

# **2011 Regional Sea Ice Outlook Lincoln Sea and Nares Strait June Report**

**Preben Gudmandsen**  
Danish National Space Institute Technical  
University of Denmark

During the first week of February ice transport out of the Nares Strait into the Baffin Bay ceased with the formation of the 'Icebridge' in the southern Kane Basin – nearly at the same place as many times before. With a low southern wind and the remarkable low temperatures in the following period new ice formed in front of the Icebridge at depth up to 38 km, Figure 1. It shows a canopy of first-year and multiyear ice with refrozen leads north of the Icebridge and just in front of it with a wind pattern on the open water extending several kilometre south into the North Water..

By the end of February all ice transport ceased along the Strait up to a line across the Robeson Channel from Kap Brevoort (81.980°N, 60.272°W) to the Lincoln Bay on the coast of Ellesmere Island. North of that line only small north-to south movements has taken place in the Lincoln Sea caused by alternating southern and northern winds.

Exceptional low temperatures during the following three months have strengthen the Icebridge and the associated frontal area of new ice so that they may withstand strong northern winds down the Strait, and judging from observations in 2006 we could expect that the Icebridge will last until the beginning of July. However, the recent rather abrupt increase of the air temperatures from -5°C to +1°C during 1½ day (measured at Hans Island,) and continuing temperatures around zero may change the situation if they continue in a longer period.

Subject to the very low temperatures that was experienced since the last weeks of January the overall thickness of the ice in the Lincoln Sea has increased associated with a moderate compaction with small volumes of ice entering from the Arctic Ocean.

When the Icebridge disintegrates drift will slowly begin all along the Nares Strait. However, the 2006-experience shows that the frozen ice canopy from shore to shore in the Hall Basin and the Robeson Channel is maintained for a while to break open when melting temperatures reach the area – at a delay of about two weeks. After that, ice in the Lincoln Sea will begin moving southwards into the Strait at velocities increasing with time.

[Monthly average air temperatures measured at Littleton Island in the Smith Sound (78.368°N, 72.872°W): were -24.1°C and -22.3°C during February and March. Measurements ceased by 4 April but temperatures measured on Hans Island in Kennedy Channel (81.827°N, 66.576°W) about 200 km north of the Icebridge show a continuation of the cold period with -25.3°C in April and -10.7°C during the first 22 days of May].

