

## Sea level — big picture

Local sea level has **risen** 0.4 ft (.12 m) since the 1960s, and much of New Orleans has **sunk** over 1.5 ft (.46 m) in the same period for a combined change of 2 ft (.6 m) relative to sea level.<sup>30</sup> Additionally, Louisiana has **lost** some 1,900 sq mi (4921 sq km) of coastal wetlands since the 1930s, accounting for up to 80% of the nation's coastal land loss, increasing vulnerability to flooding and storm surge.<sup>31</sup>

**DEPRIVATION** Extensive levee systems and upstream dams along the Mississippi River and its tributaries prevent coastal wetlands from receiving freshwater, nutrients, and sediment replenishment needed to survive and regenerate.

### SUBSIDENCE, THE SINKING OF LAND

- Natural compacting of loose soil
- Earth shifts and settlement deep below ground
- Draining land for agriculture, road and canal construction, and urban development
- Weight of buildings, levees, and spoil banks
- Some believe underground strata collapse after oil and gas are extracted

### SALTWATER INTRUSION

Saltwater enters canals and weakens or kills freshwater vegetation, so soil disintegrates and wetlands convert to open water.

### EROSION, THE WEARING AWAY OF LAND

- Natural abrasive force of water and wind
- Logging and clear-cutting cypress swamps
- Dredging thousands of canals for navigation and oil and gas, creating miles of new shorelines for saltwater to erode
- Wind and boat wake washing away the edges and carrying off sediment

### HURRICANE DAMAGE

The coastal land loss from hurricanes Katrina and Rita in 2005 amounted to roughly ten years' worth of loss in two days, with nearly half from the relatively small land area east of the lowermost Mississippi River, the buffer needed most for the protection of metropolitan New Orleans.<sup>32</sup>

China, India, Bangladesh, Vietnam, Indonesia, Japan, Egypt, the United States, Thailand, and the Philippines have the largest number of people living within 10 m (about 33 ft) of the average sea level.<sup>33</sup> Worldwide, about half of all salt marshes and mangrove swamps have been cleared, drained, diked, or filled, and few estuaries remain unpolluted or unaltered.<sup>34</sup> Louisiana coastal land loss is the most rapid in the United States, forming a major laboratory for global climate change;<sup>35</sup> what happens here and the response to it have widespread implications.