

FLOOD FORESIGHT EXECUTIVE BRIEFING.

Background

Flood events are the most frequently occurring type of natural disaster. As a result, millions of people are affected by flooding every year. In the UK, one in five properties are at risk to flood and annual economic losses are estimated between £500 million and £1 billion. In only 3 months, Storms Desmond, Eva and Frank generated £1.3 billion of insured losses alone (ABI, 2016), and the cost of flooding is expected to increase across most of the UK under future climate scenarios. Globally, the rate of extreme weather events also appears to be increasing.

Without the tools and forecasting information to provide reliable predictive flood analytics before and during flood events, insurance companies often respond to flooding reactively, with limited pre-emptive action to minimise damage. Timing is critical not only for flood mitigation but also to effectively manage capital allocation and reinsurance, prioritise claims resources and manage the claims process.

During and immediately following flooding, it can be difficult to identify the areas impacted. Many companies rely on earth observation data in combination with information from media reports and social media. While useful, these resources are often intermittently available and may provide an inconsistent and incomplete view of flooding. This can limit efforts to deliver timely updates to both internal stakeholders and externally to policy holders, investors and regulators. JBA's Flood Foresight is a system that provides near real-time and forecast rainfall and flood data for river flooding, giving users a reliable source of information to understand potential flooding.

Deeper insight into flood potential before, during and after flood events

Up to a week in advance, rainfall forecasts alert users to potentially hazardous weather conditions. The Rainfall Screening module provides forecast rainfall globally on a 0.5° x 0.5° grid and accumulated over

HIGHLIGHTS.

Set up flood warnings

Combine with exposure data to forecast impact and loss across your portfolio

Prioritise and mobilise flood mitigation and response measures

Understand and communicate evolving flood risk to key stakeholders sooner

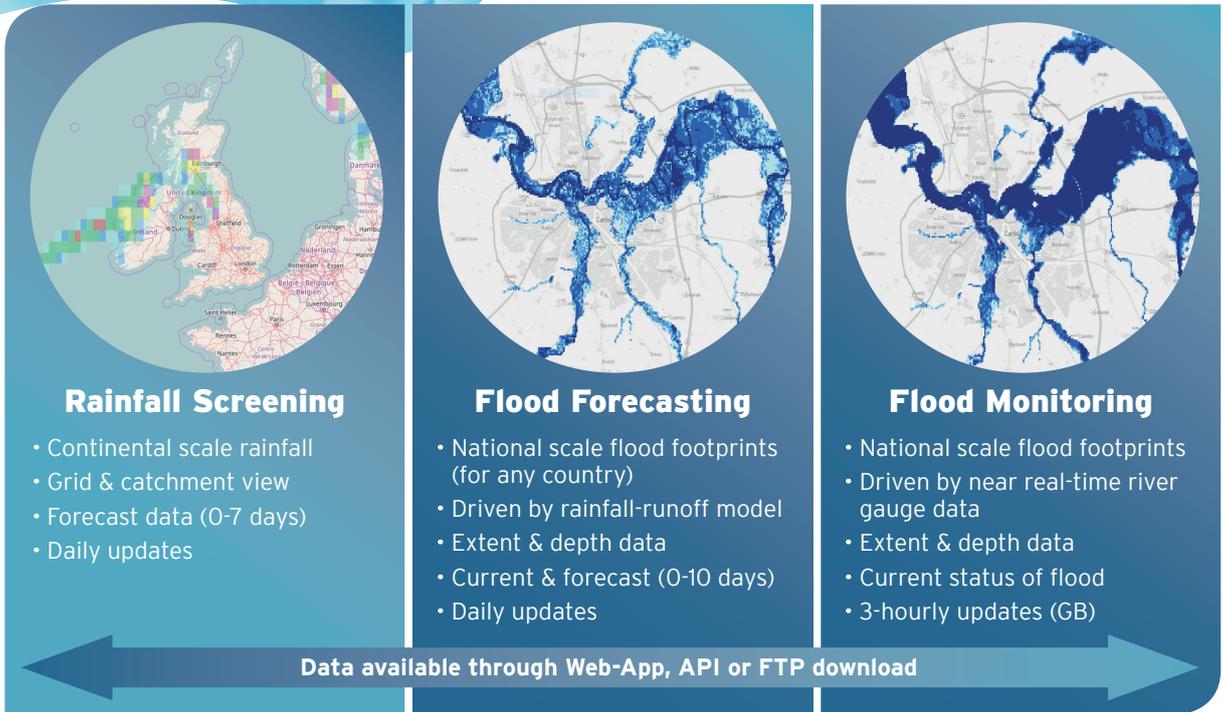
Reliable and available data for parametric products

individual river catchments to allow the potential impact of rainfall in river basins to be visualised. In addition to the rainfall amount in millimetres, the Maximum Return Period Exceeded metric provides a view of rainfall severity at a given location, relative to historical conditions. This highlights unusually heavy rainfall and can be used alongside accumulated forecast rainfall to identify areas likely to experience flooding.

Flood Foresight also provides forecast and real-time flood inundation footprints for river flooding at 30m resolution, showing flood extents and depths for current and future states of flooding. The Flood Forecasting module generates forecast flood footprints using forecast precipitation and a rainfall-runoff model to simulate daily streamflow conditions for a range of lead times (0 to 10-days ahead). As a flood event unfolds, the Flood Monitoring module uses observed streamflow data from a network of river gauges to produce estimated flood extents and depths. These are updated at up to three hours' frequency and provide a near real-time view of flood risk as it evolves. In both forecast and real-time states, JBA's market-leading flood maps are used to rapidly translate streamflow conditions into dynamic flood footprints.

