

Arctic Council Arctic Marine Shipping Assessment 2009 Report



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ARCTIC COUNCIL
NORWEGIAN CHAIRMANSHIP
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PAME
Protection of the Arctic Marine Environment

Interestingly, the five smallest September ice-covered areas for the Arctic Ocean during the modern satellite record (1979-2008) have occurred in the five most recent seasons (2004-2008). Map 2.2 shows the sea ice coverage derived from satellite at the time of minimum extent of Arctic sea ice on September 16, 2007.

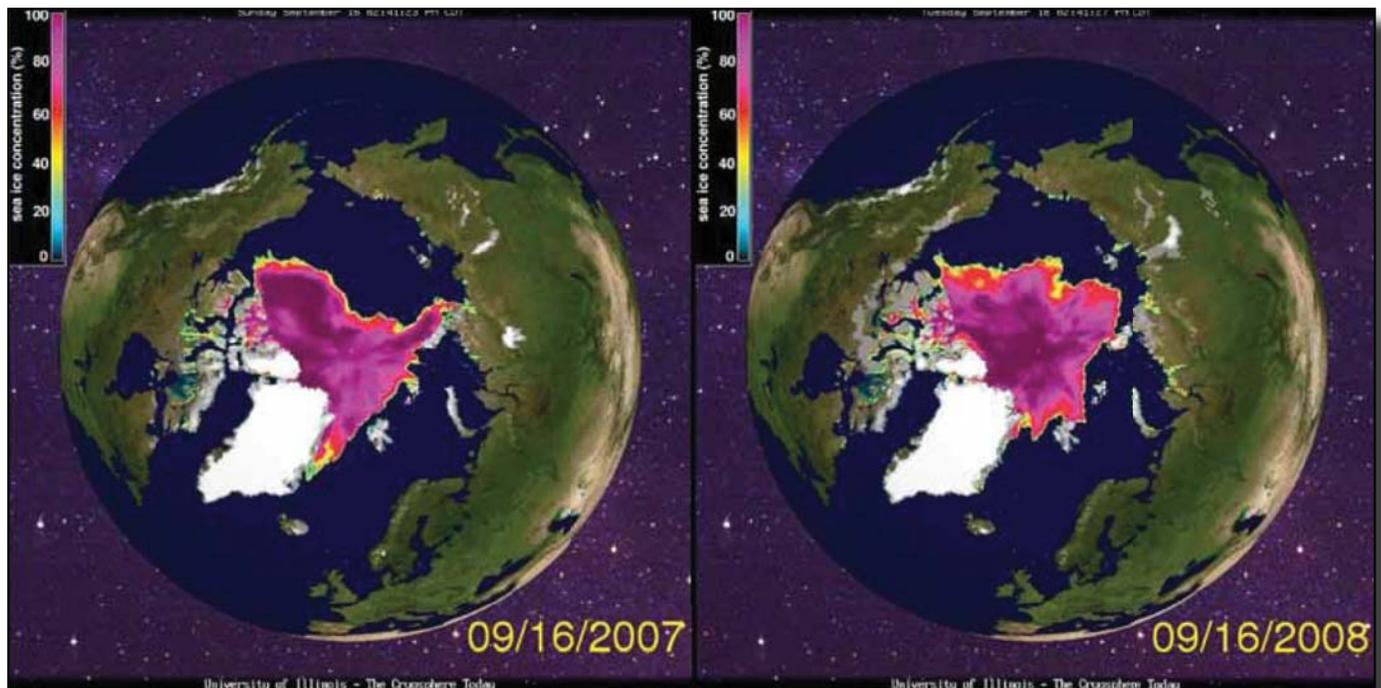
This snapshot represents the minimum coverage of Arctic sea ice in the satellite era of observations. Striking are several notable features: the largely ice-free areas across the Russian Arctic coastal seas (north of the Eurasian coast), except for a small region in the western Laptev Sea; an ice edge that has retreated north of Svalbard and well north in the Beaufort and Chukchi seas; several ice-free passages through the Canadian Archipelago; and a large area of the central Arctic Ocean that previously has not been observed open or without even a thin ice cover.

These extraordinary changes in the summer ice cover of the Arctic Ocean, represented by a single, iconic satellite image for September 16, 2007, are major factors in the potential lengthening of the navigation season in regional Arctic seas, particularly in the summer. It should be noted though that during the same timeframe, the Fram Strait contained more ice than normal, underscoring the regional variability of sea ice extent.

Arctic Climate Impact Assessment

The ACIA, approved by the eight Arctic countries, was called for by the Arctic Council and the International Arctic Science Committee. The assessment found that the Arctic is extremely vulnerable to observed and projected climate change and its impacts. The Arctic is now experiencing some of the most rapid and severe climate change on earth. During the 21st century, climate change is expected to accelerate, contributing to major physical, ecological, social and economic changes, many of which have already begun. Changes in Arctic climate will also affect the rest of the planet through increased global warming and rising sea levels. Of direct relevance to future Arctic marine activity, and to the AMSA, is that potentially accelerating Arctic sea ice retreat improves marine access throughout the Arctic Ocean.

The assessment confirmed, using a wealth of current Arctic research, that declining Arctic sea ice is a key climate change indicator. During the past five decades the observed extent of Arctic sea ice has declined in all seasons, with the most prominent retreat in summer. While the ACIA models have now been surpassed by more capable GCMs, each of the five GCMs used in the ACIA did project a continuous decline in Arctic sea ice coverage throughout the 21st



Map 2.2 Satellite images of summer sea ice cover. Source: University of Illinois - The Cryosphere Today