

## PAN-ARCTIC OUTLOOK As of July 13, 2010

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### 1. Extent Projection

5.6 million square kilometers

### 2. Methods / Techniques

Heuristic: judgment based on recent observations, e.g., previous winter AO, ice conditions observed during NPEO hydro surveys, atmospheric and ice surface conditions observed with the NPEO buoys and Web Cams, recent ice trajectories.

### 3. Rationale

- The winter AO was negative, which we feel contributed to the relatively great amount of deformed ice we directly observed in the central Arctic Ocean in April. Consequently, we think the central Arctic ice, in spite of still being predominately young, tends to be thicker than in recent years.
- Recent buoy trajectories in the central Arctic Ocean also have a more anticyclonic, export adverse, trajectory than in recent years, and our buoys don't appear to be crossing towards Fram Strait as fast.
- Our NPEO Web cams show more melt ponds than last year, but less than in other recent years. This is in spite of there having been more snow in April 2010 than the previous 2 springs. For the most part, the ice at both 2010 Web Cam locations looks fairly well drained, presumably contributing to increased albedo
- As evidenced by the number of times we have seen the 2010 melt ponds freeze over already, we think the early summer input of heat to the ice from the atmosphere is less than average.
- Based on some AXCTD drops done in May, we think there is some ocean heat from 2009 directly below the mixed layer in the Beaufort Sea. However, the mixed layer was reasonably deep (40-50 m) this spring so if there has been enough melt in quiet to normal wind conditions, a new shallower seasonal pycnocline may be established and the ocean heat may be trapped for the rest of this summer.

### 4. Executive Summary

Last month's estimate of 5.3 million square kilometers was based on considering the 2009-2010 winter AO and ice conditions observed in the field in April. The conditions observed with the Web Cams, buoy trajectories, and the present trends in ice extent have prompted us to raise our estimate to 5.6 million square kilometers, recognizing that the Arctic weather in the next couple of months will trump all.