



Vermilion Parish Hazard Mitigation Plan Update Risk Assessment Meeting

October 30, 2014

Abbeville, LA



Agenda

- Risk Assessment
- Mitigation Strategies/Goals
- Proposed Mitigation Projects



Risk Assessment: Hazard Identification

- The plan includes descriptions of the natural hazards that affect the jurisdictions in the planning area.
- A hazards identification should include the
 - locations affected
 - the extent or strength
 - previous occurrences
 - probability of future events



Risk Assessment: Analyze Risk and Summarize Vulnerability

- Risk analysis involves evaluating vulnerable assets, describing potential impacts, and estimating losses for each hazard.
- This helps the community understand the greatest risks facing the area.
- Methods can include exposure risk analysis, historical analysis and scenario analysis.
- Through the risk analysis the community should be able to verbalize or create problem statements about the identified risks.



Risk Assessment: Hazards Identified

- Twelve hazards identified, only five hazards will be profiled,
- These natural hazards were selected based on an assessment of the overall impact (geographic extent, magnitude, probability, and exacerbating or mitigating conditions) affecting Vermilion Parish.
- The hazards that pose the greatest potential for a negative impact are:
 - **Floods, hurricanes, thunderstorms with lighting and high winds, tornadoes, coastal erosion, and levee failure.**



Flooding

- A flood is the overflow of water onto land that is usually not inundated.
- The National Flood Insurance Program defines a flood as a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waves, unusual and rapid accumulation or runoff of surface waters from any source, mudflow, or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.



Flooding

Types of flooding may include the following:

- Riverine
- Flash
- Ponding
- Backwater
- Urban
- Coastal



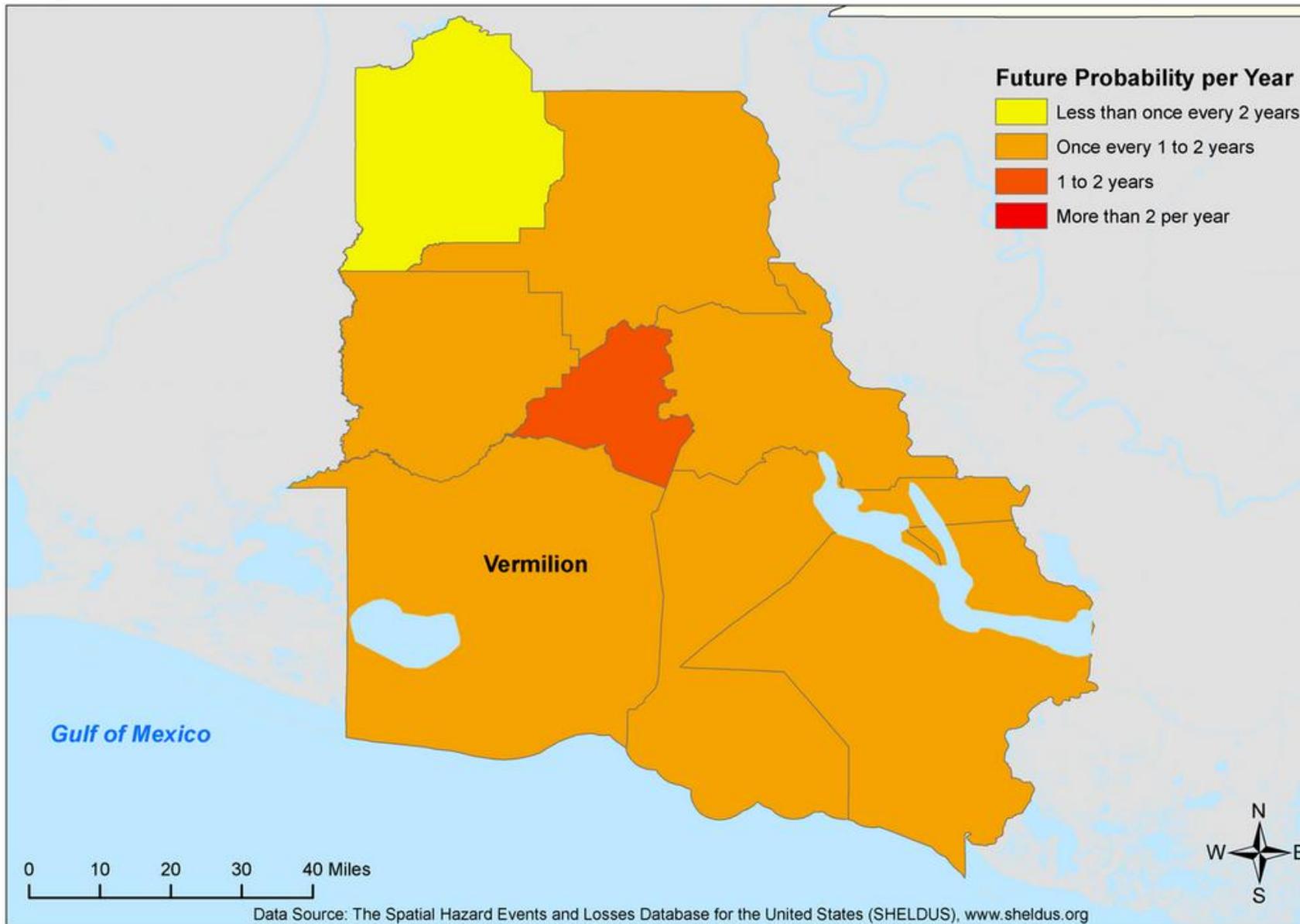
Repetitive Flooding

- Some areas flood more often than other properties, even more than those in the mapped 100-year floodplain.
- FEMA defines a “repetitive loss” property as one which has received two flood insurance claim payments for at least \$1,000 over any 10-year period since 1978.
- These properties are important to the National Flood Insurance Program and the Community Rating System because even though they comprise 1% of the policy base, they account for 30% of the country’s flood insurance claim payments.



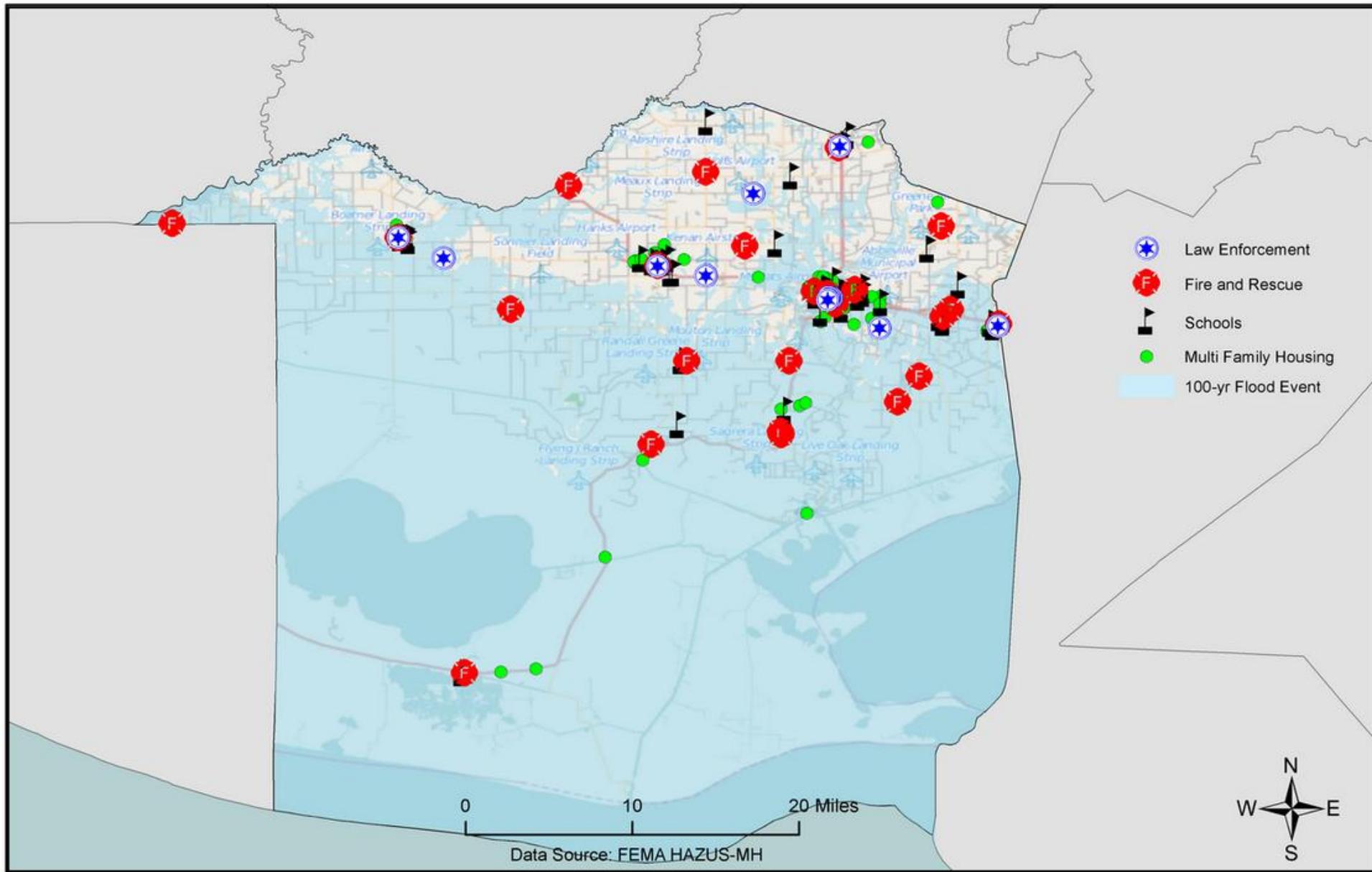


GOHSEP Region 4 Vulnerability: Flooding Probability





Vermilion Parish Critical Facilities: 100-Year Flood Event



Tropical Cyclones (Hurricanes)

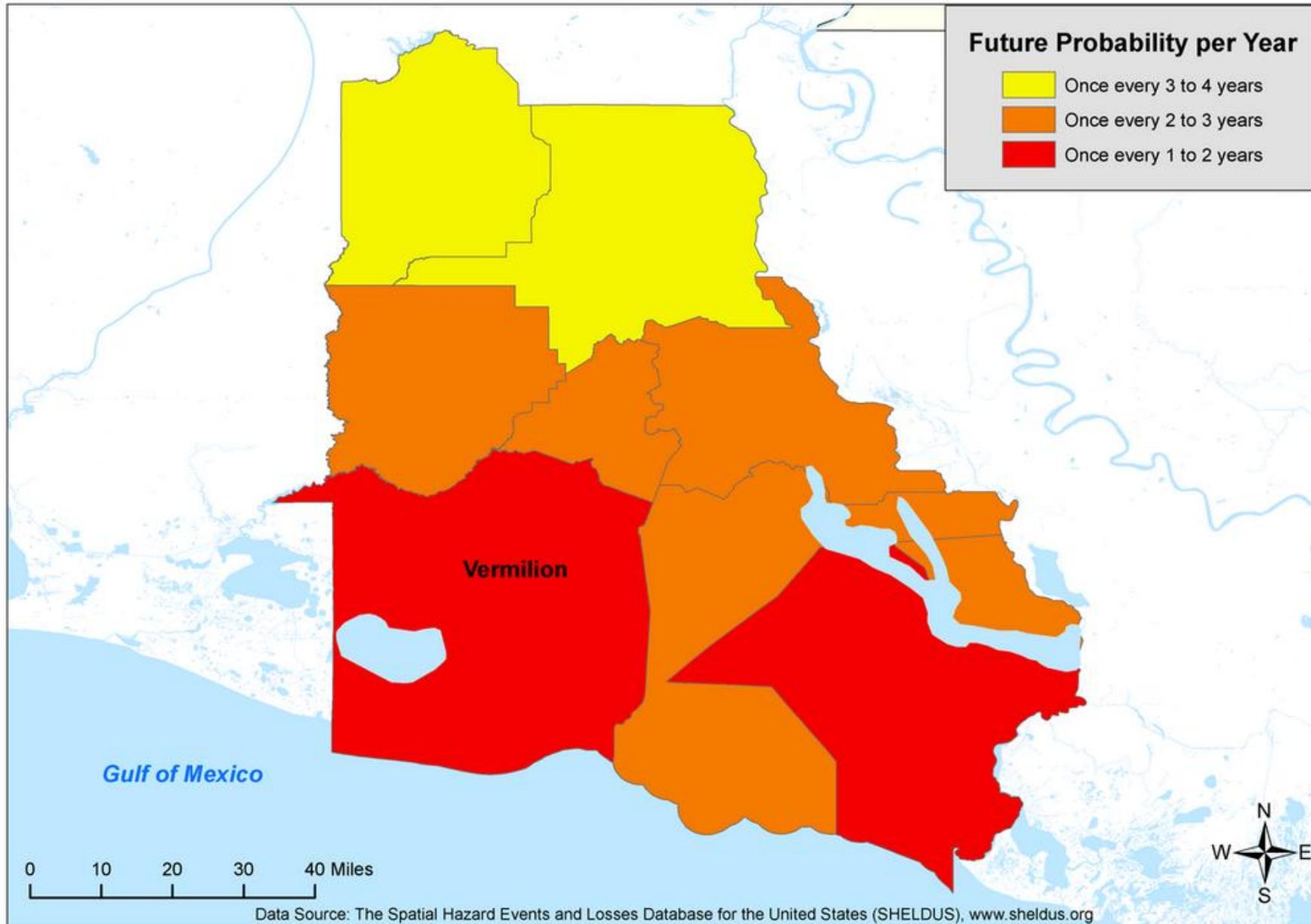
- Tropical cyclones are defined spinning, low-pressure air masses that draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes

Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major damage to exposed mobile homes, evacuation of some shoreline residents
Category 3	111-130 mph (178-209 km/hr)	Devastating damage will occur. Some structural damage to small buildings; serious flooding at coast and many smaller structures near coast destroyed
Category 4	131-155 mph (210-249 km/hr)	Catastrophic damage will occur. High risk of injury or death to people, livestock, and pets due to flying and falling debris. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months.
Category 5	> 155 mph (249 km/hr)	Catastrophic damage will occur. People, livestock, and pets are at very high risk of injury or death from flying or falling debris. A high percentage of frame homes will be destroyed. Long-term power outages and water shortages will render area uninhabitable for weeks or months.



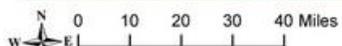
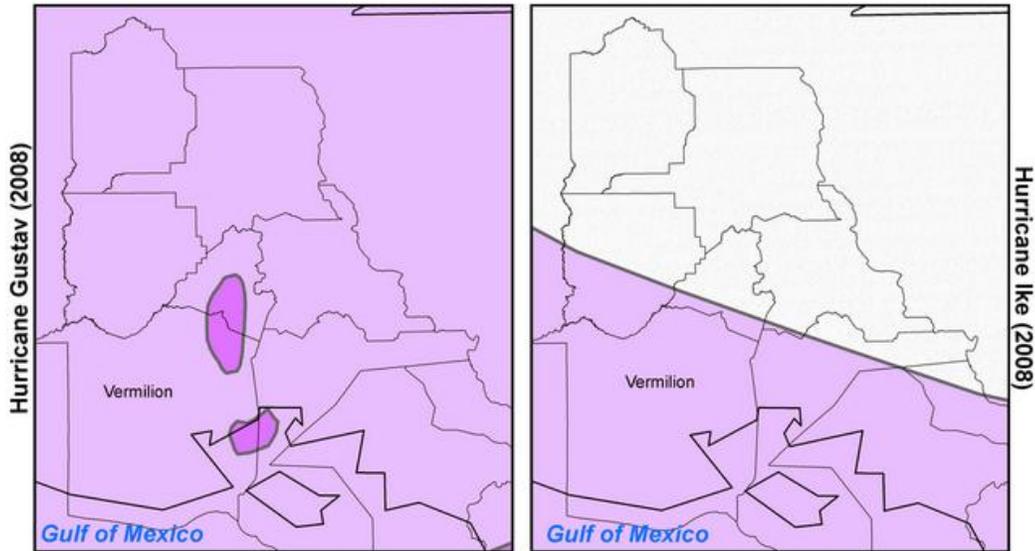
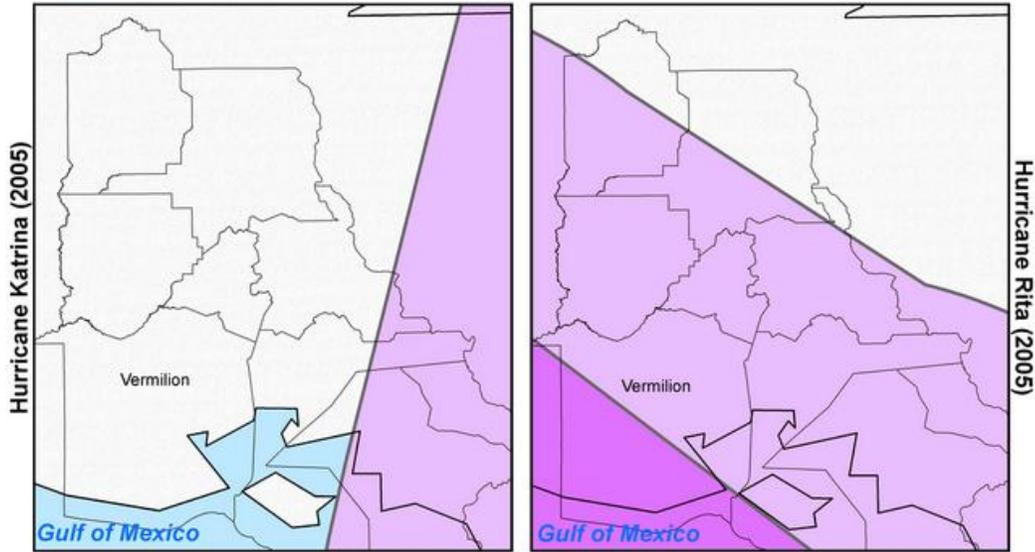


GOHSEP Region 4 Vulnerability: Hurricane Probability





Tropical Cyclone Wind Fields Affecting GOHSEP Region 4



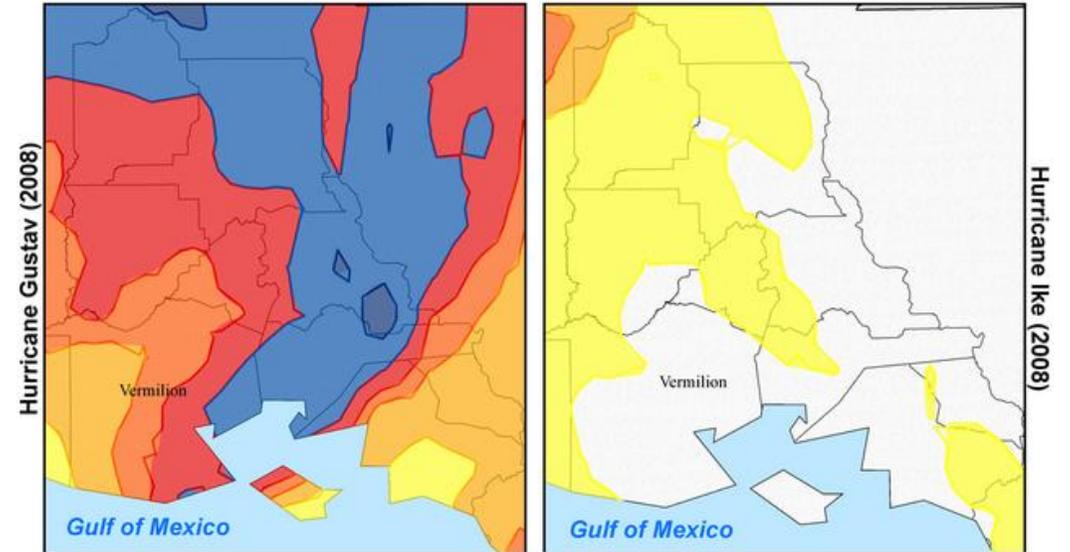
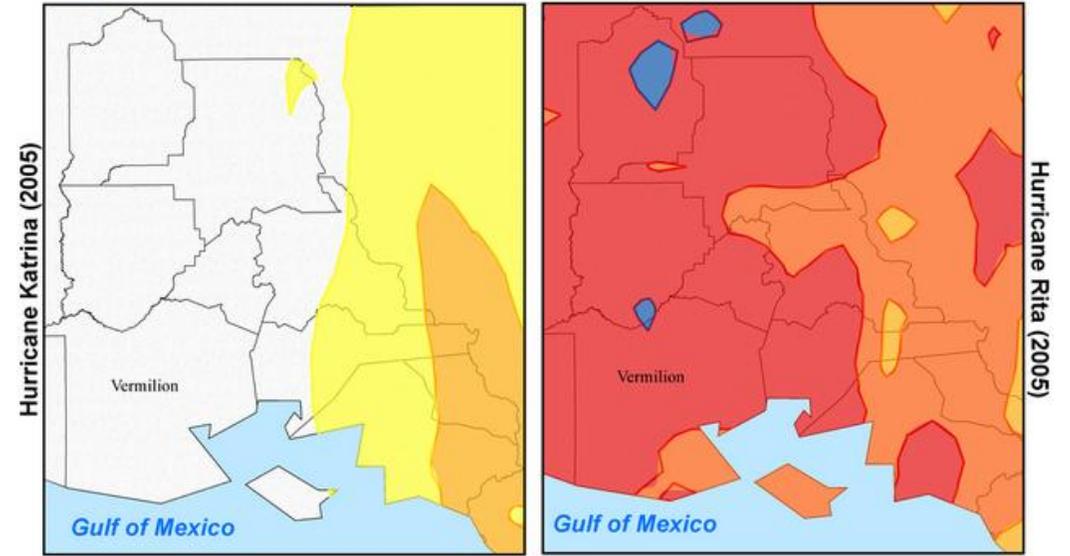
Wind Speed (Saffir-Simpson Scale)

Tropical Storm (39 - 73 mph)
 Hurricane (74 - 110 mph)
 Major Hurricane (> 110 mph)

Data Source: NOAA Hurricane Research Division (HRD)



