

AN APPROACH TO OWN YOUR OWN VIEW OF RISK

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James Waller, PhD
Research Meteorologist
GC Analytics @
Guy Carpenter & Co. LLC
Philadelphia, U.S.



Industry Good Practice for Catastrophe Modeling



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Own Your View of Risk

- Understand Risk Models
- Assume **Responsibility** of Risk Views
- Justify** Decisions Related to Risk Models
- Document** Assumptions and Arguments

Motivation

- Each model has its own strengths and weaknesses.
- There is no such thing as a model that is "all good" or "all bad," nor is there such as a thing as a "perfect" model.
- While many of these strengths and weaknesses have a direct effect on market share of the model, a particular strength is sometimes outweighed by a weakness or vice versa.
- Examples
 - User environment
 - Scientific approach
 - Resolution
 - Vulnerability
 - Hazards of particular interest

Motivation

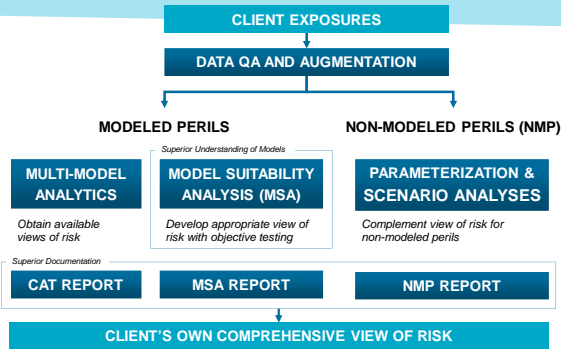
- Models are calibrated to the industry at large.
- Model performance will vary
 - By geography
 - By portfolio characteristics
- Different models use different methodologies and approaches to
 - Hazard
 - Vulnerability
 - Financial
- Best practice is to develop an organized, modular framework to objectively categorize these variations.
- Once catalogued and documented, they can be applied for optimal model use on that portfolio for more realistic risk assessment.

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September 20, 2013

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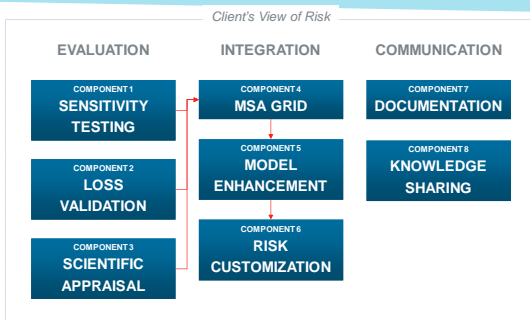
Customized Cat Modeling Approach



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Guy Carpenter's Model Suitability Analysis (MSA)SM



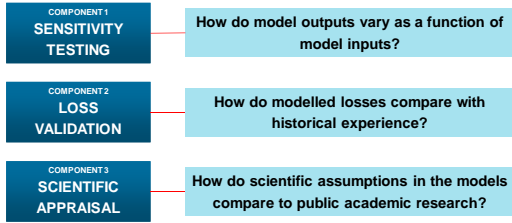
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MSA Tests for Model Evaluation

EVALUATION

Our objective is to address these questions...

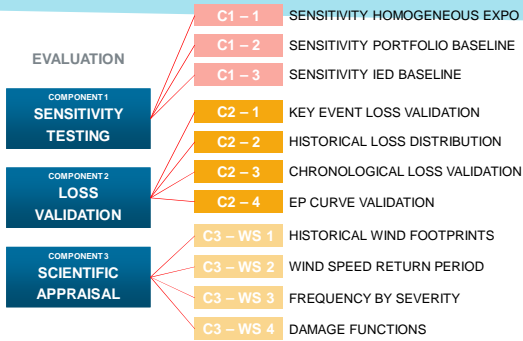


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MSA Tests Developed for Euro Windstorm in 2012

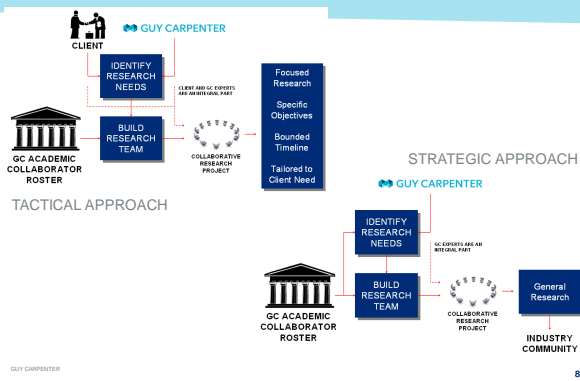
EVALUATION



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MSA Scientific Appraisal and Research Strategy



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MSA Grid Observations and Their Impact (Integration)

Isolated Poor Performance
Points at potential modeling opportunity: R&D or Model Fusion

Systematic Poor Performance:
Points at unsuitable model for a client

Limited Shortcomings
Points at potentially possible slight adjustment to improve performance

	C1: ST Relative RC Bldg Code	C2: LV Klaus Loss Validation	C2: LV Hi-Freq EP Validation	C3: SA Agreement Dmg Funcs	C3: SA Agreement Event Flirts
MODEL 1	GOOD	10% ERROR	SO-SO MATCH	MATCHES RESEARCH	MATCHES UK MET
MODEL 2	GOOD	200% ERROR	POOR MATCH	NO MATCH	MATCHES UK MET
MODEL 3	NO LATEST AGE BAND	50% ERROR	SO-SO MATCH	MATCHES CLAIMS	NO MATCH UK MET

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The MSA Grid Organization and Documentation (Integration)

