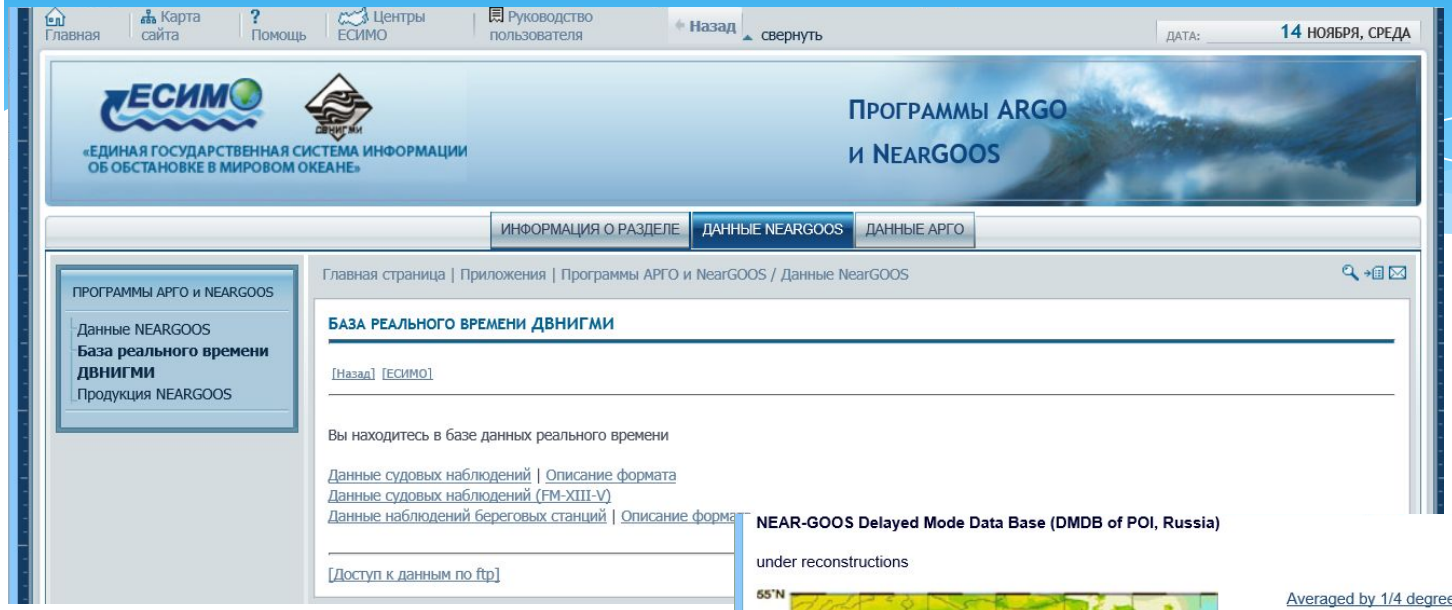
22nd Session of NEAR-GOOS-CC, March 10, 2025, Tokyo, Japan

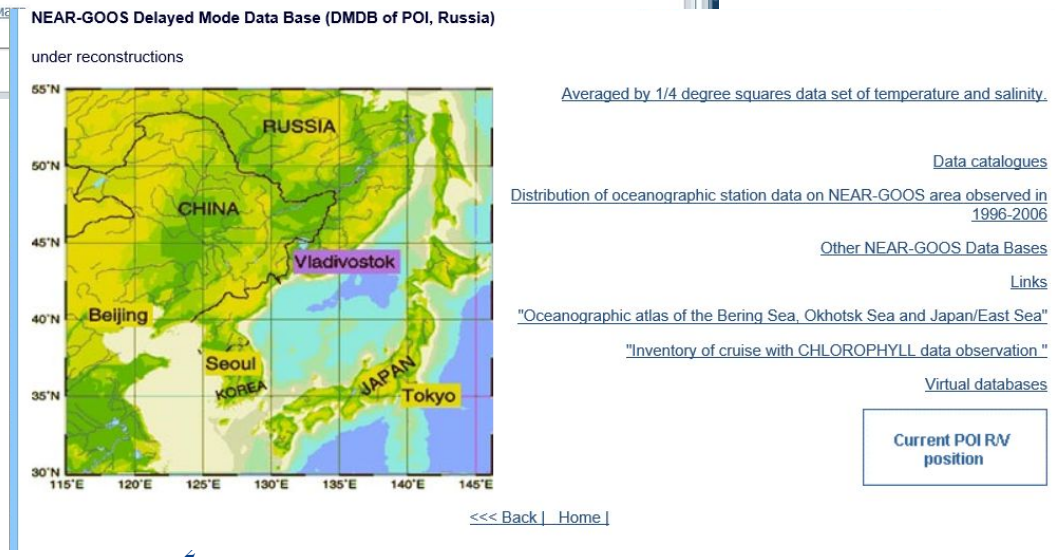
Progress report on NEAR-GOOS activity in Russia

Vyacheslav Lobanov, *(POI FEB RAS)*
Oleg Sokolov *(FERHRI)*

NEAR-GOOS RTDB/DMDB (FERHRI)

NEAR-GOOS DMDB (POI)





http://ferhri.org/en

Our projects > NEAR-GOOS > Databases > ...

http://pacificinfo.ru/near-goos

NEAR-GOOS RTDB (FERHRI)

Available real-time hydrometeorological observations:

- GTS messages from ships,
- 3 coastal meteorological stations (meteoparameters, water temperature, sea surface elevation) of the marine areas in the vicinity of Vladivostok.

http://rus.ferhri.ru/argoos/part_goos_dat1.php

Unfortunately, due to the system's limitations, the UI is in Russian only.

Available real-time (operational) forecast products:

- Wave forecast for 120 hours (images).

http://www.ferhri.org/en/our-projects/near-goos/operative-products.html

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Temporarily stopped.
Require password to access.
If NEAR-GOOS members are interesting to use these data FERHI can arrange the password access.

