



# Calcasieu Hazard Mitigation Plan Update Public Meeting

July 28, 2015

Lake Charles, LA



# Agenda

- Hazard Mitigation Planning Process – SDMI Staff
- Risk Assessment – SDMI Staff
- Update on Previous/Current Mitigation Projects – Calcasieu Parish OHSEP
- Public Outreach Activities – SDMI Staff/ Calcasieu Parish OHSEP



# Hazard Mitigation

- Protect public safety and prevent loss of life and injury;
- Help accomplish community objectives, such as leveraging capital improvements, infrastructure protection, open space preservation, and economic resiliency;
- Prevent damage to a community's economic, cultural and environmental assets;
- Minimize operational downtime and accelerate recovery of government and the private sector after an event



# Why are we required to have a Hazard Mitigation Plan?

- Disaster Mitigation Act of 2000 (DMA 2000)

*Section 322 of the Act specifically addresses mitigation planning and requires state and local governments to prepare multi-hazard migration plans as a precondition for receiving FEMA mitigation project grants.*

- Meet federal requirements of Title 44 Code of Regulations (CFR) §201.6 for approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs.



- The approved Calcasieu Parish Hazard Mitigation Plan will allow for distribution of HM funding following future disasters.

# The Planning Team: A multi-jurisdictional approach

- Each jurisdiction has at least one representative as part of the Hazard Mitigation Steering Committee:
  - Calcasieu Unincorporated
  - City of Lake Charles
  - City of DeQuincy
  - City of Sulphur
  - Town of Vinton
  - City of Westlake





# Collaborative Planning Approach



# Planning Development



# New Plan Layout

- Section 1: Introduction
  - Updated demographics
  - Economics
  - Update parish/jurisdiction descriptions
- Section 2: Hazard Identification and Parishwide Risk Assessment
- Section 3: Capability Assessment
- Section 4: Mitigation Strategies
  - New actions
  - Action updates
  - Survey results





# New Plan Layout

- Appendix A: Planning Process
- Appendix B: Plan Maintenance
- Appendix C: Parish Essential Facilities
- Appendix D: Plan Adoption
- Appendix E: State Required Worksheets



# Hazard Identification and Risk Assessment

- Based on currently profiled risks
- Any newly identified risks
- Prevalent Hazards
- Previous occurrences
- Probability of future events
- Assets Inventory
- Essential Facilities
- Hazard Impact
- Future Development
- Future Hazard Impacts
- Zoning and Land Use
- Hazard Profiles



# Hazard Identification and Risk Assessment

- Drought
- Excessive Heat
- Flooding
- Sinkholes
- Thunderstorms (Lightning, Hail, High Wind)
- Tornadoes
- Wildfires
- Tropical Cyclones
- Winter Storms



# 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

- These natural hazards were selected based on an assessment of the overall impact (geographic extent, magnitude, probability, and exacerbating or mitigating conditions) affecting Calcasieu Parish;
- The hazards that pose the greatest potential for a negative impact are:
  - Drought, Excessive Heat, Flooding, Sinkholes, Thunderstorms, Tornadoes, Wildfires, Tropical Cyclones, Winter Storms





# Drought

- A drought is a deficiency in water availability over an extended period of time, caused by precipitation totals and soil water storages that do not satisfy the environmental demand for water either by evaporation or transpiration through plant leaves.
- There are four classes of drought, based upon what is impacted by the shortage of water:

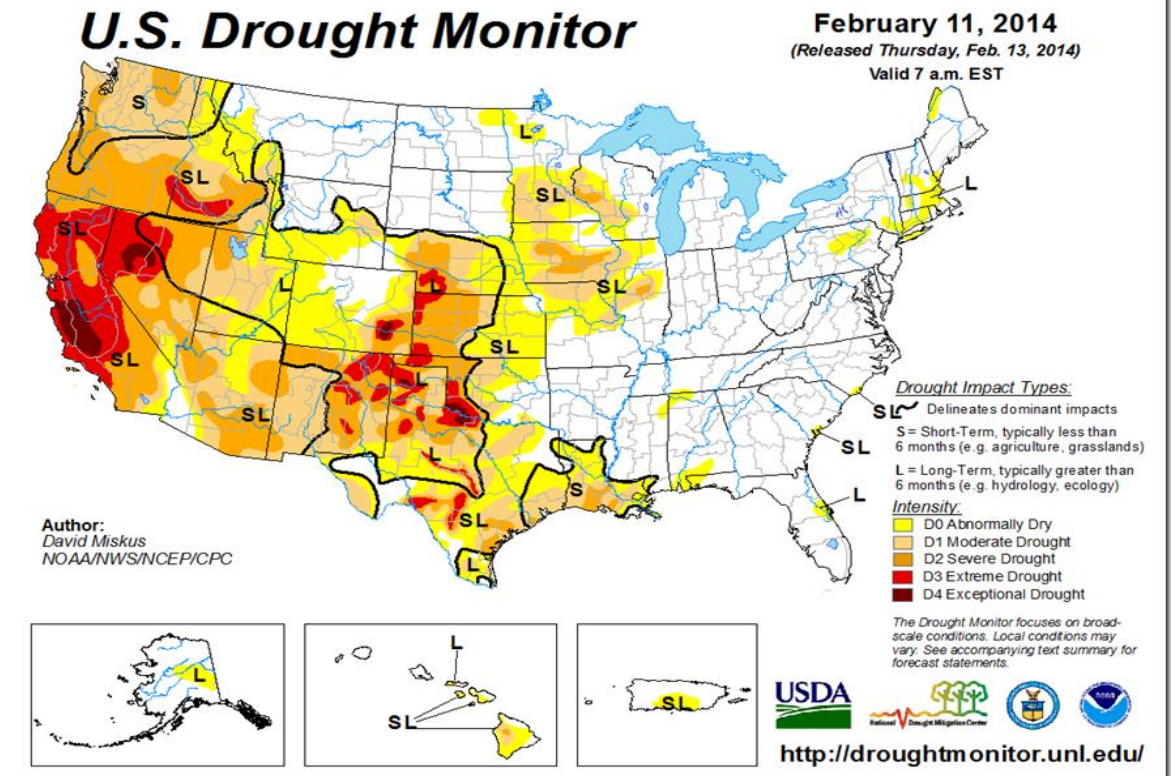
Meteorological Drought

Hydrologic Drought

Agricultural Drought

Socioeconomic Drought

- The entire parish can be affected by drought



# U.S. Drought Monitor Louisiana

**June 2, 2015**

(Released Thursday, Jun. 4, 2015)

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	100.00	0.00	0.00	0.00	0.00	0.00
<b>Last Week</b> <i>5/26/2015</i>	100.00	0.00	0.00	0.00	0.00	0.00
<b>3 Months Ago</b> <i>3/3/2015</i>	24.07	75.93	26.68	0.00	0.00	0.00
<b>Start of Calendar Year</b> <i>12/3/2014</i>	47.23	52.77	10.88	0.00	0.00	0.00
<b>Start of Water Year</b> <i>9/30/2014</i>	88.99	11.01	0.63	0.00	0.00	0.00
<b>One Year Ago</b> <i>6/3/2014</i>	87.66	12.34	2.91	1.29	0.00	0.00

## Intensity:

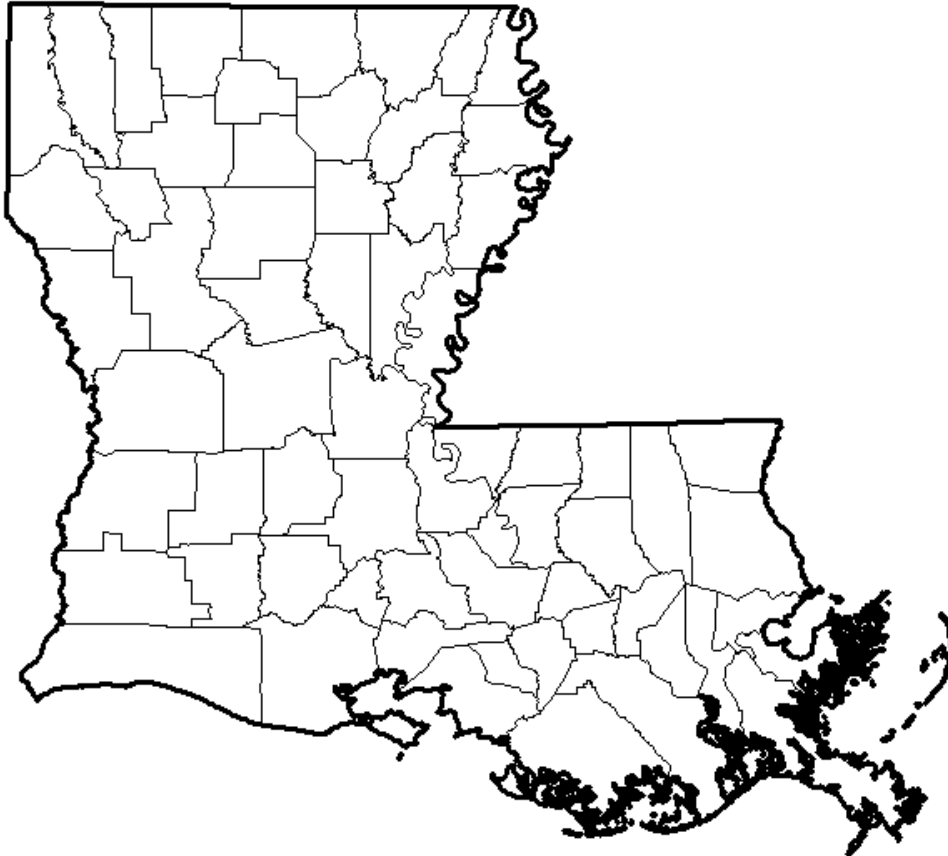
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

## **Author:**

David Miskus

NOAA/NWS/NCEP/CPC



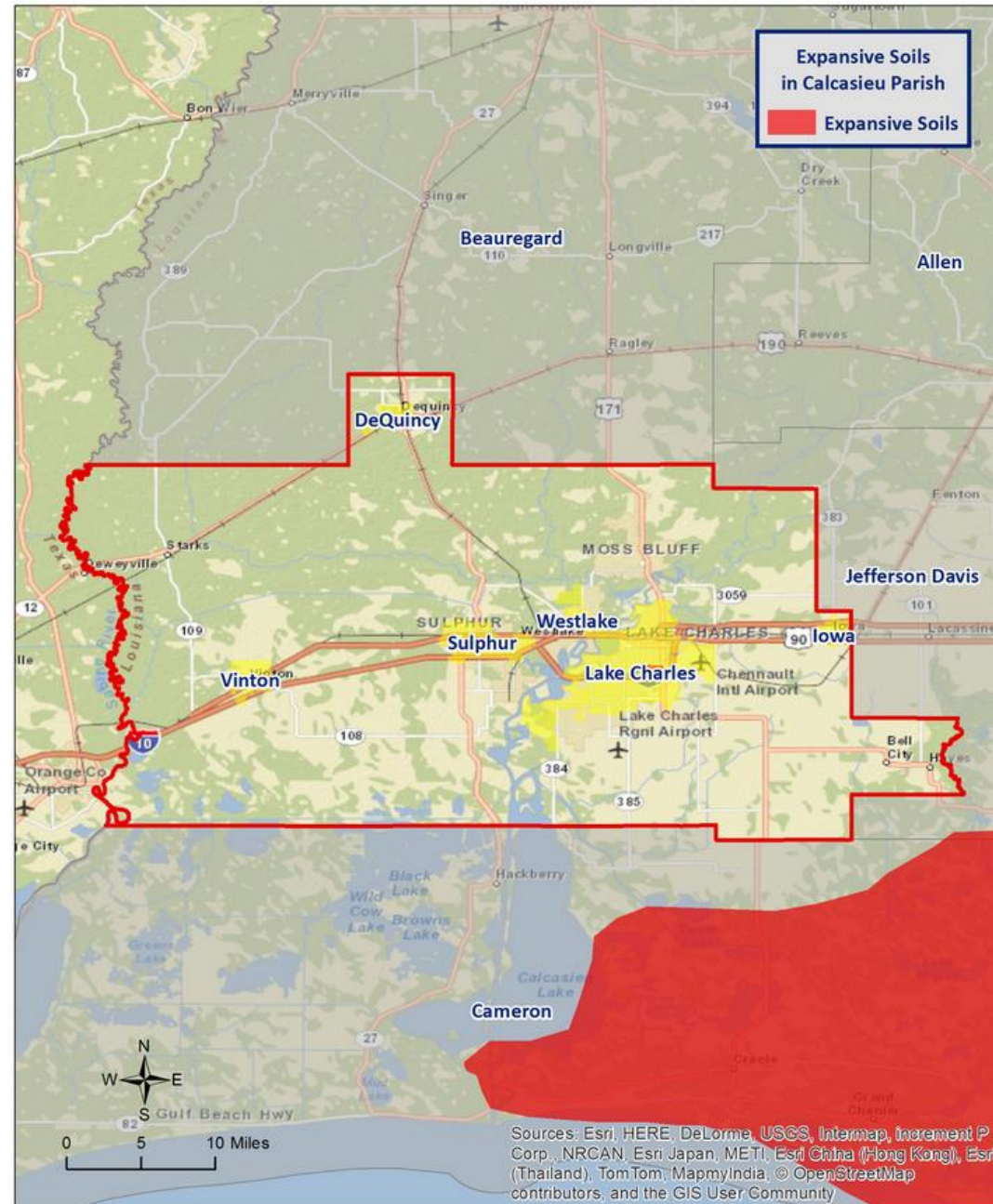
<http://droughtmonitor.unl.edu/>

# Expansive Soils (discounted)

- Expansive soils are soils that expand when water is added, and shrink when dried out. The more water they absorb the more their volume increases. When dried out, expansive soils will shrink which can remove support from buildings or other structures, resulting in damaging subsidence.
- This continuous change in soil volume can exert enough force on a building or other structure to cause damage, causing them to move unevenly and crack.

