

Weathernews Looks Back on Sea Ice in the Arctic Sea in 2019 Summer Heat Results in the Second Smallest Sea Ice Area on Recorded

Weathernews Inc. Global Ice Center announced its review of Arctic Sea ice conditions during 2019. Sea ice is usually at its peak surface area in February or March of each year, and at its smallest in September. This summer, the Arctic region saw record-breaking heat, and from the Laptev Sea to the Beaufort Sea, the sea ice area decreased at the fastest rate in the history of observation. In addition, the year's smallest sea ice area was observed in September, at 3.96 million square kilometers, which was the second smallest in the history of observation.

The Northeast Passage (Russian side) of the Northern Sea Route (NSR) was open (*) this year from August 20th to October 21st—the latest date it has ever stayed open. In addition, the Northwest Passage (Canadian side) was open for the first time in three years, from September 1st to September 29th.

For voyages between Asia and Europe, using the NSR reduces not only transportation costs but also CO2 emissions. Since 2011, Weathernews has provided Polar Routing Service to support the safe operation of vessels navigating the Arctic Ocean. In 2019, we provided support for 13 voyages, contributing to an emissions reduction of approximately 12,500 tons of CO2 compared to routing the ships through the Suez Canal. Going forward, we will continue to support the safe navigation of vessels through the Northern Sea Route, while also focusing on reducing CO2 emissions.

* Definition of "open": A state in which the entire route can be traversed without entering any areas affected by sea ice, according to satellite data.

Record-breaking summer heat caused sea ice to melt at the fastest rate ever observed

This summer the Arctic experienced record-breaking high temperatures, accelerating the melting of sea ice. According to the University of California, the average temperature in August north of 70°N was the highest in 40 years, and the average temperatures in June and September were also the second highest on record. As a result, the melting of sea ice has progressed further than usual, and in the area from the Laptev Sea to the Beaufort Sea in particular, the sea ice area decreased at the fastest rate since observations began.

This year, the sea ice area peaked at 14.27 million square kilometers on March 12, and the minimum was 3.96 million square kilometers on September 17. This was the second smallest sea ice area recorded since observations began in 1979, next to the record set in August 2012, which was influenced by a huge cyclone generated over the Arctic Ocean.

The Northeast Passage (Russian side) opened up on August 20th, about 10 days earlier than in 2018. It remained open for 2 months until October 21st, which is the latest date it has ever been open. The increase in not only the ambient temperature, but also the seawater temperature, due to global warming, contributed to the delayed formation of sea ice. The opening of the Northwest Passage was confirmed on September 1st, when the sea ice in the Canadian archipelago melted for the first time in three years. The open period continued for almost one month, until September 29th.

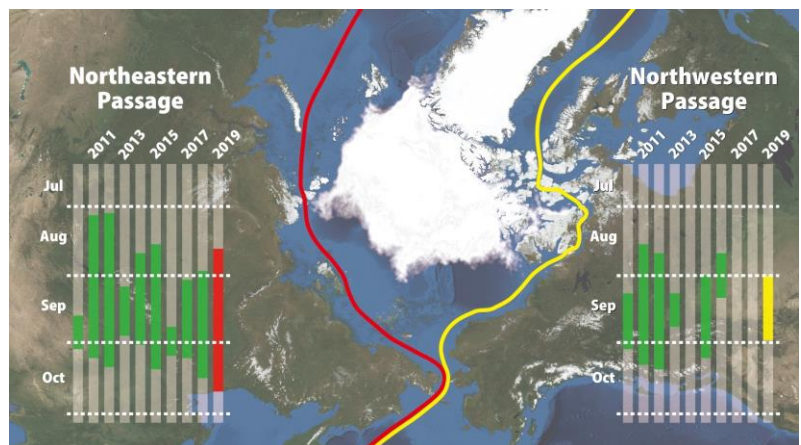
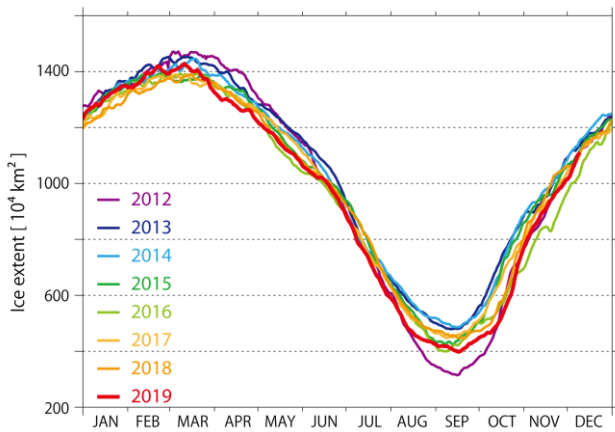


