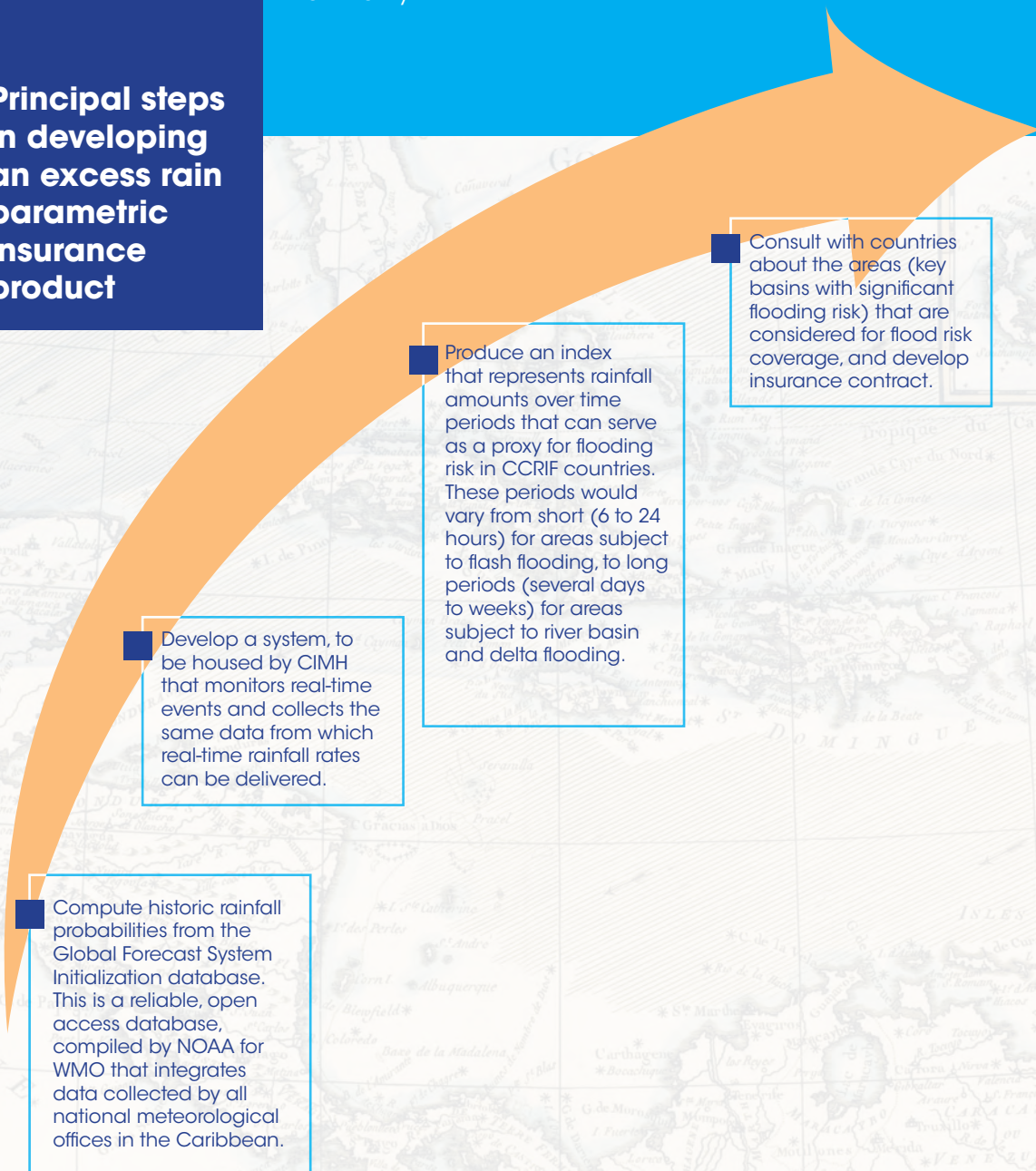


Covering Catastrophic Flooding Risk

Several CCRIF participating countries have expressed a strong interest in being able to contract for catastrophic flood coverage. In response, the CCRIF engaged the Caribbean Institute for Meteorology and Hydrology (CIMH) to conduct a study of the adequacy of existing rainfall and flooding data in the region for the purpose of supporting flood insurance. The study analyzed the quality and extent of existing data, and attempted to link relevant data sets to selected historic flood events. The main conclusion of the study was that the database is presently insufficient to develop hydrologic basin flood models needed for producing flooding probabilities, and that an alternative approach, likely to be based on excess rainfall, holds the best promise for a workable flood risk insurance in the short term.

CCRIF has contracted with CIMH and KAC to develop and test a parametric excess rainfall insurance product. The excess rainfall model will use the same platform as developed for the second generation Hurricane and Earthquake Hazard and Loss Estimation Model. A proof of concept has been completed, and comprehensive testing of the concept will be undertaken over the coming months, alongside outreach activities designed to ensure client feedback and reinsurer familiarity.

Principal steps in developing an excess rain parametric insurance product



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Hurricane and Earthquake Emergency Funding for Caribbean Governments

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About Caribbean Catastrophe Risk Insurance Facility

The CCRIF is the first multi-country risk pool in the world, and is also the first insurance instrument to successfully develop a parametric policy backed by both traditional and capital markets. It is a regional insurance fund for Caribbean governments, designed to limit the financial impact of catastrophic hurricanes and earthquakes by quickly providing financial liquidity when a policy is triggered.

