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Abstract

In this study, the attempt to consider the relationship between sea surface anomalies of temperature (SST anomalies °C) in spawning area of the Norwegian Arctic cod off the Lofoten islands in coastal zone of the Norwegian Sea and modern cod total stock biomass including forecasting assessment of future cod generation success.
Continuous long-term database of the sea surface temperature (SST) was created on the NOAA satellites data. Mean monthly SST and SST anomalies are computed for the selected area on the basis of the weekly SST maps for the period of 1998-2012. These maps were plotted with the satellite SST data, as well as information of vessels, byoies and coastal stations. All data were classified by spawning seasons (March-April) and years.
The results indicate that poor and low middle generations of cod (2001, 2006, 2007) occurred in years with negative or extremely high positive anomalies in the spawning area. The SST anomalies in years which were close to normal or some more normal significances provide conditions for appearance strong or very strong generations of cod (1998, 2000, 2002, 2004, 2005, 2006, 2008, 2009).
Temperature conditions in concrete years influence on different indexes of cod directly. So, the mean temperature in spawning seasons in years 1999-2005 was ≈5,0°C and SST anomaly - +0,35°C, by the way average year significances indexes of cod were: total stock biomass – 1425,0 th.t., total spawning biomass – 460,0 th.t., recruitment (age 3+) – 535,0 mln. units and landings – 530,0 th.t. In spawning seasons 2006-2012 years the average data were following: mean SST ≈6,0°C, SST anomaly - +1,29°C, total stock biomass – 2185,0 th.t., total spawning biomass – 1211,0 th.t., recruitment (age 3+) – 821,0 mln. units and landings – 600,0 th.t.
The SST and SST anomalies (the NOAA satellite data) characterize increase of decrease in input of warm Atlantic waters which form numerous eddies along the flows of the main warm currents thus creating favorable conditions for development of the cod larvae and fry and provide them with food stock, finally, direct influence on forming total stock biomass of cod and helping its population forecast.

Key words: satellite monitoring of SST, Northeast Arctic cod, spawning area, maps of SST, prognosis.