7/3/2008 outlook of 9/2008 Arctic sea ice by Jinlun Zhang <zhang@apl.washington.edu>

The predicted ensemble median of September 2008 ice extent is 4.6 million square kilometers. This is based on ensemble predictions starting on 7/1/2008. 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 Zhang et al. (2008)
http://psc.apl.washington.edu/zhang/Pubs/Zhang_etal2008GL033244.pdf

Figure 1 shows the monthly variations of ice extent over January–September 2008 from these seven ensemble members and their ensemble median. Results for January–June are from the retrospective simulation and results for July–September are from the ensemble predictions (prediction range is 7/1 – 9/30/2008). The ensemble median is considered to have a 50% probability of occurrence and the ensemble median ice extent for September 2008 is 4.6 million square kilometers, slightly greater than that in September 2007 at 4.3 million square kilometers.

Figure 2 shows the predicted September 2008 ice thickness from these seven ensemble members and ensemble median and standard deviation (SD). The white line represents the satellite observed September 2007 ice extent and the black line the predicted September 2008 ice extent. The spatial ensemble median ice thickness distribution (Figure 2h) is most likely to occur in September 2008, which suggests that most of the Pacific sector is likely be ice free this summer as in summer 2007. Figure 2g suggests that if the wind and thermal forcing in July–September 2008 is close to that in 2007, the North Pole would be close to ice free. Additional prediction results and analysis may be found at our web page:
http://psc.apl.washington.edu/zhang/IDAO/seasonal_outlook.html.
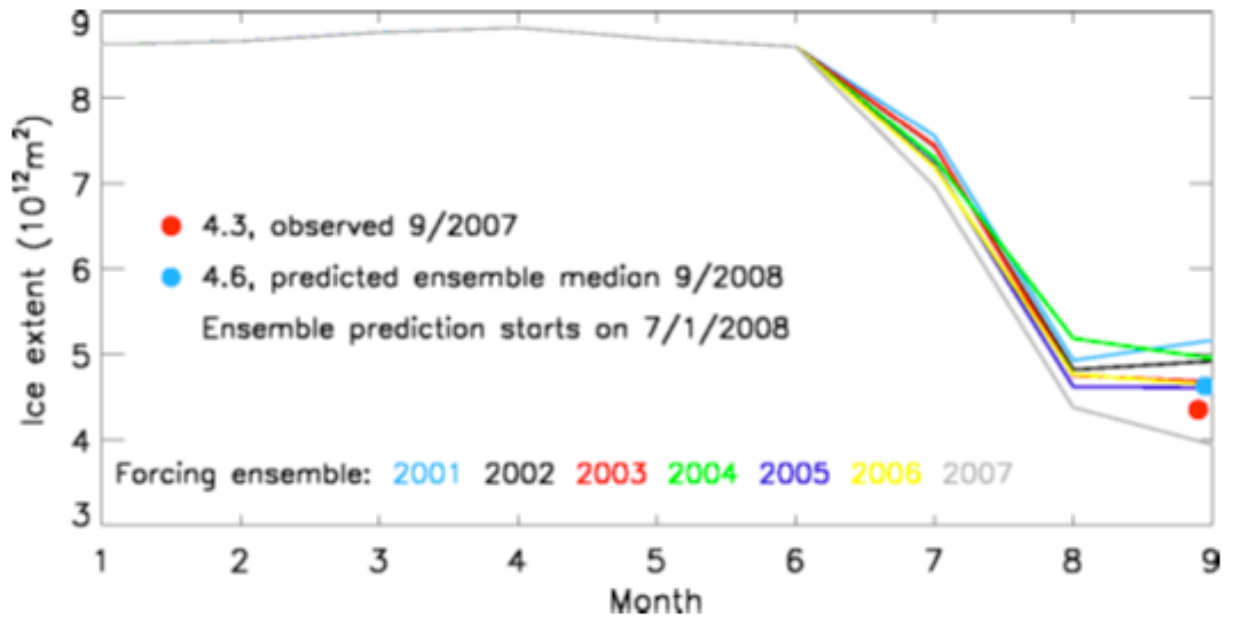
The two figures are below:

Figure 1: Monthly ice extent over January–September 2008 from seven ensemble members and their ensemble median. Results for January–June are from a retrospective simulation and results for July–September are from ensemble predictions (prediction range is 7/1 – 9/30/2008). The ensemble median is considered to have a 50% probability of occurrence and the ensemble median ice extent for September 2008 is 4.6 million square kilometers, slightly greater than that in September 2007 at 4.3 million square kilometers.
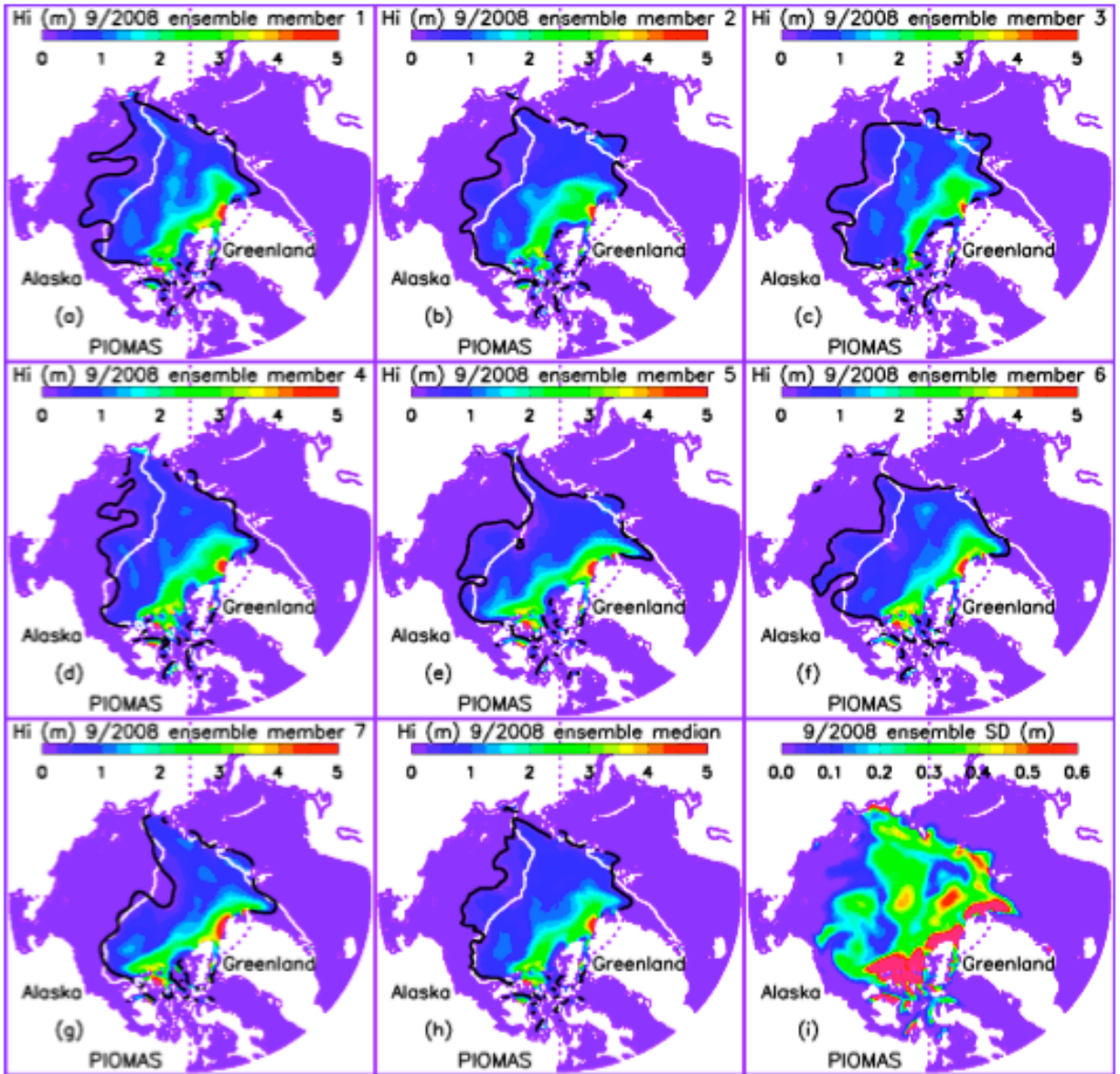
Figure 2: September 2008 mean sea ice thickness predicted by seven individual ensemble members, ensemble median ice thickness, and ensemble standard deviation (SD) of ice thickness. The spatial ensemble median ice thickness distribution (Figure 2h) is most likely to occur in September 2008, which indicates that most of the Pacific sector is likely be ice-free this summer as in summer 2007. Figure 2g suggests that if the wind and thermal forcing in July–September 2008 is close to that in 2007, the North Pole would be close to ice free.