

Sea Ice Outlook  
2020 June Report  
Individual Outlook

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**Name of contributor or name of contributing organization:**

Cawley, Gavin

**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.**

Gavin Cawley, School of Computing Sciences, University of East Anglia

**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.)**

Include this submission in all three monthly reports (June, July, and August)

**What is the type of your Outlook projection?**

Statistical

**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.**

4.0791

**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.**

This is a purely statistical method (related to Krigging) to estimate the long term trend from previous observations of September Arctic sea ice extent. As this uses only September observations, the prediction is not altered by observations made during the Summer of 2020.

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

This is a purely statistical method, which uses a Gaussian process regression (c.f. Krigging) model to estimate the (non-linear) long term trend from previous observed September Arctic sea ice extent. The model uses a radial basis covariance function and tunes the parameters via marginal likelihood maximisation (using the GPML toolbox for MATLAB). As this uses only September observations, the prediction is not altered by observations made during the Summer of 2020.

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

Only uses previous monthly September sea ice extent data.

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

**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:**

[DynamicModelType]

**If available from your method.**

**a) Uncertainty/probability estimates:**

**Median**

4.0791

**Ranges**

2.9757 - 5.1825

**Standard Deviations**

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

Bayesian posterior predictive uncertainty from Gaussian Process

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