



Press Room

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[Arctic Sea Ice News & Analysis Press Room](#)

2 October 2008

Arctic Sea Ice Down to Second-Lowest Extent; Likely Record-Low Volume

Despite cooler temperatures and ice-favoring conditions, long-term decline continues

This is a press release from the National Snow and Ice Data Center (NSIDC), which is part of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado at Boulder.

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Arctic sea [ice extent](#) during the 2008 melt season dropped to the second-lowest level since satellite measurements began in 1979, reaching the lowest point in its annual cycle of melt and growth on September 14, 2008. Average sea ice extent over the month of September, a standard measure in the scientific study of Arctic sea ice, was 4.67 million square kilometers (1.80 million square miles) ([Figure 1](#)). The record monthly low, set in 2007, was 4.28 million square kilometers (1.65 million square miles); the now-third-lowest monthly value, set in 2005, was 5.57 million square kilometers (2.15 million square miles).

The 2008 season strongly reinforces the thirty-year downward trend in Arctic ice extent. The 2008 September low was 34% below the long-term average from 1979 to 2000 and only 9% greater than the 2007 record ([Figure 2](#)). Because the 2008 low was so far below the September average, the negative trend in September extent has been pulled downward, from -10.7 % per decade to -11.7 % per decade ([Figure 3](#)).

NSIDC Senior Scientist Mark Serreze said, "When you look at the sharp decline that we've seen over the past thirty years, a 'recovery' from lowest to second lowest is no recovery at all. Both within and beyond the Arctic, the implications of the decline are enormous."

Conditions in spring, at the end of the growth season, played an important role in the outcome of this year's melt. In March 2008, thin first-year

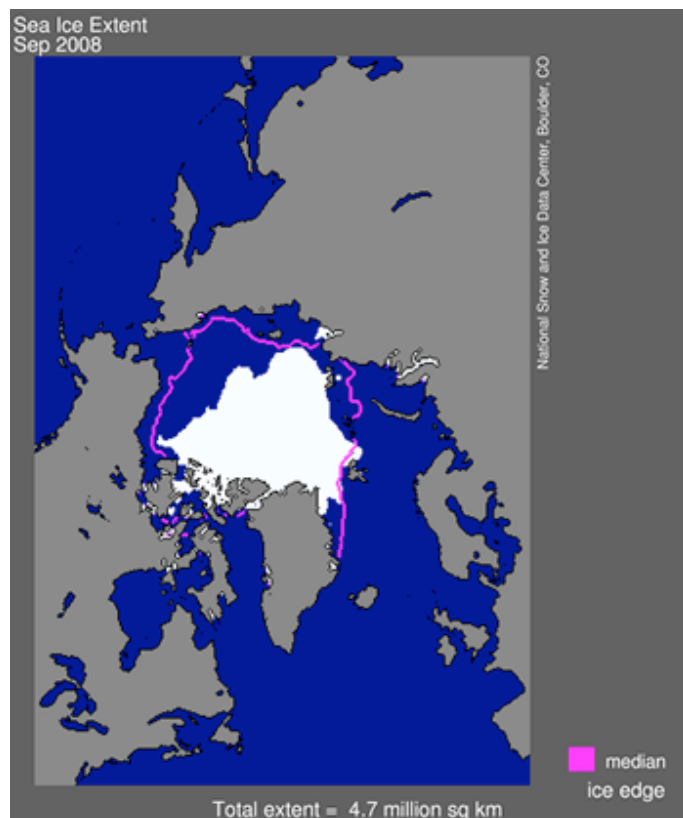


Figure 1. Arctic sea ice extent for September 2008 was 4.67 million square kilometers (1.80 million square miles), the second-lowest in the satellite record. The magenta line shows the median ice extent for September from 1979 to 2000. Sea Ice Index data. [About the data.](#)
—National Snow and Ice Data Center

[High-resolution image](#)

ice covered a record high 73% of the Arctic Basin. While this might seem like a recovery of the ice, the large extent masked an important aspect of sea ice health; thin ice is more prone to melting out during summer. So, the widespread thin ice of spring 2008 set the stage for extensive ice loss over the melt season.

Through the 2008 melt season, a race developed between melting of the thin ice and gradually waning sunlight. Summer ice losses allowed a great deal of solar energy to enter the ocean and heat up the water, melting even more ice from the bottom and sides. Warm oceans store heat longer than the atmosphere does, contributing to melt long after sunlight has begun to wane. In August 2008, the Arctic Ocean lost more ice than any previous August in the satellite record.

NSIDC Research Scientist Walt Meier said, “Warm ocean waters helped contribute to ice losses this year, pushing the already thin ice pack over the edge. In fact, preliminary data indicates that 2008 probably represents the lowest volume of Arctic sea ice on record, partly because less multiyear ice is surviving now, and the remaining ice is so thin.” (See [Figure 4](#).)

