

NOT TO BE CITED WITHOUT PRIOR  
REFERENCE TO THE AUTHOR(S)

Northwest Atlantic



Fisheries Organization

Serial No. N4214

NAFO SCR Doc. 00/2

**SCIENTIFIC COUNCIL MEETING – JUNE 2000**



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

by

M. Stein<sup>1</sup> and V.A. Borovkov<sup>2</sup>

<sup>1</sup> Institut für Seefischerei (ISH)

Hamburg, Palmaille 9, D-22767 Hamburg, Germany

<sup>2</sup> Knipovich Polar Research Institute of Marine Fisheries and Oceanography (PINRO)

6, Knipovich Street, Murmansk, 183763, Russia

A Workshop consisting of V. A. Borovkov (PINRO, Murmansk, Russia), M. Stein (ISH, Hamburg, Germany) and G. Nesvetova (PINRO, Murmansk, Interpreter) met at the Institut für Seefischerei, Hamburg during 10-14 April 2000. Terms of references and agenda as formulated during the second meeting of this project formed the basis for this Workshop.



## Preliminary Results

### *Data acquisition*

Data on recruitment (REC) and Spawning Stock Biomass (SSB) of Greenland cod were taken from Hansen and Buch (1986), and Riget (1990). For Iceland cod the corresponding data were taken from Anon. (1999). These data were used to calculate a survival index (SI) for both cod stocks (Borovkov and Serebryakov, 1991; Borovkov and Serebryakov, 1993). As environmental variables which might have an impact on the early stages of development of cod, we consider air temperatures, meridional and zonal winds, and sea surface temperatures (SST). Computation of correlation between  $\ln(\text{SI})$ ,  $\ln(\text{REC})$  and the environmental factors in the Northwestern Atlantic was achieved through the INTERNET page:

<http://www.cdc.noaa.gov/Correlation/>

which provides software and data bases in the Climate Diagnostics Center of NOAA.

Three examples of correlation patterns are given in the following figures.

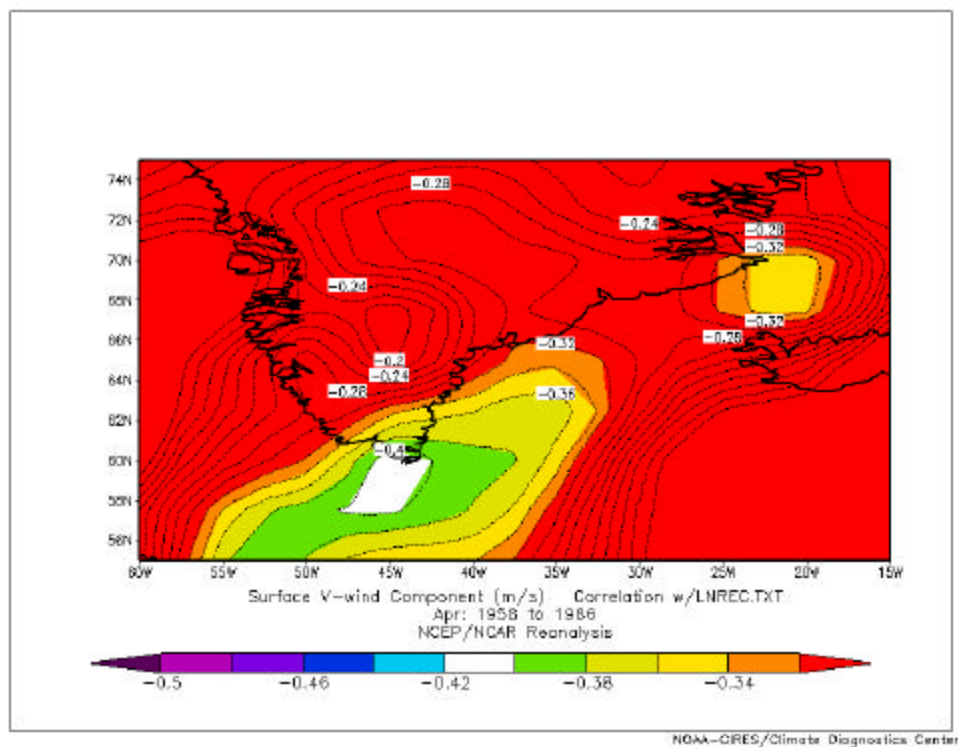


Fig. 1 Correlation pattern of meridional wind component/ Recruitment of Greenland cod (*Gadus morhua*) during April (database 1958-1986).

