

Outlook of 9/2010 Arctic sea ice from 8/1/2010

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Based on ensemble predictions starting on 8/1/2010, the predicted September 2010 ice extent is **4.8 million square kilometers**. This number is the same as that predicted one month ago. However the predicted spatial distribution of September ice thickness and the shape of ice extent are different from those predicted last month.

The ensemble predictions are based on a synthesis of a model, NCEP/NCAR reanalysis data, and satellite ice concentration data. The model is the Pan-arctic Ice-Ocean Modeling and Assimilation System (PIOMAS), which is forced by NCEP/NCAR reanalysis data. It is able to assimilate satellite ice concentration data. The ensemble consists of seven members each of which uses a unique set of NCEP/NCAR atmospheric forcing fields from recent years, representing recent climate, such that ensemble member 1 uses 2003 NCEP/NCAR forcing, member 2 uses 2004 forcing, ..., and member 7 uses 2009 forcing. Each ensemble prediction starts with the same initial ice-ocean conditions on 8/1/2010. The initial ice-ocean conditions are obtained by a retrospective simulation that assimilates satellite ice concentration data. No data assimilation is performed during the predictions. More details about the prediction procedure can be found in Zhang et al. (2008)

http://psc.apl.washington.edu/zhang/Pubs/Zhang_etal2008GL033244.pdf. Additional information can be found in http://psc.apl.washington.edu/zhang/IDAO/seasonal_outlook.html.

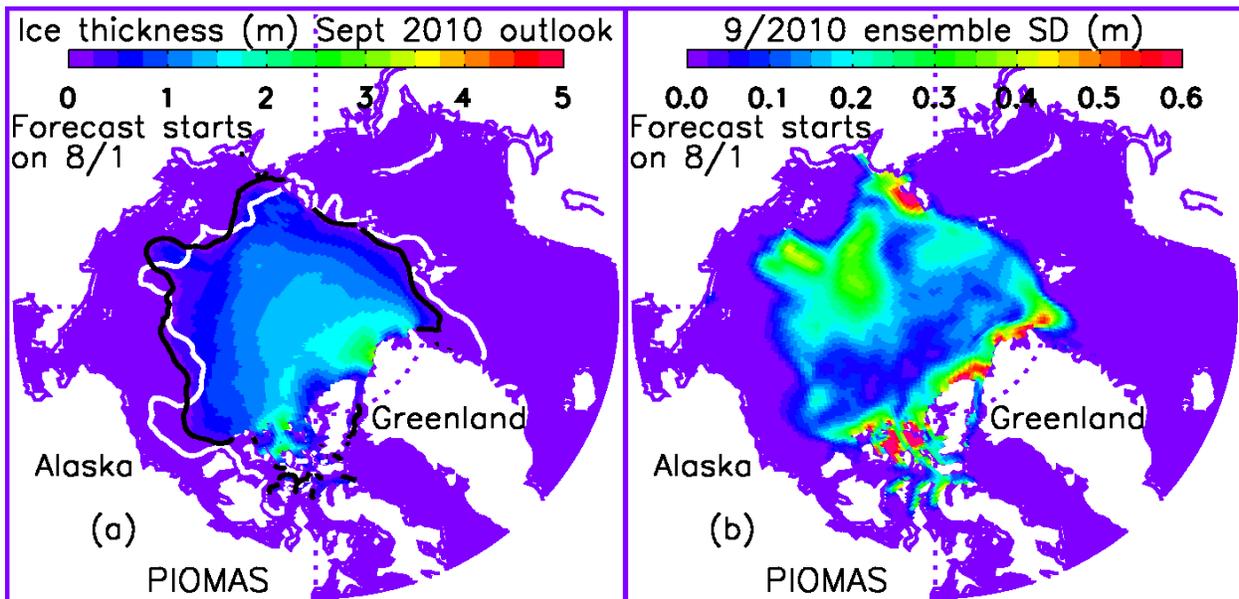


Figure 1. Ensemble prediction of September 2010 sea ice thickness (a) and ensemble standard deviation (SD) of ice thickness which shows the uncertainty of the prediction (b). The white line represents satellite observed September 2009 ice edge defined as of 0.15 ice concentration, while

the black line model predicted September 2010 ice edge. The prediction shows less ice in the Beaufort and Greenland seas in September 2010 than last September.

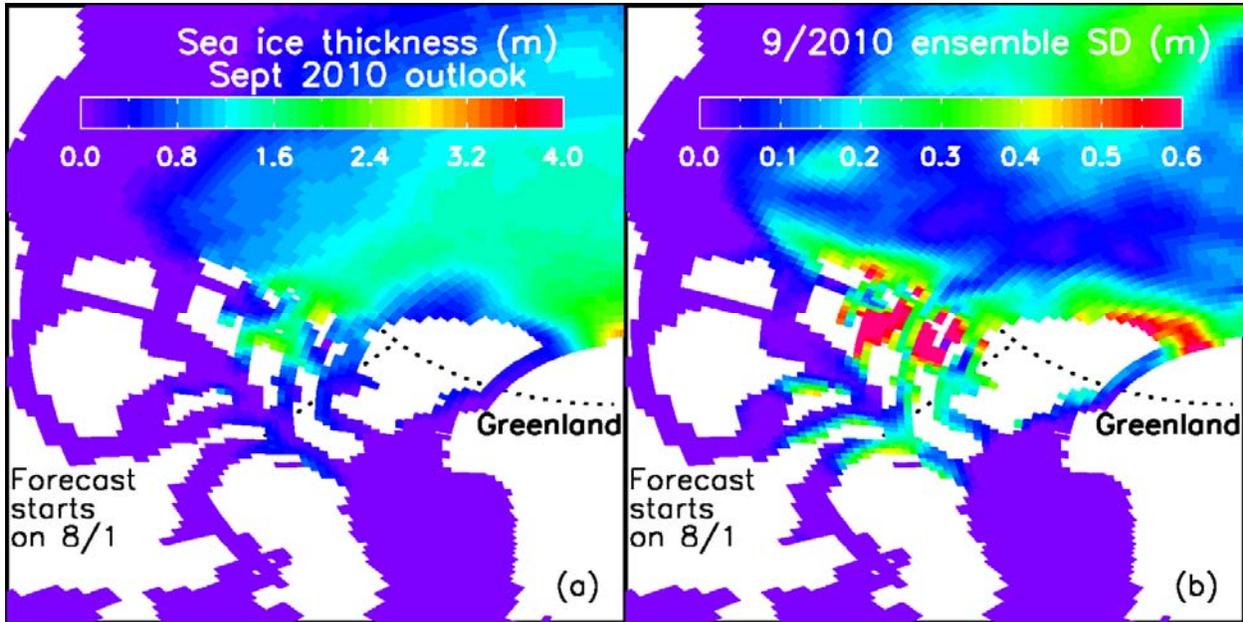


Figure 2. Ensemble prediction of September 2010 sea ice thickness (a) and ensemble standard deviation (SD) of ice thickness (b) in the Northwest Passage (NWP) region. Most of the NWP is ice free except some thin ice in the Lancaster Sound. However, because of the significant uncertainty (with relatively high SD) in the Lancaster Sound, it is possible that no ice will be there in September.