

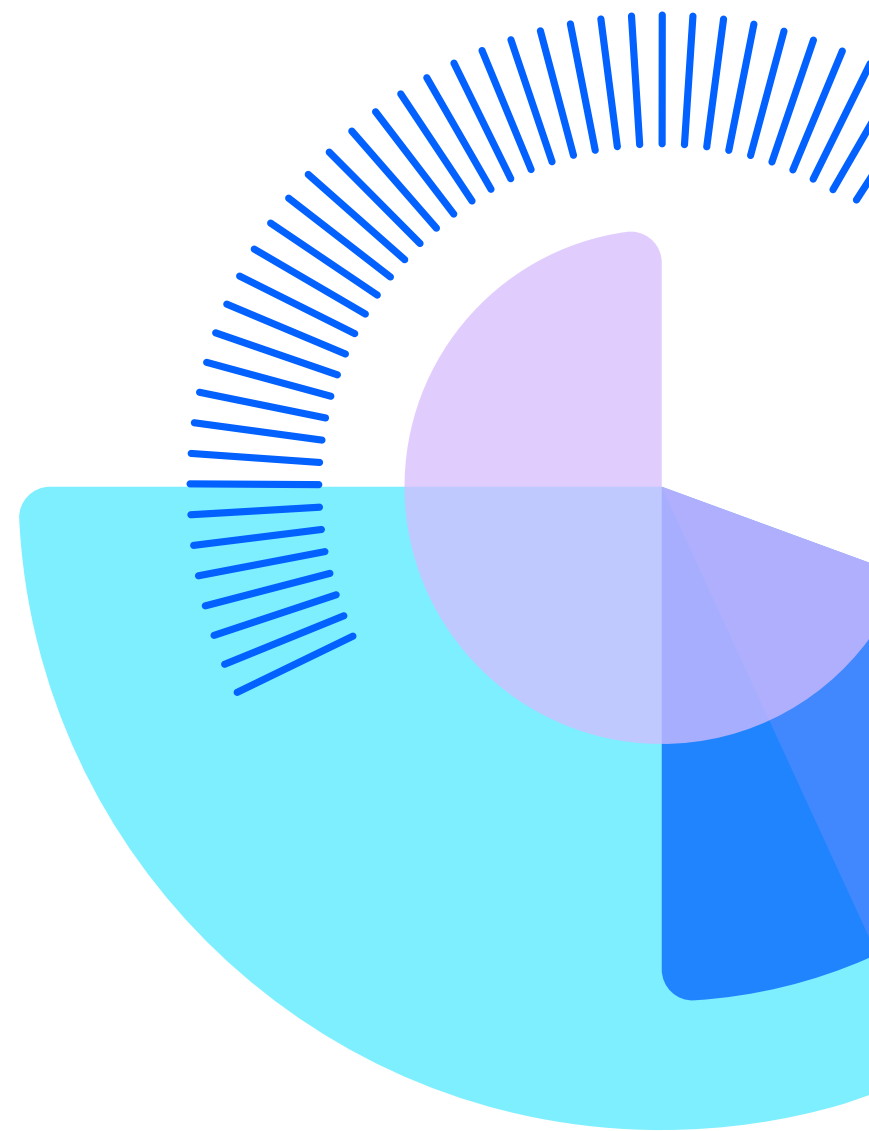


A Sharper View of U.S. Tropical Cyclone Risk: Model Highlights and What They Mean for Capital, Compliance, and Strategy

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Redefining U.S. hurricane risk modeling

Verisk Catastrophe and Risk Solutions first unveiled its hurricane modeling in 1987

 >90%

of industry 100-year tail value-at-risk is driven by U.S. hurricane

 65%

of expected loss on outstanding 144A cat bond principal comes from U.S. hurricane

63.3% of Bermuda's reporting Class 3B and 4 Insurers rely on Verisk cat modelling*

Hurricane cat risk is a part of major solvency requests

What drives model updates?



Methodology

New scientific techniques
and peer-reviewed research



Data

New event experience and
expanded exposure data



Market Needs

Regulatory, solvency, and
client requirements evolve

Formulation and calibration of the wind field methodology from Verisk scientists with leading expertise



More stochastic structural variation



Direct modeling of surface-level winds



Asymmetric variations



Realistic wind shear-induced asymmetry



Peer-reviewed publication

An Asymmetric Model of the Tropical Cyclone Surface Wind Field and Probabilistic Climatology of Structural Parameters

ERIC W. UHLHORN,^a SUZ TOLWINSKI-WARD,^a AND SYLVIE LORSOLO^a

^a Verisk Analytics, Inc., Boston, Massachusetts



Our model researchers are former NOAA hurricane hunters, bringing firsthand storm-reconnaissance experience directly into the science

Top shelf claims and exposure data

1950 - Present

Verisk – Claims and Industry Insured Losses

Industry insured loss estimates, location-level claims for residential, commercial risks



