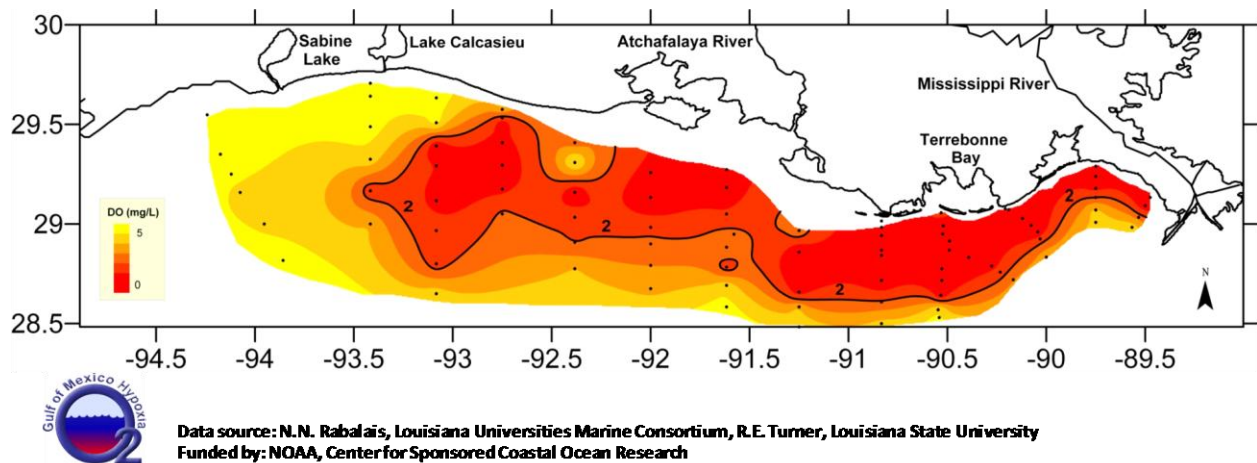


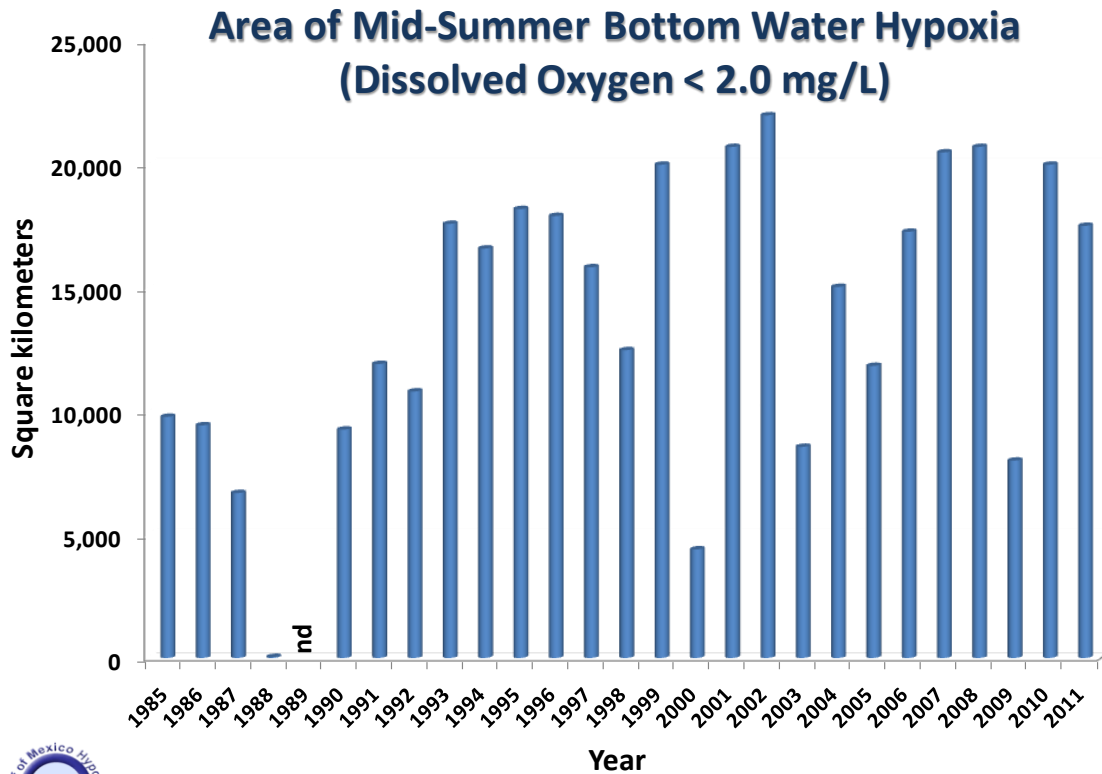
PRESS RELEASE  
LOUISIANA UNIVERSITIES MARINE CONSORTIUM  
July 31, 2011

