

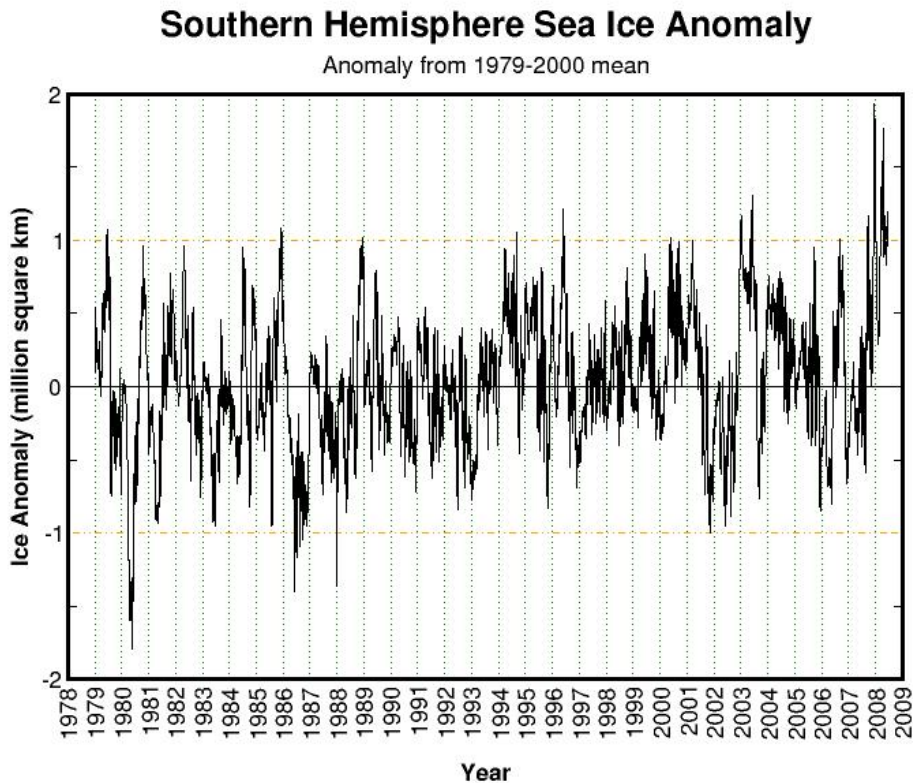
SOLSTICE SEA ICE UPDATE

ANTARCTICA

The Antarctic set a new record (since records began in 1979) for sea ice extent at the end of last winter. It has stayed well above the normal through the summer with icemelt 40% below the normal.

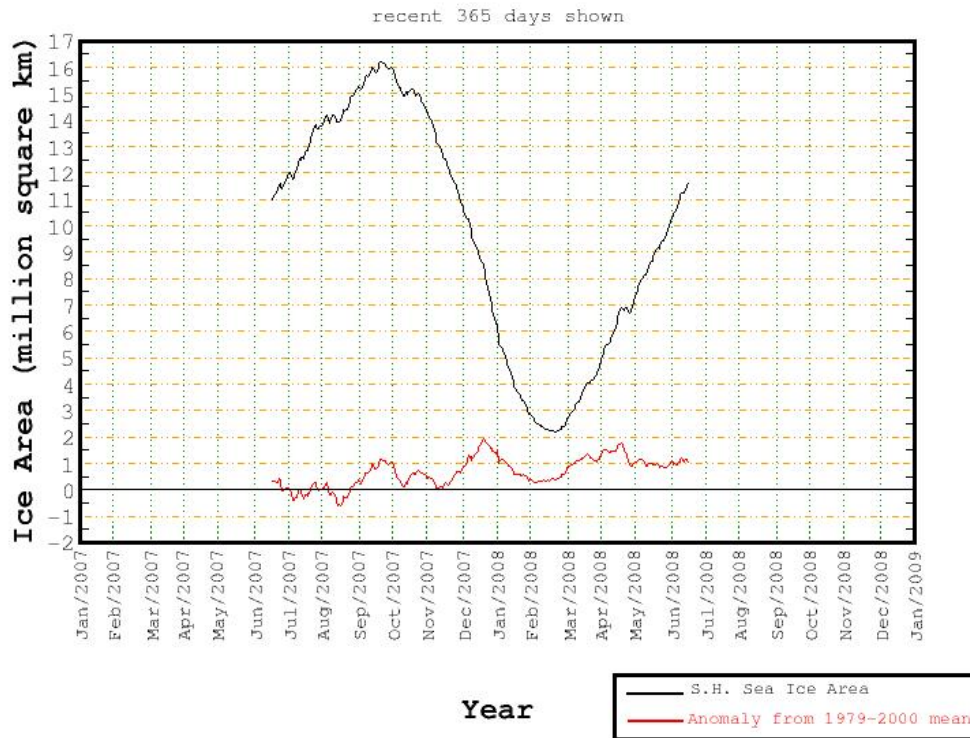
The media made a big deal about a fracture of a small part of the Wilkins ice sheet in late February (160 square miles of the 6 million square mile Antarctic ice sheet (0.0027% of the total). Media headlines blared: [Bye-bye, Antarctica?](#) and [Massive ice shelf collapsing off Antarctica.](#)

