Sea Ice Outlook

2023 June Report

Individual Outlook

Name of contributor or name of contributing organization:

ASIC, NIPR

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.

ASIC, NIPR

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.

4.6

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.

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.

Monthly mean ice extent in September will be about 4.598 million square kilometers. Our prediction is based on a statistical way using data from satellite microwave sensor. We used the ice thickness (accumulated ice convergence), ice age, and mean ice divergence on April 30. Predicted ice concentration map from July 1 to September 20 is available in our website: https://www.nipr.ac.jp/sea_ice/e/forecast/2023-06-02-1/

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

We predicted the Arctic sea-ice cover from coming July 1 to September 20, using the data from satellite microwave sensors, AMSR-E (2002/03-2010/11) and AMSR2 (2012/13-2022/23). The analysis method is based on our research (Kimura et al., 2013). First, we expect the ice thickness distribution on April 30 from redistribution (divergence/convergence) of sea ice during December and April. Additionally, ice age distribution and mean ice divergence distribution which represents how much area of young ice is contained in the old ice on April 30 were estimated from the backward tracking of sea ice. And then, by using the mean sea ice drift velocity since May over the past four years, effects of sea ice transport from May 1 to the prediction date was considered. Finally, we calculated the summer ice concentration by multiple regression analysis based on the derived ice thickness, ice age, and mean ice divergence.

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

10km grid data distributed by Arctic Data archive System (https://ads.nipr.ac.jp)

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

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

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