Sea Ice Outlook
2023 June Report
Individual Outlook

Name of contributor or name of contributing organization:

ArCS II Kids

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

Yes, this contribution is from a "Citizen Scientist."

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.

ArCS II Kids

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.)

[Do you want your contribution for this month to automatically be included in subsequent reports?]

What is the type of your Outlook projection?

Heuristic

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.

4.51

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 Arctic ice extent in this September is expected to be 4.51 million square kilometers. The prediction was made by 10 groups (44 students) of junior high school students and 37 elementary school students.

The groups of junior high school students was given a graph of monthly mean sea ice extent and a sea ice distribution map for the entire Arctic for September since 2002. In addition to this, each group was given supplementary data for parameters on the Arctic climate. Based on these data, each group projected the sea ice extent for September 2023. The elementary school students were given a sea ice distribution map for September. They estimated the sea ice extent for each year based on the map and made a graph of the interannual changes. By looking at the graph, each individual made a prediction of the sea ice extent for September 2023. Finally, the ice extent of the prediction was calculated by averaging the determined values by the 10 groups and 37 individuals.

The maximum and minimum predicted values were 6.43 and 2.65, respectively, but most students predicted values similar to those of 2021 and 2022 (around 4.9 million square kilometers) or in line with the long-term trend (around 4.2 million square kilometers).

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

The prediction was made by 10 groups (44 students) of junior high school students and 37 elementary school students. The groups of junior high school students was given a graph of monthly mean sea ice extent and a sea ice distribution map for the entire Arctic for September since 2002. In addition to this, each group was given supplementary data such as Arctic temperature, precipitation, salmon landings, and changes in the number of polar bear sightings, to predict the sea ice extent for September 2023. The elementary school students were given a sea ice distribution map for September. Based on this, they estimated the sea ice extent for each

year and made a graph of the interannual changes. By looking at the graph, each individual made a prediction of the sea ice extent for September 2023. Finally, the ice extent of the prediction was calculated by averaging the determined values by the 10 groups and 37 individuals.

The 47 values predicted by the 10 groups of the junior high school students and 37 elementary school students were averaged to the predicted values as ArCS II Kids.

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

Ice concentration: 25km grid data from SSM/I, and 10km grid data from AMSR-E and AMSR2, distributed by Arctic Data Archive System (https://ads.nipr.ac.jp)

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

N/A

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

Lower error bound

Lower error bound

Standard Deviation

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).