The Verisk Severe Thunderstorm Model for the United States

Severe thunderstorms are one of the most common and damaging natural catastrophes in the United States. More than half of annual reported industry insured losses, on average, have stemmed from severe thunderstorm events since 1985. While large outbreaks can produce insured losses exceeding USD 25 million, smaller events with lower losses can impact a company's portfolio on an aggregate basis or a more rural portfolio on an occurrence basis.

To capture all severe thunderstorms with loss-causing potential across the United States, statistical and physical modeling are integrated with the latest meteorological research and claims data in the Verisk Severe Thunderstorm Model for the United States.

Severe thunderstorm risk has evolved.
Observations of severe hail, winds, and tornadoes reflect biases that lead to over- or underreporting due to population density where an event occurs and access to reporting tools. In addition, recent studies have shown increases in the incidence of large hail (>2" diameter) in the Northeast and Midwest, as well as statistically significant increases in tornado activity from 1950 to 2018 in most states.

The novel detrending approach used in the Verisk model leverages radar and observation data to remove reporting bias in hazard data and address trends that may exist from climate change, providing an accurate view of the risk in the near-present climate.

A single storm can cause damage that varies by property across your portfolio.
Updates to building codes can impact the vulnerability of a structure. Roofs, for example, may be a different age than the rest of the structure and have varying levels of damageability depending on their shape, pitch, and material.

Our state-of-the-art component-based vulnerability framework accounts for impacts to both primary and secondary building characteristics and every type of roof damage for a location-level view of the risk.

You can get an accurate view of your risk to prepare for the next severe thunderstorm before it occurs.
Each component of our model has been extensively validated against billions of dollars of detailed claims data, damage surveys, engineering research, historical events, and industry experience.
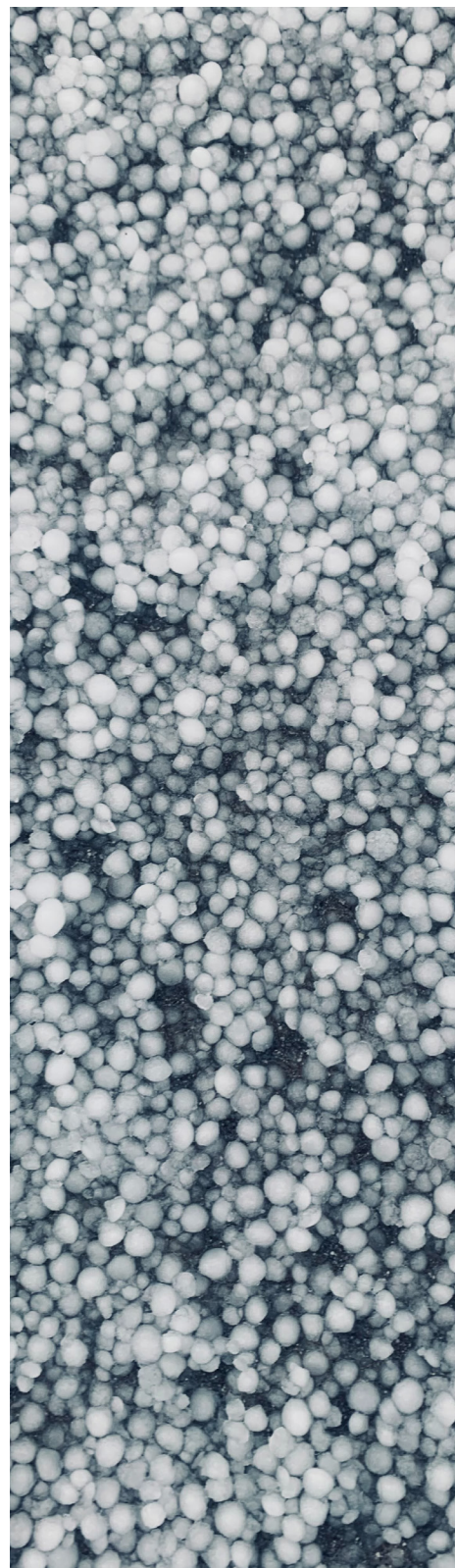
Model at a Glance

Modeled Perils: Straight-line wind, hail, and tornado

Model Domain: Contiguous United States

Stochastic Catalog
- Touchstone®: 10,000-, 50,000-, and 100,000-year all-events and cat-only catalogs
- Touchstone Re™: 10,000-year cat-only catalog

Construction and Occupancy Classes
- 140 construction classes and 112 occupancy classes
- 62 large industrial facilities
- Buildings with unknown risk characteristics
- Specialty risks, including infrastructure, greenhouses, wind turbines, and marine lines such as marine hull, inland transit, and pleasure boats

Industry Exposure Database
- 90-meter resolution
- Detailed representation of commercial and industrial building stock

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