But as you can see from this [Cryosphere](#) chart, the extent never dropped to less than 1 million square km ABOVE NORMAL during or after the brief event.



Currently we are running nearly 1 million square kilometers higher than last year at this time. The peak comes at the end of the southern winter (September).

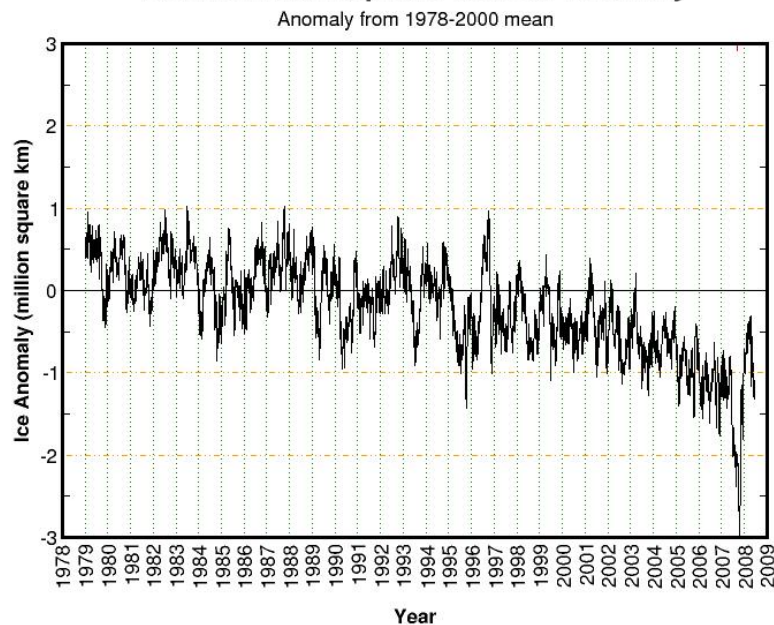
Current Southern Hemisphere Sea Ice Area



ARCTIC

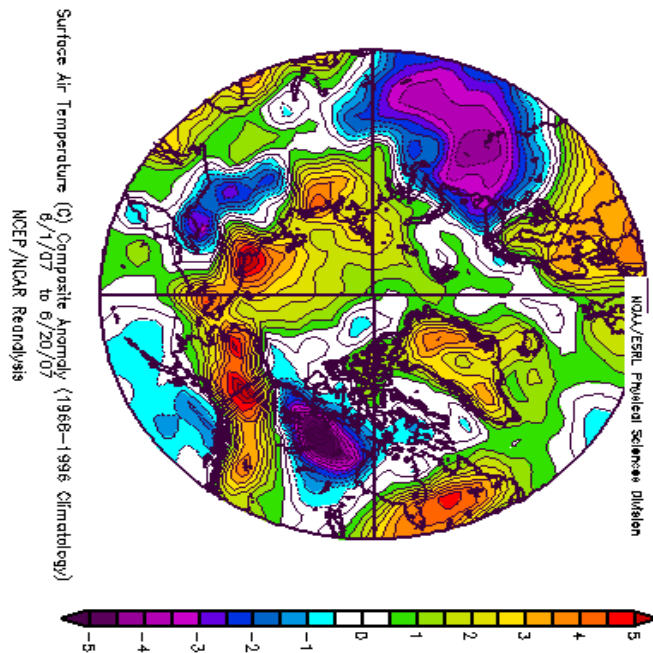
In contrast, the arctic set a record for the least extent since 1979 last September. It recovered at a record pace in the fall and reached levels more like several years ago this past winter.