Available real-time (operational) forecast products:

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http://www.ferhri.org/en/our-projects/near-goos/operative-products.html

Real-time database

Access: **ftp://rus.ferhri.ru/pub/neargoos/**
http://rus.ferhri.ru/argoos/part_goos_dat1.php

Data: - Meteorological observations from ships[ShipV]
- Coastal station observations [StationV]

Daily update. Separate files for each day contain all the data in plain text form. File format description provided.

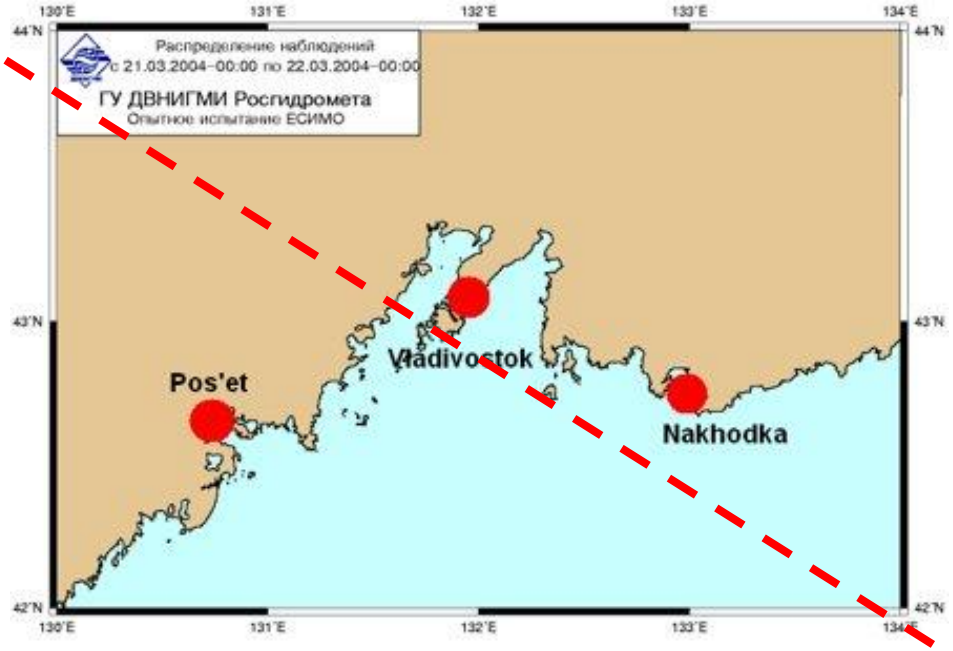
Ship data stream:

GTS meteorological data on lowest cloud height, visibility distance, total cloud cover, wind direction and speed, air temperature and dew-point, instrument-level pressure and its tendency, weather state etc.

Coastal stations data stream:

Data on visibility distance, wind direction and speed, air and water temperature, wave period and direction, ice cover concentration, floe size, and thickness.

Three automated stations at Vladivostok, Pos'et and Nakhodka.



Temporarily stopped. Require password to access. If NEAR-GOOS members are interesting to use these data FERHI can arrange the password access and probably add more parameters.

Operational wave forecast

FERHRI

http://ferhri.org/en

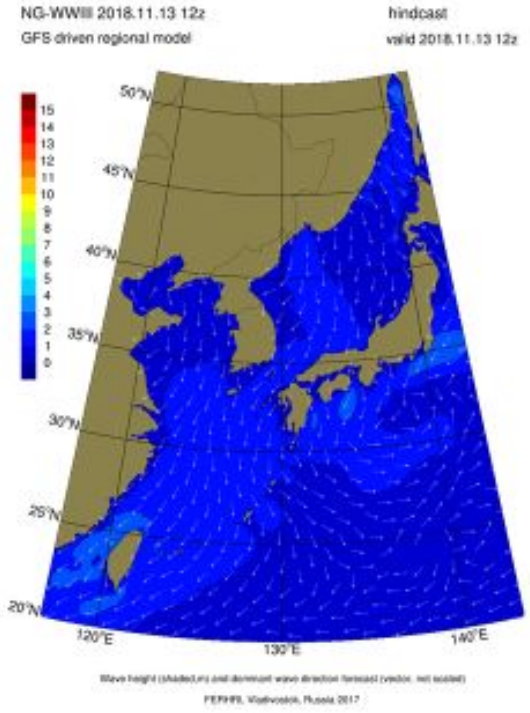
ABOUT FERHRI | OUR FLEET | OUR PUBLICATIONS | OUR PROJECTS

