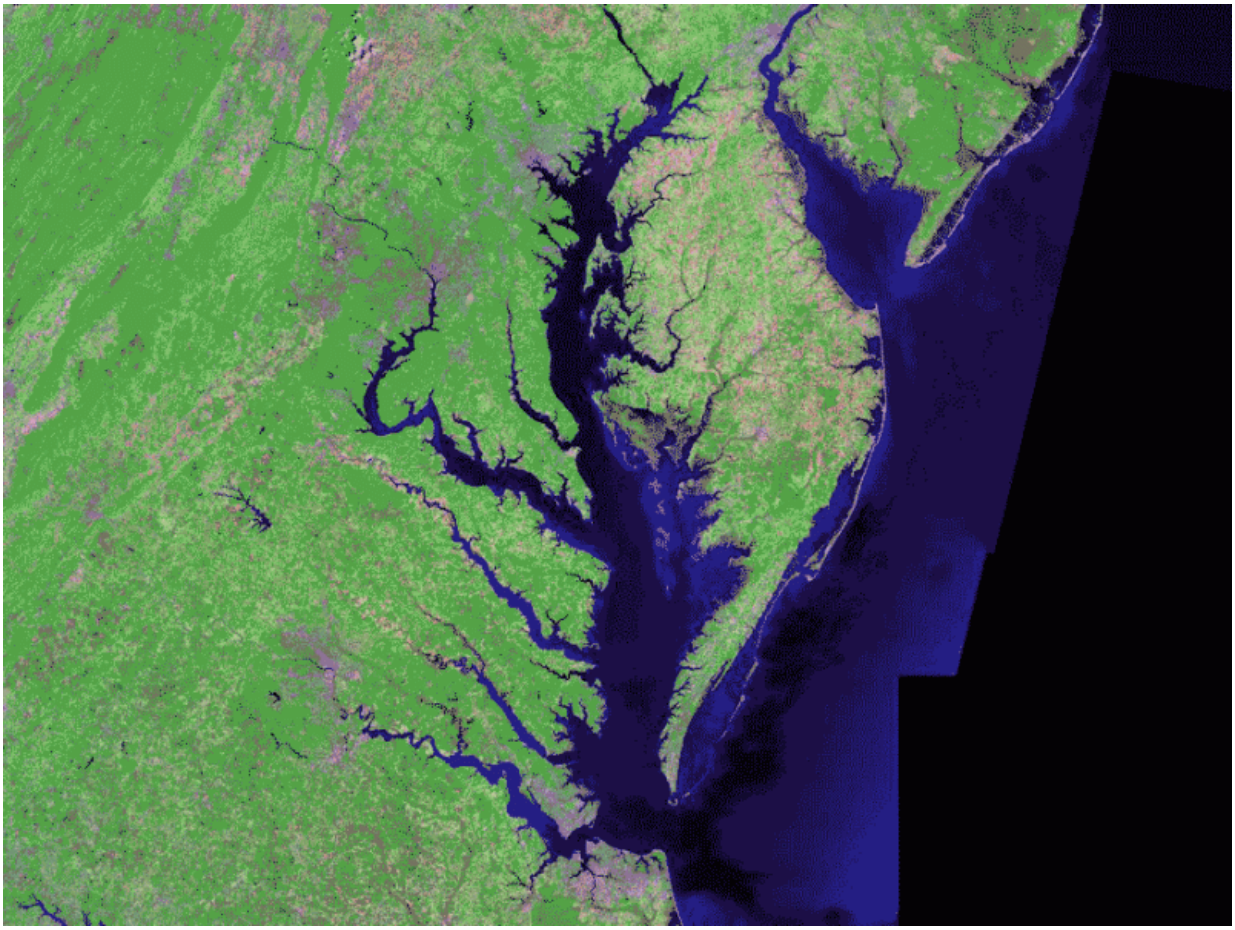
Larger-than-average summer 'dead zone' predicted for Chesapeake Bay in 2017

June 15 2017, by Jim Erickson



Satellite (Landsat) picture of Chesapeake Bay (center) and Delaware Bay (upper right) - and Atlantic coast of the central-eastern United States. Credit: Landsat/NASA, via Wikimedia Commons

A University of Michigan ecologist and colleagues from several institutions are forecasting a larger-than-average Chesapeake Bay "dead zone" in 2017.

This summer's Chesapeake Bay hypoxic or "dead zone," an area of low to no oxygen that can kill fish and aquatic life, is expected to be approximately 1.89 cubic miles—nearly the volume of 3.2 million Olympic-size swimming pools.

The forecast was released today by the National Oceanic and Atmospheric Administration, which funds the work. Measurements of the Chesapeake Bay's dead zone go back to 1950, and the 30-year mean maximum dead zone volume is 1.74 cubic miles.

The anoxic portion of the zone, which contains no oxygen at all, is predicted to be 0.35 cubic miles in early summer, growing to 0.49 cubic miles by late summer—both of which are at or slightly above average. Above-average nutrient loading from the Susquehanna River this spring accounts for the overall slightly larger-than-average predicted size of the anoxic portion.

The bay's hypoxic (low-oxygen) and anoxic zones are caused by excess nutrient pollution, primarily from agriculture and wastewater. The excess nutrients stimulate an overgrowth of algae, which then sinks and decomposes in the water. The resulting low oxygen levels are insufficient to support most marine life and habitats in near-bottom waters, threatening the bay's crabs, oysters and other fisheries.

"The forecast calls for an above-average dead zone in the Chesapeake Bay this year, illustrating that more work needs to be done. The dead zone remains considerably larger than the size implied by the targets set under the Chesapeake Bay Total Maximum Daily Load agreement," said U-M aquatic ecologist Don Scavia, U-M professor of natural resources

and environmental engineering.

Scavia is a member of the NOAA-funded teams that produce annual forecasts for the Gulf of Mexico, Chesapeake Bay and Lake Erie. This year's gulf forecast will be issued this month, and the Lake Erie harmful algal bloom forecast will be released in early July.

Spring rainfall plays an important role in determining the size of the Chesapeake Bay hypoxic zone. In spring 2017, the Susquehanna River delivered 81.4 million pounds of nitrogen into the bay, which is slightly greater than the long-term average. Rainfall amounts were greatest in New York and Pennsylvania, leading to higher than average streamflow into the bay from the Susquehanna.

"Despite this year's forecast, we've made great strides in reducing nutrient pollution from various sources entering the Chesapeake Bay, and we are starting to see positive long-term signs," said Rob Magnien, director of NOAA's Center for Sponsored Coastal Ocean Research. "However, more work needs to be done to address indirect nutrient pollution from farms and other developed lands, to make the bay cleaner for its communities and economic interests."

The bay outlook is based on models developed by NOAA-sponsored researchers at the University of Maryland Center for Environmental Science and the University of Michigan. They rely on nutrient-loading estimates from the U.S. Geological Survey.

Throughout the year, researchers measure oxygen and nutrient levels as part of the Chesapeake Bay Monitoring Program, run by the Maryland Department of Natural Resources and the Virginia Department of Environmental Quality. This year's findings will be released in the fall.

"The USGS supports this forecast by calculating nutrient loads based on

its streamflow gauges and water-quality sampling sites," said Don Cline, associate director for the USGS Water Mission Area. "The USGS and Maryland have maintained a monitoring partnership for over 30 years in order to track conditions in the Chesapeake Bay and its tributaries. These data are all publicly accessible at waterdata.usgs.gov."

Provided by University of Michigan