

Northwest Atlantic



Fisheries Organization

Serial No. N2766

NAFO SCR Doc. 96/84

SCIENTIFIC COUNCIL MEETING - SEPTEMBER 1996

First Report of Joint Russian/German Data Evaluation of Oceanographic Data  
from ICNAF/NAFO Standard Sections in the Davis Strait/Labrador Region

by

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A Workshop consisting of V. Borovkov (PINRO, Murmansk, Russia), M. Stein (ISH, Hamburg, Germany) and V. Volkova (PINRO, Murmansk, Interpreter) met at the Institut für Seefischerei, Hamburg, Germany during 25-29 September 1995. Terms of references and agenda of the meeting are given in Annex I.

### **Background**

First steps to arrange the annotated workshop were undertaken as early as June 1992 during the meeting of the NAFO Subcommittee on Environmental Research. The Subcommittee realized that there are large oceanographic databases in various institutes of Contracting Parties, and proposed that analyses should be undertaken in the light of climatic time series, consistency of events and possible interrelationship with recruitment patterns in fish stocks. Based on the Cooperation in Agricultural Research between Russia and Germany a project was finally formulated in June 1994 to evaluate climatological oceanographic data in the ICNAF/NAFO area. The scientists being responsible of conducting the project were designated by the cooperating institutes PINRO and ISH as V. Borovkov and M. Stein. The project was planned to be started in April 1995. However, due to an accident of one of the participants it had to be postponed until September 1995.

### **Data and Methods**

A total of 9884 Russian data sets (vertical profiles of temperature, temperature and salinity) were made available through the assistance of MEDS, Ottawa, Canada. 986 German data sets were added to the Russian data to form a data base of randomly distributed data and Standard Sections data in the Davis Strait/Labrador Region. The available data cover the period 1958-1989. Major gaps were, however, encountered in the Labrador region for the early 1970's.

V. Borovkov presented a time series on oceanographic data for 1962-1992 from Section 8A. Time series analysis was performed for the 8A-Standard Section data for the deep layers of stations S01, S02, S03 and S04 (Positions of S01-S04) at standard depths from 500m through to 1000m. The same technique was applied to the 0-50m, 50-200m, and 200-500m layer of station S01 (Annex II).

Delimited by the 57°W meridian as a western boundary the West Greenland region was analysed, as well as with 57°W as eastern boundary the Labrador region was evaluated for same deep layers as annotated above.

### **Preliminary Results**

Two approaches in data analysis have been considered: i.e. the Standard Section approach, and the Regional approach. Both analyses show comparable results. A decline in temperature and in salinity occurred in the early 70s. From the available data, the depth layers 500, 600, 800 and 1000m clearly indicate this trend. It would appear that a major change in the thermohaline system of the area under investigation took place in those times: from warm/saline to cold diluted conditions. This change seemed to be initiated in the year 1972 which was a serious ice-year in the Labrador Region. However, further data have to be added to the data base in order to explore this time period in more detail.

#### **a) Standard Section Data**

Different patterns of variation in temperature and salinity were encountered for different layers along Section 8A (see Annex II). The thermohaline signal clearly emerged from the layers below 200m, indicating that the observed changes are a sub-surface to deep layer phenomenon. The amplitude of the signal decreases with depth. The observed change amounts to about 1°C at 500m depth, and about 0.7°C in 1000m depth. The salinity time series indicate the changes to be less pronounced. This reflects the homohaline conditions in the deep waters of the region.

#### **b) Regional Approach**

Based on the Russian/German data subsets of thermohaline properties at depths from 500m to 1000m were extracted by means of a special retrieval software developed in the ISH. The results are displayed in Annex II. The left panel side reveals the thermal changes off Labrador, whereas the right panel side gives the results from the West Greenland region. Similar to the Standard Section Data the signal pattern varies with depth. It would appear that changes occurred earlier in West Greenland waters than in Labrador waters. This points at the advective character of the signal.

Because of insufficiency of data some difficulties arise in the interpretation of the variation in the thermohaline characteristics. This requires future activities.

### **Future Activities**

The next workshop within the frame of this joint project will be held in Murmansk during 13-19 November 1995. Data which have not yet been implemented to the joint Russian/German database should be prepared for the next workshop meeting to be added to the database. This is in particular CTD-data from 1975 onwards (German data), and bottle-data from the 70s (Russian data).