Tropical Cyclone Precipitation Affecting GOHSEP Region 4



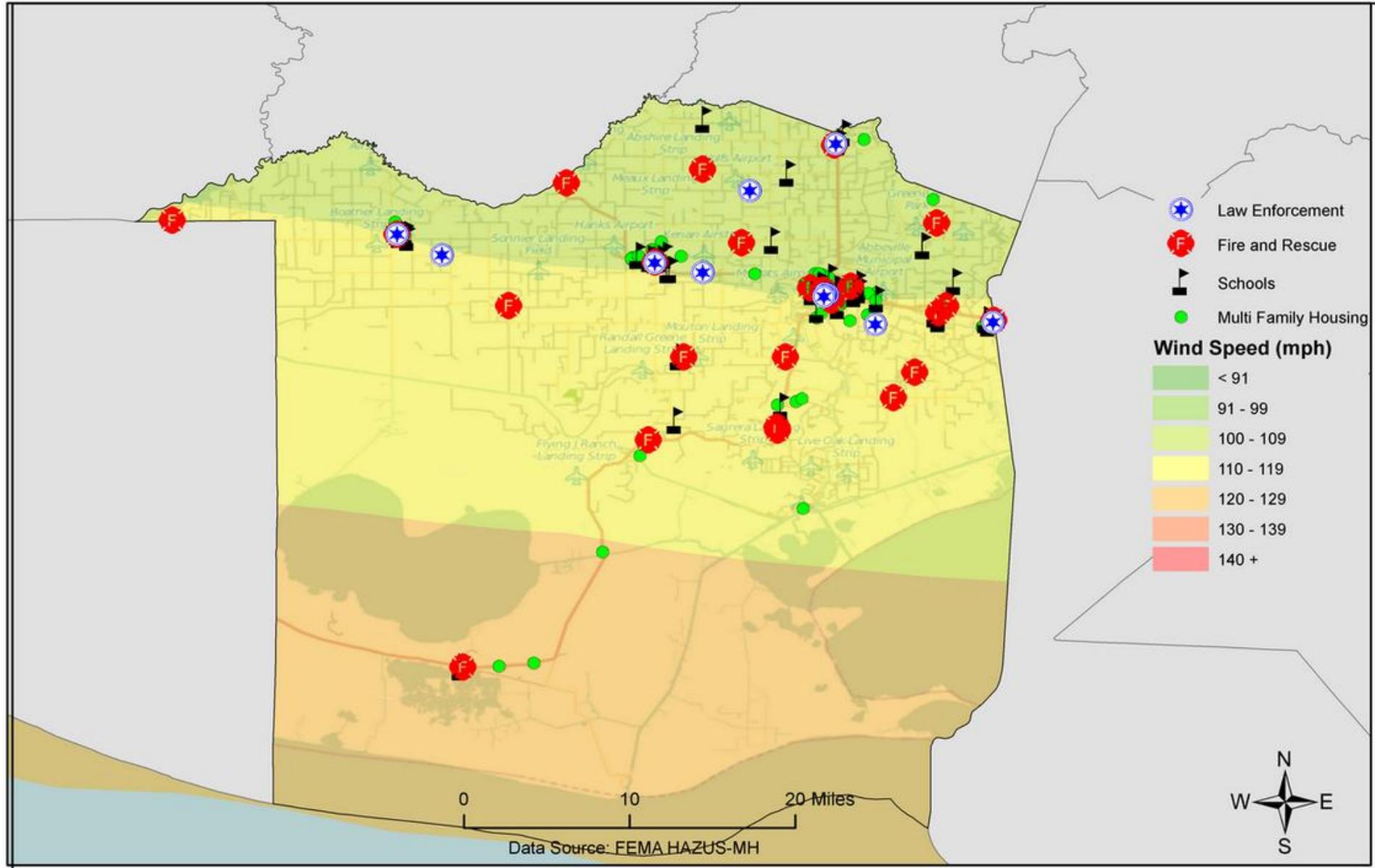
Total Precipitation (inches)

1
 3
 5
 7
 10
 15
 20

Data Source: Advanced Hydrologic Prediction Service (AHPS)

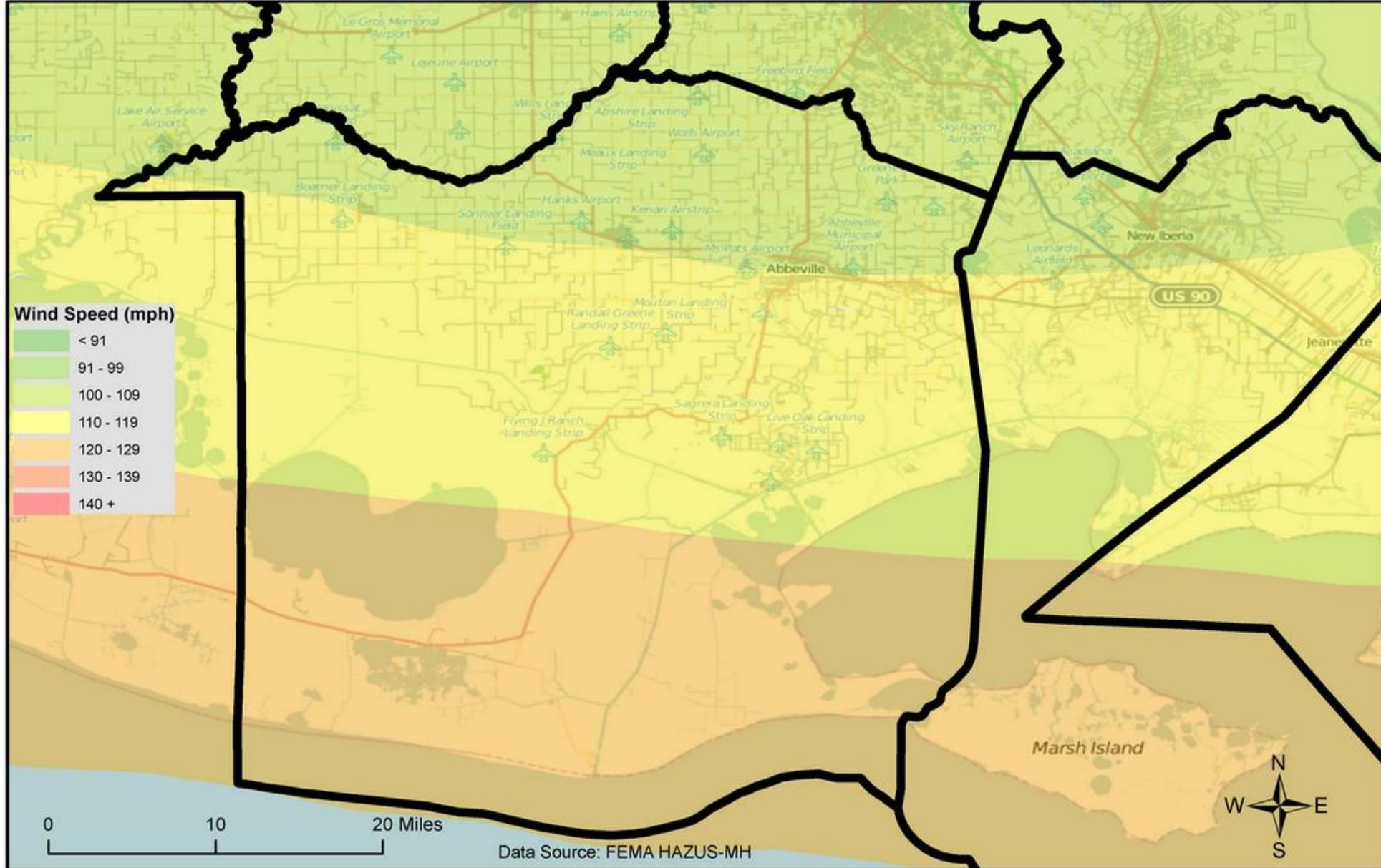


Vermilion Parish Critical Facilities: Tropical Cyclones





Wind Zone Map for Vermilion Parish



Tornadoes

- Tornadoes (also called twisters and cyclones) are rapidly rotating funnels of wind extending between storm clouds and the ground.
- Tornadoes are the most severe storms for their size, and 70% of the world's reported tornadoes occur within the continental United States.

