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All the Appendices are the original PPT copies shown during the 9<sup>th</sup> CEARAC FPM, and some descriptions are not matched to documents in this booklet which were revised after the meeting in accordance with the adopted report of the 9<sup>th</sup> CEARAC FPM.

**Report on NOWPAP implementation**

NOWPAP RCU

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**DINRAC**

DINRAC has maintained the following databases (available at the DINRAC website):

- Database on **NOWPAP Institutions** and **NOWPAP Experts**
- Database on NOWPAP Coastal and Marine Environmental **Geographic Information Systems (GIS)** and **Remote Sensing (RS)** applications
- Database on **Marine Litter**
- Database on **Coastal and Marine Nature Reserves**

Reference Databases have been also established and maintained:

- **Atmospheric Deposition (AD)** of contaminants
- **River and Direct Inputs (RDI)** of contaminants
- **Integrated Coastal and River Basin Management (ICARM)**

In October 2010, **national and regional reports on alien species in the NOWPAP region** were published.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**MERRAC (1)**

The 14<sup>th</sup> NOWPAP IGM approved MERRAC work plan and budget for 2010-11 biennium, including the following activities:

- **Expert Meeting** to be hosted by Japan on technical issues regarding the marine pollution preparedness and response in the NOWPAP region
- **NOWPAP Exercises** (NOWPAP BRAVO, NOWPAP DELTA) to enhance regional capacity on marine pollution preparedness and response
- **Regional report on HNS preparedness and response**
- Other specific projects on oil and HNS issues
- **Marine litter** issues (under NOWPAP RAP MALI)

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**MERRAC (2)**

- **NOWPAP BRAVO (communication) exercises** were conducted (in April 2010, led by Russia).
- The **3<sup>rd</sup> Joint NOWPAP Oil Spill Response Exercise** (NOWPAP DELTA) was conducted in Wakkanai, Japan on 4 September followed by **MERRAC Expert Meeting** (Forum on Sakhalin Projects) on 5 September 2010.
- In 2010, MERRAC has completed **HNS training manual** and published **Regional report on HNS preparedness and response**.
- In June 2011, MERRAC held the **14<sup>th</sup> Focal Points Meeting** and **Competent National Authorities Meeting** and discussed details of work plan for 2012-2013 biennium.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**POMRAC**

The 14<sup>th</sup> NOWPAP IGM approved POMRAC workplan and budget for the 2010-2011 biennium, including the following main activities:

- Preparation of the Regional Overview “**Atmospheric deposition of contaminants in the NOWPAP region with special case studies on anthropogenic and natural changes**”
- Preparation of the Regional Overview “**River and direct inputs of contaminants in the NOWPAP region with special case studies on anthropogenic and natural changes**”
- Preparation of **ICARM regional strategic plan**
- Preparation of the draft of the second “**State of Marine Environment Report**” for the NOWPAP region

Within ICARM, experts started preparation of the Regional Overview on **marine spatial planning and ecosystem-based management** in the selected areas of the NOWPAP region.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**NOWPAP RAP MALI**

After the **2010-11 work plan and budget for the NOWPAP RAP MALI** was approved by NOWPAP National Focal Points, the following activities were implemented:

- **DINRAC has added to its ML database monitoring results for 2009** provided by China, Japan, Korea and Russia.
- **News and information related to marine litter** have been posted and updated on the NOWPAP homepage by NOWPAP RCU, shared by e-mail with NOWPAP RACs and Marine Litter Focal Points (ML FPs).
- In September 2010, annual **national ICC campaigns** were organized in **China and Russia**.
- NOWPAP ICC held in Korea on 1-2 October 2010 marked the **10<sup>th</sup> Anniversary of the ICC movement in the Republic of Korea**.

