

2008 September Arctic sea ice Outlook
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We would like to participate in the 2008 September arctic sea ice outlooks by conducting ensemble predictions. 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 2001 NCEP/NCAR forcing, member 2 uses 2002 forcing, ..., and member 7 uses 2007 forcing. Each ensemble prediction starts with the same initial ice-ocean conditions at a given starting date of prediction before September 2008. The initial ice-ocean conditions are obtained by a retrospective simulation that assimilates satellite ice concentration data. Of course, no data assimilation is performed during the predictions. More details about the prediction procedure can be found in a newly published paper:

http://psc.apl.washington.edu/zhang/Pubs/Zhang_etal2008GL033244.pdf

The attached figure shows the predicted September 2008 ice thickness from these seven ensemble members and their ensemble median and standard deviation (SD). The prediction starts on May 1, 2008. The white line represents the satellite observed September 2007 ice extent and the black line the predicted September 2008 ice extent. As shown by the figure, most of the ensemble members (members 2, 3, 5, and 6) predict a September ice extent that is close to September 2007. Member 1 predicts a largest ice extent; while member 7 predicts an ice extent that is lower than September 2007. The ensemble median is considered to have a 50% probability of occurrence and the ensemble median ice extent is close to that in September 2007. This means that ice extent in summer 2008 is likely to be close to last summer, if not lower. Needless to say, there are many uncertainties with seasonal predictions of arctic sea ice. We will try to update the ensemble predictions every month, all the way to summer. As the starting date of prediction approaches September 2008, we hope the prediction uncertainties will be reduced. We would be happy to provide predicted ice thickness fields to you or the related organization every time we update the ensemble predictions. Additional prediction results and analysis may be found at our web page:

http://psc.apl.washington.edu/zhang/IDAO/seasonal_outlook.html.

