RMS MODELS


RMS

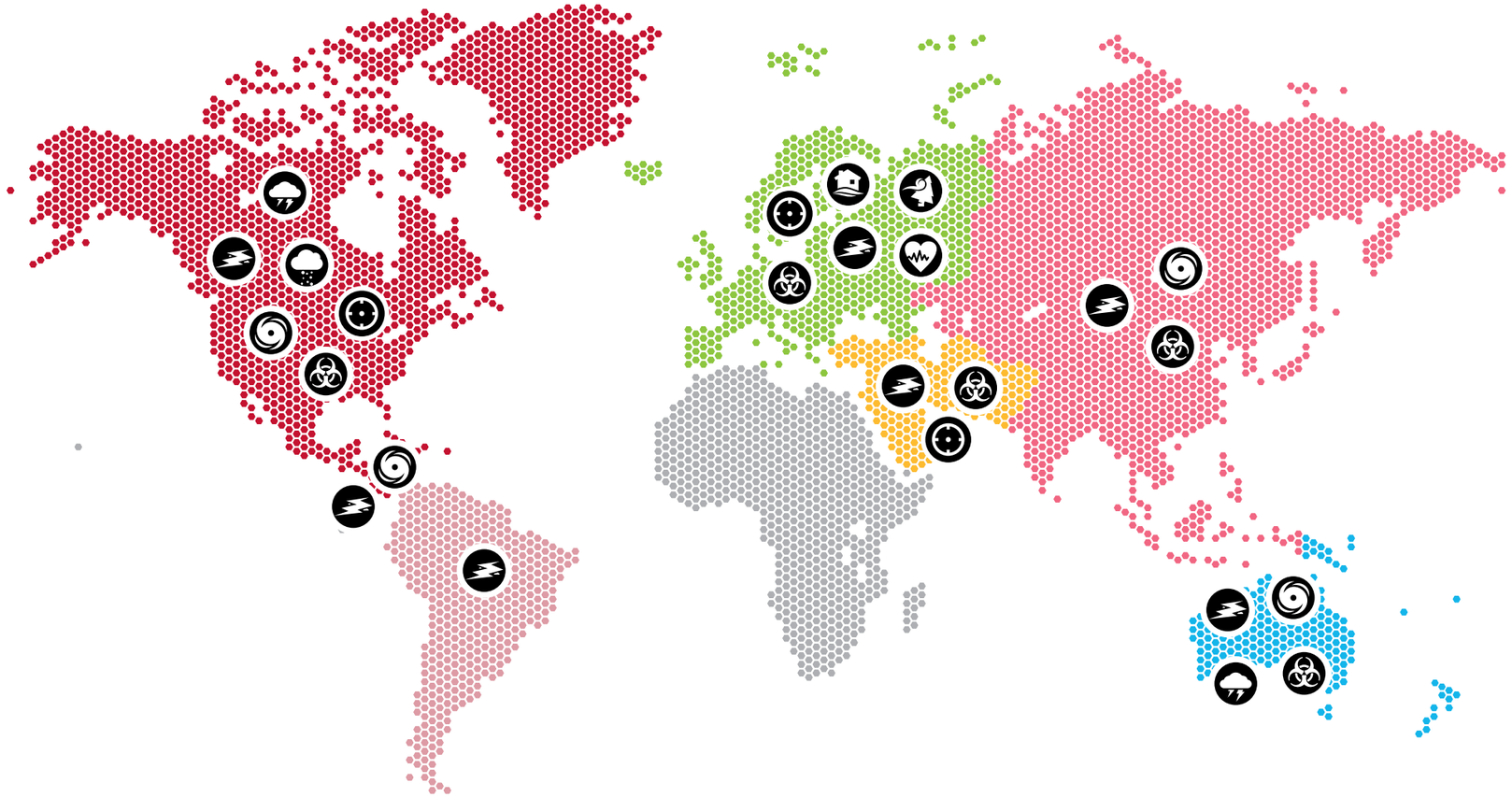
RISK**MANAGEMENT**SOLUTIONS

The Global Risk Landscape

RMS models quantify the impacts of natural and human-made catastrophes for the global insurance and reinsurance industry.