2004-2022

Company Claims and Exposure Data

Residential and commercial risks in excess of USD 25 Bn

Select events post 2004

1978 - Current

NFIP Exposures and Claims Data

Residential and commercial risks

Educating model users

Model Documentation

Detailed information on model data, methodologies and expertise applied

Presentations

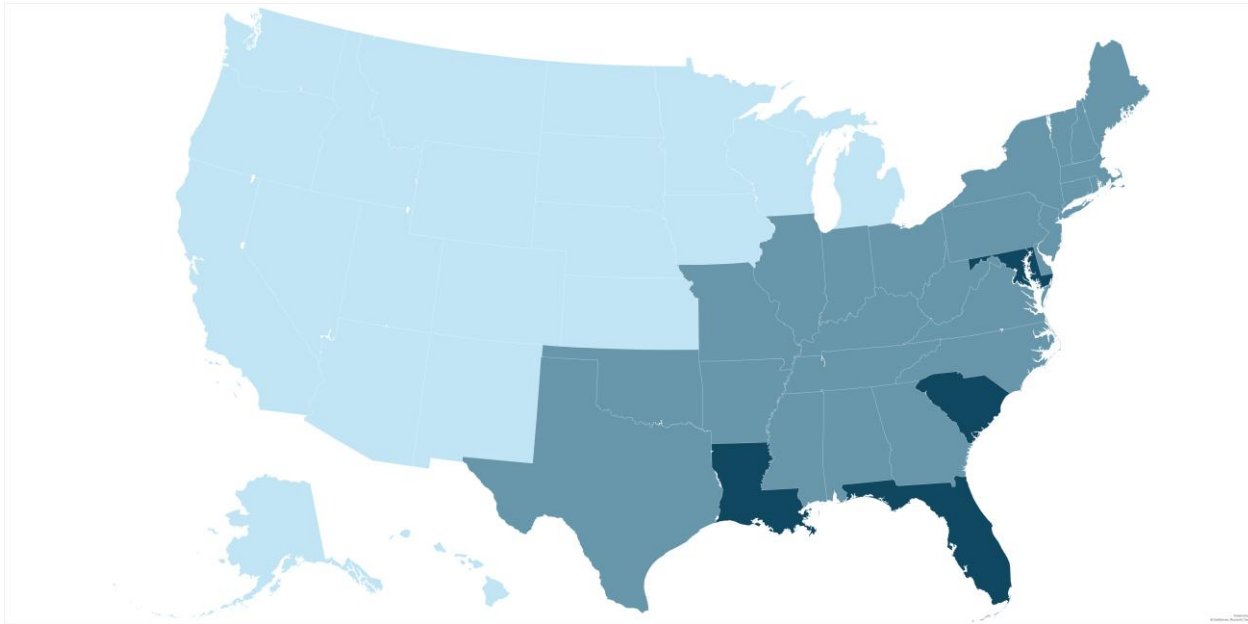
Online webinars, user guide content, modeling review content, industry events and Verisk hosted events

Extended Events Database

Understand changes in frequency and severity by region
Develop better understanding of climatological indices now explicitly captured in the model
Develop validation exhibits for key parameters



The Verisk Tropical Cyclone Model for the United States was released June 15, 2026 on the Verisk Synergy Studio platform



U.S. regulatory requirements

- Regulator-focused documentation supports filings in all domain states
- The updated model will be submitted to the Florida Commission for review in November



Nov. 1, 2026
Filing submitted



Summer 2027
Approval expected

- Maryland, Louisiana, and South Carolina each have their own review process for the updated model

Solvency

- Updated documentation is being provided for solvency needs worldwide

Key takeaways that provide a sharper view of your tropical cyclone risk

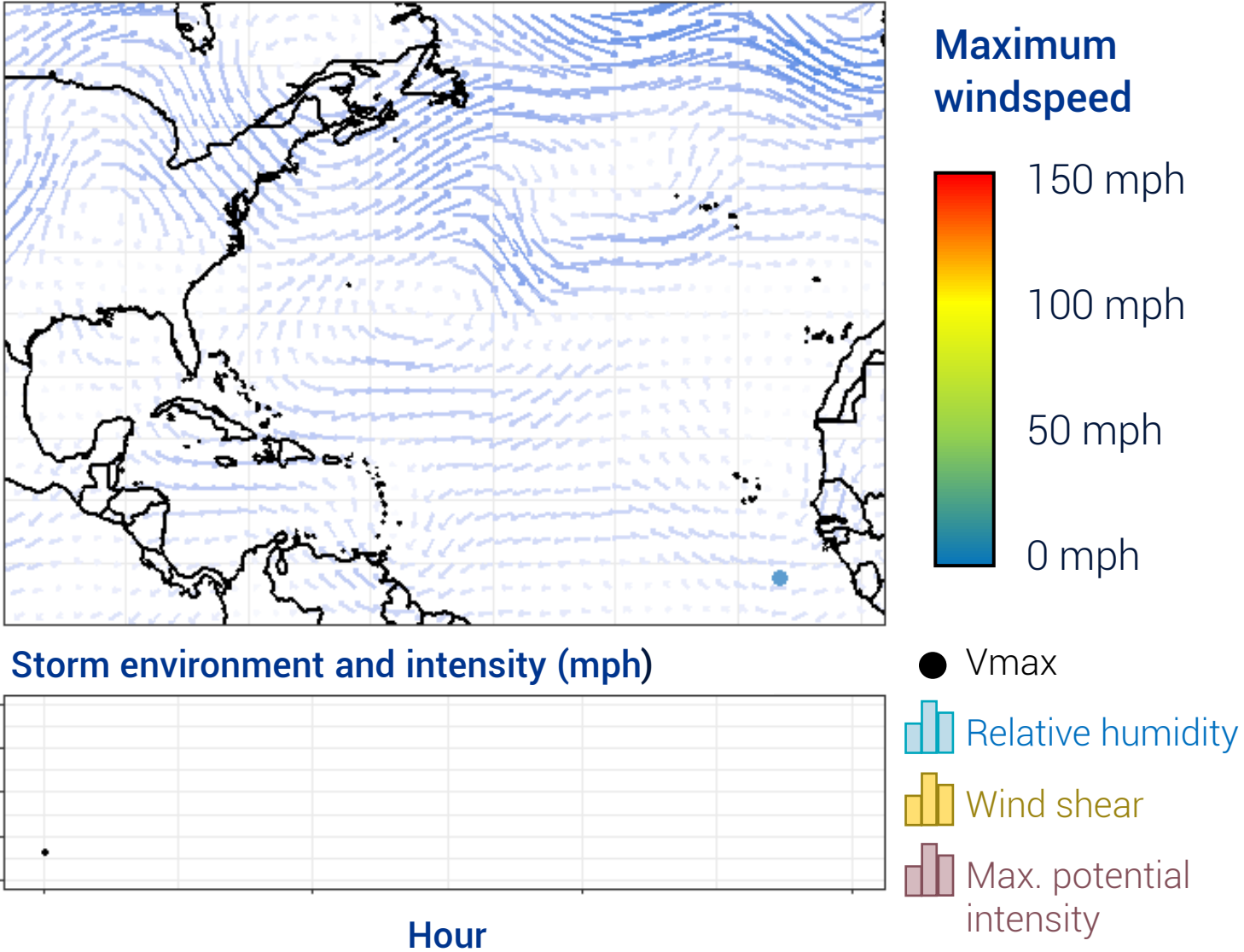
1. The updated model brings a holistic view of tropical cyclone risk for the U.S. in today's climate state
2. Advanced modeling techniques means more nuanced and realistic representation of tropical cyclone hazard
3. Vulnerability updates afford an opportunity to fine tune your modeled view of risk
4. A new demand surge framework brings consistency and rigor to this key component of losses



