Skyline Partners: Protecting Jamaican Credit Unions from Tropical Cyclones with FatTrack™ Parametric Insurance: Timely Payouts During Hurricane Beryl

By

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Abstract

Skyline’s proprietary FatTrack™ methodology underpins a parametric insurance solution designed to safeguard the Jamaican Co-operative Credit Union League (JCCUL) against the financial risks posed by major hurricanes. By leveraging reported wind fields, this approach provides a precise, independent parametric trigger, enabling swift and accurate payouts. Its effectiveness in protecting smallholder farmers' loans was demonstrated during Hurricane Beryl.

Overview

Peril/s	Tropical Cyclones
Geography/Region	Jamaica
Years of	2022 – 2023 and 2023 - 2024
Exposure covered	Portfolio of loans issued by multiple credit unions to famers
Trigger type/s	Pure parametric
Trigger mechanism/s	Skyline's FatTrack™ methodology using independently reported NOAA NHC data
Key information	
Annual Limit	
Issuer	Munich Re
Cedant	Jamaican Cooperative Credit Unions League (JCCUL)
Parties Involved	Broker: Howden Structuring and calculation agent: Skyline in partnership with Munich Re Risk analytics provider: Skyline Partners using FatTrackTM, a methodology using Skyline's proprietary technology.

DETAIL

Motivation

What is the context for wanting to obtain a parametric insurance product?

The Jamaican Co-operative Credit Union League is relied upon for loans by 100,000 smallholder farmers to cover the cost of essentials, such as seeds, day-old chicks and farming equipment. Farming is the main source of income for around 18% of the Jamaican population.

Adverse weather events could lead to farmers being unable to repay their loans, putting at risk the JCCUL's ability to continue to offer financial support.

The insurance product, which is based on a parametric trigger, intends to replace funds lost as a result of farmers defaulting on loans in the event of an extreme hurricane.

Are there any relevant past experiences that catalysed the purchasing of a parametric insurance product?

No, this was the first time they purchased an insurance product for this risk.

Was a traditional indemnity solution considered and if so, why was one not chosen?

Due to the rise in frequency and severity of hurricanes in the region, the appetite for indemnity credit insurance was plummeting and no capacity was available in the Caribbeans. Parametric insurance can also extend the cover to the loss of relevant parties' income too.

What type of coverage were you motivated to provide?

The motivation was to provide cover against delinquency of loans resulting from hurricanes causing business interruption and physical damages to assets, impacting the capacity of loanees to meet their loan obligations. The intention was also to cover potential loss of future interests' income as a result of the hurricane impact.

What is the aim of the policy?

The aim was to embed within the loans a holiday period during which no interest and principal repayment would be required after the occurrence of CAT 3 and above hurricane impacting farmers. This loan feature would be funded via an insurance product bought by the lender.

What was the role and perception of basis risk?

This cover offers the lenders a discretionary option to lift the loanees obligations to pay interest and repay principal during a defined period after the occurrence of a hurricane of category 3 or higher with impacts across the island. The financial loss covered by the insurance policy is the cost of the loan holiday periods offered by the credit unions. Hence from the perspective of the policyholder - the credit unions, the product by construct had very reduced basis risk.

The solution was structured as an insurance product, with well-defined insurable interest and no betterment with the proof of loss.

Description of the Coverage

How was the risk profile determined and evaluated?

Skyline's proprietary FatTrack™ index, a methodology developed by Skyline to blend existing settlement methodologies, provides a unique product triggering solution that is complemented by its execution as a credit embedded parametric insurance affinity scheme. Using financial institutions as a vector of resilience has proven a success and should be replicated.

Skyline has compiled 174 years empirical and 10,000 years stochastic catalogues of FatTrack™ across all basins worldwide, with the tropical cyclone intensity attributes (e.g. maximum wind speed, minimum pressure, Saffir Simpson scale, radius of max windspeed, wind radii). These catalogues were used by Skyline to assess the risk profile of the credit unions in Jamaica in line with their portfolio of loans.

Multiple options were provided with various attachment probability, exhaustion probability, expected loss and non-binding indicative rate-on-line. We went through a thorough validation of the modelling and pricing with Munich Re against their in-house wind model. The aim of the cover was to fund the loan relief offered by the lender, so the triggers were selected to align with the objectives set by the client to maximise their satisfaction.

Limited research has been done in this specific area of agricultural loans in the Caribbeans, but more general studies performed on mortgages in the US have shown a stronger link between loan delinquencies and major hurricanes, hence the CAT3+ trigger. [Zanin et al 2024]

Skyline and Munich Re wrote the policy wording including the settlement methodology.

Describe the trigger mechanism and how it was evaluated?

Skyline Partners' FatTrack™ is a proprietary tropical cyclone parametric trigger mechanism that provides an original approach to tropical cyclone parametric triggers, one which combines the geospatial sophistication of a dynamic wind hazard footprint with the transparency and independence of NOAA/NHC data. Hurricane Beryl in 2024 proved the potential for FatTrack™has and it has also been validated by the recent definition of parametric insurance set by the New York insurance regulator using independent reporting agency and intensity-based triggers.