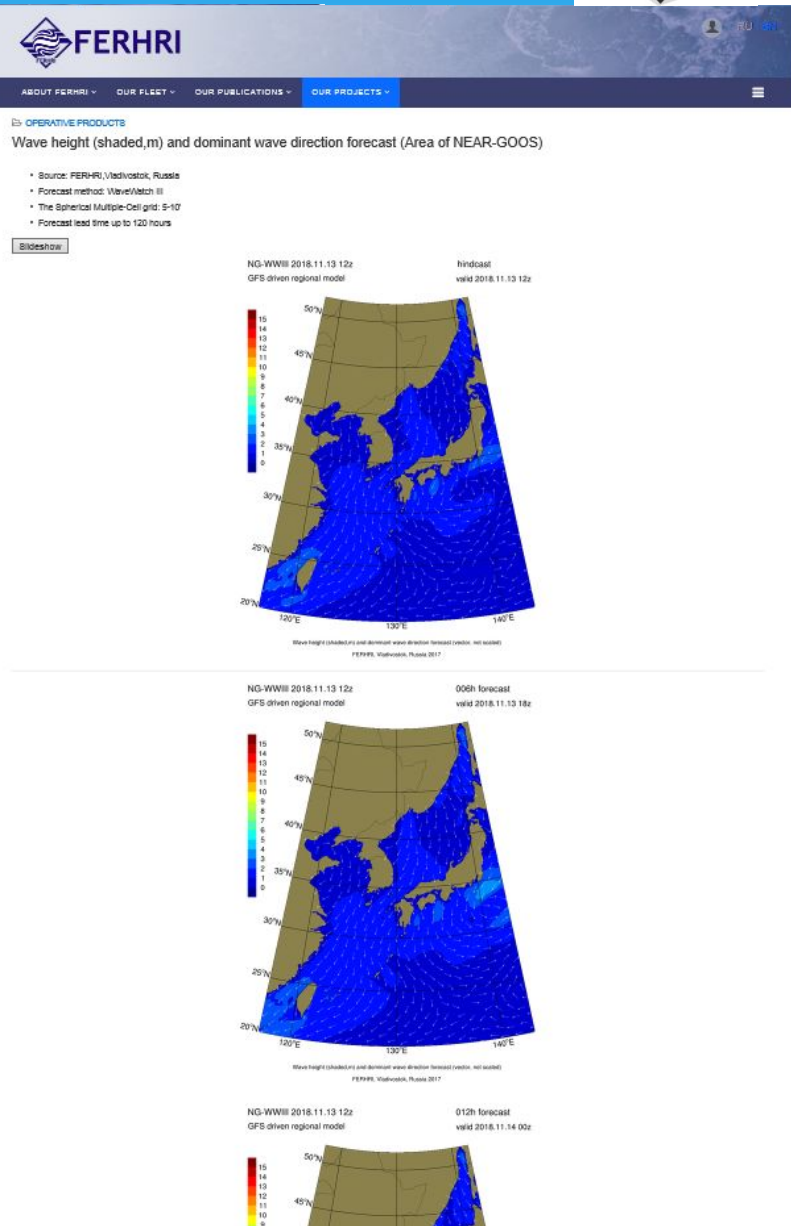
OPERATIVE PRODUCTS

Wave height (shaded,m) and dominant wave direction forecast (Area of NEAR-GOOS)

- Source: FERHRI,Vladivostok, Russia
- Forecast method: WaveWatch III
- The Spherical Multiple-Cell grid: 5-10'
- Forecast lead time up to 120 hours

Slideshow





Operational wave forecast

Access:

http://www.ferhri.org/en/our-projects/near-goos/operative-products/248-wave-height-and-dominant-wave-direction-forecast.html

Data: Images

The WAVEWATCH III used in the FERHRI takes into account the mechanisms developed by the French Meteorological Agency (IFRAMET), by F. Ardhuin:

- Energy input and dissipation (ST4 switch);
- Parameterization for sandy bottom, obtained on the basis of experimental SHOWEX data (BT4 switch);
- BS1 switch and coastal refraction (REF1 switch).

Additionally, the model takes into account:

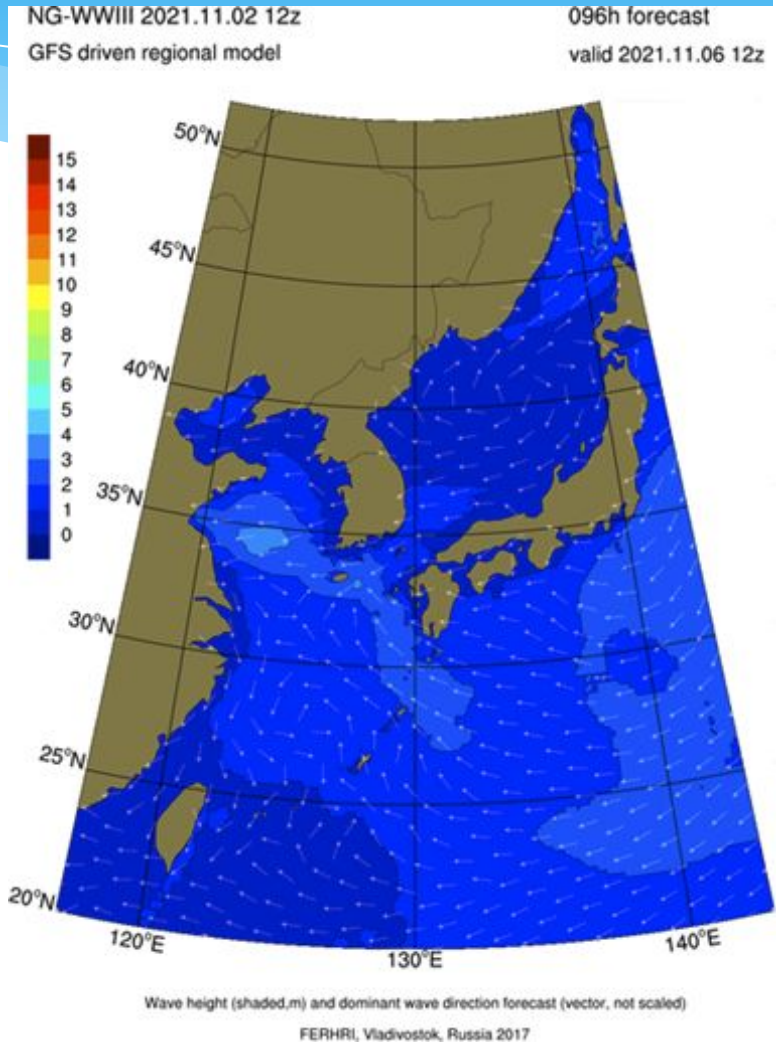
- crests collapse in shallow water;
- non-linear discrete interaction approximation (DIA, NL1 switch)

120 hour forecasts issued twice a day for 0 and 12 UTC in automatic mode.

The forecast utilizes 12 processors.

Parallelization of the task is performed using the Message Passing Interface (MPI) software package.

Operating system: MS Windows (64-bit).



Delayed-mode database

Access (rus):

http://ferhri.org/napravleniya-rabot/2017-06-25-23-13-34/2017-07-26-05-45-24/10-okeanograficheskie-s-jomki-dvnigmi-v-zalive-petra-velikogo.html

Data:

- Metadata of ocean surveys
- Images

Overview:

- The ocean surveys in the **Peter the Great bay** have been conducted since 2001 twice a year in spring and autumn with some gaps until 2007.
- The survey domain is bound by geographic configuration of the Peter the Great bay and 200-300 meters of depth (even if bottom is deeper).
- The majority of these cruises was conducted utilizing two ships simultaneously.
- The acquired data is quality checked, processed, and put into the internal database as temperature and salinity profiles at station locations.