In the end, however, summer conditions worked together to save some first-year ice from melting and to cushion the thin pack from the effects of sunlight and warm ocean waters. This summer’s weather did not provide the “perfect storm” for ice loss seen in 2007: temperatures were cooler than 2007, although still warmer than average ([Figure 5](#)); cloudier skies protected the ice from some melt; a different wind pattern spread the ice pack out, leading to higher extent numbers. Simply put, the natural variability of short-term weather patterns provided enough of a brake to prevent a new record-low ice extent from occurring.

NSIDC Research Scientist Julienne Stroeve said, “I find it incredible that we came so close to beating the 2007 record—without the especially warm and clear conditions we saw last summer. I hate to think what 2008 might have looked like if weather patterns had set up in a more extreme way.”

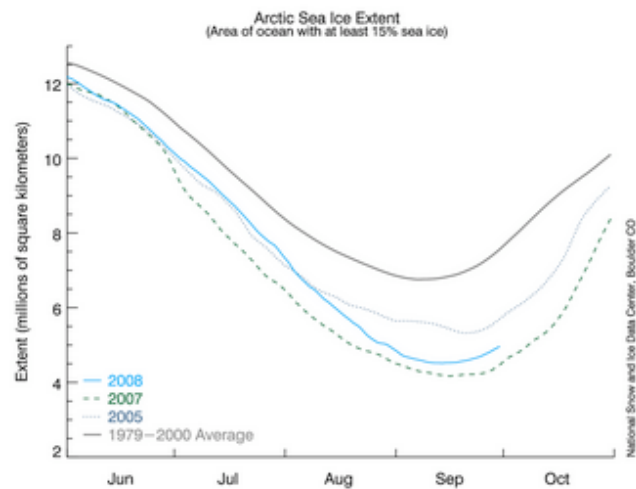


Figure 2. The updated time series plot puts this summer’s sea ice extent in context with other years. The solid light blue line indicates 2008; the dashed green line shows 2007; the dotted dark blue line shows 2005; and the solid gray line indicates average extent from 1979 to 2000. Note the steep decline in August 2008, which depicts record ice losses for the month. Sea Ice Index data.

—National Snow and Ice Data Center

[High-resolution image](#)

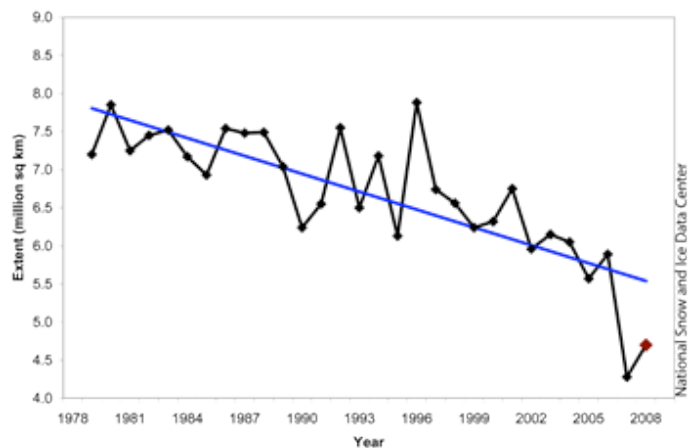


Figure 3. September ice extent from 1979 to 2008 shows a thirty-year decline. The September rate of sea ice decline since 1979 has now increased to -11.7 percent per decade. Sea Ice Index data.

—National Snow and Ice Data Center

[High-resolution image](#)

The melt season of 2008 reinforces the decline of Arctic sea ice documented over the past thirty years (Figure 6). NSIDC Lead Scientist Ted Scambos said, “The trend of decline in the Arctic continues, despite this year's slightly greater extent of sea ice. The Arctic is more vulnerable than ever.”

For a full listing of press resources concerning Arctic sea ice, including previous press releases and quick facts about why and how scientists study sea ice, please see navigation on right at Arctic Sea Ice News & Analysis (<http://nsidc.org/arcticseaicenews/>).

[Read the PDF \(544 KB\) of this press release.](#)

References

Maslanik, J.A., C. Fowler, J. Stroeve, S. Drobot, J. Zwally, D. Yi, and W. Emery. 2007. A younger, thinner Arctic ice cover: Increased potential for rapid, extensive sea-ice loss, *Geophysical Research Letters*, vol. 34, L24501, doi:10.1029/2007GL032043.

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Arctic sea ice age at the end of the 2007 and 2008 melt seasons.

