Name of contributor or name of contributing organization:

Barthélemy et al.

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.

Antoine Barthélemy (antoine.barthelemy@uclouvain.be)
François Massonnet (francois.massonnet@uclouvain.be)
Hugues Goosse (hugues.goosse@uclouvain.be)
Thierry Fichefet (thierry.fichefet@uclouvain.be)

Georges Lemaître Centre for Earth and Climate Research (TECLIM), Earth and Life Institute (ELI), Université catholique de Louvain (UCL), Louvain-la-Neuve, Belgium

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.)

No do not use my prediction this month in later months

What is the type of your 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.

3.6

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.

18.1

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.

Our estimate is based on results from ensemble runs with the global ocean-sea ice coupled model NEMO-LIM3. Each member is initialized from a reference run on June 30, 2017, then forced with the NCEP/NCAR atmospheric reanalysis from one year between 2007 and 2016. Our final estimate is the ensemble median, and the given range corresponds to the lowest and highest extents in the ensemble.

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

Our estimate is based on results from ensemble runs with the global ocean-sea ice coupled model NEMO-LIM3. The ensemble members are expected to sample the atmospheric variability that may prevail this summer. In practice, the model is forced with NCEP/NCAR atmospheric reanalysis data from 1948 to June 30, 2017. No data are assimilated during this simulation. Ten ensemble members are then started from the obtained model state, each using atmospheric forcing from one year between 2007 and 2016. This choice is a compromise between a sufficiently large ensemble and the rapidly changing Arctic atmospheric conditions in recent decades. The estimate given above corresponds to the ensemble median monthly September extent, corrected by the mean bias between simulated and observed values reported in the NSIDC sea ice index, which equals 0.6 million square kilometers. The model configuration is exactly the same as in our last four years contributions. Additional details can be found in our 2013 reports.

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.

Initial sea ice concentrations come from a model free run on June 30.

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

Initial sea ice thicknesses come from a model free run on June 30.

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:

Ocean - NEMO 3.5 - initialized on June 30 from a free run
Sea ice - LIM3 - initialized on June 30 from a free run

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).

Projection uncertainty range:
- Arctic: from 2.4 to 4.2 million square kilometers
- Antarctic: from 17.5 to 18.6 million square kilometers

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

The projection uncertainty is given as the range between minimum and maximum extents in the ensemble. Although relatively wide, this neglects potential erroneous initial state and model errors not accounted for through the mean bias correction. It is based solely on the uncertainties arising from atmospheric variability, and on the hypothesis that the 2017 atmospheric summer conditions will be similar to the ones observed during the last decade.

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

The September sea ice extents from the ensemble members have been corrected by the mean bias between the observed (from the NSIDC sea ice index) and simulated (by the reference NEMO-LIM3 run) extents over 2007-2016, which equals 0.6 million square kilometers.