CoreLogic®

Coastal Underwriting Solutions

Presented by: Dan Munson, VP Sales

September 19, 2013

The data in this report represents CoreLogic analysis and interpretation of certain property risks in the United States. It is based on publically available information combined with other CoreLogic internal research and application of CoreLogic proprietary tools and information. It is not meant as a probabilistic evaluation of the potential for any specific risk to occur or to address the risk determination of any particular property. CoreLogic recommends that specific analysis be performed at the property level to adequately determine the likelihood of risks for an individual parcel of land. All maps represented in the report were created by CoreLogic using CoreLogic data, current as of 2013.

Agenda

- Welcome
- Benefits of Comprehensive Coastal Underwriting Solutions
- Catastrophe Solutions
- Wind Probability
- Distance to Coast
- CoreLogic Flood Risk Score (FRS)
- Coastal Storm (Storm Surge)
- Demo
- Q&A

Coastal Reports Available through RiskMeter Online™

- Wind/Hurricane Average Annual Loss (AAL) and Probable Maximum Loss (PML)
- Wind Probability
- State Wind Pool Eligibility
  - Florida Wind Mitigation
- Building Characteristics
  - Pre-fill for AAL and PML
  - Roof Age
- Flood Risk Score (FRS)
- Coastal Storm Surge
- Distance to Coast
  - Customization Options

Catastrophe Modeling Products

- Uses hazard data to create models with % lost dollar values and help price risk
- Outstanding ease of use to enhance workflow process
  - Enables underwriters to run reports themselves
- RiskMeter Online provides nearly instant access to risk information
- Allows AAL and PML data to be used in Point of Sale (POS)

EQECAT USWIND® Model

Product Name	North Atlantic Hurricane Model (On Shore)
Model Type	Probabilistic
Geographic Coverage	**Comprehensive basin wide model, covers:** ▪**US Mainland- 20 states along the US coastline and DC** ▪**Caribbean Islands**
Hazard Model Methodology	**Wind speed using pressure, filling rate, radius to maximum winds, the angle of attack, translation speed, gradient to sustained winds, gust factor, storm profile, friction caused by local terrain**
Vulnerability Derivation	**From Claims Data, Engineering approach & Expert opinion**
Analysis Resolution	**Lat/ Long specific; ZIP Code (population centroid); county (dynamic market weighted)**
Historical Event Set	**205 events**
Stochastic Event Set	**47,315 events affecting mainland US (127,821 in the basin)**
Importing Resolution	**Lat/Long, Street address level, Zip code, County and City**
Industry Certification	**Certified by the Florida Commission Hurricane Loss Projection Methodology (FCHLPM) annually, since the inception of the certification process in 1997**

EQECAT Average Annual Loss (AAL) and Probable Maximum Loss (PML)

- AAL Returns:
  - Long term average annual loss from simulation of tens of thousands of probable events
  - Considered a true measure of the cost of risk for the chosen peril only
  - Use as a baseline for pricing
    - AAL + Other Perils + Overhead + Profit
    - AAL * Factor
- PML Returns:
  - Largest expected loss for a given return period
    - 100, 250 or 500 years
  - Helps to understand the effect on capacity for the chosen peril only
  - For the coverage(s) selected (building, contents, time)
- AAL's are additive, PML's are not

Important Considerations for Underwriting Coastal Risks (model parameters)

- Site Deductibles
  - Allows AAL's & PML's to more accurately reflect insurance structure
- Demand Surge
  - Labor & materials are more expensive after catastrophic events as seen with recent hurricanes
- Standard Deviation
- Coefficient of Variation
  - Allows users to recognize that results are based upon statistical probabilities and distribution of values
- Prefill Values with Building Information
  - Takes out the guesswork and makes your modeling output more accurate. Catastrophe models will assume a worst case scenario if data is missing!

Sample AAL and PML Returns

5286 Boca Marina Cir S

Boca Raton, FL

- 2 Stories
- Residential
- $500,000 Total Insurance Value (TIV)

Construction	Yr. Built	AAL	100 Yr - PML	250 Yr - PML
ISO1 (Frame)	1950	$6,379	$146,755	$280,414
ISO2 (Joisted Masonry)	1950	4,835	111,589	221,663
ISO1	2005	3,800	89,362	182,218
ISO2	2005	2,809	65,450	137,028

- Values vary dramatically based upon year built and construction

AAL by Construction and Year Built ($500,000 TIV used)