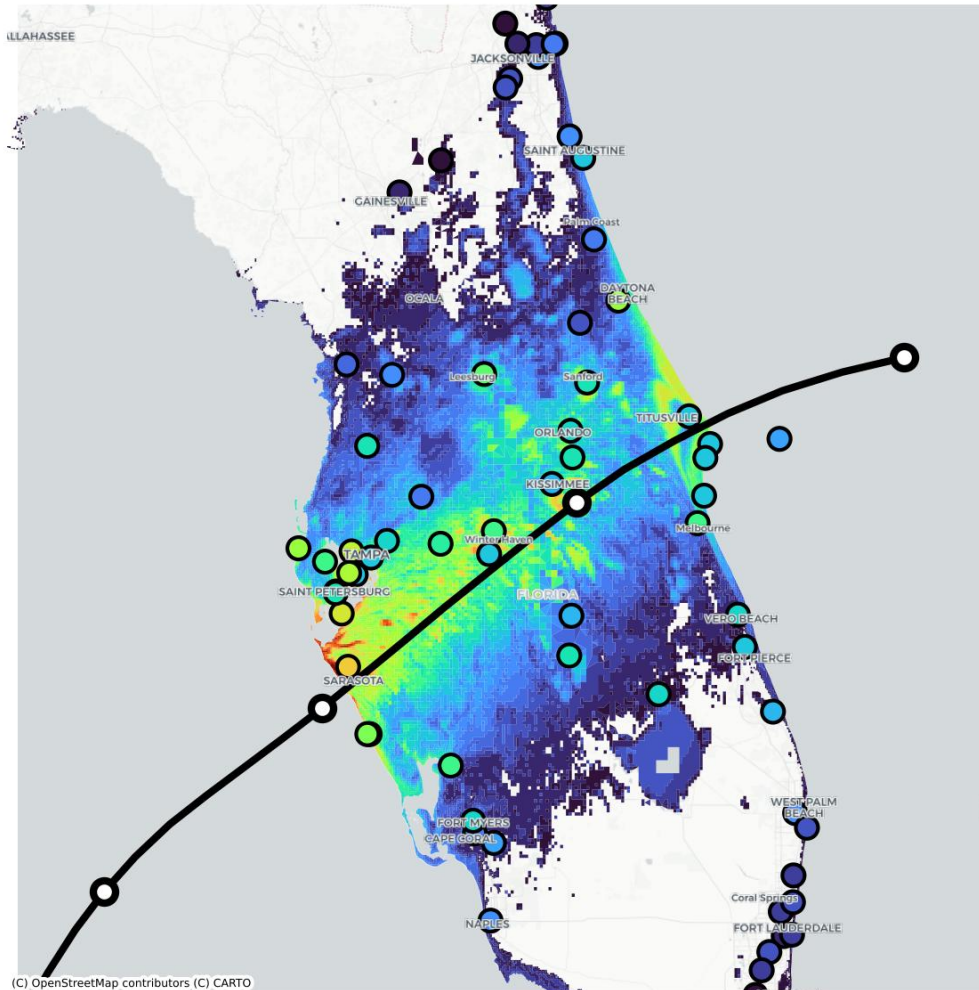
Key catalog changes for the U.S. tropical cyclone model



Fully reimagined track motion and intensity modules generate storms for their lifecycle



Hurricane Milton (2024) exhibited strong winds on the left side of the eye.