MANAGE YOUR WORLD OF RISK

RMS catastrophe models incorporate the latest science, over 20 years of dedicated catastrophe risk research and development, and partnerships with local institutions and leading academic experts. RMS models, metrics, and analytics are trusted as reliable benchmarks for strategic risk pricing, management, and transfer decisions, enabling unparalleled risk intelligence that helps insurers, reinsurers, and other financial institutions build resilience into their risk management framework.



- North America
- South America
- Europe
- Asia
- Australia and Oceania
- Middle East

- Earthquake
- Tropical Cyclone
- Windstorm
- Severe Convective Storm
- Winter Storm
- Flood
- Terrorism
- Pandemic
- Longevity

MANAGING WHAT MATTERS

What does it take to remain solvent when multiple events strike at once?

How do you manage growth without volatility?

How do you prepare for events you can't predict?

RMS models integrate and synthesize the relevant science, data, engineering knowledge, and behavior of claimants and insurers to understand the potential impacts of events before they occur. The resulting analytics are harnessed by insurers, reinsurers, property owners, and policymakers to make informed risk management and mitigation decisions, from pricing to capital planning to regulatory compliance.

REALITY, REPRESENTED

YOUR MOST INFORMED VIEW OF RISK

HIGH-RESOLUTION

In dense urban areas, small distances can have big impacts. RMS models incorporate the highest-resolution data available in key areas to realistically model hazard, damage, and loss.

Specialized vulnerability models allow the detailed modeling of complex industrial facilities, and buildings under construction from start to completion, to capture the unique characteristics of these risks.

BILLIONS OF DOLLARS, TERABYTES OF DATA

Model results are validated against tens of billions of dollars in worldwide claims data to ensure loss estimates are verifiable and derived from accurate assessments of building damage and loss.

RMS supercomputers run millions of simulations every day, and analyze terabytes of data to deliver a comprehensive view of risk.

INSIGHT INTO UNCERTAINTY

RMS models, delivered in RMS(one)™, are built with the agility to access and adapt to ongoing learning, the capacity to understand and test assumptions, and the flexibility to build your own view of the risk, leveraging your own experience and knowledge.

