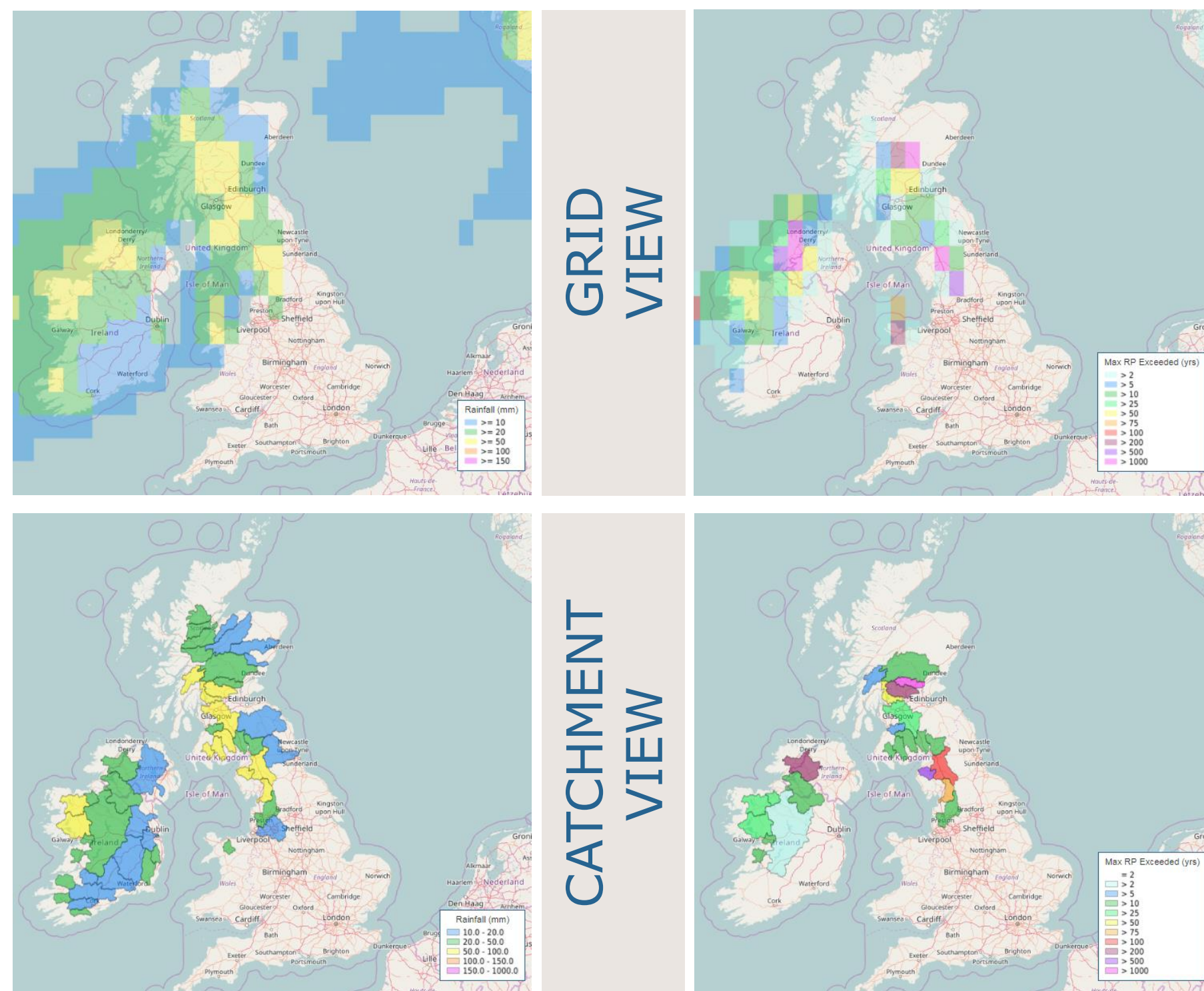
The **Rainfall Screening** module compares forecast (NCEP GFS) and analysis (NCEP GDAS) rainfall with historical rainfall (NCEP CFSR) to determine **rainfall rarity** on a 0.5° grid or for river catchments.

The flood-risk modules are supported by **global flood mapping** across 168 countries at 30m horizontal resolution. The flood maps are based on **river flow event sets** linked to river catchment rainfall event sets.