Scientists have returned from mapping the 2011 area of hypoxia, commonly known as the ‘Dead Zone,’ along the Louisiana coast. This year’s zone is 17,520 square kilometers, or 6,765 square miles. This extent across the seafloor is larger than average, but below the large size expected following record-breaking flow of the Mississippi River this spring and summer. Chief Scientist, Dr. Nancy Rabalais, reported that “the major disruptor of the size was Tropical Storm Don that followed the Research Vessel *Pelican* across the Gulf of Mexico towards Texas and whipped up the winds and waves.” Mixing of the water column re-supplies oxygen to the lower layers and reduces the area of low oxygen, at least temporarily.

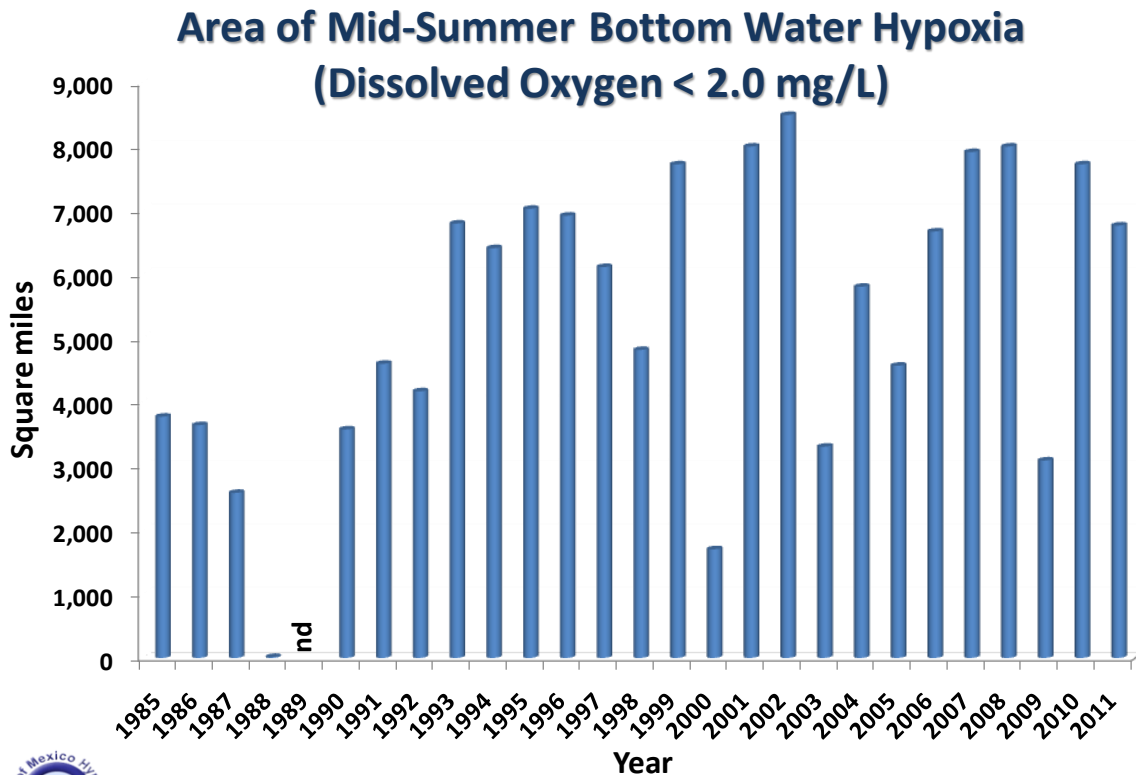
Low oxygen (hypoxia is dissolved oxygen  $\leq 2$  milligrams per liter, or 2 ppm) was more severe and extensive off two lines of stations in mid-July—one off Terrebonne Bay and one off Atchafalaya Bay. These stations will be restudied in August.

