Sea Ice Outlook for September 2017
June Report - NASA Global Modeling and Assimilation Office

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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.

1. What is the type of your Outlook projection?
Dynamical Model

2. a) Pan-Arctic extent: 5.30±0.33 million km^2
b) Pan-Antarctic: N/A
c) Alaska Region: 0.90±0.10 million km^2; reference area: 4.00 million km^2

3. Contributor: NASA Global Modeling and Assimilation Office (NASA GMAO).

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4. No, do not use my prediction this month for later months.

5. The GMAO seasonal forecasting system predicts a September average Arctic ice extent of 5.30±0.33 million km^2, 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.

6. Brief explanation of Outlook method

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.

7. Dataset of initial sea ice concentration:

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

8. Dataset of initial sea ice thickness used: model-derived.

9. 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).

10. If available from your method:

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) Brief description of any post processing you have done (1-2 sentences).
The model output was re-gridded to the standard Northern Hemisphere passive microwave grid.

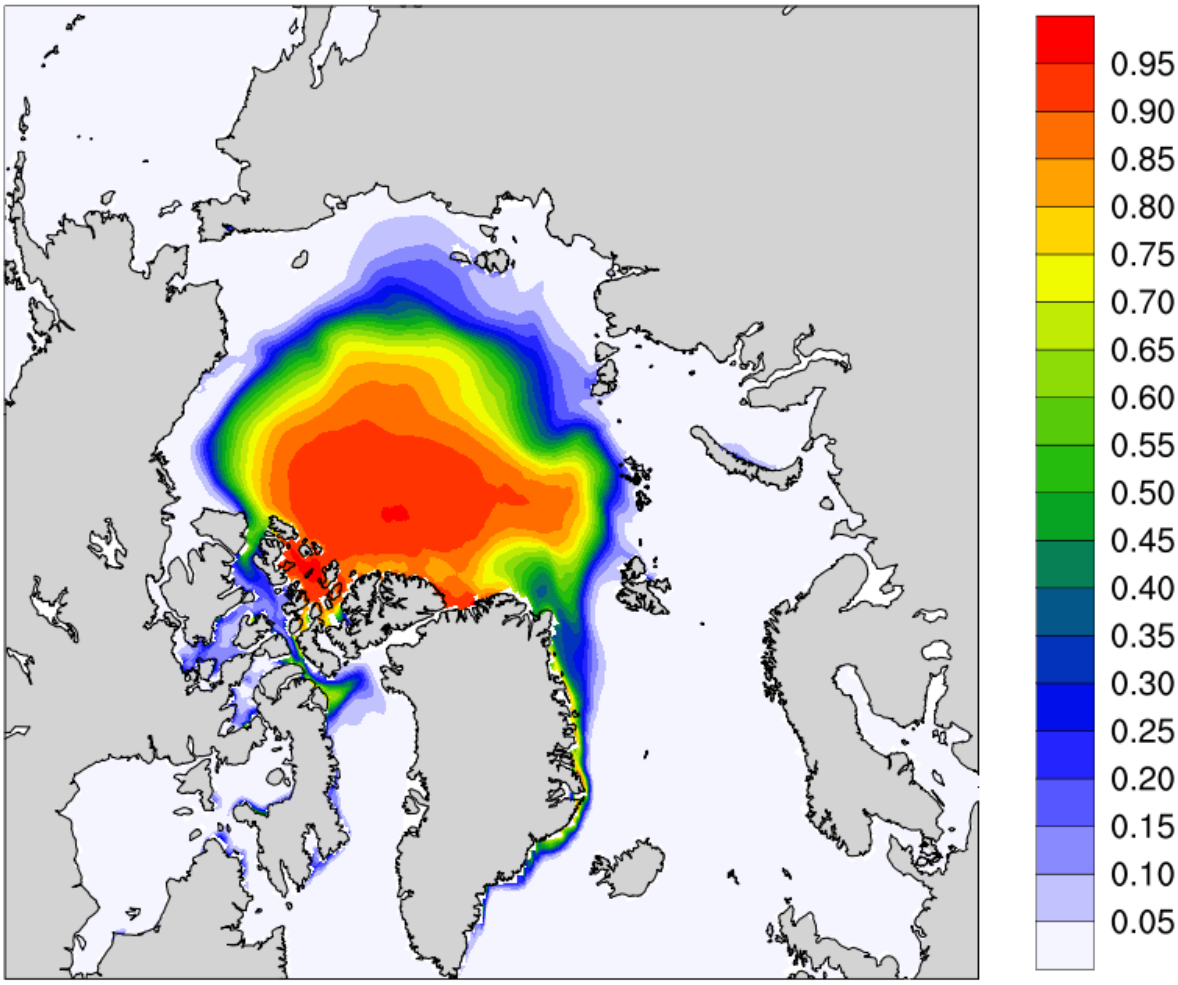

Figure 1. Ensemble-averaged sea ice concentration forecast for September 2017.

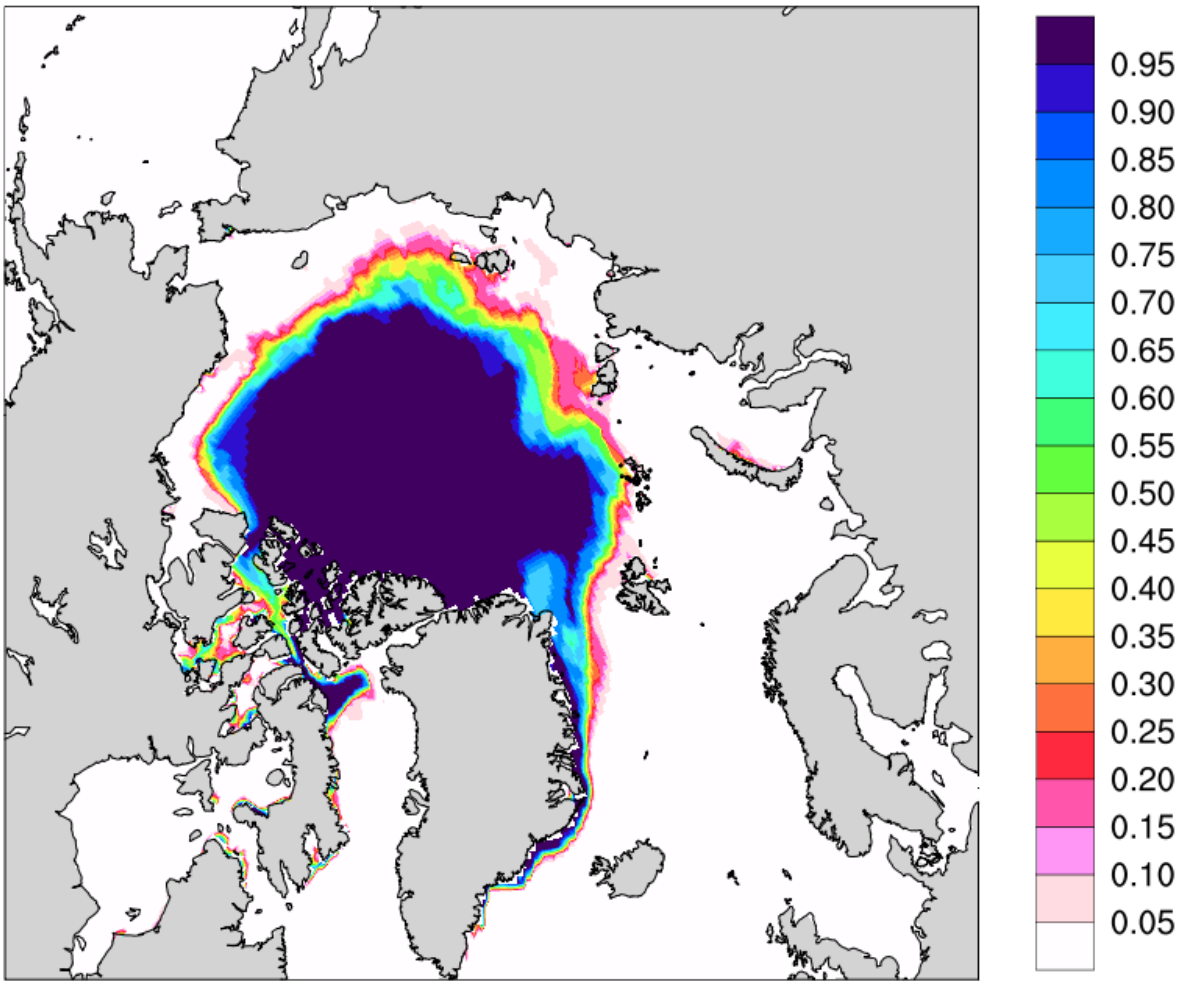

Figure 2. Ensemble probability of sea ice extent for September 2017.