### **Acknowledgements**

The members of the workshop appreciate the tremendous work and assistance in dissemination of data by MEDS. We also should like to thank Mrs. H. Cenek, ISH for her valuable assistance in arrangements for the workshop.

### **Abbreviations:**

CTD-data	Conductivity, Temperature, Depth-data
ICNAF	International Commission for Northwest Atlantic Fisheries

ISH Institut für Seefischerei  
MEDS Marine Environmental Data Service  
NAFO Northwest Atlantic Fisheries Organisation  
PINRO Polar Research Institute of Marine Fisheries and  
Oceanography

*Annex I*

**Joint Russian/German Data Evaluation of Oceanographic Data from  
ICNAF/NAFO Standard Sections in the Davis Strait/Labrador Region**

***Provisional agenda***

first meeting in Hamburg, 25 - 29 September 1995

housekeeping issues

**Timetable**

**i) definition of terms of references**

- a) detection of variability on different time-scales
- b) parameters to be analyzed
- c) regional/basin-wide coherence of events

**ii) availability of data on Russian/German databases**

- a) data formats
- b) time requirements to get access to manuscript-based data

**iii) possible use of other data sources (NODC, WDC, others)**

**iv) presentation of available software for data analysis (PC-system based)**

- a) software as developed in the Institut für Seefischerei
- b) software as used in PINRO

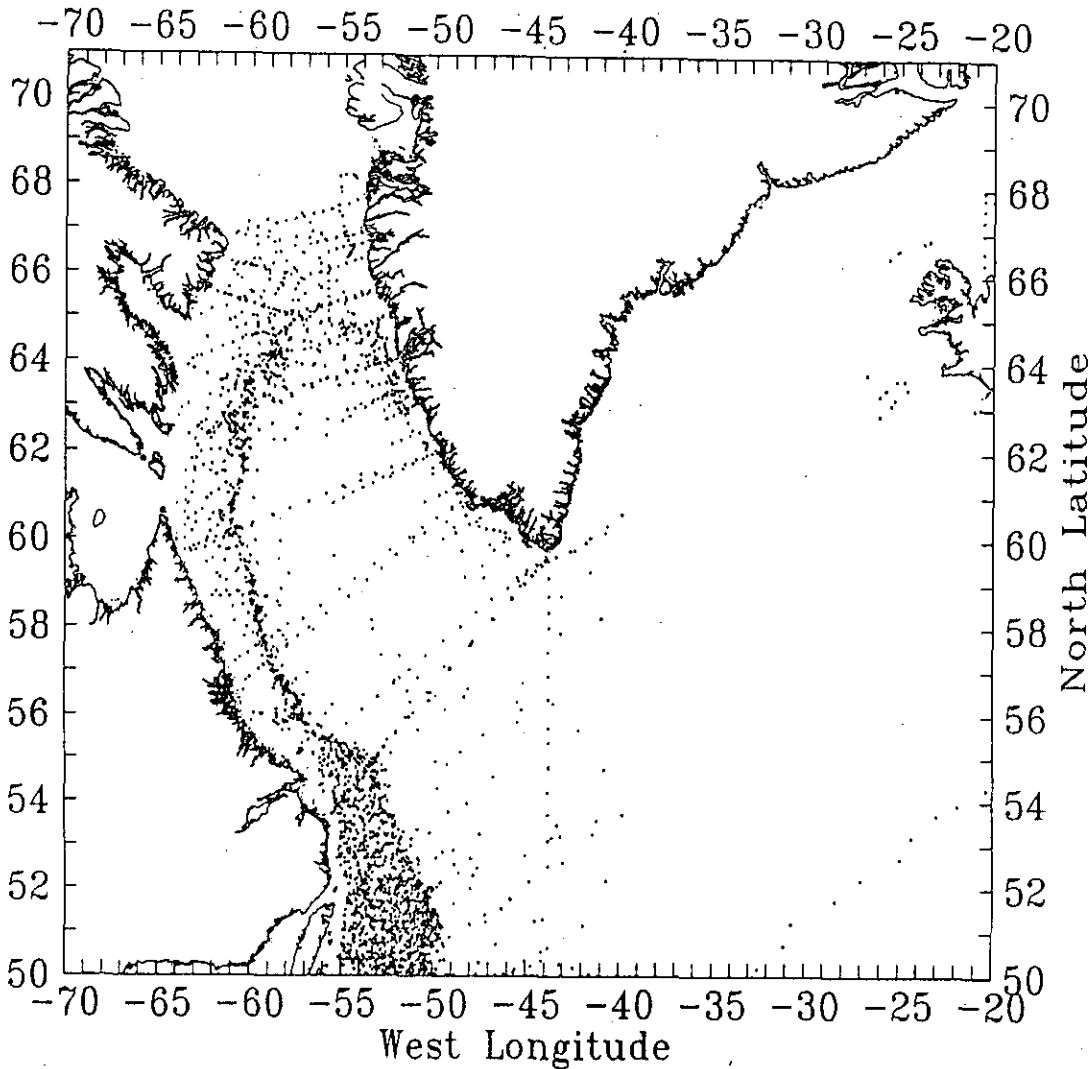
**v) required data format to suit the available software**

