

JBA GLOBAL 30m FLOOD MAPS.

JBA's 30m resolution Global Flood Maps enable insurers to quantify the risk of river and surface water at any location worldwide,⁽¹⁾ using a high-quality globally-consistent dataset. The maps can be used for indicative property-level flood risk assessment for insurance risk selection, pricing and underwriting, portfolio management and optimisation, as well as land use planning by governments and disaster risk reduction schemes.

Background

The economic value exposed to flood hazard globally is increasing almost proportionally with the population increase.⁽²⁾

Pictured below
30m flood map extent for the 200-year return period, Calgary, Canada (river and surface water combined).

Based on an internal study, we estimate that up to a quarter of the world's population will be exposed to inland flood risk by 2020. Furthermore, the flood risk for many at-risk areas will increase due to climate change.⁽³⁾⁽⁴⁾ This is reflected in the concerns of financial institutions and governments worldwide who are striving for a better understanding of the

HIGHLIGHTS.

Consistent view of flood hazard across the world

Informed risk selection and pricing for underwriting

Accumulation management and hotspot identification

Portfolio planning and diversification

current and future flood risk to their sector. To date, the quality and consistency of reliable information and available tools varies widely.

As the global leader in flood risk management, we continually invest in the development of maps and models to bring the latest science and data to the forefront of flood risk management practices. Our 30m Global Flood Maps provide a consistent view of risk for river and surface water flooding worldwide, enabling insurers to compare the level of flood risk at different sites on an equivalent basis, even when they are located in different countries or continents.

Consistent flood analysis around the world

Our market-leading, peer-reviewed flood mapping methodologies are based on observed river gauge and rainfall data. Flood extents and water depths



© Google Earth Image Landsat / Copernicus

¹ Excludes ice caps; as a result Greenland and Antarctica are not mapped.

² Munich Re - Reasons for the increase in flood losses (<https://www.munichre.com/touch/naturalhazards/en/naturalhazards/hydrological-hazards/flood/causes/index.html>), date accessed: 10 September 2018.

³ Lorenzo Alfieri et al. - Global projections of river flood risk in a warmer world, February 2017, *Earth's Future*, Volume 5, Issue 2, pages 171 - 182 (<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016EF000485>).

⁴ Jason Thistlethwaite, Andrea Minano, Jordan A. Blake, Daniel Henstra and Daniel Scott, Application of re/insurance models to estimate increases in flood risk due to climate change, *Geoenvironmental Disasters* 2018, 5:8, 11 July 2018, (<https://geoenvironmental-disasters.springeropen.com/articles/10.1186/s40677-018-0101-9>).

Figure 1
30m flood map
extents for
the 100-year
return period,
Bundaberg,
Australia. River
flood (blue) and
surface water
flood (purple).



are derived by 2D-hydraulic modelling using globally consistent, best available elevation data, supplemented by suitable digital terrain data where available.

JBA's Global Flood Maps are available for 6 return periods (20, 50, 100, 200, 500 and 1,500 years), enabling users to perform analysis against a range of flood severities, from low to extreme, for the development of a more detailed risk profile. The maps include defence information, indicating the areas that

are protected by flood defences to provide a more representative view of risk.

With 30m resolution flood data, an indicative property-level flood assessment can be achieved, enabling the user to identify low risks and avoid high risk locations. The maps are also beneficial for accumulation assessment, allowing the user to make informed decisions at the point of underwriting as to the make-up and diversification of their portfolio, influencing long-term portfolio profitability.

When used in conjunction with our suite of probabilistic catastrophe models or global flood event set, the Global Flood Maps enable a consistent view of risk across the transfer chain, from location-level risk selection pricing and underwriting to portfolio management and optimisation.

We also offer higher resolution mapping of up to 5m for countries in Europe and North America for a more detailed assessment beyond the scope of our global mapping data.

Understand the different impact of river and surface water flooding

River and surface water flooding behave in different ways and have different impacts on risk. As a result, our experienced hydrologists have developed a

MAP FEATURES.

- 30m resolution mapping**
- River and surface water flooding**
- Flood extents and flood depths**
- 6 return periods**
- Defended and undefended view of risk**

methodology for separately modelling the two different flood types. Our flood maps therefore provide an opportunity to consider surface water flooding separately in the risk assessment process.

Due to the ability to separately assess river and surface water flooding, comparing flood claims data against these maps will support a greater insight into the type of flooding that drives the losses.

Account for the positive impact of river flood defences

The river flood map is complemented by flood defence data based on a variety of sources, including information from national agencies and detailed local knowledge where available to JBA. The dataset delineates areas protected by flood defences and provides the standard of protection (expressed as a return period) associated with each.

The combination of the maps and defence data enables users to decide how to consider flood defences based on their own risk appetite, by choosing whether to incorporate none, some, or all of the defended areas for their risk assessment.

Data access

To enable easy integration into pre-existing systems, we provide flood maps in a range of formats either

directly from JBA or via our network of resellers. We also offer consultancy opportunities to help you identify exposure hotspots, run bespoke flood risk assessments and manage your accumulations.

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.

Figure 2
Example of defended river area data for Malaysia with a standard of protection of 20 years (hashed polygons) overlaid on top of the 20-year return period river flood map (blue). The overlap between both datasets indicates areas that benefit from existing flood defences during river flood events of return periods of up to 20 years.





**THE
FLOOD
PEOPLE.**



GLOBAL LEADERS IN FLOOD RISK MANAGEMENT.

Get in touch
hello@jbarisk.com

UK +44 1756 799919	EUROPE +49 8092 2326756	www.jbarisk.com @jbarisk
USA +1 510 585 8401	SINGAPORE +65 968 62 968	

LEGAL BITS
 JBA Risk Management and The Flood People are UK registered trademarks of JBA Risk Management Limited.
 © JBA Risk Management Limited 2018.
 JCalf® is a registered trademark in the UK, and an unregistered trademark elsewhere, of JBA Risk Management Limited. All references to JCalf in this document refer to JCalf® in the UK.
 JFlow® is a registered trademark in the UK, and an unregistered trademark elsewhere, of Jeremy Benn Associates Limited. All references to JFlow in this document refer to JFlow® in the UK.

All intellectual property rights in the contents of this document belong to and shall remain the property of JBA Risk Management Limited. Please don't copy, reproduce or adapt any of it in any way.
 The information in this document is subject to change. No guarantee is made as to its accuracy or completeness. JBA shall have no liability in connection with use of this document or the information it contains. Its contents deal with the modelled probabilities of natural hazards, which are highly uncertain.
 JBA Risk Management Limited, registered in England & Wales number 7732946, South Barn, Broughton Hall, Skipton, North Yorkshire, BD23 3AE, United Kingdom.