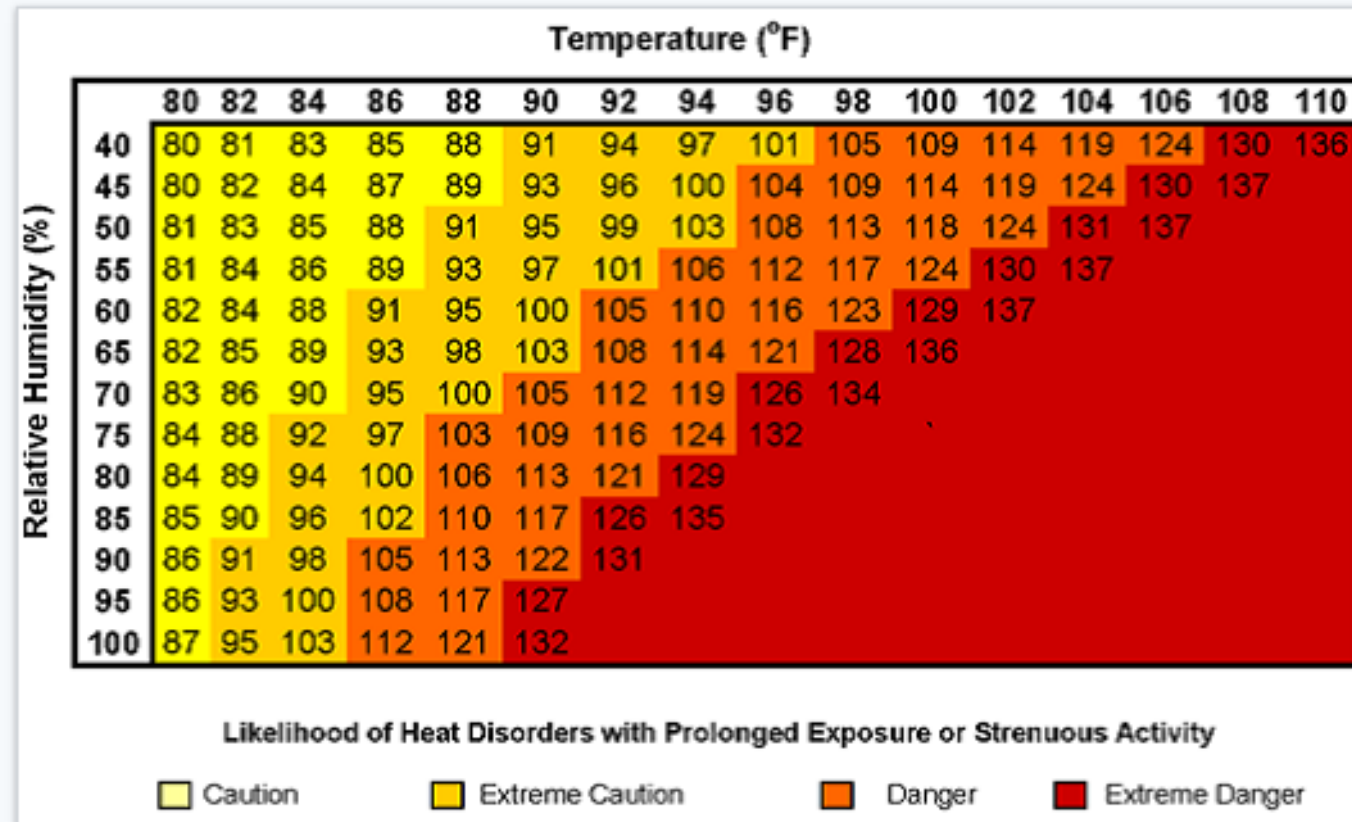


# Expansive Soils





# Excessive Heat



# 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.



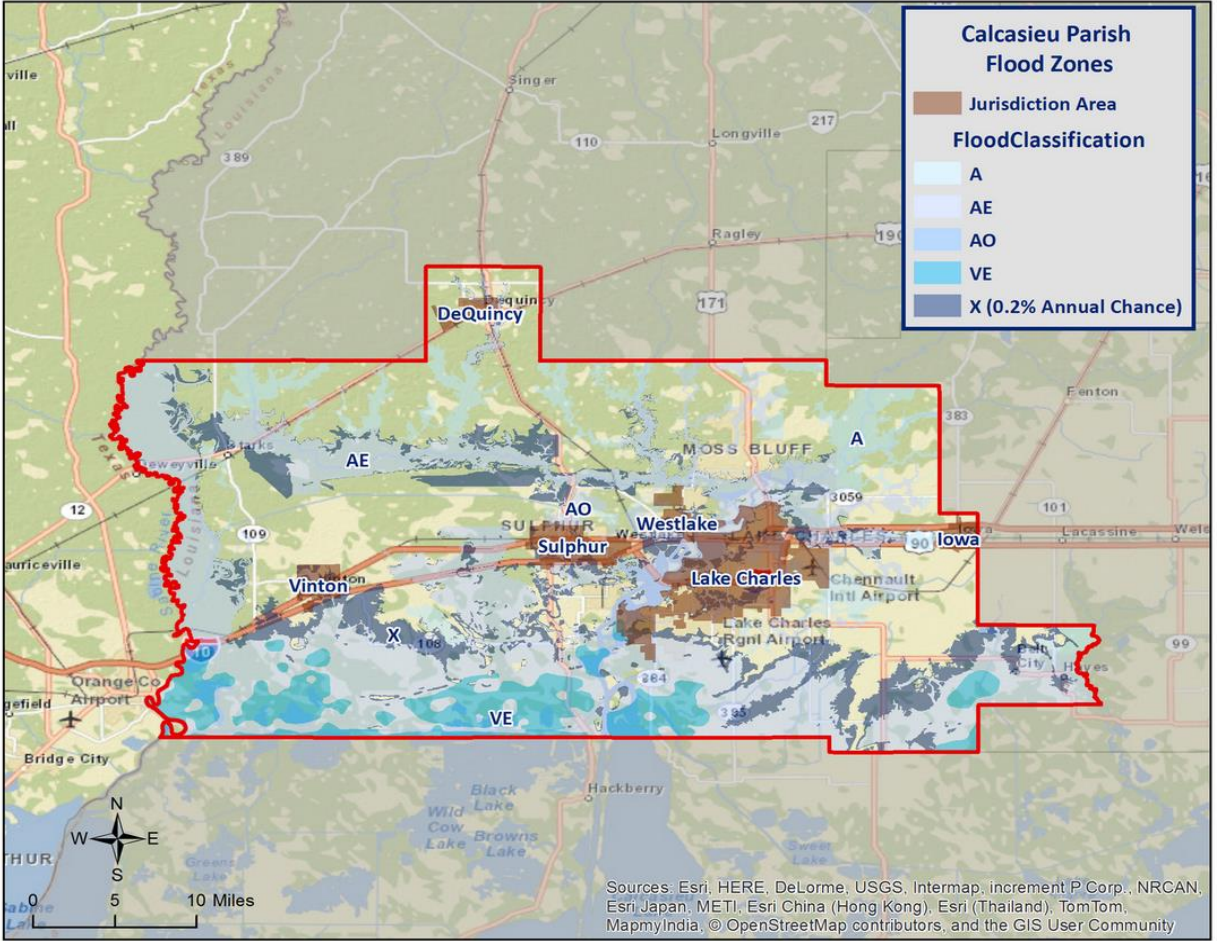
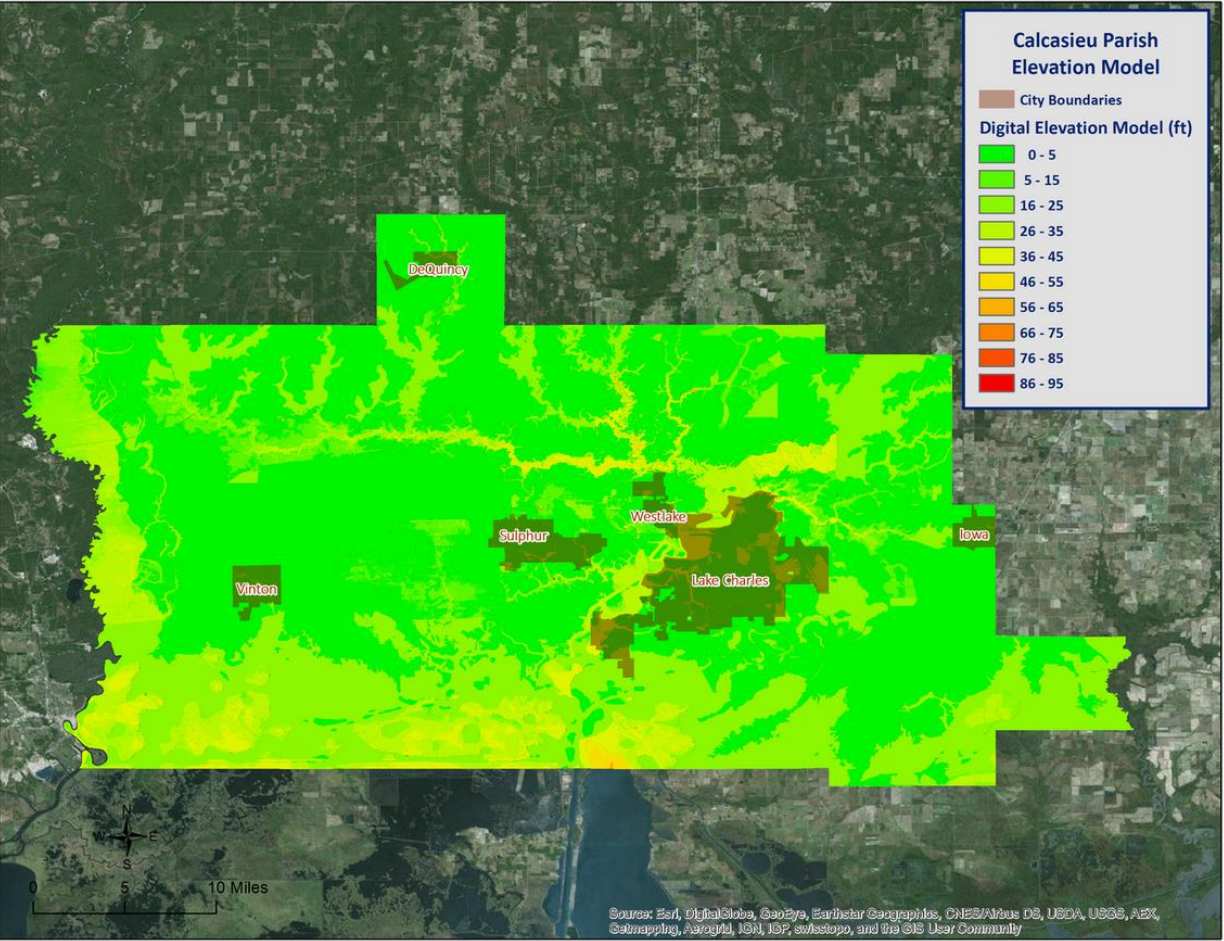


# Flooding

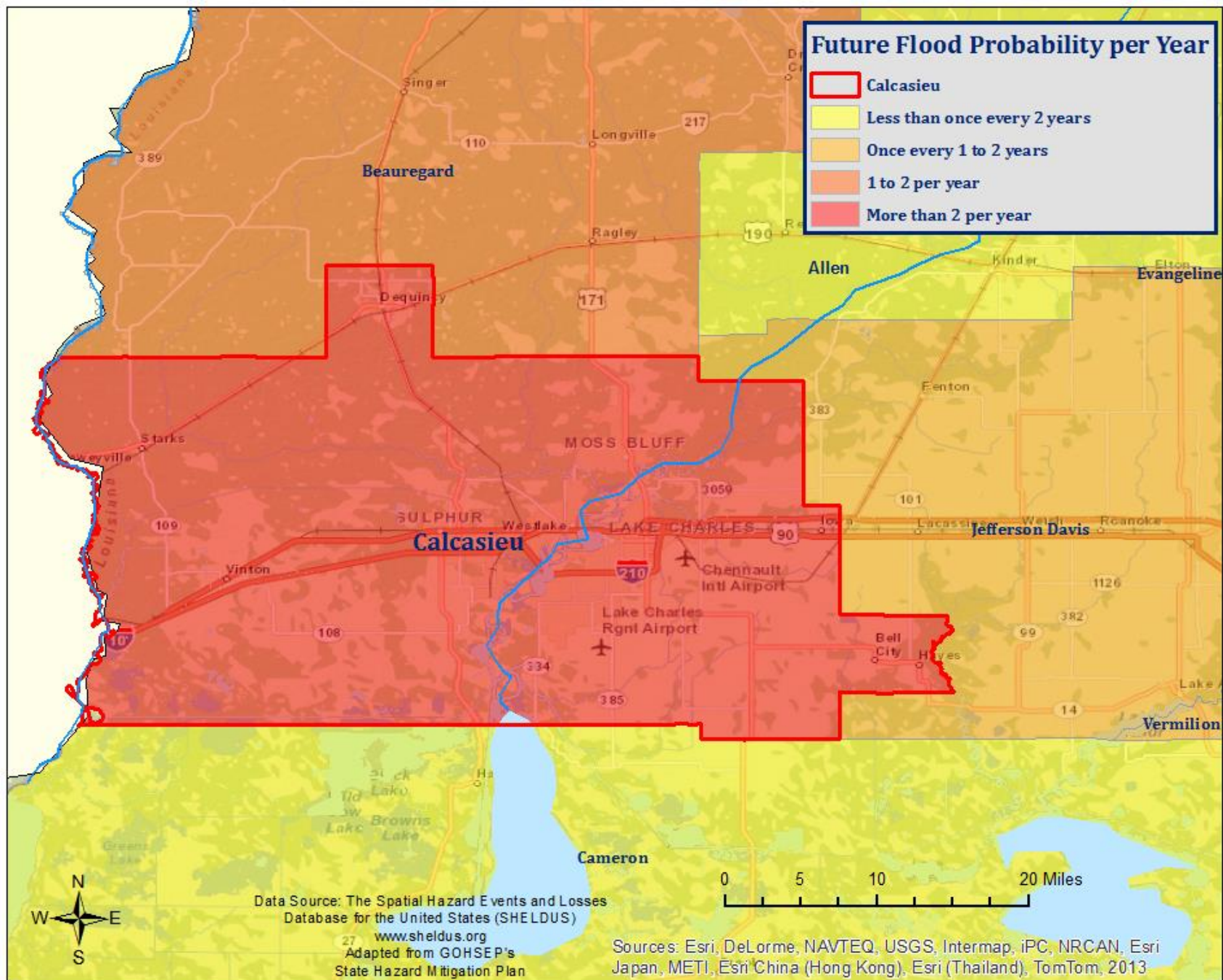
Types of flooding may include the following:

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





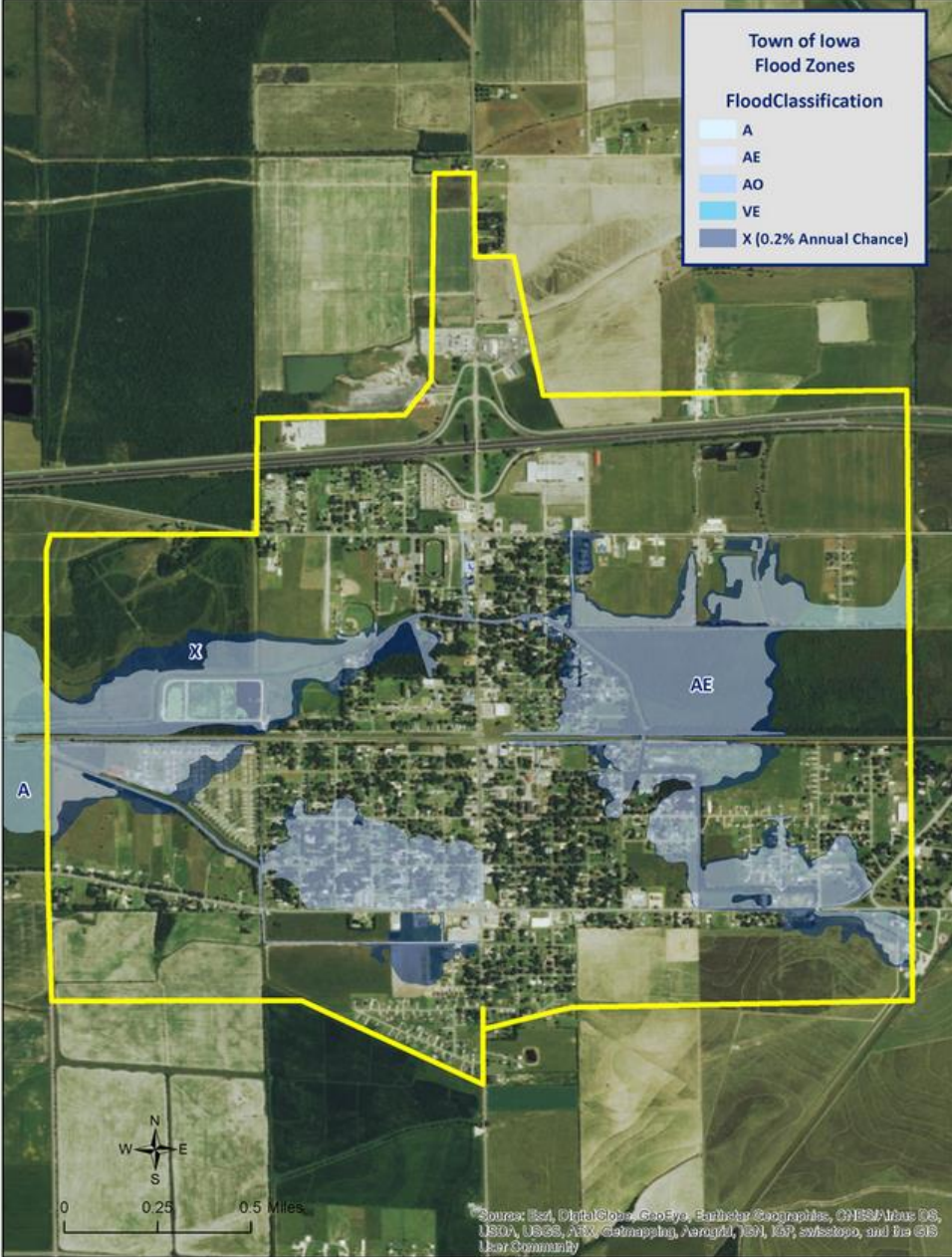
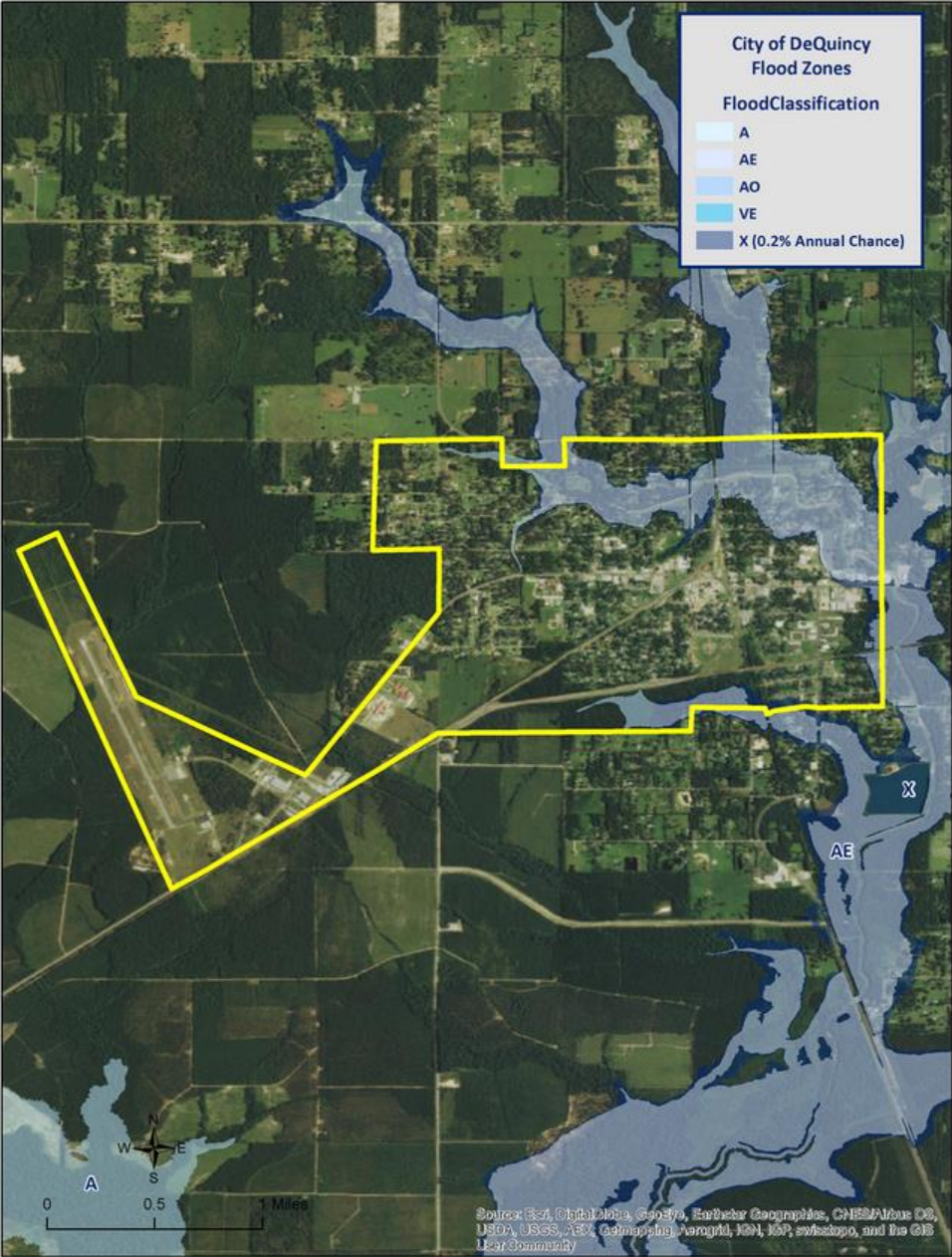