- *The observed data can be acquired only through the contact with the FERHRI administration.*

Survey #	Start date	Stations count	Duration (days)	Survey #	Start date	Stations count	Duration (days)
1	15.08.2001	113	5	17	15.05.2013	173	5
2	14.11.2001	111	5	18	02.09.2013	173	4
3	10.07.2003	26	3	19	05.05.2014	174	5
4	09.08.2003	23	4	20	11.09.2014	172	5
5	21.10.2003	180	6	21	14.05.2015	173	4
6	30.06.2004	39	3	22	07.09.2015	172	8
7	24.07.2007	171	7	23	04.05.2016	173	6
8	10.10.2007	105	6	24	22.08.2016	173	5
9	10.09.2008	172	7	25	05.06.2017	172	6
10	05.08.2009	179	7	26	25.08.2017	170	6
11	20.04.2010	171	7	27	04.05.2018	172	6
12	24.08.2010	172	5	28	20.08.2018	171	5
13	24.06.2011	173	6	29	22.05.2019	172	5
14	09.09.2011	173	5	30	24.08.2019	169	5
15	04.04.2012	85	14	31	08.08.2020	171	6
16	11.09.2012	69	4	32	22.08.2020	169	8
				33	14.05.2021	172	6

schemes

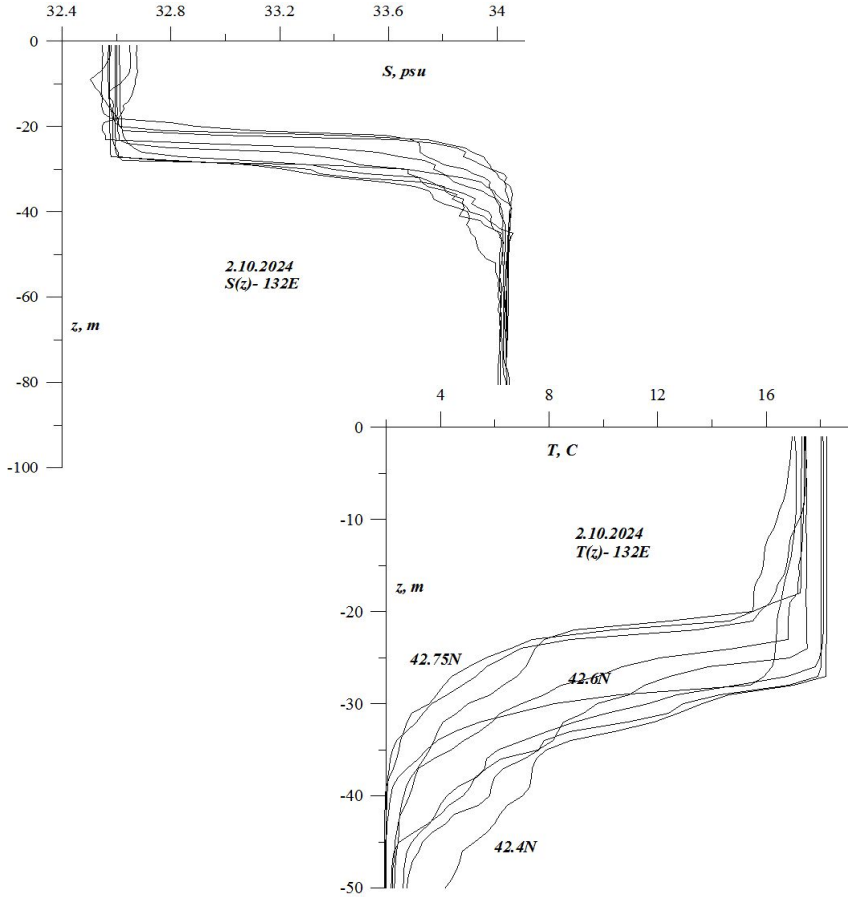
Delayed-mode database

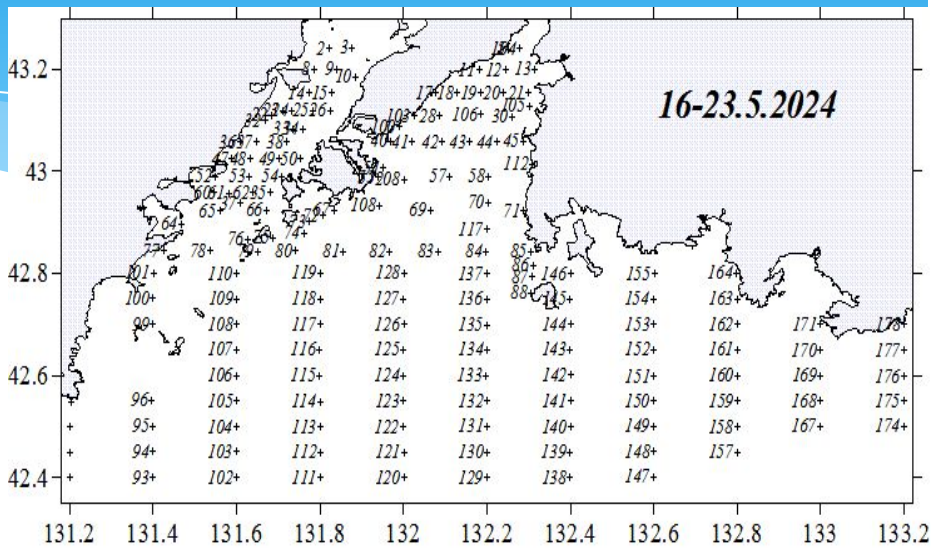
Access (rus):

