

Sea Ice Outlook
2019 June Report
Individual Outlook

Name of contributor or name of contributing organization:

Navy ESPC (Metzger et al.)

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.

Naval Research Laboratory (NRL), Marine Meteorology and Oceanography Divisions.

E. Joseph Metzger¹, Neil Barton², David Hebert¹, and Michael Phelps³

¹Naval Research Laboratory, Oceanography Division

²Naval Research Laboratory, Marine Meteorology Division

³Jacobs Technology Inc., Stennis Space Center MS

*Note, the NRL global coupled modeling group includes many more scientists. This author list only represents the main contributors to this report.

**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.)**

This is a new submission.

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.

5.7

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.

20.5

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.

0.72

"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 projected Arctic 2019 September mean sea ice extent from the Navy Earth System Prediction Capability (ESPC) is 5.7 million km². This projection is the average of a 10 member time-lagged ensemble using initial conditions from 1 May to 10 May 2019. The range of the ensemble is 5.2 to 6.3 million km². The projected Antarctic 2019 September mean sea ice extent is 20.5 million km² with an ensemble range from 19.5 to 21.7 million km². Note that our ensemble range does not represent a full measure of uncertainty.

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

We performed ensemble forecasts with the Navy ESPC using initial conditions on 2019-05-01 12Z through 2019-05-10 12Z. The atmospheric initial conditions are from NAVDAS-AR (Xu et al. 2005), which is part of the NAVGEM (Hogan et al. 2014) operational suite. The ocean/sea ice initial conditions are from the Navy's 3Dvar NCODA data assimilation system (Cummings 2005), which is a component of GOFS 3.1 using HYCOM and CICE (Metzger et al. 2014).

SSMIS and AMSR2 ice concentrations are assimilated with NCODA (Posey et al., 2015). There was no bias correction performed on the results.

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

Sea ice concentration in the Navy ESPC forecasts was initialized from GOFS 3.1 (<https://www7320.nrlssc.navy.mil/GLBhycomcice1-12>).

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

Sea ice thickness in the Navy ESPC forecasts was initialized from GOFS 3.1 (<https://www7320.nrlssc.navy.mil/GLBhycomcice1-12>).

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:

Coupled

If available from your method.

a) Uncertainty/probability estimates:

Median

Ranges

5.2 - 6.3 million km²

Standard Deviations

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

The uncertainty estimate is the range of the 10 member ensemble, and does not represent a full measure of uncertainty.

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