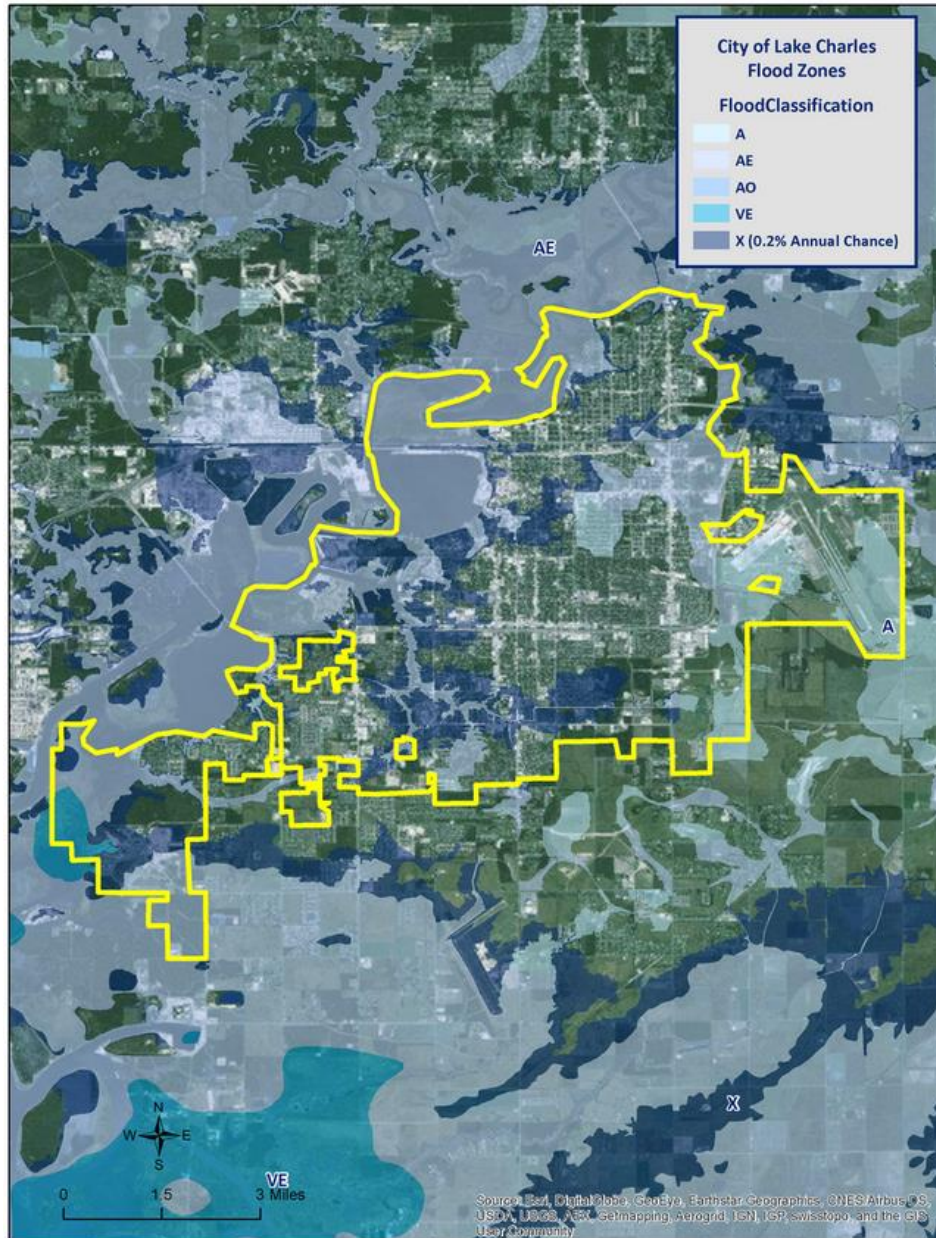
# City of DeQuincy Flood Zones

# Town of Iowa Flood Zones

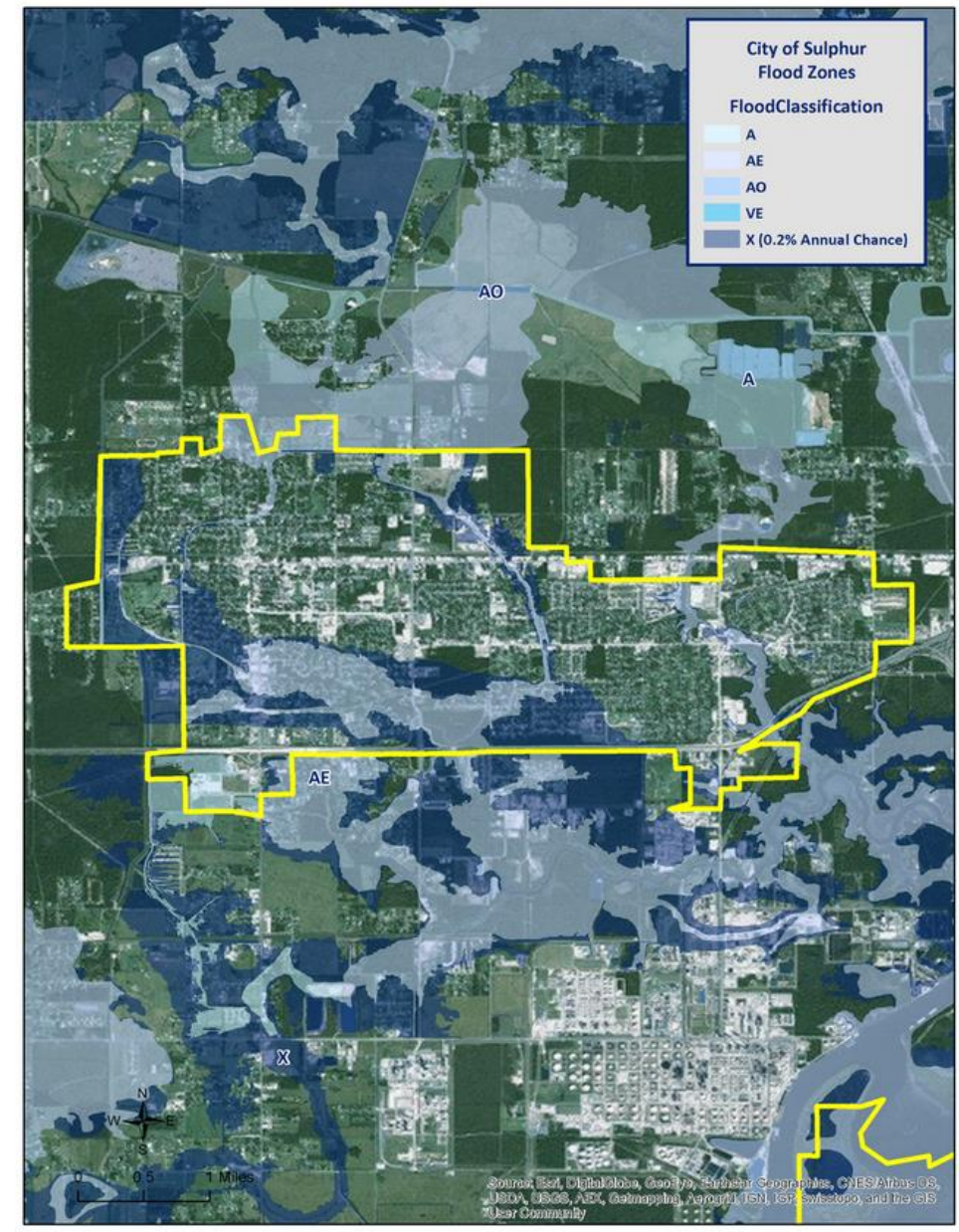




# City of Lake Charles Flood Zones

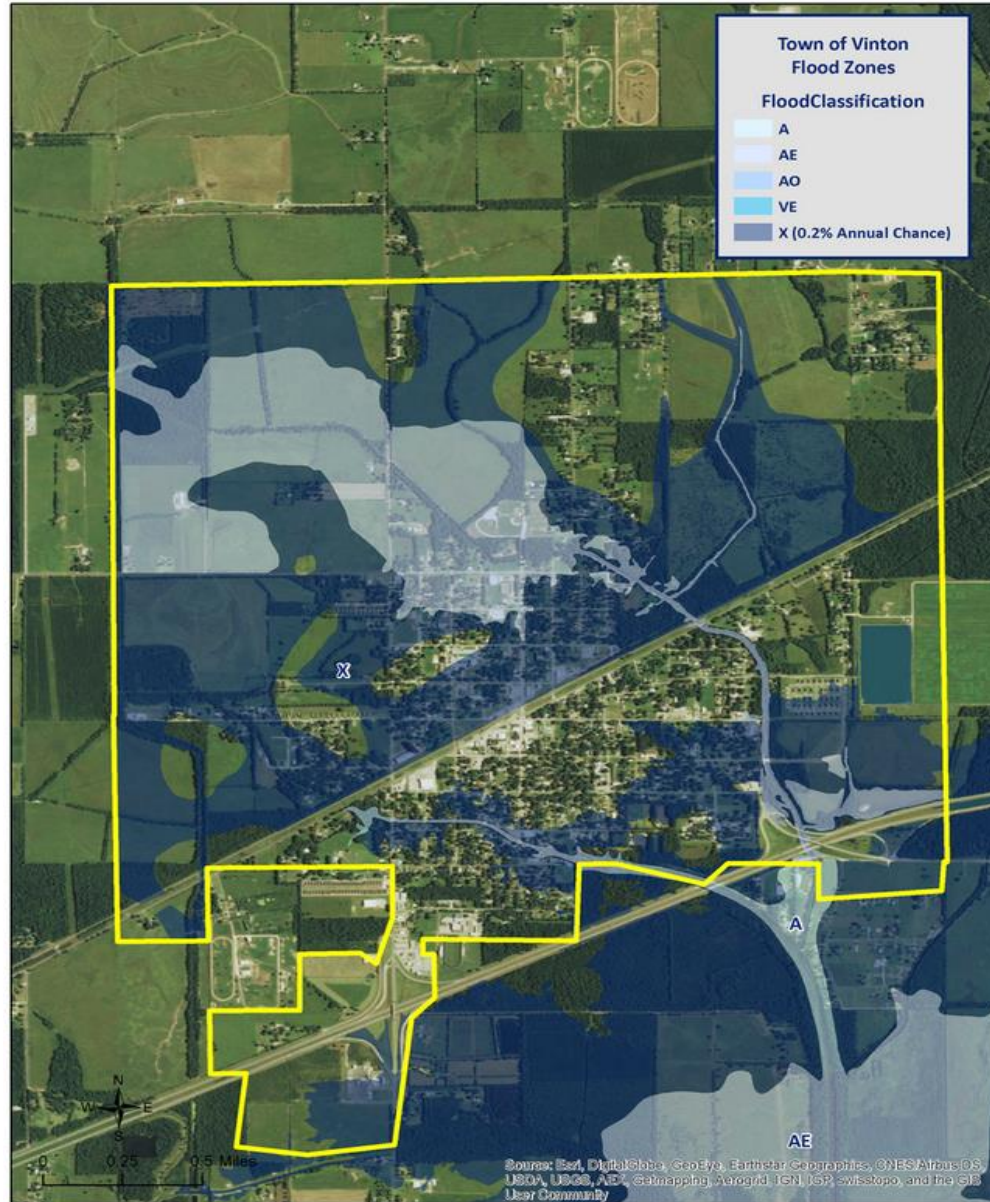


# City of Sulphur Flood Zones

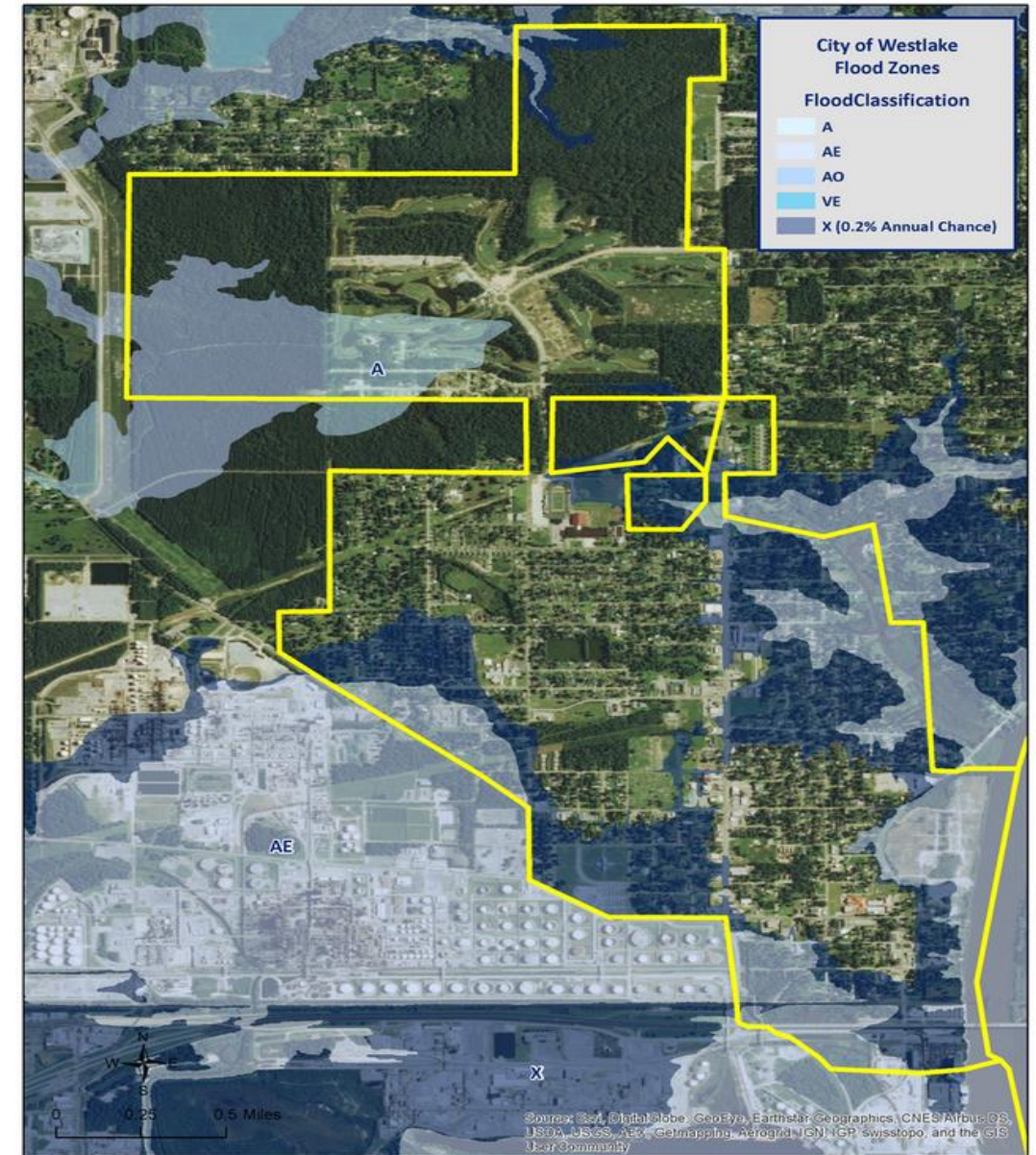




# Town of Vinton Flood Zones



# City of Westlake Flood Zones

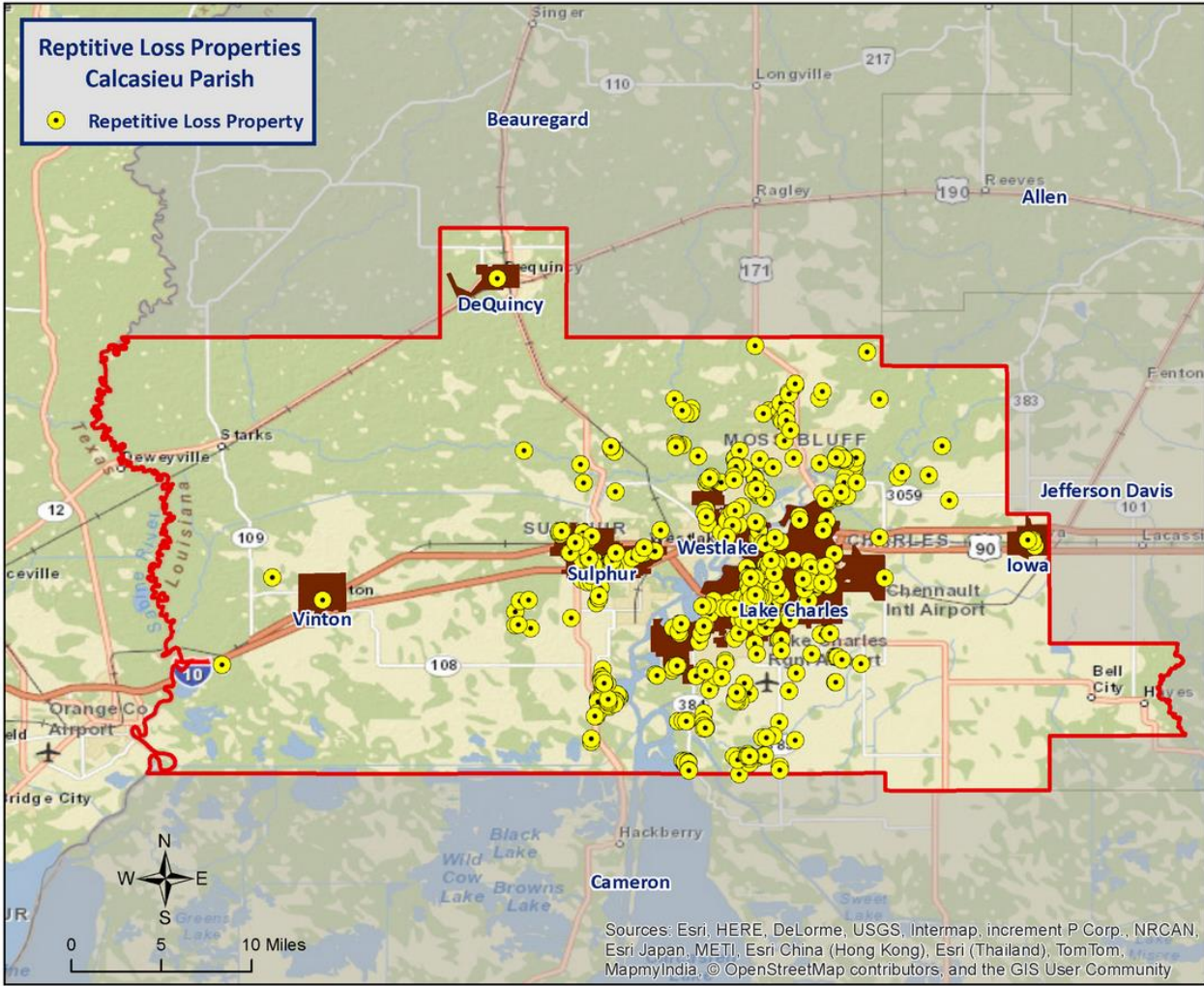
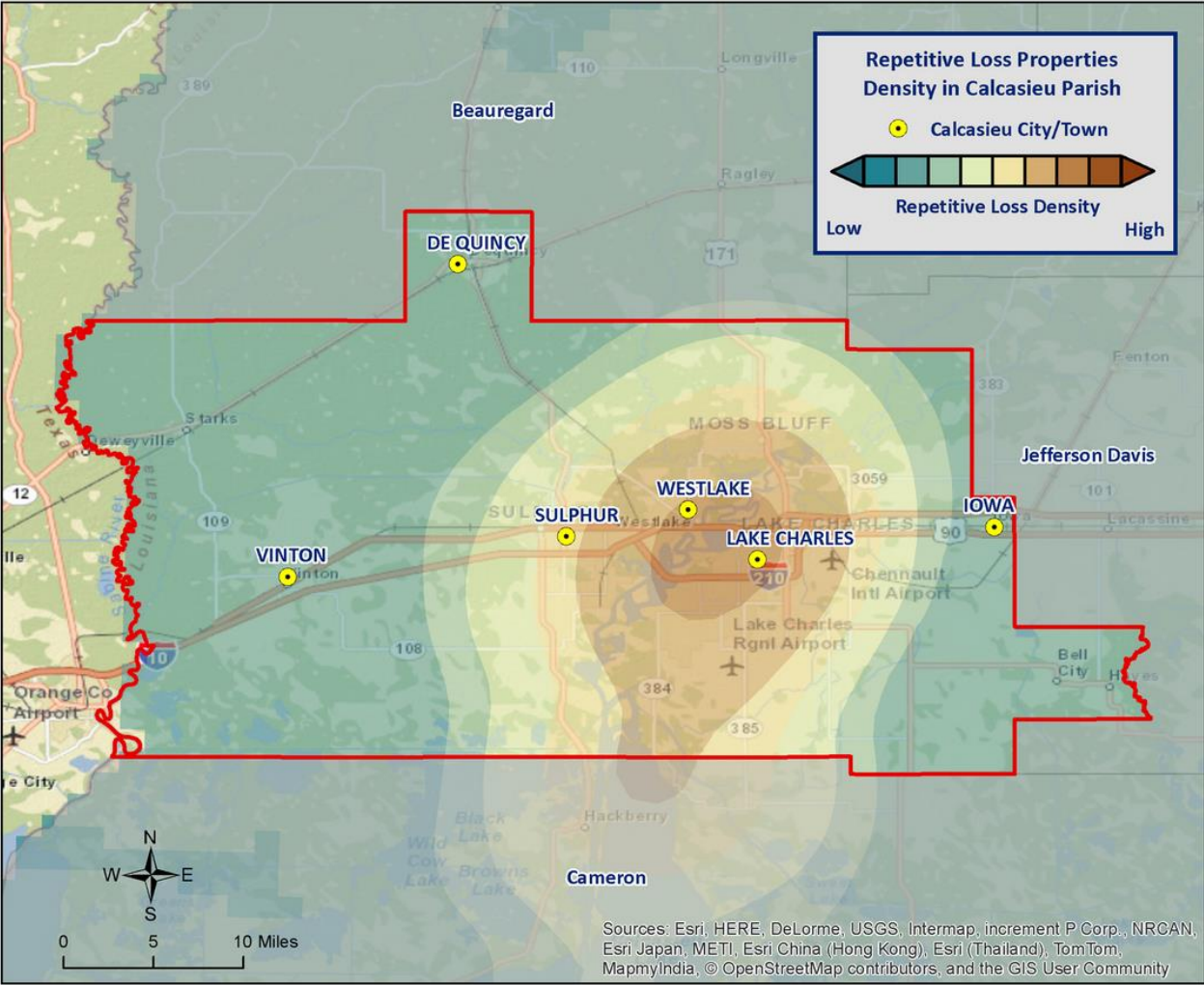




