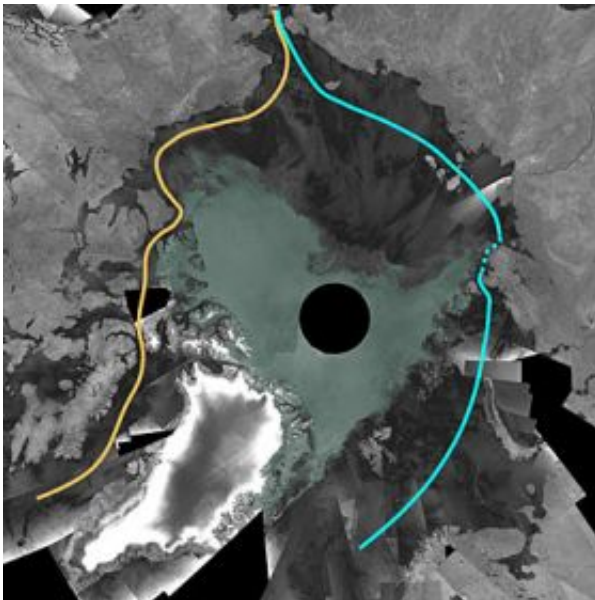


Less Arctic ice means higher risks, experts warn

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Envisat ASAR mosaic of the Arctic Ocean for early September 2007, clearly showing the most direct route of the Northwest Passage open (orange line) and the Northeast passage only partially blocked (blue line). The dark grey colour represents the ice-free areas, while green represents areas with sea ice. Credits: ESA

The International Ice Charting Working Group predicts more marine transportation in the Arctic as sea ice continues to diminish and warns of "significant hazards to navigation," according to a statement released yesterday.

The statement was released during a five-day conference held at ESRIN, ESA's Earth Observation Centre in Frascati, Italy, in which operational ice experts from Europe and North America gathered to discuss the state of the polar regions.

"In September 2007, the Arctic sea ice reached the minimum extent – the lowest amount of ice recorded in the area annually – in the history of ice charting based on satellite, aircraft and surface observations, continuing a recent trend of diminishing sea ice that began in the 1980s and has accelerated. While there will still be natural inter-annual variability, the decline is likely to continue," the statement reads.

"The Arctic is already experiencing an increase in shipping, primarily for oil and gas development and tourism, and we can expect to see further increases as diminishing ice extent makes Arctic marine transportation more viable. The International Ice Charting Working Group (IICWG) cautions that sea ice and icebergs will continue to present significant hazards to navigation for the foreseeable future."

Satellites for monitoring, modelling

During the last 25 years, satellites have been observing the Arctic and have witnessed reductions in the minimum ice extent at the end of summer from around 8 million km² in the early 1980s to the historic minimum of less than 4.24 million km² in 2007, as observed in September by ESA's Envisat satellite. The previous record low, as observed by Envisat and the EOS Aqua satellite, was in 2005 when the minimum ice extent was 5.5 million km².

"We have been very lucky to have had the capability to monitor the polar regions with satellites since the 1970s because it has allowed us to fully capture the trend," Dr Pablo Clemente-Colón, Chief Scientist at the US National Ice Center and International Ice Charting Working Group

(IICWG) member, said. "Furthermore, because of satellite monitoring we will be able – with a high-degree of precision – to indicate if the trend is reversing, continuing or worsening."

The reduction in the sea ice extent has been much faster than global climate models predict. According to Douglas Bancroft, Director of the Canadian Ice Service, the record reduction in 2007 stunned the international operational ice charting community: "The overall extent was similar to what some of the models envisioned but decades in advance of when they expected that would occur. In fact, the summer of 2007 looked very similar to some climate model forecasts for 2030 to 2050."

Helge Tangen, Regional Director of the Norwegian Meteorological Institute, says satellite data are also important for continually updating models. "We are now making more sophisticated models forecasting the ice in the short range. Analysts use the satellite-derived data and put that into the models, which gives them a very good start compared to what we had before."

Satellites for ice services

"With the introduction of space-based systems designed specifically for remote sensing of ice, it is clear that satellites are now the backbone of ice services around the world," Bancroft said. "We primary rely on active radar satellite instruments operating at C-band, such as the Synthetic Aperture Radar (SAR) aboard Canada's RADARSAT-1 and the Advanced Synthetic Aperture Radar (ASAR) aboard ESA's Envisat."

The continuity of these missions, as represented by the forthcoming launches of RADARSAT-2 and the series of GMES Sentinel satellites being developed by ESA, is essential to maintaining operational ice services in the immediate future, Bancroft said.

Source: European Space Agency

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