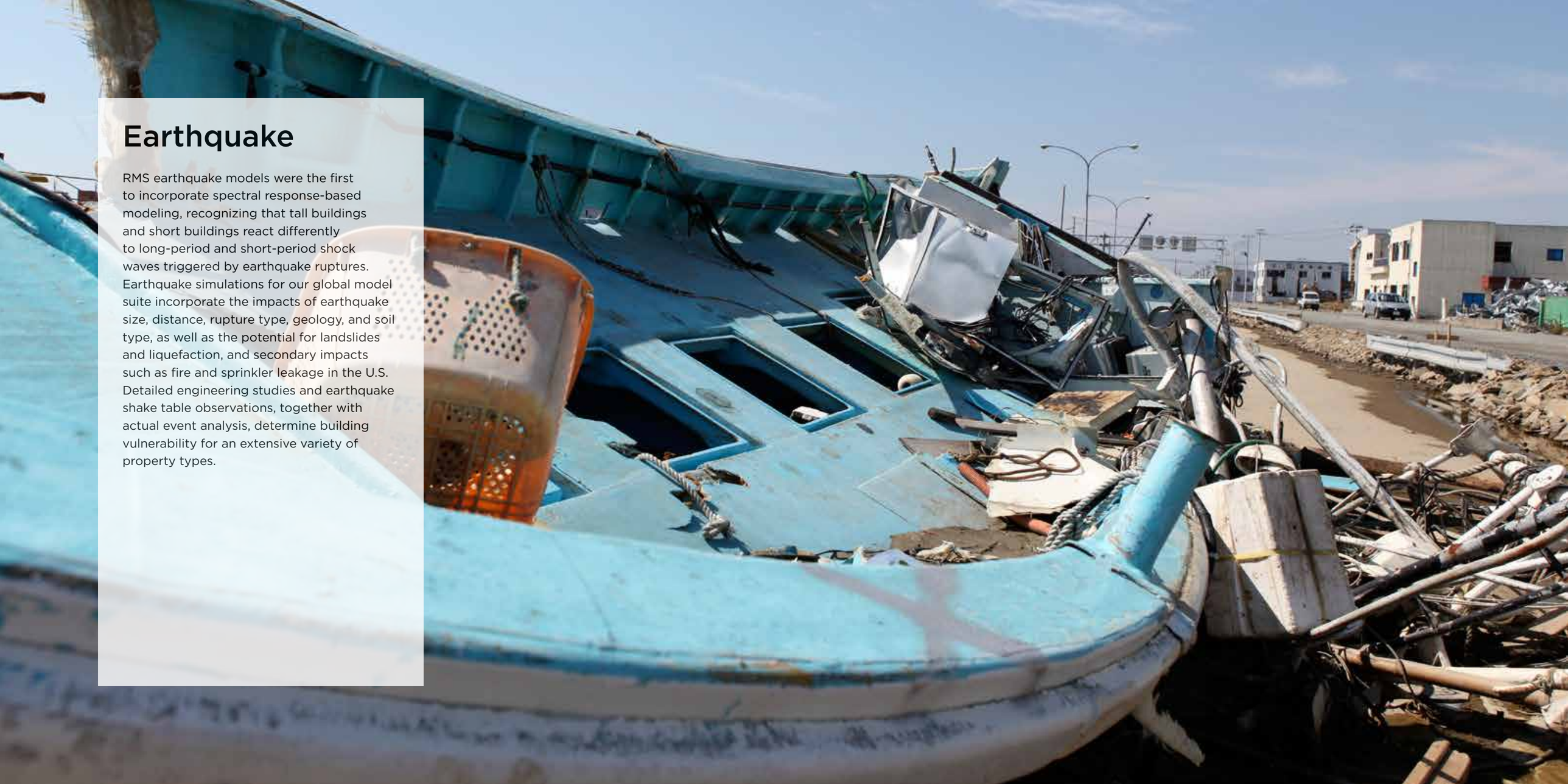
RISK MODELING WITHOUT COMPROMISE, CONSTRAINT, OR APPROXIMATION

IN HIGH DEFINITION

The RMS(one) High-Definition Simulation Engine™, powered by the RMS AoS™ (analytic operating system), is the key to improving accuracy in model results, and deepening your understanding of model uncertainty.

In the HD Simulation Engine, uncertainty and loss correlation between locations are more accurately applied, giving greater confidence in model results. Simulating events on a timeline enables the explicit modeling of clustering, seasonality, and time-dependent contract terms. And initiating simulations at the location level gives the purest calculations of loss through your portfolio, removing artifacts and approximations.

