Russia in scientific collaboration in programs related to the GLOBEC International

Meta-presentation by Vladimir I. Radchenko, SakhNIRO, Yuzhno-Sakhalinsk

The building above is the headquarters of the Russian Academy of Sciences, Leninsky prospect, 32a, 117993 Moscow, Russia.

GLOBAL CHANGE IGBP

ГЛОБАЛЬНЫЕ РНК МГБП ИЗМЕНЕНИЯ

English language

RUSSIAN NATIONAL COMMITTEE FOR THE INTERNATIONAL GEOSPHERE-BIOSPHERE PROGRAMME

Vladimir L. Kasyanov, Academician, Chairman of the IGBP Russian National Committee, Director Institute of Marine Biology, Russian Academy of Sciences

IGBP Russian National Committee

- RAS National Committee Members
- IGBP RNC publications in 1997-2003 years

Archive of IGBP RNC

- PAGES (Past Global Changes) in Russia
- RAS National Committee activity in 1999 year

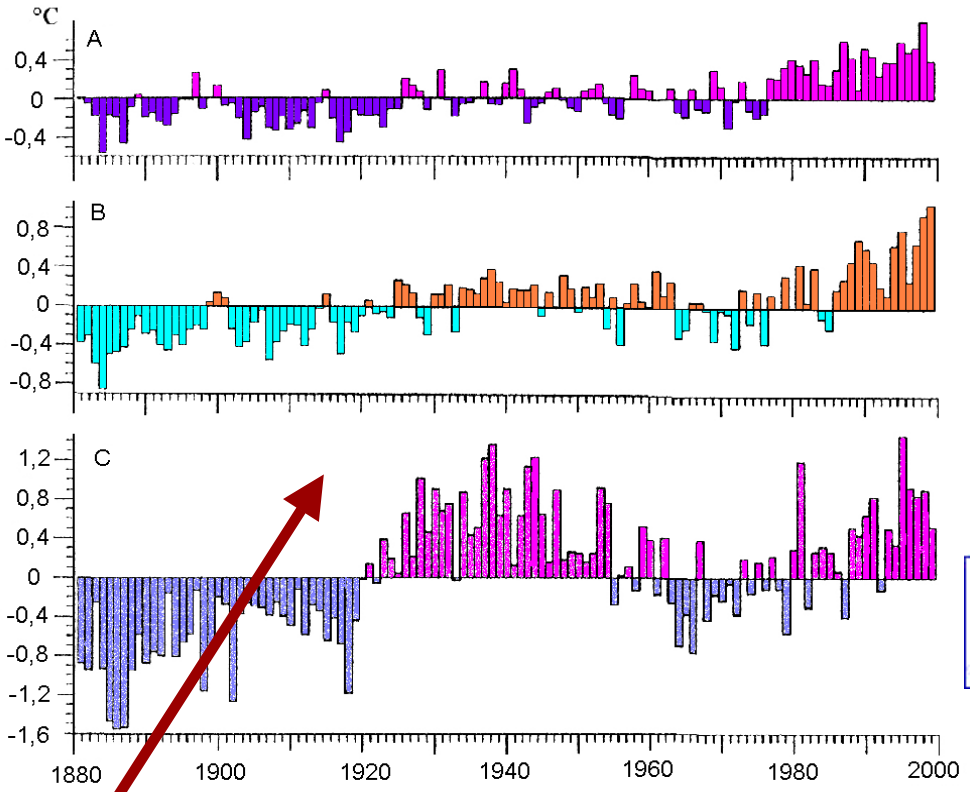
News

10.09.2004
New book of Kirill Kondratyev and Ignacio Galindo Estrada "Key Issues of Global Changes at the End of the Secon Millennium" were published. Details >>

IGBP is in its second decade of research, continuing to focus on global biogeochemistry. In order to meet the challenges of a more integrated Earth System science, IGBP has adopted a new structure of eight projects in total. Six projects (GLOBEC, GLP, IGAC, IMBER, LOICZ and LUCC) are centered on the three major Earth System compartments (ocean, land and atmosphere) and the interfaces between them (land-atmosphere, atmosphere-ocean, land-ocean). Two projects - PAGES and GAIM - focus on a whole system perspective, from the past into the future. Additionally, there are two Phase I projects that continue to operate for the next 1-5 years within the new structure: GLOBEC (the OCEAN project consists of GLOBEC and the new project IMBER) and LUCC (part of the LAND project together with the Global Land Project, GLP).

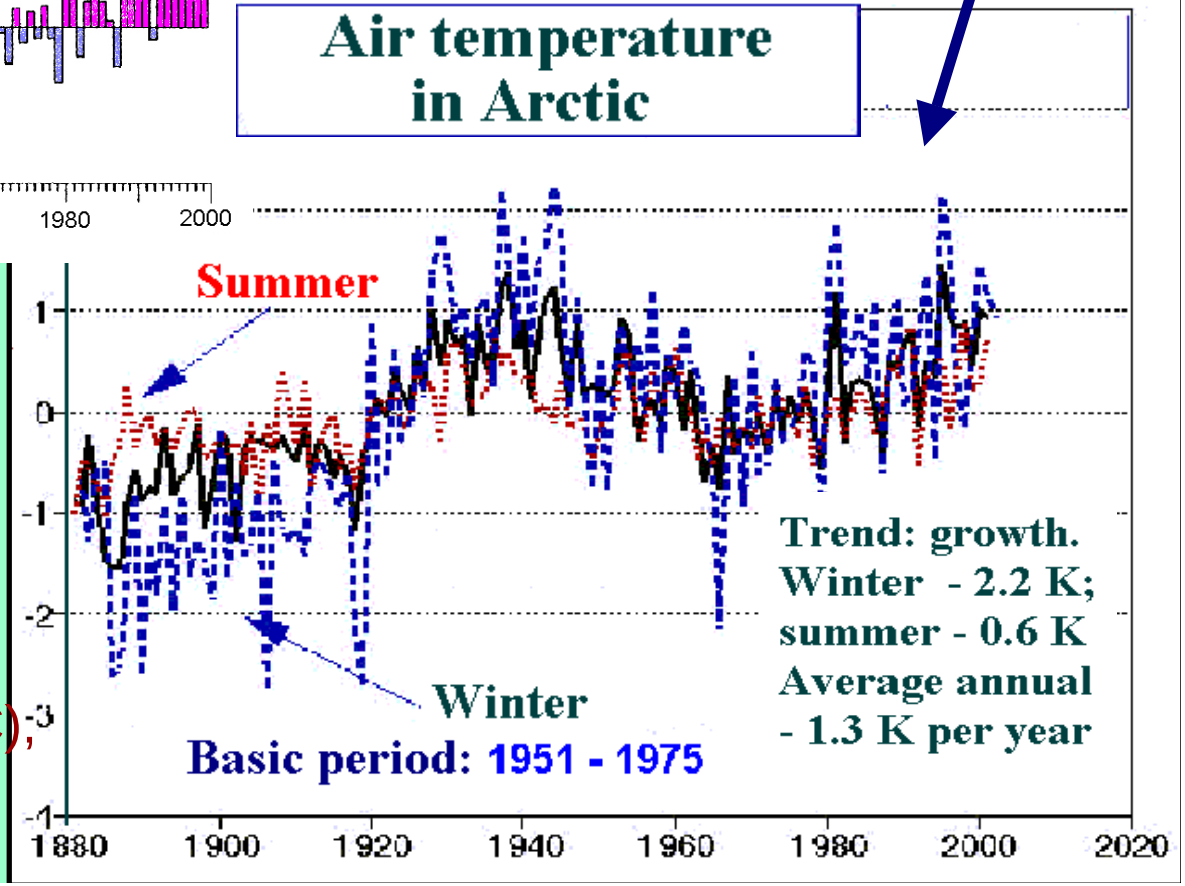
Four IGBP Projects (Phase I) have been completed during the last few years: BAHC (completed in Dec. 2003) IGBP-DIS (completed in Dec. 2001), GCTE (completed in Dec. 2003), and JGOFS (completed in Dec. 2003).