			Masonry			Frame		
County	ZIP	City	Before 1995	1995-2001	After 2001	Before 1995	1995-2001	After 2001
Alachua	32604	Gainesville	264	98	65	288	107	71
Leon	32301	Tallahassee	494	181	122	538	200	134
Orange	32820	Orlando	788	288	195	859	317	215
Duval	32267	Jacksonville	1,787	977	732	2,217	1,279	975
Charlotte	33952	Port Charlotte	2,663	1,420	1,114	3,264	1,848	1,479
Hillsborough	33686	Tampa	3,219	1,940	1,630	4,109	2,674	2,310
Collier	34103	Naples	6,039	3,979	3,255	7,740	5,372	4,474
Palm Beach	33405	West Palm Beach	6,954	3,056	2,113	8,539	3,905	2,694
Lee	33931	Fort Myers Beach	10,026	7,913	7,205	12,498	10,183	9,380
Miami-Dade	33109	Miami Beach	12,608	6,415	4,640	15,872	8,362	6,085

A wide variety of losses exist across geography, construction and year-built

Use Cases for Brokers and Underwriters

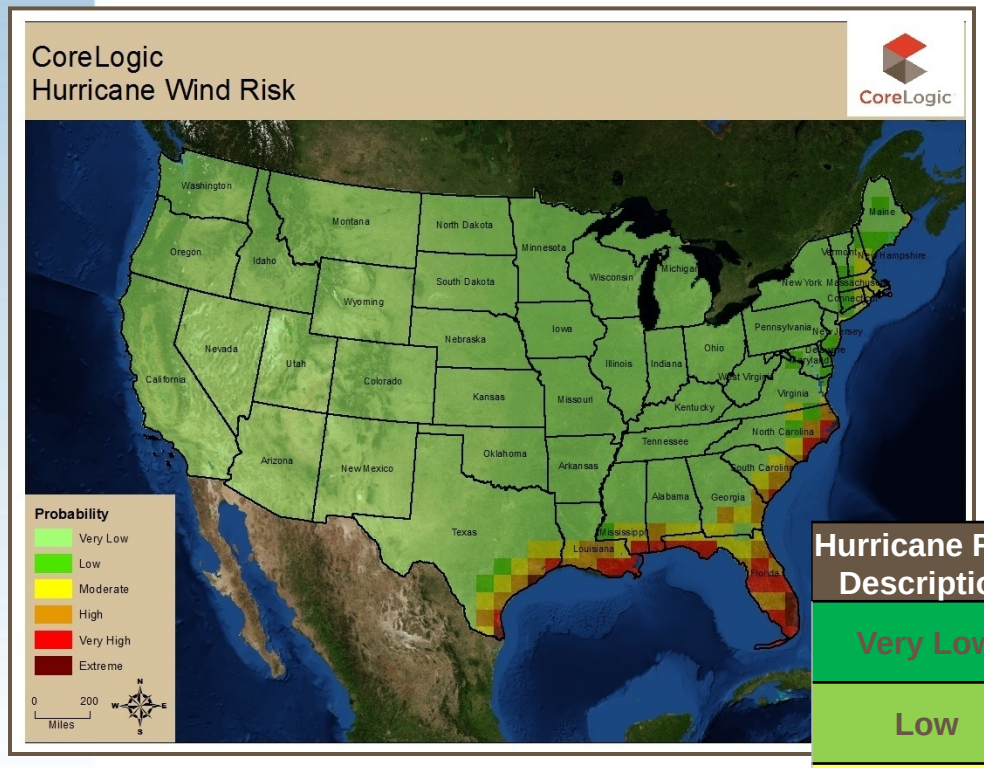
Brokers:

- Enhance client presentations
  - Small/midsize brokers can use data for presentations to compete with larger competitors
- Determine coverage amount
  - Use as a resource to justify additional coverage to clients
  - Determine quake/wind sub limits – How much should you purchase?
- Negotiate with the carriers

Underwriters:

- Strategically aid in pricing policies (AAL)
  - Reinsurance pricing is driven by AAL's in cat-prone areas. You could be paying more in reinsurance for a policy than you're receiving in premiums!
- Determine effect on capacity (PML)
  - If there are two risks with similar AAL's and one has a higher PML, it is considered less attractive
- Second opinion for your primary model
  - If there is a huge discrepancy in numbers further analysis is needed

Hurricane Wind Probability



- Complete view of Hurricane Force Wind including:
  - Risk Description, Risk Level (1-12) and 100 Year Probability
- Risk Level can be used to set Underwriting Guidelines

Hurricane Layer

Hurricane Risk Description	Risk Level	Hurricane 100-Year Probability Range	Empirical % Risks
Very Low	1	Probability <= 0.009	17.0%
	2	0.009 < Probability <= 0.028	2.7%
Low	3	0.028 < Probability <= 0.035	15.5%
	4	0.035 < Probability <= 0.041	4.0%
Moderate	5	0.041 < Probability <= 0.085	7.7%
	6	0.085 < Probability <= 0.095	11.5%
High	7	0.095 < Probability <= 0.120	14.8%
	8	0.120 < Probability <= 0.160	6.7%
Very High	9	0.160 < Probability <= 0.195	9.0%
	10	0.195 < Probability <= 0.215	4.9%
Extreme	11	0.215 < Probability <= 0.266	3.6%
	12	Probability > 0.266	2.7%

State Defined Wind Programs

State Wind Pool Eligibility

- Provides insights into whether or not the address entered falls into the state defined wind pool area. In areas with a tiered wind pool, the report will also tell what eligible area the property falls within.
- Availability: AL, FL, GA, MS, NC, NJ, SC, TX.

