RMS Philippines Typhoon and Inland Flood Model
Captures Risk From Typhoon Wind and Flooding, Coastal Storm Surge, and Seasonal Precipitation-Driven Flooding

Overview
Situated on the Pacific Ring of Fire and in the western North Pacific Typhoon Basin, the Philippines is one of the most disaster-prone countries in the world. Approximately 20 tropical cyclones enter the Philippine Area of Responsibility each year, with around eight making landfall. The transition of the Philippine economy from agriculture to services and manufacturing has increased the value of exposure at risk to typhoons and flooding.

The RMS® Philippines Typhoon and Inland Flood Model enables users to model the typhoon-related risks of wind, typhoon-driven flood, and storm surge, in addition to seasonal and monsoon flood events. The model expands the RMS suite of climate modeling solutions to the Philippines.

Complete Wind and Flood Risk Solution
Tropical cyclones bring the associated perils of strong wind, heavy precipitation, and storm surge leading to flooding. These three typhoon-related perils are captured by a set of thousands of stochastic tropical cyclone tracks representing the full spectrum of landfalling and bypassing storms.

In addition, the southwest Habagat monsoon from May to October, and northeast Amihan monsoon from November to April can bring heavy rainfall and flooding. Such monsoonal and seasonal flood events are also captured in the model, providing a complete view of flood risk in the Philippines.

Within the Philippines Typhoon and Inland Flood Model, the typhoon-induced flooding and flood events from monsoon and seasonal rainfall are captured by precipitation models, and this allows for spatial correlations in flooding. The flood model also accounts for local flood defenses and urban drainage systems.

The Philippines comprises thousands of islands and possesses the fifth longest coastline of any country in the world. Coastal flood risk is assessed using a fully hydrodynamic storm surge model, driven by the wind field of each stochastic typhoon event. The storm surge model covers the main areas at risk in the Philippines, including western Luzon and the Visayas islands, as well as the area surrounding Laguna de Bay.
High-Resolution Hazard Modeling

The wind and flood hazards in the Philippines Typhoon and Inland Flood Model are modeled on the proprietary RMS variable resolution grid (VRG) to ensure the highest hazard resolution where the greatest risk and highest exposures occur. This is particularly important for the flood peril, as flood depths can vary considerably even within very short distances. Modeling risk at high resolution allows for improved risk selection and pricing, assisting users in identifying the most profitable locations for writing new business and determining which areas are driving losses.

Risk Differentiation Using Comprehensive Vulnerability Module

Building characteristics, including construction type and building height, can have a significant impact on the loss experienced from a typhoon or flood event. The Philippines Typhoon and Inland Flood Model contains almost 1,000 vulnerability functions and five vulnerability regions to assess the losses from wind and flood perils for different building types. To increase the accuracy of loss results, the model allows users to define secondary modifiers, such as basement information (highly influential on flood losses) and roof characteristics (important for wind loss estimation).

Where primary building information is not available, the model uses a building inventory, developed using satellite data combined with detailed national building census data, to approximate the typical building characteristics for that location. The effects of post-event loss amplification (PLA) are included to reflect the impact of more extreme loss-causing events.

Accurate Loss Modeling for Specialty Risks

Supplementary vulnerability models are available to aid the assessment of several types of specialty risk in the Philippines. The Industrial Facilities Model (IFM) includes additional vulnerability curves to allow users to specifically define the types of industrial exposure within their portfolios, leading to more accurate modeled loss results. The Builders Risk Model captures the unique vulnerabilities and value ramp-up characteristics of buildings under construction.

The Philippines also has a significant shipping industry and many large port facilities. The Marine Cargo and Specie Model can be used to assess the wind and surge risk for hundreds of product and storage combinations.

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