PAN-ARCTIC OUTLOOK
June Report based on May Data

Dr. Timothy Folkerts
Barton Community College

1. Extent Projection   4.4 ± 0.2 million km^2

2. Methods/Techniques

A variety of publicly available monthly data from 1978 forward (including area, extent, volume, regional extent, NCEP Reanalysis Data, and various climate indices) was collected.   For each year, monthly data up to 24 months before the September minimum extent was organized and correlated with the minimum extent. Multiple regression analysis was also performed on a variety of combinations, seeking sets of data that correlate well, while trying to avoid overfitting.

These simple regression and multiple regression results were then used to predict the minimum extent for September 2012. Once several different predictions were made using different input paratmeters, the predictions were combined to come up with a final prediction.

More details can be found at https://sites.google.com/site/sciencestatsandstuff/sea-ice

3. Rationale

It is reasonable to assume that past conditions of the ice, the Arctic climate, and wide-area climate indices should be correlated with future ice conditions.   Because these relationships can be subtle and complex, statistical models combining multiple parameters are expected to be more effective than individual monthly data at making predictions.

4. Executive Summary

This analysis is based purely on a statistical analysis of climate and ice data, using commercial statistical software.   The goal was to use techniques and data available to the public.

5. Estimate of Forecast Skill (if available).
The regression models typically have R^2 values of 0.7 to 0.9 for the September minimum extent from the period 1979 – 2010, with typical RMS errors of the fits of approximately 0.2 million km^2.

Pan-arctic Outlook contributions should include:

1. **Extent Projection**
   Provide a sea ice projection for the September monthly mean arctic sea ice extent (in million square kilometers).

2. **Methods/Techniques**
   Provide the type of estimate (heuristic, statistical, ice-ocean model ensemble runs, etc.).

3. **Rationale**
   Include a short paragraph on the physical rationale for the estimate.

4. **Executive Summary**
   Provide a short paragraph that summarizes your outlook contribution in two or three sentences.

5. **Estimate of Forecast Skill (if available)**
   If possible, please include any estimates of forecast skill, uncertainty, or error associated with your prediction. This year, we will add error estimates to the summary bar chart of outlook estimates, as appropriate.

We would also like to expand discussion of ice thickness in the monthly reports, so please include any relevant information on ice thickness (or age), if available.