

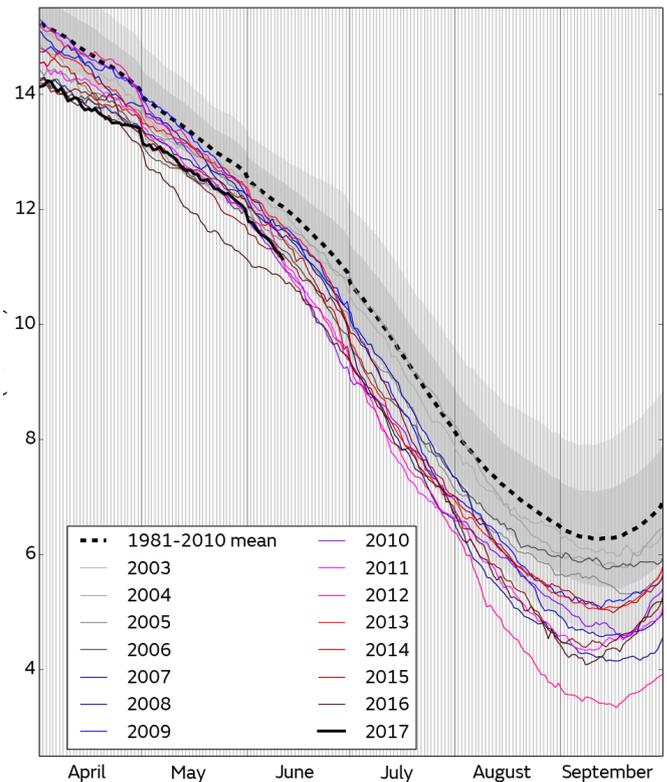
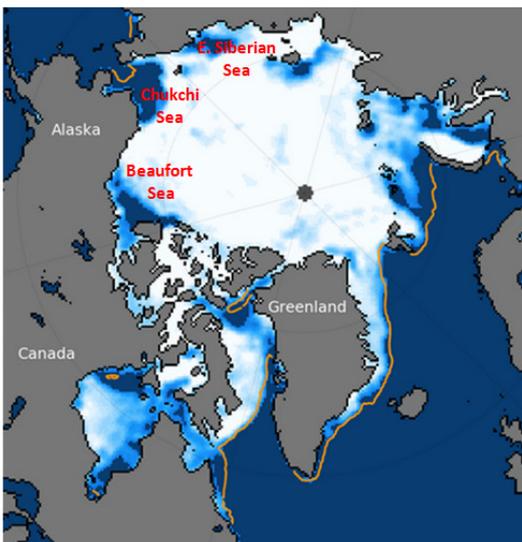
Briefing on the state of the Arctic sea ice

Current Arctic sea ice extent

Arctic sea ice extent on 11th June 2017 was 11.30 million square km (Figure 1), according to data from the National Snow and Ice Data Center (NSIDC).

Extent is 0.85 million square km below the 1981-2010 average for this date and 0.49 million square km above the previous record low for the time of year, which occurred last year. Extent is currently particularly low in the Chukchi Sea, where the ice retreat was the earliest on record (Figure 2).

The conditions are likely to be associated with above-average air temperatures over the East Siberian, Chukchi, and Beaufort Seas during May, and thinner than usual spring ice due to delayed winter ice growth in this region.



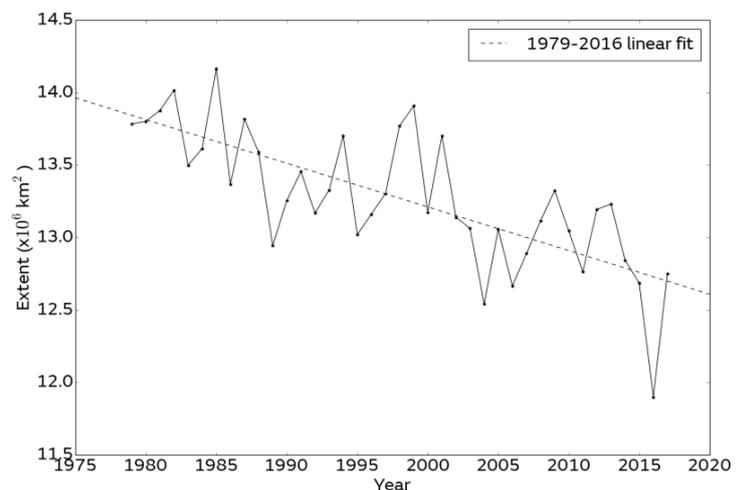
▲ **Figure 1:** Daily Arctic sea ice extent for 2017, compared with recent years and the 1981-2010 average with +/- 1 and 2 standard deviation intervals indicated by the shaded areas. Data is from the National Snow and Ice Data Center (NSIDC).

◀ **Figure 2:** Sea ice extent on 11th June 2017, with 1981-2010 extent for this date indicated in orange. Underlying map and data courtesy of NSIDC.