Hirado, Japan, 2010  
Jeju, Korea, 2010

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

### Marine and Coastal Biodiversity Assessment (1)

Upon the decision of the 14<sup>th</sup> NOWPAP IGM to **assess marine and coastal biodiversity** in the NOWPAP region, the following report was issued as a part of the UNEP Global Outlook on Marine and Coastal Biodiversity: **Rapid assessment of the current status of marine and coastal biodiversity in the NOWPAP region**

Some key findings were:

- **Pressure:** rising fish catches; high level of nutrient loading; increasing shipping volumes; rising sea surface temperature.
- **State:** decline in Marine Trophic Index (MTI).
- **Response:** fish stock agreements; MPAs establishment.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

### Marine and Coastal Biodiversity Assessment (2)

**Asia Pacific Network for Global Change Research (APN)** granted **US\$ 86,000** for a project on “Impacts of Global Warming on Coastal and marine Ecosystems in the NW Pacific”. Project concept was initiated by NOWPAP and will be implemented under leadership of Dr. Sukgeun JUNG (Jeju National University). The project team will:

- conduct comparative studies across NOWPAP countries to evaluate regional differences in the responses of marine ecosystems to the changes in the NOWPAP sea area;
- provide scientific basis to decision makers in developing policy strategies in NOWPAP countries.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

### Partnerships (1)

NOWPAP RCU and RACs staff have continued actively developing partnerships with many relevant organizations, programmes and projects in the region:

- East Asian Seas Regional Coordinating Unit (**EAS/RCU**);
- GEF/UNDP/IMO Regional Programme on Partnerships in environmental Management for the Seas of East Asia (**PEMSEA**);
- North Pacific Marine Science Organization (**PICES**);
- UNESCO/IOC Sub-Commission for the Western Pacific (**WESTPAC**);
- UNDP/GEF Project on the Yellow Sea Large Marine Ecosystem (**YSLME**).

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

### Partnerships (2)

NOWPAP partners were involved in co-organizing numerous events, which improved sharing of information, coordination of related activities and raising public awareness.

Within the UN system, NOWPAP maintained good relationships with several important partners:

- **UNEP Regional Office for Asia and the Pacific (ROAP);**
- **UNEP Regional Seas Programme, Global Programme of Action (GPA)** for the Protection of the Marine Environment from Land-Based Activities;
- **IOC/WESTPAC;** and
- **IMO.**

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

### Public Awareness (1)

According to NOWPAP Public Awareness Strategy, the following actions were taken by NOWPAP RCU and RACs.

- NOWPAP homepage and RAC homepages have been **maintained and constantly updated**. News and information have been posted on the NOWPAP homepage in five languages (English, Chinese, Japanese, Korean and Russian) since 2006.
- News about NOWPAP implementation were **regularly posted at the partners' websites and introduced in their electronic newsletters** (e.g., COBSEA, PEMSEA, WESTPAC, YSLME).
- Information about NOWPAP activities was **introduced to UNEP Headquarters (HQ), UNEP ROAP and GPA websites** (and is currently available there).

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

### Public Awareness (2)

- **Several brochures, leaflets, posters about NOWPAP activities** were prepared and widely distributed.
- While attending a few global and regional meetings (e.g., 2010 Global Oceans Conference; 12<sup>th</sup> Global Meeting of Regional Seas; CBD COP-10) as well as local events, **RACs and RCU staff contributed to increasing NOWPAP visibility** and attracting public attention by introducing the NOWPAP activities.
- RACs and RCU staff also **contributed articles to magazines, newspapers and newsletters, and delivered lectures/presentations at a local level**.
- NOWPAP RCU proposal (prepared together with all RACs) for the display at the **2012 Expo** to be held in Yeosu, Republic of Korea, was accepted by Expo organizers.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

**Resource Mobilization / Financial Support**

- Several external funding sources were identified and approached by the NOWPAP.
- NOWPAP RCU has prepared several proposals to implement long-term biodiversity assessment in the region and submitted to Mitsui and Co. Ltd., Toyota Foundation, and APN.
- UNEP Regional Seas Programme (RSP) provided financial support (US \$ 5,000) to prepare rapid assessment of the current status of marine and coastal biodiversity in the NOWPAP region.
- Korean Government supported the NOWPAP ICC and Workshop in Jeju, Korea (October 2010).
- Global Programme of Action (GPA) provided financial support (US\$ 5,000) for marine litter-related activities during the 2011 NOWPAP ICC campaign in China.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