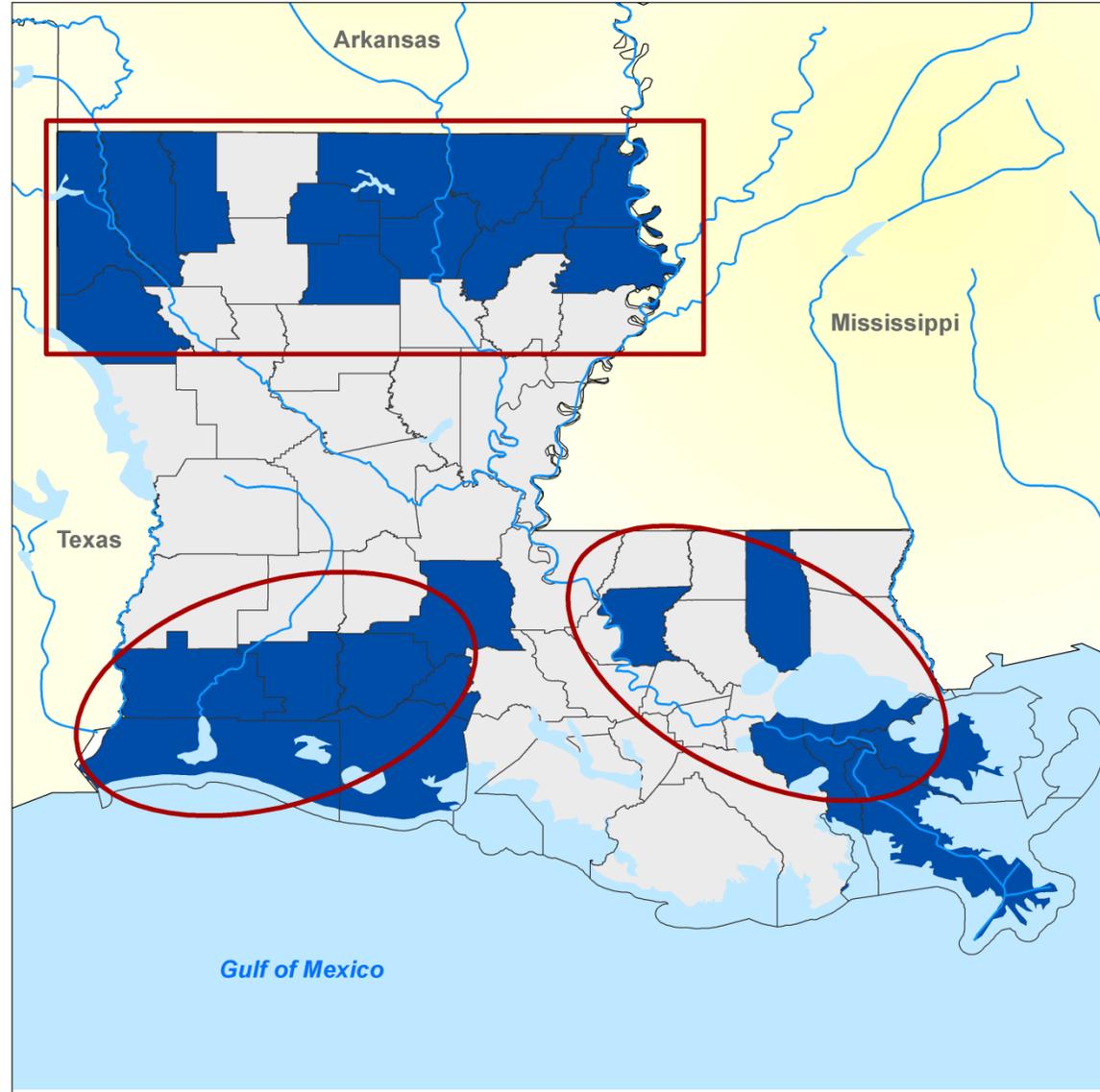


ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph





High Risk Areas for Tornadoes in Louisiana

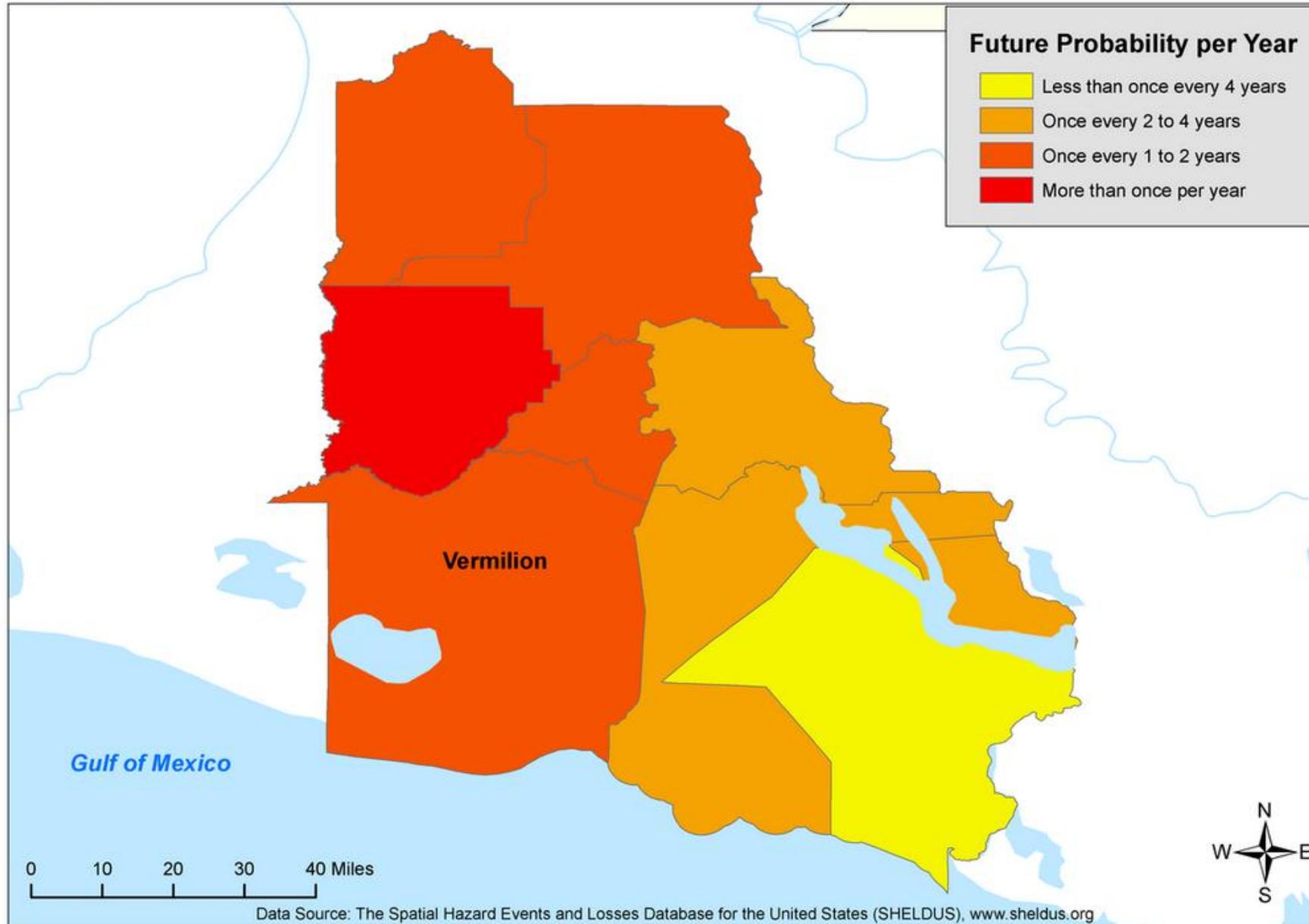


0 20 40 60 80 Miles



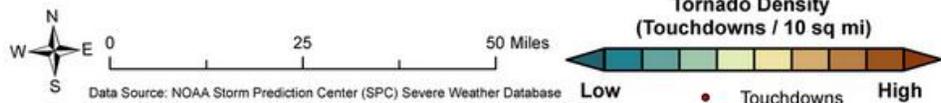
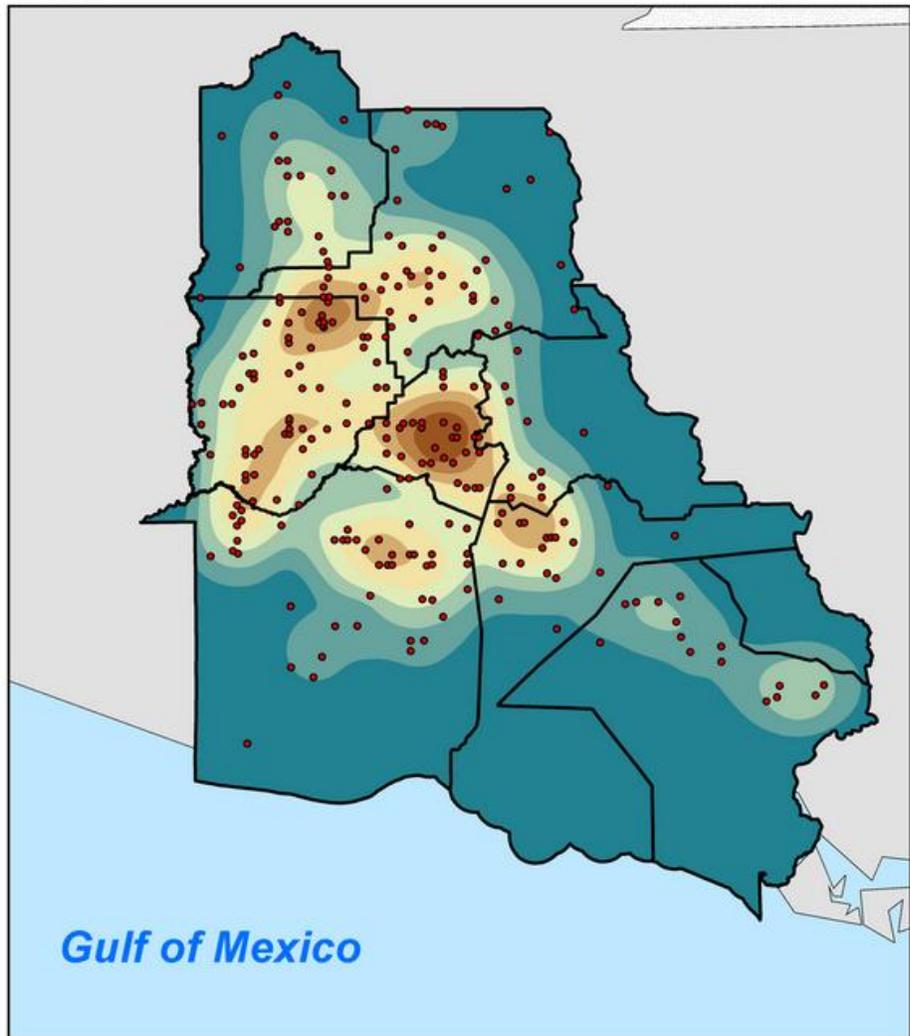


GOHSEP Region 4 Vulnerability: Tornado Probability

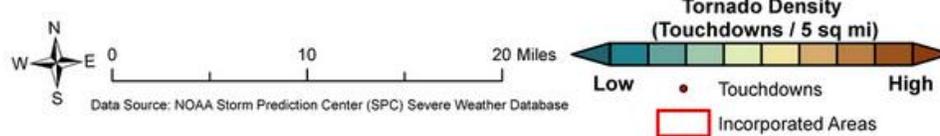
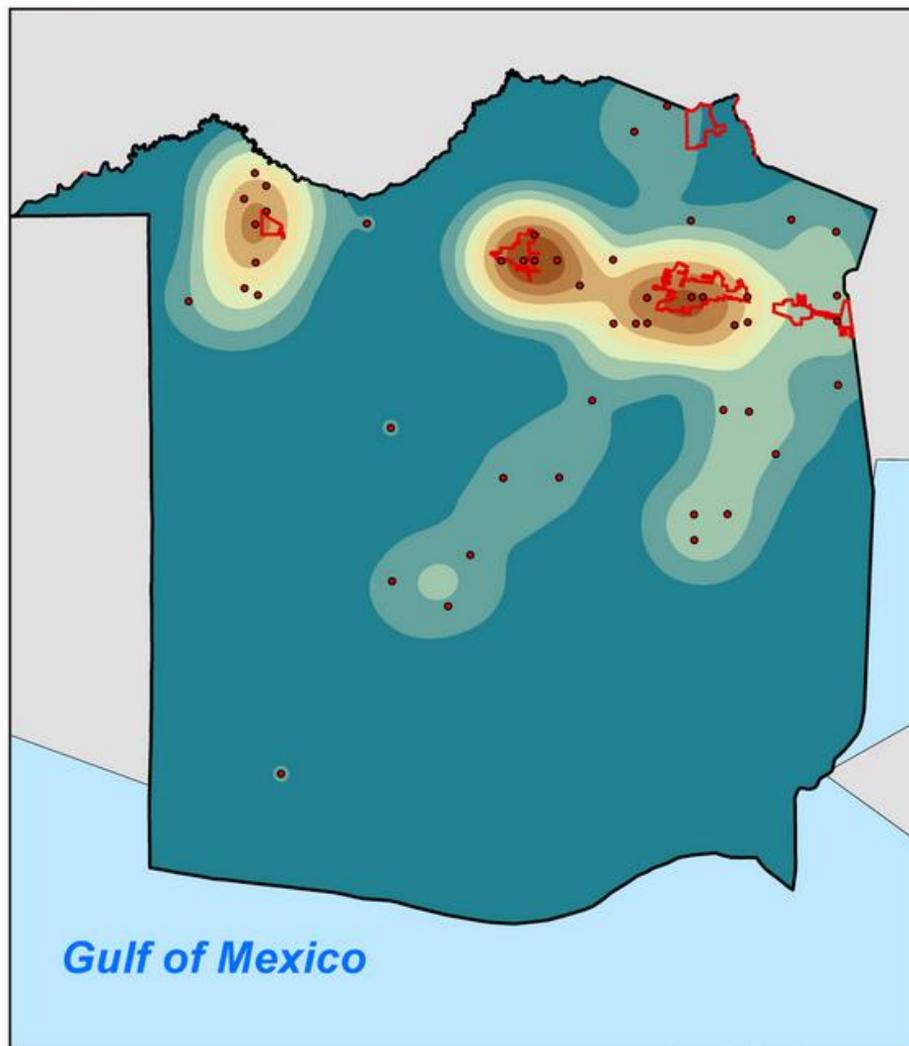




GOHSEP Region 4 Tornado Density



Vermilion Parish Tornado Density



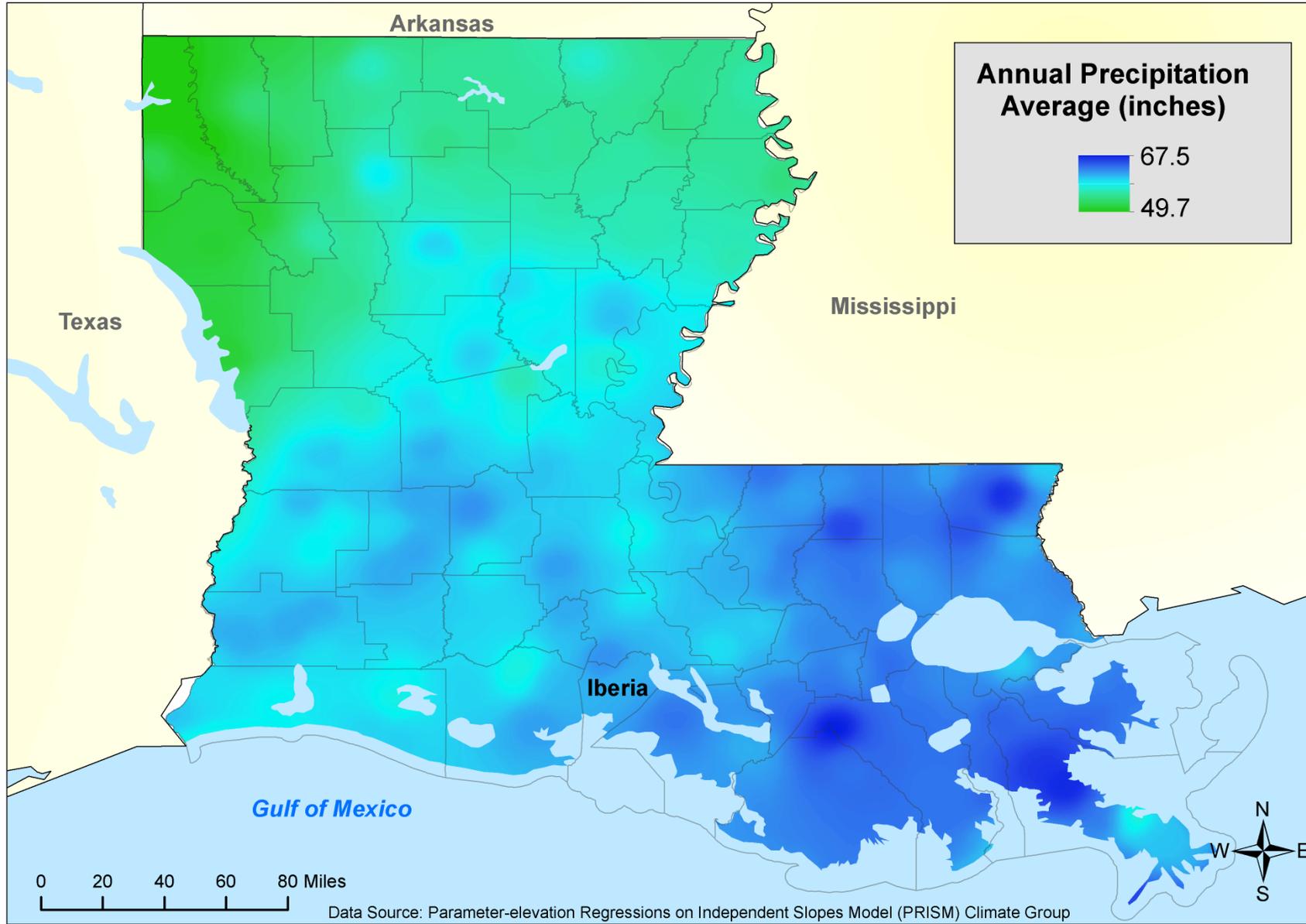
Thunderstorms (lightning, high wind)