GC + Client Defined

	C1: ST Relative RC Bldg Code	C2: LV Klaus Loss Validation	C2: LV Hi-Freq EP Validation	C3: SA Agreement Dmg Funcs	C3: SA Agreement Event Flirts
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MSA C3: SA CHAPTER

Leadership
Risk Management
Regulators
Rating Agencies
Solvency II
Other Stakeholders

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MSA Characteristics of Note

MODULAR

- Every analytical task is well organized across components
- Documentation lends itself to extraction for Solvency II

CUSTOMIZABLE

- Client can focus on components of interest
- Client may choose a multi-phase approach

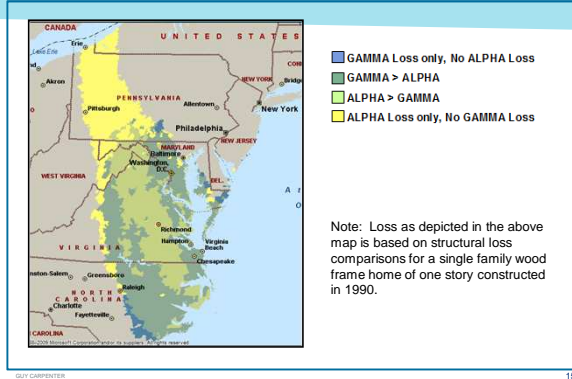
FLEXIBLE

- Client may shape the process within the framework components
- Components can be expanded and they can evolve with client needs

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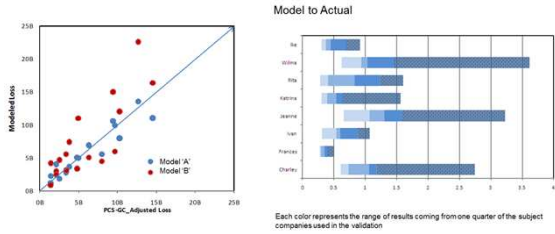
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Example: U.S. Hurricane Wind Footprint (Isabel, 2003)

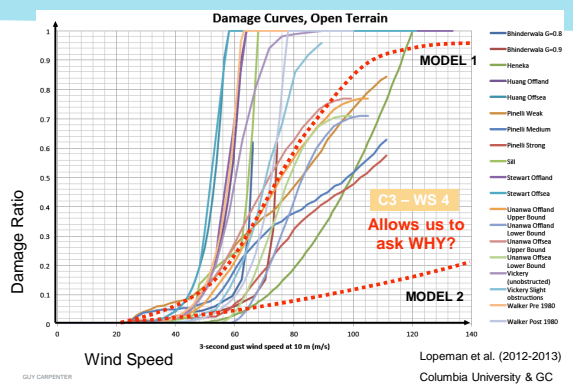


Understanding Hurricane Model Differences
Rigorous Model Questioning

- Example:
 - Can historical events help validate my modeled results?
 - Validate against historic losses and quality check return period levels



MSA^(SM) Scientific Appraisal Example: Wind Vulnerability

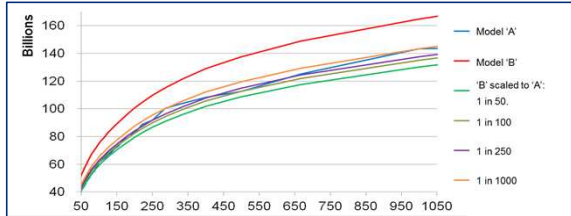


Model Suitability Analysis (MSA)SM
Risk Customization

The OEP can be scaled to match any single point by scaling the whole OEP curve.

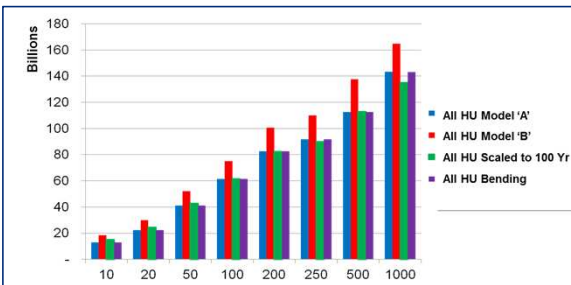
$$Scale = \frac{LOSS_{Target,RP}}{LOSS_{Modeled,RP}}$$

Scaling cannot be used to match along the whole curve.



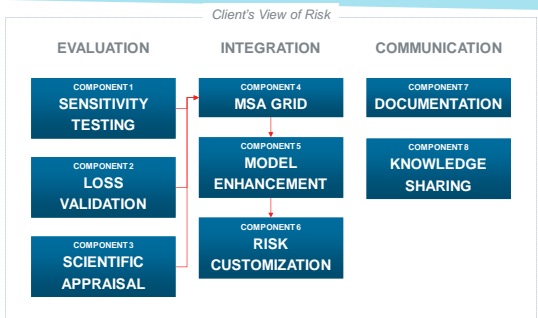
Model Suitability Analysis (MSA)SM
Risk Customization

Bend - All Hurricane States for Personal Lines



Bending Model 'B' results to match Model 'A' results.

Guy Carpenter's Model Suitability Analysis (MSA)SM



Essentials

- Motivation: Solvency II, NAIC, Regulatory
- Ongoing pursuit of *true* assessment of risk
- Naturally varies by geography
- Naturally varies by nature of portfolio
- Requires deep understanding of perils
- Cat model performance varies (version, vendor)
- MSASM offers objective approach (testing, evaluation)
- Enables optimal model use for the portfolio
- Enables informed model adaptation, integration, and implementation focused on portfolio nuances.
- Enables informed decision making for customized view of risk.

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