**Major Resolutions agreed at IGM-15**



- Requested RCU and RACs to implement activities of the NOWPAP RAP MALI as scheduled, in close collaboration with relevant organizations, programmes and projects, including NGOs and private sector
- Encouraged the NOWPAP member states, NOWPAP RCU and RACs, to make utmost efforts to seek additional funding sources as well as to utilize the resources available in the most efficient and effective manner.
- Agreed that the Korean Government prepares a draft paper on possible measures addressing future financial situation of NOWPAP and discuss it at the 16<sup>th</sup> IGM.
- Requested NOWPAP RCU and RACs to work closely on the preparation of the biennium work plan of NOWPAP for 2012-13 and NOWPAP Medium-term Strategy 2012-17.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

**After IGM-15 . . .**

**Draft paper on possible measures addressing future financial situation: "to seek additional funding sources..." for biennium work plan for 2012-13**

- Each RAC FP Meeting tends to apply narrow understanding of the work scope, which results in
  - overly limiting the opportunities of new project discoveries;
  - may have a negative influence on the RACs in extending their work scope to various areas in the future and in resolving financial situation.
- Will be affirmed at the next IGM that there is a need
  - to pioneer new projects at each center in terms of voluntary efforts made by RACs to resolve the ongoing financial situation (e.g., seeking external financial resources);
  - to recommend a RAC FP meeting to show affirmative support for efforts to pioneer new projects and establish additional financial resources at the centers.

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan

**Northwest Pacific Action Plan** **Regional Seas**

**Thank you!**

9<sup>th</sup> CEARAC FPM, September 2011, Toyama, Japan





## Report on implementation and expenditure of CEARAC activities for 2010-2011

NOWPAP CEARAC  
6-7 September 2011

## Outline of CEARAC Activities for the 2010-2011 biennium

- ◆ Organization of CEARAC 8<sup>th</sup> and 9<sup>th</sup> FPM
- ◆ Expert Meeting on assessment of eutrophication status and marine environment focusing on marine biodiversity
- ◆ Web maintenance
- ◆ CEARAC Projects  
(marine biodiversity) - Development of a new marine environmental assessment method focusing on marine biodiversity  
(WG3+WG4 Joint) - Assessment of eutrophication status  
(WG3) - Update of Integrated Report on HABs  
(WG4) - Update of Integrated Report on RS  
- 3<sup>rd</sup> Training Course on RS data analysis
- ◆ Cooperation and Coordination  
Publication of CEARAC Newsletters
- ◆ CEARAC Activities on RAP MALI

## Main Achievements of the 8<sup>th</sup> FPM

(13&15 September 2010, Toyama, Japan)

- ◆ Reported final outcomes of CEARAC activities for 2008-2009 biennium
- ◆ Reviewed progress of implementation in CEARAC activities for 2010-2011 biennium

## Main Achievements of the Expert Meeting on assessment of eutrophication status and marine environment focusing on marine biodiversity

(14 September 2010, Toyama, Japan)

- ◆ Reported interim results of eutrophication assessment in the selected sea areas
- ◆ Introduced a pilot study in Toyama Bay for development of a new marine environmental assessment method
- ◆ Discussed availability of data and applicability of proposed assessment method

## Maintenance of website

- WG3** - HAB Case Study Database  
- HAB Reference Database  
- *Cochlodinium* Homepage
- WG4** - Ocean RS Portal Site  
(Combination of existing 2 pages)  
- Website on Oil Spill Monitoring  
by RS

## HAB Case Study Database, HAB Reference Database, *Cochlodinium* Homepage

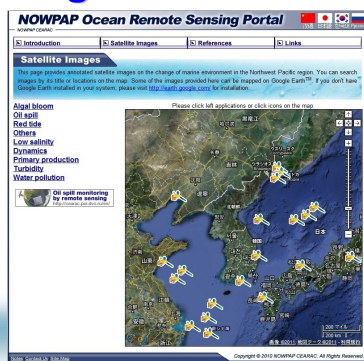
Case Study reports in 2009 and 2010, and datasheet including the latest information were updated

Information on scientific papers (2003-2005: 80, 2006-2008: 124) on HAB in the NOWPAP region is uploaded

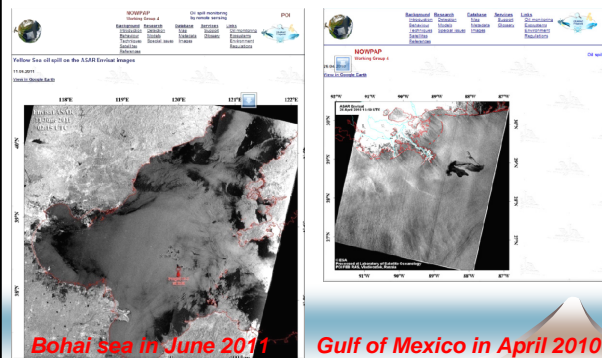
*Cochlodinium* Homepage in Chinese, Korean and Russian will be uploaded soon

## NOWPAP Ocean Remote Sensing Portal

15 satellite images (educational materials) 38 references have been added.