Florida Wind Loss Mitigation

- This report brings back three critical pieces of information needed by insurers to meet requirements for the Florida Wind Loss Mitigation Credits program. Insurers must use these maps to apply discounts in accordance with this mandate that has been in effect since January 1, 2004.
  - Three Maps Followed:
    (1) Windborne Debris Regions
    (2) Windspeed Region
    (3) High Velocity Hurricane Zones (Also known as Terrain B&C Regions)

Rhode Island Wind Speed Maps

- Displays the average annual wind speeds defined by state zones

Building Characteristics Data

Key Fields

- Year Built
- # of Stories
- Square Footage
- Construction
- Roof Shape
- Roof Covering
- Roof Age

More Fields Available Upon Request!

Building Characteristics Use Cases

Pre-fill during underwriting

- Improve ease of doing business (agents and consumers)
- Work with accurate, validated data
- Fill in missing data

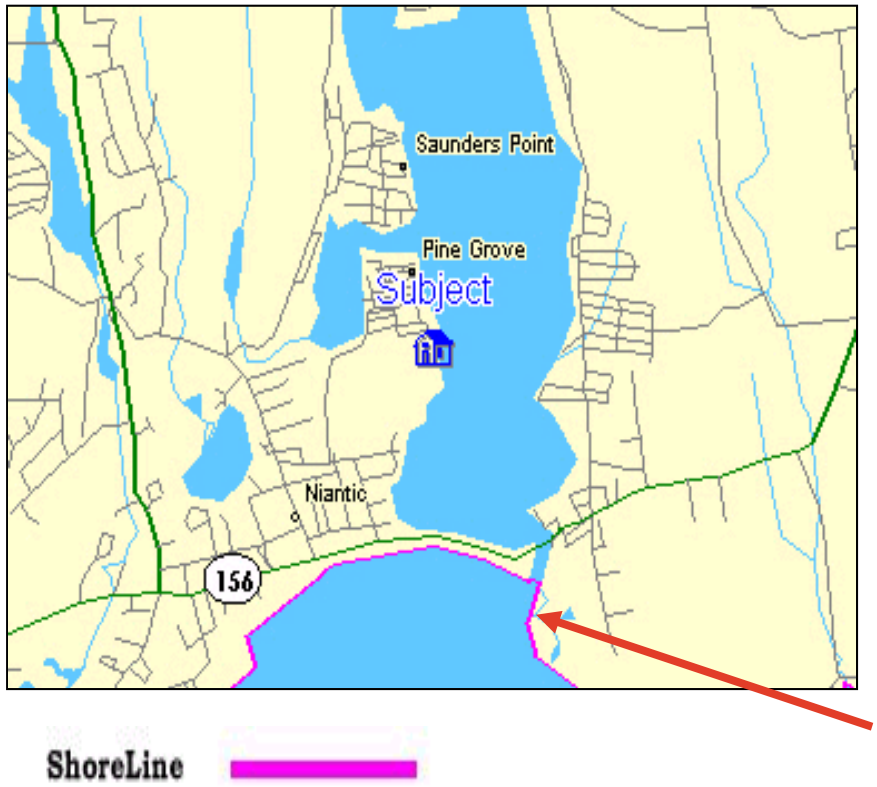
Catastrophe Modeling

- Reduce the uncertainty factor
- Increase model accuracy
- Lower reinsurance costs

Clean up your existing book of business by appending Building Characteristic data via batch processing

Custom Options for Defining What is “Coastal”