(C) OpenStreetMap contributors (C) CARTO

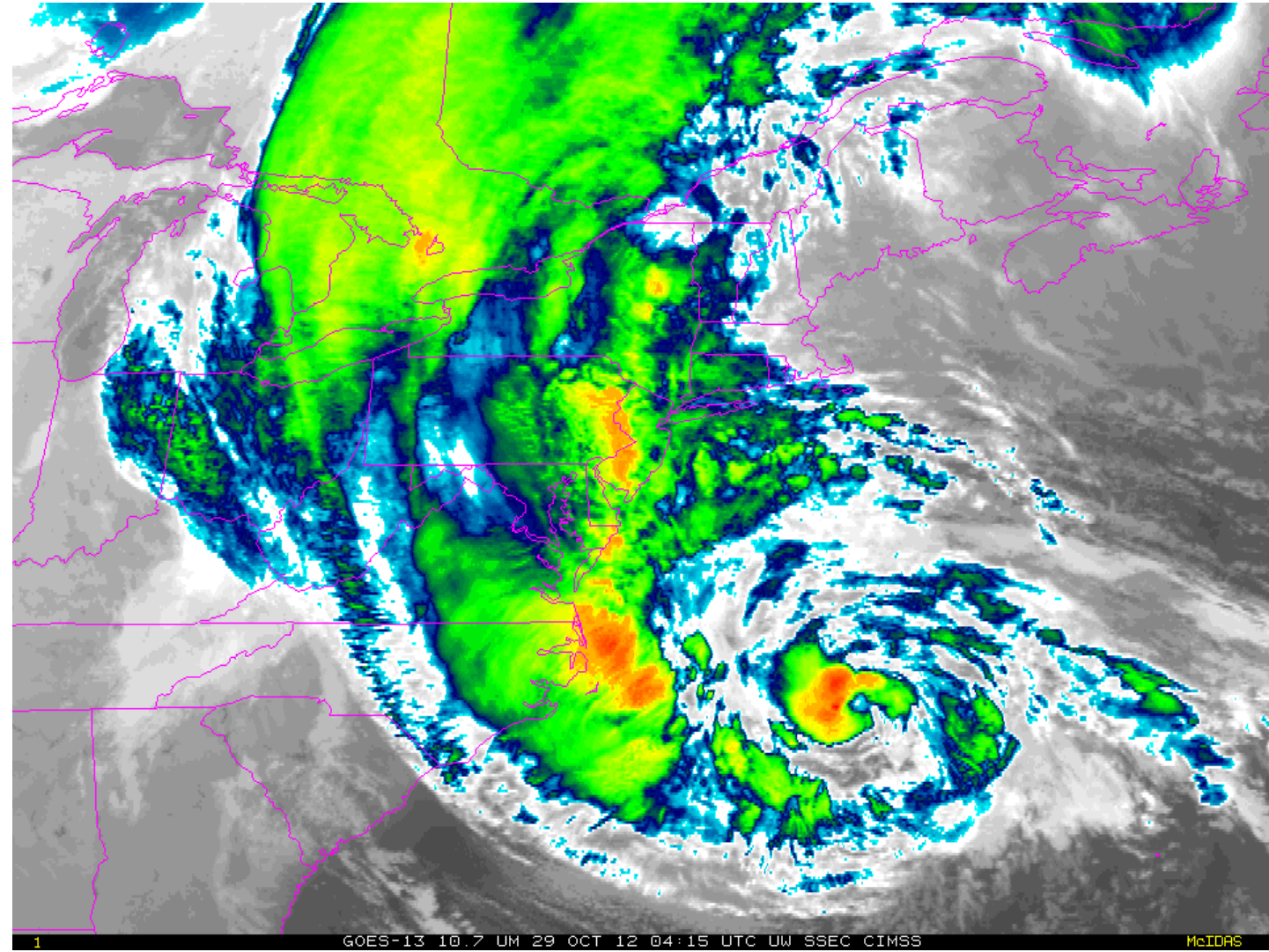
Colored dots indicate observations
Warmer colors indicate higher wind speeds

Not all tropical storms exhibit the same wind field characteristics

- Traditional modeling places highest winds on the right side of the eye
- This is true ~85% of the time... but not always
- Milton (2024) exhibited asymmetry with strongest winds to the north (left) of the track
- Our updated model allows us to explicitly model this type of behavior

Transitioning storms have a unique impact on risk.

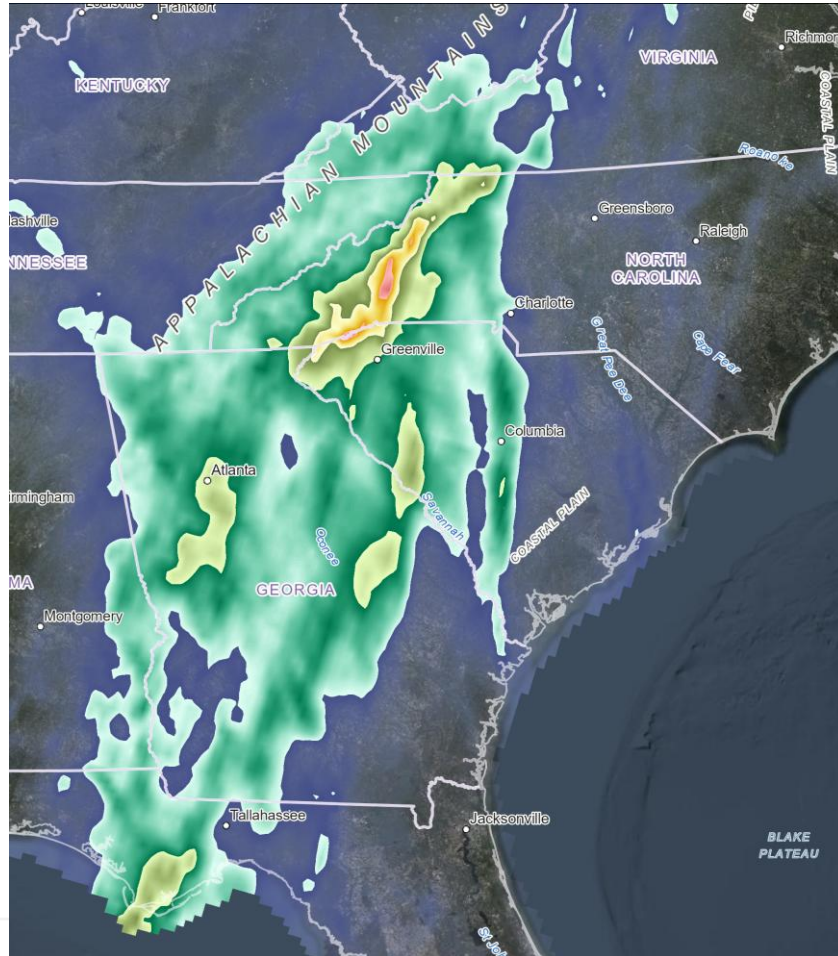
- As North Atlantic tropical cyclones move north, they transition to extratropical cyclones
- The storm will begin to draw energy from temperature contrast rather than moist ocean heat
- Wind fields generally become broader and more asymmetrical
- These storms can maintain or even increase intensity over land



