

Record loss of Arctic ice may trigger extreme weather

September 17 2012, by Monte Morin

Arctic sea ice is shrinking at a rate much faster than scientists ever predicted and its collapse, due to global warming, may well cause extreme weather this winter in North America and Europe, according to climate scientists.

Last month, researchers announced that [Arctic sea ice](#) had dwindled to the smallest size ever observed by man, covering almost half the area it did 30 years ago, when satellites and submarines first began measuring it.

While the loss of summer sea ice is likely to open up new [shipping lanes](#) and may connect the West Coast of the United States to the Far East via a trans-polar route, researchers say it will also affect weather patterns and [Arctic wildlife](#).

"It's probably going to be a very interesting winter," climate scientist Jennifer Francis said Wednesday in a teleconference with reporters. Francis, a researcher at the Institute of Marine and [Coastal Sciences](#) at Rutgers University, has argued that shrinking Arctic ice can be tied to such recent [weather events](#) as prolonged cold spells in Europe, heavy snows in the Northeastern U.S. and Alaska, and [heat waves](#) in Russia.

Decades ago, Arctic ice covered about 6 million square miles of sea in the winter, and would shrink to about 3 million square miles in the summer. The rate of summer melt increased enormously around 2005, however, and today scientists say Arctic ice covers about 1 million

square miles.

"This is a very small amount of ice indeed," said Peter Wadhams, an ocean physics professor at the University of Cambridge. Wadhams said that while Arctic ice used to build up over many years, new ice formations are now breaking up and melting each summer.

"I think that what we can expect in the next few years is further collapse leading to an ice-free Arctic in summer," Wadhams said. "It really is a dramatic change."

Previously, scientists had predicted that it would take 30 or 40 more years before the Arctic was ice-free in the summer.

The loss of [Arctic ice](#) has several effects. Ice reflects heat and solar energy back into space. With less ice cover, that heat energy is instead absorbed by the ocean, which warms and melts more ice. Currently, the Arctic region is the fastest-warming region on the planet, and the change in temperature will probably influence [weather patterns](#) here and in Europe, according to Francis.

The heating and cooling of Arctic seawater has been affecting the jet stream - the river of air that flows from west to east high above the Earth's surface - and has slowed it down, Francis said. The jet stream controls the formation and movement of storm systems, so when its movement slows, weather conditions persist for longer periods of time over the same area. They get "stuck."

"If you're in a nice dry pattern with sunny skies, it's great if it lasts for a few days. But If it lasts for a few weeks, well then you're starting to talk about a drought," Francis said. "If you have a rainy pattern and it hangs around for a long time, then that becomes a situation that could lead to flooding."

Arctic warming will influence weather to the south during the late fall and winter. While Francis said it would probably result in severe weather this winter, it was impossible to predict when and where those events would occur.

Record ice melts this year and in 2007 have alarmed many scientists, mostly because they thought it would take many more years to reach this state.

James Overland, an oceanographer with the National Oceanic and Atmospheric Administration, said forecasts failed to account for the physics of lost solar energy reflection and warming ocean water.

"These are really surprises to most scientists," Overland said. "In looking at climate models that are used to look forward, they've tended to say the Arctic may be ice-free by 2040 or 2050. It looks like things are happening a lot faster, and it's because not all of the physics that we're seeing today were well-handled in these climate models."

Overland, who is also an associate professor at the University of Washington's Department of Atmospheric Sciences, said these effects are known as "Arctic amplification" and would carry heavy consequences for wildlife like polar bears and walruses by reducing their habitat.

Wednesday's telephone news conference was hosted by Climate Nexus, a New York-based nonprofit that seeks to publicize the effects of climate change.

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