

Sea Ice Outlook
2017 August Report
Individual Outlook

Name of contributor or name of contributing organization:

Yizhe Zhan

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.

University of Auckland

Do you want your June contribution to automatically be included in subsequent reports? (If yes, you may still update your contribution via the Google form.)

Yes automatically include my contributions in July and August 2017

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.

5.46

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.

We estimated the September sea ice extent in 2017 to be much larger than last year. Compared to June 2016, MISR (firstlook product) indicates a significant increase in RSR over both the Canadian Arctic Archipelago and Svalbard, which consistent with the sea ice concentration anomaly. The area-weighted Pan-Arctic mean June RSR 2017 is much larger than that in 2016 and only slightly smaller than 2014.

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

The statistical prediction is based on the significant 3-month lag correlation between June top-of-atmosphere reflected solar radiation (RSR) and September sea ice extent (SIE). See our JGR publication in <http://onlinelibrary.wiley.com/doi/10.1002/2016JD025819/full>

Here we used MISR firstlook product that have been released on 2nd June and its hindcast model, which is established from the detrended June RSR and September SIE data (2002-2016). The June RSR 2016 anomaly is calculated by subtracting it from the 2002-2016 RSR trend (+14.56 W/m²). This RSR anomaly is then applied to the model to estimate the September SIE anomaly of this year (14.56 * 0.077). Lastly, our final estimation is made by adding the anomaly to the September SIE from the 2002-2015 trend (4.34 + 1.12).

Tell us the dataset used for your initial Sea Ice Concentration (SIC). Include name and date (e.g., "NASA Team, May 2017"). We also encourage you to submit initial fields to the dropbox, see <https://www.arcus.org/sipn/sea-ice-outlook/2017/june/call> in the section on "Submitting Figures and Gridded Data of Full Spatial Fields (Optional) of Forecasts and Initial Conditions" for detailed instructions. Required if sea Ice concentration is used.

Dataset of 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 for pan-Arctic extent prediction, please provide

a) Uncertainty/probability estimate such as median, ranges, and/or standard deviations (specify what you are providing).

± 0.3

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

The resulting uncertainty is the prediction error of the MISR hindcast model for the years 2002 to 2016. It is the standard deviation of the differences between modeled and observed September SIE.

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