PAGES
PAST GLOBAL CHANGES
Climate Variability & Predictability
CLIVAR
World Climate Research Programme
"Empirical studies within CLIVAR will rely first on instrumental data. However, useful as instrumental studies may be, they are limited by the available data record, which generally extends back less than 150 years. This duration is too short to extract the full range of variability likely to be present in the climate system. Diagnostic studies of climate variability will therefore rely in a fundamental way upon paleo-climatic proxy-data such as that derived from the analysis of tree rings, corals, sediments, ice cores, and other sources".
El Niño 1997/98
Seasonal Predictions
Niño-3

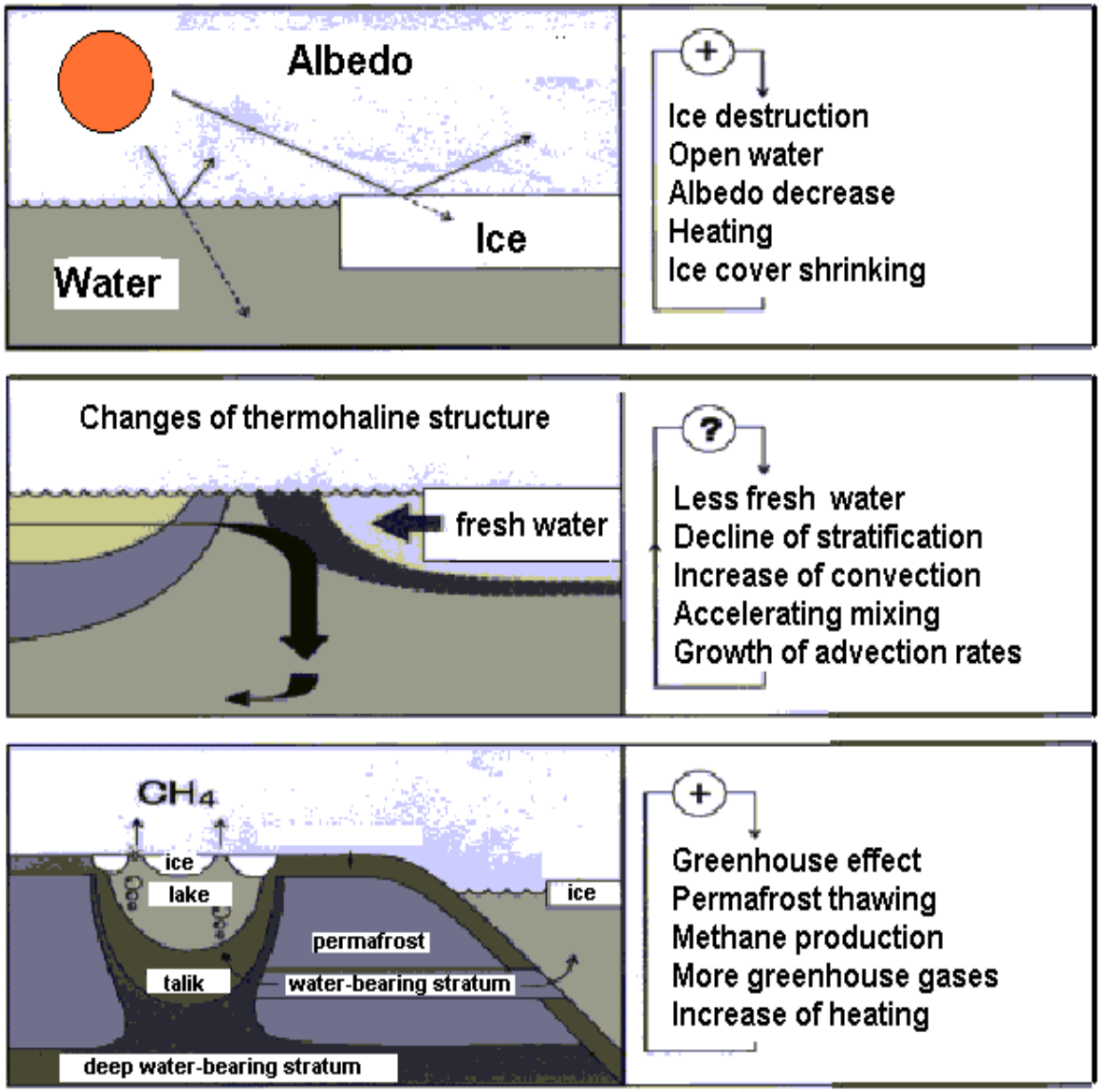


Anomalies of air temperature in Arctic (between 60 – 90 N), 1881- 2001 (Vinnikov et al., 1990; Lugina et al., 2001)

Deviation from standard (perennial mean of 1951 – 1975) of mean annual air temperature (ºC) in the Northern Hemisphere for latitude zones 0º – 30º N (A), 30º – 60º N (B), 60º – 90º N (C), after Anisimov et al. 2003



Expected responses of the Arctic climate to predicted changes



Pattern from the prepared report of the Arctic Climate Impact Assessment, submitted

"Decrease in the total area of frozen ground in the northern hemisphere to 2030, 2050 and 2080 will comprise, respectively, on 10%-18%; 15%-30%, and 20%-35%".

"An increase in the depth of seasonal thawing will be non uniform both on the time and on the space. In the next three decades it will be relatively small, in limits of 10%-15%; to the middle of century it will increase on the average to 15%-25%, by places to 50% and more. At 2080, the thickness of the layer of seasonal thawing everywhere can increase by 30%-50% and more".

(Anisimov et al., 2003).

P.P.SHIRSHOV INSTITUTE OF OCEANOLOGY

Atmosphere Interaction And Climate Laboratory

- General
- Who We Are ?
- Projects
- Publications
- Teaching
- Computer Cluster

Last News:

NEW! For David Woolf (23 Aug 2004)
Global Atlas of ocean waves (new version May 2002)
For Sterl and Woolf (17 March 2002)
Workshop photos (27 June 2001)
Opening laboratory website (10 June 2001)
WCRP/SCOR Workshop on Intercomparison and Validation of Ocean-Atmosphere Flux Fields. Bolger Center, MD (Metropolitan Washington, DC area),USA. (21-24 May 2001)

http://www.sail.msk.ru/

P.P. Shirshov Institute of Oceanology develops global-scale sea-air interaction parameters, based on voluntary observing ship data. During 2002-2003 a global climatology of basic wave parameters (heights, periods and directional steadiness for wind sea, swell and significant wave height) is derived for the period 1958-1997 from the visual wave observations was finally assembled. The pilot version is currently available and provides both individual observations and gridded fields.

GLOBEC-Ukraine
Global Ocean Ecosystem Dynamics

1871
IBSS

About GLOBEC

On GLOBEC Scientistic Steering Committee Meeting, Paris 17-20 March, the closeness of scientific programs of Institute of Biology of the Southern Seas to programs of GLOBEC was marked. Therefore it was offered to the management of IBSS to develop the Ukrainian regional program and to coordinate the activity with the schedules of GLOBEC.

IBSS studies small pelagic fish of the Black Sea and the South Ocean fish resources.and allocates by results of long-term researches in area. The activity of IBSS in this direction can be considered as the frame of GLOBEC Regional Programs - SPACC and SO-GLOBEC.

The materials of this page will display both results - current execution of programs and reaching the IBSS in this direction of the last years.

Within the framework of this programs IBSS have joint cooperation with such organizations of Ukraine as Marine Hydrophysical Institute (MHI) NAS Ukraine, Sevastopol, Southern Scientific Research Institute of Marine Fishery and Oceanography (YugNIRO, Kerch), Fishery Inspection (Sevastopol).

