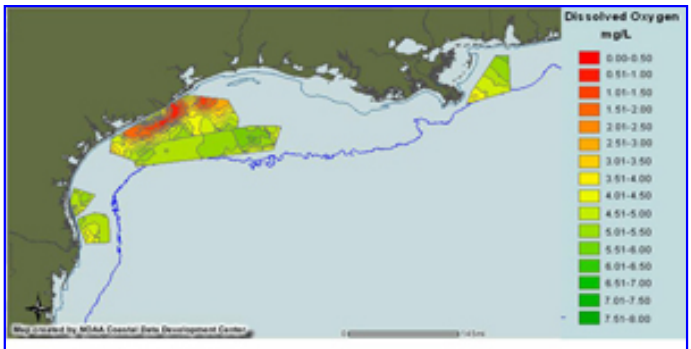
NOAA AND LOUISIANA SCIENTISTS SAY GULF OF MEXICO "DEAD ZONE" COULD BE LARGEST SINCE MEASUREMENTS BEGAN IN 1985



Hypoxia data from June 7th through July 3rd 2007 collected from the Gulf of Mexico Hypoxia Watch. Waters with oxygen concentrations below 2 mg/L are considered to be hypoxic and may be harmful to marine life. This program is part of the annual summer Gulf of Mexico Southeastern Monitoring and Assessment Program (SEAMAP) cruise in the northwest and north-central Gulf of Mexico. Near real-time data are received from the NOAA ship Oregon II. SEAMAP and other NOAA sponsored cruises will continue to map the hypoxic area this summer.

July 17, 2007 — A team of scientists from NOAA, the Louisiana Universities Marine Consortium, and Louisiana State University is forecasting that the "dead zone" off the coast of Louisiana and Texas this summer — an area of low or no oxygen which can threaten or kill all marine life in it — has the potential to be the largest since shelf wide measurements began in 1985, and significantly larger than the average size since 1990. **(Click NOAA image for larger view of hypoxia data from June 7 through July 3, 2007, collected from the Gulf of Mexico Hypoxia Watch. Click here for high resolution version. Please credit "NOAA.")**

This NOAA supported modeling effort, led by R. Eugene Turner of LSU, predicts this summer's "dead zone" may be as large as 8,500 square miles, an area about the size of New Jersey. Since 1990, the average annual hypoxia-affected area has been approximately 4,800 square miles. The "dead zone" measured 6,662 square miles in 2006. Tropical storms and hurricanes are capable of disrupting the physical structure of the water column and aerating the bottom layer. While NOAA has predicted an active hurricane season for 2007, if no strong storms appear this year's dead zone could equal the largest recorded in 2002 and stretch into Texas' continental shelf waters.

The "dead zone" is an area in the Gulf of Mexico where seasonal oxygen levels drop too low to support most life in bottom and near-bottom waters. It is caused by a seasonal change where algal growth, stimulated by input of nutrients such as nitrogen and phosphorus from the Mississippi and Atchafalaya rivers, settles and decays in the bottom waters. The decaying algae consume oxygen faster than it can be replenished from the surface, leading to decreased levels of dissolved oxygen. This hypoxic area is of particular concern because of its potential to affect the valuable Gulf fishery.

The forecast is based on nitrate loads from the Mississippi and Atchafalaya rivers in May and incorporates the previous year's conditions. The nitrogen data are provided by the U.S. Geological Survey. NOAA also funds research cruises to track development of hypoxia.

"I am anticipating a historically large hypoxic zone this summer because the nitrate loading this May, a critical month influencing the size of the area, was very high," said Turner. "The difference between 2007 and 2002 cannot be explained by increased river flow. The riverine flow in May 2007 was 77 percent of the May 2002 discharge, but it contained 35 percent more nitrogen. The relatively high nitrate loading may be due to more intensive farming of more land, including crops used for biofuels, unique weather patterns, or changing farming practices."

There are multiple models of the size of the hypoxic zone that are useful in evaluating the influence of nitrogen load and variations in ocean currents on the size of the "dead zone." These models all indicate the importance of nutrient loading to the development of hypoxia, but do not always produce the same predictions for a given year. Model improvement is one focus of ongoing research.

Over the past four years, NOAA and its collaborators have compared two independent models in an

experimental forecast product. The LSU model is the most accurate model based on past performance, but it is still in the experimental stages. Additional research for model improvement is required before this annual prediction can become an operational forecast.

“This prediction is an example of the ‘ecological forecasting’ capabilities of NOAA and its partners. We believe such forecasts will become important tools for coastal managers in the coming years,” said David Whitall, a NOAA scientist involved in this project.

Research indicates that nearly tripling the nitrogen load into the Gulf over the past 50 years has led to the heightened hypoxia problem. The scientists say their research will improve assessments of hypoxic effects under various Gulf Coast oceanographic conditions.

These research, observational, and modeling studies are part of a larger NOAA sponsored effort to support effective interagency management decisions by developing a fundamental understanding of the northern Gulf of Mexico ecosystem with a focus on the causes and effects of the hypoxic zone over the Louisiana continental shelf and the prediction of its future extent and impacts to ecologically and commercially important aquatic species.

The National Oceanic and Atmospheric Administration, an agency of the U.S. Commerce Department, is celebrating 200 years of science and service to the nation. From the establishment of the Survey of the Coast in 1807 by Thomas Jefferson to the formation of the Weather Bureau and the Commission of Fish and Fisheries in the 1870s, much of America's scientific heritage is rooted in NOAA.

NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and information service delivery for transportation, and by providing environmental stewardship of our nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems (GEOSS), NOAA is working with its federal partners, more than 60 countries and the European Commission to develop a global monitoring network that is as integrated as the planet it observes, predicts and protects.

Relevant Web Sites
NOAA

NOAA National Ocean Service

NCCOS Gulf of Mexico Ecosystems & Hypoxia Assessment

NCCOS National Centers for Coastal Ocean Science

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