MODELING YOUR WORLD



Earthquake

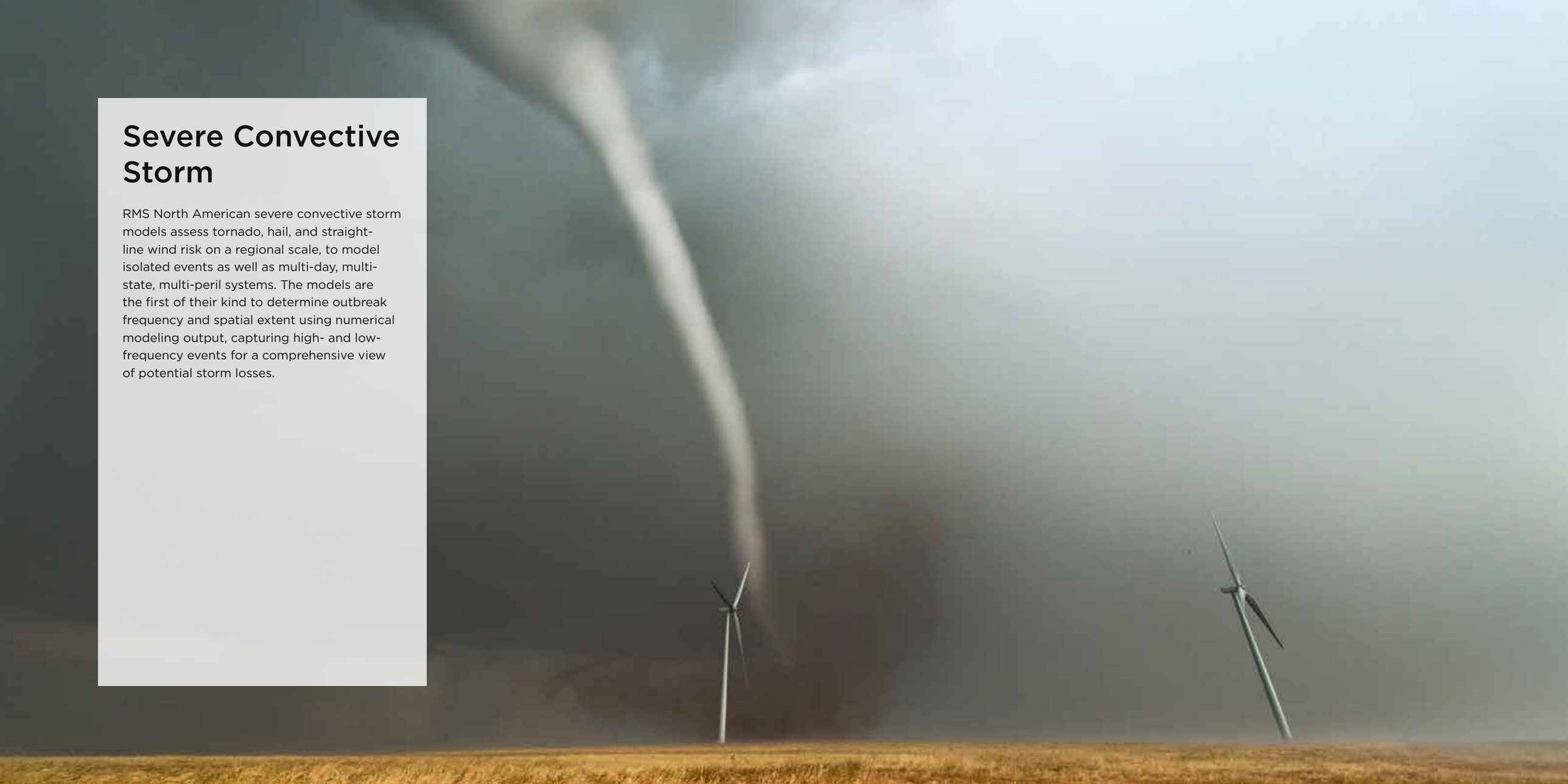
RMS earthquake models were the first to incorporate spectral response-based modeling, recognizing that tall buildings and short buildings react differently to long-period and short-period shock waves triggered by earthquake ruptures. Earthquake simulations for our global model suite incorporate the impacts of earthquake size, distance, rupture type, geology, and soil type, as well as the potential for landslides and liquefaction, and secondary impacts such as fire and sprinkler leakage in the U.S. Detailed engineering studies and earthquake shake table observations, together with actual event analysis, determine building vulnerability for an extensive variety of property types.

Tropical Cyclone

RMS models hurricanes, typhoons, and other tropical systems around the globe, through their full lifecycle. Models dynamically simulate the influence of sea surface temperature, latitude, and onshore topography on tropical cyclone formation, track, and landfall to capture events ranging from the typical to the unprecedented. With fully coupled storm surge models at resolutions reaching 10 meters, RMS tropical cyclone models are the only models detailed enough to underwrite storm surge risk. Billions of dollars of forensic claims data analysis feed vulnerability functions and loss validation for both wind and surge.

Severe Convective Storm

RMS North American severe convective storm models assess tornado, hail, and straight-line wind risk on a regional scale, to model isolated events as well as multi-day, multi-state, multi-peril systems. The models are the first of their kind to determine outbreak frequency and spatial extent using numerical modeling output, capturing high- and low-frequency events for a comprehensive view of potential storm losses.