## Website on oil spill monitoring by remote sensing



## CEARAC Projects

- ◆ marine biodiversity
  - development of a new marine environmental assessment method focusing on marine biodiversity
- ◆ WG3+WG4 Joint
  - assessment of eutrophication status
- ◆ WG3
  - update of Integrated Report on HABs
- ◆ WG4
  - update of Integrated Report on RS
  - 3<sup>rd</sup> training course on RS data analysis

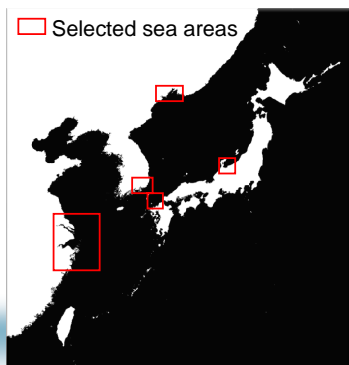
## Marine biodiversity

- ◆ Pilot study in Toyama Bay for developing a new marine environmental assessment method focusing marine biodiversity
- ◆ Expert Meeting on eutrophication and marine biodiversity in the Northwest Pacific Region



## Eutrophication assessment

- ◆ Case studies to evaluate suitability of the Common Procedures were conducted.
- ◆ Integrated report will be published by the end of 2011.



## Integrated Report on HAB

- ◆ Draft integrated report on Harmful Algal Blooms for the NOWPAP region has been prepared.
- ◆ Final integrated report will be published by the end of 2011.

## Integrated Report on RS

- ◆ Draft integrated report on Ocean Remote Sensing for the NOWPAP region: towards assessment of marine and coastal environment has been prepared.
- ◆ Final integrated report will be published by the end of 2011.

## 3<sup>rd</sup> training course on RS data analysis

- ◆ Sponsors
  - NOWPAP, PICES and IOC/WESTPAC
- ◆ Date and place
  - Oct 8-12, 2011
  - Vladivostok
- ◆ Preparation status
  - 5 day program has been finalized
  - Received 58 application from 24 countries
    - 6 trainees were selected as funded participants
    - Around 20 people will participate in the course at their own expense

## Cooperation and Coordination

### 1. Participation in NOWPAP Partners' Meetings and Workshops

- ◆ Marine Biodiversity Forum in the Northwest Pacific Region (16 October 2010, Toyama, Japan)
- ◆ CBD COP 10 Side-event (18-29 October, Nagoya-Aichi, Japan)
- ◆ PICES 2010 Annual Meeting (23-27 October 2010, Portland, U.S.A.)
- ◆ Second International Conference on Global Change and the Environment in Asia and Pacific (GCEAP): Inland Waters and Coastal Environment (28-29 October 2010, Hong Kong, China)

- ◆ 2011 PICES FUTURE Workshop (26-28 April 2011, Hawaii, U.S.A.)
- ◆ Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region (4-5 August 2011, Toyama, Japan)
  - Presentation on activities for marine biodiversity conservation in the NOWPAP member states
  - Presentation on the result of the assessment of the eutrophication status in the NOWPAP region
  - Discussion on the workplan of CEARAC related to marine biodiversity and eutrophication for the 2012-2013 biennium

### 2. Participation in NOWPAP-related and other RACs' Meetings and Events

- ◆ 2010 NOWPAP International Coastal Cleanup Campaign and Workshop on Marine Litter (1-2 October 2010, Jeju, Korea)
- ◆ Focal Points Meetings of Other RACs
  - DINRAC FPM9 (26-28 April 2011, Hangzhou, China)
  - MERRAC FPM14 an Competent National Authorities Meeting6 (7-10 June 2011, Daejeon, Korea)
- ◆ 15<sup>th</sup> NOWPAP Intergovernmental Meeting (16-18 November 2010, Moscow, Russia)

