Sea Ice Outlook
2018 June Report
Individual Outlook

Name of contributor or name of contributing organization:

Nico Sun

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

Yes

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.

Nico Sun

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.)

No

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.

4.3

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 forecast model is based on a global surface radiation model and uses arctic albedo to calculate daily sea ice area and volume losses. The average error for the hind-cast (2007-2016 period) is 0.147 million km2 for daily minimum sea ice area. In the future it will be used as a reference for machine learning forecasts.

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

The forecast model treats the sea ice as a single ice cube with a start volume using PIOMAS and start surface using NSIDC Area. For each day during the astronomical summer the model calculates volume and area losses. The losses are mainly calculated by defining the (Extent - Area) area number as an active melt area. From the extent value the model derives a latitude for the active melt area and using the solar energy reaching the surface at this latitude the model calculates the daily volume and area loss. In June / July the northern hemisphere snow cover contributes losses as well. Ice volume change from the atmospheric temperature is approximated over the DMI 80N temperature. Calculation up to the model run date is a hind-cast based on observed values (Area/Extent) and the forecast uses historical compaction ratios.

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

NSIDC NASA Team, https://nsidc.org/data/nsidc-0081,
https://doi.org/10.5067/U8C09DWVX9LM

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

PIOMAS, 20th March 2018

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

4.3

Ranges

3.66-4.93

Standard Deviations

1.28

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).

The sea ice has been very compact this year. Therefore the model was biased with a high compaction ratio.