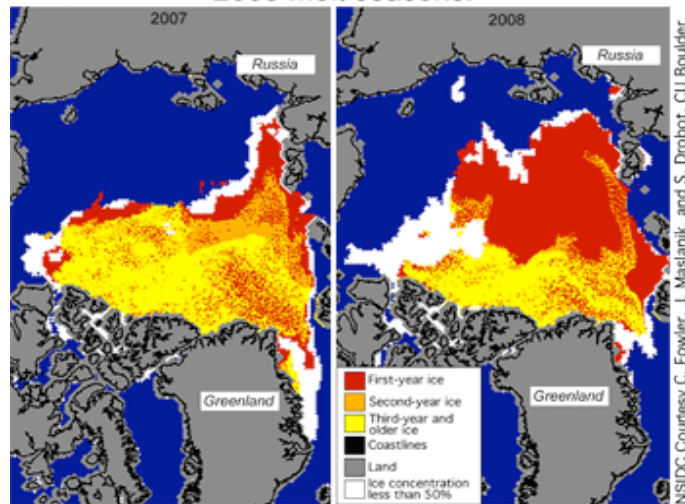


Figure 4. A comparison of ice age in September 2007 (left) and September 2008 (right) shows the increase in thin first-year ice (red) and the decline in thick multi-year ice (orange and yellow). White indicates areas of ice below ~50 percent, for which ice age cannot be determined. AVHRR, SMMR SSM/I, and IABP buoy data. —From National Snow and Ice Data Center courtesy C. Fowler, J. Maslanik, and S. Drobot, University of Colorado at Boulder [High-resolution image](#)

Arctic air temperature anomalies June, July, August 2008

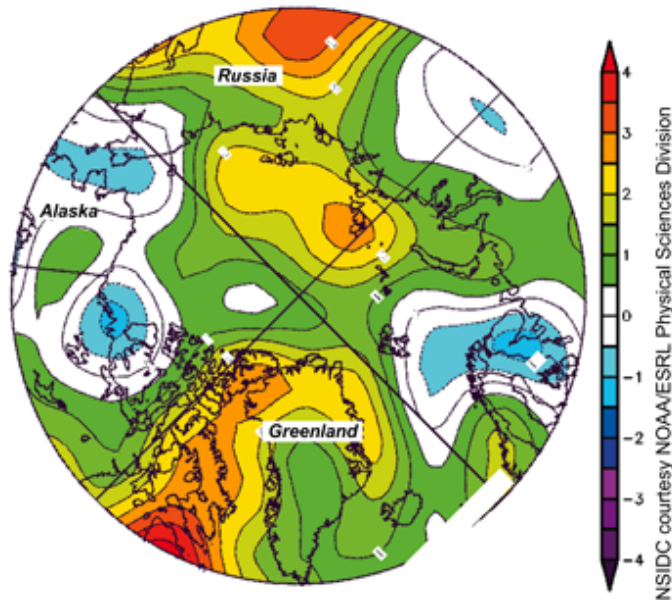


Figure 5. A map of air-temperature anomalies at the 925 millibar level (about 3,000 feet above the surface) averaged over June, July, and August 2008 shows that temperatures in the Arctic were warmer than average this summer. Yellow and red indicate areas with above-average temperature; blue indicates areas with below-average temperature. —From National Snow and Ice Data Center courtesy NOAA/ESRL Physical Sciences Division Climate Diagnostics Center [High-resolution image](#)

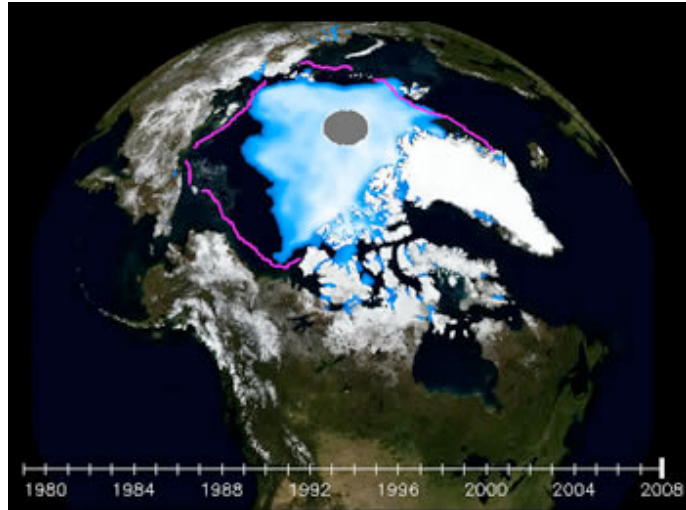


Figure 6. This animation of September sea ice concentration from 1979 to 2008 shows two aspects of sea ice change: First, it shows that sea ice has been declining over the thirty years of the satellite record. Second, it shows that September extent in 2008 was well below average, which is indicated by the magenta line. The satellite does not pass close enough to the North Pole for the sensor to collect data there; lack of data is indicated by a gray circle. SMMR SSM/I data.

—Data from the National Snow and Ice Data Center using NASA GSFC Scientific Visualization Studio Blue Marble

[View animation \(1.3M\)](#)

High-resolution available upon request

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