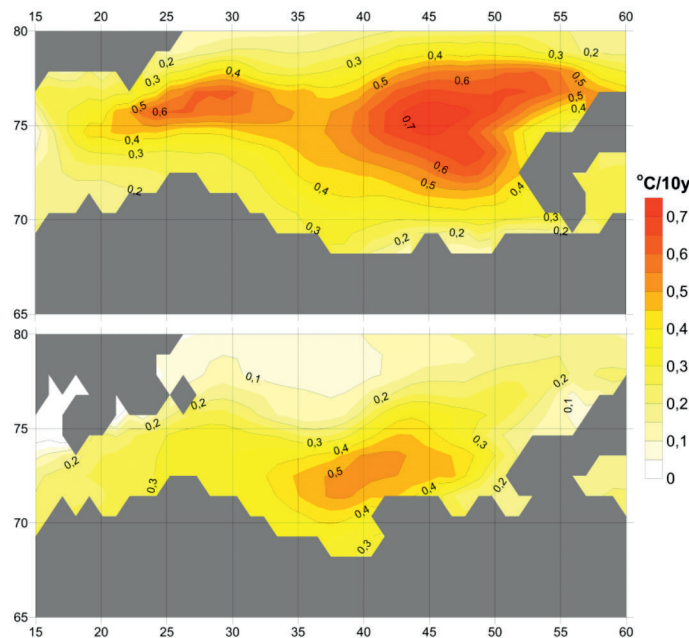


# Interannual variability and predictability of the Barents Sea temperature

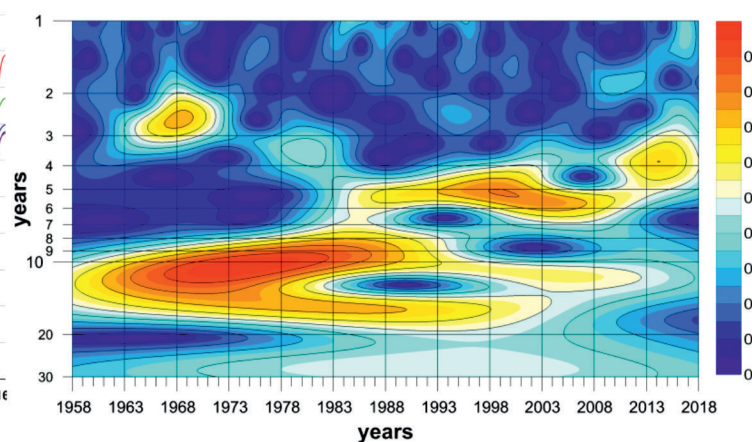
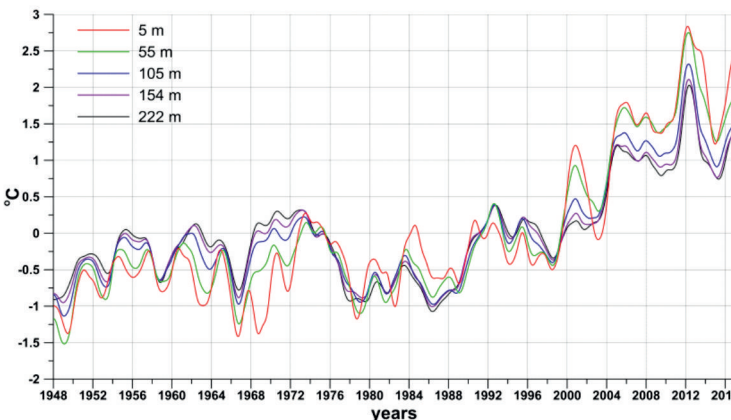


Serykh I.V., Kostianoy A.G.

Analysis of the monthly average temperature data of the Barents Sea at various depths for the period 1948-2016 showed its growth, which accelerated significantly since the mid-1980s. Against the background of this growth, interannual variability was found over periods of 2 to 7 years and about 10 years. It is shown that periods of this variability can be associated, respectively, with El Nino - Southern Oscillation and the North Atlantic Oscillation. It has been hypothesized that the Global Atmospheric Oscillation may be the synchronizing mechanism of the interannual variability of the tropics of the Pacific Ocean, the North Atlantic and the Barents Sea. Interdecadal changes with a period of about 15 years were also found, which are most likely related to surface temperature anomalies carried by the North Atlantic Current.



