

ANNUAL MEETING - JUNE 1967Ice conditions in the Northwest Atlantic Ocean in 1966

by A.A.Lebedev
PINRO, Murmansk

In 1966, general atmospheric circulation was characterized by the prevalence of zonal macrosynoptical processes over the Pacific Ocean and of meridional processes over the Atlantic Ocean. Cyclonic activity over North America and the anti-cyclonic character of the weather in the North Atlantic resulted in the distribution of relatively warm water masses from temperate and tropical oceanic latitudes over the Northwest Atlantic.

Due to these features of atmospheric circulation, the cooling of water masses in winter, as well as the process of ice formation, were delayed in the area of the Labrador Current; in summer, water heating (due to solar radiation) ran very intensively and therefore the edge of ice quickly retreated to the northwest. At the same time, the movement of ice from the Baffin Sea to the Davis Strait, Labrador Sea and to the area of the Great Newfoundland Bank decreased. An unusually small number of icebergs was observed on the navigation routes in the North Atlantic.

Based on the reports of the meteorological service of England, the International Ice Patrol, the Danish Ice Service and Soviet fishing vessels, the monthly ice conditions in the Northwest Atlantic are discussed in this paper.

In the first 10 days of January, little floating ice was observed in the central Labrador fishing area and on the northeast slope of Hamilton Bank. Every day, about 50 icebergs were recorded off Cape Farewell.

In February, the edge of the floating ice on the North Newfoundland Bank near the Belle Isle Island stretched directly along the coast. A "tongue" of drifting Arctic ice was observed along the coast of southwest Greenland as far as 63°20'N.

In March, floating ice was found 40-60 miles east of the southern extremity of Labrador and Newfoundland. Only single icebergs were recorded on the Great Newfoundland Bank in March. In the Gulf of St. Lawrence ice occurred south and west of the Magdalen Island, in the northeast part of the Gulf as well as in the mouth of the St. Lawrence River (Fig. 1).

In April, the ice edge was found 20-40 miles to the east of Newfoundland. Broken ice was observed in White Bay Sound and in Belle Isle Strait. Some icebergs were seen in the area of Fogo Island. The area of the Gulf of St. Lawrence was free of ice except for the most northeast part of the Gulf. The quantity of floating ice off southwest Greenland was still decreasing and up to 50 icebergs were recorded daily within visual limits.

In May, in the area of south Labrador a belt of ice 20-40 miles in width was observed and separate icebergs were seen occasionally. The ice edge near central and north Labrador and in the Davis Strait were 60 miles (on the average) and 30 miles respectively farther to the west than usual. The St. Lawrence Gulf was free of ice. The width of the "tongue" of drifting ice off southwest Greenland was about 30-50 miles and up to 15 icebergs were recorded daily in this area.

By the middle of June, the south Labrador fishing area became almost free of ice. However, the ice edge displaced northwestward somewhat slower than in May. Icebergs were more numerous on the eastern slope of the Great Newfoundland Bank.

In July, the ice edge ran directly along the coast of north Labrador and in Davis Strait (along 60°W). Icebergs were also observed in Belle Isle Strait. Broken Arctic ice was found near Cape Farewell.

In the first 10 days of August, the area of Davis Strait adjacent to the northern coast of Labrador became free of ice. In Davis Strait and Baffin Sea floating ice was observed west of 60°W only. The northern part of Baffin Sea south of the Smith Strait was free of ice. Icebergs and ice were still recorded off Cape Farewell.

In September, the area of floating ice occupied in the Davis Strait and in the Baffin Sea decreased considerably. Icebergs only were seen near the southwest extremity of Greenland. In the first half of September, floating ice was observed only adjacent to the Cumberland Peninsula. As many as 15 icebergs were recorded daily in the coastal area of southwest Greenland.

During the first half of November, floating ice was still found near Baffin Land. Every day, about 16 to 50 icebergs were seen along the southwest coast of Greenland.

In December, ice occupied almost the whole of the Baffin Sea and was observed in the western part of Davis Strait and in the coastal zone (60 miles in length) of Labrador as far as Hamilton Inlet. After the middle of December, the formation of new ice was reported over the shallows of the St. Lawrence River. Icebergs were seen in Belle Isle Strait and off the southern extremity of Greenland. At the end of the second 10-day period floating ice in the coastal Greenland waters reached as far as Cape Farewell.