**Bottom-Water Dissolved Oxygen  
24-30 July, 2011**



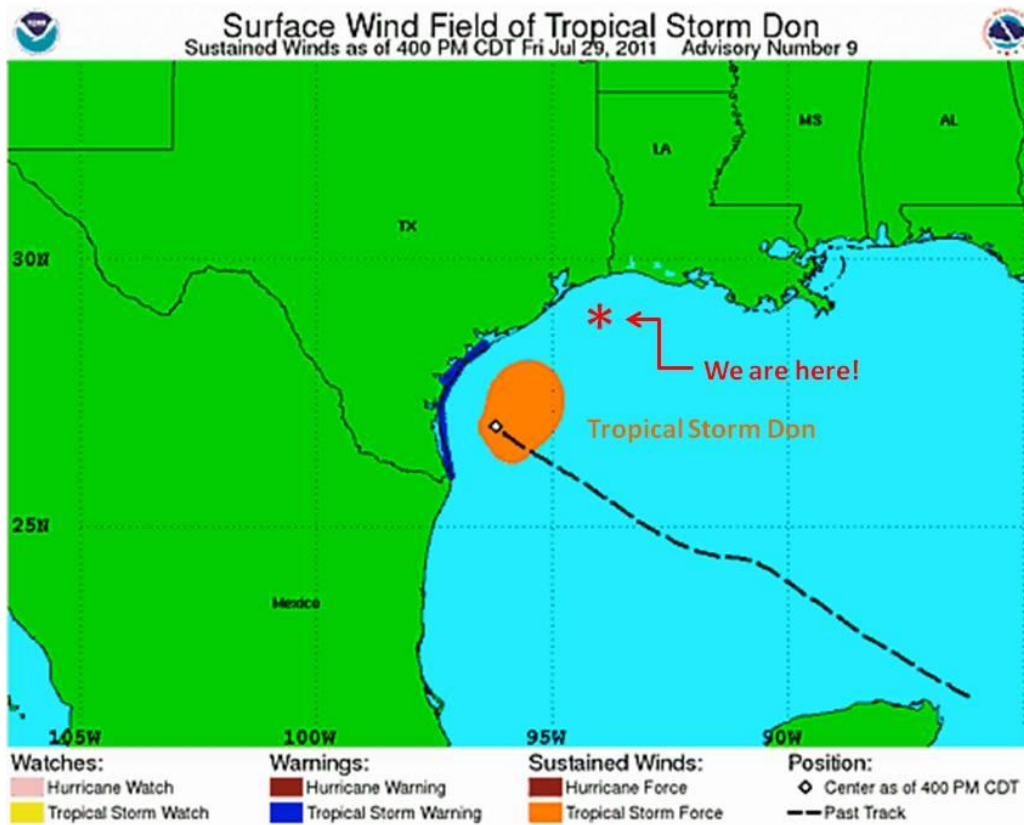


Data source: N.N. Rabalais, Louisiana Universities Marine Consortium, R.E. Turner, Louisiana State University  
 Funded by: NOAA, Center for Sponsored Coastal Ocean Research