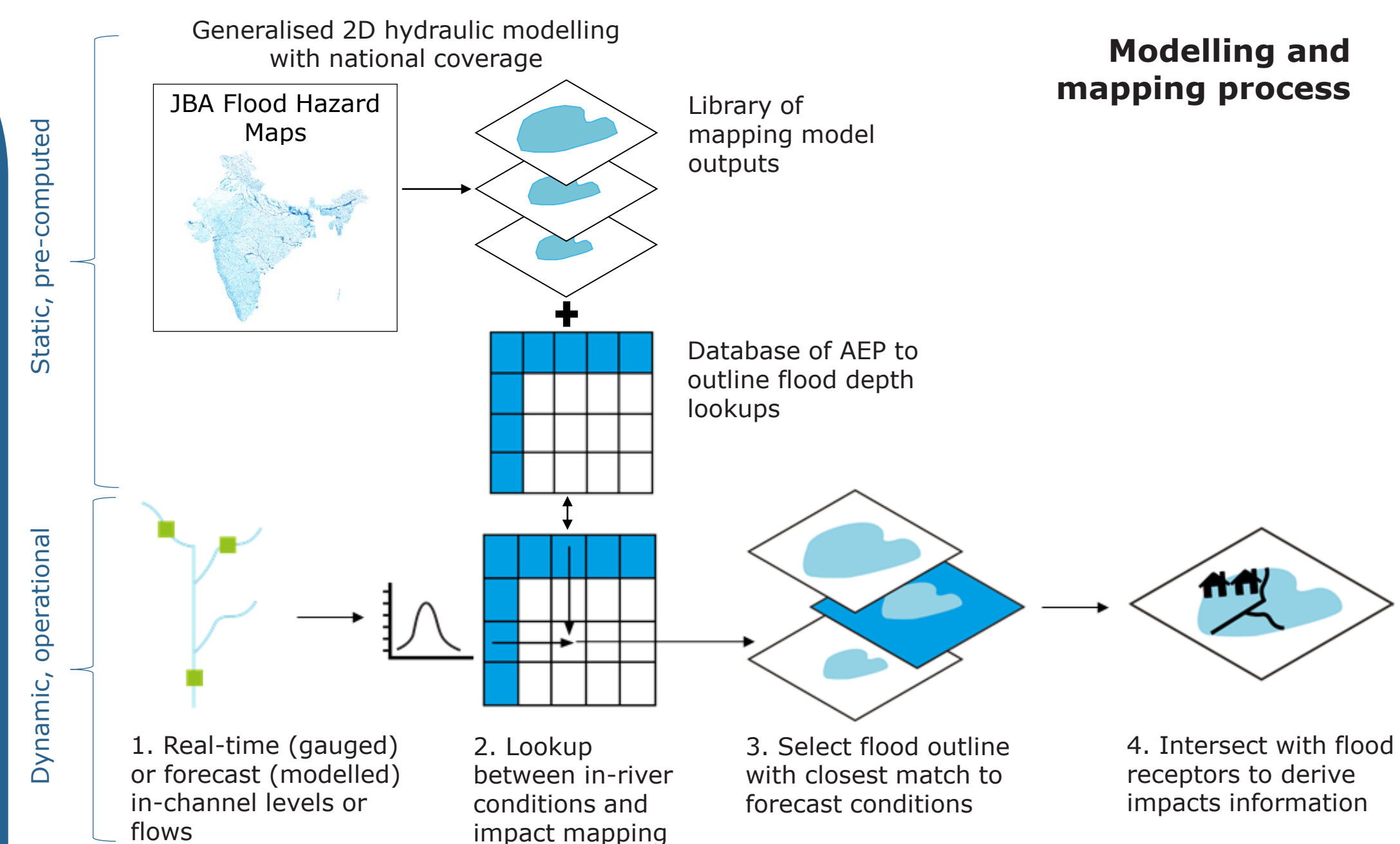
The **Flood Forecasting and Monitoring** modules link predicted (deterministic SMHI E-HYPE) or observed (gauge telemetry) streamflow to lookup tables for volume on floodplain and distributed event rarity, defined for 1km impact zones (IZs) linked to each (pseudo-) gauge. The forecast and real-time flood footprints are generated by stitching together the most appropriate depth grid from each of the IZs.



