

2014 REGIONAL OUTLOOK

June Report based on May Data

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The present situation in the Lincoln Sea - Nares Strait region is the result of developments from December 2013 to present. By the end of that year major drift of ice out of the Lincoln Sea took place whereby forming the characteristics of moving ice in the Lincoln Sea towards the Nares Strait within a large arch extending from the coast of Ellesmere Island to the northwest coast of Greenland, reaching towards north almost to the edge of the Sea. This drift of multiyear ice involved a large floe that got stuck in the Robeson Channel (the northern part of the Nares Strait) forming a 23-km wide barrier that stopped the advection of ice completely. This happened on 5 January 2014. Two-third of the floe broke off as part of the process and drifted southwards reaching the northern entrance to the Kane Basin at an average velocity of about 35 km/day. Here, an ice bridge formed in the period 8 to 11 January off the coast of Darling Peninsula just south of the well-known sill. By this the drift from north ceased leaving the Nares Strait open all way south with new ice being formed at the site of the ice bridge.

North of the ice bridge new ice formed a coast-to-coast ice canopy subject to the low temperatures of the year. Thus, the automatic weather station at Hans Island measured weekly average temperatures below minus 25°C during the first 13 weeks of 2014 (until the end of March), with some weeks close to minus 30°C. We expect that the ice formed north of the ice bridge has reached a thickness of two to two and a half meter.

Most of the winter experienced moderate winds from north but during May 2014 southern winds appeared in 80% of the time without giving an impact on the solid ice in the Nares Strait north of the ice bridge. However, after many days the ice in the Lincoln Sea moved slightly northwards resulting in a great number of leads to be covered by new ice.

The first week of June shows an average temperature of minus 3°C with narrow leads at the usual places indicating the forthcoming break-up of the ice canopy. One place is at the coast of the southwest corner of Washington Land. Based on previous experiences we estimate with this 'signal' that the ice in the Kennedy Channel will break with the disappearance of the ice bridge by the beginning of July. What will happen to the blocking floe in the Robeson Channel we do not know and

with the observations with a spatial resolution of 500 meter available (MODIS and Radarsat) we cannot observe the melting process that undoubtedly takes place. When it actually happens large quantities of first-year and multiyear ice will drift into the North Water and the Baffin Bay including quantities from the Lincoln Sea.

Figure Caption

The region of the Lincoln Sea and the Nares Strait showing the blocking floe at 82°N and the ice bridge at 79.8°N with floes that originate from the large floe that created the blocking one. Note the position of Hans Island in the Kennedy Channel at about 80.8°N with floes accumulated towards the coast of Greenland and Franklin Island 20 km south of Hans Island. Black areas north of the ice bridge represent first-year ice formed after the establishment of the ice bridge.