### 3. Participation in more meetings and workshops

- ◆ NOWPAP Marine Litter Workshop and International Coastal Cleanup in Lianyungang (20-21 September 2011, Lianyungang, China)
- ◆ PICES 2011 Annual Meeting (14-23 October 2011, Khabarovsk, Russia)
  - Session W2: Remote sensing techniques for HAB detection and monitoring
- ◆ 9<sup>th</sup> POMRAC FPM (25-26 October 2011, Khabarovsk, Russia)
- ◆ 16<sup>th</sup> NOWPAP IGM (20-22 December 2011, Beijing, China)





## CEARAC activities on RAP MALI

- ◆ Revise “Marine Litter Guidelines for Tourists and Tour Operators in Marine and Coastal Areas”
- ◆ Update the pamphlet “Current Situation on marine litter in the NOWPAP region”
- ◆ Compile and harmonize marine litter monitoring data on beaches and submit collected data to DINRAC
- ◆ Provide information on best practice to reduce marine litter generation from land-based sources

### Activities and expenditure of CEARAC for the 2010-2011 biennium

Activity	Time	Budget (US\$)	Expected Expenditure (US\$)	Balance
FPM7 + Expert Meeting FPM8	Sep.2010 Sep.2011	27,000 27,000	27,000 27,000	0 0
Maintenance of Websites (WG3)	2010-2011	In total	In total	0
- Updating HAB Integrated Website		(2010) 3,000	(2010) 0	
- Developing website in NOWPAP languages (WG4)		(2011) 2,000	(2011) 5,000	
- Updating Ocean RS Portal Site				
- Updating RS Educational Materials site				

Activity	Time	Budget (US\$)	Exp. (US\$)	Balance
Specific Projects				In total
- New assessment method focusing on marine biodiversity	2010-2011	In-kind	In-kind	0
- Assessment of eutrophication status		12,000(10)	0(10)	
- Updating the Integrated Report on HAB		4,000(11)	16,000(11)	
- Updating the Integrated Report on RS		8,000(10)	0(0)	
- 3 <sup>rd</sup> Training Course on RS Data Analysis		2,000(11)	10,000(11)	
		4,000(11)	4,000(11)	
		10,000(11)	10,000(11)	
Cooperation & Coordination	2010 2011	2,000 2,000	213 3,787	0
Newsletter(7 <sup>th</sup> & 8 <sup>th</sup> )	2010 2011	2,000 2,000	0 4,000	0
<b>Sub-Total</b>		<b>107,000</b>	<b>107,000</b>	<b>0</b>

Activity	Time	Budget (US\$)	Exp. (US\$)	Balance
Activities on RAP MALI	2010-11			In total
- Revise “Marine Litter Guidelines for Tourists and Tour Operators in Marine and Coastal Areas”		5,000	5,000	0
- Update the pamphlet “Current situation on marine litter in the NOWPAP region”		2,500	2,500	
- Compile and harmonize marine litter monitoring data on beaches & submit collected data to DINRAC		In-kind	In-kind	
- Provide information on best practices to reduce marine litter generation from land-based sources		3,000	3,000	
<b>Sub-Total</b>		<b>10,500</b>	<b>10,500</b>	<b>0</b>
<b>Grand Total</b>		<b>117,500</b>	<b>117,500</b>	<b>0</b>



# Updating the Integrated Report on Harmful Algal Blooms (HABs) for the NOWPAP Region

NOWPAP CEARAC

The 9<sup>th</sup> CEARAC FPM  
6 September 2011

## Background

The diagram illustrates the background of the report. It begins with 'The first HAB Integrated Report (2005) Data (-2003)', which leads to '2009-2010 biennium HAB Case studies in member states'. These case studies then feed into the 'HAB Integrated Website'.

## Objective

To summarize the situation on HAB in the NOWPAP region during the last five years since the first publication of the Integrated Report and to provide latest information

- Latest HAB occurrence in the NOWPAP member states
- Situation on monitoring framework in each member state
- New contents on challenging studies of remote sensing techniques, molecular genetic techniques and countermeasures against HABs

## Main Tasks

The diagram illustrates the main tasks. It starts with 'Target sea areas' (a map of the NOWPAP region), which leads to 'Case study reports updated in 2010'. These reports then lead to 'The latest information', which is used to 'Update the HAB Integrated Report'.