Thus, in 1966, the ice edge in the Northwest Atlantic was found much farther to the west than usual. The fact that ice, this year, was in smaller quantities and icebergs were rare, made favourable conditions for navigation. It is interesting to note that the slackening of the influx of Arctic waters to the Labrador Current was apparently followed by a relaxation of the inflow of Atlantic waters from the Gulf Stream - North Atlantic Current system in the Norwegian, Greenland and Barents Sea. In 1966, water temperatures in the North Cape Current in the Barents Sea were abnormally low and ice conditions were most unfavourable.

A supplementary analysis of the distribution of ice over the last five years shows that the 1965-66 ice season in the Northwest Atlantic is characterized by having the least quantities of ice. This peculiarity was especially pronounced in the winter.

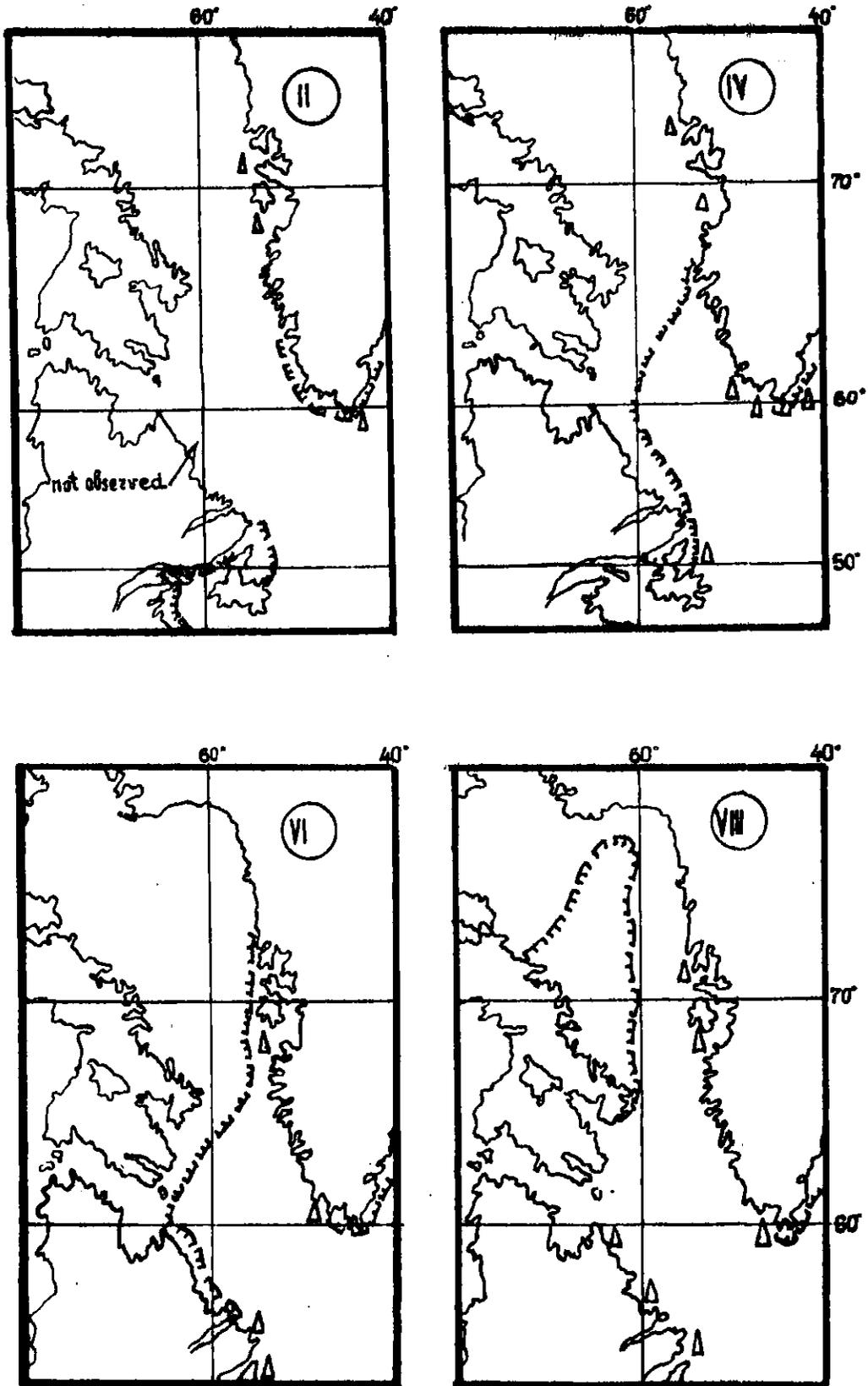


Fig. 1. Ice conditions in the Northwest Atlantic in February, April, June and August 1966. Broken line indicates the position of the ice margin. Triangles indicate icebergs.