FatTrack™ makes parametric hurricane cover more attractive to beneficiaries – from insureds to retrocession buyers – by reducing significantly the basis risk attached to first generation cat-in-shape as well as more sophisticated cat-in-grid covers, to deliver greater matching between payouts and actual losses.

Coverage under a FatTrack™ parametric insurance policy is triggered based on the location of insured values at risk relative to the storm's hazard footprint using solely data independently reported by NOAA's National Hurricane Centre or other independent data sources (e.g. local reporting agencies). The key innovation is that FatTrack™ considers the reported hurricane force wind fields and not just the center of circulation of the tropical cyclone.

For a simple and visual settlement, FatTrack™ and insured values at risk are all represented by the same hexagonal tiling system. The geospatial overlay of the FatTrack™ with the insured values at risk triggers claims payment. The amount paid varies according to the number of insured tiles hit by FatTrack™ and a predefined loss scale based on maximum windspeed or Saffir Simpson Scale category.

In this way, FatTrack™ accounts for the actual varying intensity of the tropical cyclone and the geospatial extent of its impact. It therefore provides a closer proxy to actual experience of the event at each location but also the non-physical damage related losses for wider zones, rather than arbitrary fixed geometric structures or single-reading anemometer triggers at location. In other words, by responding to the dynamic nature of cyclone events, FatTrack™ better reflects conditions on the ground and all the various drivers of losses

Payout

Illustration of FatTrack™ payout calculations

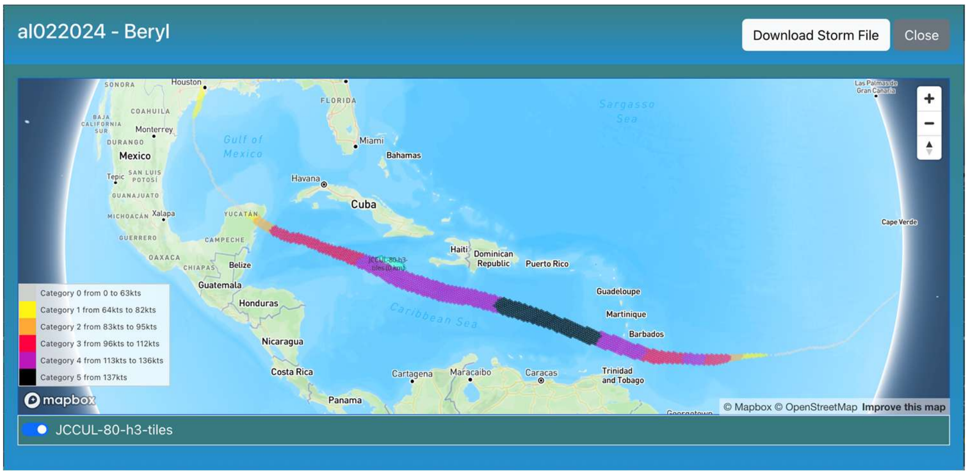

Figure 1: Snapshot from Skyline's INSDEX™ platform

Illustration exposure: USD$ 100 split uniformly across 80 tiles mapping Jamaica (USD$ 1.25 each)
Illustration payout scale: 100% payout if tile hit by CAT 3, 4 or 5 and 0% otherwise.
Illustration payout for Beryl: 36 tiles hit at CAT 4:USD$ 45 = 36 * $1.25 * 100%

Year	Event Order	Intersection Datetime	Storm Id	Storm Name	Location	Buffer	SSHS	H3 Id Count	Uncapped Loss	Eligible Loss Amount	Policy Payout
2024	1	2024-07-03T18:33:50	al022024	BERYL	JCCUL	0	4	36	$45.00	$45.00	$45.00

Figure 2: Snapshot from Skyline's INSDEX™ platform

Were there any back-up triggers or alternative mechanisms included to manage basis risk/ provide client with flexibility)?

No this was the sole trigger of the policy. Fallback methodology included a multilayered approach based on non-availability of data by the settlement calculation date, in line with data quality criteria using filling methodology and alternative data sources. If all of these were still failing, the ultimate selection of backup trigger would remain at the discretion of the calculation agent using in-situ measurements, satellite observations or reanalysis models.

What is the payout structure for the policy?

Jamaica was represented by 80 hexagonal tiles with total limit allocated to each tile in line with the portfolio of values at risk, in this instance the loan values. For each tile hit by major hurricanes of category 3 or higher, 100% of the tile value is paid out. The total payout is the sum of the payout for each tile hit by the FatTrack™.

What is the disbursement mechanism for funds to be made available to the client?

At occurrence of the event, Skyline notifies all parties with a preliminary FatTrack™ published automatically in Skyline's platform. Using this, the client sends the first notice of event to the insurer to kick off the claim procedure. Data is monitored continuously by Skyline platform until the settlement calculation date as at which the calculation agent Skyline prepares the settlement report using most recent data available. The insurer Munich Re pays a few business days after reception of the settlement report.

How quickly is the policy expected to pay out?

The policy is expected to pay out within 14 calendar days of the occurrence of the event.

Has/did the policy pay out over its duration and if so, what was the client's experience?

Yes, the policy paid out 45% of limit for Beryl in Jamaica in 2024 as quickly as expected.