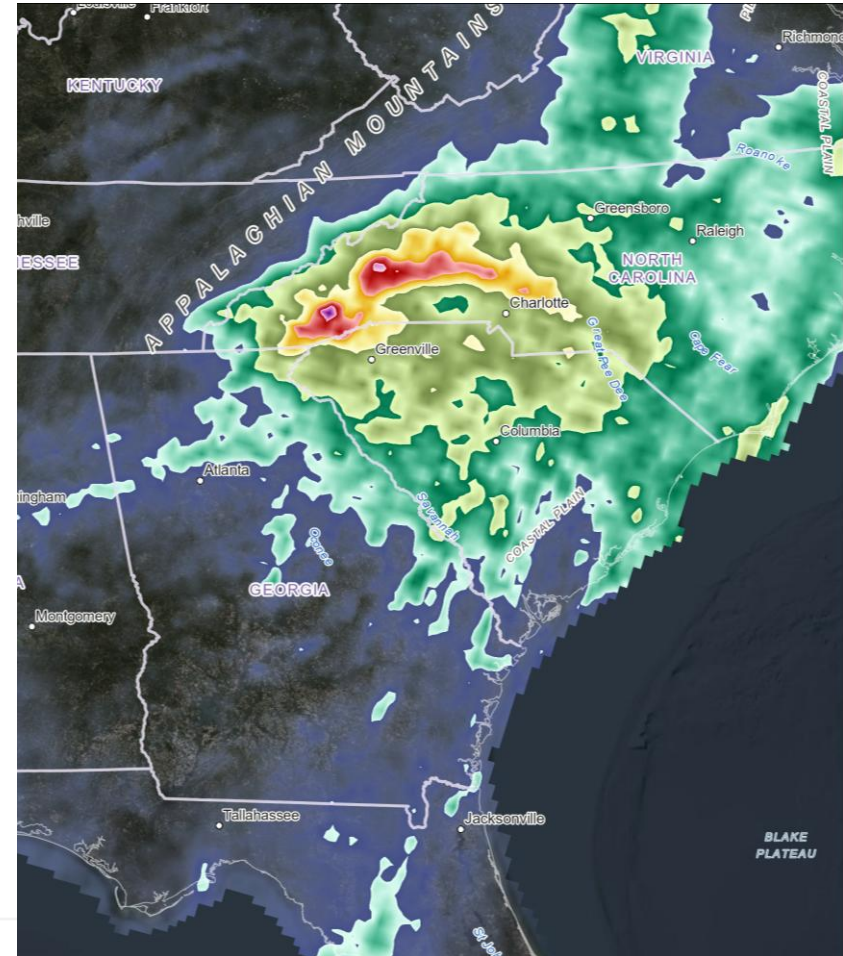
Source: Cooperative Institute for Meteorological Satellite Studies (CIMSS)

Flooding in Asheville, NC from Hurricane Helene was a direct effect of precursor rain events.

Hurricane Helene (2024)



Stochastic "Helene-like" Event



Advancements in storm surge modeling

The updated tropical cyclone model features an overhaul of the storm surge module.

New Delft 3D hydrodynamic model with updates to topography, bathymetry, land use/land cover, and inclusion of time varying tides



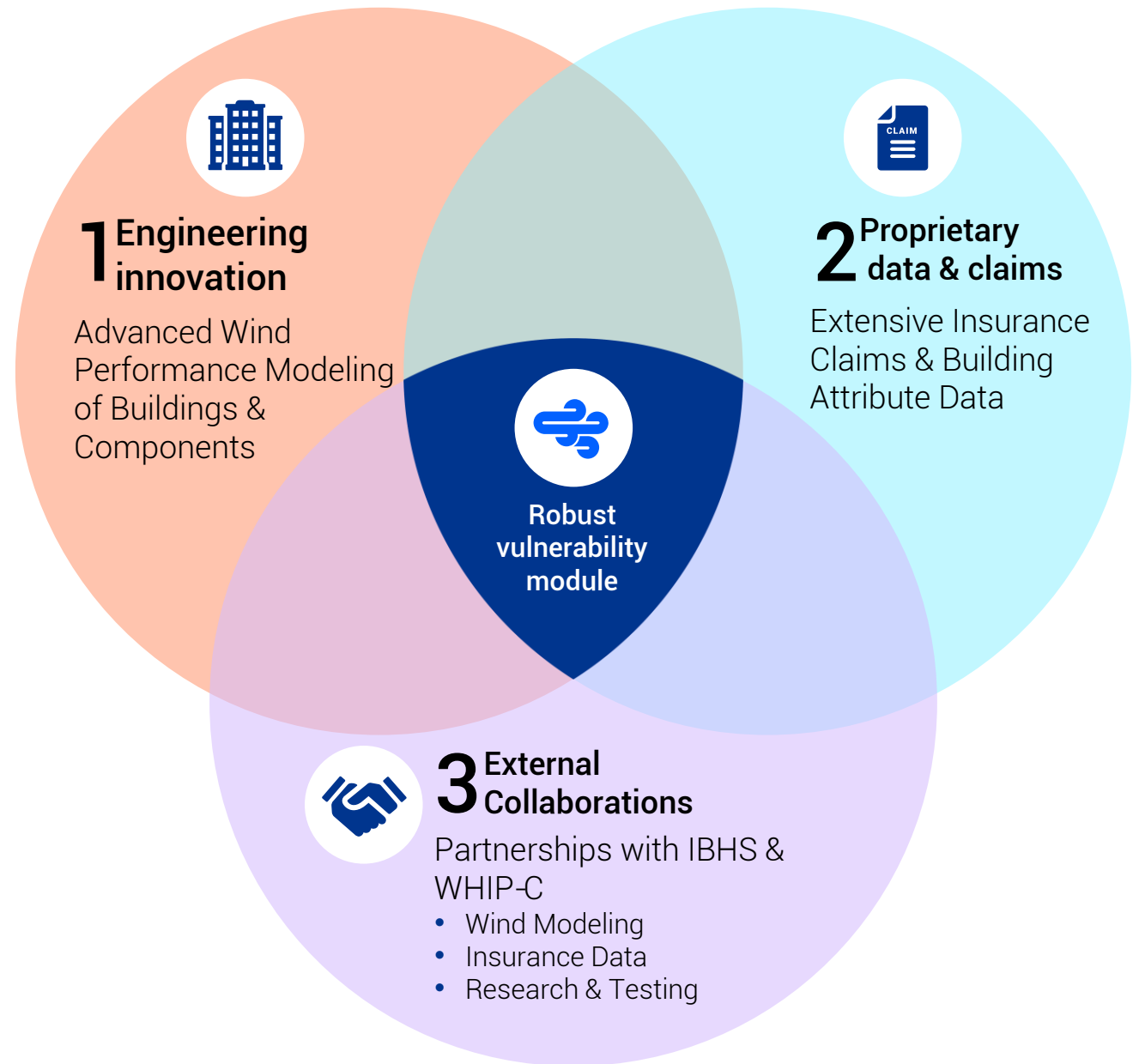
Flexible mesh facilitates high-resolution realism of modeled impacts

