

## June Outlook

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**End of May 2011:** Our statistical prediction is made with PIOMAS model data from the average of May 2011. We are using May data for the 23 years 1988 through 2010 to fit the regression model and then the ice conditions for 2011 to make the predictions. The best single predictor is the fraction of the area with open water or ice less than 1.0 m thick, G1.0. This predictor explains 77% of the variance. **The predicted extent in September is 4.89 +/- 0.42 million square kilometers.** This is very near to what was observed last September, however the error bars are still quite large, though smaller than that of the trend line prediction over the same years (5.01 +/- 0.56 million sq km). The regions most influential in making the prediction are in the Beaufort Sea and the Kara Sea (right map in the figure). These regions have greater than normal fractions of thin ice (less than 1.0 m thick, middle map) and the G1.0 variable in these regions has a significant correlation with the September ice extent (left map). The top figure shows the time series of the observed September ice extent (solid line), the predictions of the model for past years (cyan diamonds), and the prediction for this year (orange star and error bars). The error bars are the standard deviation of the error in the fit of the regression. The trend line (dashed) and the prediction of the trend line (black star) are also shown.

Other model variables tested include the mean ice thickness, the ice concentration, and the fractional area of ice less than 0.4 m or 1.9 m thick. They had a lower correlation with the September ice extent. For more details on the method see: Lindsay, R. W., J. Zhang, A. J. Schweiger, and M. A. Steele, 2008: **Seasonal predictions of ice extent in the Arctic Ocean**, *J. Geophys. Res.*, 113, C02023, doi:10.1029/2007JC004259.

# Predictions for September 2011 from May From 2sst run

## Observed and Predicted Ice Extent from the Sea Ice Index