- Thunderstorms can produce deadly and damaging tornadoes, hailstorms, intense downburst and microburst winds, lightning, and flash floods
- NWS estimates that over 100,000 thunderstorms occur each year on the U.S. mainland
- Thunderstorm and lightning events are generated by atmospheric imbalance and turbulence due to a combination of conditions:
 - Unstable warm air rising rapidly into the atmosphere;
 - Sufficient moisture to form clouds and rain; and
 - Upward lift of air currents caused by colliding weather fronts (cold and warm), sea breezes, or mountains.



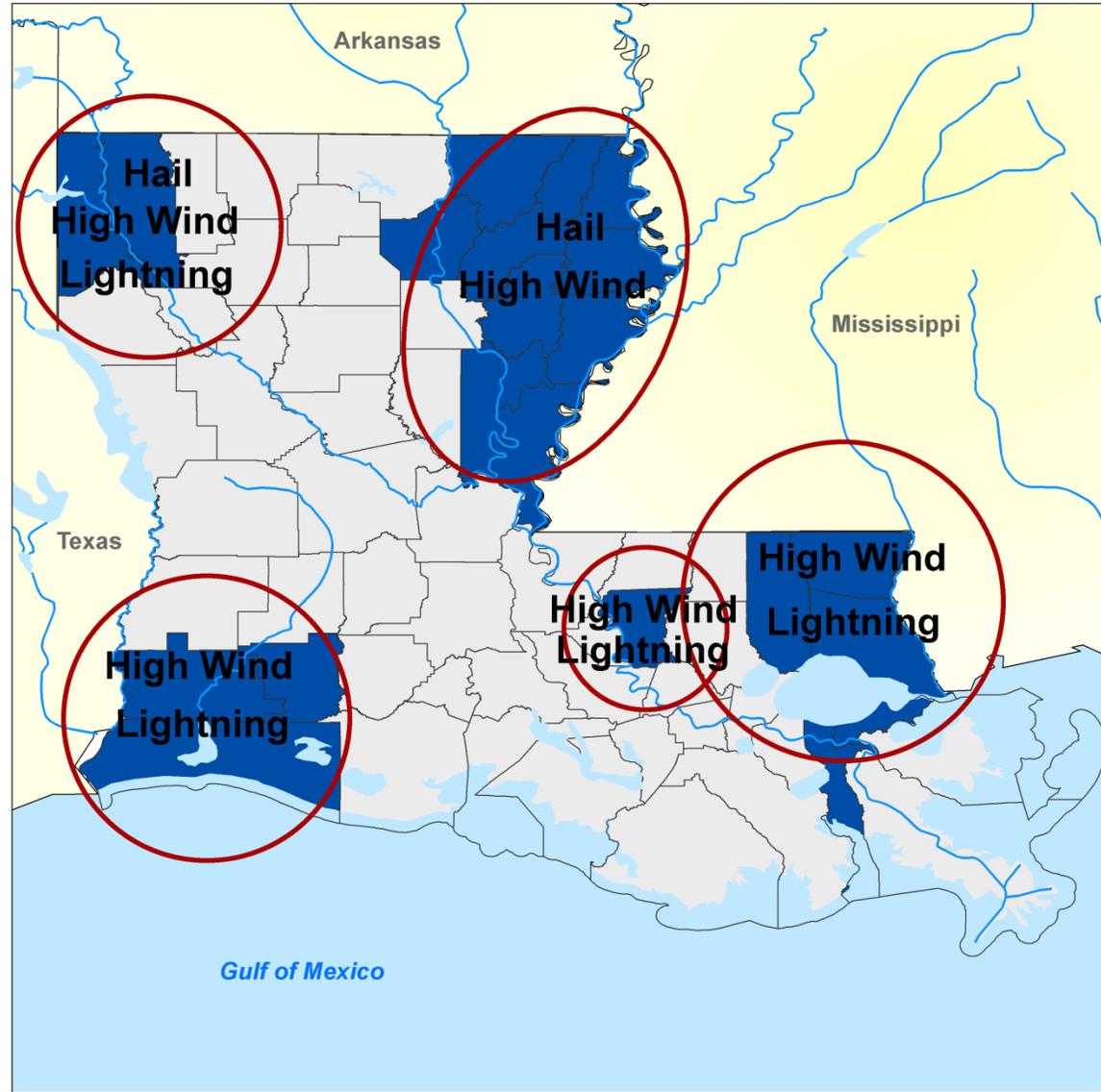


Louisiana Average Annual Precipitation (1981-2010)





