





## WATER FACTS

# New Orleans, Louisiana: Identifying and Becoming More Resilient to Impacts of Climate Change



Cities across the United States should anticipate significant water-related vulnerabilities based on current carbon emission trends because of climate change, ranging from water shortages to more intense storms and floods to sea level rise. To help cities become more resilient to the rising threats of climate change, NRDC reviewed more than 75 scientific studies and other reports to summarize the water-related vulnerabilities in 12 cities—including New Orleans. Although there may still be some uncertainty about what particular impacts threaten cities and how quickly or severely they might occur, action at the local level is the most effective method of reducing, mitigating, and preventing the negative effects of water-related climate change outlined in this fact sheet. NRDC urges cities to prepare for coming challenges relating to water resources. Fortunately, there are steps cities are already taking to become more resilient.

New Orleans is one of the most vulnerable cities in the United States to the impacts of climate change, due to its low elevation, land subsidence rates, sea level rise, and prediction of more intense hurricanes. But as New Orleans rebuilds in the wake of the Hurricane Katrina disaster, it is trying to do so in a way to make it more resilient to the effects of climate change, land subsidence, and wetlands loss. Based on current climate research, projected vulnerabilities for New Orleans include:



Summary of water-related climate changes and impacts in New Orleans throughout the 21st century	
	Rising sea levels
	Increased flooding
	More frequent and intense storm events
	Increased impacts to fisheries

● Highly likely    
 ● Likely    
 ● Possible

Source: NRDC



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## SEA LEVEL RISE

Sea levels in the New Orleans area are likely to increase by 1 to 4.6 feet (0.3 to 1.4 meters) by 2100 based on the range of estimates of absolute sea level rise and subsidence of the local land. These conditions give much of the Louisiana coast a relative sea level rise rate that is among the highest in the nation.

## WETLAND LOSS AND FLOODING

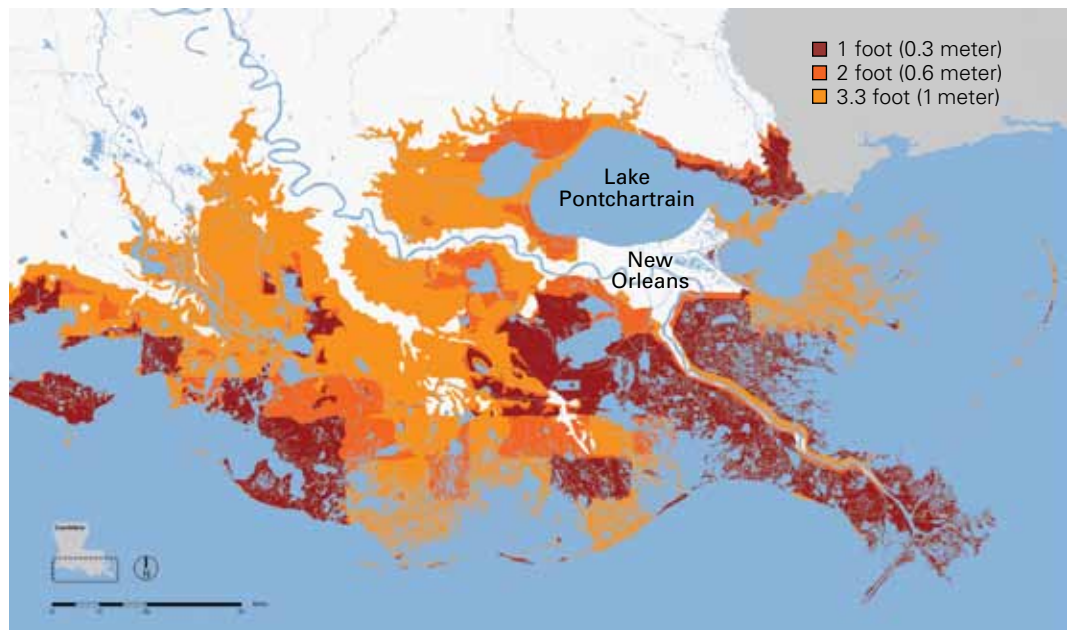
Rising seas will likely wipe out a significant portion of the coastal wetlands in the Mississippi River Deltaic Plain, where wetland loss rates are already among the highest in the world. Without inputs of sediment, an additional 3,900 to 5,200 square miles of wetlands will be under water by the end of the 21st century. If the impacts of relative sea level rise on wetlands are not checked, metropolitan New Orleans could eventually sit on land almost completely surrounded by the open waters of the Gulf of Mexico.

Loss of Louisiana's coastal wetlands would not only represent a loss of natural flood protection, but it would impact the vast array of plants and animals that the wetlands support, many of which are tied to economic activity including fishing, timber, agriculture, tourism, and recreation. The combined value of infrastructure and biological productivity associated with Louisiana's wetlands exceeds \$100 billion.

## STORM EVENTS AND COASTAL AND INLAND FLOODING

In the future, as ocean temperatures rise, New Orleans will likely continue to experience more intense precipitation events and hurricanes. Rainstorms with severe intensity have caused significant flooding in New Orleans in the past, and any increase in precipitation intensity is likely to exacerbate the situation. Further, more intense hurricanes could be devastating to the city, as evidenced by Hurricane Katrina. The storm surge from Katrina, a Category 3 hurricane, was so devastating to coastal wetlands that the impact "represented about 50 years of projected wetland loss," according to

### Potential wetland submersion by 2100



Source: Carbonell A, Meffert DJ. Climate Change and the Resilience of New Orleans: the Adaptation of Deltaic Urban Form (2009).

Dr. Douglas Meffert. The storm surge from a Category 5 hurricane could cause flooding of more than 34 feet (10.5 meters) within the city by the end of the 21st century, depending on flood mitigation systems in place at the time.

## ACTION

In Louisiana, the city of New Orleans is leading the way in mitigating and adapting to climate change. Hurricane Katrina and the resulting levee failures flooded nearly 80 percent of New Orleans. The city's efforts to rebuild have focused largely on preventing a repeat of this disaster, as well as creating a more sustainable and environmentally conscious New Orleans. For instance, new public facilities--especially public safety and emergency facilities--are being designed to withstand 500-year storm events. The city, through the Hazard Mitigation Grant Program, is providing funding to elevate existing residential structures, as well as to demolish flood-damaged residential structures and build new, elevated structures on the same site. The city's Master Plan and accompanying Comprehensive Zoning Ordinance project will use zoning to control the placement, construction, and design of new development, in addition to the expansion and renovation of existing structures. In addition to these larger city planning efforts, the greater New Orleans area recently began work on a sustainable integrated water management strategy to reduce flood hazards, use storm water as a resource, and minimize soil subsidence, among other goals.