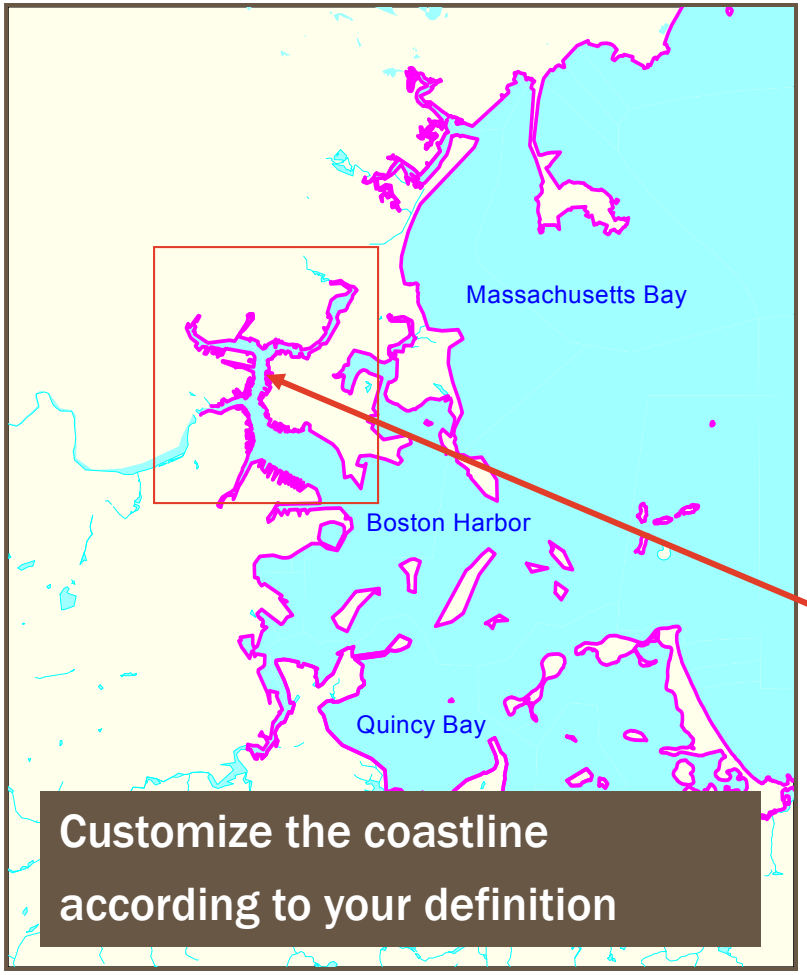
Distance to Shore - within 1 mile



- RiskMeter Online provides actual distance to the “coast” vs. distance to the closest body of water.
- Coast is defined by the customer (the pink line).
- RiskMeter Online uses concentric circles that continue until they touch the “pink line”. Buffers can be in feet, miles, or some combination of the two.
- Define the distance between the concentric circles. For example: 50 ft. between circles would provide results 950 and 1000 ft. from the shore.

Distance to Coast Using Your Definitions

Before



After

Map Layers That Back Up Coastal Results

Competition

Distance to nearest body of water:

.18 Miles - Nantucket Sound*

Distance to Ocean or Gulf:

12.75 Miles - Atlantic Ocean*

No Map Available

* This is an actual address and the reported results!

RiskMeter Online™

Distance to Coast:

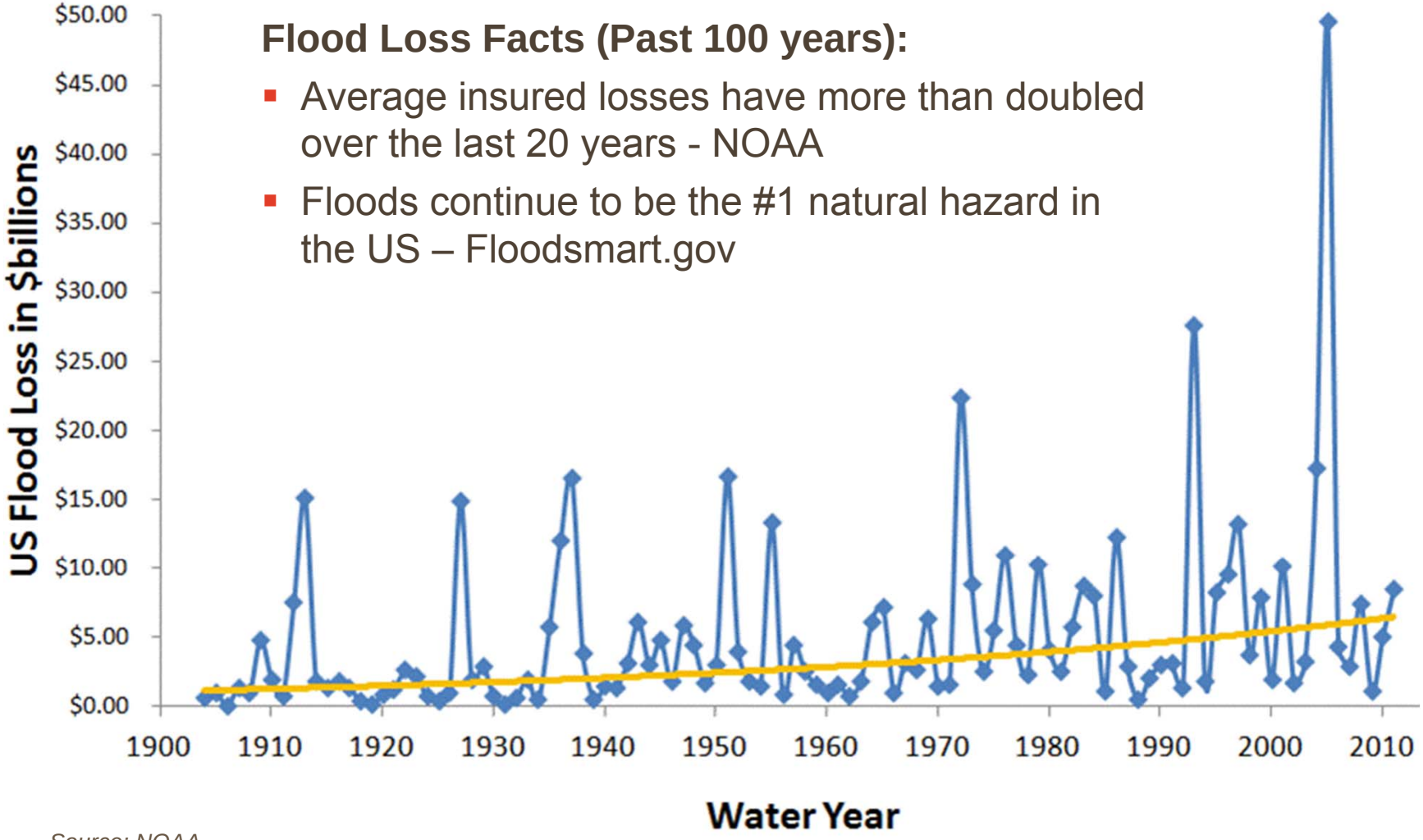
Within 1,000’

