Sea Ice Outlook
2020 June Report
Individual Outlook

Name of contributor or name of contributing organization:

Simmons, Charles

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

X

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.

Charles Simmons

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.)

Include this submission in the June report only.

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.

3.949

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 model used here assumes September sea ice extent is mostly based on three things:
* the temperature of the ocean's and atmosphere,
* the albedo of the earth and the energy it reflects away from the arctic,
* weather patterns in August.
Moana Loa CO_2 measurements are used as a proxy for the temperature of the Earth. The northern hemisphere snow and ice area are used as a proxy for the amount of energy reflected away from the arctic. The residual error is assumed to be due to weather patterns in August that we don't know how to predict.

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

This is a variant of Dekker's model. This is a simple linear regression on three variables from 1979 through 2020, used to predict NSIDC September montly sea ice extent:
* May average northern hemisphere sea ice area
(ftp://sidads.colorado.edu/DATASETS/NOAA/G02135/seaice_analysis/)
* May average northern hemisphere snow area
(https://climate.rutgers.edu/snowcover/table_area.php?ui_set=2)
* May average atmospheric CO_2 as measured at Moana Loa
(https://www.esrl.noaa.gov/gmd/ccgg/trends/data.html)

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

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:

[DynamicModelType]

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

Median

Ranges

Standard Deviations

0.495 million square kilometers

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

Standard Error of Linear Regression

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

None