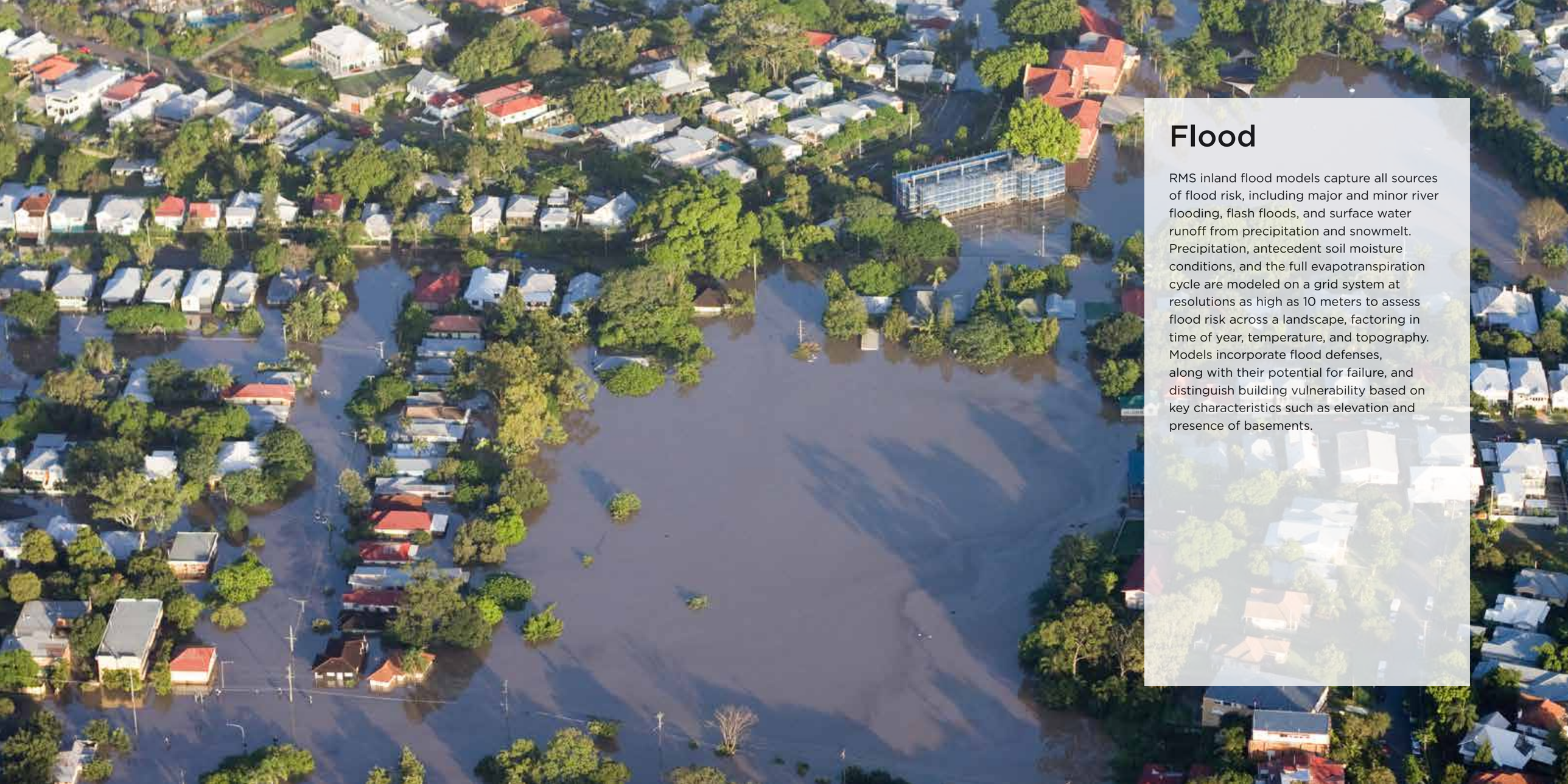


Windstorm

The RMS European windstorm model is grounded in the realistic simulation of these complex extratropical systems using “free-running” global climate modeling to capture windstorm behavior, including windstorm super-clusters. High-resolution downscaling gives accurate results that can be used for underwriting. The windstorm model incorporates more than 30,000 stochastic events for greater stability in loss results, particularly in low-activity regions and in the representation of tail-end risk and correlation across multiple countries. Alternative vulnerability analyses offer insight into model uncertainty.

