Sea Ice Outlook
2023 June Report
Individual Outlook

Name of contributor or name of contributing organization:

NMEFC ArcCFPS

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

No

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.

NMEFC ArcCFPS

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?

Dynamic Model

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.

5.42

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.

The monthly averaged sea ice extent of September 2023 is expected to be 5.42 million square kilometers.

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

Our prediction is conducted by a regional full coupled model named ArcCFPS, which is based on the ArcIOAM (Ren et al., 2021) and the PDAF. The daily SIC derived from the National Satellite Ocean Application Service (NSOAS) of China, the weekly SIT in cold season derived from the Alfred Wegener Institute (AWI) of Germany, and the daily SST in ice-free region derived from the Group for High-Resolution SST Multi-Product Ensemble (GMPE) are assimilated into our prediction system. Our initial prediction time is May 13, 2023.

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

The ensembel mean field of SIC of the Arctic Ice Ocean Prediction System (ArcIOPS) is used as the initial SIC. The ArcIOPS operationally running in the NMEFC is an ensemble-based Arctic ice-ocean forecasting system designed for predicting 7-days sea ice evolution, thus it can provide initial ensemble of ice-ocean states for the ArcCFPS.

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

The ensembel mean field of SIT of the Arctic Ice Ocean Prediction System (ArcIOPS) is used as the initial SIT.

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:

The Arctic Coupled Forecasting and Prediction System (ArcCFPS),operated by the National Marine Environmental Forecasting Center (NMEFC) in China, is used for Arctic sea ice prediction, which is conducted on the basis of the fully coupled Arctic sea ice-ocean-atmosphere model (ArcIOAM) and the Parallel Data Assimilation Framework (PDAF). The atmospheric component model is Polar WRF, the oceanic and sea ice component model is the ice-ocean coupled model MITgcm.

 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).