

FROM FLOOD HAZARD TO FINANCIAL RISK.

How S&P Global Sustainable1 built building-level climate risk analytics using JBA flood data.



The challenge for financial institutions

Climate disclosure requirements and regulatory stress tests have brought an important question into sharper focus for banks, insurers, asset managers and corporate treasurers: how will future flood hazard translate into projected changes in financial loss at the level of an individual property, mortgage or business asset? Existing tools have largely answered that question at a regional or postcode level. However, for many financial applications that level of resolution is no longer sufficient.

Flood damage can vary materially across a single street. Two properties 30 m apart may experience the difference between nuisance flooding and structural failure. For mortgage lenders, that is the difference between a performing loan and increased default risk. For corporates and investors, it can affect operational continuity, asset values and resilience planning. To stress test a portfolio meaningfully, financial institutions need building-level analyses using hydraulically modelled, probabilistic hazard maps across multiple climate change scenarios, alongside an awareness of flood defences that currently protect assets on the ground.

How S&P used JBA data

S&P Global Sustainable1 set out to deliver exactly that capability through Climanomics®, its physical climate risk analytics platform. To do so, S&P needed a present-day probabilistic view of flood hazard with three elements: global consistency, high resolution to assess individual buildings, and real-world defence systems including levees and flood walls.

S&P selected JBA Risk Management as **its flood hazard data provider**. JBA's Global Flood Maps provide probabilistic flood depths at 30 m resolution across 99.98% of the global landmass, using advanced hydrological and hydraulic modelling techniques validated against observed flood events.

As part of its published analysis, S&P compared model outputs based on JBA data with documented flood events in San Jose (2017), Altenahr (2021) and central Thailand (2012), demonstrating strong alignment between projected and observed flood extents across multiple return periods.

Importantly, JBA's data also captures local and regional flood defence systems. For financial institutions, understanding future flood risk is not only about whether an asset could flood under an extreme event, but whether existing defences continue to perform as climate conditions evolve. By integrating JBA's defended view of risk into Climanomics®, S&P enables users to better assess future flood risk at asset-level with greater confidence.

IN BRIEF

S&P Global

Partner

S&P Global Sustainable1.

Platform

Climanomics®, the physical climate risk analytics platform within S&P Global Energy Horizons.

JBA contribution

Global probabilistic flood hazard data and defence data at 30 metre resolution.

Coverage

Building-level flood risk across 73,000+ public and private companies, distributed via S&P Global Sustainable1 data infrastructure such as Capital IQ Pro and Xpressfeed.

Use cases

Climate stress testing, mortgage and CRE credit risk, underwriting, portfolio screening, regulatory disclosure, adaptation planning.

Status

Live; S&P-published thought leadership April 2026.

“To quantify climate physical risk at the level of an individual building, you need hazard science validated against real events and awareness of the flood defences that protect those buildings today. JBA's data meets that bar, which is why it now sits at the core of Climanomics' flood analytics.

Rick Lord – Head of Sustainable1 Research & Innovation, Sustainable1, S&P Global Energy Horizons.

How the integrated capability works

Climanomics® combines JBA's baseline probabilistic flood hazard and defence data with Sustainable1's climate projections, a mean signal derived from more than 20 CMIP6 Global Climate Models. The platform's output is delivered at 30 m resolution globally, covering multiple return periods (2 to 1,000 years), four major climate change scenarios, and future time horizons projected through to the end of the century.

The result is a more detailed and actionable view of flood risk. Rather than relying on broad climate scenarios or high-level assumptions, financial institutions can assess how changing flood hazard may affect individual properties, assets and portfolios over time.

The integrated dataset is now available within Climanomics® and is also being incorporated into S&P's broader physical climate risk data offerings, distributed through the company's global data infrastructure used by the world's largest investors, banks and corporate risk teams.



Figure 1: How the partnership works – the process from flood hazard to financial decision-making.

Proof point: Sacramento, California

S&P's first published analysis using the integrated capability examined 88,699 single-family homes in **Sacramento**, one of the most flood-exposed major US cities. Located at the confluence of the Sacramento and American rivers, the city is protected by an extensive levee system that has received roughly \$1.8 bn of upgrade investment since 2016. The analysis assessed how those defences would hold up against 20-year and 100-year floods during the 2030s under the SSP2-4.5 climate scenario.

