



# Mitigation: The Modeling Perspective

**Mitigation Leadership Summit**

**Orlando, FL**

**February 21, 2008**

**Paul VanderMarck**

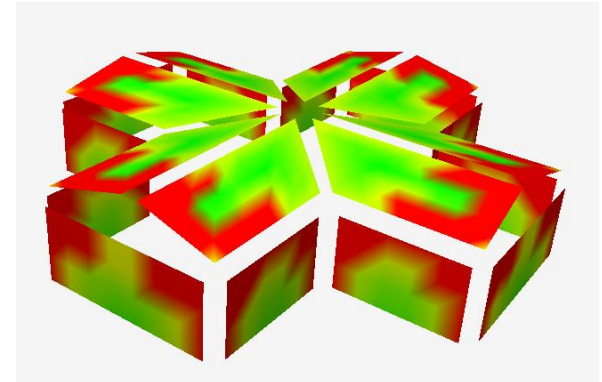
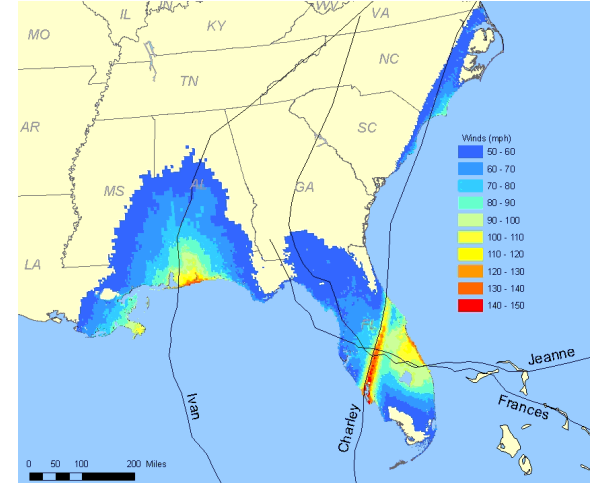
**Chief Products Officer**

Bringing Science to the Art of Underwriting™



# Risk Management Solutions, Inc.

- The leading catastrophe risk modeling firm
  - An independent, objective focus on providing the best possible quantification of catastrophe risk to all stakeholders
  - Client base includes insureds, insurers, and reinsurers
- Over 1,000 professionals worldwide
  - > 50 PhDs
- Annual R&D investment ~\$50 million



# A Vision for Florida 2020



The most wind-resistant building stock in the world



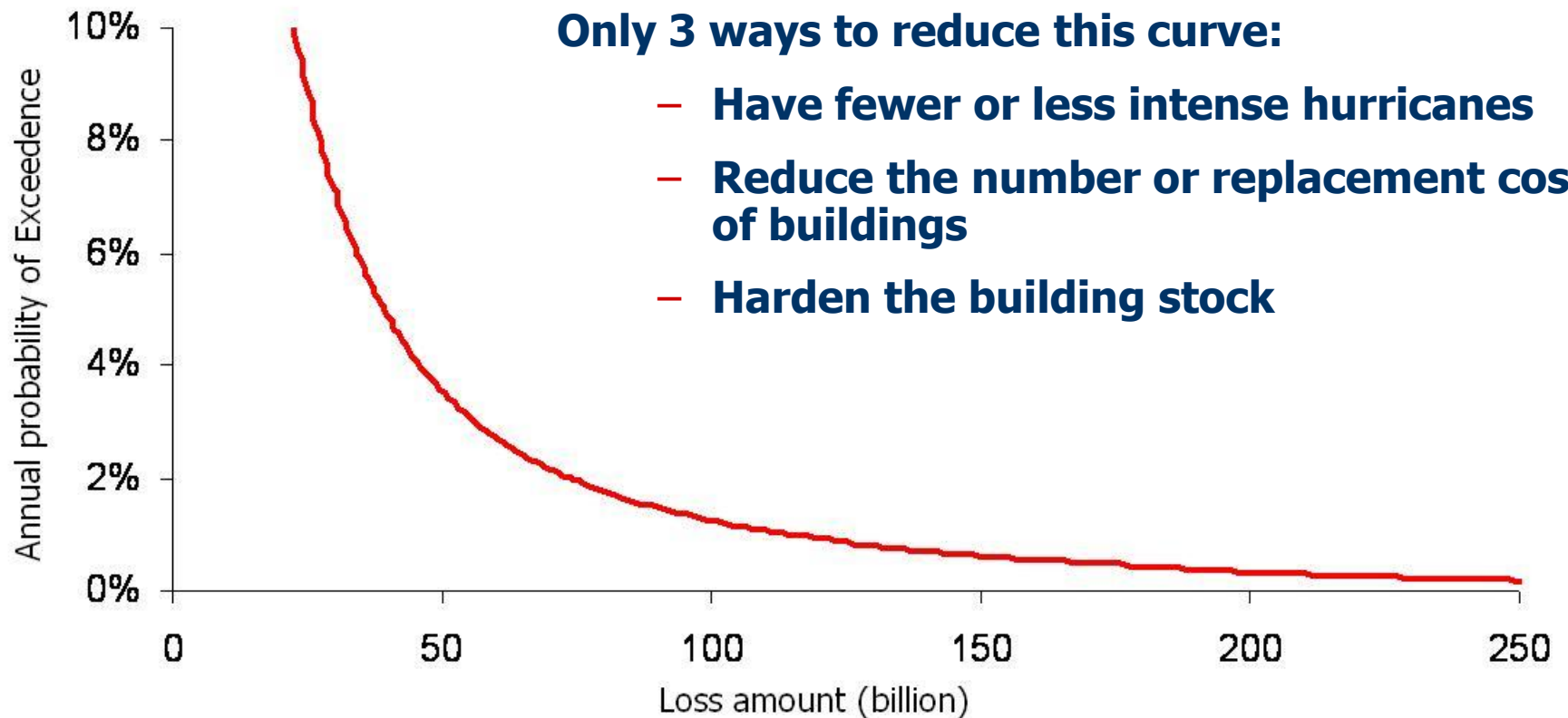
A strong and well-aligned system of risk-based incentives for construction & mitigation



