- **ADVANCED HAZARD MODELING**
- **STATE-OF-THE-ART ENGINEERING**
- **EXTENSIVE MODEL VALIDATION**

The AIR U.S. Winter Storm Model

ADVANCED HAZARD MODELING	THE ISSUE.	THE SOLUTION.
Numerical Weather Prediction (NWP) Technology Yields Highly Realistic View of Potential Storms	The complex interactions between various atmospheric components of winter storms cannot be adequately captured by traditional parametric models.	The AIR model is based on NWP technology, today's leading scientific technique for simulating complex storm systems. NWP captures how the atmosphere changes over time using mathematical equations that govern fluid flow and thermodynamics.
Captures Regional Differences in Storm Characteristics	Winter storms affect nearly all areas of the continental U.S., but they manifest themselves differently in different regions depending on the climate conditions.	The AIR model captures regional manifestations of winter storms in the U.S., ranging from windstorms in the West, blizzards in the Rocky Mountain and Plains states, ice storms in the Southeast, and traditional Nor'easters in New England.
Captures Accumulated Snow Load	Snow load is a major driver of damage and loss from winter storms. The situation is exacerbated when multiple storms come in quick succession, with little time for the accumulated snowpack to melt.	AIR's dynamical approach to modeling snow load accounts for the changing average temperatures throughout the season (warmer temperatures allow for snow to melt) as well as the elapsed time between successive storms. By adding the snow load from new storms to the load remaining from previous events, the model appropriately estimates the total load at any given time.
STATE-OF-THE-ART ENGINEERING		
Peril-Specific Damage Functions Provide Superior Estimates of Combined Losses	High winds, precipitation, and temperature inflict damage differently.	The AIR model employs damage functions specific to each peril. The model's snow damage functions, for example, convert accumulated snow to pounds per square foot. Information about wind speed is used to calculate a snow load "surcharge" from drifting snow. Low temperatures can result in burst pipes and ice dams, which can in turn damage interior walls, ceilings, and contents.

AIR WORLDWIDE®

MODEL AT A GLANCE

FIRST RELEASED 2005

MODELED PERILS Wind, precipitation, and temperature.

CATALOG 10,000-year catalog of over 68,000 simulated winter storms.

HAZARD MODULE Employs sophisticated NWP technology to develop a realistic catalog of tens of thousands of potential storms. Snowmelt module generates cumulative ground load conditions for seasons in which multiple storms come in quick succession, with little time for accumulated snow to melt.

VULNERABILITY MODULE Incorporates damage functions specific to wind, precipitation, and temperature.

MODEL VALIDATION Extensively validated against loss estimates issued by ISO's Property Claim Services® and claims data.

STATE-OF-THE-ART ENGINEERING *(contd.)*	THE ISSUE.	THE SOLUTION.
Explicitly Accounts for Regional Vulnerability	In southern states, pipes are more likely to be exposed, while in northern climates, water pipes are more typically located on the inside of building insulation.	The model accounts for regional differences, such as the better preparedness of both structures and their owners in more northerly latitudes.

EXTENSIVE MODEL VALIDATION   NO ISSUE HERE.

Modeled losses are extensively validated against loss estimates issued by ISO's Property Claim Services® and actual company-level loss experience data.

ABOUT AIR WORLDWIDE

AIR Worldwide (AIR) is the scientific leader and most respected provider of risk modeling software and consulting services. AIR founded the catastrophe modeling industry in 1987 and today models the risk from natural catastrophes and terrorism in more than 90 countries. More than 400 insurance, reinsurance, financial, corporate, and government clients rely on AIR software and services for catastrophe risk management, insurance-linked securities, detailed site-specific wind and seismic engineering analyses, and agricultural risk management. AIR is a member of the Verisk Insurance Solutions group at Verisk Analytics (Nasdaq:VRSK) and is headquartered in Boston with additional offices in North America, Europe, and Asia. For more information, please visit www.air-worldwide.com.

verisk Analytics®   AIR is a member of the Verisk Insurance Solutions group at Verisk Analytics.

AIR WORLDWIDE®