High Risk Areas for Thunderstorms in Louisiana

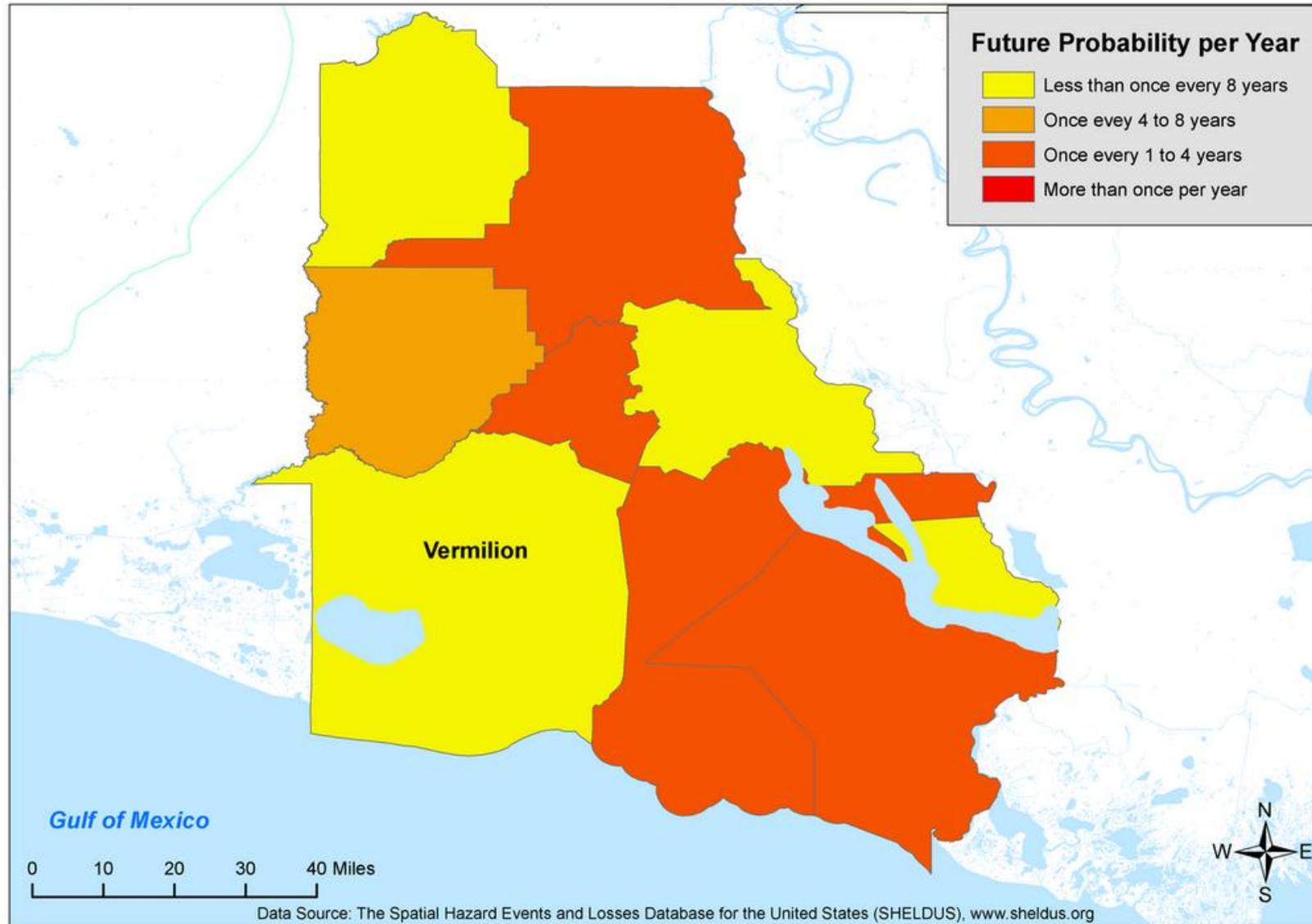


0 20 40 60 80 Miles



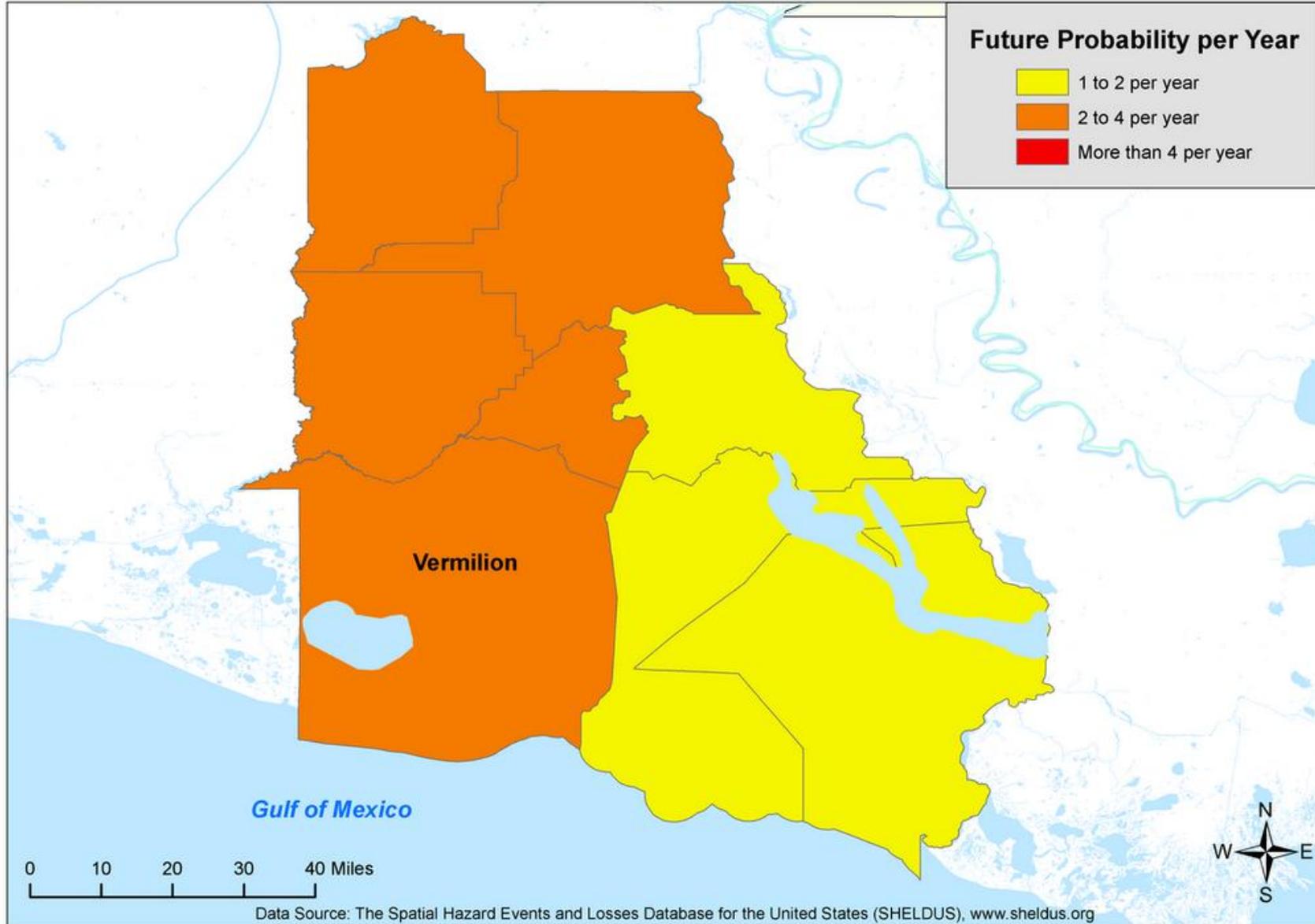


GOHSEP Region 4 Vulnerability: Lightning Probability



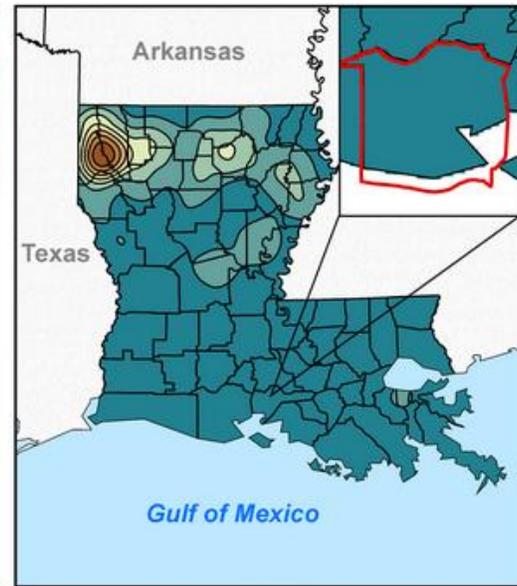
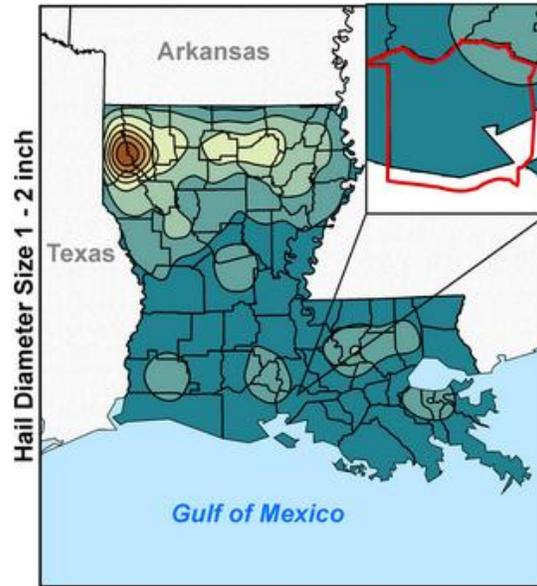
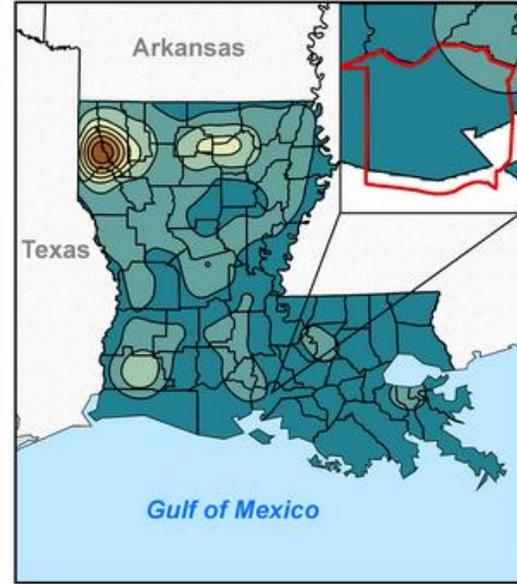
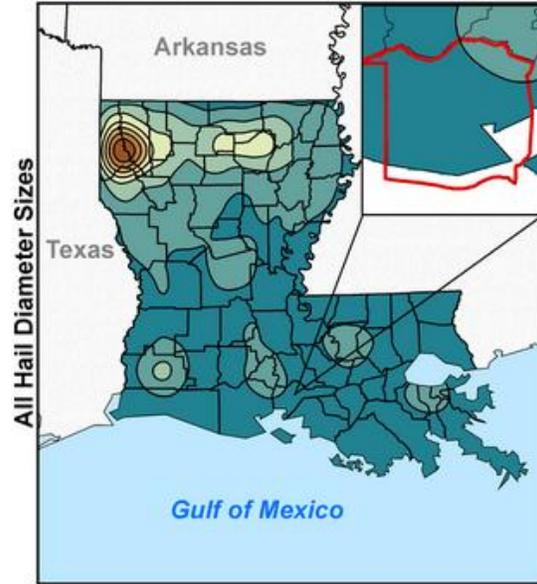