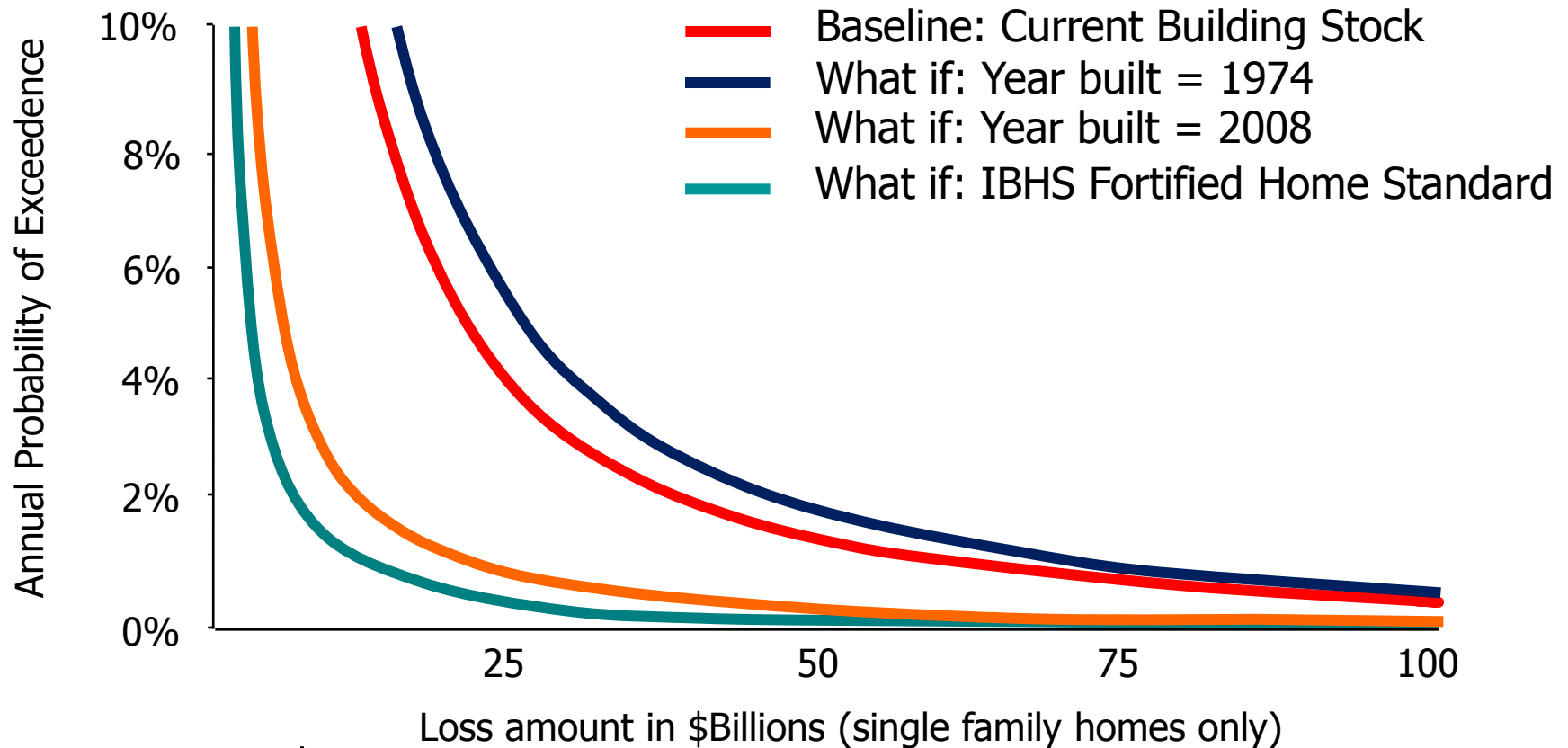
Hurricane Research - Florida Coastal Monitoring Program