Sixteen governments are members of the fund: Anguilla, Antigua & Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago and the Turks and Caicos Islands. Last year the CCRIF paid out approximately US\$6.3M to Turks and Caicos in the aftermath of Hurricane Ike.

CCRIF also supports disaster management and risk reduction in the Region, by making available real-time information on the likely impact of tropical storms and active hurricanes to national disaster offices, CDERA and CIMH.

CaribRM, the risk management division of the Caribbean's CGM Gallagher Group, is the CCRIF's Facility Supervisor.

Promoting effective country risk management

The development of CCRIF has come at a critical time for developing countries, faced with growing exposure to hydro-meteorological risks as climate change signals become stronger. Risk management and risk transfer, through innovative pooling arrangements such as CCRIF, will form an important part of the UNFCCC Copenhagen Conference discussions and resulting treaty. Ex-ante funding for the increasing costs of disaster relief and recovery in the developing world through catastrophe insurance mechanisms, is likely to form a significant part of the adaptation framework in the Copenhagen Agreement. The Caribbean nations, particularly exposed to natural hazards and particularly vulnerable due to their small and un-diversified economies, have led the world in implementing the CCRIF, using cost-effective risk transfer as part of their holistic risk management

programmes. CCRIF has become established as a sound financial institution, capable of providing rapid payouts to governments when policies are triggered, even for multi-island impact events causing hundreds of millions of dollars in damage. CCRIF is also building partnerships with key regional and global agencies, to promote disaster mitigation and support capacity building in risk management at the country level. In particular, CCRIF will be sponsoring workshops aimed at promoting and implementing the role of Country Risk Officer within its participating countries. This development is highlighted in recent reports from the OECD and World Economic Forum and is one critical to effective implementation of risk mitigation, management and adaptation within the context of the forthcoming Copenhagen Agreement.