* This is right on the coast of Cape Cod!

Historical US Flood Losses (1903-2011)

Flood Loss Facts (Past 100 years):

- Average insured losses have more than doubled over the last 20 years - NOAA
- Floods continue to be the #1 natural hazard in the US – Floodsmart.gov



Source: NOAA

Limitations of a Flood Zone

Today, a property's flood risk is based on whether it is located "in" or "out" of a FEMA designated flood zone.

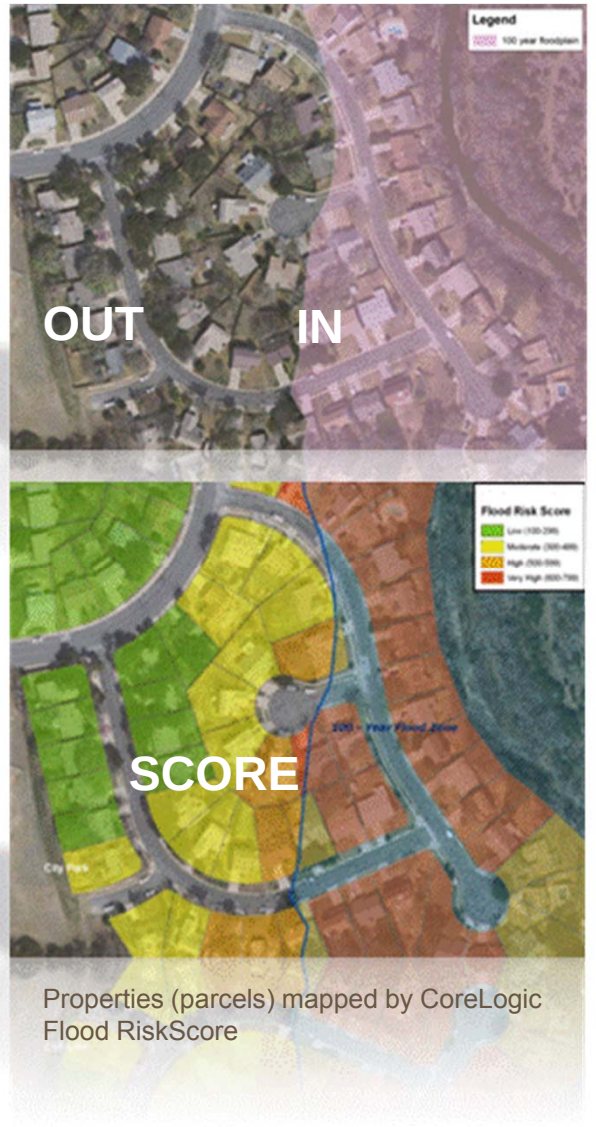
- Binary Data – "in" or "out"
- Over 20% of National Flood Insurance Program (NFIP) claims originate from properties located outside of high risk areas[1]
- From 2003 to 2012, total flood insurance claims averaged more than $3.0 billion per year[1]

[1] *Source: www.floodsmart.gov/floodsmart/pages/flood_facts.jsp*

Flood Risk Score (FRS)

A New Perspective on Flooding!