Levee failure modeling for more high-property concentration locations



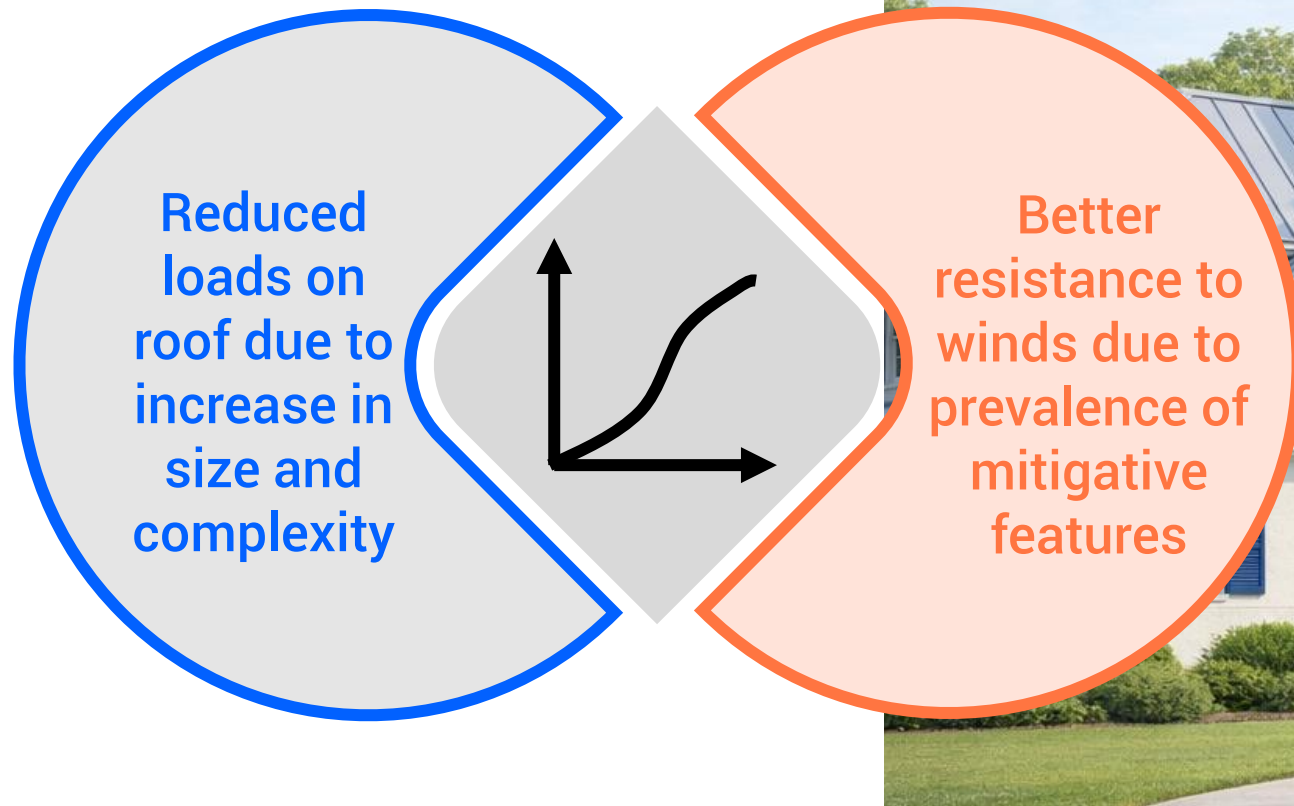
Building a robust vulnerability module

The updated Vulnerability Module is a synthesis of internal engineering innovation, leveraging insights from data, and harnessing the power of external collaborations.