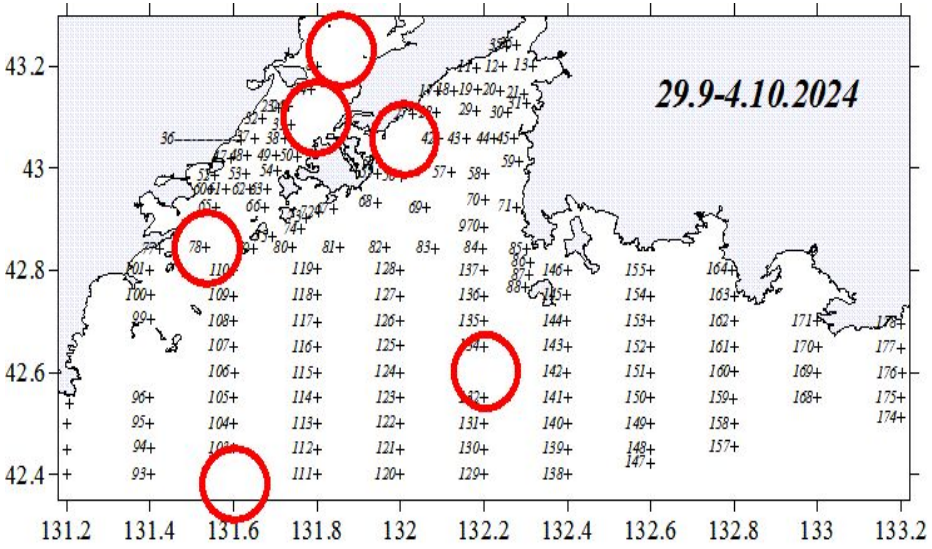
http://ferhri.org/napravleniya-rabot/2017-06-25-23-13-34/2017-07-26-05-45-24/10-okeanograficheskie
ki-dvnigmi-v-zalive-petra-velikogo.html

Data:

- Metadata of Peter the Great Bay surveys
- Images







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Data:

- Metadata of ocean surveys
- Images

Images:

(some positions may be missing for some surveys)

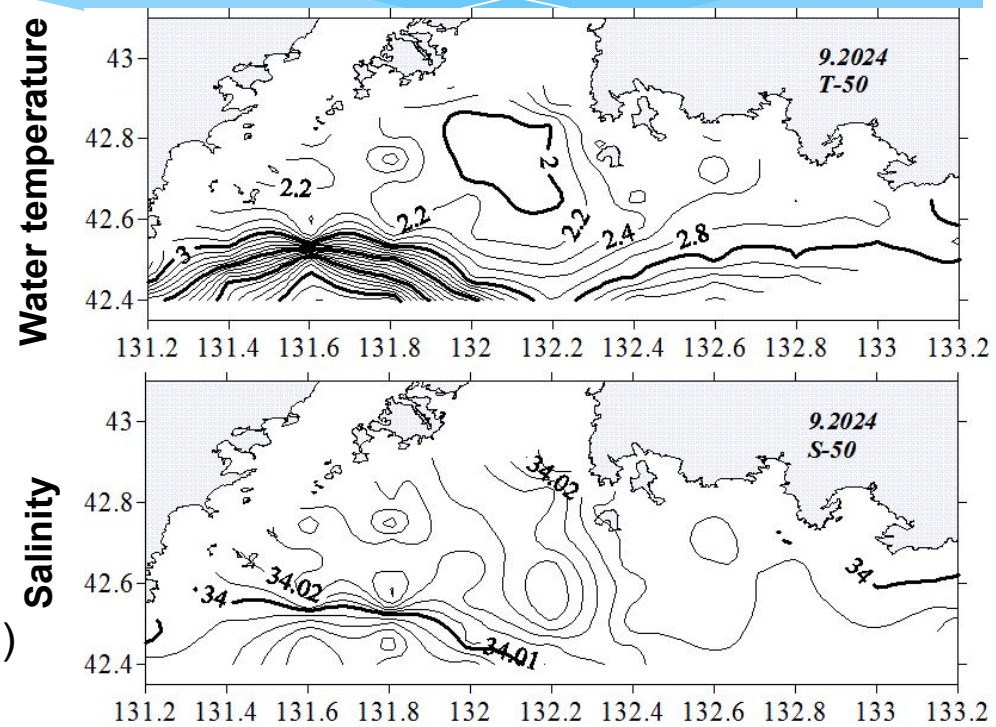
Horizontal distribution images:

- Surface *(example to the right)*,
- 20 m,
- 30 m,
- 50 m,
- Bottom.

Vertical distribution images:

- Meridional slices: 131.2 - 133.2 (step 0.2) deg. east.
- Zonal slices (rarely): ~42.5, ~42.8, ~43 deg. north.

Surface and subsurface distribution



Available parameters: water temperature, salinity, specific density, as well as diagnostic currents estimated by using diagnostic numerical models.

Delayed-mode database

Access (rus):

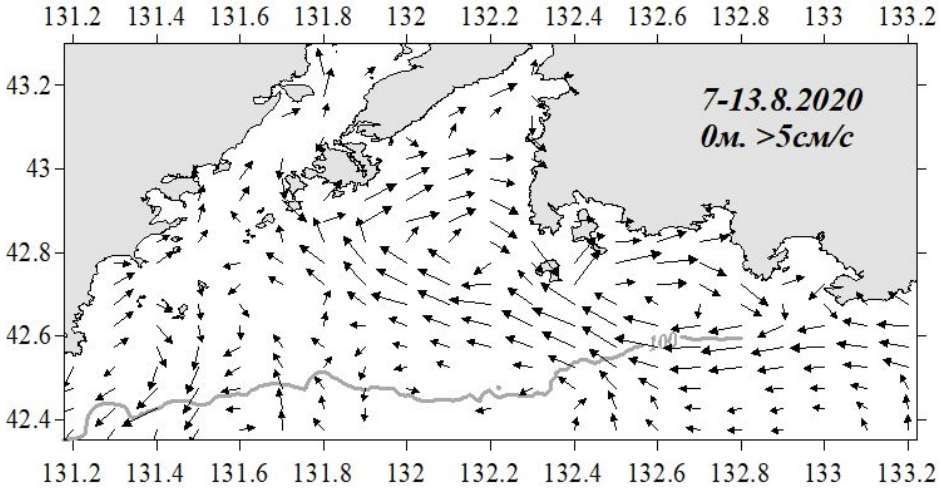
http://ferhri.org/napravleniya-rabot/2017-06-25-23-13-34/2017-07-26-05-45-24/10-okeanograficheskie-s-jomki-dvnigmi-v-zalive-petra-velikogo.html

