Sea Ice Outlook
2017 June Report
Individual Outlook

Name of Contributor of Name of Contributing Organization:

NASA Global Modeling and Assimilation Office (NASA GMAO)

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.

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

No do not use my prediction this month in later months

What is the type of you outlook projection?

Dynamic Model

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.

5.30 ± 0.33 million km2.

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.

N/A

c) same as in (b) but for the Alaskan region. Please also tell us the maximum possible extent if every

ocean cell in your region were ice covered.

0.90 ± 0.10 million km2; reference area: 4.00 million km2

"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 GMAO seasonal forecasting system predicts a September average Arctic ice extent of 5.30±0.33 million km2, about 12 percent greater than the 2016 value. The forecast suggests slightly cooler conditions over the western Arctic. Forecast experiments may be conducted over subsequent Outlook months as a new forecasting system becomes available.

Please note that these predictions are experimental and are produced for research purposes only. Use of these forecasts for purposes other than research is not recommended.

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

The GMAO seasonal forecast is produced from coupled model integrations that are initialized every five days, with seven additional ensemble members generated by coupled model breeding and initialized on the date closest to the beginning of the month. The main components of the AOGCM are the GEOS-5 atmospheric model, the MOM4 ocean model, and CICE sea ice model. Forecast fields were re-gridded to the passive microwave grid for averaging.

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.

NASA Team for 11-Apr, 16-Apr, 21-Apr, 26-Apr, and 1-May 2017.

Dataset of initial Sea Ice Thickness (SIT) used (include name and date):

Model-derived from GMAO Ocean Data Assimilation System.

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:

Model Name: Goddard Earth Observing System Model (GEOS).
Atmosphere: GEOS-5 AGCM initialized with MERRA-2 and GMAO forward processing NWP analysis.
Ocean: MOM4 initialized with GMAO Ocean Data Assimilation System (EnOI).
Ice: CICE4 (EnOI).

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).

Ensemble standard deviation: 0.33 million km2.

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

The given uncertainty is the standard deviation of the 11 member ensemble.

c) same as in (b) but for the Alaskan region. Please also tell us the maximum possible extent if every ocean cell in your region were ice covered. See https://www.arcus.org/sipn/sea-ice-outlook/2017/june/call **in the section on "Instructions for Submitting an Alaskan Regional Outlook" for detailed instructions.**

The model output was re-gridded to the standard Northern Hemisphere passive microwave grid.

d) Raw (and/or post processed) forecasts for this year and retrospective forecasts in an excel spreadsheet with one year on each row and ensemble member number on columns (specifying whether raw or post processed).

The model output was re-gridded to the standard Northern Hemisphere passive microwave grid.