**vi) publication of results (Report, NAFO, primary literature)**

**vii) other business**

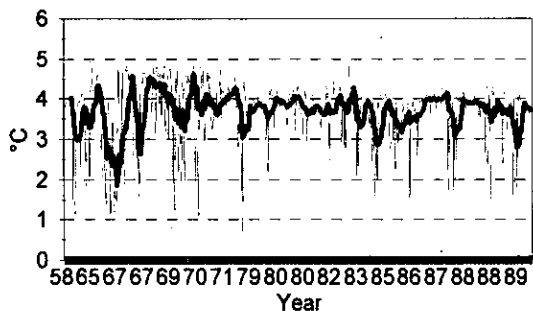
Annex II

### Russian Data in MEDS 0m



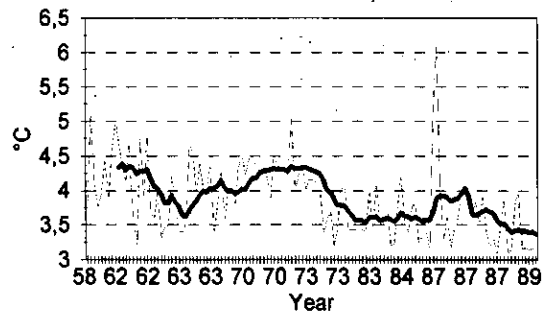
### LA\_500m

Temperature +10 values r.m.



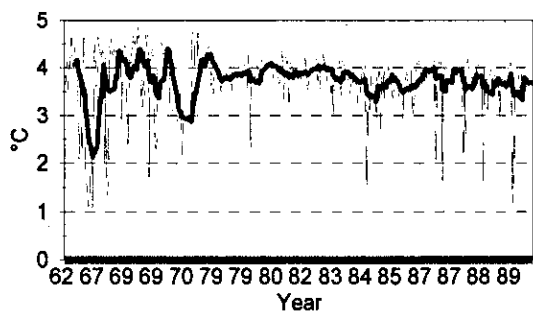
### WG\_500m

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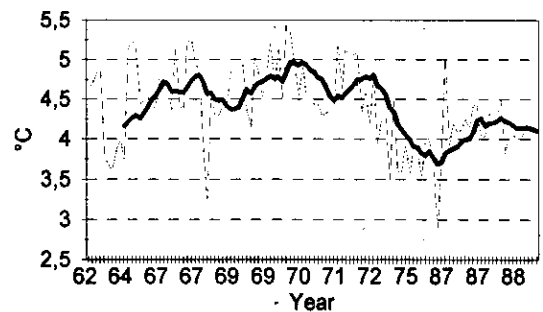
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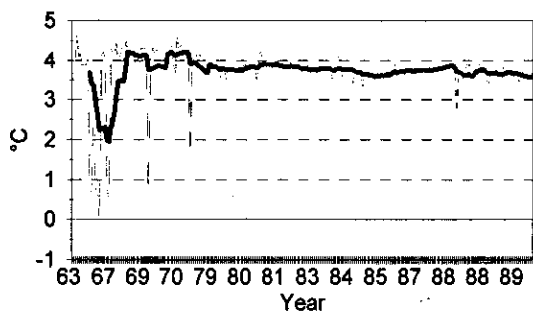
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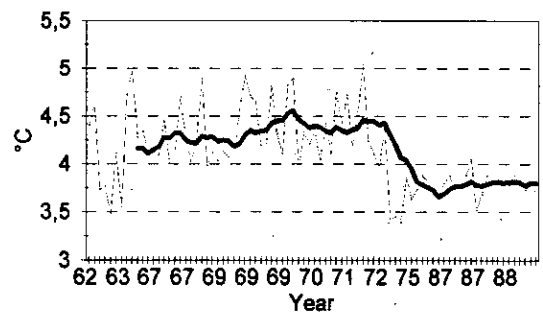
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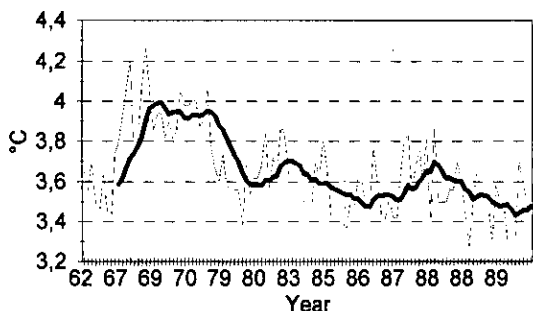
### WG\_800m

