

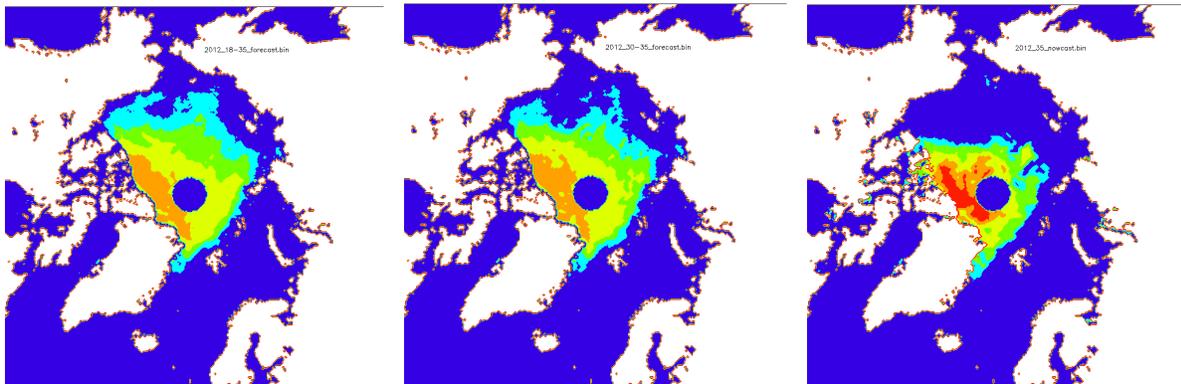
## Comment on the Aug 27, 2012, Arctic sea ice conditions

August 29, 2012

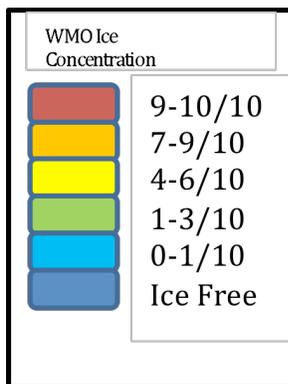
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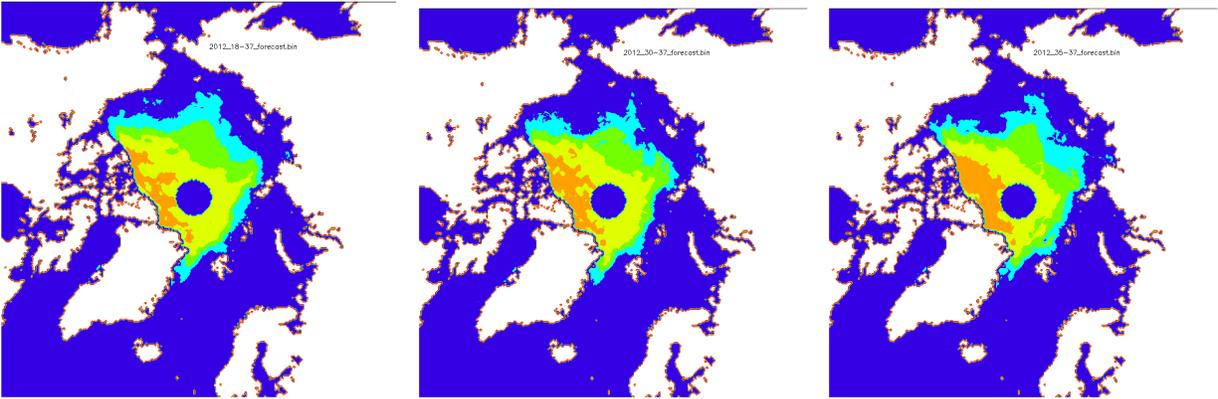
On August 27, the National Snow and Ice Data Center announced today their Sea Ice Index, a 5-day average of Arctic sea ice extent, has broken the record for lowest amount ever in 33 years of satellite observations. This announcement comes while the summer seasonal minimum is likely still a few weeks away. Earlier projections using a statistical seasonal sea ice forecast model have projected a minimum ice extent that would be at or below prior values for 2007 and 2011.



Projected ice extent for week 35 from May 1 (left) and Aug 1 (center), 2012. Observed SSM/I, week 35, 2012 (the week containing August 27). The green area represents where sea ice concentration is at least 1/10, which is the WMO definition of sea ice extent. The “pole hole” in the North Pole region is included in the projected and observed values. Both May 1 and Aug 1 projections are greater than observed, but the geographical distribution of ice-covered ocean, excluding “open water (0-1/10, teal)” and “ice free” (no ice, blue) is in general agreement with observations. Both projections overestimate the ice extent (when corrected for the model mask). However, the location of the ice edge (green) is reasonably well-predicted. The model does not capture localized variability (e.g., the embayment north of the Laptev Sea).



WMO Sea Ice Color codes for Ice Concentration.



Projections for week 37 (Sep 21, 2012) based on May 1 (left, 4.35 million km<sup>2</sup>), Aug 1 (center, 4.03 million km<sup>2</sup>), and August 27 conditions (right, 4.28 million km<sup>2</sup>). Despite the low initial conditions for the August 27, the outlook returns a higher value than current and also higher than the Aug 1 projection. Because of this, there is no confidence in this projection. There are a number of possibilities for this remarkably unremarkable value:

- 1) The model is correct; ice extent will increase. This would be possible if the ice pack diverged with little or no additional melting. It would also be possible if the fall freeze-up much earlier than typical.
- 2) The model is incorrect; despite extremely low initial conditions, the model is not capable of projecting continued record low ice extent because it cannot forecast conditions far outside the range of prior observations.
- 3) The model is incorrect; the forecast period is too short for a useful forecast with this model.

Based on observed conditions over the past decade, options 2 & 3 are the most likely. Typically this model has not been run for intervals shorter than 4 weeks because little skill was observed, and physical-based computational models are able to give reliable forecasts, at least for intervals of up to a week.

(CAVEAT: This is not a forecast and should not be interpreted as rules for navigation. This is not a description of current ice conditions except where indicated. Ice hazards may occur at any time of year even in areas classified as open water. Only ice-capable ships with experienced ice pilots should attempt navigation in the Arctic.)