A vigorous, coordinated program of applied hurricane research

# Florida Hurricane Risk



# Hardening The Florida Building Stock



# Key Florida Risk Metrics

## (Single family homes only)

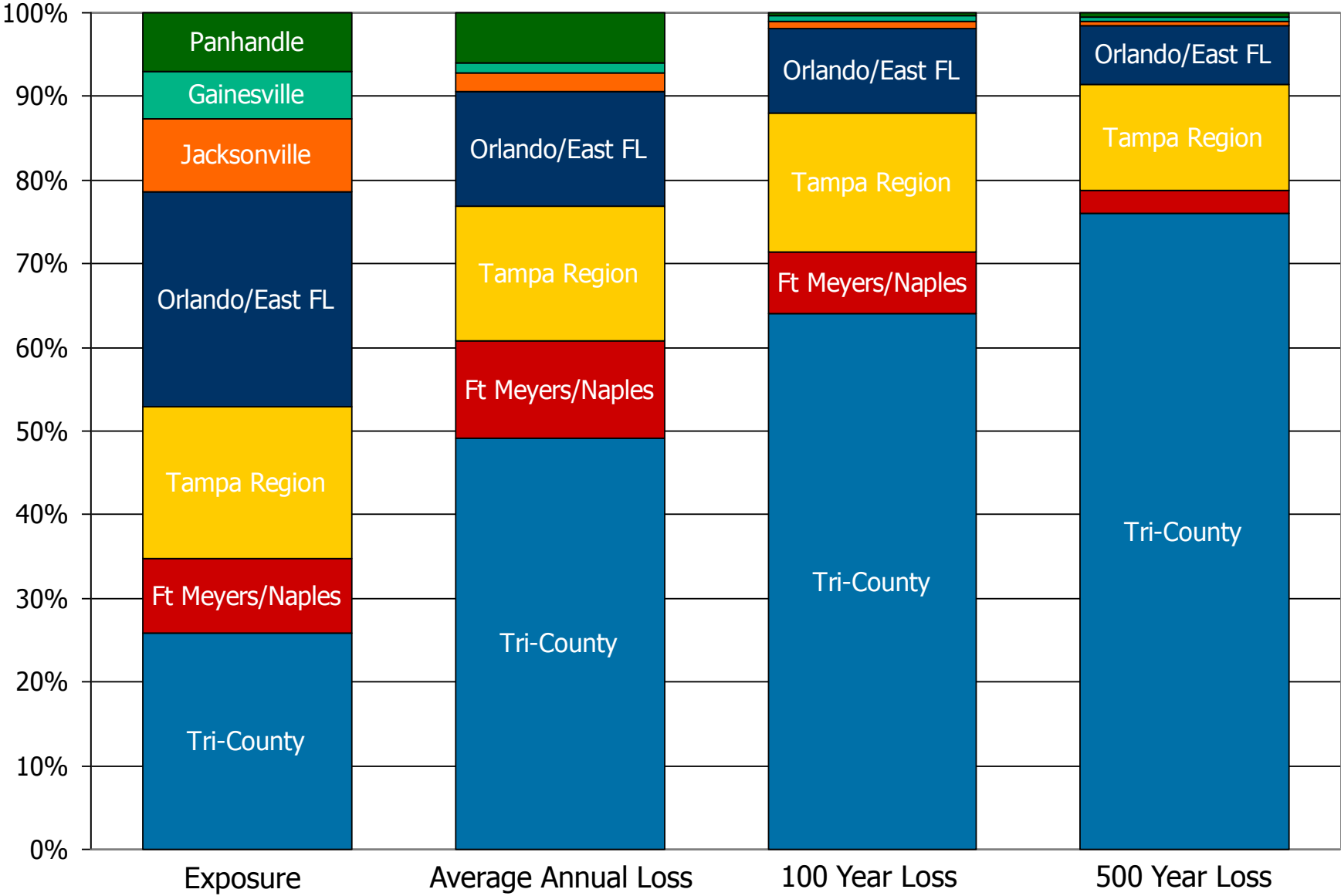
Scenario	Avg Annual Loss	10 yr loss	100 yr loss	1,000 yr loss
Current Bldg Stock	5.5	13	63	150
What if: 1974	6.7	16	74	180
What if: 2008	1.5	3	22	74
What if: Fortified Home	1.0	2	14	53

