

2010 PAN-ARCTIC OUTLOOK

July Outlook

Chris Petrich - Geophysical Institute, University of Alaska Fairbanks

1. Extent Projection

The projected sea ice extent for September 2010 is 4 Mm², with a possible range of 3.4 to 5.4 Mm², and most likely range of 3.4 to 4.9 Mm².

2. Methods / Techniques:

heuristic, statistical

It is assumed that the mean sealevel pressure in June in the Pacific sector of the Arctic and sub-Arctic (90E to 270E and 45N to 90N) is a useful indicator for the inter-annual change of September sea ice extent. June mean sealevel pressure is calculated from the NCEP/NCAR reanalysis product, and individual years are visually compared to 2010. The pressure distribution in June 2010 resembles the situation of 1997 most closely and is in tune with many years that showed a considerable decrease in ice extent with respect to the previous year. However, it also resembles 1965 which was most likely a year like any other. Sea ice extent anomalies were kindly provided by Walt Meier, NSIDC, and are based on the NASA Team algorithm from SMMR-SSM/I (1979-present) and Hadley ISST dataset, with monthly extents adjusted to be consistent with the SMMR-SSM/I data (1953-1979).

The best estimate is based on the 1.4 Mm² reduction observed from 1996 to 1997. The bounds are based on the 2006 to 2007 and 1964 to 1965 reductions of 2 Mm² and 0 Mm², respectively.

3. Rationale

Sealevel pressure is related to both surface winds and clouds (and hence insolation) which are known to drive Arctic ice reduction in summer. The mean sealevel pressure of June is used as a proxy for September sea ice extent reduction because the association appears to be stronger than for any other month.

4. Executive Summary

The June sealevel pressure distribution is used as proxy for the inter-annual change in sea ice extent. September 2010 is most likely to see a lower sea ice extent than September 2009, potentially even less than in 2007.