Winter Storm

RMS North American winter storm models capture the spatial correlations of ice, freezing temperatures, and extratropical winds, and incorporate RMS research on building vulnerability under varying storm conditions. High-resolution, four-dimensional winter storm simulations capture the complex nature of atmospheric processes and describe in detail how storm systems evolve during the lifecycle of an event.

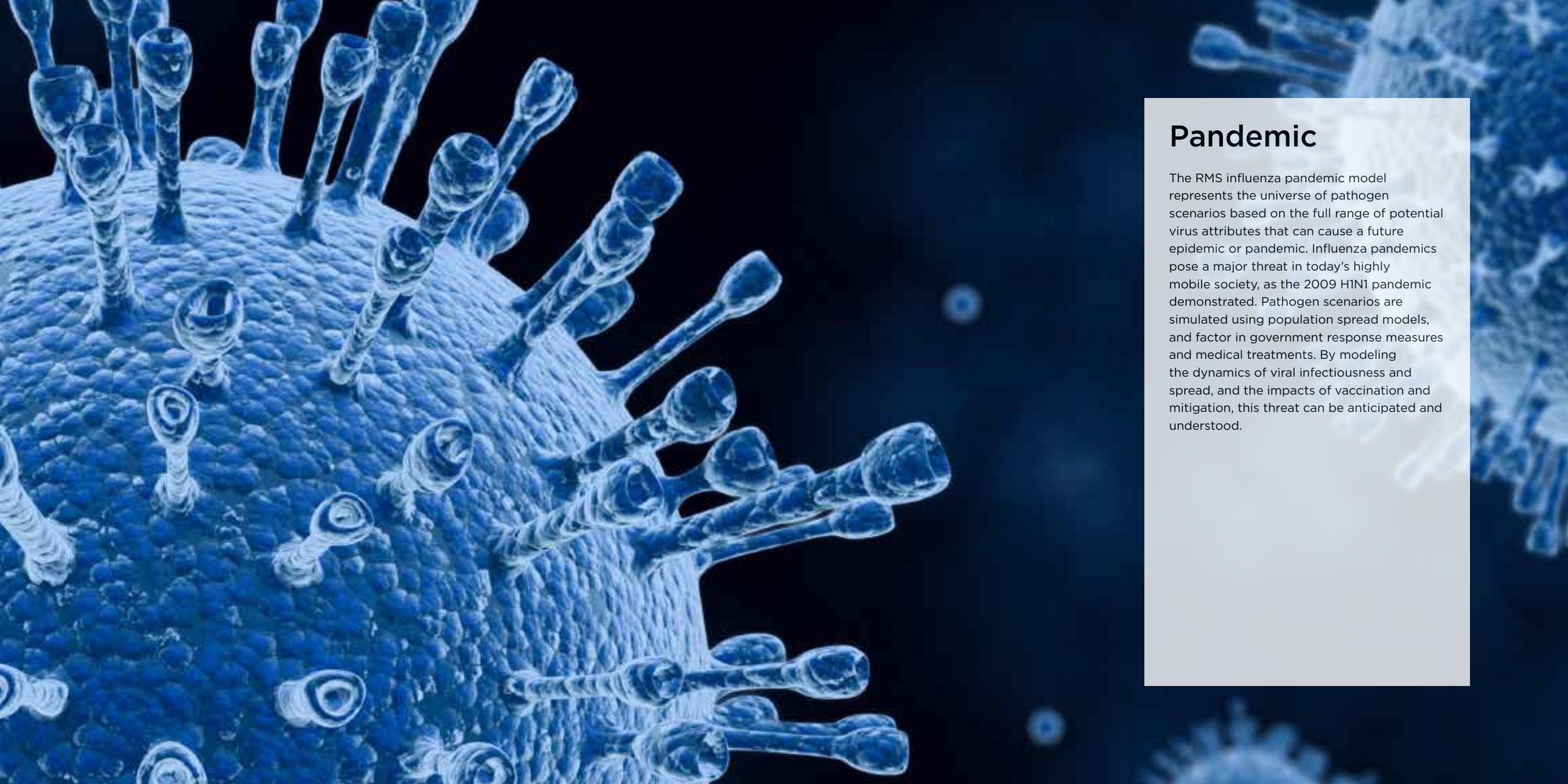


Flood

RMS inland flood models capture all sources of flood risk, including major and minor river flooding, flash floods, and surface water runoff from precipitation and snowmelt. Precipitation, antecedent soil moisture conditions, and the full evapotranspiration cycle are modeled on a grid system at resolutions as high as 10 meters to assess flood risk across a landscape, factoring in time of year, temperature, and topography. Models incorporate flood defenses, along with their potential for failure, and distinguish building vulnerability based on key characteristics such as elevation and presence of basements.

Terrorism

RMS terrorism models simulate the impacts of chemical, biological, radiological, and nuclear (CBRN) attacks for the dynamic and complex global terrorism risk landscape. Mathematical methods from game theory, together with operational research and social network analysis are utilized to quantify target prioritization, likely attack mode, and the potential for multiple terrorist strikes. Models incorporate the full range of counterterrorism measures that serve to control potential terrorist actions and mitigate consequent loss.



Pandemic

The RMS influenza pandemic model represents the universe of pathogen scenarios based on the full range of potential virus attributes that can cause a future epidemic or pandemic. Influenza pandemics pose a major threat in today's highly mobile society, as the 2009 H1N1 pandemic demonstrated. Pathogen scenarios are simulated using population spread models, and factor in government response measures and medical treatments. By modeling the dynamics of viral infectiousness and spread, and the impacts of vaccination and mitigation, this threat can be anticipated and understood.

Longevity