Data:

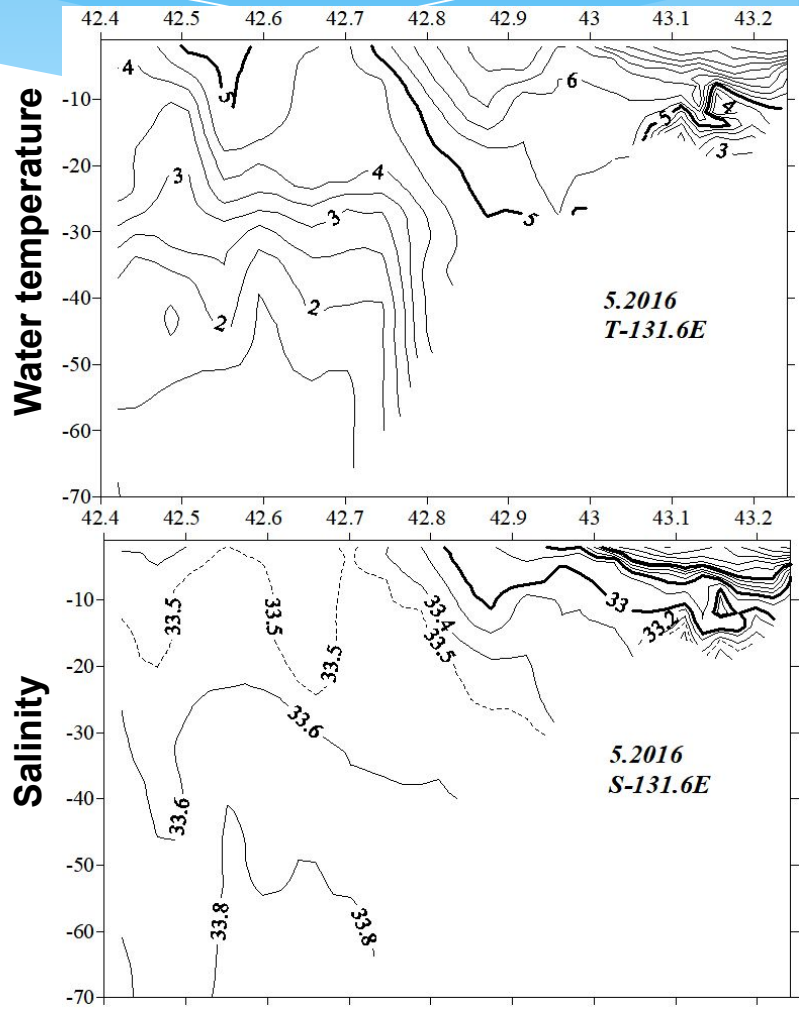
- Metadata of ocean surveys
- Images

More examples:

Surface currents (via diagnostic model)



Meridional cross-section



Model intercomparison

Work in progress
Simple approach; w/o complex nDVAR assimilation schemes

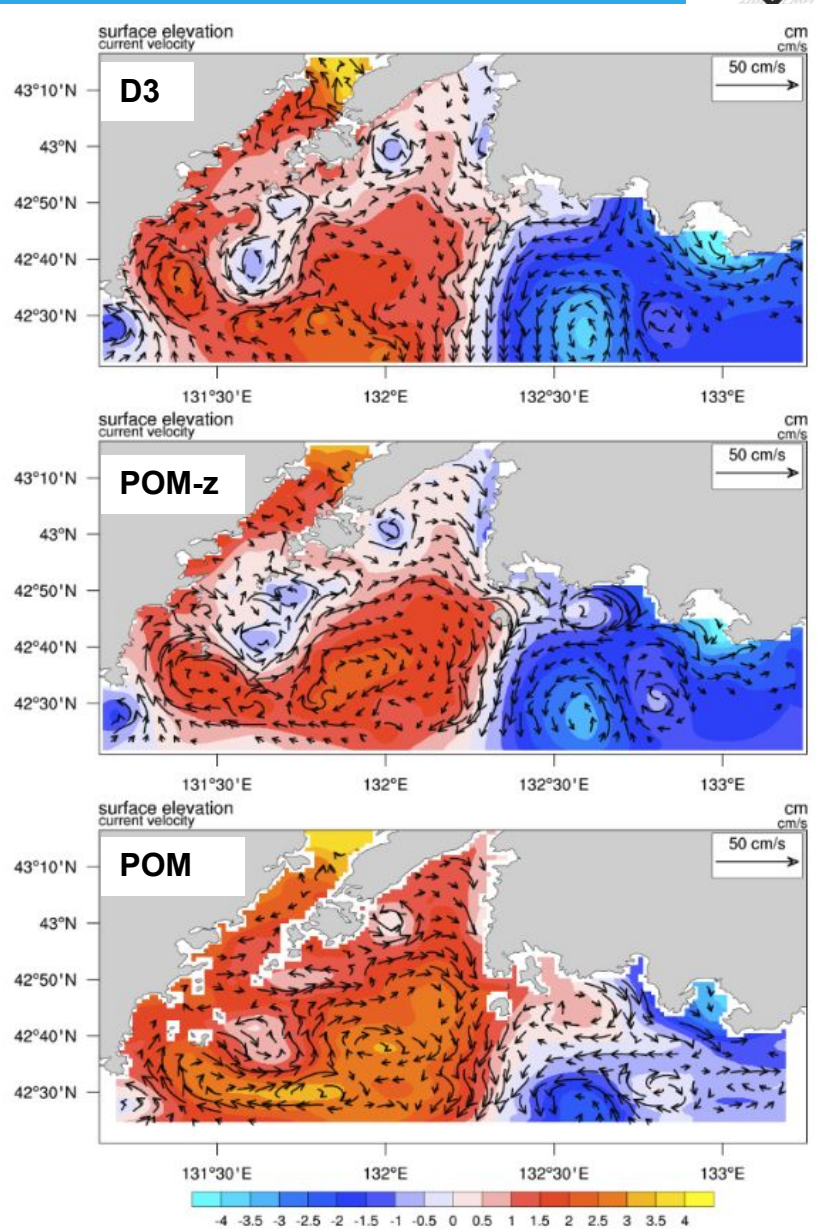
2 models:

- Diagnostic linear model D3 *(Sarkisyan, 1977)* [MATLAB]
- Hydrodynamic ocean model (POM) with "diagnostic" mode *(Blumberg, Mellor, 1987)* [FORTRAN]

POM is modified to allow z-coordinates for better intercomparison with a D3 model.
An "approximation" of diagnostic approach is used by fixing T and S in time.