GOHSEP Region 4 Vulnerability: High Wind Probability



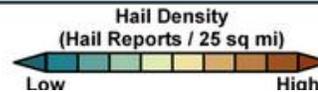


Hail Density in Louisiana and Vermilion Parish



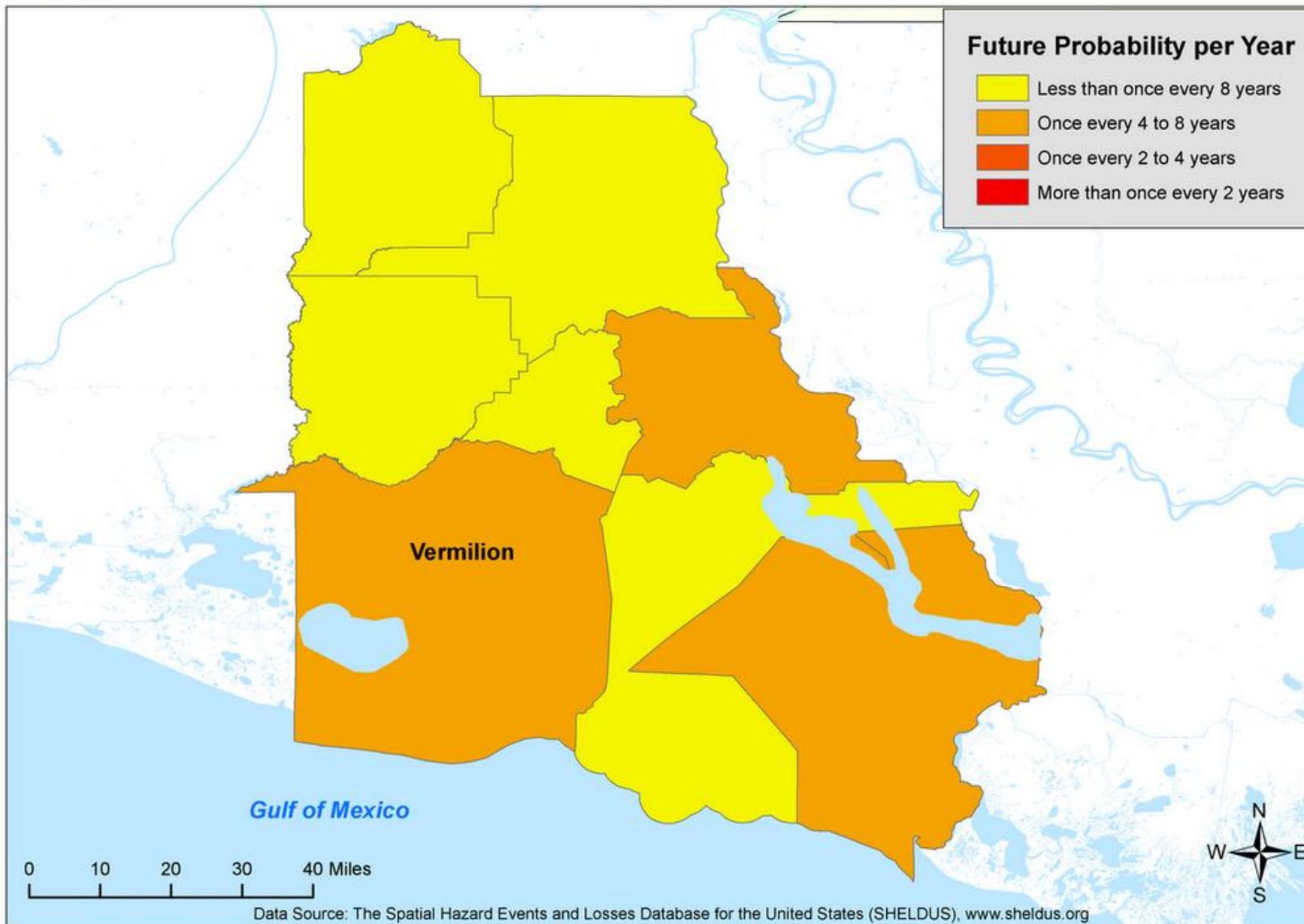
0 50 100 150 200 Miles

Data Source: NOAA Storm Prediction Center (SPC) Severe Weather Database





GOHSEP Region 4 Vulnerability: Hail Probability



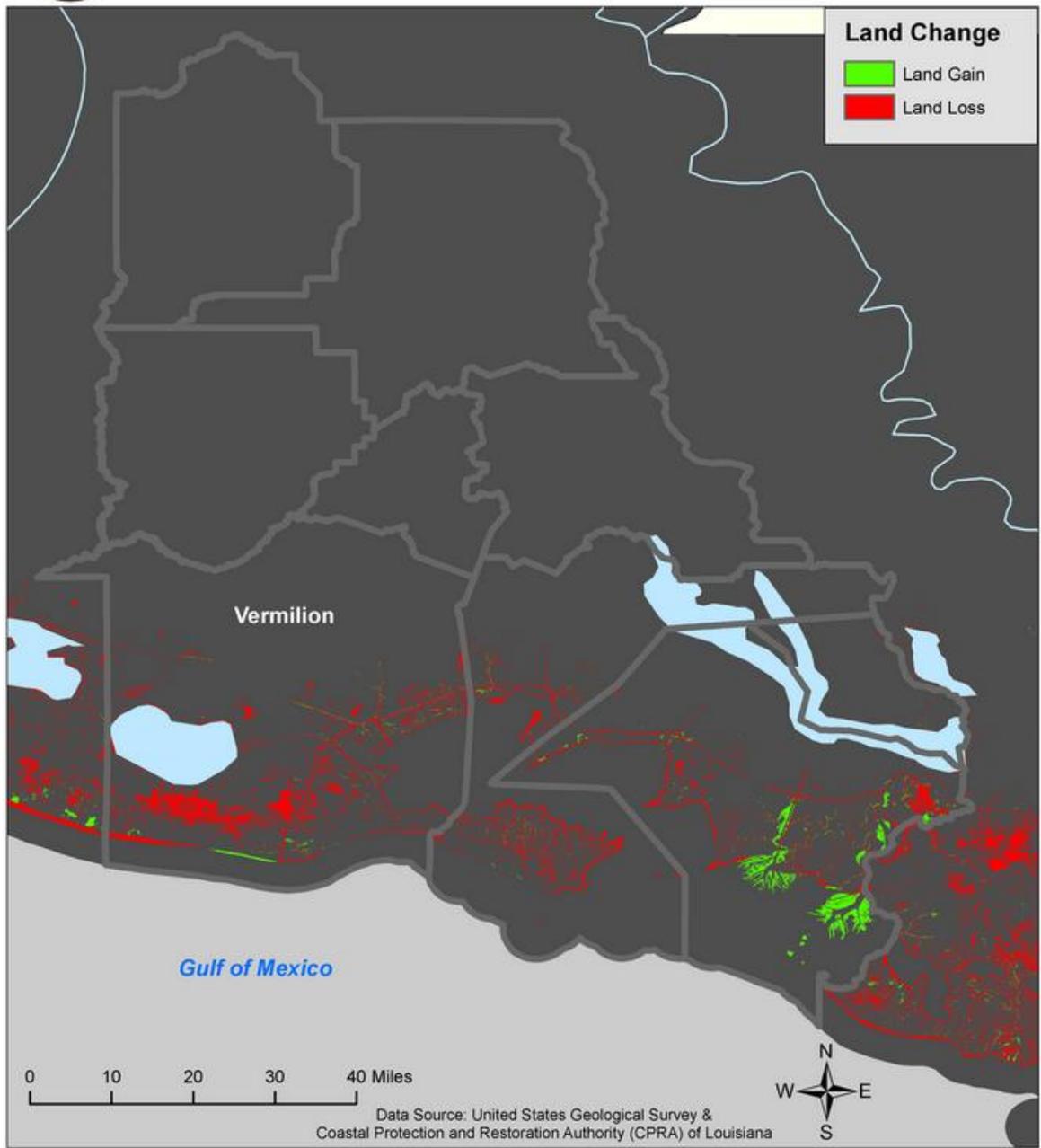
Coastal Land Loss

- Coastal land loss is the loss of land (especially through beach, shoreline, or dune material) by natural and/or human influences.
- Coastal land loss occurs through various means, including coastal erosion, subsidence (the sinking of land over time as a result of natural and/or human-caused actions), saltwater intrusion, coastal storms, littoral drift, changing currents, manmade canals, rates of accretion, and sea level rise.
- The effects of these processes are difficult to differentiate because of their complexity and because they often occur simultaneously, with one influencing each of the others.



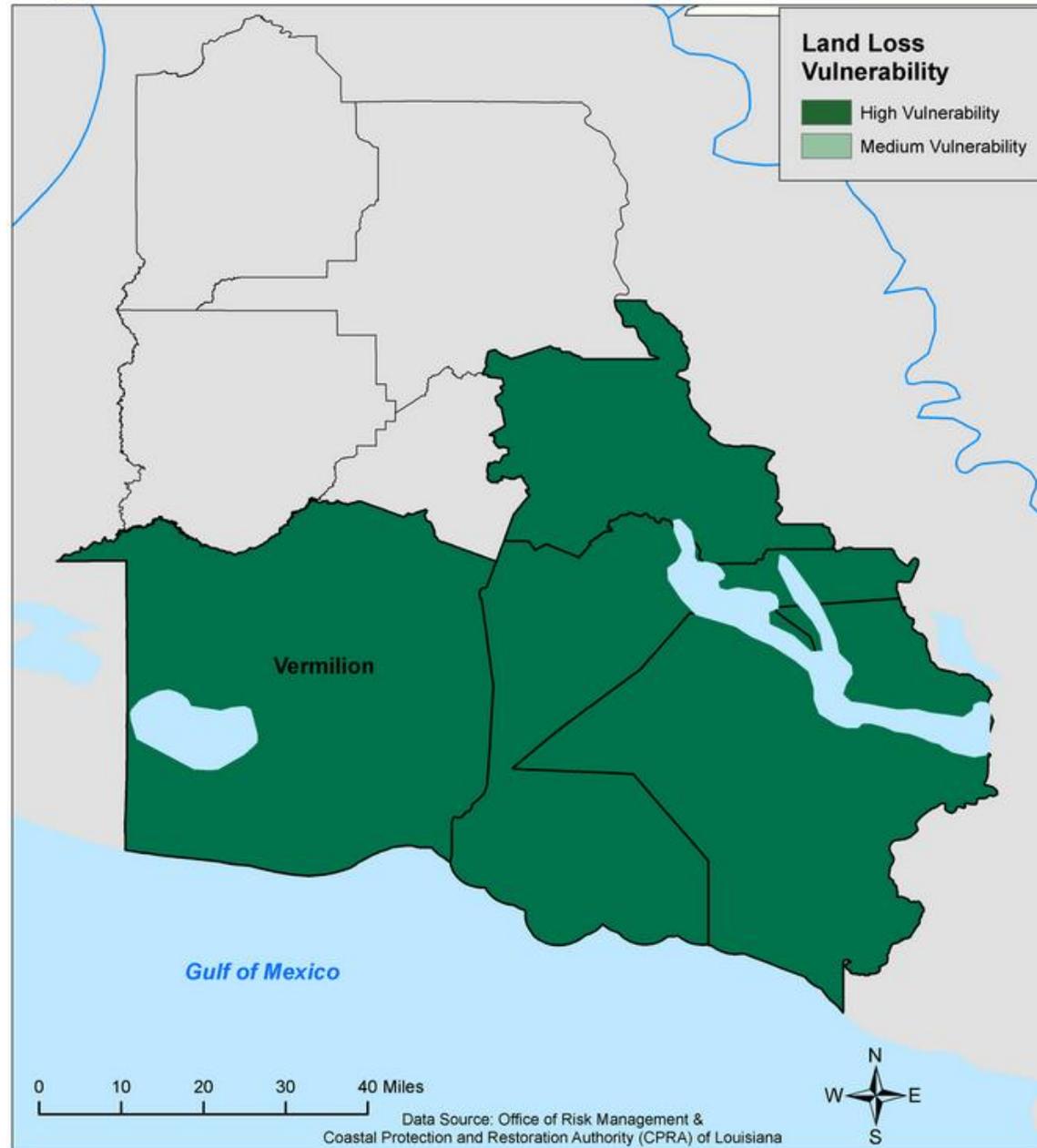


GOHSEP Region 4: Land Loss/Gain: 1932-2010





GOHSEP Region 4 Vulnerability: Subsidence



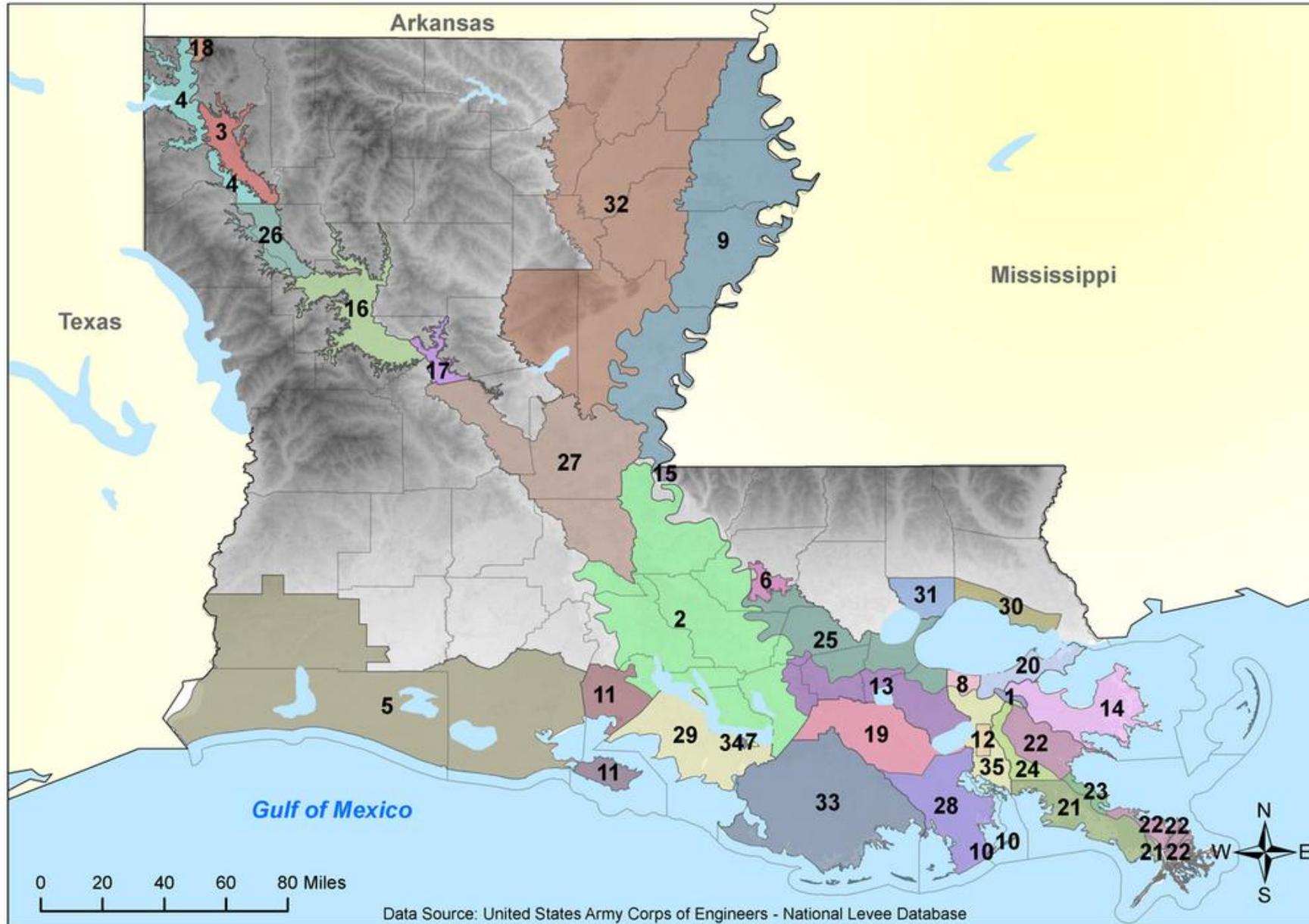
Levee Failure

- Levees and floodwalls are flood control barriers constructed of earth, concrete, or other materials. For the purposes of this plan, levees are distinguished from smaller flood barriers (such as berms) by their size and extent.
- Levees and floodwalls are barriers that protect significant areas of residential, commercial, or industrial development; at a minimum, they protect a neighborhood or small community.
- Levee failure involves the overtopping, breach, or collapse of the levee. Levee failure is especially destructive to nearby development during flood and hurricane events.