The staff of the working group of the Ukrainian Committee:

- Prof. Victor E. Zaika - Head of the Committee (IBSS)
- Dr. Alexander R. Boltachev - Deputy of the Head (IBSS)
- Prof.Georgy E.Shulman - Instructor of the SPACC program (IBSS)
- Prof. German Zuev - Instructor of the SPACC program (IBSS).
- Prof. Ernest Samyshev - Instructor of the SO-GLOBEC program (IBSS).
- Prof. Alexander Suvorov, Marine Hydrophysical Institute (MHI, Sevastopol).
- Dr. Ivan Serobaba, Southern Scientific Research Institute of Marine Fishery and Oceanography (YugNIRO, Kerch)
- Mr. Dmitriy Gutsal - Fishery Inspection (Sevastopol)

In 1997 to 2000, Ukrainian GLOBEC has acted along the lines of the following paragraphs of the GLOBEC-International Implementation Plan:

- FOCUS 1: Retrospective Analyses and Time Series Studies
  - Activity 1.1. Preservation of Existing Long Time Series Studies and Data
  - Activity 1.2. Analyses of Existing Retrospective Data
- FOCUS 2: Process Studies
  - Activity 2.2. Identification and Understanding of Multiscale Physical-Biological Interactions

In the framework of these two foci, the following international programs have been carried out:

The INTAS (UA-95-80) funded project: "Dissemination of data on environmental characteristics using innovative electronic (CD-ROM) data management; Tools for protection of biodiversity in the endangered areas of the World's Tropical Ocean".

Contact: Dr. S.A. Piontkovski (spiontkovski@notes.cc.sunysb.edu)

"Plankton biodiversity and biovariability in the Indian and Atlantic Oceans" funded in the framework of the international "Darwin Initiative" (DETR, UK).

Contact: Dr. S.A. Piontkovski

"The database on the bioluminescence field of the Worlds Ocean" funded by ONR (USA).

Contact: Dr. S.A. Piontkovski and Dr. Yu.N. Tokarev (ibss@ibss.iuf.net)

ROSHYDROMET

Center of Oceanographic Data (COD) cooperation with the International Oceanographic Commission (IOC)

http://ioc.unesco.org/iocweb/index.php

Cooperation in the data exchange field:

Russian Federation is a member of the International Oceanographic Commission (IOC, http://IOC.unesco.org). Inside the IOC, the Center of Oceanographic Data (COD VNIIGMI-ICD) serves as the inter-regional data center on oceanography. Russian Federation actively participate large international projects implemented by IOC.

Oceanographic observations for climate Panel - **Ocean Observations Panel for Climate- http://ioc.unesco.org/oopc/**

- •Global experiment on the oceanographic data assimilation (GODAE)- **The Global Ocean Data Assimilation Experiment - http://www.bom.gov.au/bmrc/ocean/GODAE/**
- •Network of drifting/diving buoys – **ARGO - (http://www-argo.ucsd.edu/)**

International Oceanographic Data and Information Exchange (IODE)-http://ioc.unesco.org/iode/

COD participation in the IODE -http://www.meteo.ru/nodc/Project/iode.html

In GTSPP - http://www.meteo.ru/nodc/Project/gtspp.html,

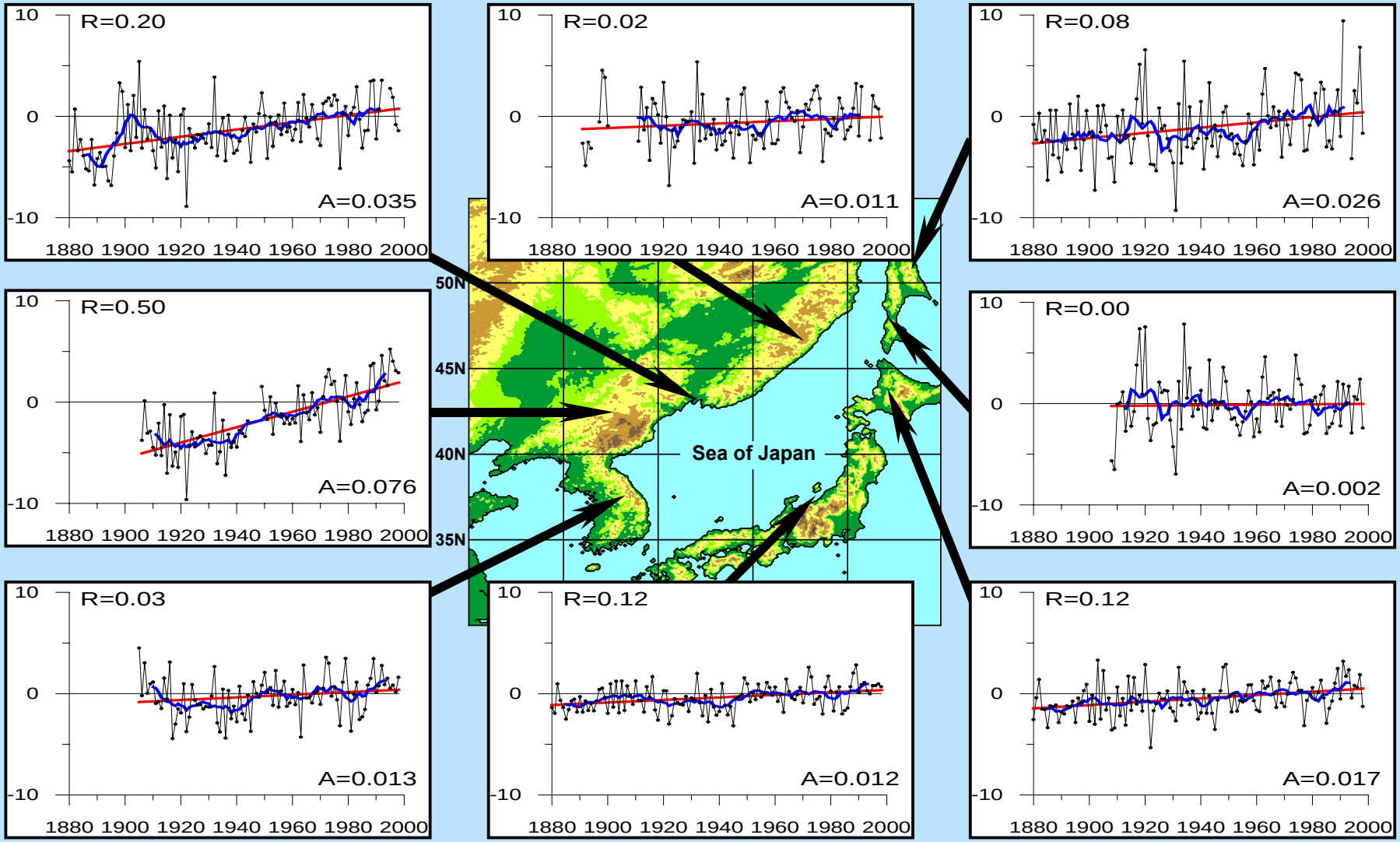
In GODAR-http://www.meteo.ru/nodc/Project/godar.html,