\* Ground-up economic losses, in \$ billions

# Managing the State of Florida Portfolio

- Florida policymakers are portfolio managers
- For the largest portfolio of hurricane property risk in the world
  - 4.5 million single family homes
  - \$1.8 trillion of residential property
  - \$1.0 trillion of commercial property
- Catastrophe modeling enables smart & informed decision-making
  - Cost/benefit analysis for new building code provisions
  - Optimizing taxpayer investments in mitigation
  - Different objectives → different priorities? (eg affordability vs availability)

# Anatomy of Florida Hurricane Risk



# What Stands In The Way?

A subset of any population will make mitigation investments without immediate economic benefit, especially if you address:

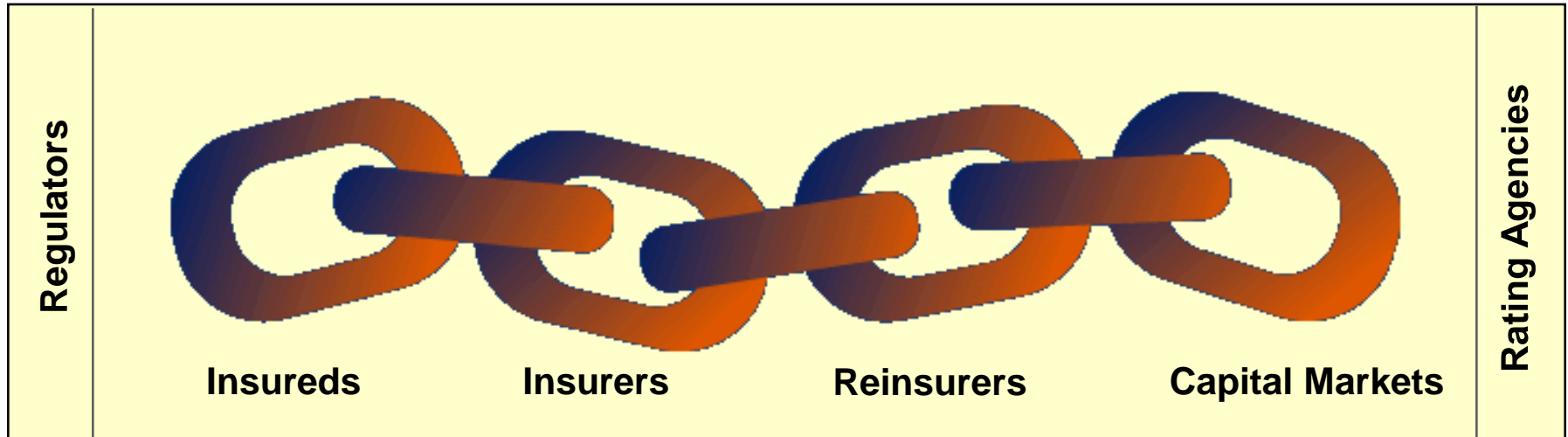
## ■ Awareness

- H04 & H05
- FLASH
- Disney exhibit
- My Safe Florida Home

## ■ Cost

- Direct: State matching grants
- Direct: Mitigation tax credits?
- Financing: Municipal bonding a la solar programs?

