North East Asian Regional Global Ocean Observing System (NEAR-GOOS):

the story of success and current requirements for coastal and marine management

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NEAR-GOOS: one of 13 GOOS Regional Alliances





Initiated by IOC of UNESCO in 1993 (UNESCO Res. 53)

NEAR-GOOS is a regional pilot project of GOOS in the Western Pacific region with a view to demonstrate the usefulness of a regional ocean observing system within the framework of GOOS.

Participating countries:

China, Japan, Republic of Korea, Russian Federation co-ordinated by *IOC/WESTPAC*

HISTORY

- In November <u>1993</u>, the General Conference of UNESCO adopted Resolution 57 which called on IOC to establish a GOOS regional pilot activity in the North-East Asian region.
- Planning of the regional pilot activity started in 1994 with the participation of China, Japan, the Republic of Korea and the Russian Federation.
- In February 1996, a draft implementation plan for NEAR-GOOS was presented at the third session of IOC Sub-Commission for the Western Pacific.

- The session decided to establish a Coordinating Committee as a management body for NEAR-GOOS.
- The Coordinating Committee finally adopted an implementation plan for the initial phase NEAR-GOOS at its first session in September 1996.
- <u>1998</u>-1999 Current NEAR-GOOS Structure was fixed. NEAR-GOOS Data Bases was set up; operational manual was prepared revised and completed

The main goal of NEAR-GOOS in its initial phase:

To promote free oceanographic data exchange in real time through Internet, in support of daily mapping of sea conditions in marginal seas bordered by NEAR-GOOS participating countries, benefiting a wide range of marine users.

- limited number of oceanographic parameters
- easily accessible
- free of charge



NEAR-GOOS Data Flow since 1998 T. Yoshida



Regional Data Bases

NEAR-GOOS Regional Real-Time Data Base:http://goos.kishou.go.jp- JMA

NEAR-GOOS Regional Delayed Mode Data Base:http://near-goos1.jodc.go.jp-JODC



NBAR-GOOS Regional Real Time Data Base

http://goos.kishou.go.jp

User's Room registered users only!! Access to the data in the NEAR-GOOS RRTDB, Manual on Codes of WMO, etc **Data in the NEAR-GOOS RRTDB** Short descriptions of the data in the NEAR-GOOS RRTDB **JMA Products** Graphic-type products by JMA **Online Registration Operational Manual for the NEAR-GOOS LINKS**

Data available at Regional Real-Time DB,

40 different types of data and products:

- GTS Reports (oceanographic and marine meteorological observations)

FM13 SHIP, FM18 BUOY, FM62 TRACKOB, FM63 BATHY, FM64 TESAC

- Data provided by users (sea water temperature observations)
- Decoded Data (temperatures and winds)
- GTSPP (quality controlled temperature and salinity data)
- JMA Products:
- 1) Daily Sea Surface Temperatures (MGDSST: Global, Regional),
- 2)10 day mean SST (MGDSST and others: Northwestern Pacific),

3) Monthly Mean SST (COBE-SST: Global),

- 4) Daily Subsurface Temperatures and Surface Currents (Assimilation model-MOVE/MRI.COM outputs: Regional),
- 5) Monthly Mean Pacific Subsurface Temperatures (OI),
- 6) 5 day mean Sea Surface Heights (Jason, Pacific),
- 7) Sea Ice Concentrations (north-east Asian marginal seas)
- Observations by JMA Research Vessels

JMA products

Daily Sea Surface Temperature (MGDSST) Global/Regional 10 days SST (regional) and monthly mean Global/Regional





T.Yoshida, JMA

JMA products

Monthly mean Pacific Subsurface Temperatures (OI) 5 day mean Sea Surface Heights (Jason, Pacific)





JMA products

Sea Ice Concentration (North-east Asian marginal seas)



JMA products (new)

<u>Daily</u> and monthly <u>Subsurface</u> Temperatures and Surface Currents with high spatial resolution data of 0.1 degree (assimilation MOVE/MRI.COM, Regional)







- Composition of NEAR-GOOS RRTDB registered USERS
 - Total number of users: 114 as of April, 2010
 - The registered users are from Australia (1), Canada (4), China (15), Greece (1), Indonesia(1), Japan (78), Republic of Korea (4), Russian Federation (7), U.K. (1), and USA (2),
 T. Yoshida, Y. Kanno

Regional Real-Time DB Registered Users (1996-2009)

The total number of the registered RRTDB users was increased from 105 in May 2008 to 114 in Apr 2010. The maximum number of this period was 145, on Apr 2009.