## Table of contents of updated Integrated Report

**Executive Summary**

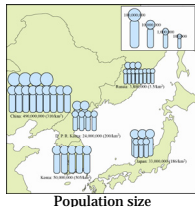
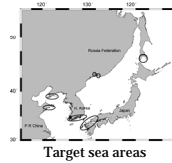
1. Introduction
2. Information on HAB monitoring
3. HAB occurrence in the NOWPAP region
4. Challenging studies to cope with HABs
5. Conclusion

## Executive Summary

- Regional characteristics of the NOWPAP region
- Background of this report
- Recent situation on HAB occurrence in the NOWPAP member states  
(China: 10, Japan: 208, Korea: 21 and Russia: 31 (2006-2008))
- Challenging studies for countermeasures against HABs

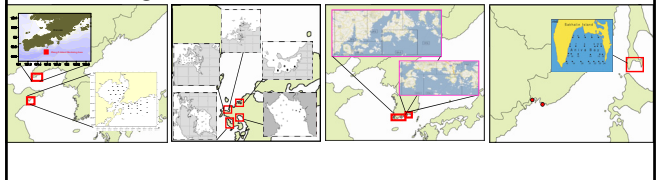
## Chapter 1: introduction

- Background
- Definitions
- Natural environment of the NOWPAP region  
Sea areas, Rivers, Oceanographic current
- Social environment of the NOWPAP region



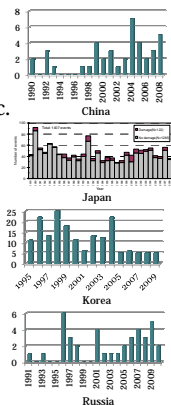
## Chapter 2: Information on HAB monitoring

- Monitoring framework and parameters in each member state (Table 8)
- Monitoring organization
- Monitoring parameters
- Target species
- Warning and action standards
- Monitoring sites in each member state



## Chapter 3: HAB occurrence in the NOWPAP region

- Information on HAB occurrence in each member state
- Red tide occurrence  
Yearly trend, Red tide species, location etc.
- Toxin-producing plankton and shipment stoppage
- Common issues on HABs  
*Cochlodinium polykrikoides*  
*Chattonella antiqua*  
Green macroalgae  
DSP and PSP



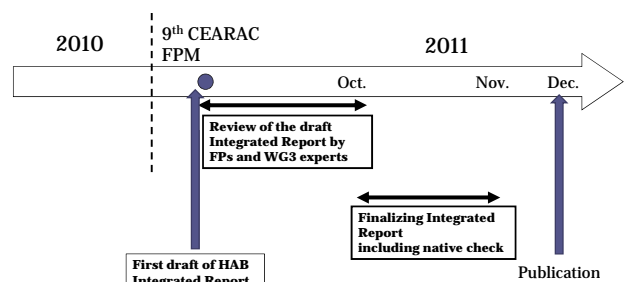
## Chapter 4: Challenging studies to cope with HABs

- Remote sensing techniques
  - Monitoring of red tide using satellite images
  - Forecasting the movement of red tide using satellite images
- Molecular genetic techniques
  - FISH method
  - Real-time PCR
  - LAMP method
  - Microsatellite
- Countermeasures against HABs