# Repetitive Flooding

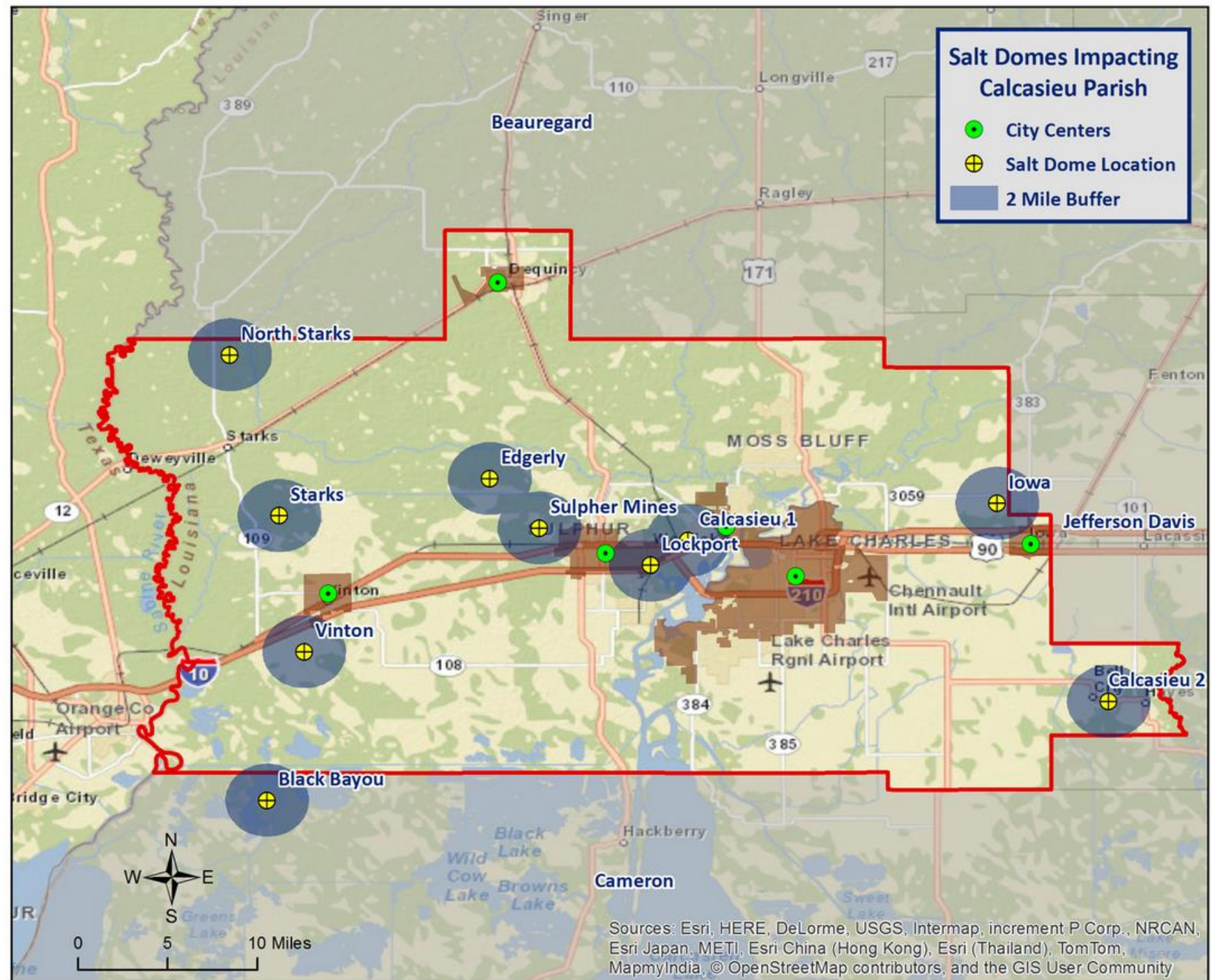
- Some areas flood more often than other properties, even more than those in the mapped 100-year floodplain.
- FEMA defines a “repetitive loss” property as one which has received two flood insurance claim payments for at least \$1,000 over any 10-year period since 1978.
- These properties are important 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.







# Sinkholes



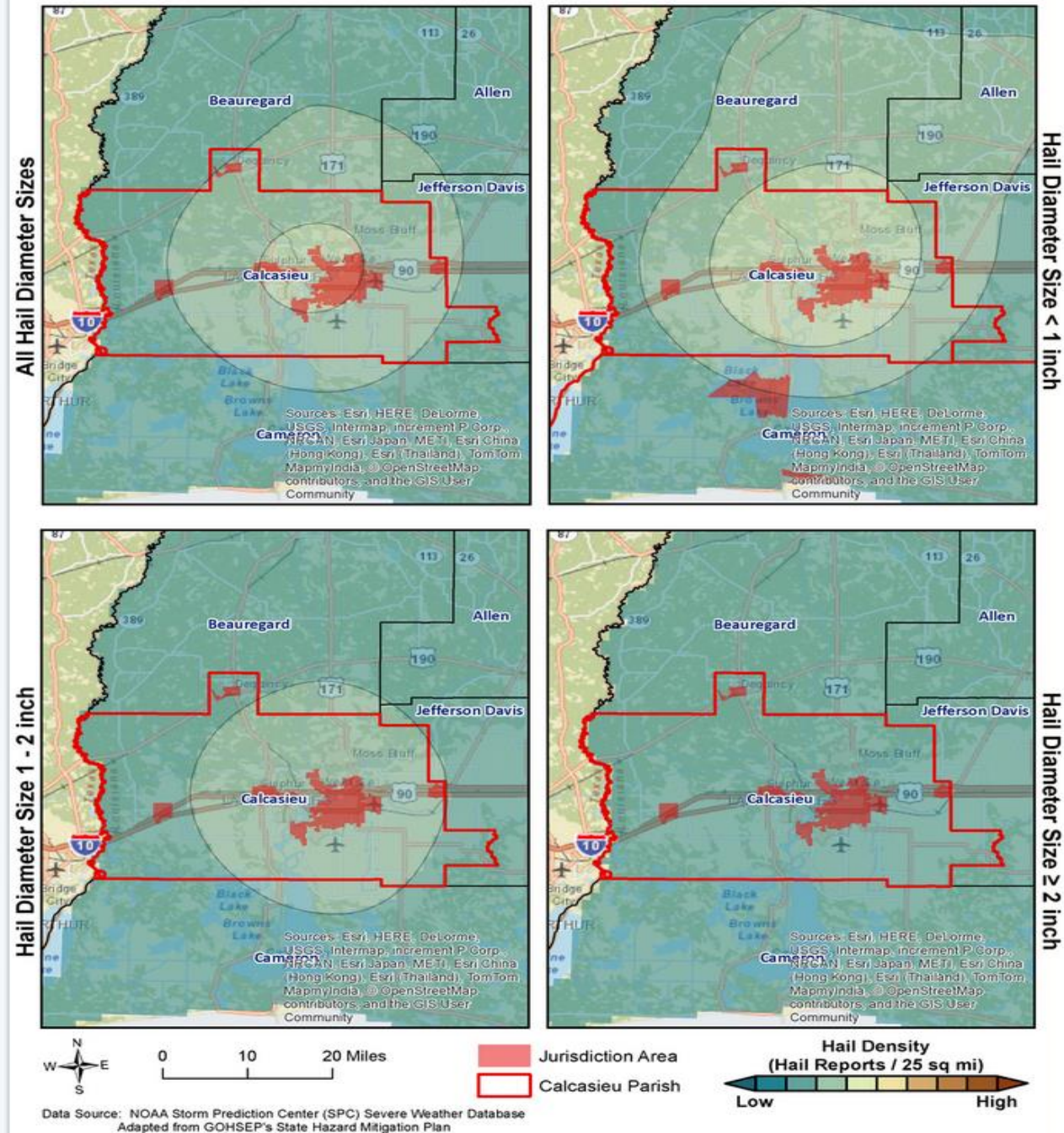
# Thunderstorms (lightning, high wind, Hail)

- 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.