The Flood Foresight Rainfall Screening product uses meteorological forecasts to provide globally consistent warnings of significant precipitation up to 7 days in advance



Storm Desmond 2015: 1-day forecast for 5 Dec 2015

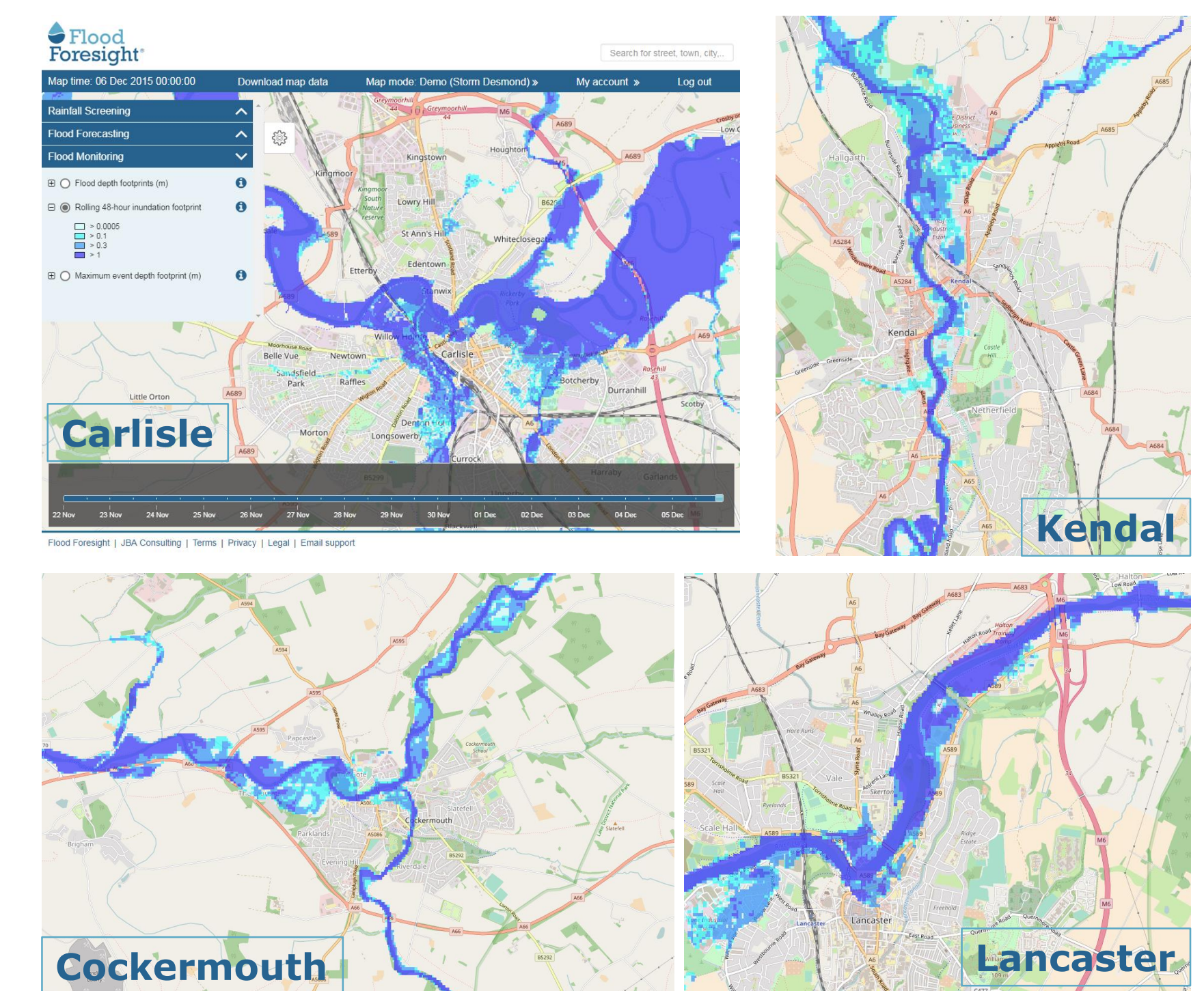


Benefits

- Move from reactive to **proactive flood management**
- Integrate** into a range of platforms, web apps, and workflows
- Rapidly **prioritise and mobilise** flood mitigation and response measures
- Combine with asset data to **forecast impact and loss** across whole portfolio
- Communicate** evolving flood risk to partners and clients earlier
- Consistent**, (trans-) national data. Globally scalable.



The Flood Foresight Monitoring and Forecasting product provides flood extent and depth data, nationally-consistent footprints and warnings of flooding up to 10 days in advance



Storm Desmond 2015: 48-hr max extent ending 00UTC 6/12/2015