- FRS is a comprehensive and consistent indication of a specific property's risk of flood that goes beyond the flood zone
- FRS:
  - Reflects incremental risk in/out of flood zone
  - Incorporates and supports FEMA data
  - Communicates risk clearly and concisely as a single score
  - Adds additional layers of risk assessment (elevation, dams, levees, hydrology)
  - Automatically calculates elevation variance
  - Lends itself to easy integration into existing systems and processes with multiple implementation options
  - Available in real-time through RiskMeter Online™
  - Utilizes CoreLogic's proprietary parcel based geocoder
  - Provides the most complete flood risk assessment available today



Properties (parcels) mapped by CoreLogic Flood RiskScore

Hurricane Sandy – New York City

Details:

- Intersection of Ohio St. and Ladik St. Piermont, NY
- Lat/Long: 41.03998, 73.915399
- Flooded October 29, 2012

The intersection of Ladik Street and Ohio Street has flooded in Piermont. (Oct. 29, 2012)

Source: Source: http://newyork.newsday.com/news/weather/repairing-the-damage-sandy-did-to-your-home-1.4177340

Flood Risk:

- FEMA Flood Zone: “X” (not in)
- Flood Risk Score: 50
- Flood Risk Score Rating: High Risk
- Water Back Up Potential: High Risk

FRS Case Study – Hurricane Sandy

- FRS is an effective tool to identify flood risk for Sandy-type of events
- Sandy was a flood event above 100-year flood level
- FRS was effective in identifying 97% of the properties inundated

	Risk Rating	Properties *	%
	Very Low	14	0.01%
	Low	97	0.04%
	Moderate	7,091	3.28%
	High	39,984	18.47%
	Very High	144,120	66.57%
	Extreme	25,204	11.64%

*** 216,510 Residential Sample**

Source: Metropolitan Transportation Authority, www.MTA.info

FRS Underwriting Rule Example

FLOOD RISK SCORE	RISK RATING	EXPLANATION	Action
NOT AVAILABLE (N, N/A)	NULL	Property is located either in a D or NONE zone (un-studied) or in a non-participating community. No flood study is available and the Flood Risk Score cannot be determined.	Referral
<20	VERY LOW	Property is either located over 3,000 feet outside of the FEMA 100-year flood plain as well as outside of the 500-year flood plain, or there is a very significant positive elevation variance (difference between the ground elevation and the water surface elevation).	Approved
20-29	LOW	There is a significant positive elevation variance (difference between the ground elevation and the water surface elevation).	Approved
30-49	MODERATE	Property is located within a FEMA 500-year or is outside of the 500-year flood plain and has *material* elevation variance (difference between the ground elevation and water surface elevation).	Referral
50-59	HIGH	Property is located within a FEMA 500-year or is outside of the 500-year flood plain and has greater *material* elevation variance (difference between the ground elevation and water surface elevation).	Referral
60-79	VERY HIGH	Property is either located "inside" the FEMA 100-year flood plain with *immaterial* elevation variance or is located "outside" the flood plain with *material* elevation variance and located in an "Additional Impact Area" [Lowest risk properties "inside" the special flood hazard area and higher risk properties "outside" the flood plain]	Do Not Write
80-100	EXTREME	Property is either located inside the FEMA 100-year flood plain with *material* elevation variance or is located "outside" the flood plain with *material* elevation variance and located in an "Additional Impact Area" [Higher risk properties "inside" the special flood hazard area and highest risk properties "outside" the flood plain]	Do Not Write

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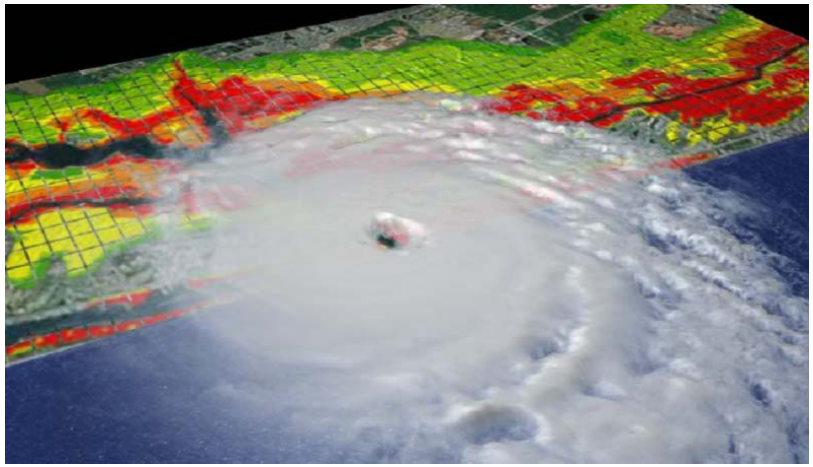
U.S. Coastal Storm Surge