Status of Access to RRTDB (2009 Jan-Dec)

total 33 thousand downloads



Y. Kanno



Last update : November 11, 2002

As a regional pilot project of the Global Ocean Observing System (GOOS), the North-East Asian Regional GOOS (NEAR-GOOS) is being implemented by China, Japan, the Republic of Korea and the Russian Federation. NEAR-GOOS is intended to provide a regional framework for gathering and distributing oceanographic data in the North-East Asian region, in enabling participating countries to make better use of their investments in ocean observations and research towards the establishment of the Global Ocean Observing System. Oceanographic data and relevant products generated within NEAR-GOOS system will be open at free cost through electronic communications for various forms of marine uses.

The oceanographic/marine meteorological data in the NEAR-GOOS region are maintained at the Regional Delayed Mode Data Base (RDMDB) operated by the Japan Oceanographic Data Center (JODC), which is responsible for the Regional Data Center for WESTPAC. The Regional Delayed Mode Data Base receives the data from the Regional Real Time Data Base

1





NEAR-GOOS Regional Delayed Mode Data Base (RDMDB)

RDMDB processes 43 items at present 40 items from RRTDB

GTS, NRTDB and other organizations, JMA products

The data volume of RDMDB was totally 65 GB (as of the end of 2009)

Data volume has increased by 18GB for the past 21 months. The following items have increased by more than 1GB. GLBTS(7.4GB), Buoy G(2.6GB), MGDSST(1.9GB), 30secTIDE(1.0GB)

S. Satou, JODC

Annual change of access number to English and Japanese top page of RDMDB



The total access numbers have been in constant level around 8000 a year since 2006. The access numbers to the English in 2009 was counted maximum number of 5700 in the past years.

Annual variation of the downloaded data file numbers and volume from RDMDB



About 12,600 data files and 31GB data were downloaded from RDMDB in 2009.

The numbers of downloaded files by member countries from 2007 to 2009

	Year 2007	Year 2008	Year 2009
CHINA	4329	1222	9815
JAPAN	1014	1537	1281
KOREA	1126	478	459
RUSSIA	28	200	7
Others	27	274	503
Unknown	1406	1030	553

S. Satou, JODC 22

Regional and National NEAR-GOOS Data Bases

Country	Data base	Responsible organization	Address
Japan	Regional RTDB	JMA	http://goos.kishou.go.jp
	Regional DMDB	JODC	http://near-goos1.jodc.go.jp
China	National RTDB	NMEFC	http://www.nmefc.gov.cn
	National DMDB	NMDIS	http://www.nmefc.gov.cn
Korea	National RTDB	KORDI	http://near-goos.kordi.re.kr
	National DMDB	NFRDI	http://kodc2.nfrdi.re.kr:8001/home/eng/ near-goos
Russia	National RTDB	FERHRI	http://rus.ferhri.ru/esimo/Projects/Nearg oos
	National DMDB	POI	http://www.pacificinfo.ru



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Implementation of NEAR-GOOS Initial Goal

Goal:

• to facilitate the sharing of oceanographic data in the region

Achievements:

- Consolidation of the <u>Regional Database</u> <u>System</u>: functional two-mode structure based on internet.
- Adoption and practice of a <u>free and open data</u> <u>exchange</u>

NEAR-GOOS DEVELOPMENT

From pilot experiment toward sustained regional monitoring system

- adoption of the Strategic Plan (Nov. 2004),
- first actions toward its implementation



A Strategic Plan For NEAR-GOOS In Its Second Phase

GOOS REPORT NO. 166

Vision of the NEAR-GOOS 2nd Phase

- systematic observations and associated research,
- operational system that brings products and services that meet the needs of users,
- providing information on the past, present and future
- of marine environment, ecosystem and climate.