An early view into flood hazard can be used for outreach to policy holders prior to flooding, providing the opportunity to implement flood mitigation

Figure 1
Flood Foresight
modules.



measures such as the relocation of high-value goods. Resources can be prioritised and preferred service providers booked, ensuring a better service to customers and minimising the use of more costly external loss adjusters and non-preferred service providers. Flood footprints can be combined with exposure data in other systems to allow rapid estimation of loss across your portfolio with increasing confidence over time, allowing timely and informed reporting and decision-making.

Data access

Flood Foresight can be accessed through the web application with an intuitive user interface to visualise hazard data. Flood Foresight data can also be downloaded or integrated directly into existing risk management platforms for evaluation alongside exposure and claims information. For custom alerts, it is possible to configure early warning alerts and notifications via email.

About JBA Risk Management Limited

Established in 2011, we are a global leader in flood risk management. Affectionately known as The Flood People, our flood maps, catastrophe models and analytics are used by some of the world's largest insurers, reinsurers, financial institutions, property companies and governments. We're experts in translating complex, scientific data into useful information, using sophisticated hydraulic approaches and models to provide cutting-edge flood risk intelligence.

As part of the JBA group established over 20 years ago, we work closely with leading academic institutions in the field of flood risk. We also support our independent charity, JBA Trust, which enables research, education and training in the water environment sector.

Our commitment to continuous improvement and detailed research and development is what makes us the number one choice for many insurers, reinsurers, financial institutions and governments.

Flood Foresight is developed by and provided in collaboration with JBA Consulting, part of the JBA Group. JBA Consulting is a leading environmental, engineering and scientific consultancy, managing the risks of flooding and other natural perils in the natural and built environment, with a strong track record of major studies for national governments and international bodies such as the European Investment Bank, European Commission, Defra, Environment Agency, SEPA and the Rivers Agency Northern Ireland.

KEY FEATURES.

Near real-time and forecast rainfall and flood data for river flooding

Dynamic flood footprints provided before and throughout the flood event

Based on best-available river telemetry and modelling approaches combined with state-of-the-art flood maps

Consistent and globally scalable

Figure 2
Various examples of validation of Flood Foresight in Great Britain, 2017 and 2018.

Appleby, Cumbria 23rd November 2017

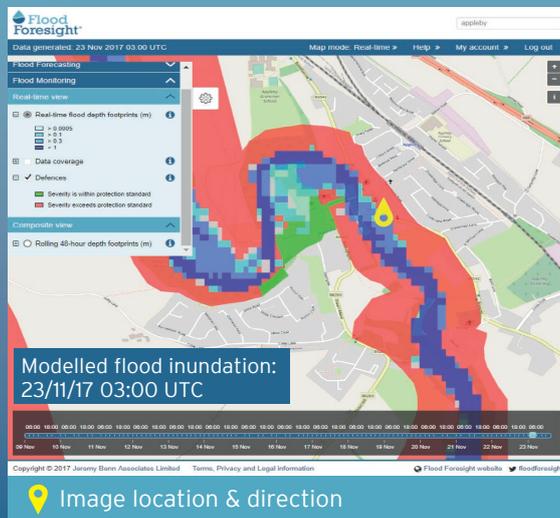


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Friar's Vennel, Dumfries, (Dumfries and Galloway) 24th January 2018

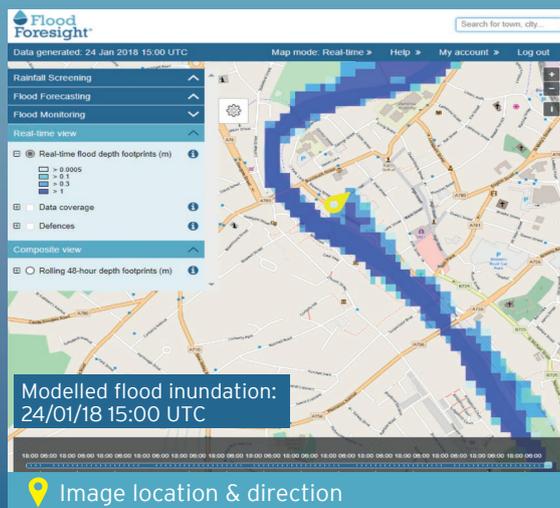


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Tesco, Oban (Argyll and Bute) 9th October 2018

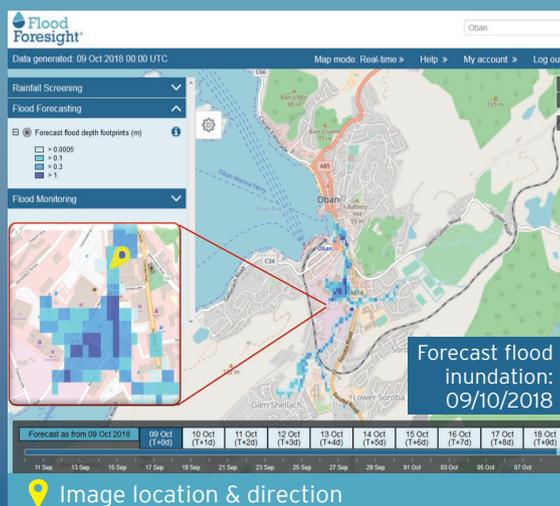


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