Diagnostic model is quite simple and requires minimum CPU time.

POM is more reliable but generates more kinetic energy and requires a lot more CPU time to finish simulations.



NEAR-GOOS DMDB (POI)

pacificinfo.ru : POI NEAR-GOOS Delayed Mode Data Base. - Microsoft Internet Explorer

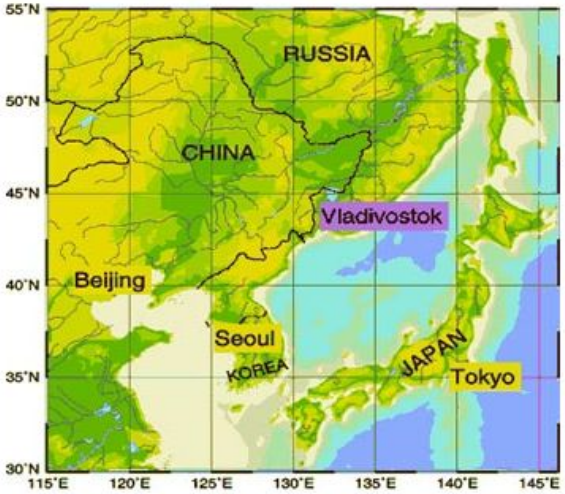
Файл Правка Вид Избранное Сервис Справка

Назад Поиск Избранное

Адрес: http://pacificinfo.ru/near-goos/ Переход Ссылки

NEAR-GOOS Delayed Mode Data Base (DMDB of POI, Russia)

under reconstructions



Averaged by 1/4 degree squares data set of temperature and salinity.

Data catalogues

Distribution of oceanographic station data on NEAR-GOOS area observed in 1996-2006

Other NEAR-GOOS Data Bases

Links

"Oceanographic atlas of the Bering Sea, Okhotsk Sea and Japan/East Sea"

"Inventory of cruise with CHLOROPHYLL data observation "

Current POI R/V position

<<< Back |

NEAR-GOOS DMDB (POI)

1. Gridded data

2. Cruise Data/metadata:
   - POI
   - TINRO-Centre
   - FERHRI

3. POI R/Vs positions monitoring

4. Inventory of cruises with CHLOROPHYLL and suspended materials data observations

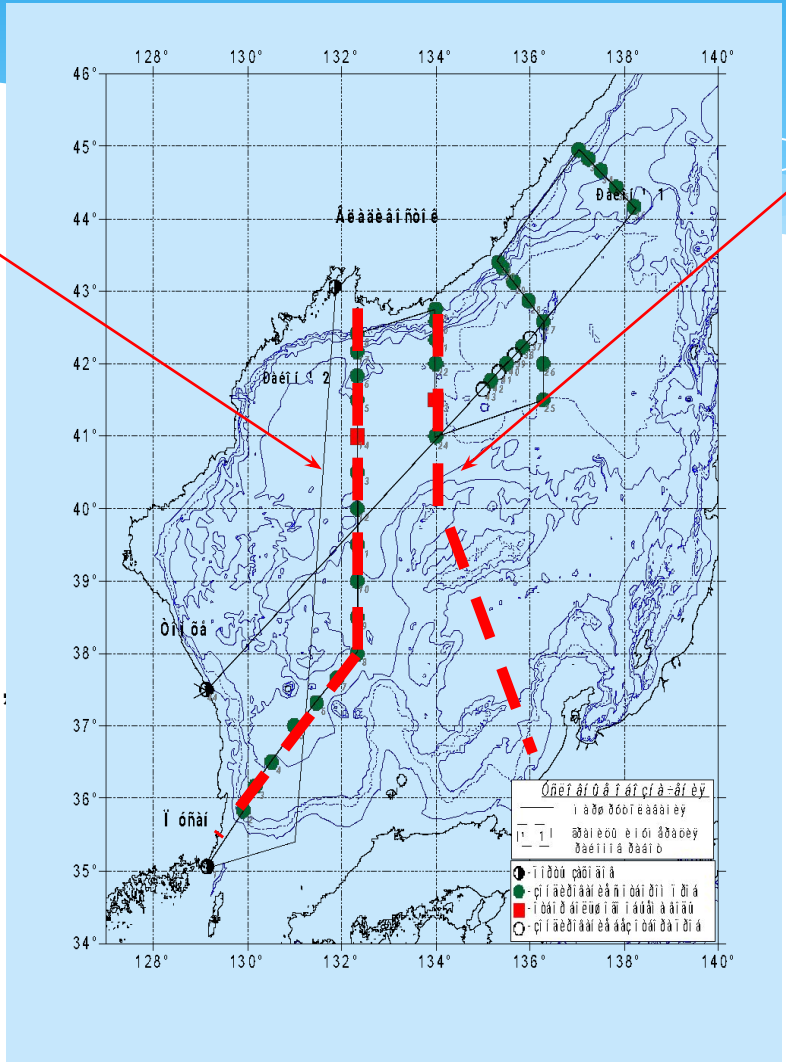
5. Development of observing system

5. NEAR-GOOS Observing System Development

- Climate monitoring sections
- Peter the Great Bay Observing System

Basin scale monitoring:
two Climate Monitoring Sections

CREAMS Line
- with SNU, Korea
- since 2001
- Japan and Ulleung deep basins
- every 1-3 years interval
- last - Nov 2019
- next – ?
- CTD, chem, carb., Chl, phyto- and zooplankton)