# But Widespread Mitigation Requires Clear & Aligned Economic Incentives



Rational development, construction & mitigation decisions

Location-specific underwriting decisions (structure, price, capacity, etc)

Portfolio-specific underwriting decisions (structure, price, capacity, etc)

Rational investment decisions & return on capital expectations

**Underlying Enabling Mechanism = Catastrophe Models**

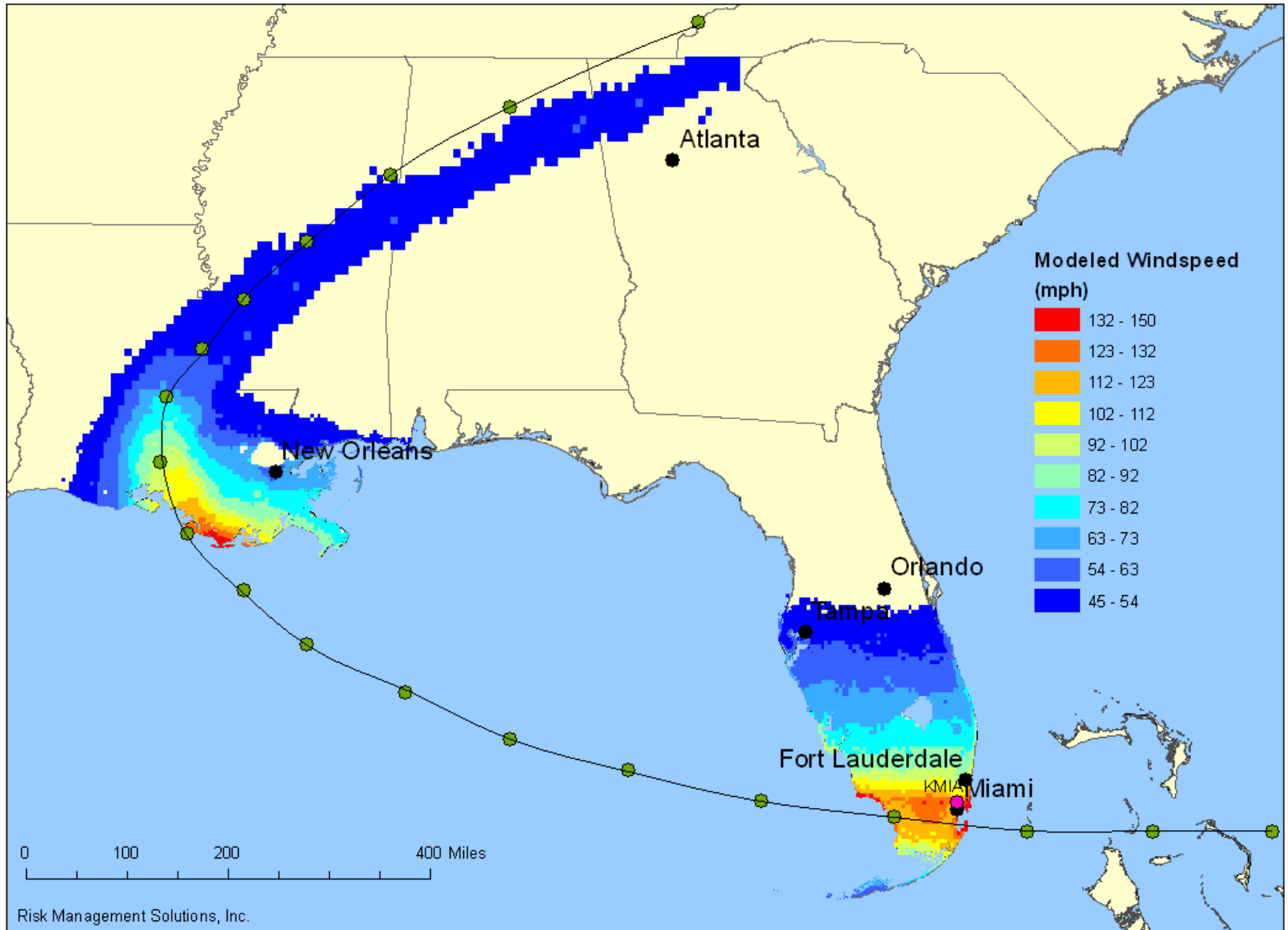
# Incentives: The Way Forward

- Transition to transparent, risk-based pricing
  - Granular, property-specific economic signaling
  - Traditional rating territories = subsidization schemes = distort insured's understanding of the risk & subsequent behavior
- Mitigation credits are a good start
  - But base rates need to reflect the technical risk first
  - And model-driven risk-based pricing can provide a powerful incentive for broader, Code Plus investments
- Address equity and affordability issues through explicit public policy and funding, not through embedded insurance subsidies (see Wharton work)
  - Avoid challenges of cherry-picking by insurers
  - Don't undermine value of economic signaling in premiums

