Ensemble Predictions of September 2008 Arctic Sea Ice Conditions (Summary)
Recommended by an international workshop supported by the US SEARCH and the European DAMOCLES program, a community-wide Arctic Sea Ice Outlook for September 2008 was being initiated (http://www.arcus.org/search/seaiceoutlook/). We participated in this initiative by conducting ensemble seasonal predictions of arctic sea ice extent and spatial distribution of ice thickness and concentration. We have also set up a web page to support this activity (http://psc.apl.washington.edu/zhang/IDAO/seasonal_outlook.html). 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, Zhang et al., 2008), which is forced by NCEP/NCAR reanalysis data and assimilates 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. More details about the prediction procedure can be found in Zhang et al. (2008).

The September 2008 sea ice extent was predicted to be 4.5/4.6/5.1 million square km in May/June/July, based on the ensemble median of the 7 ensemble members. The NSIDC reported that the minimum summer 2008 ice extent is 4.52 million square km. To illustrate the results, the September 2008 sea ice conditions predicted in June are presented, followed by a summary.