

Arctic Sea Ice Hits Second-lowest Level

In September 2011, the extent of sea ice covering the Arctic Ocean declined to its second-lowest level on record. Satellite data from NASA and the NASA-supported National Snow and Ice Data Center (NSIDC) at the University of Colorado, USA, showed that the summertime sea ice cover narrowly avoided a new record low.

The Arctic ice cap grows each winter as the sun sets for several months and shrinks each summer as the sun rises higher in the northern sky. Each year the Arctic sea ice reaches its annual minimum extent in September. It hit a record low in 2007.

The near-record ice-melt followed higher-than-average summer temperatures, but without the unusual weather conditions that contributed to the extreme melt of 2007. NSIDC scientist Walt Meier said that atmospheric and oceanic conditions were not as conducive to ice loss this year, but the melt still neared 2007 levels, probably reflecting loss of multiyear ice in the Beaufort and Chukchi seas as well as other factors that are making the ice more vulnerable.

Joey Comiso, senior scientist at NASA's Goddard Space Flight Center in Greenbelt, MD, said the continued low minimum sea ice levels fits into the large-scale decline pattern that scientists have watched unfold over the past three decades.

While the sea ice extent did not dip below the 2007 record, the sea ice area as measured by the microwave radiometer on NASA's Aqua satellite did drop slightly lower than 2007 levels for about 10 days in early September, Comiso said. Sea ice area differs from extent in that it equals the actual surface area covered by ice, while extent includes any area where ice covers at least 15 percent of the ocean.

Arctic sea ice extent on 9th Sept 2011, the lowest point, was 4.33 million square kilometres (1.67 million square miles). Averaged over the month of September, ice extent was 4.61 million square kilometres (1.78 million square miles). This places 2011 as the second lowest ice extent both for the daily minimum extent and the monthly average. Ice extent was 2.43 million square kilometres (938,000 square miles) below the 1979 to 2000 average.

This summer's low ice extent continued the downward trend seen over the last 30 years, which scientists attribute largely to warming temperatures caused by climate change. Data show that Arctic sea ice has been declining both in extent and thickness. Since 1979, September Arctic sea ice extent has declined by 12% per decade.

"The oldest and thickest ice in the Arctic continues to decline, especially in the Beaufort Sea and the Canada Basin," NSIDC scientist Julienne Stroeve said. "This appears to be an important driver for the low sea ice conditions over the past few summers." Climate models have suggested that the Arctic could lose almost all of its summer ice cover by 2100, but in recent years, ice extent has declined faster than the models predicted.

NASA monitors and studies changing sea ice conditions in both the Arctic and Antarctic with a variety of spaceborne and airborne research capabilities. This month NASA resumes Operation IceBridge, a multi-year series of flights over sea ice and ice sheets at both poles. This fall's campaign will be based out of Punta Arenas, Chile, and make flights over Antarctica. NASA also continues work toward launching ICESat-2 in 2016, which will continue its predecessor's crucial laser altimetry observations of ice cover from space.