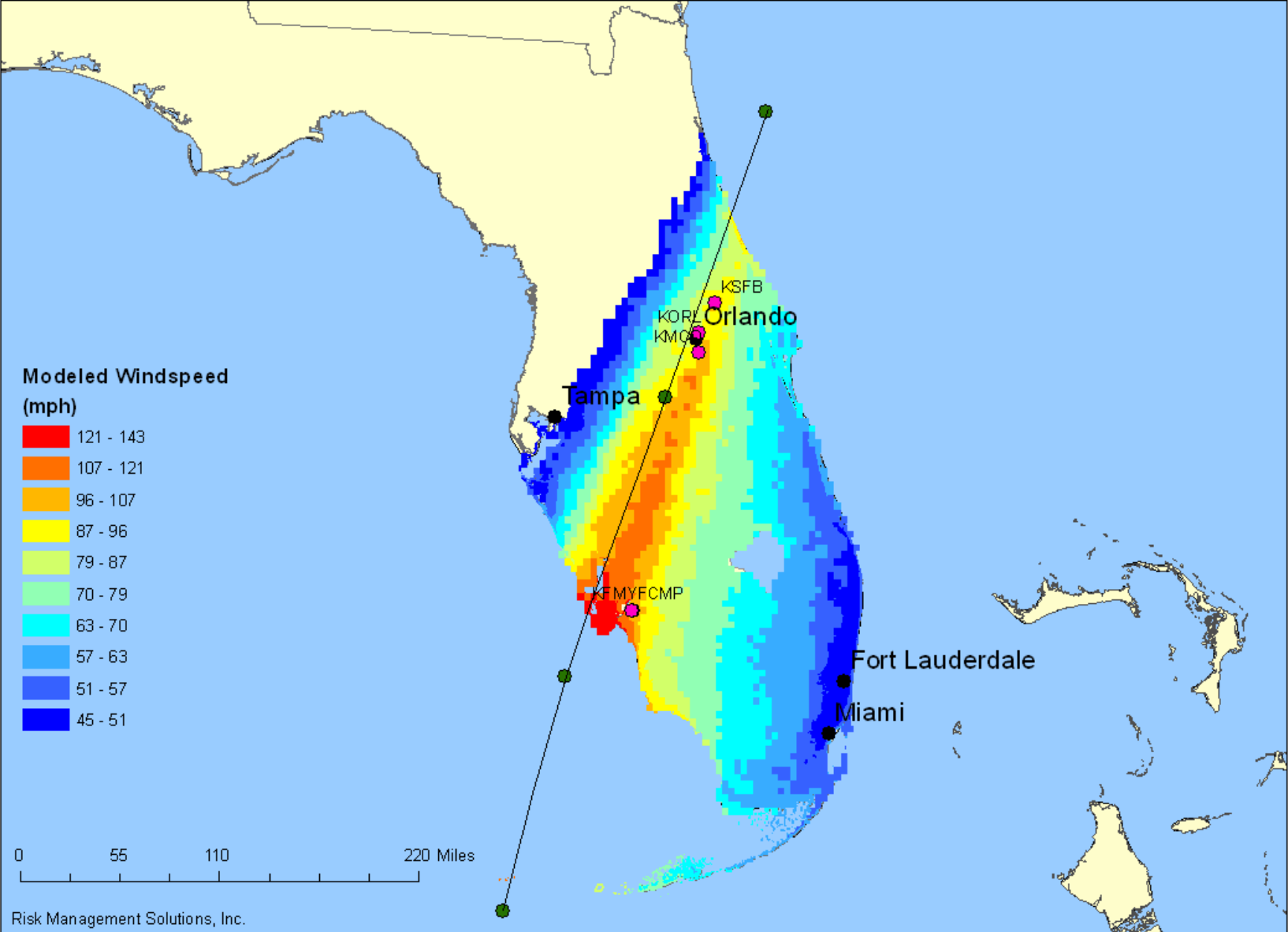
# Research: The Way Forward

- Establish state policy to directly fund and/or encourage and facilitate the funding of applied hurricane research
- Tangible benefits would include:
  - Attracting talent
  - Innovation in mitigation solutions & costs
  - Reduced uncertainty in modeling the hazard
  - Catalyze private sector activity that will further incent mitigation
- Prime examples:
  - Build open database of building characteristics from MSFH inspections and other sources (add to tax assessor data?)
  - Develop a surface hurricane wind observation network

