



Considerations for Storm Surge Standards

**PRESENTATION TO THE FLORIDA COMMISSION
ON HURRICANE LOSS PROJECTION METHODOLOGY**



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AIR's Model Currently Includes Fully Probabilistic Storm Surge Module

- AIR's current Atlantic Tropical Cyclone Model contains a fully probabilistic storm surge module
- The surge model has been developed and validated in the same framework as the wind model
- AIR is well-versed in the challenges attending modeling of the surge peril
- AIR's model is currently being updated, so if the Commission drafts new standards we are in position to consider them as we go through model validation and peer review process



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Unique Features of the Storm Surge Peril

- Estimation of surge damage is very location specific
 - Geocode level of exposures will affect accuracy of loss estimation
 - If exposures contain address information to achieve an exact geocode match, loss estimate will be more accurate
 - Loss estimates for exposures with fewer address attributes (such as the FHCF data) and modeled at the ZIP centroid may not vary according to the underlying risk
- Other sources such as tide height, wave variation, bathymetry and inland waterways contribute to water rise
- Meteorological parameters affecting the surge
- Consideration of precipitation induced flooding



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Considerations for Commission Review of Modeled Storm Surge - Hazard

- Development of the surge footprint
 - How is the model different from HAZUS model
 - How does the generated surge footprint compare with those in HAZUS products
- In reviewing a model, look at the surge hazard in similar way as you look at wind
 - storm validation
 - return period
 - open exposure vs. real exposure
 - idealized storm & its wind footprint



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Considerations for Commission Review of Modeled Storm Surge - Vulnerability

- Focus on the type of building features affecting surge vulnerability
 - Presence of basements
 - FEMA recommendations and enforcement
- Review of vulnerability framework for surge can be approached the same as review for wind vulnerability framework
- Claims data does not break out water damage
 - Validation of the wind + surge loss levels rather than surge-only losses
- Claims (and sometimes exposure) data does not include important details that would be important for model validation, such as whether a structure has a basement or is built on pilings
- Other covered property
 - Autos
 - Commercial (presence of underground storage, utility lines in basement level)
 - Pleasure boats



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Considerations for Commission Review of Modeled Storm Surge - Actuarial

- How much granularity exists in the model to determine wind vs. surge in the loss costs
- In absence of claims data available for validation, can wind losses be compared with surge losses
- Deductible level to use for closest match to NFIP policies
 - NFIP does not have % deductibles, but rather \$ deductibles
 - Ground up or 2% deductible can be used
- Wind + Surge losses capped at policy limits



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Thorny Issues Requiring More Thought, Research and Development

- Temporality of surge vs. wind
 - Which happens first
 - Claims settlement determination is on case-by-case basis
- Separate capture of water losses in claim settlement process
- Coordination with NFIP policy coverage
- Capturing water level measurements during an event requires significant investment by communities or states



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AIR Supports Efforts to Advance the Storm Surge Modeling and Review

- We recognize the importance of sorting through these issues impacting both modeling companies and regulators alike
- This is a great opportunity for the industry as a whole to push forward in areas such as
 - Collecting new data
 - Defining benchmarks for validation
 - Raising awareness of the potential impacts of surge
- AIR is looking forward to working with the Commission in the next steps of reviewing storm surge



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