



Wind Loss Estimation Model

HAZUS is a nationally applicable standardized methodology and software program for estimating potential losses from earthquakes, floods, and wind. HAZUS is being developed by the Federal Emergency Management Agency (FEMA) under contract with the National Institute of Building Sciences (NIBS). HAZUS now has the capability to estimate earthquake losses, with flood and wind models under development. NIBS maintains a committee of wind engineering experts to provide technical oversight and guidance to the wind model development project. Applied Research Associates, Inc., is the technical subcontractor developing the wind model.

Hurricane Preview Model

A Hurricane Preview Model is being developed for release at the end of 2002. This initial version of the model will allow users in the Atlantic and Gulf Coast regions of the U.S to estimate hurricane winds and potential damage and loss to residential, commercial, and industrial buildings. It will also allow users to estimate direct economic loss, post-storm shelter needs, and building debris quantities.

Full Wind Model

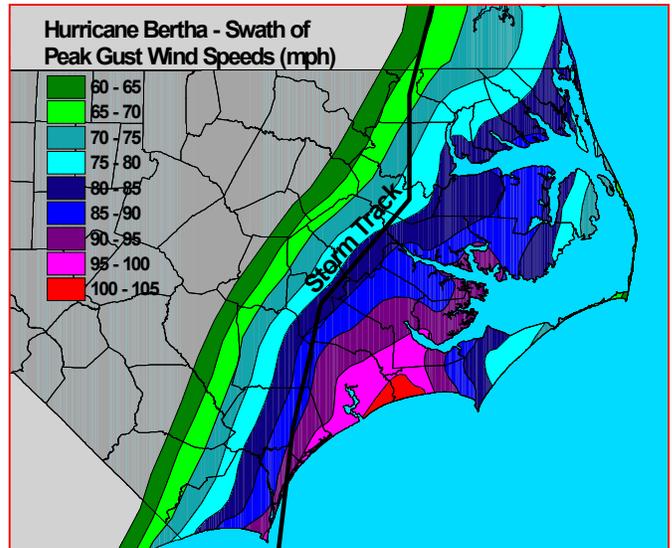
Development of the hurricane model will continue after 2002 to add capability for estimating indirect economic losses, casualties, and impacts to lifelines and agriculture. Loss models for other wind hazards including extra-tropical cyclones, tornadoes, hail, and thunderstorms also will be developed later and incorporated into the Full Wind Model release.

Multihazard InCAST

The **HAZUS** InCAST inventory collection tool will be released in 2002 with expanded capabilities for multihazard data collection. InCAST will assist users with collecting and managing local building data for more refined analyses than are possible with the national level data sets that come with **HAZUS**.

Hurricane Loss Estimation

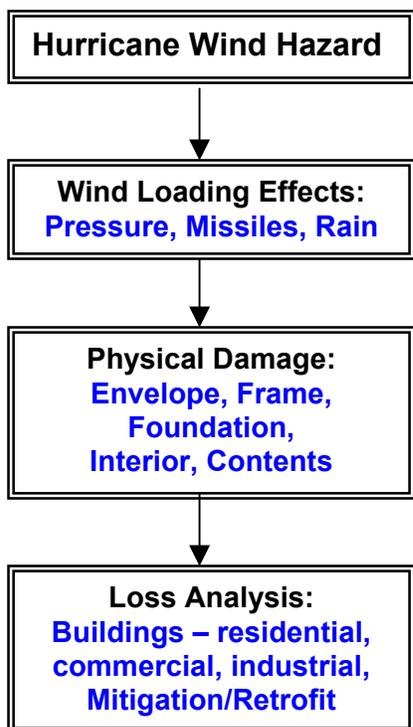
The hazard component of the **HAZUS** Hurricane Preview Model will make use of an existing state-of-the-art windfield model, which has been calibrated and validated using full-scale hurricane data. The model incorporates sea surface temperature in the boundary layer analysis, and calculates wind speed as a function of central pressure, translation speed, and surface roughness. The wind speeds are used to estimate the forces on buildings and facilities and to calculate potential damage and loss.



The **HAZUS** Hurricane Preview Model will be an improvement over existing loss estimation models by using a wind hazard-load-damage-loss framework. The model will address wind borne debris, progressive failure, and the effects of rain entering the building, and will have the following features:

- A building classification system based on the characteristics of the building envelope and frame.
- Capability to compute damages for residential, commercial, and industrial buildings.
- Capability to compute damage to building structure, contents, and interior.
- Capability to estimate building debris quantities and post-storm shelter needs.
- Ability to estimate direct economic loss due to damaged buildings.
- Ability to test reduction in potential damage to certain building classes by using shutters or improved roof connections.

The figure below shows the various elements of the Hurricane Preview Model.



Receive More Information

Visit the [HAZUS](http://www.fema.gov/hazus) website at <http://www.fema.gov/hazus> or contact:

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Summary

The Hurricane Preview Model will allow users to

- formulate and evaluate policy programs to reduce wind loss, including general mitigation strategies;
- estimate required resources for disaster relief;
- improve emergency response planning through scenario analysis;
- plan response and recovery efforts following hurricanes;
- plan for building debris removal following hurricanes;
- estimate displaced households and post-storm shelter requirements; and
- provide for multiple levels of analysis with national level data as well as user and expert-supplied data.