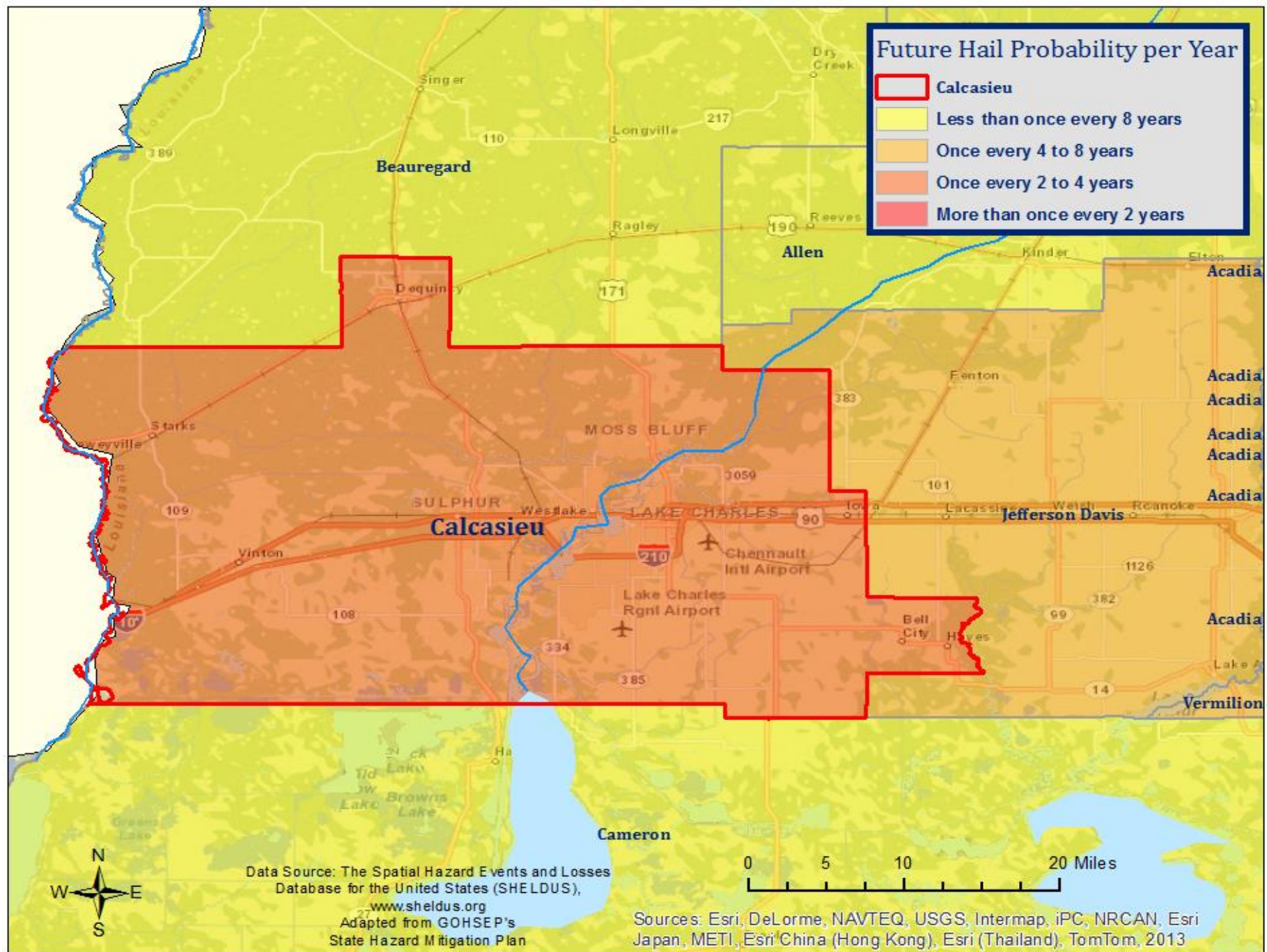




# Hail Density

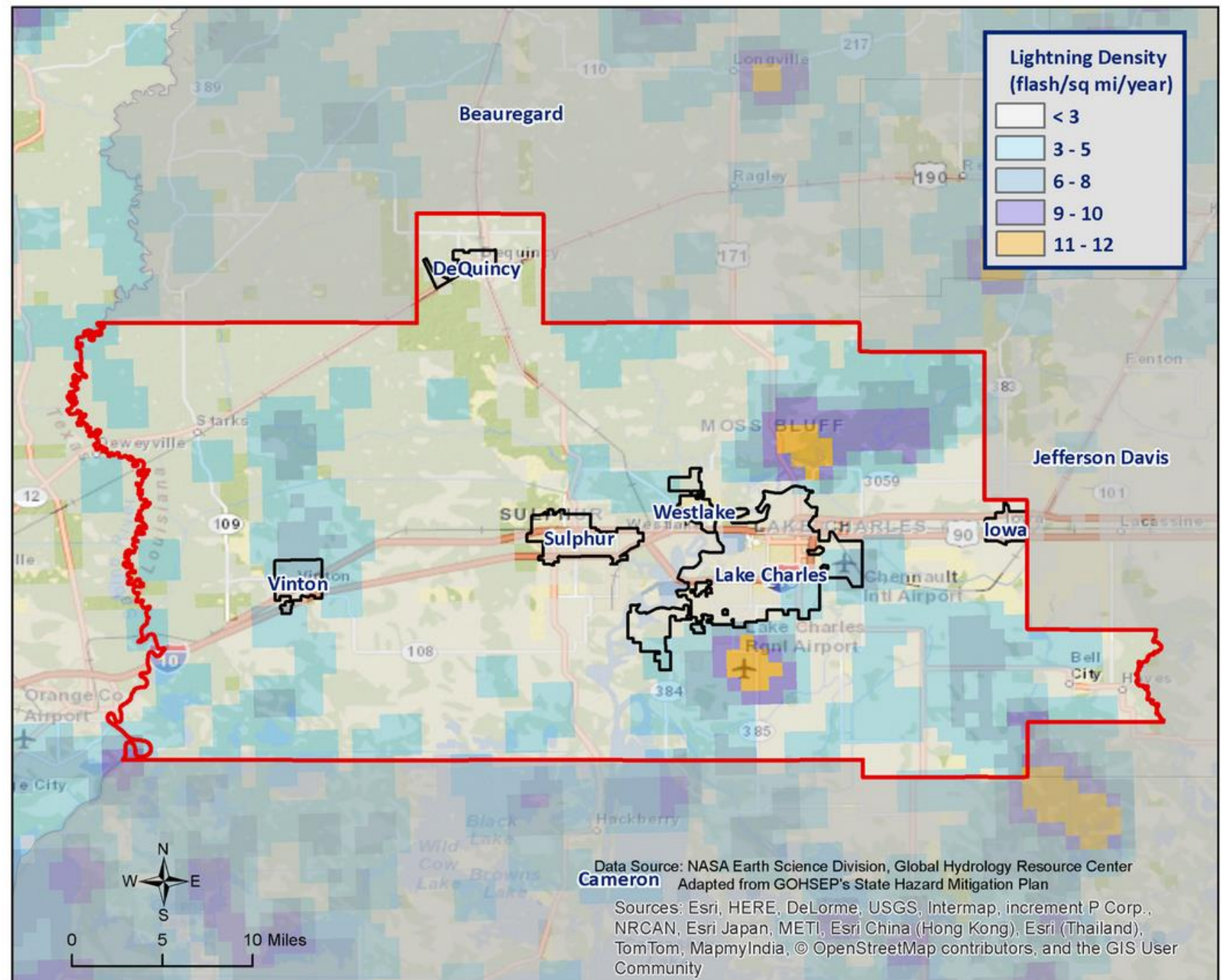






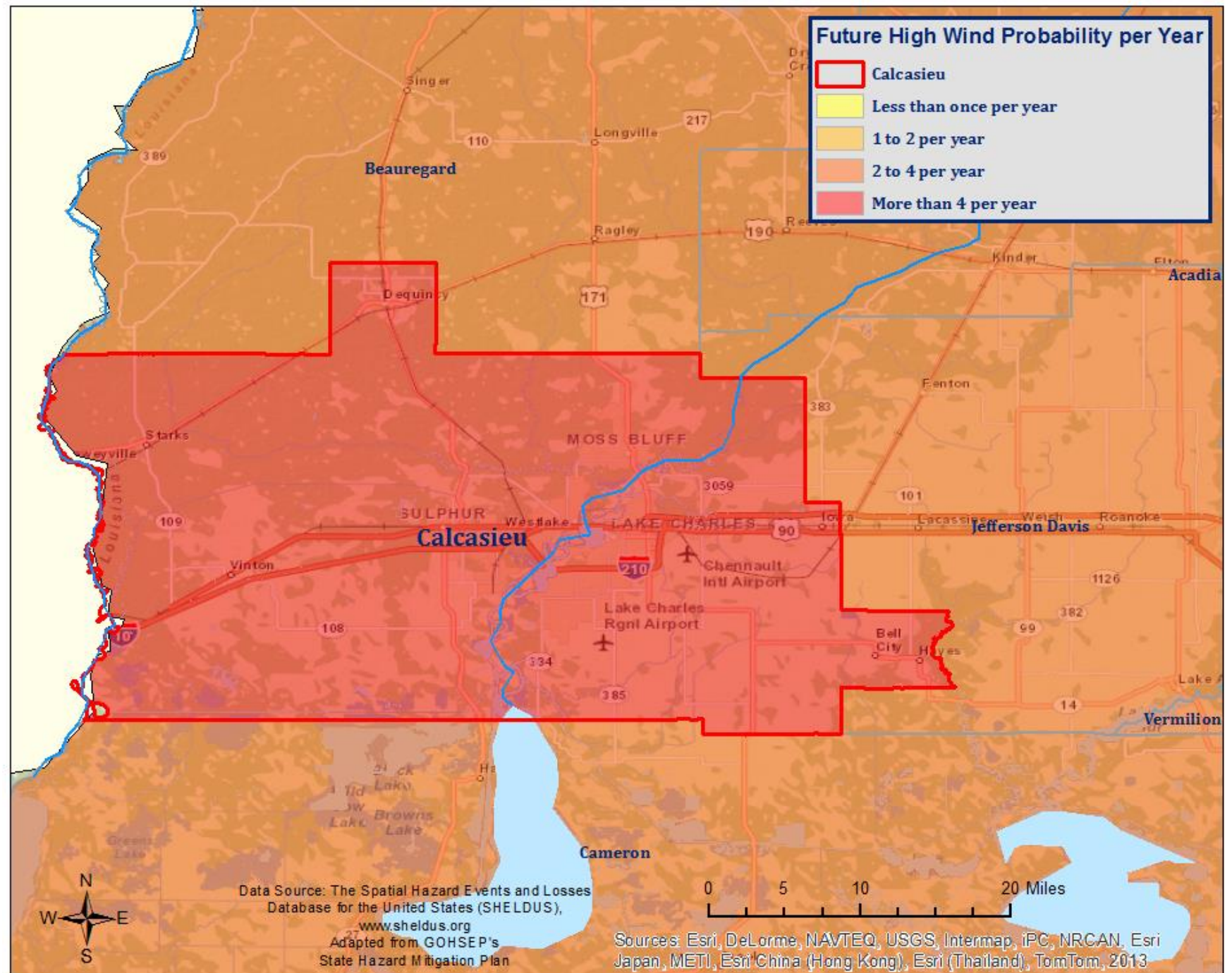


# Lightning Density

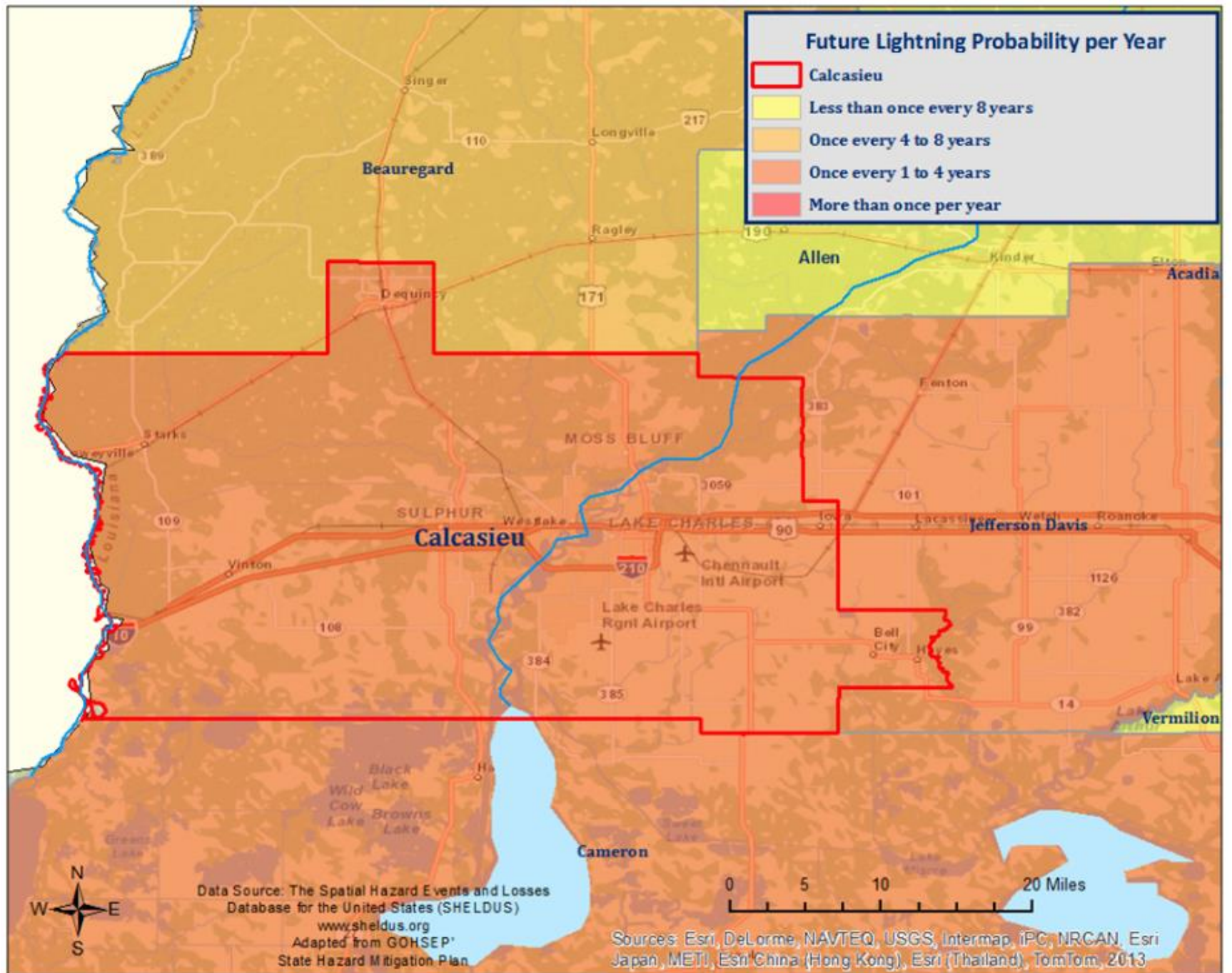




# Future High Wind Probability



# Future Lightning Probability





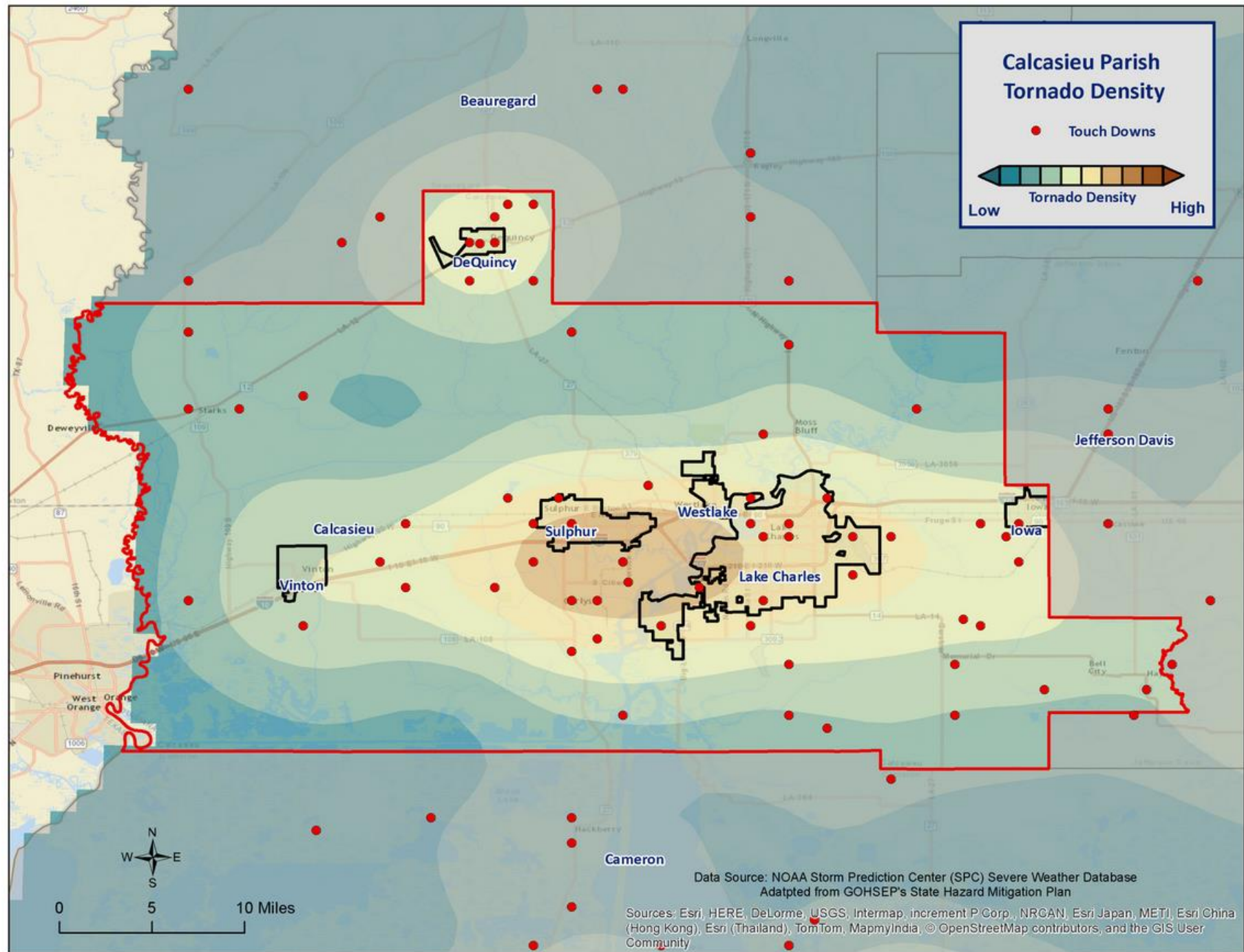
# Tornadoes

- 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.