In MEDAR, which is a regional chapter of GODAR (data on the Mediterranean and Black Seas)- http://www.meteo.ru/nodc/Project/medar.html;

http://www.meteo.ru/nodc/project/project.htm

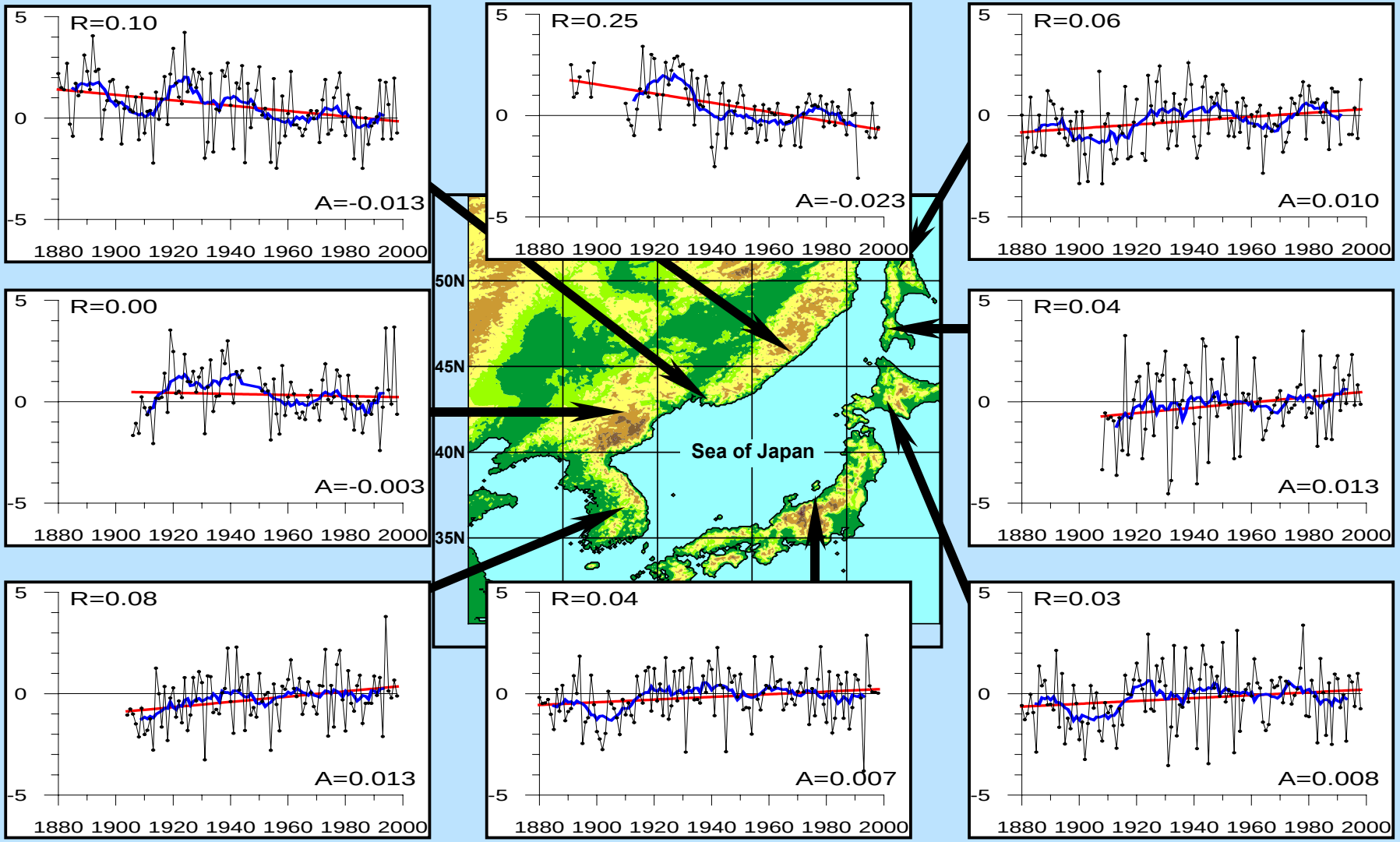
Teaching through the research **(http://ioc.unesco.org/tema/)**

COD participation - http://www.meteo.ru/nodc/Project/tema.html



