Characterizing the Hurricane Hazard for Southeastern Louisiana

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- Define what is possible a set of hypothetical storms
- Estimate probabilities storms and storm characteristics

(central pressure – maximum wind speed, radius-tomaximum winds, track, forward speed, etc.)

- Apply wind, storm surge and wave models to compute responses
- Compute frequency of occurrence and uncertainty estimates



Severe Hurricane Tracks



Upper Cat 4 and Cat 5 intensity Cat 2 and greater intensity hurricanes hurricanes (125 knots and greater) 31* 30 30 290 29 27* 26% 25 254 24 23* 22* 20 21 20* 19 18° 15 17° -84° -100* -98* -96' -94* -92' -90* -88' -86* 82 -95 -90 -85







Major hurricane probabilities are not spatially homogeneous.



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Intensity Decay Near Landfall



1941 Oct - No Name Definition of values at 1944 Oct - No Name landfall gives a consistent 1957 Jun - Audrey 1961 Sep | Carla 1964 Sep - Hilda measure of storm intensity! 1965 Aug Betsy 1967 Sep Beulah Average decay is 15 – 20 1969 Aug - Camille millibars over last 90 nm. 1970 Jul - Celia 1974 Aug - Carmen 1979 Aug Frederic **F**1000 1980 Jul - Allen Central Pressure (milliba 096 096 096 096 1992 Aug Andrew 1995 Aug - Opal 1999 Aug - Bret 2002 Sep Lili 2004 Sep - Charley 2004 Sep - Ivan 2005 Aug - Katrina 2005 Sep - Rita 2005 Oct Wilma 2005 Jul - Dennis **Based on data from Oceanweather Inc., decay** during approach to 920 land is about the same as post-landfall decay. 900 3 -1 Distance to Landfall (degrees)



Definition of Hypothetical Storms









Modeling Methodology







Water Levels – 1% Chance Exceedance LaCPR Planning Unit 1



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Water Levels – 1% Chance Exceedance LaCPR Planning Unit 2



Louisiana Coastal Protection and Restoration Planning Unit 2 New Orleans Barataria Basin Water Surface Elevations (see note) 7 ft 0.08.5 100 -Year Frequency Belle 2010 Base Conditions Chasse April 2008 Lake Salvador Lafitte Houma Larose **Breton Sound** 8 ft π 12 ft Golden Meadow Barataria Bay 9) T a Grand Isle Legend 21 Port S Fourchon Planning Unit Boundar Note: All elevations shown are for storm surge Miles only, exterior to the existing levee system, and 0 3.5 7 14 21 28 do not include waves, overtopping or rainfall.