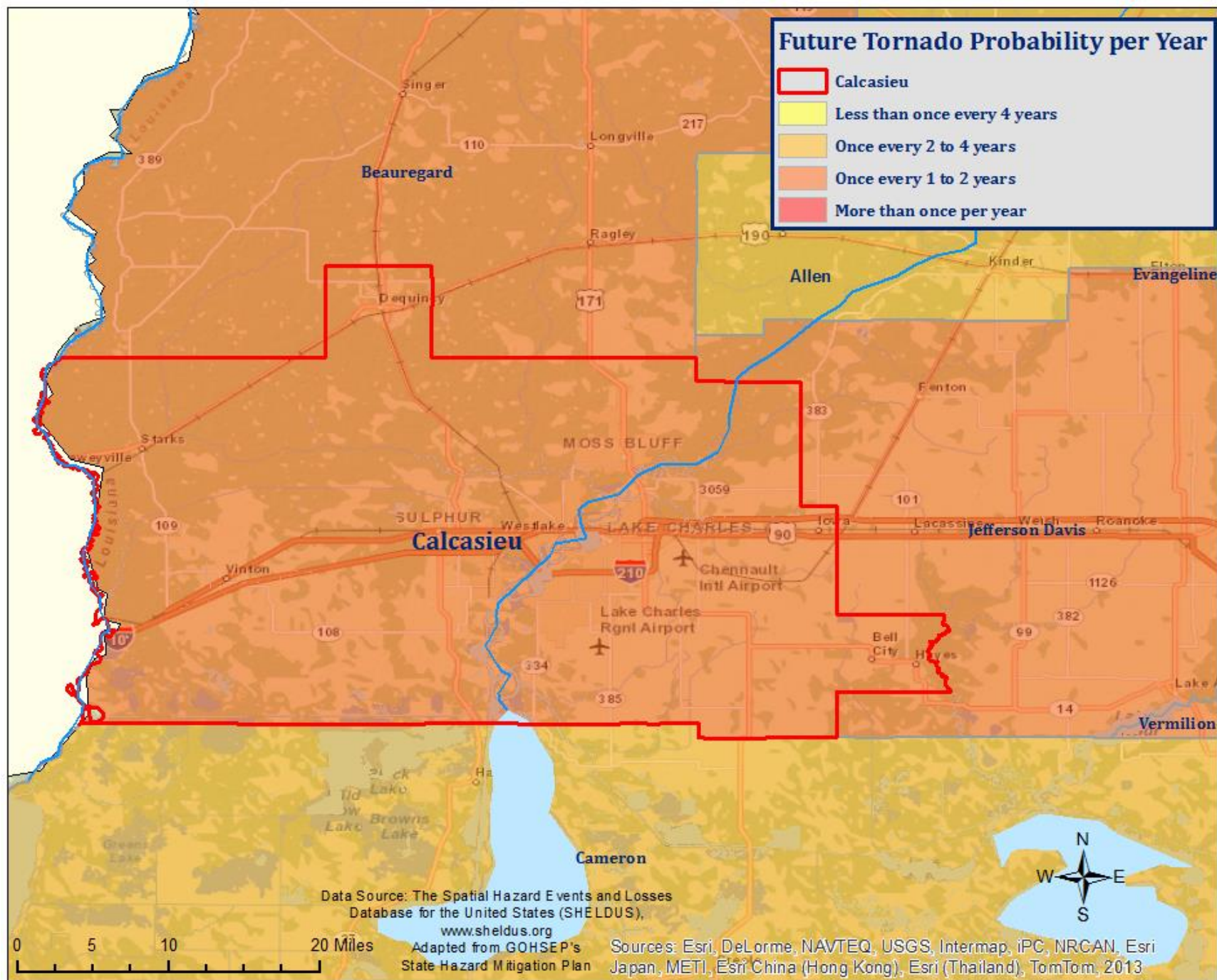


ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph

# Tornado Density





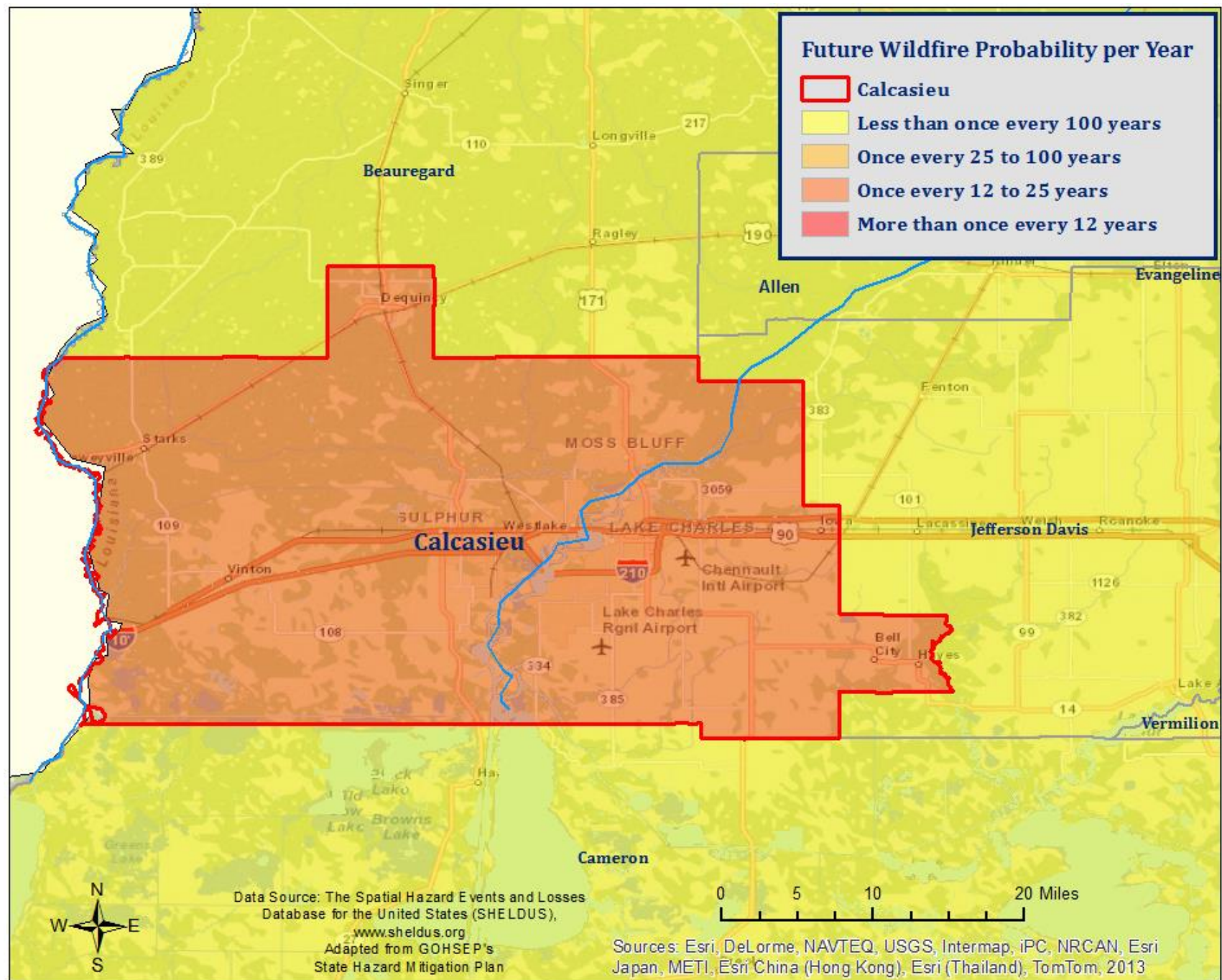




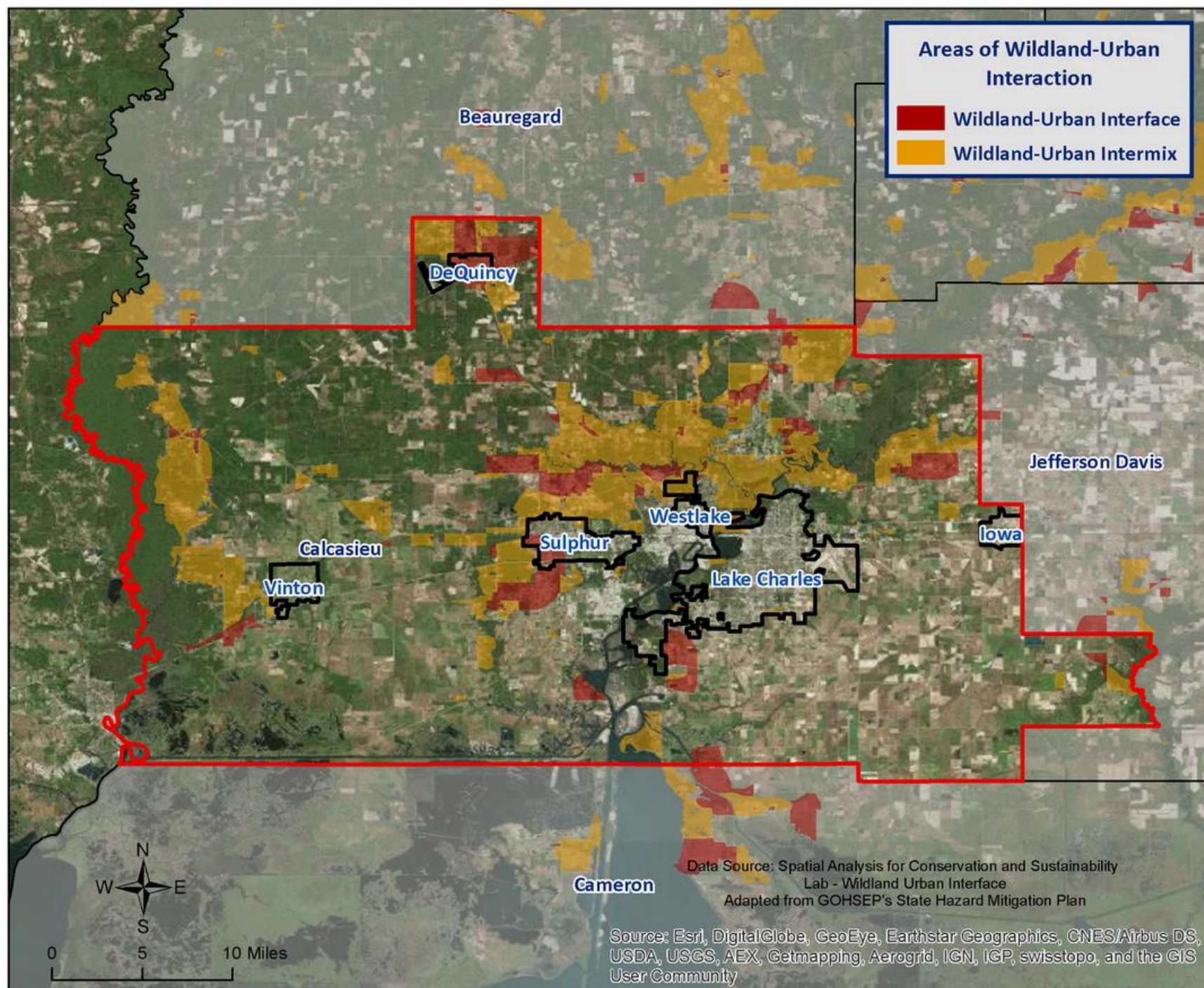
# Wildfires

- Wildfires are fueled by naturally occurring or non-native species of trees, brush, and grasses.
- Topography, fuel, and weather are the three principal factors that impact wildfire hazards and behavior.
- There are four categories of wildfires; wildland fires, interface or intermixed fires, firestorms, and prescribed natural fires.









# Tropical Cyclones

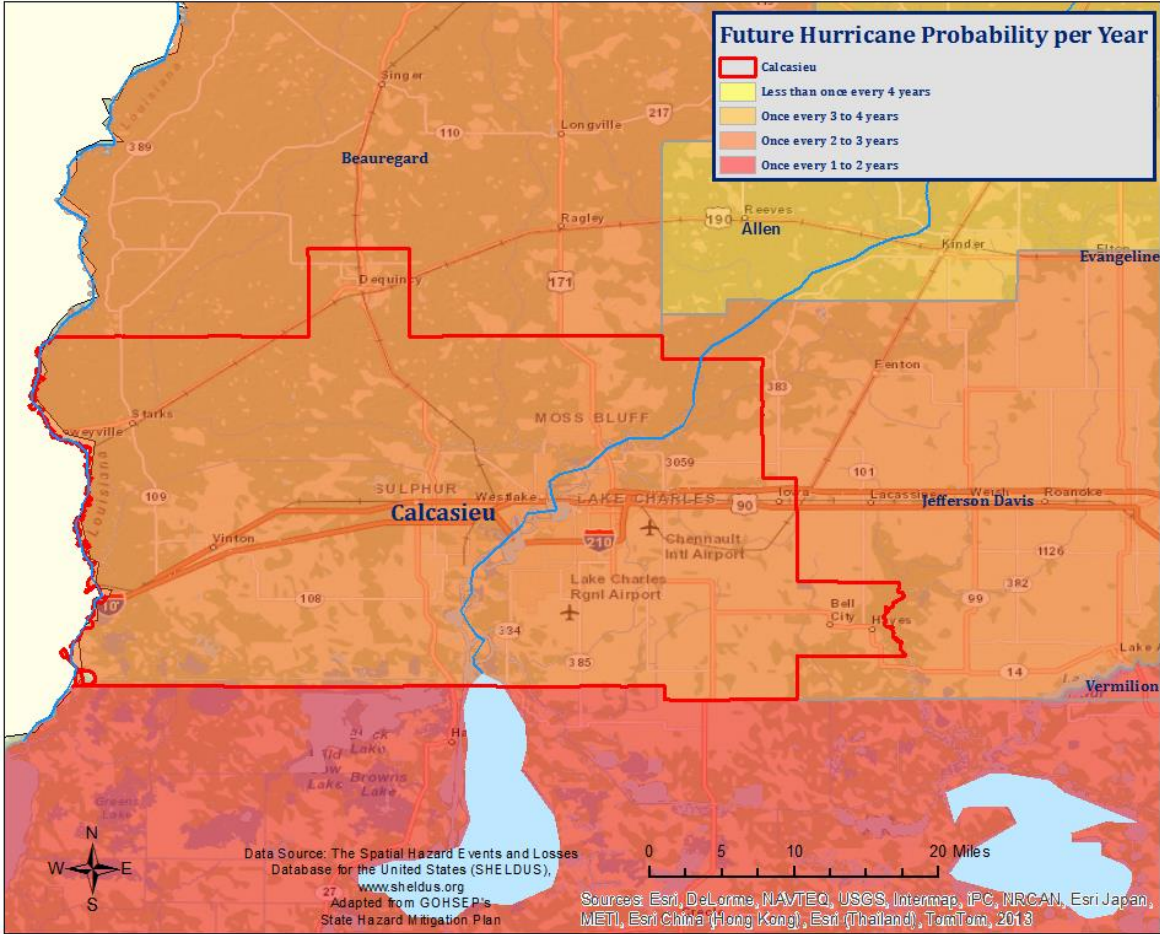
- Tropical cyclones are defined spinning, low-pressure air masses that draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes



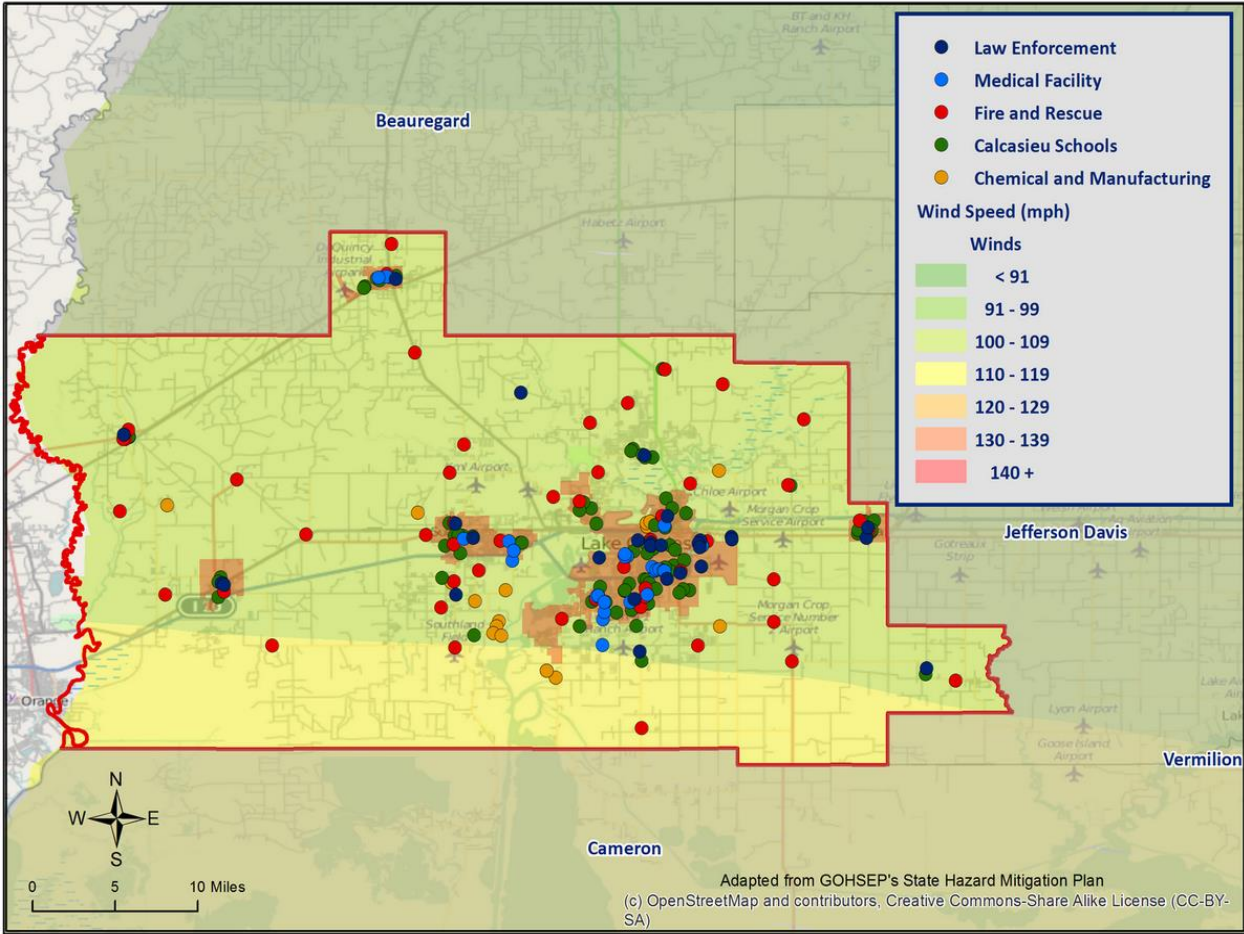
Saffir-Simpson Hurricane Wind Scale		
	Sustained Wind Speed	Effects
Category 1	74-95 mph (119-153 km/hr)	Very dangerous winds will produce some damage. Low-lying coastal roads flooded, minor pier damage
Category 2	96-110 mph (154-177 km/hr)	Extremely dangerous winds will cause extensive damage. Major 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.