RMS longevity and mortality models provide a framework for integrating multidisciplinary science into mortality risk management, enabling the wealth of knowledge created by scientific study to be assimilated into life insurance business decisions. By combining actuarial statistics with mortality projections that provide realistic medical constraints on what could happen in the future, RMS models the underlying drivers of mortality based on lifestyle, medical intervention, environment, regenerative medicine, and age retardation, to understand life expectancy, and the toll that catastrophic events can take in terms of human lives lost.

RMS MODELS IN RMS(one)

Models remain at the core of RMS' strategy and future. The industry's ever-deeper understanding and usage of catastrophe models drives us to build greater resiliency into our risk management framework through increased modeling agility, insight into uncertainty, and innovative methodologies. RMS(one) integrates our models within a global framework, one that captures the interconnected nature of events by linking modeled and non-modeled risks across perils and regions, and swiftly translates lessons learned from one event to others where relevant.

Within RMS(one), we can incorporate new insights as they emerge, and adapt quickly to new views of risk, with less disruption. We can enable the consistent application of sensitivity and scenario tests across our global model suite so you can understand and test key model assumptions and uncertainties. Only through RMS(one) can we provide our best models, and our best view of the risk.

ABOUT RMS

RMS models and software help insurers, financial markets, corporations, and public agencies evaluate and manage catastrophe risks throughout the world.

We lead an industry that we helped to pioneer—catastrophe risk modeling—and are the innovators of the RMS(one)® platform, which is transforming the world's understanding and quantification of risk through open, real-time exposure and risk management.

More than 400 insurers, reinsurers, trading companies, and other financial institutions trust RMS models and SaaS solutions to better understand and manage the risks of natural and human-made catastrophes, including hurricanes, earthquakes, floods, terrorism, and pandemics.

We think about the unthinkable, enabling the management of even the most extreme events. Our scientific and objective measurement of risk facilitates the efficient flow of capital needed to insure, manage, and ultimately mitigate these risks to reduce the consequences of disasters, promoting resilient societies and a sustainable global economy.

Visit RMS.com to learn more.

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