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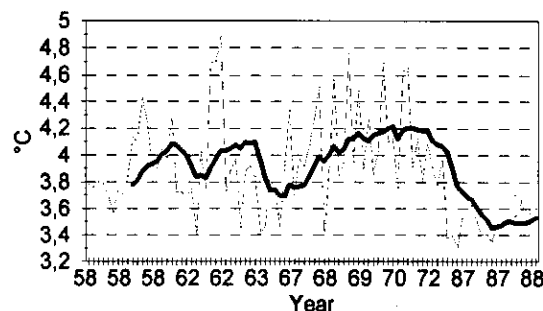
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Temperature 10 values r.m.



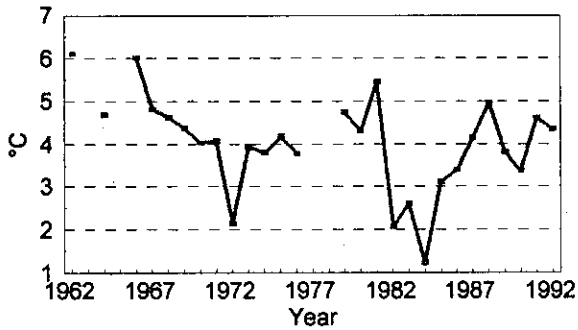
### WG\_1000m

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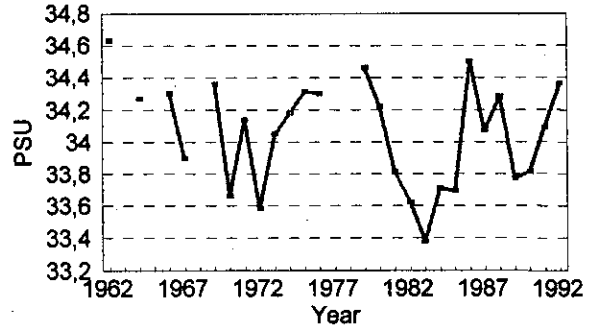
### Russian Data 8A\_S01

0-50 m Temperature



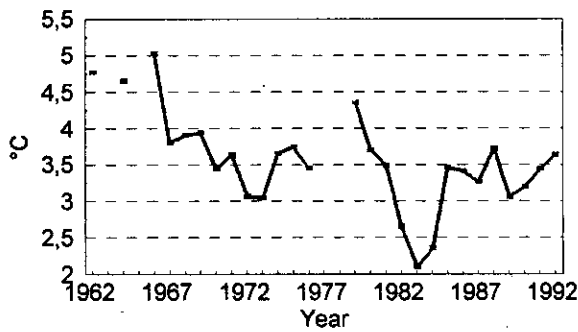
### Russian Data 8A\_S01

0-50 m Salinity



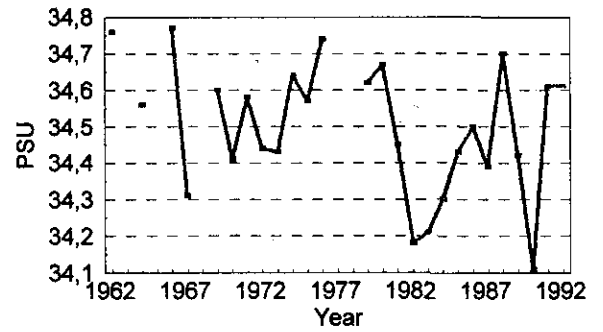
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50-200 m Temperature