The Mission

'To develop a comprehensive and sustained ocean observing network in the North-East Asian regional seas and coastal regions, especially focussed on observations, monitoring and other activities that cannot be easily implemented by countries acting independently.

This network will embrace a wide range of data types and will be accompanied by pilot observing experiments, trials and demonstrations, training and useful products for use by the participating members and as a contribution to the GOOS and other global observing initiatives.'

Concerns

- Data management system
 - Restrictions of data exchange (on national and international levels)
 - Limited number of parameters and gaps in the areas
- Coordination mechanism
 - Lack of strong coordination in some countries
 - CC is not effective as a steering committee not many experts are involved
- Visibility and recognition
 - Low level
- Funding status
 - Lack of financial support

Strategy

- Restructuring NEAR-GOOS to provide a more comprehensive, flexible and expandable operational capability appropriate to a shift from a regional pilot experiment to a durable regional alliance;
- Strengthening and refinement of Data Bases network established in Phase 1 to deliver data and useful products;
- Implementation of NEAR-GOOS-labeled projects - enhance range of parameters, spatial coverage, range of products; - involve research scientists and organizations;
- Establish Outreach program of awareness rising, recruitment of partners, training and capacity building.

New Structure



Partners

New Structure



Existing part

Requirements for Implementation

 Stronger support on national and international level MoU between member countries Closer interaction with other GRAs (GRAND)
 Involve more scientists and agencies NEAR-GOOS and co-sponsored Workshops
 Share resources with regional organizations and programs

PICES, NOWPAP, LMEs, PEACE

First Steps

Workshops on NEAR-GOOS data managements, data processing, products, operational forecasts etc.

- Establishing of working groups on:
 - Data management
 - New Generation SST project

Under discussion:

- Monitoring using ferry boats
- Coordination of in situ routine observations

WESTPAC New Generation Satellite SST Project

quality-controlled, cloud-free

<u>Since Oct. 2003:</u> 4 km, daily

Planned: 1 km, 4 times a day

A regular product as MGDSST by JMA since 2006

H.Kawamura, U.Tohoku, Japan



Development of regional observing system

Extensive development of the observing system involved in NEAR-GOOS was demonstrated in Korea where it consists of growing network of coastal stations, moorings, buoys and open sea platforms. Joint Korean-China activity, development of Yellow Sea Operational Oceanography System (YOOS) will essentially contribute to NEAR-GOOS. In addition to regional data sets the most of the data bases are linked with other international project, such as Argo, GTSPP, JCOMM.



Capacity Building

• Training course on NEAR-GOOS Data Management

Every year since 1997 JODC, with support from Japan Fund in Trust for UNESCO and the IOC, organise the course for 7 people with preference to NEAR-GOOS and WESTPAC member states.

The course covers subjects of data processing, data quality control, data archive, and basic database skills at data centers

1st NEAR-GOOS - NOWPAP Joint Training Course on Remote Sensing Data Analysis 3-7 Sept. 2007, Nagasaki Univ., Japan



- 23 trainees (post-grad. students, researchers) from 8 countries;

 lectures and hands-on practical sessions on the analysis of satellite data;

- introduced practical satellite remote sensing applications, especially related to eutrophication, red tides and oil spills.

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Challenges

- Requirement to increase visibility of NEAR-GOOS to provide more products and services to meet the needs of end users rather than basic oceanographic information (end-to end observing system)
 - contradicts with initial idea of NEAR-GOOS as free data provider , products need more funding...
- More data for ecosystem and coastal management.
 coastal observations are mostly done by national observing systems, how to keep project as an international collaboration?...

Conclusion

- 1. NEAR-GOOS provides various oceanographic data that are useful for oceanographic community. Some problems of easy and fast international data exchange still exist. However the volume of available data, number of parameters, data providers and users are steadily increasing.
- 2. Over its more than ten years history NEAR-GOOS developed technology of oceanographic data management, exchange and services, communication with data providers and users. This experience would be useful for developing of new ocean observing systems in the PICES area.

Conclusion

3. Further development of NEAR-GOOS would require to increase visibility to involve more partners/data providers as organizations and individual scientists.

It may be expected that by enhancing cooperation and sharing resources between NEAR-GOOS and PICES this would be achieved.