R – determination coefficient, A – trend value, °C/1 per year

Temporal rate of mean monthly air temperature anomalies in January (after GHCN, Gridded data, presented by T. Belan, DVNIGMI) with moving 11-years average and linear trend



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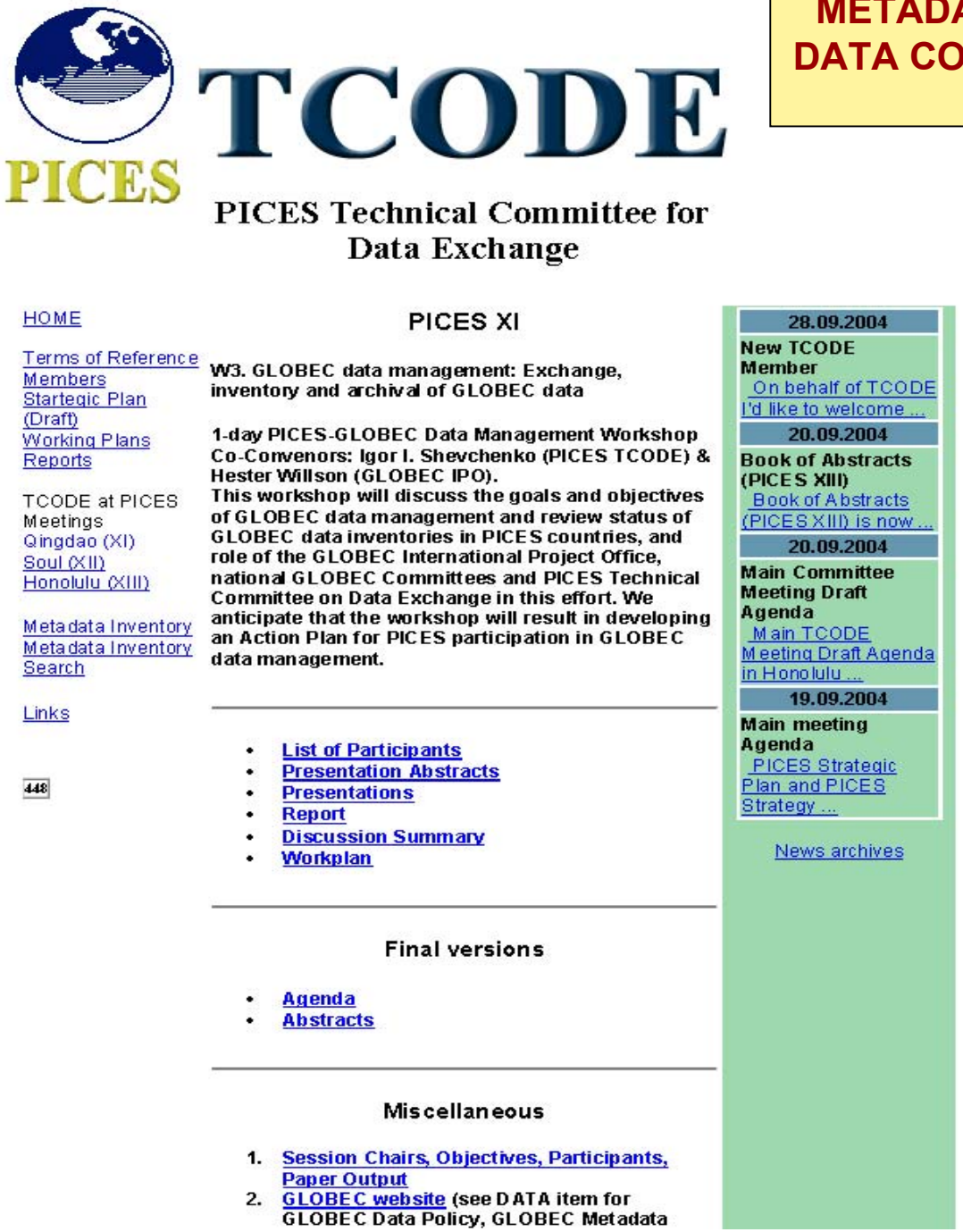
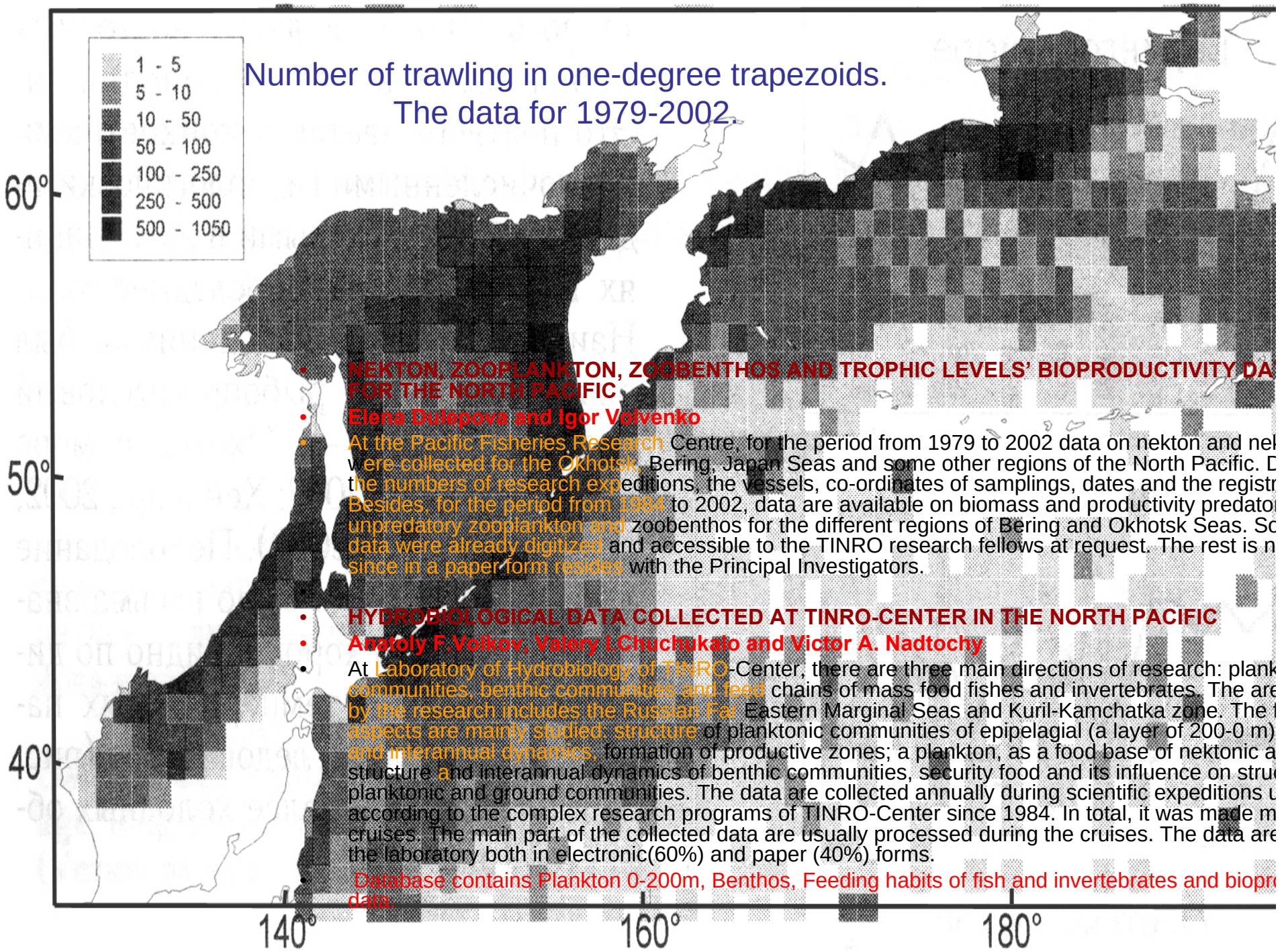