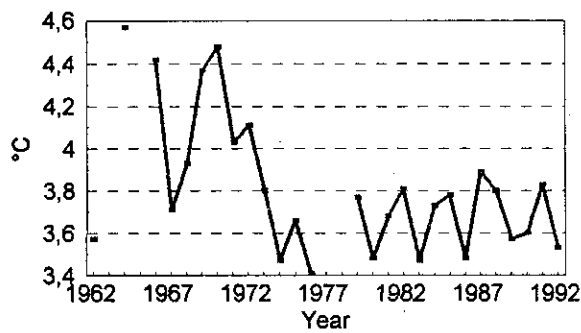
### Russian Data 8A\_S01

50-200 m Salinity



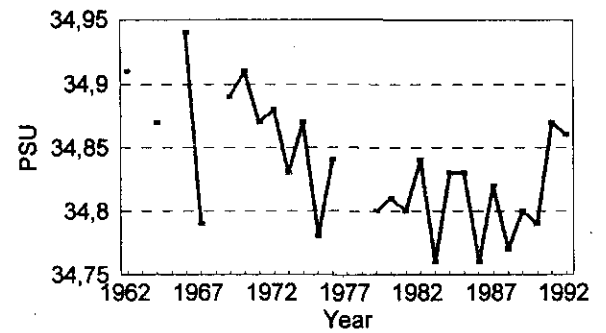
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200-500 m Temperature



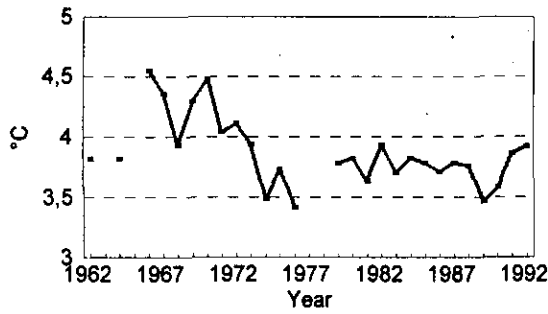
### Russian Data 8A\_S01

200-500 m Salinity



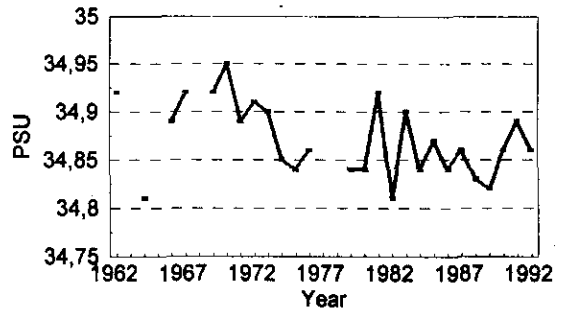
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500m Temperature