Determining Storm Surge Risk

Surge model uses offshore variables: storm intensity, forward speed, direction, landfall location, bathymetry

Introduces onshore variables: land surface elevation, natural barriers, human-made barriers, inland waterways



- Billions of dollars in insured losses and countless lives lost to storm surge
- According to CoreLogic analysis, approximately 976,054 homes in the U.S. are located in an “Extreme” category and are susceptible to storm surge flooding from Category 1-5 hurricanes
- Affects 19 coastal states

Slide 24

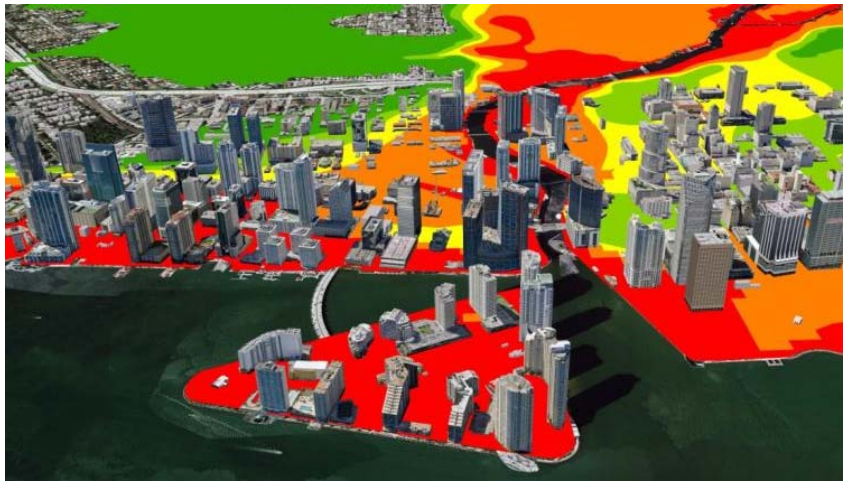
MA7 This was all taken from a previous Coastal Storm Deck that was used.
Monique Audette, 10/8/2013

Categories of Storm Surge Risk

- **Extreme**: Category 1 – 5 storm
- **Very High**: Category 2 – 5 storm
- **High**: Category 3 – 5 storm
- **Moderate**: Category 4 – 5 storm
- **Low**: Category 5 storm only

NY Metro Area Example

Category	Properties Affected	Residential Structure Value
Extreme	116,013	$57,515,509,302
Very High	125,884	$60,975,163,269
High	104,376	$44,221,860,288
Moderate	101,155	$43,000,204,402
Low	N/A	$N/A
Total	447,428	$205,712,837,261



Comparing FEMA Special Flood Hazard Areas (SFHA) to CoreLogic Coastal Storm

- FEMA SFHA are based on 100-year flood
- Hurricanes are not limited to 1% events
- In most areas, surge risks extend beyond the FEMA flood zone
- Properties at risk of a surge may not be aware of their flood risk

FEMA risk is binary

- Out
- In

CoreLogic risk is granular

- Low
- Moderate
- High
- Very High
- Extreme

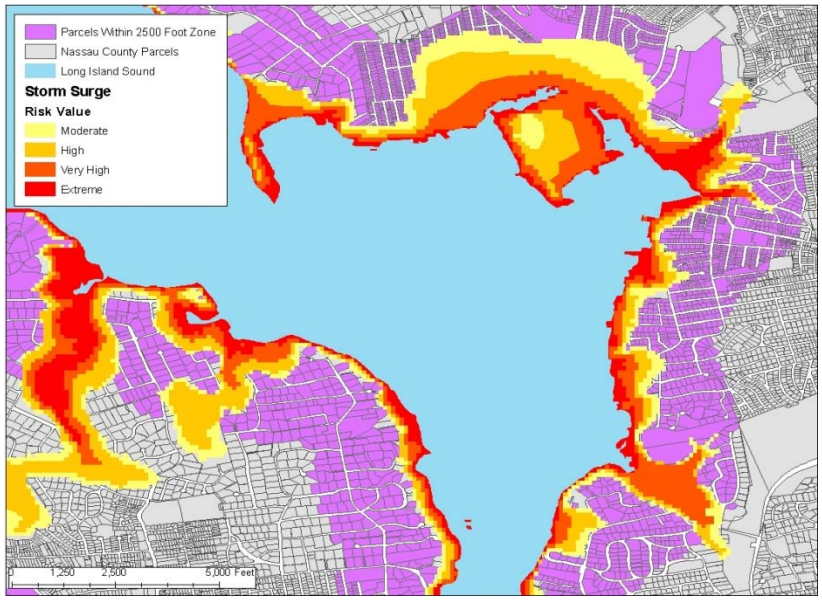
Table 1 – Storm-Surge Inundation vs. Fresh-Water Flooding[1]