METADATA INVENTORY OF BIOLOGICAL DATA COLLECTED BY RUSSIAN FISHERIES RESEARCH INSTITUTES

Shevchenko et al., 2002

For the period from 1999 to 2002 the Fisheries Committee of Russia has been funding project on implementation and maintenance of a metadata inventory of biological data collected by Russian fisheries research institutes. Metadata includes the numbers of research expeditions, the vessels, co-ordinates and regions of samplings, dates, registration forms, current storage location. Accounted are data that already digitized and stored in the computerized databases. Covered are the periods beginning from the foundations of institutes and all regions visited by the Russian research vessels including the North Pacific. The contents are updated once a year. The inventory is searchable through the Internet at http://metadata.tinro.ru. Authorized users may even send queries using SQL.

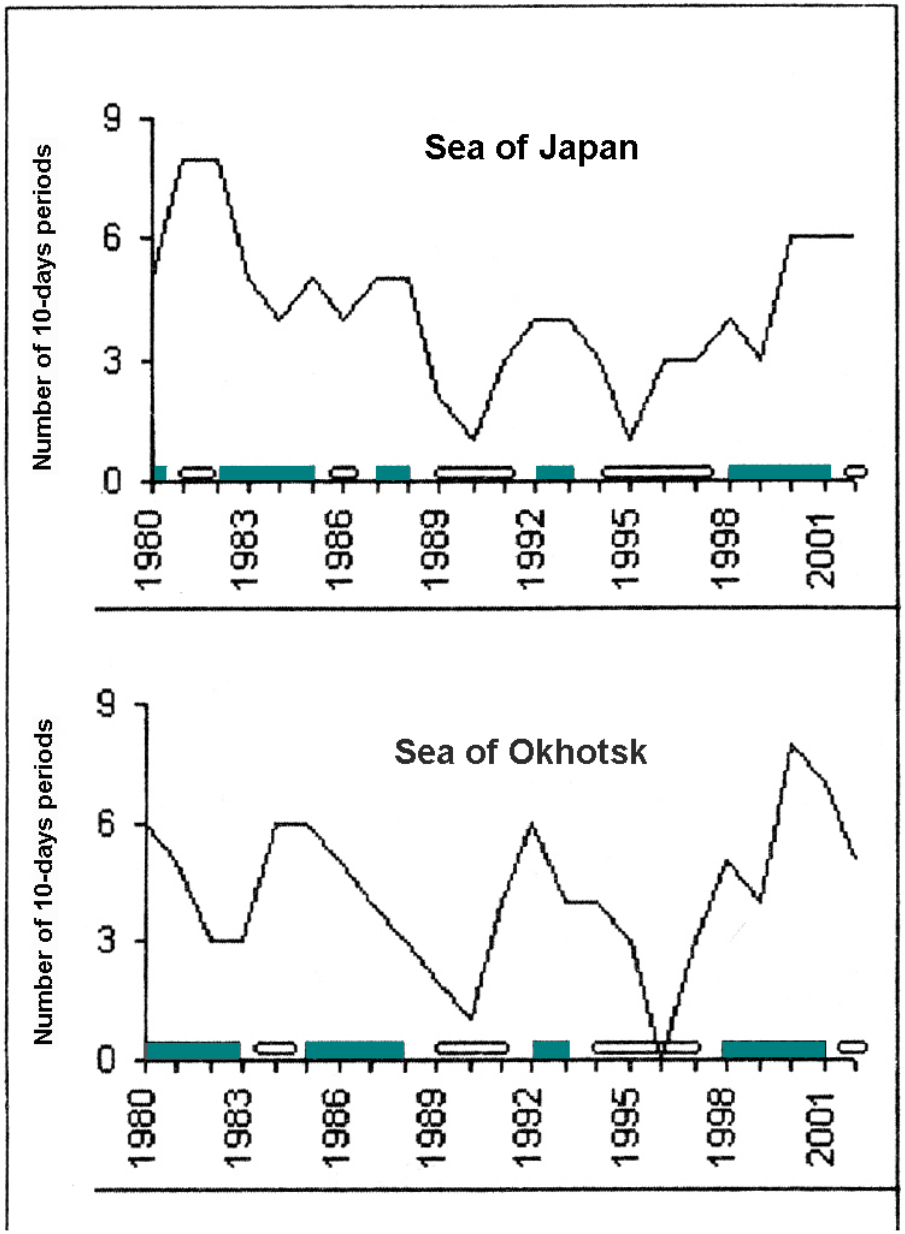


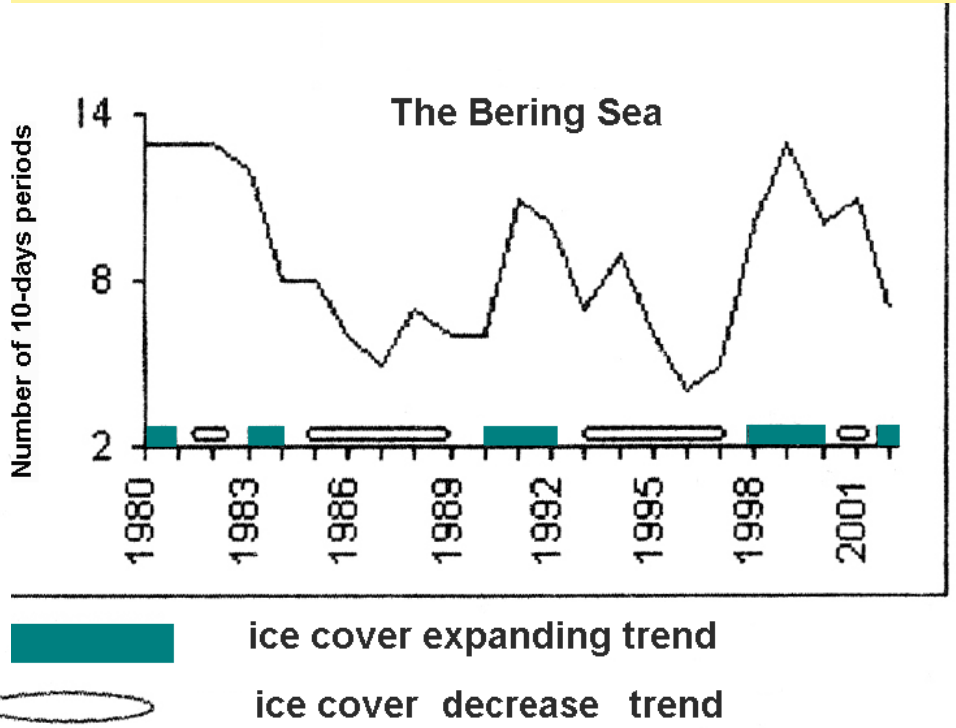
Number of trawling in one-degree trapezoids.
The data for 1979-2002.

- **NEKTON, ZOOPLANKTON, ZOOBENTHOS AND TROPHIC LEVELS' BIOPRODUCTIVITY DA FOR THE NORTH PACIFIC**
- **Elena Dulepova and Igor Volvenko**
- At the Pacific Fisheries Research Centre, for the period from 1979 to 2002 data on nekton and nek were collected for the Okhotsk, Bering, Japan Seas and some other regions of the North Pacific. D the numbers of research expeditions, the vessels, co-ordinates of samplings, dates and the registr Besides, for the period from 1984 to 2002, data are available on biomass and productivity predato unpredatory zooplankton and zoobenthos for the different regions of Bering and Okhotsk Seas. So data were already digitized and accessible to the TINRO research fellows at request. The rest is n since in a paper form resides with the Principal Investigators.

- **HYDROBIOLOGICAL DATA COLLECTED AT TINRO-CENTER IN THE NORTH PACIFIC**
- **Anatoly F.Volkov, Valery I.Chuchukalo and Victor A. Nadtochy**
- At Laboratory of Hydrobiology of TINRO-Center, there are three main directions of research: plank communities, benthic communities and feed chains of mass food fishes and invertebrates. The are by the research includes the Russian Far Eastern Marginal Seas and Kuril-Kamchatka zone. The aspects are mainly studied: structure of planktonic communities of epipelagial (a layer of 200-0 m) and interannual dynamics, formation of productive zones; a plankton, as a food base of nektonic a structure and interannual dynamics of benthic communities, security food and its influence on stru planktonic and ground communities. The data are collected annually during scientific expeditions u according to the complex research programs of TINRO-Center since 1984. In total, it was made m cruises. The main part of the collected data are usually processed during the cruises. The data are the laboratory both in electronic(60%) and paper (40%) forms.
- Database contains Plankton 0-200m, Benthos, Feeding habits of fish and invertebrates and biopr data.

Interannual variability of re-occurrence of cold synoptic types of atmospheric processes (classification developed by S. Glebova, 2002) and trends of ice conditions in the far-eastern seas





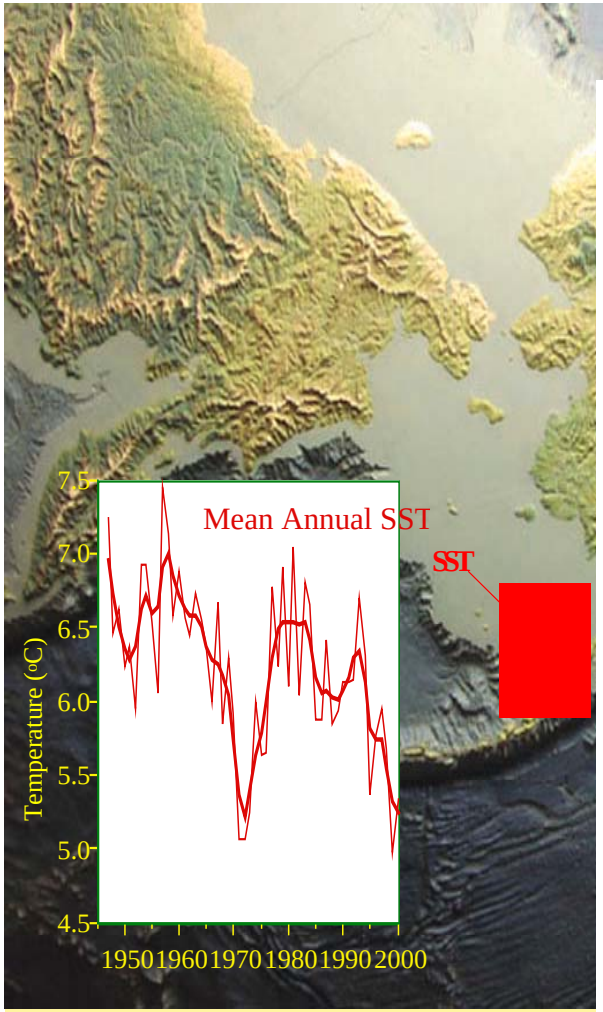
Mean water temperature in 50-200 m layer in different Sea of Okhotsk regions in spring and summer, 1996 – 2000, after Ustinova et al., 2000; Shuntov et al., 2003

Region	1996	1997	1998	1999	2000
The Western Kamchatka shelf, April	0.40	1.13	0.01	-0.25	-0.28
The north-western Sea of Okhotsk, May - June	-0.45	-0.12	-0.72	-0.94	-0.98