CCRIF to introduce real-time loss model

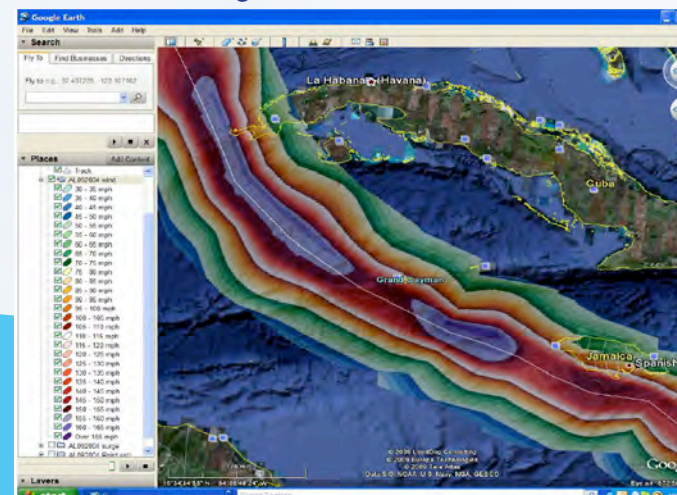
CCRIF announces the introduction of its second generation loss model that will be used to underwrite hurricane and earthquake risk, which will enable CCRIF to offer new coverage types. Depending on the results of testing and validation over the coming months, a new rainfall product should be available either in late 2009 or at the start of 2010.

With this model, the CCRIF will be better able to meet the catastrophe insurance needs of its Caribbean government clients, to offer additional products beyond hurricane and earthquake coverage, and to expand beyond the present number of clients.

The new model reduces the 'basis risk', inherent in the loss indexing approach used in the first generation model. Since the second generation model is built on techniques published in the scientific literature, it promotes a better understanding of the loss modelling process. And most importantly, it supports CCRIF's quest to provide a more open environment to assist Caribbean institutions, such as the University of the West Indies, in developing a regional hazard and risk assessment and mapping capability in support of improved natural hazard risk management in the region.

The second generation loss model was developed by Kinetic Analysis Corporation (KAC), a firm that was part of the consortium contracted by the World Bank to develop the financial and operational strategy for the CCRIF. KAC has extensive experience in natural hazard and risk assessment in the Caribbean; experience gained from being the lead consultant on the Caribbean Disaster Mitigation Project (CDMP) in the late 90's. Their approach, which uses modules based on public-domain data and peer-reviewed science, meets the transparency goals of the CCRIF.

CCRIF is committed to working closely with both client countries and supporting reinsurers, to ensure that the transition to the second generation modelling framework is as smooth as possible. CCRIF firmly believes that, once the transition is completed, the second generation modelling framework will provide a platform for the continued expansion of CCRIF's offerings to its client countries and to new client countries, and will also act as a focus for development of regional capacity in hazard and loss modelling.



Key Strengths of the Second Generation Modelling

- Built on strong, validated hazard modelling base at a 1 km grid cell resolution.
- The same techniques/codes are used for historical hazard/loss modelling and real-time event modelling/payout calculation.
- It is implemented using open modelling techniques from published scientific literature.
- It is highly scalable and can be applied at a wide range of modelling resolutions.
- It is implemented on a geographic base, enabling map outputs.

Improvements in Hazard and Loss Modelling

FIRST GENERATION	SECOND GENERATION
No terrain model used	Uses digital terrain model at 900m grid
Assets-at-risk (exposure) are compiled from limited country data, and assumptions where data are lacking	Exposure is constructed from satellite imagery, and published population and economic data. Quality is uniform across all territories
Exposure is concentrated in one or a few points per territory	Exposure is draped over terrain at 900m grid
Uses fixed wind attenuation factor over terrain	Wind attenuation is based on actual terrain friction, derived from satellite imagery
Storm surge not modelled	Storm surge hazard explicitly modelled
Seismic hazard is modelled with fixed amplification factors	Seismic hazard is modelled with amplification factors based on local geology
No hazard results are available	Results of hazard modelling are available
The Facility is provided with loss index curves for each territory, from which it can derive policy costing and event payouts	The Facility is provided with a stand-alone loss model that allows it to model any historic or real-time event, to cost policies, and to calculate payout based on the event as modelled.

Hazard and Loss Modelling Generic Framework