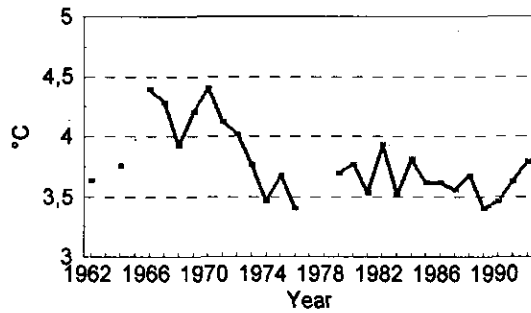
### Russian Data 8A\_S02

500m Salinity



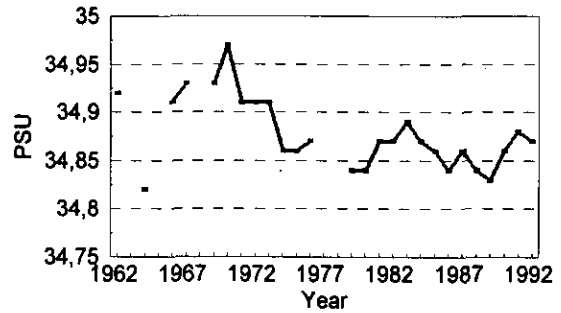
### Russian Data 8A\_S02

600m Temperature



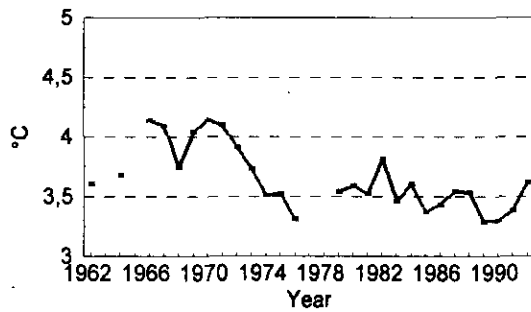
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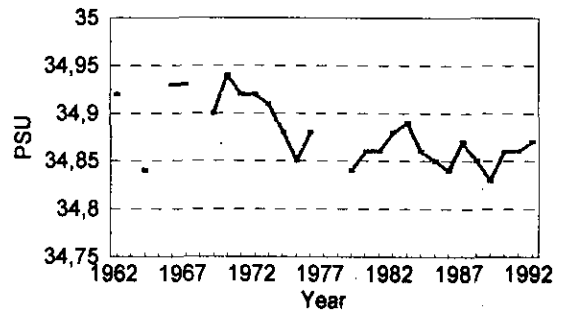
### Russian Data 8A\_S02

800m Temperature



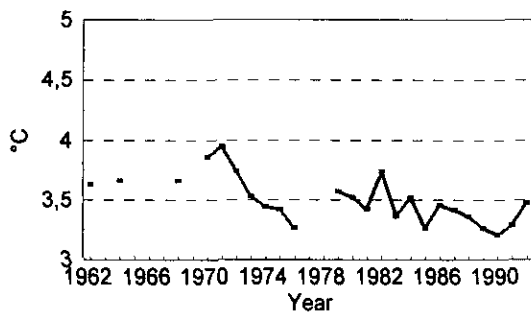
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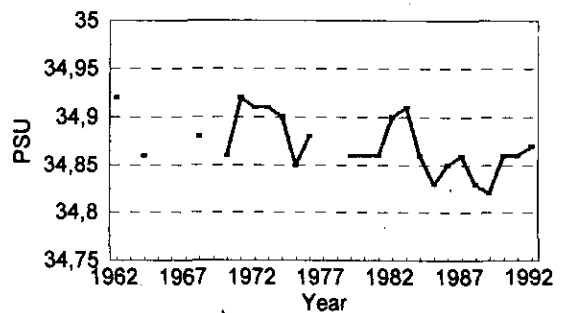
### Russian Data 8A\_S02

1000m Temperature



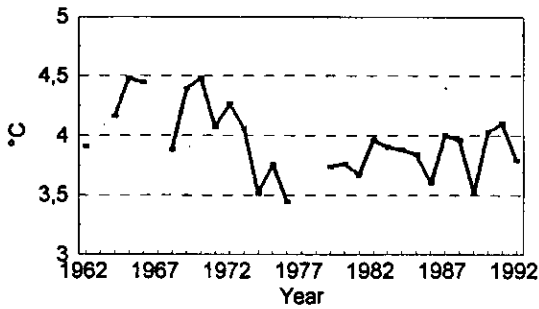
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1000m Salinity



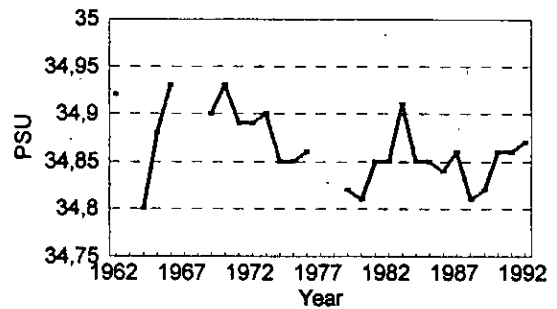
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500m Temperature