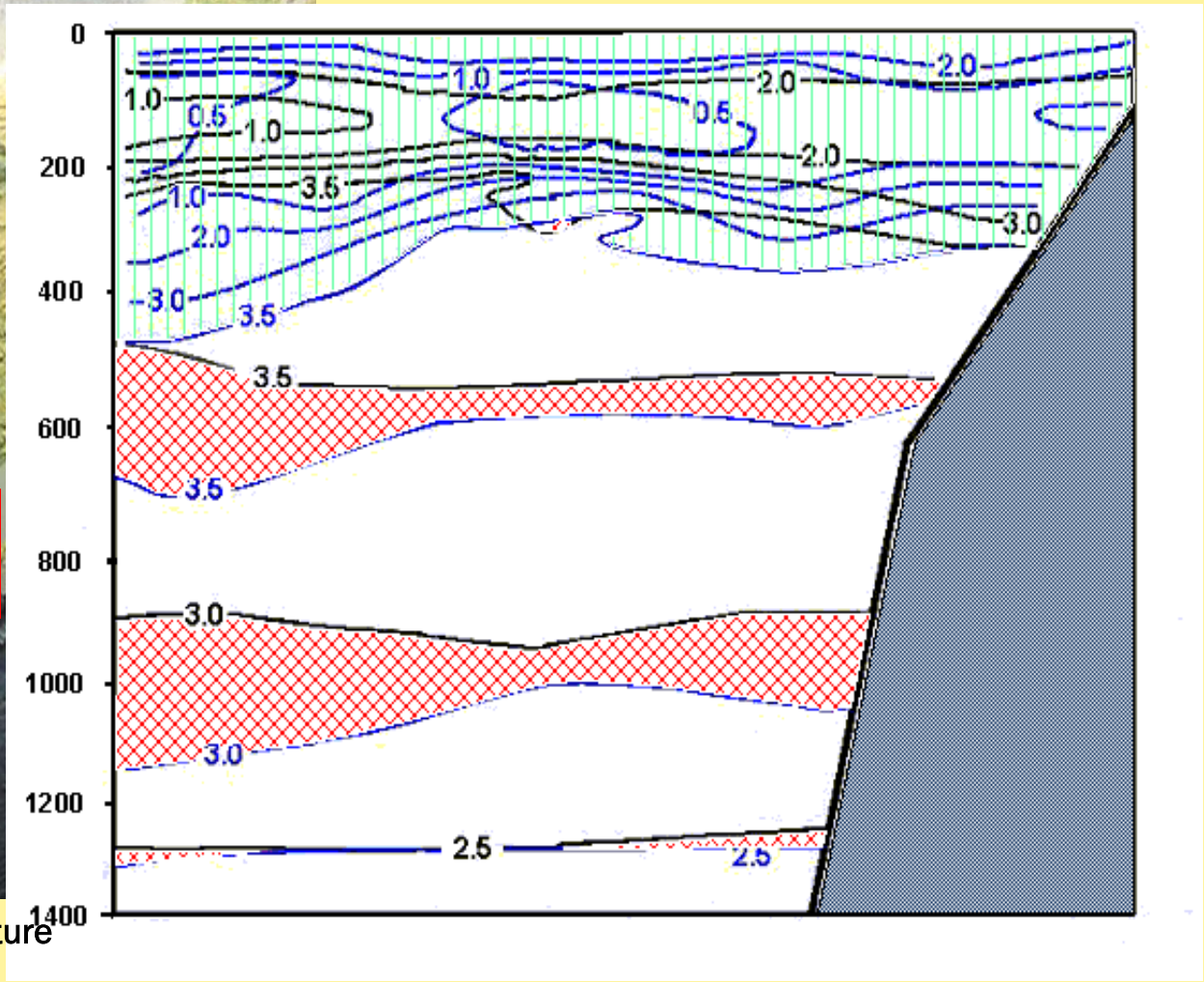
Area occupied by the cold intermediate layer (CIL) with water temperature less than -1°C in the northern part of the Sea of Okhotsk (1,000 sq. km), 1997 – 2002, after Khen et al., 2002; Shuntov et al., 2003

Season	1997	1999	2002	Perennial average
Spring	285	565	582	379
Summer	91	228	274	172

Remarks: Ciphers' font increased proportionally to values



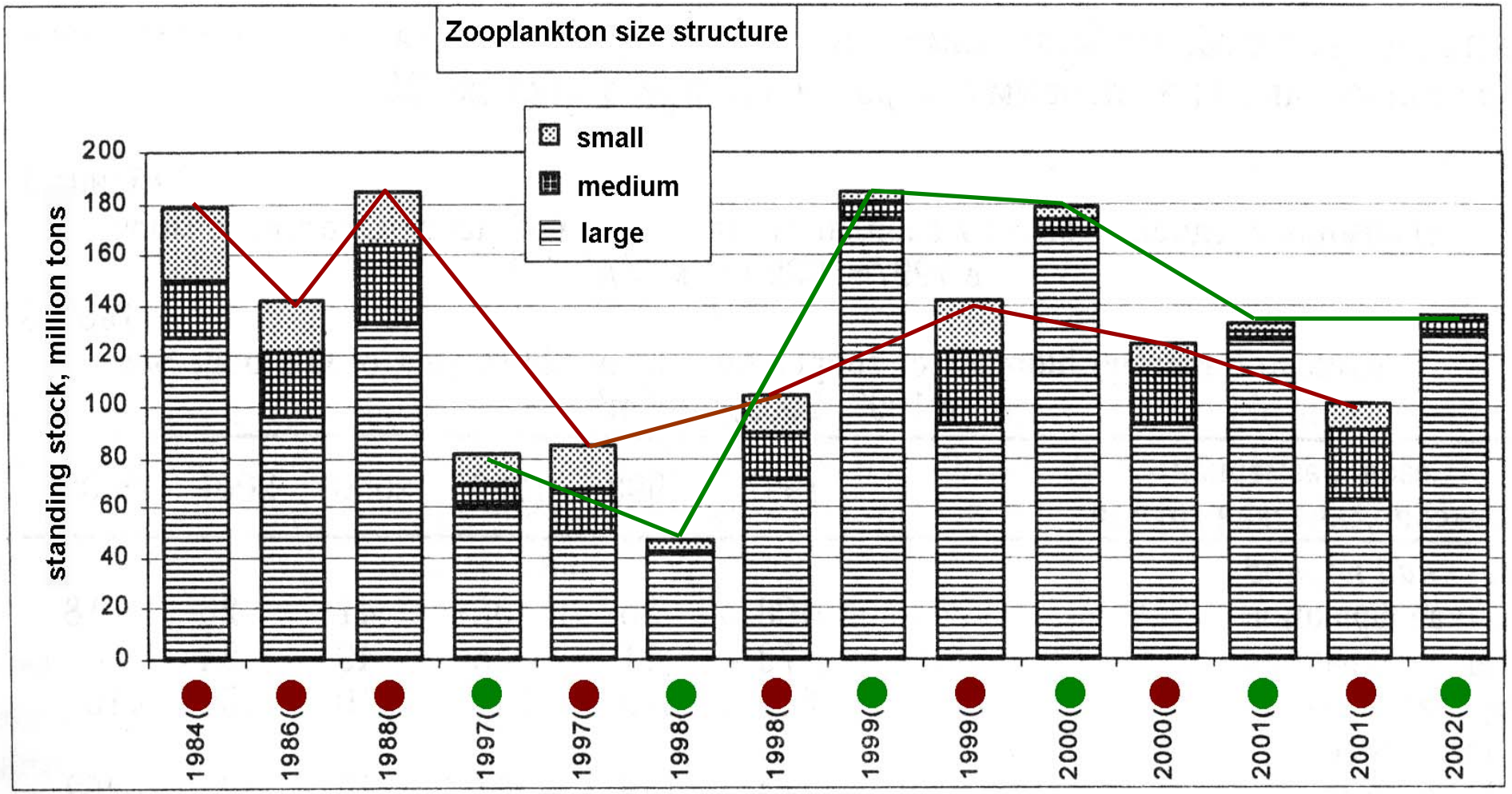
Annual mean sea surface temperature in the Aleutian passes



Comparison of water temperature (°C) on the Kamchatka Strait section, 13-14 August 1991 (black lines, after Stabeno et al. 1999) and 27 June 2002 (blue lines, data of TINRO-Center). Areas shadowed by red indicate layers with water temperature higher in 2002 than 1991, areas shadowed by green indicate layers water temperature higher in 1991 than 2002. Isotherms > 2°C are not indicated in the upper sea layer.

