Study: Rising lake temps may worsen algae blooms

By John Flesher, AP

TRAVERSE CITY, Mich. — Some of the world's biggest temperature jumps are happening in lakes — an ominous sign that suggests problems such as harmful algae blooms and low-oxygen zones hazardous to fish will get worse, says a scientific report.

An analysis of 235 lakes that together hold more than half the earth's fresh surface water found they have warmed an average of 0.61 degrees Fahrenheit or 0.34 degrees Celsius per decade, the report said. While seemingly insignificant, the increase is bigger than those recorded in the oceans or the atmosphere.

Such rapid swings can affect aquatic ecosystems in profound ways, raising concerns about the quality of waters that people rely on for drinking supplies, crop irrigation and energy production.

A combination of satellite data and ground measurements, such as from

instrumented buoys like this one in Lake Tahoe, were used to provide a comprehensive view of changing lake temperatures worldwide. The buoy measures the water temperature from above and below. Photo/Limnotech

“The message we’re getting from our lakes is that they’re getting more and more stressed,” Catherine O’Reilly, an Illinois State University geologist who led the study, said Thursday. “With these rates of warming, the problems we’re seeing will become increasingly common.”

Dozens of scientists in six continents took part in the project, funded partly by NASA and the National Science Foundation. The results, made public this week during a meeting of the American Geophysical Union in San Francisco, were based on a first-of-its-kind combination of temperature data from satellites and ground measurements over 25 years. They are being published in the group’s journal, Geophysical Research Letters.

Lakes warming at the average worldwide rate or higher were widespread, including the Dead Sea, Lake Tahoe, Lake Baikal in Siberia and Lake Fracksjon in Sweden. But deep lakes in cold regions had the most rapid changes, said John Lenters of LimnoTech, a water science consulting firm in Ann Arbor, Mich.

They included four of the five U.S. Great Lakes – Superior, Huron, Michigan and Ontario. Only Lake Erie, the shallowest and warmest of the Great Lakes, was below average. Superior, the deepest and coldest, warmed three times faster than the global average.

In addition to rising air temperatures, factors causing lakes to warm vary among regions, scientists said. The Great Lakes and others in northern climates are losing winter ice earlier, and some areas are getting less cloud cover, exposing their

surfaces to more sunlight.

Algae blooms flourish in warmer waters. The report predicted a 20 percent boost in lake algae over the next century, including a 5 percent increase in blooms that are toxic to fish and animals. An outbreak of toxic algae left more than 400,000 residents of Toledo, Ohio, and southeastern Michigan without usable tap water for two days in August 2014.

Such an increase would expand “dead zones” with so little oxygen that fish cannot survive, O’Reilly said. It also would boost emissions of methane, a greenhouse gas even more potent than carbon dioxide, the leading cause of climate change.

Warming causes a different problem for some lakes. In eastern Africa, Lake Tanganyika is less able to blend warm water near the surface with colder layers farther down, reducing distribution of nutrients for algae on which fish feed.

Donald Uzarski, director of the Institute for Great Lakes Research at Central Michigan University, who was not involved with the study, said its findings were consistent with other water temperature measurements in places such as the Great Lakes and Poyang Lake in China.

Other likely results of warmer lakes, he said, include lower lake levels, damaged coastal wetlands and exotic species invasions.

“What seems to be nothing more than a small change in water temperature produces a domino effect that drastically impacts the ecosystem,” Uzarski said.