NASA to embark on last leg of Arctic sea study

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This NASA Aqua satellite image released in 2003 shows clouds of phytoplankton thriving in the cold, nutrient-rich waters off of Greenland's eastern coast. The US space agency said Tuesday it is sending a team of scientists on the second and final mission of a NASA field study of how melting Arctic ice is changing the life cycles of sea creatures.

The US space agency said Tuesday it is sending a team of scientists on the second and final mission of a NASA field study of how melting Arctic ice is changing the life cycles of sea creatures.

The five-week mission, which kicks off Saturday, focuses on tiny organisms called phytoplankton, whose population blooms can offer clues about the wider health of the ocean ecosystem and how a warming climate may change the ocean's ability to absorb carbon from the atmosphere.

Phytoplankton blooms in the Arctic have been observed to peak as many as 50 days earlier than they did a dozen years ago, a development that could have implications for the larger food web, scientists have said.

The microscopic organisms are the base of the food chain and drive the food and reproductive cycles of fish, seabirds and polar bears. How larger animals may react to phytoplankton changes remains unknown.

Phytoplankton are also important because through the process of photosynthesis they remove about half of the harmful carbon dioxide produced by the burning of fossil fuels worldwide.

The mission, known formally as "Impacts of Climate on Ecosystems and Chemistry of the Arctic Pacific Environment," or ICESCAPE, combines satellite data with on-site measurements of the Chukchi and Beaufort seas along Alaska's coast.

"Last year, ICESCAPE nailed down quite a few things in terms of the phytoplankton work," said chief scientist Kevin Arrigo of Stanford University in Palo Alto, California.

"We know pretty well now how fast they are growing and what they are responding to. The repeat measurements from this voyage will help us confirm what's going on."

NASA said this year's mission begins about three weeks later than it did last year, meaning the Healy icebreaker should be able to better navigate the thinner, summer ice and explore the ecosystem.

Between 2004 and 2008, "multi-year ice cover shrank 595,000 square miles (1.5 million square kilometers) -- nearly the size of Alaska's land area," said a 2009 report of the findings from NASA's Ice, Cloud and Land Satellite (ICESat).

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