Sea Ice Outlook
2017 August Report
Individual Outlook

Name of contributor or name of contributing organization:

RASM(Kamal 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.

Our RASM Team includes the following people:

1. Samy Kamal, primary contact, Naval Postgraduate School
2. Wieslaw Maslowski, Naval Postgraduate School
3. Robert Osinski, Institute of Oceanology, Polish Academy of Sciences
4. Andrew Roberts, Naval Postgraduate School
5. Mark Seefeldt, University of Colorado
6. John Cassano, University of Colorado

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.)

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.

4.323

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.

0.08186

"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 used the Regional Arctic System Model (RASM), which is a limited-area, fully coupled climate model consisting of the Weather Research and Forecasting (WRF) model, Los Alamos National Laboratory (LANL) Parallel Ocean Program (POP) and Sea Ice Model (CICE) and the Variable Infiltration Capacity (VIC) land hydrology model (Maslowski et al. 2012; Roberts et al. 2014; DuVivier et al. 2015; Hamman et al. 2016; Hamman et al. 2017; Cassano et al. 2017). WRF and VIC are configured on the same polar stereographic grid at 50-km resolution, and POP and CICE are sharing a rotated spherical grid at 1/12o (~9 km). Reanalysis data are used to force RASM from September 1979 to August 2017, after that the NCEP version 2 Coupled Forecast System model (CFSv2) Operational Forecasts are used for forecast forcing.

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

We used a 28-member ensemble to determine the September 2017 Arctic sea ice status. The ensemble forecasts utilized two different sea ice initial states produced by two different RASM 1979-2017 simulations (root cases). Root cases are forced with CFSR reanalysis data and ran from September 1979 to August 2017. After that, each set of initial conditions is used to run 14 forecast cases forced with 14 different versions of CFSv2 seasonal forecast data and ran from August 1st to September 30th 2017. CFSv2 datasets used to force individual RASM ensemble members were initialized sequentially 12 hours apart from July 24th 00:00 through July 30th 12:00.

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.

The initial conditions for sea ice (and other model components) are RASM-produced from multi-decadal simulations, from 1979 through July 2017.

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

Same as #7

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: Regional Arctic System Model (RASM).
Atmospheric model: WRF.
Ocean model: POP.
Ice model: CICE.
Land hydrology: VIC

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).

Our expected uncertainty is about 0.1354 million square kilometers

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

We estimate our uncertainty to be equal to the spread in September mean extent among all the ensemble members.

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