

NOAA forecasts average-size Gulf of Mexico summer 'dead zone'

June 2 2022



Credit: Pixabay/CC0 Public Domain

A team of scientists including a University of Michigan aquatic ecologist

is forecasting a summer "dead zone" in the Gulf of Mexico of 5,364 square miles, about average for the 35-year history of the measurements.

The [forecast](#) is lower than last year's measured size and slightly lower than the five-year average measured size of 5,380 square miles. The 2022 Gulf of Mexico hypoxia forecast was released today by the National Oceanic and Atmospheric Administration.

"The action plan to reduce the size of the Gulf of Mexico dead zone was established over 20 years ago, yet this year's forecast is comparable to the 35-year average zone," said U-M's Don Scavia, who leads one of several research teams partnering with the [federal government](#) on the annual forecasts.

"This is not surprising because nutrient loads have not changed since 1990, proof that current efforts to reduce loads to the Gulf have not been effective. Clearly, the federal and state agencies and Congress continue to prioritize industrial agriculture over water quality," said Scavia, professor emeritus at the School for Environment and Sustainability.

The Gulf of Mexico dead zone, or hypoxic area, is an area of low oxygen that can kill fish and other marine life. It occurs every summer and is primarily a result of excess nutrient pollution from human activities in cities and farm areas throughout the Mississippi River watershed.

When the excess nutrients reach the Gulf, they stimulate an overgrowth of algae, which eventually die and decompose, depleting oxygen as they sink to the bottom. The resulting low oxygen levels near the bottom of the Gulf cannot support most marine life. Fish, shrimp and crabs often swim out of the area, but animals that are unable to swim or move away can be stressed or killed.

"The Gulf dead zone remains the largest hypoxic zone in United States

waters, and we want to gain insights into its causes and impacts," said Nicole LeBoeuf, assistant administrator of NOAA's National Ocean Service. "The modeling we do here is an important part of NOAA's goal to protect, restore and manage the use of coastal and ocean resources through ecosystem-based management."

This is the fifth year NOAA has produced a dead zone forecast using a suite of models jointly developed by the agency and its partners—teams of researchers at the University of Michigan, Louisiana State University, William & Mary's Virginia Institute of Marine Science, North Carolina State University, Dalhousie University and the U.S. Geological Survey (USGS), which provided the Mississippi River nutrient loading data for the models.

NOAA integrates the results of these multiple models into an aggregate forecast and releases the forecast in coordination with these external groups, some of whom are also developing independent forecasts.

The USGS measures nutrient levels using more than 3,500 real-time stream gauges, 68 real-time nitrate sensors and 38 long-term monitoring sites in rivers throughout the Mississippi-Atchafalaya watershed. These data are used to track long-term changes in nutrient inputs to the Gulf and to build models of nutrient sources and hotspots within the watershed.

"Long-term USGS monitoring shows that nitrogen loading to the Gulf decreased then stabilized since 1985, while phosphorus loading increased during part of that same period," said Don Cline, associate director of the USGS Water Resources Mission Area.

"A new USGS study indicates these trends are partly explained by nutrient inputs like fertilizer, but notes other factors such as agricultural management practices and nutrients accumulated in the past were also

likely important, particularly for phosphorus."

The Interagency Mississippi River and Gulf of Mexico Hypoxia Task Force has set a long-term goal of reducing the dead zone to 1,900 square miles. NOAA's hypoxia forecast models and USGS monitoring of nutrients in rivers help to predict how hypoxia in the Gulf of Mexico is linked to nutrients coming from throughout the Mississippi River Basin. The Task Force uses the information the two agencies produce to inform nutrient reduction targets across the Mississippi watershed states.

Through the Bipartisan Infrastructure Law, the U.S. Environmental Protection Agency is investing \$60 million over the next five years to support the implementation of nutrient reduction strategies that will address the challenge of Gulf hypoxia.

"The Hypoxia Task Force has a transformational opportunity to further control [nutrient loads](#) in the Mississippi River Basin and reduce the size of the hypoxic zone using Bipartisan Infrastructure Law funding," said John Goodin, director of EPA's Office of Wetlands, Oceans and Watersheds. "This annual forecast is a key metric for assessing the progress the Hypoxia Task Force is making."

To confirm the size of the hypoxic zone and refine the forecast models, a NOAA-supported monitoring survey is conducted each summer. While the forecast assumes typical coastal weather conditions, the measured dead zone size could be disrupted by major weather events, such as hurricanes and tropical storms.

NOAA and its partners continue to develop additional hypoxia forecast capabilities to understand impacts on living marine resources, including a tool to visualize future scenarios of fish biomass with and without nutrient reduction actions.

Provided by University of Michigan

Citation: NOAA forecasts average-size Gulf of Mexico summer 'dead zone' (2022, June 2)
retrieved 27 April 2024 from

<https://phys.org/news/2022-06-noaa-average-size-gulf-mexico-summer.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.