# 2010 Sea Ice Outlook
# June Report based on May Data

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The following is based on consideration of the U. of Colorado satellite-derived (Lagrangian drift) sea ice age in the context of conditions in previous years (see attached figure) along with review of atmospheric fields and a variety of other data sets.

A. Regional outlook for Beaufort and Chukchi seas

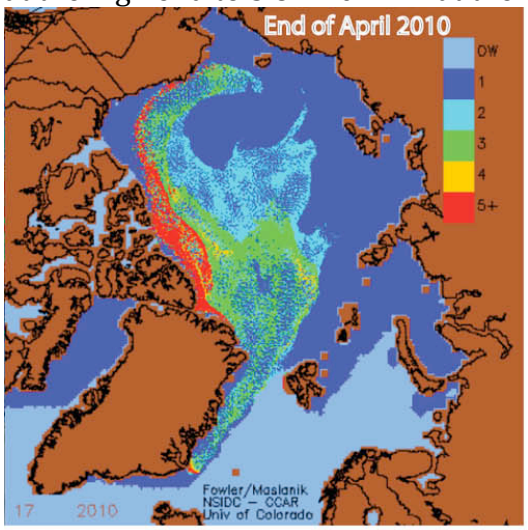
(1) A prominent feature is the lobe of old ice extending through the Beaufort Sea and into the Chukchi Sea at the end of April (top-left panel in Figure 1). Based on our age data, the strip of ice on the southern edge of this area is 5+ year-old ice (red), which is likely to be particularly thick and strong. One might expect it and the 3+ year-old ice to survive well into the melt period, at fairly high ice concentrations. Our data and other data we have examined suggest that the floes are large but with some separation by first-year ice. Given the likelihood of 3+ year-old ice being present, then some residual and perhaps quite small multiyear ice floes may well survive into autumn, with the associated potential hazards they pose for shipping, etc. These surviving floes may end up relatively close to the coast and therefore might be entrained into new land-fast ice, thus helping stabilize the fast ice. Note that our ice age product uses a 40% ice concentration cut-off, so it is possible and even likely that some old ice extends beyond the bounds we show, and particularly so at the westernmost tip of the old ice lobe.

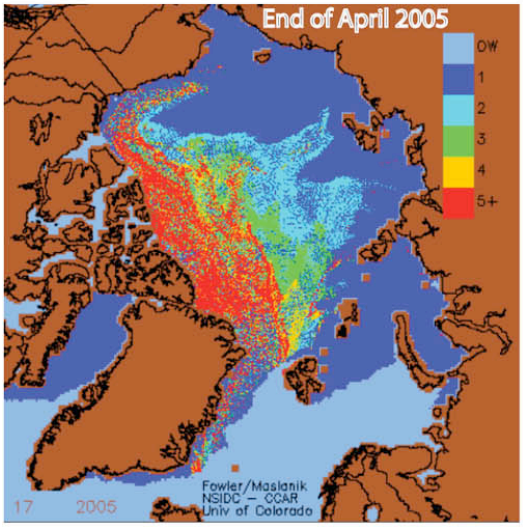
(2) Wind patterns during most of May have continued to push this ice to the west, placing more ice into the Chukchi Sea and keeping the ice further south than in recent years. Given the extent of melt over the past several years and the southern location of this old ice, we expect that it will completely melt out (excluding some residual floes) from the central Beaufort and Chukchi seas. Some of the oldest ice may survive melt in the Banks Island area, but unlike most other years, the multiyear ice is shifted toward the west, leaving a fairly large area of first-year ice between it and the eastern Beaufort Sea area to the south.

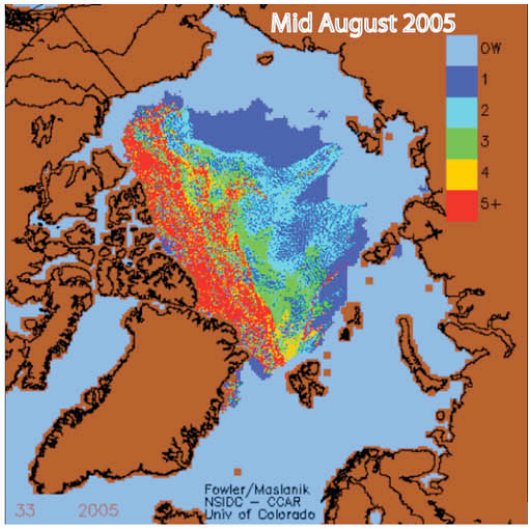
(3) There is little reason to expect that first-year ice in these areas will survive melt. While the lobe of multiyear ice will persist later into the melt season, the first-year ice to the north will melt out earlier, yielding a "semi polynya" of open water/low concentration ice partially surrounded by multiyear ice into late summer.

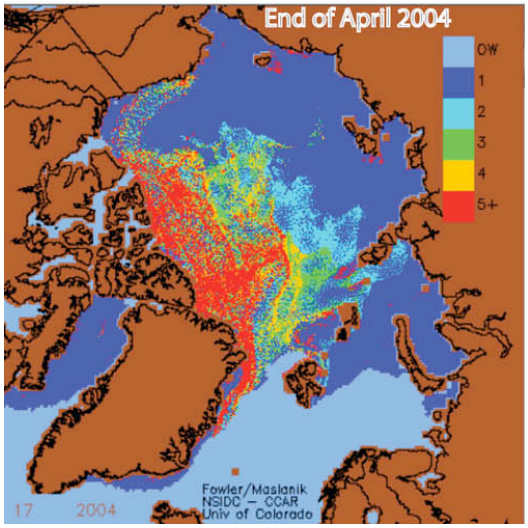
B. Overall outlook for minimum sea ice extent

Our best guess at this point for end-of-summer ice extent ranges from 4.5 x $10^6$ $km^2$ at the high end to 3.8 x $10^6$ $km^2$ at the low end.



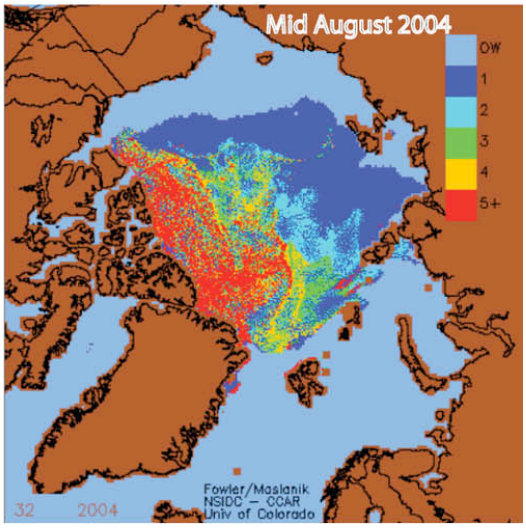



Figure 1. Estimated ice age at the end of April (left-hand panels) for 2010 (top), 2005 (center) and 2004 (bottom). Panels on the right are age coverages for mid-August 2005 and 2004. Warmer colors indicate older ice.