Northern Hemisphere Sea Ice Anomaly



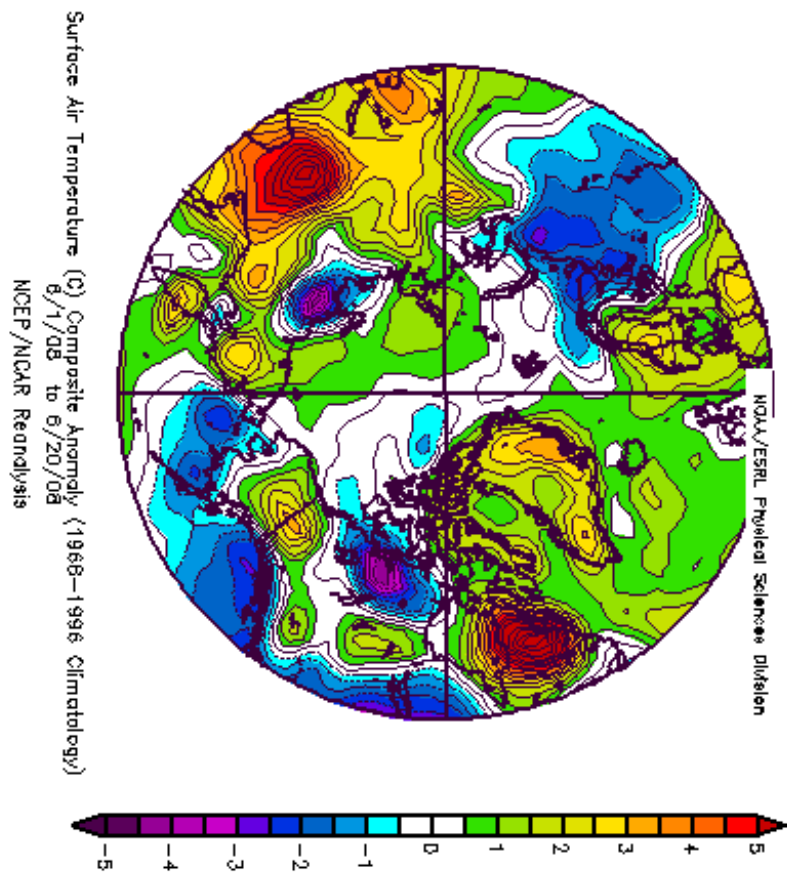
Last year the upper level pattern in June was very anomalous with a strong ridge of high pressure and warm surface temperatures. The ice melt was rapid.

The following was the first 20 days of June average surface temperature last year. As a reference Alaska is left beneath dateline meridian and Greenland bottom right quadrant.



Note that blocking high pressure led to anomalous warmth near Siberia and Bering Strait and near Greenland leading to rapid ice melt. The surface wind flow helped drain ice from the arctic into the Atlantic at a much higher than normal rate.

This year for the same 20 day period, there is a cold trough migrating around the Arctic Ocean with blocking confined to Greenland. The result is temperatures much closer to normal over much of the arctic and cold pools near the Bering Straits and Siberia coast.



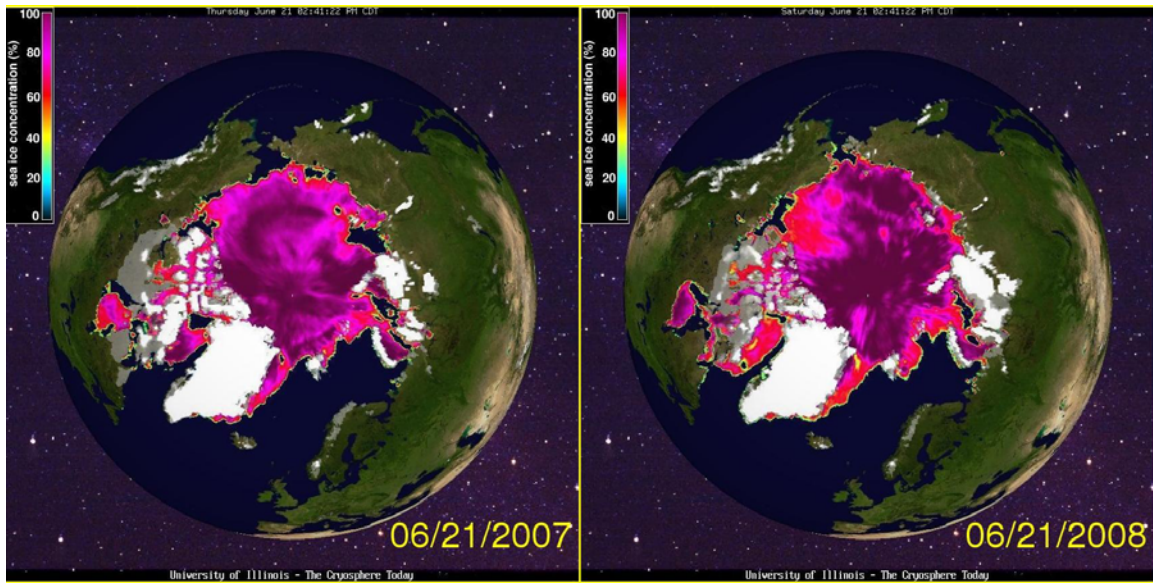
Models suggest the cold pool strengthens some in the arctic the next few weeks. It is a long time until September, but if the pattern persists, we will likely come up short of last year's record.