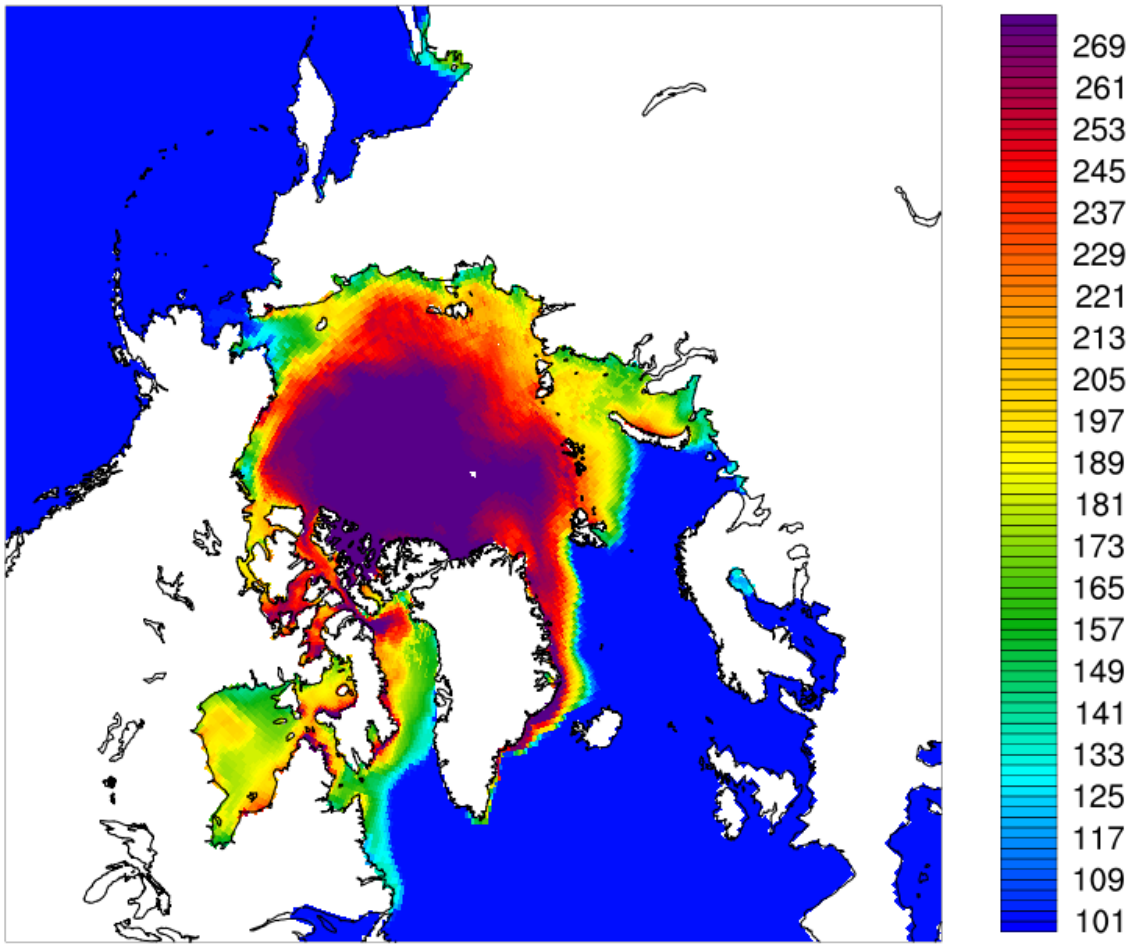

Figure 3. Ensemble-average ice-free day.