Sea Ice Outlook
2018 August 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?

true

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.)

false

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.

4.933

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.

0.535

"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 ice persistence. It uses incoming solar radiation and sea ice albedo derived from a predicted sea ice concentration to calculate thickness losses for every NSIDC 25km grid cell. As a start thickness we use AMSR2 volume data. The calculated thickness map is then converted into a sea ice concentration map.

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

Each grid-cell is initialized with a thickness derived from my AMSR2 Sea Ice Volume model (v1.1, https://sites.google.com/site/cryospherecomputing/amsr2-sea-ice-volume). For each day the model calculates average thickness loss per grid cell using the exact solar radiation energy and the predicted sea ice concentration as an albedo value.
Ice-loss(m) = Energy(solar in MJ)*(1-SIC) / icemeltenergy

SIC = sea ice concentration
icemeltenergy = Meltenergy per m3, (333.55 KJ/kg*1000(m3/dm)*0.92(density)/1000(MJ/KJ)

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

Include source (e.g., which data center), name (algorithm), DOI and/or data set website, and date (e.g., “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.

AMSR2 Sea Ice Volume model (v1.1), 10st August 2018, developed by Nico Sun https://sites.google.com/site/cryospherecomputing/amsr2-sea-ice-volume)

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:

Not specified

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

Median

4.93

Ranges

4.68-5.04

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).