Summer ice melt is from warm water from the Atlantic and Pacific making its way into the arctic. In recent years both oceans contributed. With very cold water near the Bering Straits now with a cold PDO, it would be the Atlantic warm water that would do the melting.

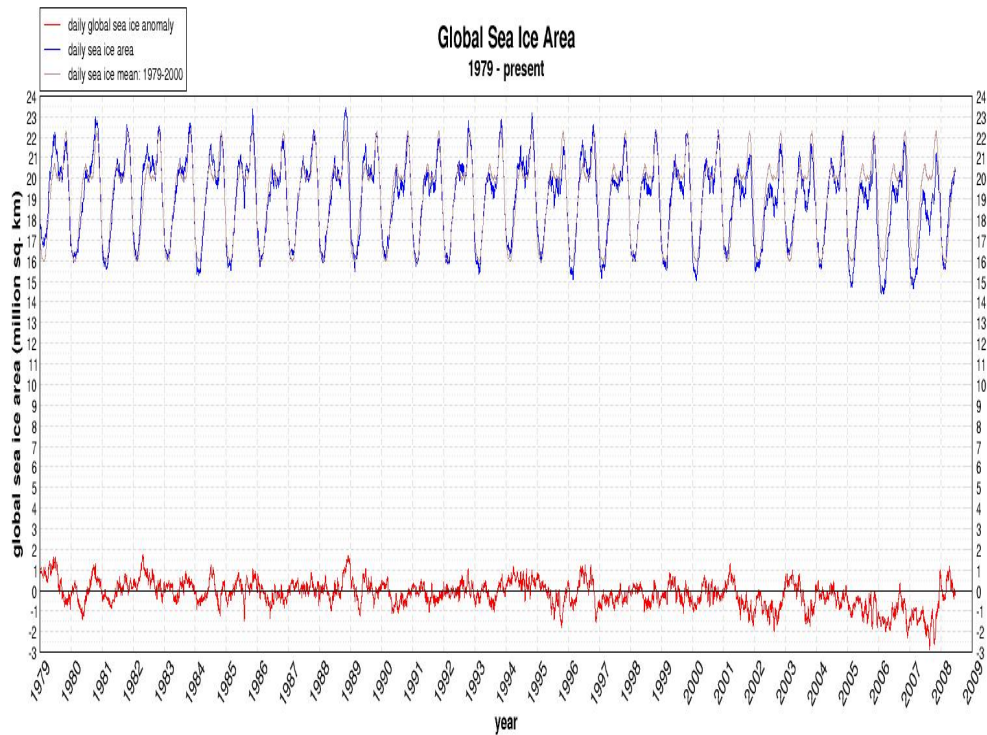
NSIDC noted last October "One prominent researcher, Igor Polyakov at the University of Fairbanks, Alaska, points out that pulses of unusually warm water have been entering the Arctic Ocean from the Atlantic, which several years later are seen in the ocean north of Siberia. These pulses of water are helping to heat the upper Arctic Ocean, contributing to summer ice melt and helping to reduce winter ice growth."

Frances et al (GRL 2007) showed how the warming in the arctic and the melting was in part the result of warm water (+3C) in the Barents Sea moving into the Siberian arctic and melting the ice. Positive feedback of changed "albedo" or reflectivity due to open water enhances the warming.

This side by side comparison shows it is more solid (dark purple) near Siberia and more broken (red) near north shore of Alaska this year, because of the winds.



The global sea ice which has been running above normal is now near normal.



Read more [here](#) and [here](#).