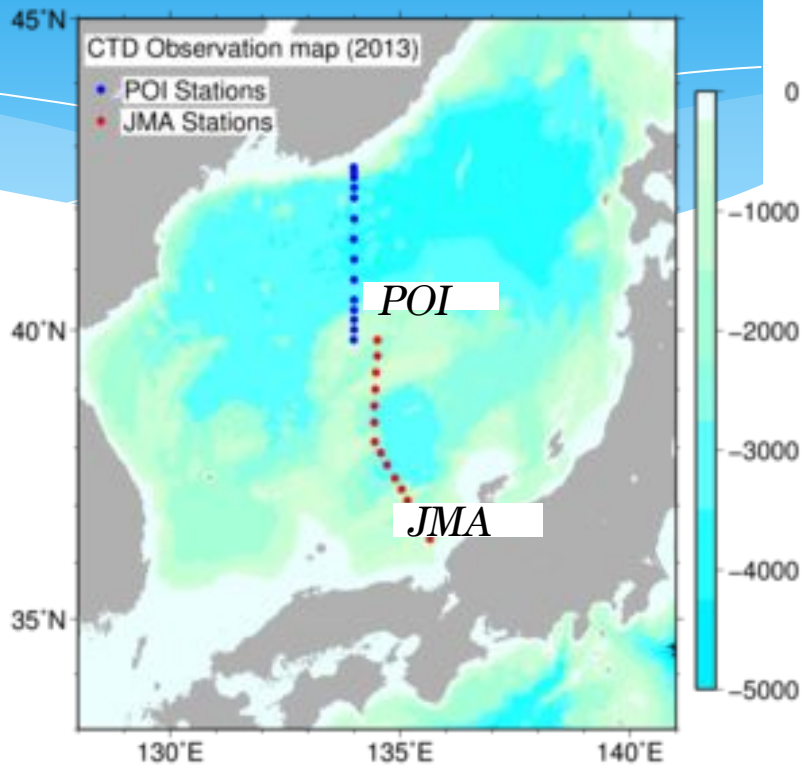


NEAR-GOOS Line
- with JMA, Japan
- since Nov. 2011
- Japan and Yamato deep basins
- every 1years interval
- last – Dec 2020
- next - 2025
- CTD, chem, carb., Chl

NEAR-GOOS Climate Monitoring Section

* Observation period 2011-2021:
  * Late October-early December

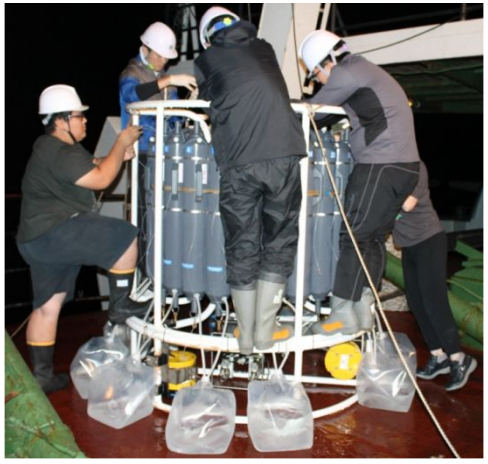
* Observed elements:
  * CTD & water sampling down to the bottom
  * Parameters observed:
    * Temperature, Salinity,
    * Oxygen, Nitrate, Nitrite, Silicate, pH,
    * Total inorganic carbon, Alkalinity



Climate Monitoring Section Implementation

r/v Akademik M.A.Lavrentyev
Akademik Oparin, Prof. Gagarinskiy

r/v Keifu-maru



<u>Synchronised observations:</u>

2011 Oct-Nov
2012 Oct-Nov
2013 Oct
2014 Oct
2015 Oct
2016 Nov-Dec
2017 Oct-Nov
2018 Oct-Dec
2019 Oct-Nov
2020 Oct-Dec
2021 Dec

Conclusion

- Activity under NEAR-GOOS has been continued in Russia
- This include development of both Data Bases and Observation capacities
- Some restrictions on free data exchange occurred since 2022

Thank you !

Twenty fifths session**, Bangkok, Thailand**, 24 April, 2024
Twenty fours session, online, 12 Oct, 2023
Twenty third session, online, 11 April, 2022
Twenty second session, online, 4 Nov, 2021
Twenty first session, online, 19 Oct, 2020
Twentieth session, Gangneung, Korea, 21-22 Nov, 2019
Nineteenth Session, **Bangkok, Thailand**, 13-15 Nov, 2018
Eighteenth Session, Fuzhou, China, 20-22 Nov, 2017
Seventeenth Session, Vladivostok, Russia, 14-16 Dec, 2016
Sixteenth Session, Tokyo, Japan, 8-9 December 2015
Fifteenth Session, Busan, Republic of Korea, 10-11 October 2013
Fourteenth Session, Tianjin, China, 8-9 September 2011
Thirteenth Session, Vladivostok, Russia, 8-10 April 2010
Twelfth session, Kota Kinabalu, Malaysia, 24 May 2008
Eleventh session, Bangkok, Thailand, 18-19 January 2007
Tenth session, Busan, Republic of Korea, 16-18 January 2006
Ninth session, Sendai, Japan, 3-5 November 2004
Eighth session, Beijing, China, 8-10 December 2003
Seventh session, Vladivostok, Russia, 2-4 October 2002
Sixth session, Seoul, Republic of Korea, 31 August 2001
Fifth session, Seoul, Republic of Korea, 7-8 December 2000
Fourth session, Tokyo, Japan, 28 September - 1 October 1999
Third session, Beijing, China, 3-6 August 1998
Second session, **Bangkok, Thailand** 14-16 May 1997
First session, **Bangkok, Thailand**, 4-6 September 1996

Operational manual version 1.0 for NEAR-GOOS Data Exchange; May 1997

Draft pilot implementation plan for North-East Asian Regional - Global Ocean Observing System (NEARGOOS); Tokyo; 26 February - 1 March 1996