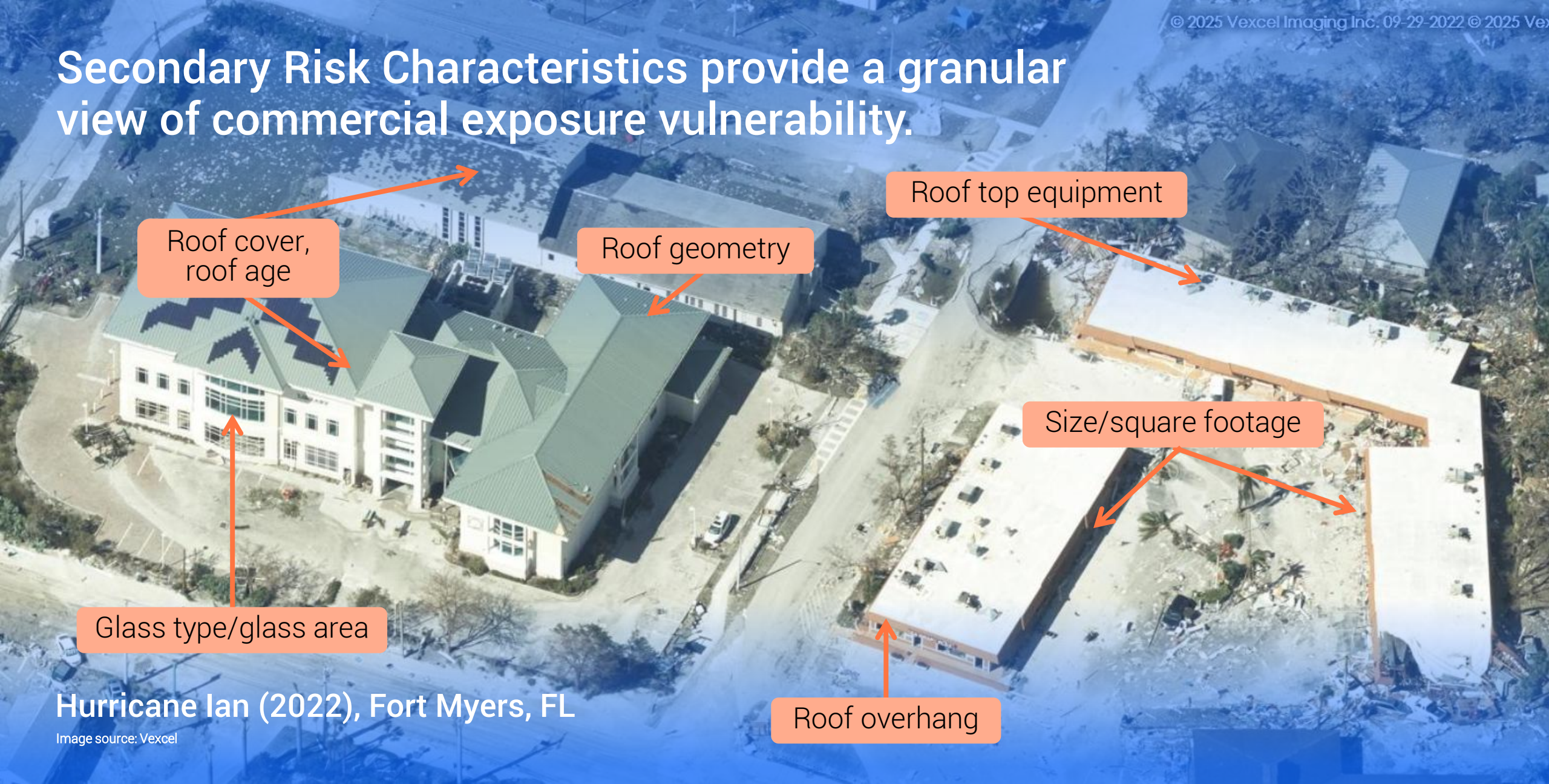


Vulnerability accounts for diversity in the form, shape, and performance of residential homes.

Example: Large high-value homes



Secondary Risk Characteristics provide a granular view of commercial exposure vulnerability.

