

LONG TERM FLUCTUATIONS OF SEA ICE AREA IN THE NORTHERN HEMISPHERE (ABSTRACT)

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A series of annual means of sea ice area for the period of 1953–1989 in the Northern Hemisphere based on a data set by J.E. WALSH, shows that a remarkable discontinuous change occurred in 1972–1973. Before 1972 the sea ice area had been generally above normal except in the early years of the 1960s, since 1973 it has been below normal with a large yearly change.

Changes of sea ice area in 4 regions have following features respectively. The largest change is on European side which mainly reflects that of the Northern hemisphere as a whole. On the Alaskan and the Siberian sides the sea ice area began to decrease slightly after about 1980. On the Canadian side, after a decrease of sea ice area in the 1970s, it has increased in the 1980s.

According to comparison between time series of sea ice area and that of meteorological data (height of 500 hPa isobar), a wide area of sea ice corresponded to low height of the 500 hPa isobar in the 1960s and narrow area to high height in the 1980s, but this correspondence was not good in the 1950s and 1970s. Time-lagged correlations between them indicate a 4-year lag of sea ice area in the Northern Hemisphere, but no lag in the separate regions.

A comparison between mean sea ice area and mean 500 hPa isobaric height for the periods 1953–1972 and 1973–1989 shows that a descent of height in 1973–1989 corresponded to an increase of sea ice area on the Canadian side, but not on European side.

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