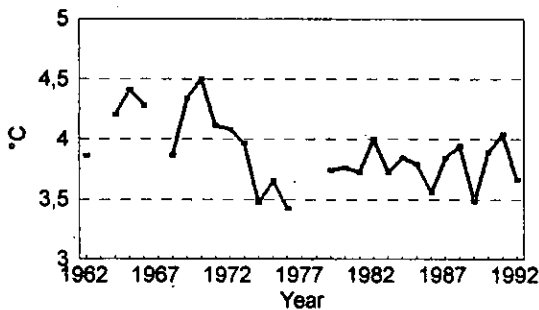
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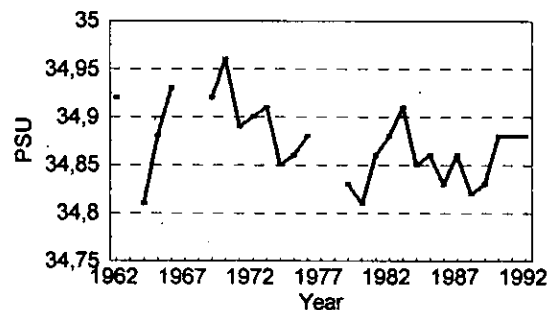
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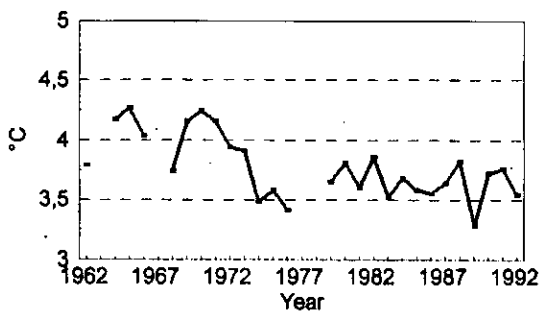
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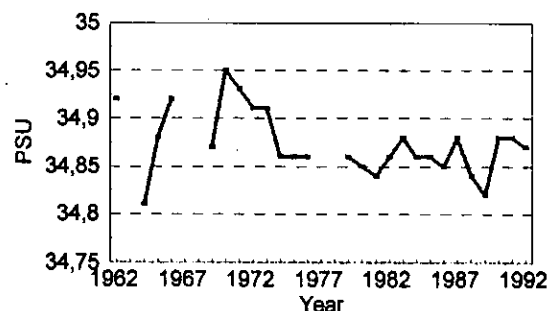
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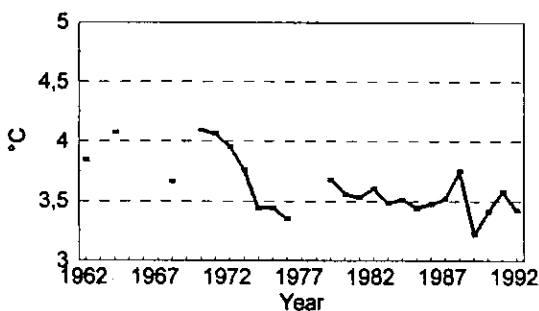
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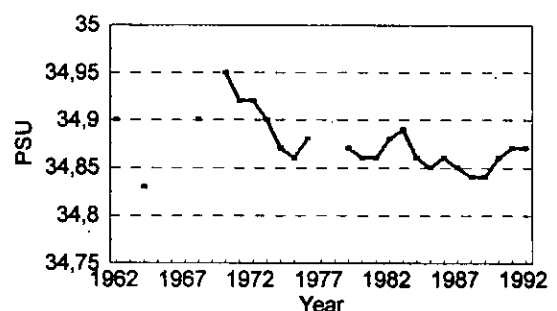
### Russian Data 8A\_S03

1000m Temperature



### Russian Data 8A\_S03

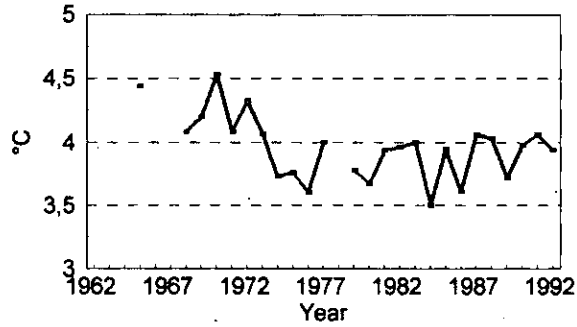
1000m Salinity





### Russian Data 8A\_S04

500m Temperature



### Russian Data 8A\_S04

500m Salinity