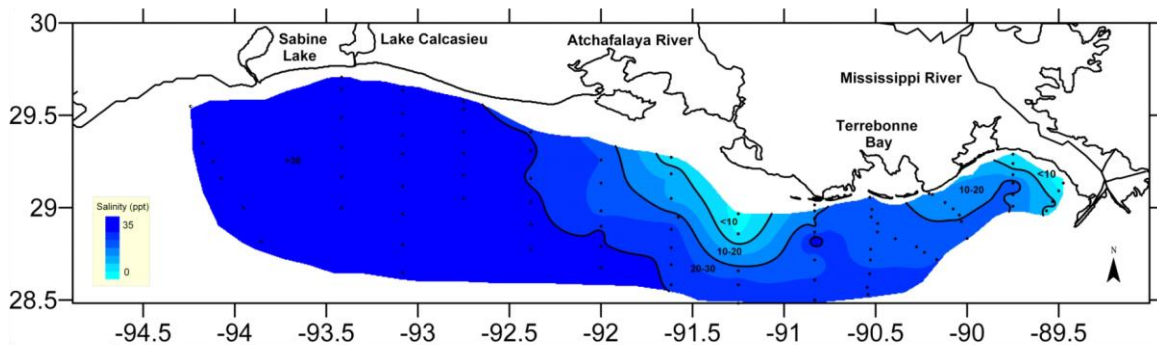
Data source: N.N. Rabalais, Louisiana Universities Marine Consortium, R.E. Turner, Louisiana State University  
 Funded by: NOAA, Center for Sponsored Coastal Ocean Research

Tropical Storm Don made landfall around 1 am 30 July 2011, in south Texas near Baffin Bay. Seas were 12 ft (4 m) in the storm's immediate path, and 5 to 6 ft (1.5 to 2 m) in the area surveyed on the cruise. The maximum sustained winds reported by the National Weather Service were 45 kn (50 mph or 85 km/hr) with higher gusts. Winds reached 18kn aboard the *Pelican*. Water depths of 10 to 20 m would experience significant mixing under these conditions, and the surface winds affect ocean currents in the bottom layers. Much of the northwestern shelf is < 25 m where hypoxia was anticipated to be found based on June and early July surveys by National Marine Fisheries Service and Texas A&M University. Sampling a 0.5 to 1 m thick hypoxic bottom layer on a ship rolling in 5 to 6 ft swells presented additional sampling issues that interfered with precise measurements at some stations. For these reasons, the size of the measured hypoxic zone was smaller than just before the storm, and was probably under-estimated.

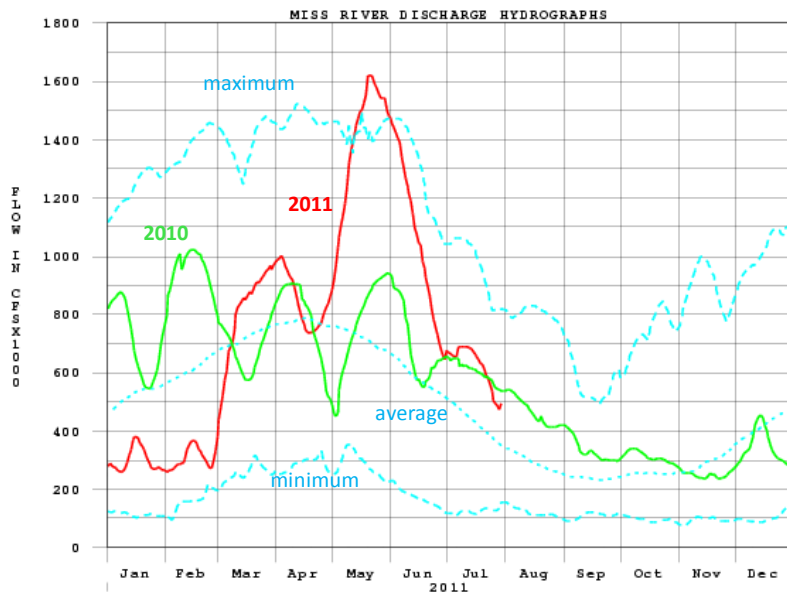


Other factors at play were (1) more southerly and southwesterly winds in the weeks before the mapping cruise that tend to push the hypoxic water mass towards the east, and (2) the dramatic decrease in the Mississippi River discharge during July. Support for this conclusion is shown in the surface-water salinity distribution figure and the chart of the Mississippi River discharge below.

