

NATIONAL GEOGRAPHIC NEWS

NATIONALGEOGRAPHIC.COM/NEWS

Warming Oceans Contributed to Record Arctic Melt

Mason Inman in San Francisco, California
for [National Geographic News](#)

December 14, 2007

Arctic sea ice shrank drastically this summer, reaching a record low, largely because warm ocean currents ate away at the base of the ice sheet, new research says.

Wind currents also played a key role, blowing sea ice south into the Atlantic Ocean, where the ice then melted, according to the research.

With more [global warming](#) in store, researchers said, the prognosis is grim for the Arctic's so-called perennial sea ice, which is the ice that survives through the summer.

At the fall meeting of the American Geophysical Union (AGU) in San Francisco, some scientists argued yesterday that the end of the perennial ice is near.

"If this trend persists, the Arctic would be ice-free [in the summer] by 2013," said Wieslaw Maslowski of the Naval Postgraduate School in Monterey, California.

Donald Perovich of the U.S. Army Corps of Engineers likened the situation to a losing football game.

"A comeback is possible," Perovich said. "But it's like the fourth quarter, and we're down by two touchdowns."

Record-Breaking Melt

The Arctic's perennial sea ice has been shrinking since the 1980s.

Before then, ice filled the whole Arctic Ocean throughout the summer, occupying an area the size of the continental United States.

But the melt this year brought it to a new low in September, melting an area larger than all of the U.S. states east of the Mississippi River.

The new record blew the old record, set in 2005, out of the water, shrinking to just three-quarters the size of that earlier low.

The ice that remains is also newer ice, which is typically not as strong as ice that's been compacted over several years, according to Jim Maslanik of the National Snow and Ice Data Center in Boulder, Colorado.

Based on satellite images, there's now less than half of the "middle-aged ice"—ice that's more than five years old—than there was in the 1980s, Maslanik reported at the AGU meeting.

"And the really old ice, nine [or more] years old, has essentially disappeared," Maslanik said.

Researchers have also been keeping an eye on the ice growth this fall and winter.

"There was a reduction in fall ice growth by nearly one meter," or about three feet, reported Michael Steele of the

University of Washington in Seattle.

"That missing meter of sea ice has a carryover effect," noted John Walsh of the University of Alaska in Fairbanks.

The decline in ice growth could increase how much melts in future years, he explained.

"It means the ice is more vulnerable," Walsh said.

"All the Suspects Are Guilty"

To determine what has caused the ice crisis, researchers looked at all the "usual suspects," such as warmer air temperatures, winds, clouds, and ocean currents.

This year, "all the suspects are guilty," Perovich said. (See an interactive map of [global warming's effects](#).)

But the ringleader may have been ocean currents that brought warmer water up to the Arctic from the Pacific and Atlantic Oceans, Steele said.

There was "off-the-charts warming" in those surface waters, he added.

Such warming not only melted the ice but also created additional effects that led to further melting.

Sea ice reflects most sunlight, but when the ice melts, it creates open ocean, which absorbs most of the sun's heat. This absorption heats up the waters, leading to even more melting.

"It's a classic positive feedback," Perovich said. "It's important because it can take a small change and amplify it."

(Read related story: ["Global Warming Feedback Loop Caused by Methane, Scientists Say"](#) [August 29, 2006].)

But the process can't start on its own, he added.

"It needs a trigger," Perovich said. "[This year] ocean currents could [have been] that trigger."

How Much Time Is Left?

When asked how long the perennial ice might last, many researchers here shrugged their shoulders.

A [report from the Intergovernmental Panel on Climate Change](#) released in February predicts that the summer sea ice may disappear early in the next century.

But the report points out that while computer models have improved, they still have problems predicting how much Arctic sea ice will melt from year to year.

Some experts think it will take longer than Maslowski's projection of six years, but it will still be less time than was previously thought.

"I'm not too precise about it," Perovich says.

"I used to say it might happen sometime in my kids' lifetime," he said.

Perovich, who says he's "over 50," added, "Now it seems I may live to see it."

Free Email News Updates

[Sign up for our Inside National Geographic newsletter](#). Every two weeks we'll send you our top stories and pictures ([see sample](#)).