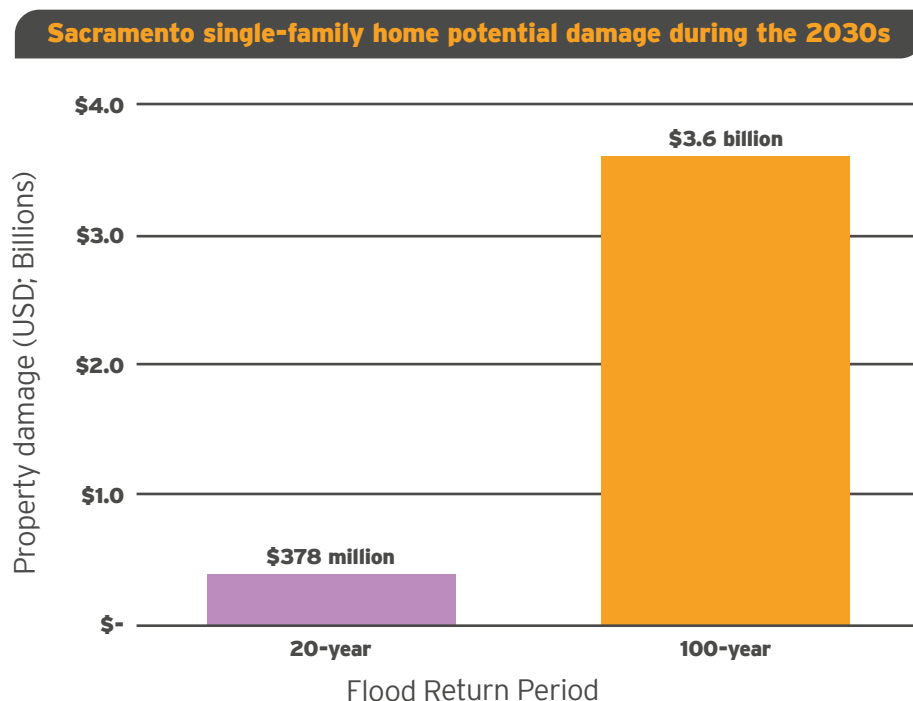


Figure 2: Projected total damage to single-family properties in Sacramento during a 20- and 100-year flood in the 2030s with present-day defences. Data sourced from S&P Global Sustainable1 using JBA flood hazard data within Climanomics®, April 2026.

The findings show that under current conditions, Sacramento's levees protect the city against both a 20-year and 100-year flood event. By the 2030s, S&P projects that the small increase in 100-year flood depth is enough to overtop the existing levee system at multiple locations, producing widespread inundation and putting more than 19,000 single-family homes at risk of more than 0.5 m flooding. Of those, 11,333 face projected damages above \$100,000 each, 21 times the equivalent count under a 20-year flood.

For mortgage lenders with exposure to Sacramento property, this translates into increased negative-equity risk and a higher likelihood of borrower default following major flood events. For regulators, it is a tractable input into a scenario stress test. For corporates or investors with real estate or infrastructure exposure in the Sacramento basin, it is a defensible basis for capital expenditure on resilience.

Proof point: Frankfurt data centres

S&P's parallel analysis of **Frankfurt**, one of Europe's five largest data centre hubs, used the same integrated dataset to flag that approximately 22% of existing capacity (around 282 MW) faces a 5% or greater annual probability of flood depths greater than 0.5 m in the 2030s. More notably, 36% of planned future Frankfurt data centre locations are within high flood risk zones. Several of the largest existing facilities (above the market-average 10 MW capacity) are sited in those zones.

For investors underwriting digital infrastructure, this is the kind of location-level projected change in flood risk that traditional regional flood risk analysis cannot deliver.

What JBA can do for financial institutions

JBA flood hazard data and services offer a range of climate risk and financial risk management applications across the banking, insurance and investment sectors. Key use cases include:

- Asset and portfolio screening - Helping to inform acquisition, lending and investment decisions by identifying properties that may be exposed to current and future flood risk.
- Climate stress testing - Assessing how flood risk may change under different climate scenarios and understanding the potential implications for losses, asset values and financial resilience.
- Adaptation and resilience planning - Identifying where additional resilience measures or investment may be needed by evaluating the role of current flood defences.
- Regulatory reporting and disclosure - Using credible and robust flood risk information to support regulatory and disclosure requirements.



S&P Global is the analytics infrastructure that the world's largest banks, investors and corporates already rely on. Their selection of JBA flood data as the foundation for Climonomics® validates a decade of investment in defence-aware, calibrated flood science – and brings building-level flood risk into the analytics that the most demanding institutional buyers run every day.

Nikki Pilgrim - Executive Director, JBA Risk Management.

In summary

Through the partnership with S&P Global Sustainable1, JBA's Global Flood Maps now sit within the analytics used to assess flood-driven financial risk for tens of thousands of public and private companies, distributed through the world's most widely used financial data infrastructure. For any financial institution wanting to understand or manage its physical climate risk today, the question is not whether to use JBA data – but whether you want it integrated through S&P, accessed directly from JBA, or both.

Read the live S&P Global partnership announcement
spglobal.com/sustainable1/en/jba-risk-management-partnership