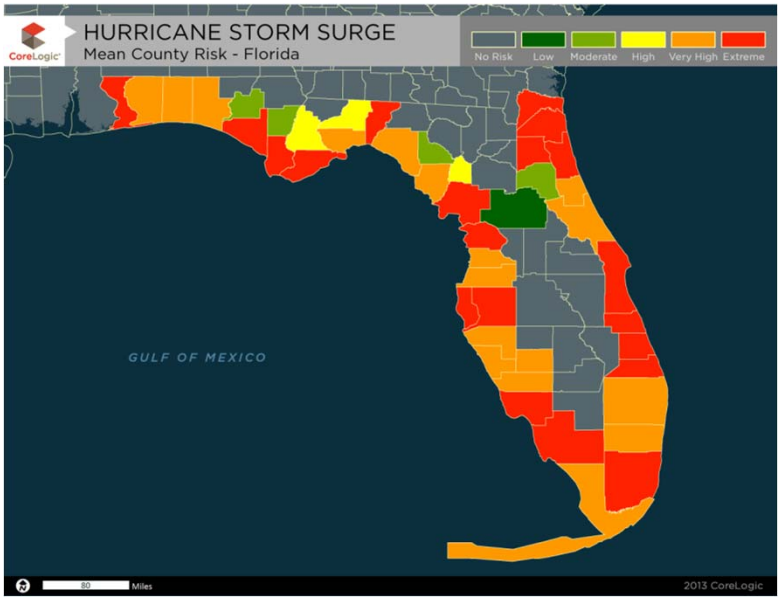
Metro Area	Total properties exposed to flood or surge	% properties only in Surge
Miami, FL	**615,756**	**19.4**
New York, NY	**475,195**	**65.3**
Tampa, FL	**328,270**	**58.5**
Virginia Beach, VA	**306,717**	**87.6**
New Orleans, LA	**240,384**	**42.7**

[1] Source: CoreLogic Storm Surge Report, 2013

Buffers and County Based Risk

- A buffer does not accurately identify risk
- Generalizing risk across a large area (county) will not accurately reflect potential for damage





Parcels within 2,500 feet of the ocean but not in a surge-risk zone

Residential Exposure in the U.S.

Table 1 – Total Exposure by Storm Surge Category

Storm Surge Risk Level (Storm Category)	Total Properties Potentially Affected	Total Estimated Structure Value ($ billion)
Extreme (Cat 1-5)	976,054	371.9
Very High (Cat 2-5)	880,998	253.0
High (Cat 3-5)	1,049,184	249.7
Moderate (Cat 4-5)	790,046	185.7
Low (Cat 5)	506,081	86.4
Total	4,202,363	1.146 trillion

Source: CoreLogic 2013. Based on estimated property values as of April 2013.

Table 2 – Storm Surge Risk for the Top 10 U.S. Metropolitan Areas

Metro Area	Total Properties Potentially Affected by all Categories	Total Structural Value ($ billion)
New York, NY	447,428	205.7
Miami, FL	239,910	100.1
Virginia Beach, VA	305,943	73.0
Tampa, FL	301,045	55.0
New Orleans, LA	238,919	43.7
Cape Coral, FL	198,020	42.8
Wilmington, NC	114,695	38.1
Naples, FL	76,104	34.5
Bradenton, FL	138,226	33.8
Charleston, FL	81,484	31.5
Total	2,141,774	658.5

Source: CoreLogic 2013. Based on estimated property values as of April 2013.

Total Coastal Solution Availability

- Per-click Pricing
  - No upfront licensing fee
  - Great for any size installation
- Hosted Service
  - RiskMeter Online™ performs all upgrades/maintenance
- Browser Based
  - No IT project needed to get started
  - Easy enough for anyone to use
- Batch processing available for multiple reports
- Easy integration implementation to automate your underwriting process

Benefits of a Comprehensive Coastal Solution

- Gives you an overall look at the risk so you can understand potential water and wind damage
  - *You may not cover water damage, but you've probably paid for some of it!*
- Highly customizable options allow you to have certain aspects at the agent level that are acceptable or unacceptable based on your companies guidelines
- AAL and PML Catastrophe solutions allow you to price the risk for single locations
- Structural information such as building characteristics and roof age allow you to understand how a building would hold up should an event occur
- Easy to understand scoring components allow you to set and follow underwriting guidelines

If you have any questions or to request a recording of this webinar, please contact:

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