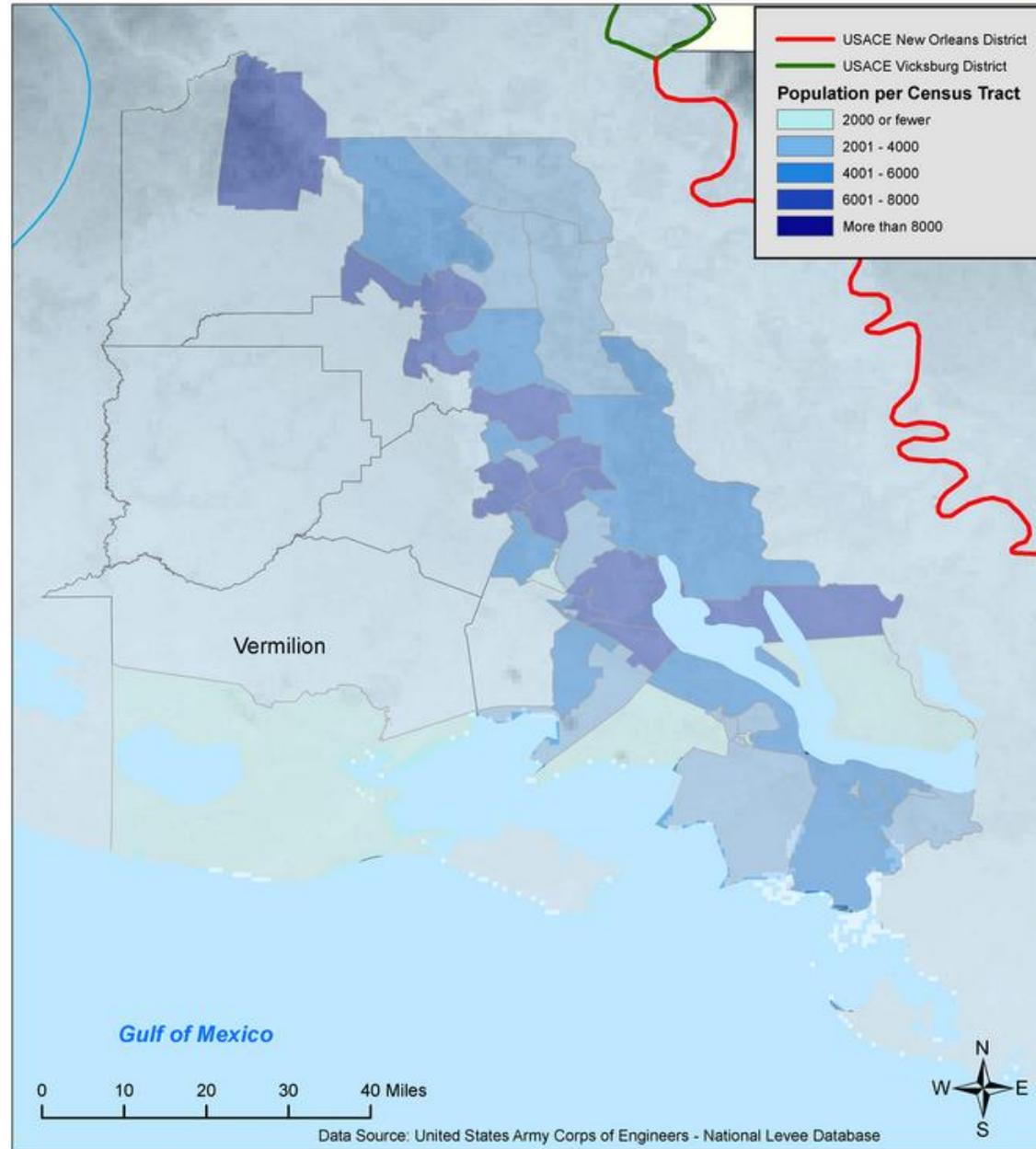


Levee Districts of Louisiana



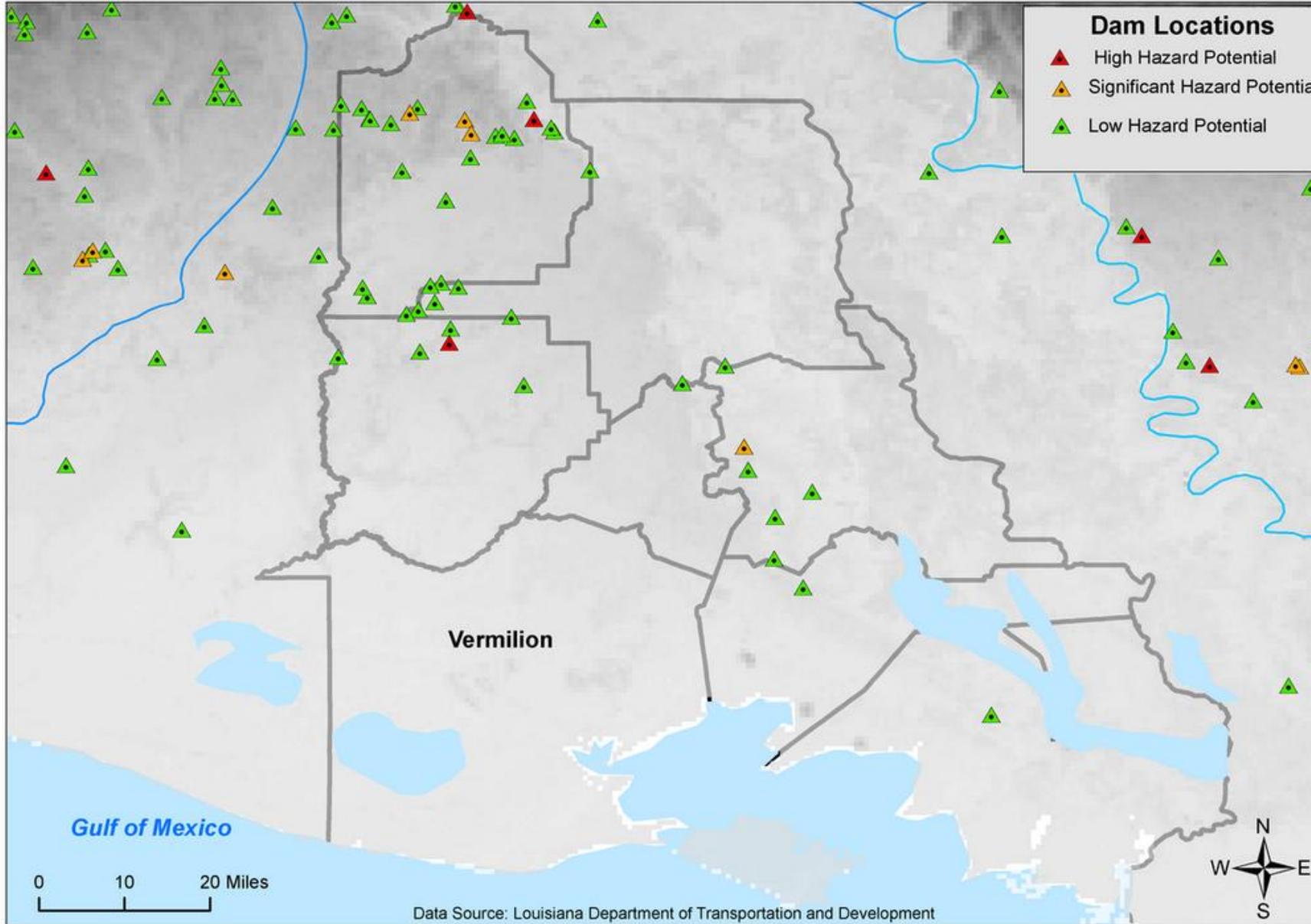


GOHSEP Region 4 Vulnerability: Population within Leveed Areas



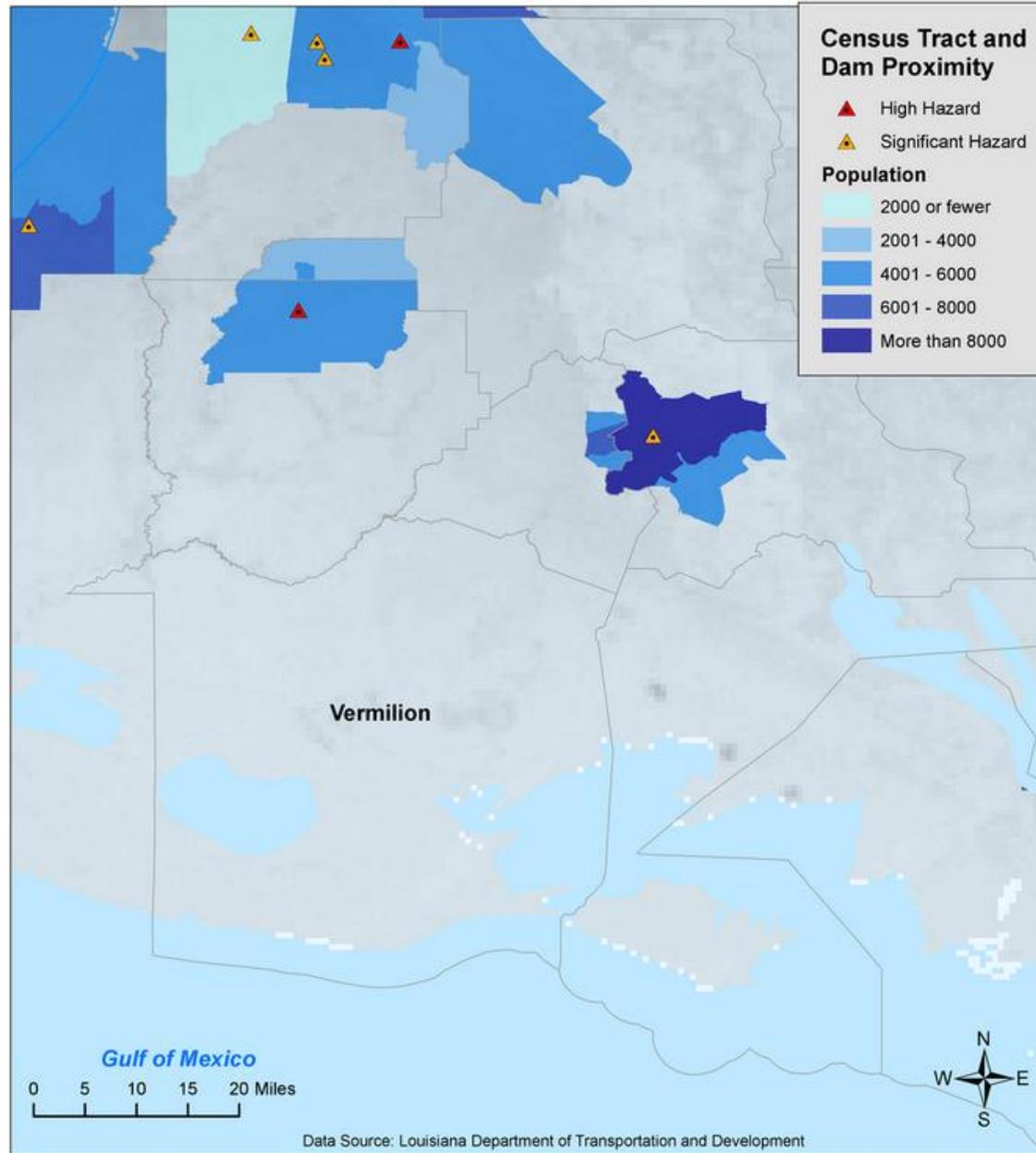


GOHSEP Region 4 Dam Locations





Vermilion Vulnerability: Population Near Dams



Hazard Summary Since 1960 for Vermilion Parish

Hazard	Occurrences since 1960	Return Frequency	Total Property Damages	Average Cost Per Event	Injuries	Fatalities
Flooding	23	Every 3 Years	\$47,833,172	\$2,079,7032	1	0
Tropical	28	Every 2 Years	\$49,259,734	\$21,417,275	534	1
Tornado	38	Every 1-2 years	\$11,384,754	\$299,598	81	3
Thunderstorm	91	Annual Occurrence	\$12,267,001	\$134,802	1	0
Hail	18	Every 4 Years	\$342,028	\$55,556	1	0
Lightning	17	Every 2 Years	\$799,871	\$23,259	0	2
Severe Wind	85	Annual Occurrence	\$1,868,550	\$21,982	9	5

Data Source: The Spatial Hazard Events and Losses Database for the United States (SHELDUS) www.sheldus.org



Mitigation Strategy



Previous Goals

- Identify and pursue preventative measures that will reduce future damages from hazards
- Enhance public awareness and understanding of disaster preparedness
- Reduce repetitive flood losses in the parish
- Facilitate sound development in the parish so as to reduce or eliminate the potential impact of disaster



Proposed Mitigation Projects for Plan Update

Becky Broussard, Vermilion Parish OHSEP: Project Update Report

Projects include:

- *Flood protection - Victoria Acres pump station with generator*
- *Flood protection – Erath schools*
- *Flood protection – pump station in Kaplan*
- *Wind hardening projects – Abbeville City Hall, Cecil Picard Elementary*
- *Drainage Improvement Projects – storm drain upgrades along Hwy 14 and 91, Geuydan*



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