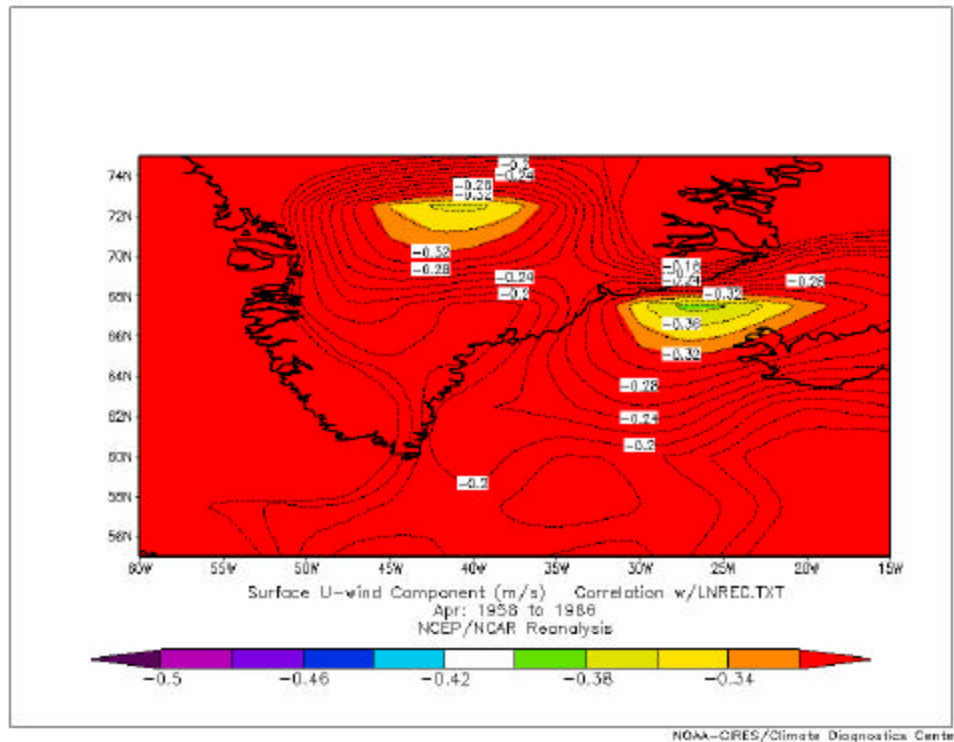


Fig. 2 Correlation pattern of zonal wind component/ Recruitment of Greenland cod (*Gadus morhua*) during April (database 1958-1986).

The examples (Fig. 1, 2) indicate that a negative significant correlation ( $r \leq -0.32$ ) is found between wind components and recruitment of Greenland cod (*Gadus morhua*) during the month of April. This means that recruitment is favoured during this time by northern winds in the region of South Greenland, and by eastern winds in the Denmark Strait region.

During summer (Fig. 3) prevailing east winds (or weakening of west winds) favour recruitment of Greenland cod (*Gadus morhua*). This situation supports the transport of ichthyoplankton of Icelandic cod along the East Greenland shelf and slope area to West Greenland.

