Sea Ice Outlook
2018 July Report
Individual Outlook

Name of contributor or name of contributing organization:

Sean Horvath, NSIDC

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

false

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.

Sean Horvath, University of Colorado Boulder, NSIDC - primary contact
Julienne Stroeve, University College London, NSIDC
Rajagopalan Balaji, University of Colorado Boulder, CIRES

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.)

true

What is the type of your Outlook projection?

Statistical

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.

4.59

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.

This statistical model computes the probability that sea ice will be present (concentration above 15%) for each grid cell in NSIDC's polar stereographic projection. Yearly data from 1980 through the present are used in a bayesian binomial linear regression. Predictors include mean winter (DJF) surface air temperature and geopotential height at 500hpa, May monthly mean surface air temperature and geopotential height at 500hpa, June sea ice concentration, and a trend index. This model predicts a minimum September sea ice extent of 4.59 million square km occurring on September 12th. Sea ice concentration data was obtained from NSIDC's Sea Ice Index V3 (Data Set ID: G02135), and the air temperature and geopotential height data was from NASA's MERRA2 dataset.

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

Yearly data from 1980 through the present are used in a binomial linear regression to predict the probability that sea ice concentration will be above 15%. Predictions are made every other day in September. To estimate total sea ice extent, grid cells with a percentage above a certain threshold (chosen from a drop-one cross-validation test) are multiplied by the pixel area grid dataset provided by NSIDC's polar stereographic toolset and then summed. This model predicts a minimum September sea ice extent of 4.16 million km2 occurring on September 4th. Sea ice concentration data was obtained from NSIDC's Sea Ice Index V3 (Data Set ID: G02135), and the air temperature and geopotential height data was from NASA's MERRA2 dataset.

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

NSIDC's Sea Ice Index V3 (Data Set ID: G02135)
NASA's MERRA2 dataset

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

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

Ranges

Standard Deviations

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).