

The 2009 Sea Ice Outlook

Lincoln Sea and Nares Strait.

In 2009 the state of sea ice in the region has been dominated by the formation of an ice barrier in the southern Lincoln Sea by 16 January blocking the export of sea ice southwards into Nares Strait during a 5.5-month period. Sea ice present in the Strait - including multiyear ice - moved southwards after the blockage to pass Smith Sound into North Water and Baffin Bay by the end of February. This was followed by new ice formation in the open water below the barrier, drifting southwards into the Strait and Baffin Bay, a process that continued until the summer-melt began by early June. In the course of June all Nares Strait became ice-free so that Arctic Sunrise, a Greenpeace ship, could anchor at the barrier at 82.6 N by the end of the month.

A consequence of the establishment of the barrier is that the amount of multiyear ice that entered Baffin Bay is very much reduced relative to 'normal' export, perhaps by a factor of 0.5, but it also means that the ice remaining in the Lincoln Sea after the barrier formation increased in thickness being subject to low winter temperatures during four to five months. This is likely to partly remedy the situation in Lincoln Sea after the great outflow in 2007 and 2008.

This great outflow – twice the average outflow in the preceding 11-year period – was due to the fact that no barrier formed in Lincoln Sea and the Strait during 2007 and that the stoppage of export in 2008 lasted only two months and in the late part of the winter. Consequently, the Lincoln Sea lost a great deal of the thick multiyear ice normally present, resulting in a lower probability of formation of ice barriers in the future and thereby an increase of the discharge of multiyear ice from the Arctic Ocean via Lincoln Sea and Nares Strait into Baffin Bay.