# Future Hurricane Probability

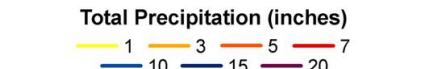
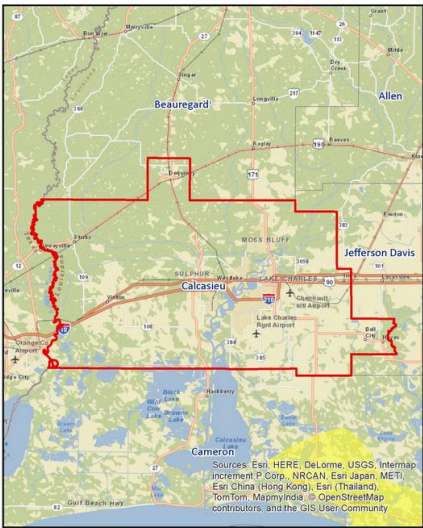
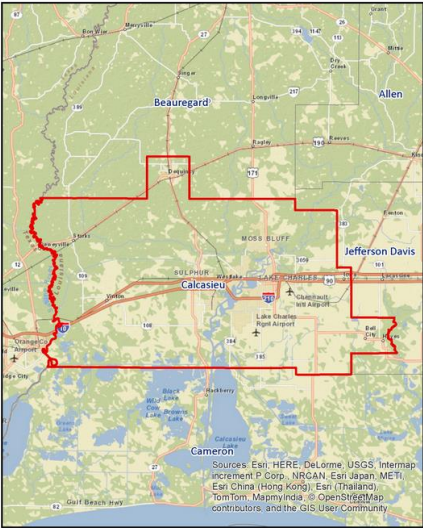


# Wind Speed Probability



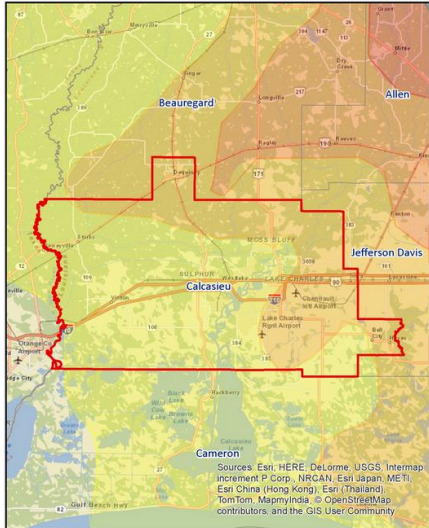
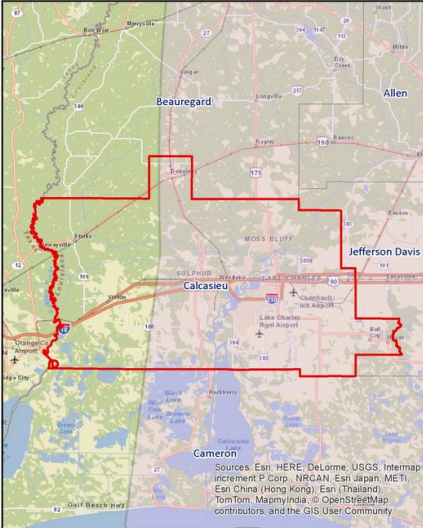


Hurricane Katrina (2005)



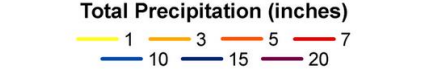
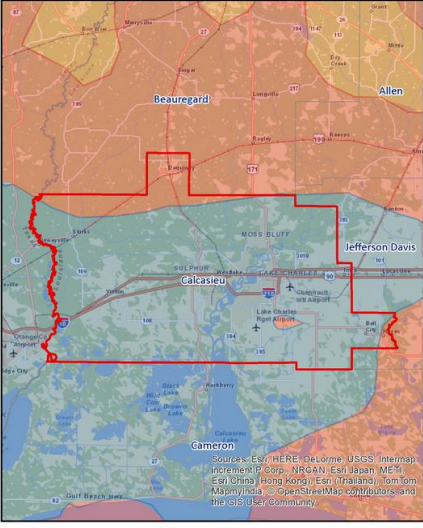
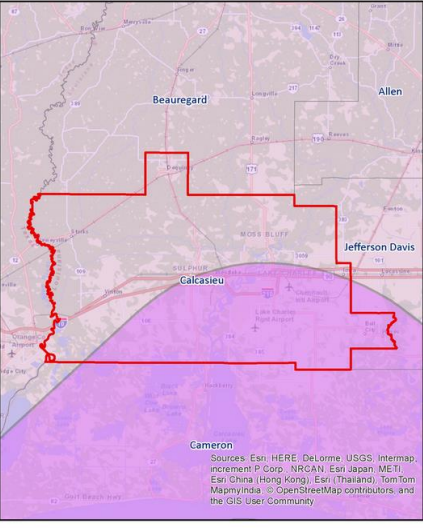
Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

Hurricane Gustav (2008)



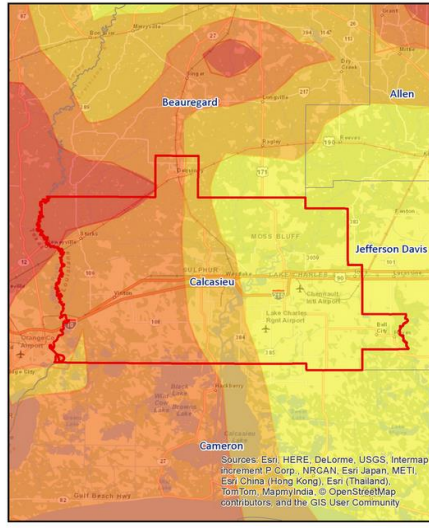
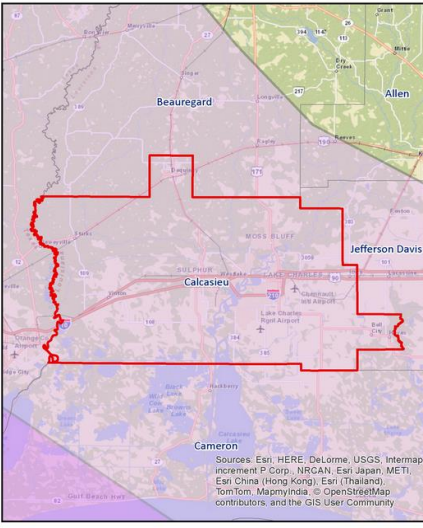
Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

Hurricane Rita (2005)



Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

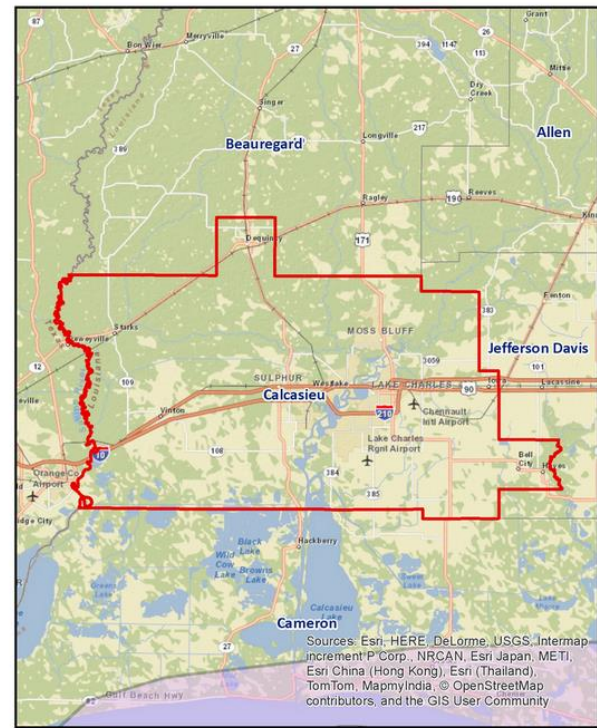
Hurricane Ike (2008)



Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan



Tropical Storm Lee (2011)



Wind Speed (Saffir-Simpson Scale)

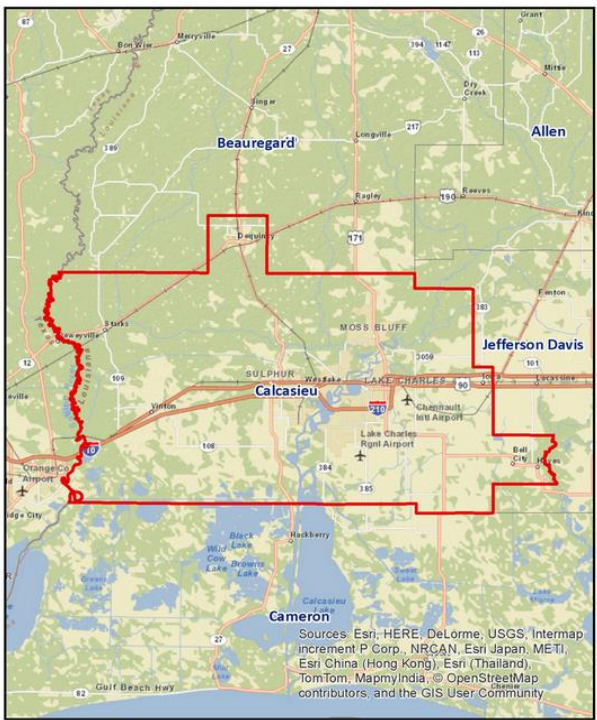
Tropical Storm (39 - 73 mph) Hurricane (74 - 110 mph) Major Hurricane (> 110 mph)

Total Precipitation (inches)

1 3 5 7  
10 15 20

Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan

Hurricane Isaac (2012)



Wind Speed (Saffir-Simpson Scale)

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

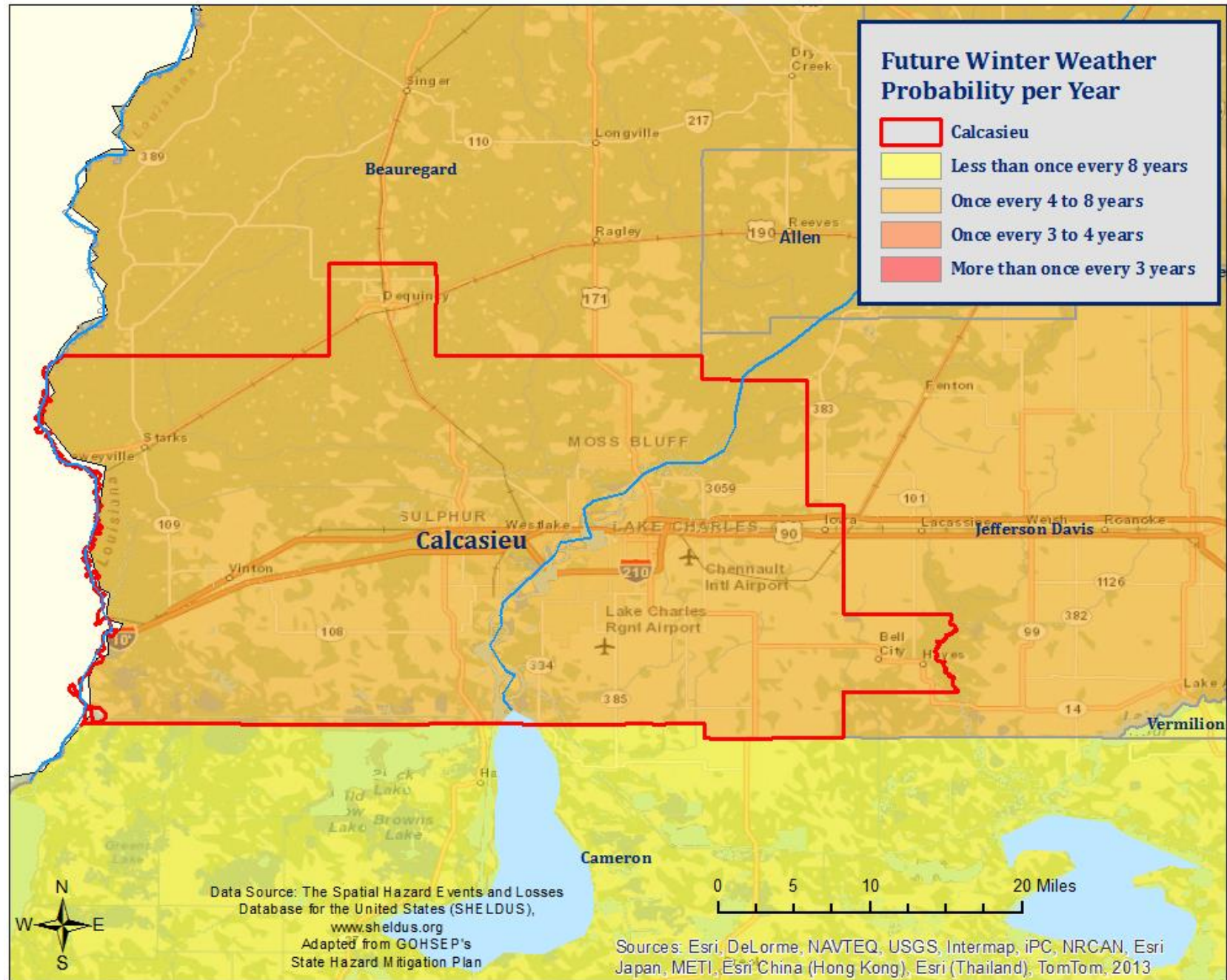
Total Precipitation (inches)

1 3 5 7  
10 15 20

Data Source: NOAA Hurricane Research Division (HRD)  
Adapted from GOHSEP's State Hazard Mitigation Plan



# Winter Weather



# Mitigation Strategy – Parish Goals

- Reduce or prevent injury and loss of life
- Reduce or prevent damage to property and material assets
- Reduce or prevent future damage to critical facilities (fire, rescue, law enforcement, communications, command and control) essential for protection and public safety
- Reduce or prevent future damage to special facilities including: schools, nursing homes, health care facilities, prisons, historical and cultural resources
- Reduce or prevent future damage to infrastructure including: stormwater conveyance structures, utility systems, pipelines, railroads, highways, bridges, and navigable waterways
- Reduce or prevent future damage to commercial facilities
- Reduce or prevent future damage to higher risk facilities that, if damaged, may result in significant loss of human life, damage to the environment, or significant harm to the local economy including: hazardous material handling facilities, dams, flood control facilities, and other high security facilities





# 2009-2014 Parish HM Project Status

- Director's Comments



# Public Outreach Activities

- Risk Analysis Activity (Hazard Occurrences)
- Problem Area Identification (Parish Maps)
- Survey



# ***Contact Us***

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