

## 2010 Sea Ice Outlook June Report based on May Data

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**End of May 2010:** Our prediction is made with model data from the end of May 2010. We are using May data for the 22 years 1988 through 2009 to fit the regression model and then the ice conditions for 2010 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 79% of the variance. **The predicted extent in September is 4.44 +/- 0.39 million square kilometers.** This is much lower than 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 (5.15 +/- 0.57 million sq km). The one-standard-deviation error bar includes the record low of 2007. The regions most influential in making the prediction are in the Beaufort Sea, the Barents Sea, and the Kara Sea (right map in the figure). All of these regions have greater than normal fractions of thin ice (middle map) and the G1.0 variable in these regions have a significant correlation with the September ice extent (left map). The 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.

The mean ice thickness predicts more ice but the error is larger, 4.76 +/- 0.51 m sq km ( $R^2 = 0.63$ ). The region most influential in the prediction is the thin ice in the Beaufort Sea and along the Canadian Archipelago to Fram Strait. The ice concentration is a poor predictor this time of year. The prediction using ice concentration is lower than that from the G1.0 predictor and gives 4.37 +/- 0.47 m sq km ( $R^2 = 0.69$ ) and the regions most influential are small places in the Kara and Barents Seas.

# Predictions for September 2010 from May

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

