

# Oscillations in abundance of some economically important fishes related to hydro-climate of the Northwest Atlantic



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Analysis of meteorological and oceanographic parameters' oscillations in Northwest Atlantic (NWA) in last 50 years revealed three periods in their development. The first one lasted from the end of 1950s to the end of 1970 – beginning of 1980s; the second one from beginning of 1980s to middle of 1990s and the third one from middle of 1990s to nowadays, it is to be completed soon. These periods and their sequence appear in many-years trend of North Atlantic Oscillation (NAO) index, in temperature variations at the surface and near bottom on the NWA shelf, in volume of the Cold-Intermediate-Layer, in variability of ice covered areas and in shifts of hydrological fronts along meridian. Those variations in environmental conditions are well-coordinated with oscillations of generations' abundance and stocks in some economically important fishes of NWA (Greenland halibut, redfish, cod, thorny skate, Atlantic mackerel, herring). There are presented diagrams of water temperature changes, NAO indices, dynamics of localization of Oceanic Fronts, oscillations in fishes abundance.

## A Scheme of monitoring SST (points 1-19) in the Labrador Current and Gulf Stream action zone and of hydrological fronts locations between 55°N – 70°N

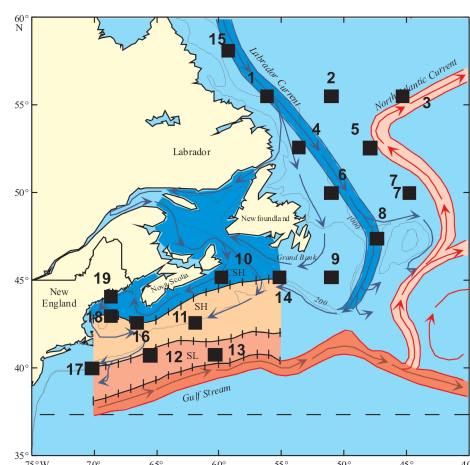


Fig. 1

## Standardized Seasonal Mean (JFM) NAO index (1950-2010)

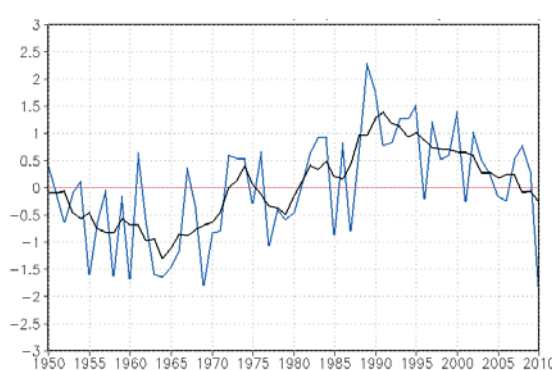


Fig. 2

## SST anomalies in Northwest Atlantic, 1977-2010

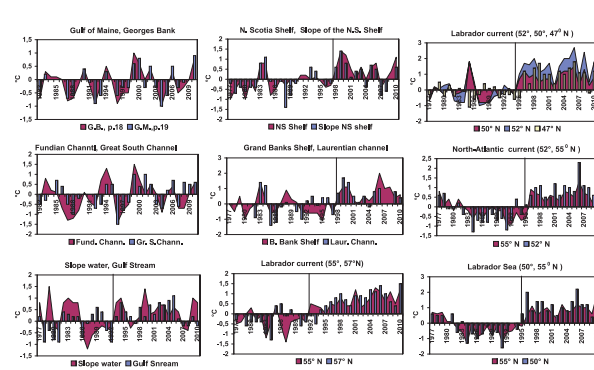
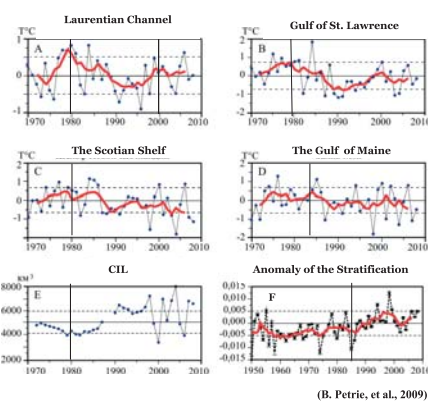


Fig. 3

## Anomalies of bottom temperature in July (A-D), Volume of the Cold intermediate layer-CIL (E) and anomalies of the Index stratification of water masses (F) on the Nova Scotian Shelf