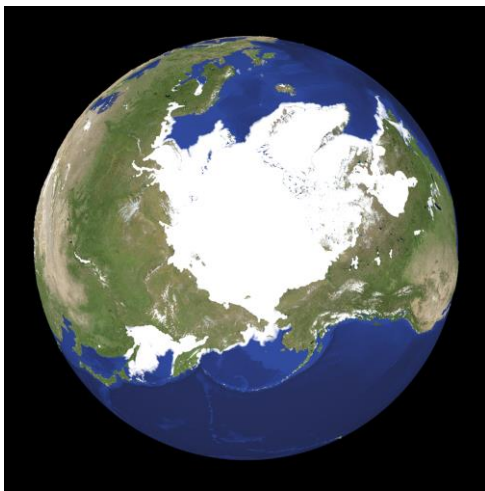
Fig 1: The year's smallest sea area covered with ice on September 17th, 2019 and Open periods of the Northern Sea Route Northeast Passage (Left) and the Northwest Passage (Right)

Minimum areas of Arctic Ocean sea ice in the summer period
(in ascending order)

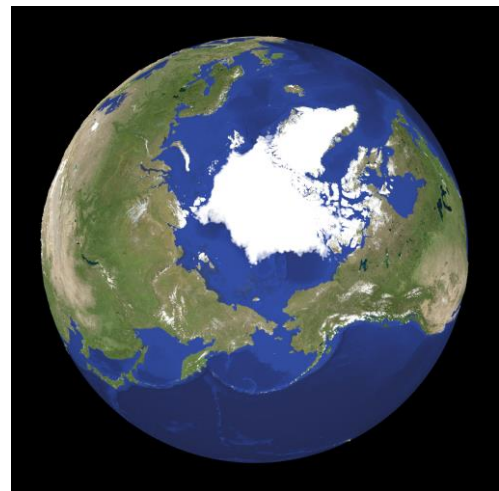
Area of Arctic Ocean ice extent (yearly minimum value)		
*Recorded since 1979, 2019 is a prediction		
1st	3.18 million km ²	(2012)
2nd	3.96 million km ²	(2019)
3rd	4.02 million km ²	(2016)
4th	4.07 million km ²	(2007)
5th	4.26 million km ²	(2015)
6th	4.27 million km ²	(2011)



Changes in the area of sea ice extent since 2012 (by year)
* Dotted line after June 2019 indicates predicted values



The year's largest sea area covered with ice on
September 17th, 2019
(Proprietary analysis image using the AMSR2
microwave satellite)



The year's smallest sea area covered with ice on
September 17th, 2019
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microwave satellite)

Weathernews supports safe navigation through the Northern Sea Route and helps reduce CO₂

Regular use of the NSR has increased in recent years, and LNG carriers are active in transporting liquefied natural gas produced in the Arctic Ocean. For ships traveling between Asia and Europe, taking the NSR reduces the travel distance to about two-thirds that of traveling via the Suez Canal, and around half that of the Cape of Good Hope route.

Since 2011, Weathernews has provided Polar Routing Service to support the safe operation of vessels in the Arctic Ocean. In 2019, we provided support for 13 voyages, contributing to an emissions reduction of approximately 12,500 tons of CO₂*, compared to when the ships traveled via the Suez Canal.

* The calculation is based on IMO guidelines (MEPC .1/Circ.684).

Weathernews Inc. (Head Office: Mihama-ku, Chiba-shi; CEO: Chihito Kusabiraki) was founded in 1986 and is one of the largest weather information companies in the world. We started as a service supporting safe maritime operations aimed at shipping companies, and we now provide weather information services 24 hours a day, 365 days a year to clients across 44 different markets in a total of 50 countries around the world. With our guiding motto of “wanting to help people in times of crisis,” we continue to take on new challenges with an innovative approach, such as developing our own original radar to pick up torrential rainstorms and sudden strong winds, launching weather satellites to capture views of sea ice in the Arctic Ocean, and making use of AI technology to achieve high-accuracy weather predictions.