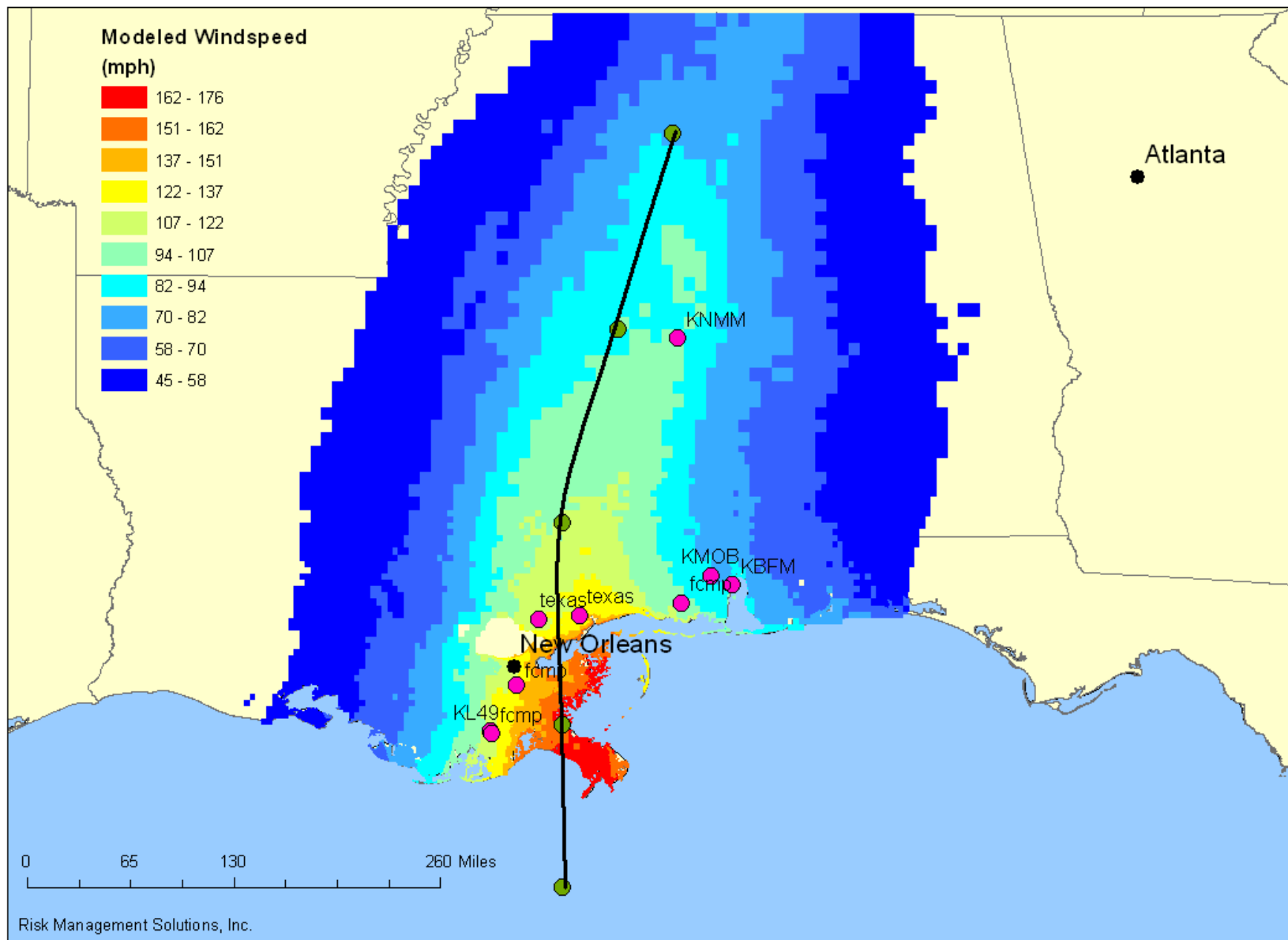
# Andrew: Useful Wind Records



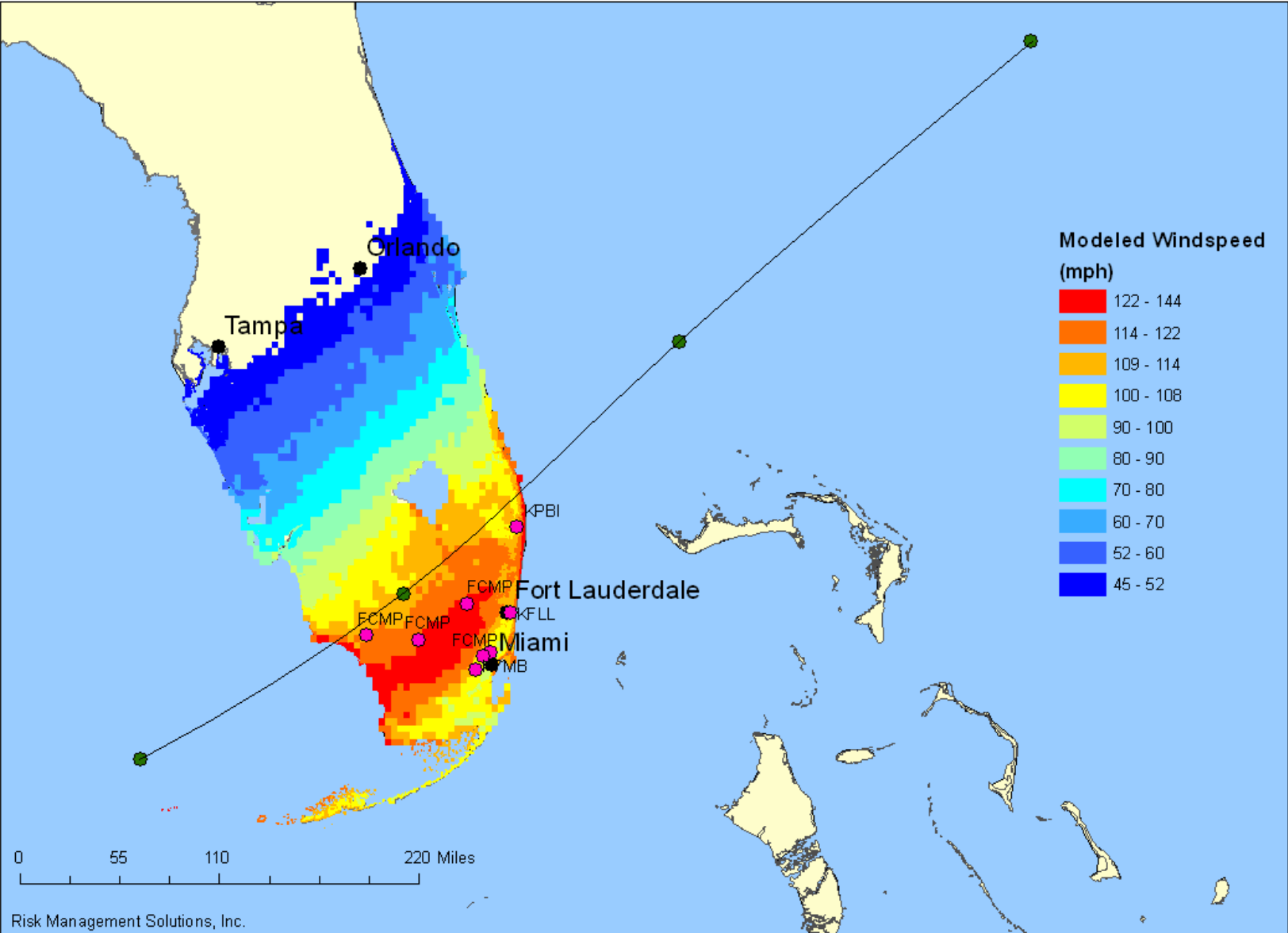
# Charley: Useful Wind Records



# Katrina: Useful Wind Records



# Wilma: Useful Wind Records



# Initiatives Already Underway

## Florida Coastal Monitoring Program



## WeatherFlow Hurricane Network



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