

U.S. Winter Storm Model

Portfolio-level analysis for winter storm risks

The U.S. Winter Storm Model is a fully probabilistic risk model that allows clients to run portfolio-level analyses for residential, commercial and industrial risks related to winter storms in the U.S.

Winter Storm Risk in the U.S.

In the United States each year from November to April, winter storms can cover thousands of miles, causing snow accumulation, ice damage, frozen pipes and downed trees resulting in severe roof and content damage. Case in point, in February 2010, the Mid-Atlantic and New England regions of the United States experienced several winter storms, which cost the re/insurance industry an estimated \$2 billion in insured losses.

Key Features

COMPREHENSIVE STOCHASTIC EVENT SET

The U.S. Winter Storm Model uses a stochastic event set of more than 11,500 events. This event set includes an extensive catalog of winter storm historical events from different sources, such as the Solar and Meteorological Surface Observation Network and hourly stations, Historical Climatology Network (HCN) and COOP stations.

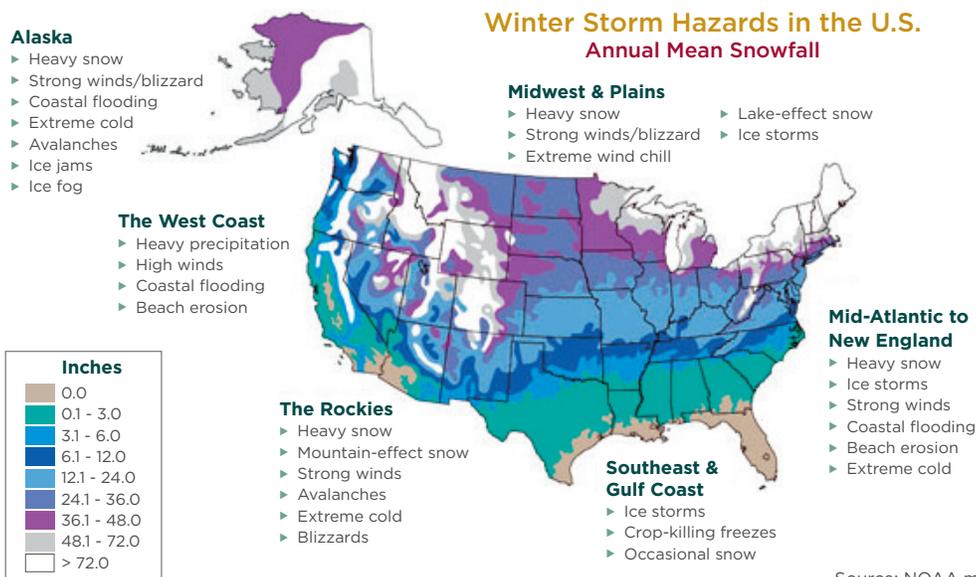
ROBUST VULNERABILITY AND HAZARD DEFINITION

The vulnerability functions for the different structural and occupancy types are based on extensive claims data collected from the re/insurance industry and observation data.

Three hazard parameters are incorporated in the model:

- ▶ Snow depth (major structural damage)
- ▶ Snow and ice thickness (light to minor damage)
- ▶ Wind speed (wind damage)

The U.S. Winter Storm Model is part of the suite of products by Catastrophe Risk Management from CoreLogic® integrated in the RQE® (Risk Management & Engineering) platform.



DAMAGE TYPES

Three damage types are represented in the U.S. Winter Storm Model:

Roof damage due to snow accumulation:

- ▶ No slide off (sheltered)
- ▶ Wind-blowing snow
- ▶ “Lean-tos”
- ▶ Shingled roofs
- ▶ Roof valleys

Frozen and ruptured pipes lead to potential damage in:

- ▶ Crawl spaces
- ▶ Outside walls
- ▶ Floors, rugs, furniture

ICE DAM / EAVE ICING

Ice formation on roofs and in gutters can prevent melting snow from draining. When temperatures drop, melted snow can re-freeze on eaves and create ice dams or icicles, which can block water and cause the water to seep into the home, resulting in damage.

MODEL VALIDATION

The Winter Storm Model has been validated using historical PCS data and insurance companies’ historical claims data. It has also been favorably reviewed by Wayne Tobiasson, who has more than 30 years of research experience with Cold Region Research and Engineering Lab (CRREL).

Model Specifications

IMPORT RESOLUTION

Includes detailed risk differentiation, enabling import and evaluation of risks geocoded to: latitude/longitude coordinate pairs, street address, ZIP Code, city, and county level. When input data is provided at aggregate levels, the model adds refinement to loss results by disaggregating data to finer resolutions points based on weighted distribution of values for the purpose of analysis and risk estimation.

HAZARD ANALYSIS RESOLUTION

The hazard is defined on a grid with a resolution that varies from .025 degree to 0.2 degree depending on a function of population density and hazard intensity.

GEOGRAPHIC COVERAGE

The model’s geographic coverage includes the continental United States (excluding Hawaii and Alaska).

LINES OF BUSINESS

Lines of business include residential, commercial, industrial, and automobile.

STRUCTURE TYPES AND OCCUPANCIES

The U.S. Winter Storm Model incorporates a variety of structure types and dozens of occupancy categories allowing for risk differentiation across hundreds of combinations.

COVERAGE TYPES

The model calculates damage to structures (building damage), contents, and time element (business interruption and additional living expenses). Separate, independent vulnerability functions are used for calculating losses for each coverage type. Time-element vulnerability is function of both, building and contents damage.

MODEL OUTPUT

Reporting of results supports multiple levels of refinement: company, division or branch and state, county, ZIP code and site level.

FINANCIAL MODELING

All major insurance policy structures and reinsurance treaty types are modeled.

FOR MORE INFORMATION, PLEASE CALL 866-774-3282
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