

Northwest Atlantic



Fisheries Organization

Serial No. N4545

NAFO SCR Doc. 01/151

SCIENTIFIC COUNCIL MEETING – SEPTEMBER 2001



Seventh Report of the Joint Russian/German Project “Assessment of
Short-time Climatic Variations in the Labrador Sea”



by

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A Workshop consisting of V. A. Borovkov (PINRO, Murmansk, Russia), M. Stein (ISH, Hamburg, Germany), E. Varlamova and V. Volkova (PINRO, Murmansk, Interpreter) met at the Knipovich Polar Research Institute of Marine Fisheries and Oceanography, Murmansk, during 28-31 August 2001 and 3 September 2001. During the weekend of 1-2 September the meeting was held at the Biological station of PINRO at Palkina Inlet/White Sea. Terms of references and agenda as formulated during the second meeting of this project formed the basis for this Workshop.

Preliminary Results

The major task to be fulfilled during this workshop was to enhance the publication prepared during the previous project meeting in Hamburg for the NAFO June 2001 meeting (Borovkov and Stein, 2001). The biological data were the same as used in the cited paper. As a first step the time series of West Greenland cod recruitment was de-trended (linear trend subtracted), and the resulting time series of variance was correlated with climatic data on surface air temperatures, sea surface temperatures, zonal wind components, and meridional wind components available through the *NOAA-CIRES* Climate Diagnostics Center, Boulder, CO, USA. The correlation analysis was performed via the internet <http://www.cdc.noaa.gov/Correlation>. Regions of significant correlation (95% significance level) were then defined, and time series of surface air temperatures, zonal wind components, and meridional wind components were downloaded from the Climate Prediction Centre of NOAA http://wesley.wwb.noaa.gov/ncep_data/index_sgi62.html. The resulting data were used to perform a stepwise regression analysis to explain the variability of West Greenland cod recruitment (de-trended time-series in logarithmic form) by environmental influences on the survival of young fish during the first two years of life.

It could be shown that the linear trend, incorporated in the West Greenland cod recruitment time-series, explains 55% of variation. About 50% of the inter annual variability in the de-trended recruitment time-series can be explained by the inter-annual variation in surface air temperatures, zonal wind components, and meridional wind components.

We explain the trend in the recruitment time-series by the concurrent trends in the time-series of spawning stock biomass of West Greenland cod, and Icelandic cod, annual sea surface temperature in the Denmark Strait region (63.5-66N, 23-37W), and mean air temperatures for May-July from the West Greenland (62-66N, 49-53W) area.

The **resulting model** (trend plus multi-regression factors) **explains 79%** of variability of recruitment of West Greenland cod (time-series in logarithmic form). This is an addition of 3% to the r^2 of the first model which was evaluated during the Hamburg meeting in 2001, when de-trending of the recruitment time-series was not taken into consideration.

It is planned to publish the enhanced manuscript in primary literature. As a next step we anticipate to present these results at the ICES Cod and Climate Workshop to be held in Copenhagen, Denmark, during April, 2002.

Next Meeting

After considerations about continuation of co-operation between PINRO and ISH scientists, the next meeting will be held tentatively in Hamburg during 2002.

Acknowledgements

The members of the workshop appreciate the administrative help given by the director of PINRO, Murmansk, Dr. Alexander Boltnev and his staff.

This project was funded by the “Programme of Cooperation between the Federal Republic of Germany and the Russian Federation in the field of Agriculture Research 2000/2001 (Project 74)”.

References

BOROVKOV, V.A., and M. STEIN. 2001. Recruitment of West Greenland Cod – Modelling Different Cause-Effect Regimes. NAFO SCR Doc.01/7: 1-8.