(B. Petric, et al., 2009)

**Particularities:**  
during of positive phase NAO since 1979-83 ??  
- fall of bottom temperature,  
- increase of volume CIL;  
- rise index of water masses stratification

Fig. 4

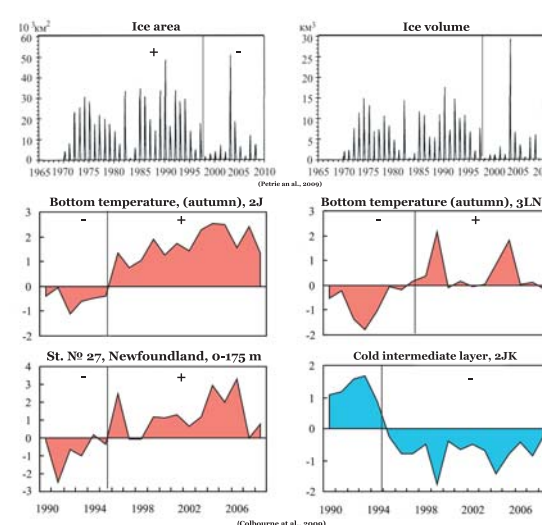


Fig. 5

## The annual means anomalies of indices of hydrological fronts localization in NWA

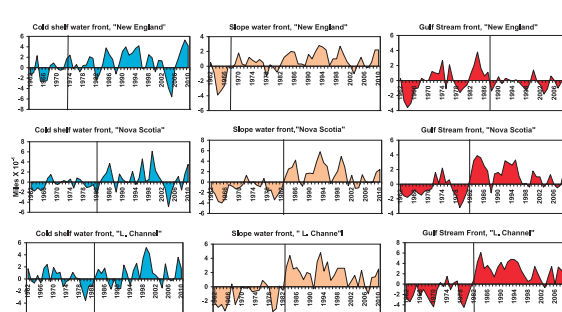


Fig. 6

## North Atlantic oscillation (winter) and front of Slope waters, 1962 - 2008 rr.

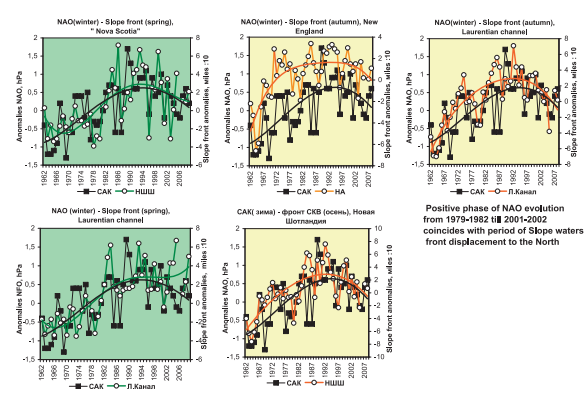


Fig. 7

## North Atlantic Oscillation and Gulf Stream Front, 1962-2008

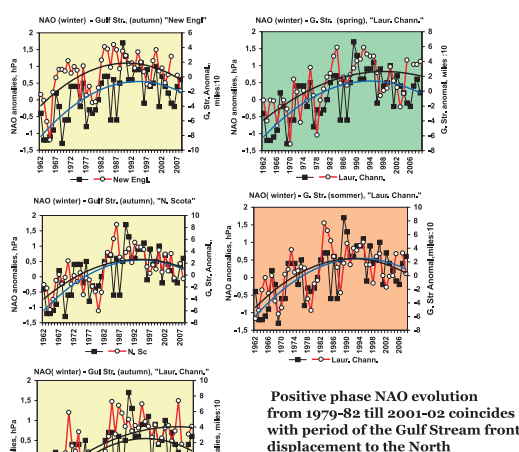


Fig. 8

## Abundance and catch of some commercial species in NWA

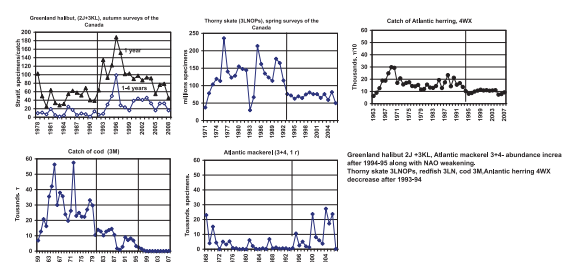


Fig. 9