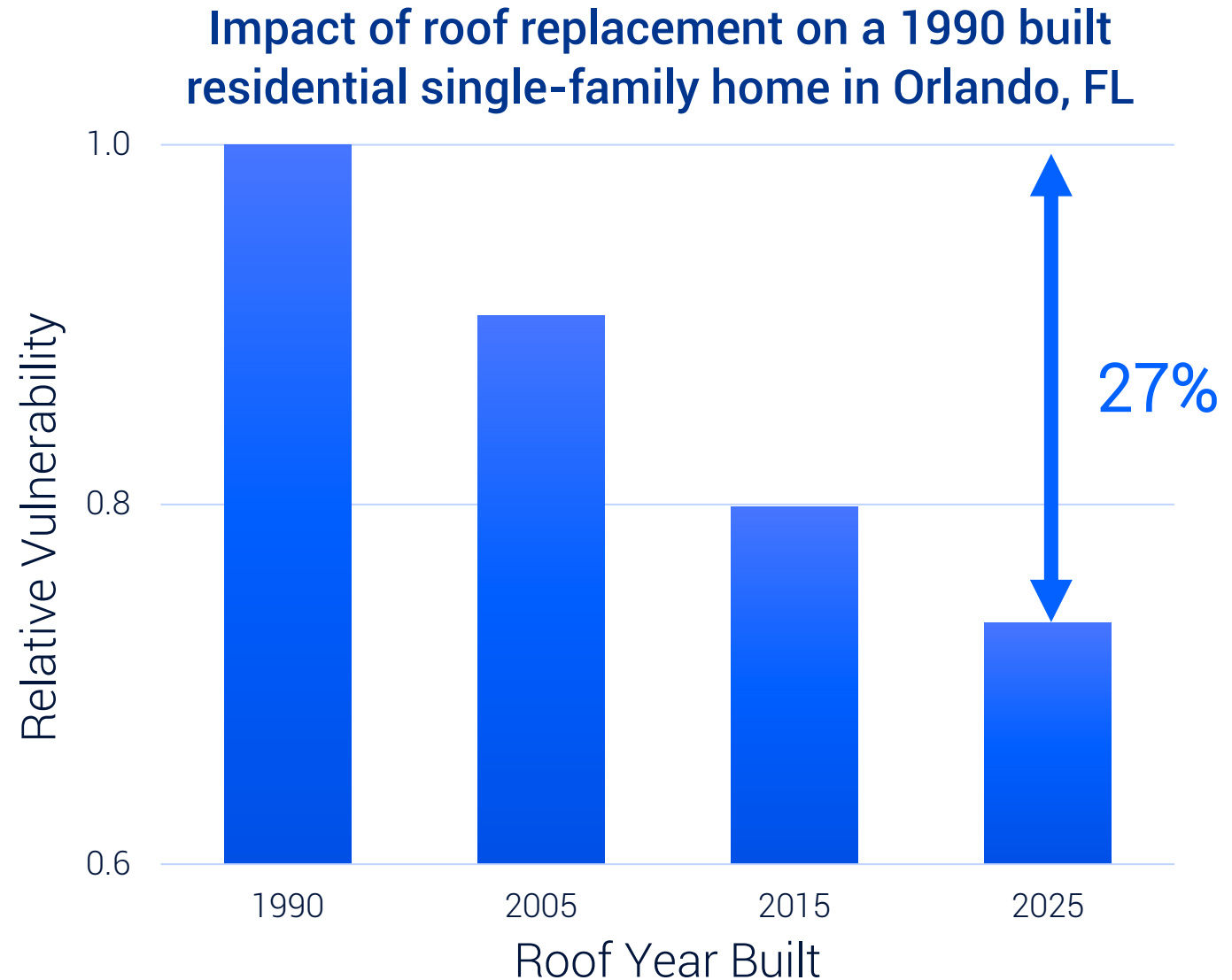


Hurricane Ian (2022), Fort Myers, FL

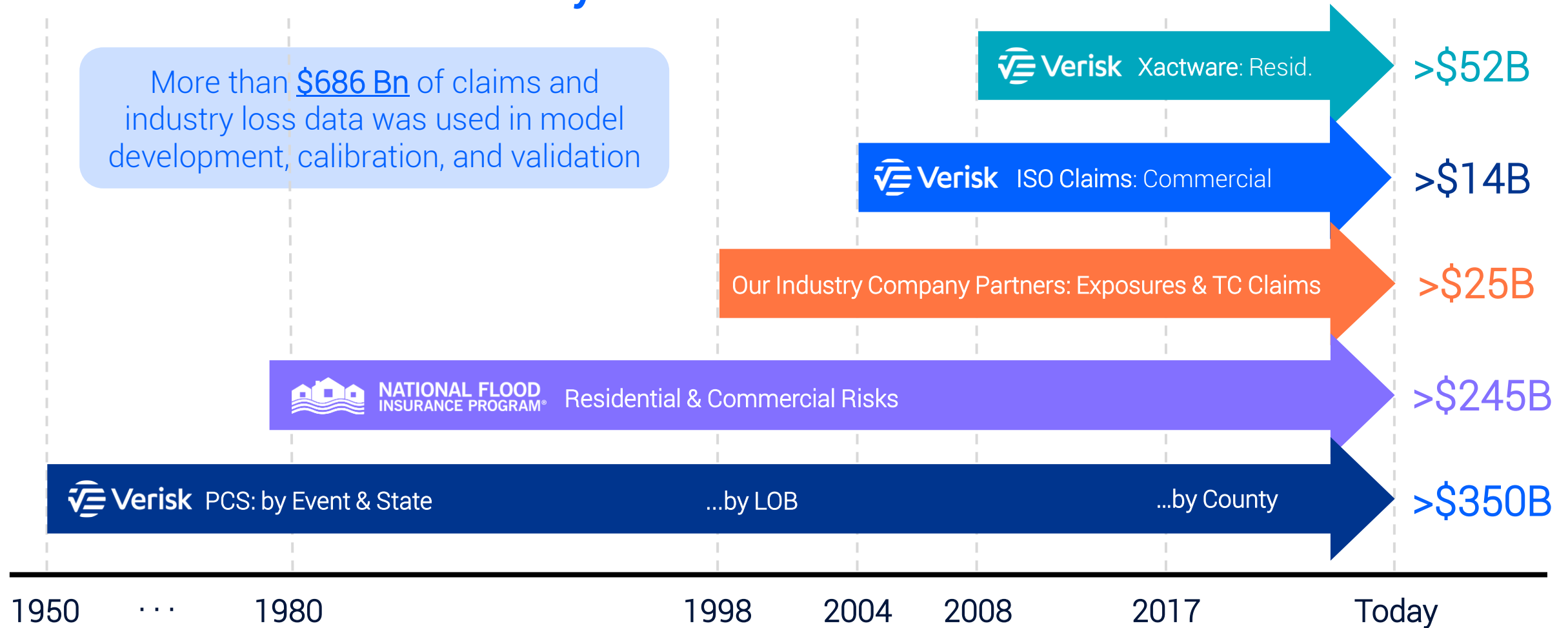
Image source: Vexcel

Roof age has a significant impact on building vulnerability.

- Explicitly account for roof upgrades
- Our proprietary data driven assumptions when roof age is unknown



Access to extensive claims data provides a reliable foundation for vulnerability enhancements



Key changes to U.S. demand surge

Verisk's new U.S. demand surge framework aligns with Verisk's latest research on demand surge and enables peril- and state-specific resolution for demand surge. Synergy Studio 2026 release will apply to U.S. tropical cyclone, inland flood, and winter storm.



Enhanced view of demand surge

- Peril-specific
- State-specific
- Latest economic data



Labor disruption hazard

- Integrates Verisk's research on labor disruption



Post-event cost inflation

- Independent of labor disruption hazard
- Function of claim settlement time



User flexibility and adjustability

- Users can adjust post-event cost inflation to meet their needs

Better resilience
requires evolution





Discover More

There are an abundance of resources available to deepen your understanding of this comprehensive model update:

- Learn about the reimagined US Tropical Cyclone risk model on the landing page:
 - <https://www.verisk.com/resources/campaigns/us-tropical-cyclone-risk-model/>
- Model Documentation and Supplements are available on the US Tropical Cyclone model page within the client portal:
 - <https://risksolutions.verisk.com/models/landing-pages/verisk-hurricane-model-for-the-united-states/>

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