## Surface-Water Salinity 24-30 July, 2011



Data source: N.N. Rabalais, Louisiana Universities Marine Consortium, R.E. Turner, Louisiana State University  
Funded by: NOAA, Center for Sponsored Coastal Ocean Research



<http://www.mvn.usace.army.mil/eng/edhd/tar.gif>

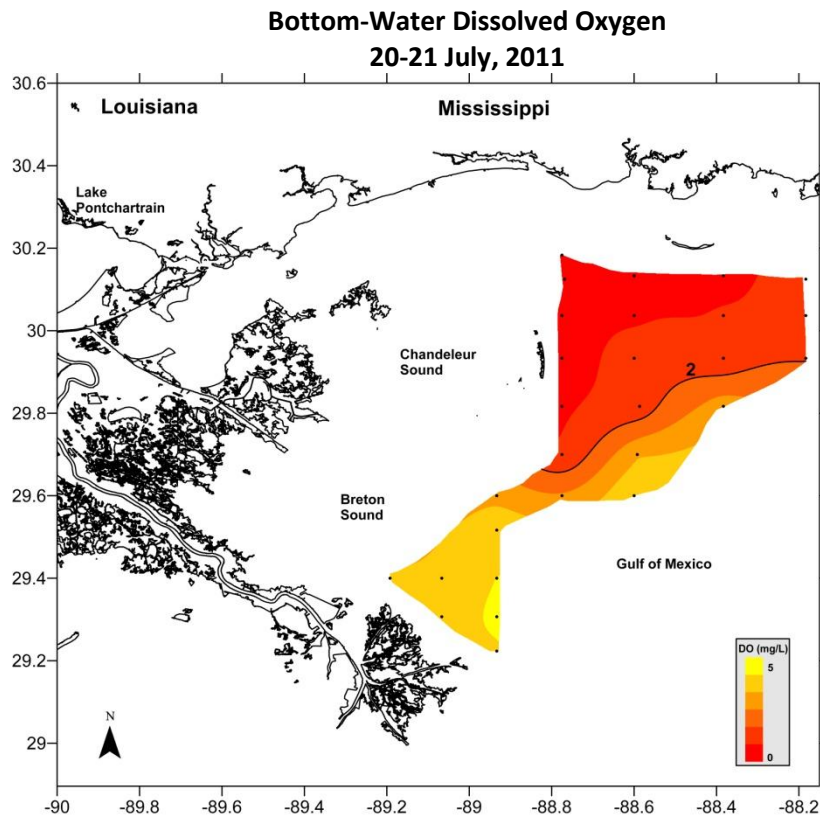
The Hypoxia Research Team led by researchers from Louisiana Universities Marine Consortium (LUMCON) and Louisiana State University (LSU) has been conducting mid-summer mapping cruises since 1985, and the areas determined on these cruises form the basis of the Mississippi River/Gulf of Mexico Nutrient Task Force Hypoxia Action Plan to reduce the size of the low oxygen area to 5,000 square kilometers (about 1,930 square miles). The 5-year running average upon which the environmental goal is based is now 17,350 square kilometers (6,700 square miles).

Hypoxia is a recurring environmental problem in Louisiana (and sometimes Texas and Mississippi) offshore waters. It forms as a result of the nutrient-overloaded waters of the Mississippi River stimulating the excess growth of phytoplankton. Not all of the phytoplankton is consumed by higher levels of the food web, and it sinks to the seabed where bacteria

decompose the remains and deplete the oxygen. The low oxygen forms in the lower half of a stratified water column (warmer, fresher water overlying cooler, saltier water), which keeps the plentiful oxygen in the surface waters from reaching into the lower layer and replenishing the oxygen depleted by the microbial activity.

Hypoxia may occupy much of the water column or be just a few meters above the bottom. Sure signs of severely low oxygen over much of the lower water column are when sea life that usually live in the mud bottom are swimming at the water's surface instead. Mud eels were observed at the surface along with many lesser blue crabs on this summer's cruise,

The LUMCON team, led by Dr. Nancy Rabalais, mapped another Dead Zone east of the Mississippi River during mid-July that concentrated between the Chandeleur Islands and Mobile Bay. It was similar in severity to the area just west of the Mississippi River.



For further information, contact:

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Dr. Gene Turner, [euturne@lsu.edu](mailto:euturne@lsu.edu)

Visit the Gulf Hypoxia web site at <http://www.gulfhypoxia.net> for additional graphics and information concerning this summer's research cruise, and previous cruises.

NGOMEX09 funding from the National Oceanic and Atmospheric Administration, Center for Sponsored Coastal Ocean Research.