Report on Ship Observations: July 2010
Compiled by Jennifer Hutchings. Observations provided by Hongjie Xie on the Xuelong, Sebastian Gerland on the Lance, and the Polarstern meteorologist team.

Three ships reported observations this month, the Xuelong in the Chukchi Sea, the Lance near Svalbard, and the Polarstern in the Greenland Sea.

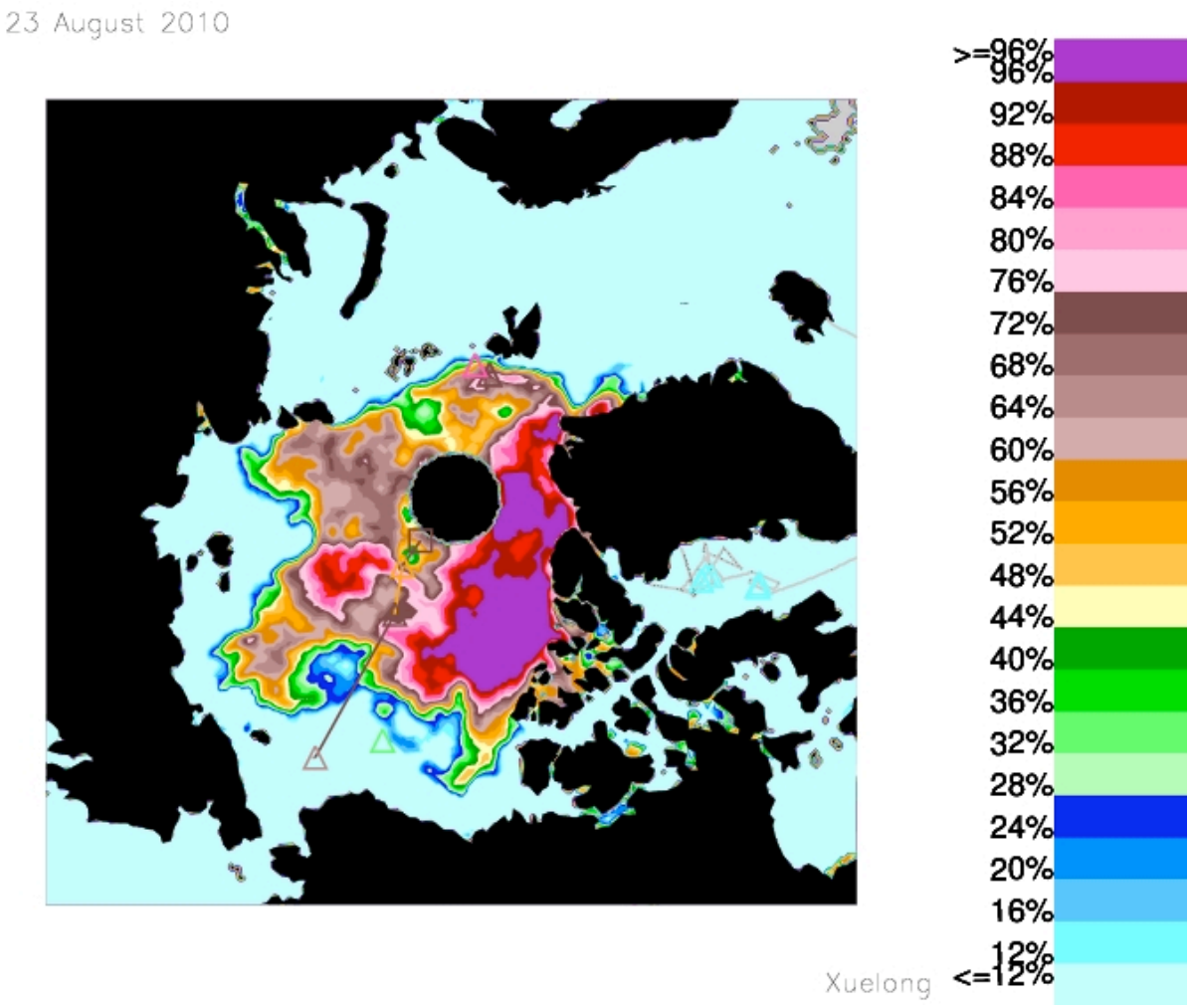

Figure 1: Passive microwave, NASA Team near real time ice concentration on August 23th (This is the date of most recent obervations from the Polarstern, and the single observation from the Lance) from NSIDC. Colour scale is percentage ice concentration. Ice concentration observations from the Xuelong, Polarstern and Lance are overplotted, for July and August 2010. When no ice is observed, the track is plotted as black. Symbols show predominant ice type: New ice (square), First year ice (triangle), Multi-year ice (diamond), no ice (cross). Please note, ship observations are not reported for the same time as the satellite data. Observations in the southern Chukchi date from late July.

Chukchi Sea

The Xuelong crossed the Bering Strait on, and progressed on a northbound cruise track. Several ice stations were made, and a two week station made at the northern most point on the cruise track. The ships travel north was relatively easy

Ice concentration observations were not surprising, following satellite passive microwave estimates reasonably well. The main pack ice, in the Chukchi Sea, was becoming less consolidated (<80% cover), and level ice was reported to be 1-2m thick. Almost all the ice encountered has been reported as first year. However there is some ambiguity in the Chukchi observations, where discussions from different observers on the Xuelong suggest that second year and multi-year ice may have been encountered. The ice was not reported as heavily deformed (ridge fractions ranging from 5-10%). At the south-west reporting location (see figure 1) some multi-year ice was encountered and some ice was more heavily ridged (30% ridged). Melt ponds were observed on all ice, with variability in coverage between 20-40%), less melt pond coverage at the most southerly latitudes where ice was at a later stage of melt.

