Sea Ice Outlook

2023 August Report

Individual Outlook

Name of contributor or name of contributing organization:

NSIDC (Meier)

Is this contribution from a person or group not affiliated with a research organization?

Name and organization for all contributors. Indicate primary contact and total number of people who may have contributed to your Outlook, even if not included on the author list.

NSIDC (Meier)

Do you want your June contribution to automatically be included in subsequent reports? (If yes, you may still update your contribution via the submission form.)

[Do you want your contribution for this month to automatically be included in subsequent reports?]

What is the type of your Outlook projection?

Statistical/ML

Starting in 2017 we are accepting both pan-Arctic and pan-Antarctic sea ice extent (either one or both) of the September monthly mean. As in 2016, we are also collecting Alaskan regional sea ice extent. To be consistent with the validating sea ice extent index from NSIDC, if possible, please first compute the average sea ice concentration for the month and then compute the extent as the sum of cell areas > 15%.

a) Pan-Arctic September extent prediction in million square kilometers.

4.77

b) same as in (a) but for pan-Antarctic. If your method differs substantially from that for the Arctic, please enter it as a separate submission.

16.22

c) same as in (b) but for the Alaskan region. Please also tell us maximum possible extent if every ocean cell in your region were ice covered.

"Executive summary" of your Outlook contribution (using 300 words or less) describe how and why your contribution was formulated. To the extent possible, use non-technical language.

This method applies daily ice loss rates to extrapolate from the start date (August 1) through the end of September. Projected September daily extents are averaged to calculate the projected September average extent. Individual years from 2005 to 2022 are used, as well as averages over 1981-2010 and 2007-2022. The 2007-2022 average daily rates are used to estimate the official submitted estimate.

The predicted September average extent for 2023 is 4.77 (±0.35) million square kilometers. The minimum daily extent is predicted to be 4.64 (±0.35) million square kilometers and occurs on 16 September. This an increase of ~0.15 million square kilometers from the July predictions. The range of the estimates has declined, reflecting the smaller potential variability in ice loss rates over the final ~1.5 months of the melt season compared to June and July. None of the last 18 years (2005-2022) yield a 2023 extent lower than the current record low September extent of 3.57 million sq km in 2012.

Using the same method, the predicted Antarctic average extent for September 2023 is 16.22 (±0.34) million square kilometers. The maximum daily extent is predicted to be 16.31 (±0.34) million square kilometers and occurs on 26 September. These values are higher, by ~0.5 million square kilometers, than the July predictions.

Brief explanation of Outlook method (using 300 words or less).

This method applies daily ice loss rates to extrapolate from the start date (August 1) through the end of September. Projected September daily extents are averaged to calculate the projected September average extent. Individual years from 2005 to 2022 are used, as well as averages over

1981-2010 and 2007-2022. The 2007-2022 average daily rates are used to estimate the official submitted estimate. The method essentially provides the range of September extents that can be expected based on how the ice has declined in past years, though it is possible that record fast or slow daily loss rates may yield a value outside the projected range. It also can provide a probability of a new record by comparing how many years of loss rates yield a record relative to all years. It has the benefit that it can easily and frequently (daily if desired) be updated to provide updated estimates and probabilities and as the minimum approaches the "window" of possible outcomes narrows.

Tell us the dataset used for your initial Sea Ice Concentration (SIC).

Maslanik, J. and J. Stroeve. 1999, updated daily. Near-Real-Time DMSP SSMIS Daily Polar Gridded Sea Ice Concentrations, Version 1. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/U8C09DWVX9LM.

Tell us the dataset used for your initial Sea Ice Thickness (SIT) used. Include name and date.

NA

If you use a dynamic model, please specify the name of the model as a whole and each component including version numbers and how the component is initialized:

If available from your method.
a) Uncertainty/probability estimates:

Median

Lower error bound

Lower error bound

Standard Deviation

0.35

b) Brief explanation/assessment of basis for the uncertainty estimate (1-2 sentences).

Standard deviation of estimates using individual years of 2007 through 2022.

c) Brief description of any post-processing you have done (1-2 sentences).