Sea Ice Outlook
2018 June Report
Individual Outlook

Name of contributor or name of contributing organization:

UTokyo (Kimura et al.)

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

No

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.

Noriaki Kimura (The University of Tokyo, Japan)
Hiroyasu Hasumi (The University of Tokyo, Japan)

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.)

Yes

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.

4.71

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.

Monthly mean ice extent in September will be about 4.71 million square kilometers. Our estimate is based on a statistical way using data from satellite microwave sensor. We used the ice thickness in December and ice movement from December to April. Predicted ice concentration map from July to September is available in our website:
http://ccsr.aori.u-tokyo.ac.jp/~kimura_n/arctic/2018e.html

Sea ice cover in the Laptev and East Siberian Seas will retreat with nearly same speed as last year. Minimum sea ice cover in September of this year will be very similar to that of the last year

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

We predicted the Arctic sea-ice cover from coming July 1 to November 1, using the data from satellite microwave sensors, AMSR-E (2002/03-2010/11) and AMSR2 (2012/13-2017/18). The analysis method is based on our recent research (Kimura et al., 2013). First, we expect the ice thickness distribution in April 30 from redistribution (divergence/convergence) of sea ice during December and April, based on the daily ice velocity data. Then, we predict the summer ice area depending on the assumption that thick ice remains later and thin ice melts sooner than the average.

For this analysis, we distributed particles homogeneously over the Arctic sea ice on December 1. We traced the trajectories of the particles to the end of April by using the satellite derived daily ice velocity (Kimura Dataset). Based on the relationship between particle density on April 30 and ice concentration in summer, we predicted the summer sea ice cover of this year. We also take it into account that thickness of sea ice on December 1 calculated by an algorithm of Krishfield et al. (2014) .

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

SIC dataset distributed by distributed by Arctic Data archive System (ADS, https://ads.nipr.ac.jp/index.html).

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

SIT dataset distributed by distributed by Arctic Data archive System (ADS, https://ads.nipr.ac.jp/index.html), December 1 of all AMSR-E/AMSR2 years. This SIT is calculated by an algorithm of Krishfield et al. (2014).

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).