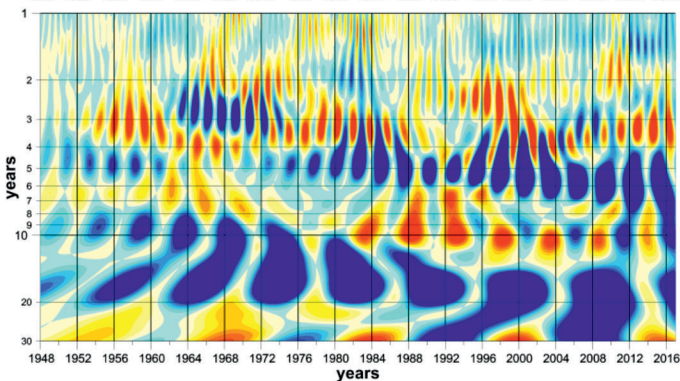
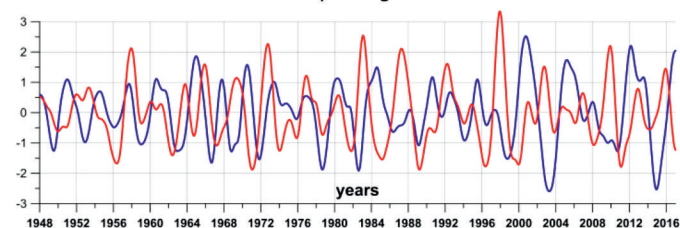
°C/10y



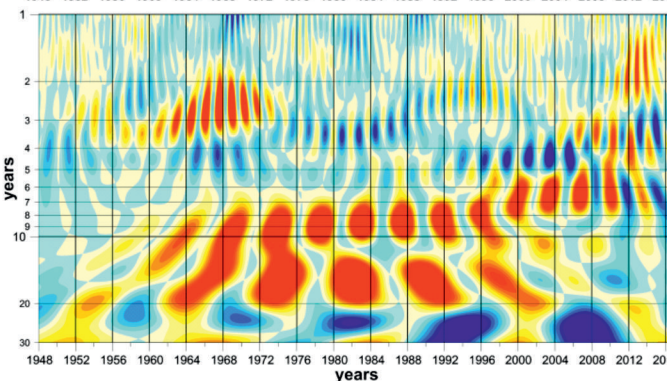
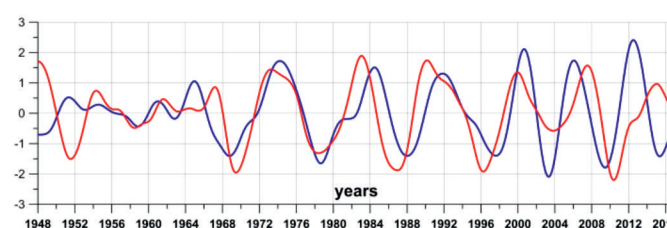
Fields of changes in the average monthly temperature of the Barents Sea (°C over 10 years) at depths of 5 meters (above) and 105 meters (below) calculated from the linear trends of its monthly average anomalies for 1948-2016.

Series of monthly average temperature anomalies for the Barents Sea at depths of 5, 55, 105, 154 and 222 meters for the period 1948-2016 after applying the 2-year low-frequency Butterworth filter.

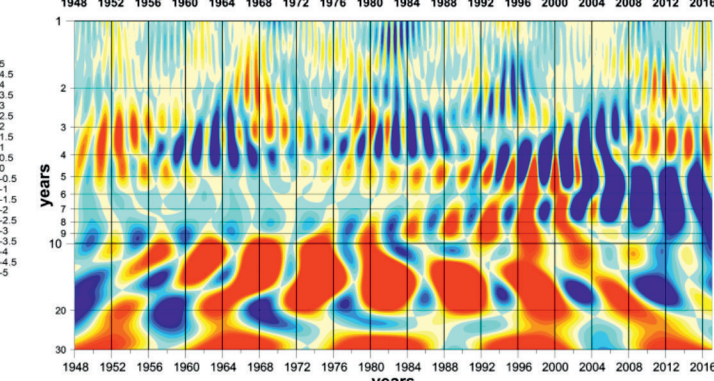
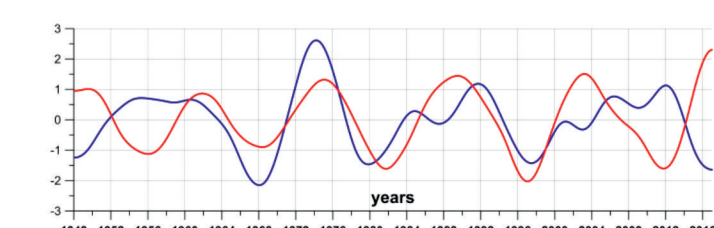
Picture of the wavelet transform of the monthly average temperature anomalies of the Barents Sea at depth of 5 meters for the period 1948-2016. The preliminary normalization of the series to their standard deviations was made.



Interannual variability of the Global Atmospheric Oscillation Index (red) and monthly average temperature anomalies of the Barents Sea (blue) at a depth of 5 meters for the period 1948-2016 after applying the Butterworth bandpass filter from 2 to 7 years, and the cross-correlation picture of their material transformations.



Interannual variability of the North Atlantic Oscillation Index (red) and monthly average temperature anomalies of the Barents Sea (blue) at a depth of 5 meters for the period 1948-2016 after applying the Butterworth bandpass filter from 7 to 10 years, and the cross-correlation picture of their material transformations.



Interannual variability of the North Atlantic Current Index (red) and monthly average temperature anomalies of the Barents Sea (blue) at a depth of 5 meters for the period 1948-2016 after applying the Butterworth bandpass filter from 12 to 16 years, and the cross-correlation picture of their material transformations.