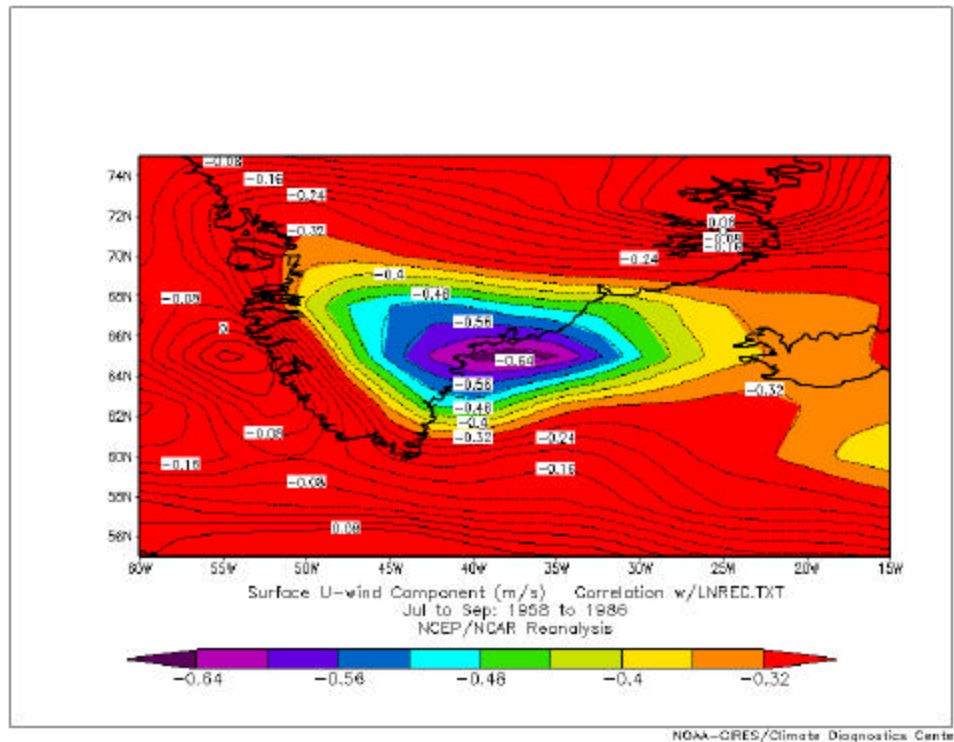


Fig. 3 Correlation pattern of zonal wind component/ Recruitment of Greenland cod (*Gadus morhua*) during summer (database 1958-1986).

#### *Future activities*

Results of this workshop including an analysis of West Greenland Current strength and West Greenland cod recruitment, as performed during a previous workshop within the scope of this project (Stein and Borovkov, 1998), will be presented during the June 2000 Scientific Council Meeting of NAFO.

#### *Next Meeting*

The next Workshop meeting within the scope of the project will be held in PINRO, Murmansk, tentatively during 6 to 10 November 2000.

#### *Acknowledgements*

The members of the workshop appreciate the administrative help given by the director of ISH, Hamburg, Dr. G. Hubold 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*

Anon. 1999. Report of the North-Western Working Group. ICES-CM-1999/ACFM:17.

Borovkov, V. A., and V. P. Serebryakov 1991. Fluctuations of Cod Year-class Strength in the North Atlantic in Relation to the Spawning Stock Biomass and Survival Conditions. NAFO SCR Doc. 91/116, 1-15.

- Borovkov, V. A., and V. P. Serebryakov 1993. Fluctuations of Cod (*Gadus morhua*) Year-class Strength in the North Atlantic in Relation to the Spawning Stock Biomass and Survival Conditions. NAFO Sci. Coun. Studies, 18: 25.
- Hansen, H., and E. Buch 1986. Prediction of Year-class Strength of Atlantic Cod (*Gadus morhua*) off West Greenland. NAFO Sci. Coun. Studies, 10: 7-11.
- Riget, F. 1990. Data and Preliminary Assessment of Subarea 1 Cod. NAFO SCR Doc. 90/55, 1-12.
- Stein, M., and V.A. Borovkov 1998. First Report of Joint Russian/German Project "Assessment of Short-time Climatic Variations in the Labrador Sea". NAFO SCR Doc. 98/18: 1-2.