May 2017 in context

The average May Arctic sea ice extent was 12.75 million square km. This is 0.61 below the 1981-2010 average, 0.85 above the record low set last year (Figure 3).

The average rate of ice loss for May was 42,800 square km per day. While this is relatively slow compared to the 1981-2010 average for May of 46,990, the fact that extent at the start of the melt season was low means that this year saw the 5th lowest May extent on record.



▲ **Figure 3:** Average May Arctic sea ice extent according to the Hadley Centre Sea Ice and Sea Surface Temperature (HadISST) 1.2 dataset (Rayner et al, 2013).

Arctic ice thickness

Measurements of sea ice thickness from the Cryosat-2 satellite suggest that thicker ice (above 2m) is more widely dispersed than at the same time last year (Figure 4): sea ice thinner than 2m is usually considered vulnerable to melting away during the summer. However this year there is a reduced area of ice thicker than 3m north of the Canadian Archipelago.

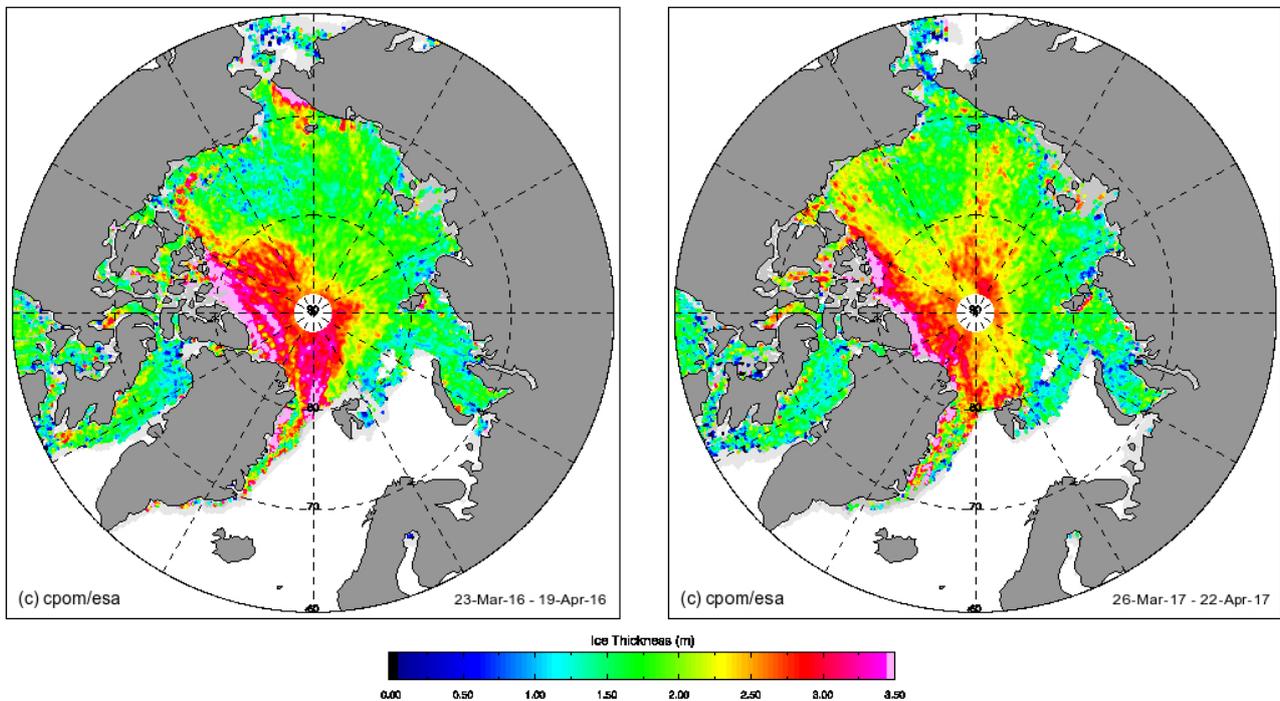


Figure 4: Arctic sea ice thickness for late March/April, as estimated from CryoSat-2 radar altimetry data for 2016 (left) and 2017 (right). Courtesy of Centre for Polar Observation and Modelling (Tilling et al., 2016).

Outlook for 2017 melt season

There is no significant correlation between ice extent in mid-June and the seasonal minimum extent in September. While there was a greater proportion of relatively thin ice at this stage last year, the melt season minimum will be strongly influenced by the weather conditions over the Arctic for the remainder of the melt season.

Rayner, N. A.; Parker, D. E.; Horton, E. B.; Folland, C. K.; Alexander, L. V.; Rowell, D. P.; Kent, E. C.; Kaplan, A. (2003) Global analyses of sea surface temperature, sea ice, and night marine air temperature since the late nineteenth century *J. Geophys. Res.* Vol. 108, No. D14, 4407 10.1029/2002JD002670.

Tilling, R. L., Ridout, A., and Shepherd, A.: Near-real-time Arctic sea ice thickness and volume from CryoSat-2, *The Cryosphere*, 10, 2003-2012, doi:10.5194/tc-10-2003-2016, 2016.