

SEA ICE PREDICTION NETWORK (SIPN)

June Report (Using May Data)

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2. Research organization
3. Yes, use this contribution for all of the 2016 SIO reports (this contribution will be superseded if you submit a later one).

4. "Executive summary":

We predict the September ice extent 2016 to be slightly lower than last year. Given the extreme low current sea ice extent and the positive SST anomalies, a stronger decline might be expected. But looking at the May 2016 melt pond fraction in our sea ice simulation, the pond fraction is higher in the Kara Sea, north of Svalbard and in the Fram Strait compared to May 2015 and with a lesser extent to May 2012, but lower in the East Siberian Sea and the Arctic Basin. The weighted Arctic wide mean May pond fraction 2016 is higher than in 2015, but much lower than in 2012. While the ice thickness is generally thinner in May 2016 compared to previous years, the air temperature has been several degrees above the last 10 year mean in the northern North Atlantic and the Beaufort Sea, but colder in the Eastern Siberian Sea and Laptev Sea causing the described melt pond pattern.

5. Type: statistical

6. not relevant

7. not relevant

8. not relevant

9. 4.5 million km²

10. not predicted

11. Short explanation:

This is a statistical prediction based on the correlation between the ice area covered by melt-ponds in May and ice extent in September. The melt pond area is derived from a simulation with the sea ice model CICE in which we incorporated a physically based melt-pond model¹. See our publication in Nature Climate Change <http://www.nature.com/nclimate/journal/v4/n5/full/nclimate2203.html> for details².

References:

1. Flocco, D., Schröder, D., Feltham, D. L. & Hunke, E. C., 2012: Impact of melt ponds on Arctic sea ice simulations from 1990 to 2007. *J. Geophys. Res.* **117**, C09032.

2. Schröder D., D. L. Feltham, D. Flocco, M. Tsamados, 2014: September Arctic sea-ice minimum predicted by spring melt-pond fraction. *Nature Clim. Change* **4**, 353-357, DOI: 10.1038/NCLIMATE2203.

12. Uncertainty: 0.50 million km²

The given uncertainty is the mean forecast error based on forecasts for the years 1984 to 2013. For all these forecasts only data from previous years were used (forecast mode). In the hindcast mode the prediction error amounts to 0.33 million km².