A detailed log was emailed from the ship, and you can read this at http://research.iarc.uaf.edu/~jenny/ShipObs2010/xuelong.php

Spitzbergen

The RV Lance is travelling in the vicinity of Spitzbergen. First year ice has been reported at 60% concentration, and 1 to 1.5m thick. The ocean is freezing between floes, with 20% grease ice cover. Floes are large, 500m to kilometers in size.

Baffin Bay

The Polarstern left Iceland on August 1 for a cruise in Baffin Bay. The Polarstern has mostly observed heavily melted ice remnants (20-100m wide cakes), at low concentration, in isolated locations during this cruise. Several icebergs have also been spotted.

A note of location of MY ice

This is an interesting year for MY ice. Winter winds were favourable for drift of old ice into the Chukchi Sea. This had not happened for several year previously. This ice has been drifting westward, taking drifting buoys with it into the East Siberian Sea. Even so, with this

large extent of MY ice (larger than 2007 summer), the ice is retreating to become one of the third smallest September ice extents. Observations from the Louis S. St. Laurent in September 2009 (by myself and Alice Orlich), indicated a heavily melted MY ice pack in the "tail" of the Beaufort Gyre – that is the part of the MY ice pack extending into the southern Beaufort. This ice then moved into the Chukchi during winter 2009-2010. I have watched this with interest – hoping ship reports could tell us what the fate of this ice will be this summer. From the IABP drift, it would appear it might survive the summer.

Ship observations from the western Arctic have indicated that it has not been an unusually sunny summer. Temperatures have hovered below zero in July and August, and there has been plentiful snow.

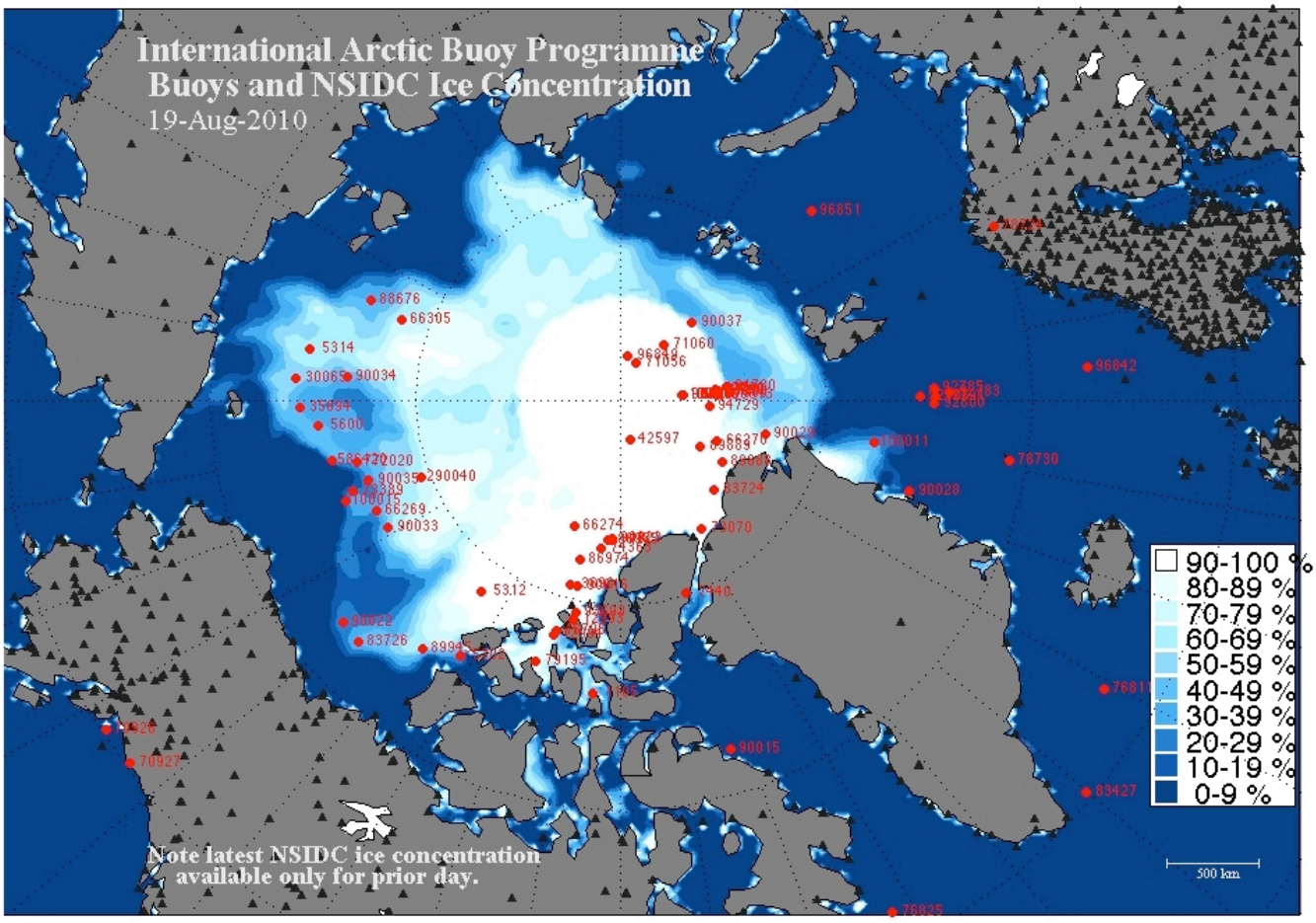

Figure 2: Image provided by the International Arctic Buoy Program.