Dynamics of fish biomass (1,000 tons and %%) in the open waters (0-200 m depth) of the south-western Bering Sea in fall, 1987 – 2000, after Gavrilov & Glebov, 2002

	1987	%	1990	%	2000	%
Pollock	5233.2	92.8	278.1	30.8	0.1	+
Salmon	86.0	1.5	19.4	2.1	43.0	4.0
Smooth lampsucker	13.8	0.2	14.3	1.6	0.9	0.1
Atka mackerel	3.4	0.1	5.2	0.6	189.7	17.1
Mesopelagics	293.4	5.2	581.5	64.3	868.5	78.4
Other	11.6	0.2	5.2	0.6	4.8	0.4
Total	5641.4	100	903.7	100	1107.0	100

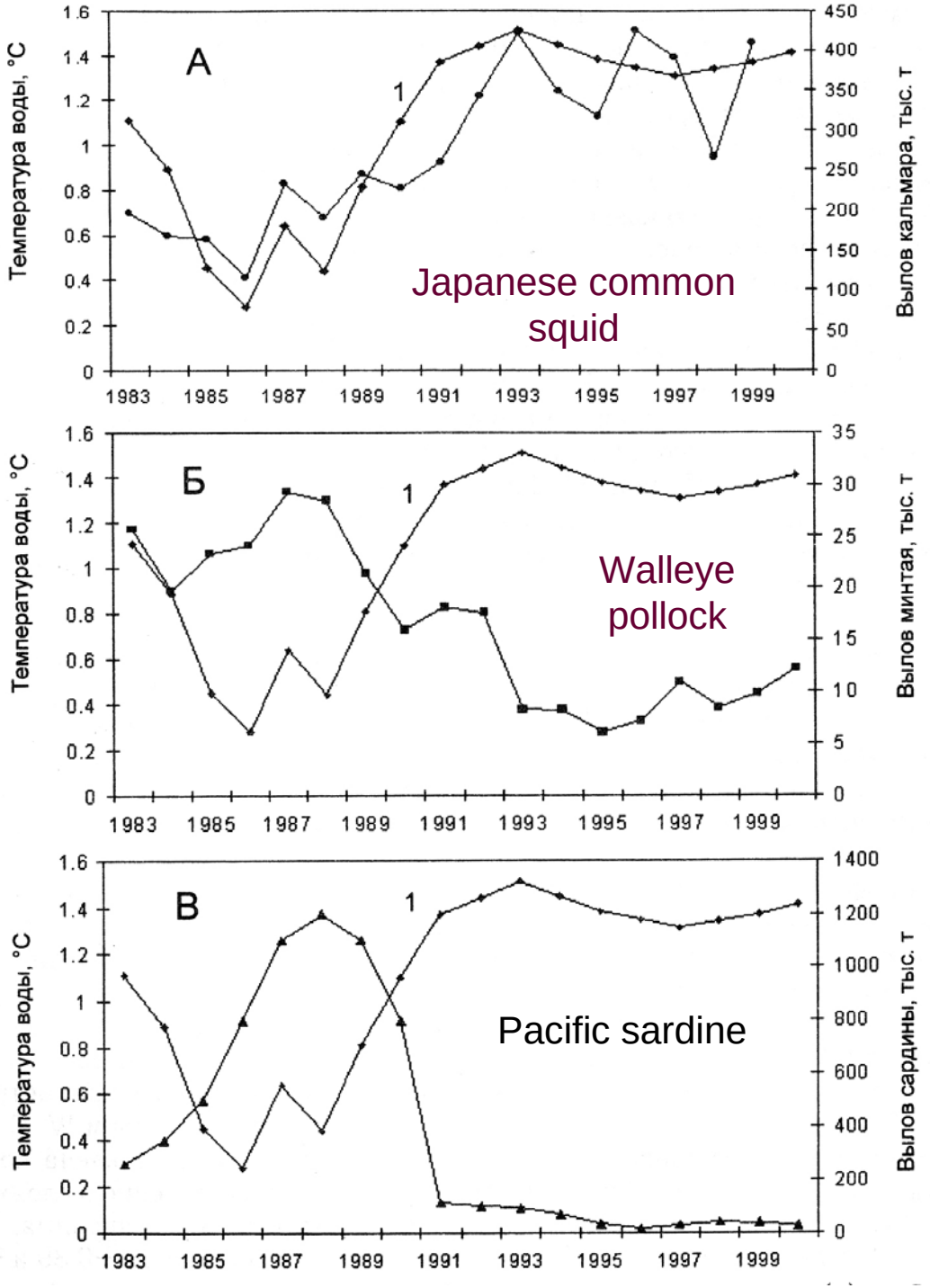


Zooplankton standing stock fluctuations in the northern Sea of Okhotsk:

Summer season – above the red cycles;

Winter – spring – above the green cycles.

Water temperature, °C



Fishery harvest (1,000 metric tons)

Mean water temperature variability at the 132º E section (1) and fishery harvest in the Russian zone of the Japan/East Sea, 1983 – 2000, after Diakov 2004

	Group	Water temperature warming in upper pelagic layer	Increase of wind stress, zone transport repetition	Growth of water exchange with Pacific ocean	Mild ice condi-tions	Prevalent biological effects related to the physical environment changes	Key reference:
1	Adult pollock	+	0	+	+	+ (food supply)	Shuntov et al. 1993
2	Juvenile pollock	+	–	+	+	– (predation)	Nishiyama et al. 1986
3	Pacific cod	+	0	+	0	+ (food supply)	Bakkala 1993
4	Pacific herring, WBS	–	0	–	+	– (competition)	Naumenko 2002
5	Pacific herring, EBS	+	0	–	+	– (competition)	Wespestad 1987
6	Pacific salmon	+	–	+	0	+ (food supply)	Hollowed et al. 2001
7	Cephalopods	–	0	+	0	– (predation)	Sinclair et al. 1999
8	Capelin	–	–	–	–	– (predation)	Wespestad 1987
9	Arctic cod	–	+	–	–	– (competition)	Wyllie-Echeverria & Ohtani 1999
10	Pacific halibut	–	0	0	0	–	Clark et al. 1999
11	Greenland turbot	–	0	–	0	– (competition)	Livingston et al. 1997
12	Arrowtooth flounder	0	+	0	0	+ (food supply)	Wilderbuer et al. 2002
13	Small flatfish	+	+	0	–	+ (food supply)	Wilderbuer et al. 2002
14	Skates	0	0	0	0	+ (food supply)	Borets 1997
15	Sculpins	+	0	0	–	– (competition)	Borets 1997
16	Atka mackerel	+	–	+	+	+ (food supply)	Shuntov et al. 1994
17	Mesopelagic fish	0	0	+	0	– (predation)	Radchenko 1994
18	Tanner crab	+	+	0	–	–	Rozenkranz et al. 2001
19	King crab	+	+	0	–	(predation by flatfishes)	Haflinger & McRoy 1983
20	Shrimp	+	–	0	–	– (predation)	Ivanov 2001
21	Benthic Epifauna	+	0	+	–	– (predation)	Conners et al. 2002
22	Benthic Infauna	+	0	+	–	– (predation)	Livingston et al. 1997
23	Jellyfish	+	–	+	0	– (competition)	Brodeur et al. 1999
24	Euphausiids	+	0	+	+	– (predation)	Shuntov 2001
25	Copepods	+	0	+	+	– (predation)	Shuntov 2001
26	Phytoplankton	+	+	+	–	– (greasing)	Shuntov 2001

Estimated effect of different physical phenomena and processes on the stock conditions in the western Bering Sea and forecasted stock dynamics under the expected conditions of late 2000s – 2020s.

Effects:

- + - evident positive;
- - evident negative:
- 0 – no evident or unclear effect.

Expected trend in stock abundance:

- positive
- negative
- no expected or uncertain trend


Thank you for your attention