## Chapter 5: Conclusion

- Common procedures for assessment eutrophication status

## Schedule



## Budget

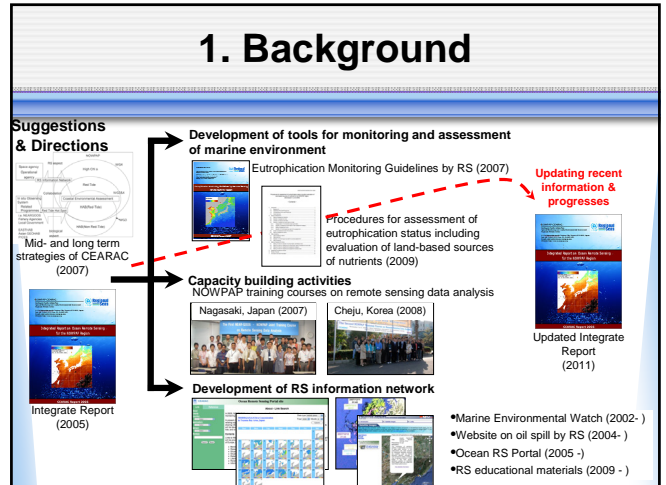
Task	Conduct	Output	Completion	Contractor	Budget (US\$)
Revising the HAB Case Study Report by adding the latest information	2010 Q3-Q4	Revised Case Study Report and Common format sheet	2010 Q4	Expert of China	2,000
				Expert of Japan	2,000
				Expert of Korea	2,000
				Expert of Russia	2,000
Updating the HAB Integrated Report on HABs for the NOWPAP region	2011 Q1	Updated Integrated Report	2011 Q4	Consultant	2,000
Total					10,000





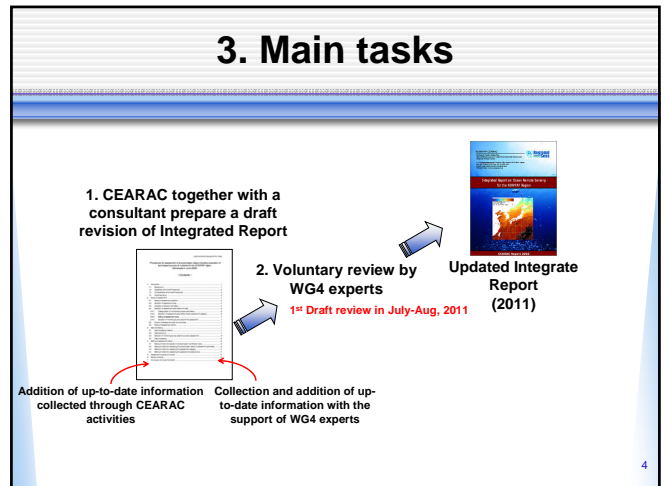
**Integrated Report on Ocean Remote Sensing for the NOWPAP Region: towards assessment of marine and coastal environment**

CEARAC  
September 6, 2011



## 2. Objective

- to summarize the recent progress on ocean remote sensing during the last 5 years and provide latest information for the NOWPAP region.
  - ◆ New applications
  - ◆ New sensors
  - ◆ New algorithms
  - ◆ New publications
  - ◆ Strategies and plans in each member state
  - ◆ Challenges and prospects



## Table of contents of the Integrated Report

1. Introduction
2. Sensors and satellites
3. Data distribution systems
4. Algorithm development, validation and application for monitoring and assessment of marine and coastal environment
5. Regional activities on monitoring and assessment of marine and coastal environment by remote sensing
6. Challenges and prospects
7. Suggested activities for NOWPAP Region
8. Summary and recommendation

## 1. Introduction

- Scope
  - ◆ Eutrophication
  - ◆ Red tides
  - ◆ Oil spills

## 2. Sensors and satellites

Sensors and satellites in the NOWPAP member states

Country	Satellite	Sensor name	Sensor type	Launch	Application
China	HY-1B	COCTS/CZI	Ocean color	Apr 2007	water quality, eutrophication, red tide
	HY-1C/1D	COCTS/CZI	Ocean color	2014	
Japan	PRISM		stereo mapping		Elevation
	ALOS	AVNIR-2	optical	Jan 2006	Land cover, coastal coastal environment
		PALSAR	SAR		oil spill
	ALOS 2	PALSAR-2	SAR	2014	oil spill
					Cartography, digital terrain models, environmental monitoring, disaster monitoring, civil planning, agriculture and forestry, Earth resources, land surface
	ALOS 3	T.B.D	Hyper spectrum	2014	
Korea	COMS	GOCI	ocean color	Jun 2010	water quality, eutrophication, red tide
	COMS-2	GOCI	ocean color	2018	
Russia	Meteor-3M No.1	MSU-50/100	optical	Jun 2010	Land cover, coastal coastal environment
	Meteor-3M No.3	ROSS-1	ocean color	2013	water quality, eutrophication, red tide

## 2. Sensors and satellites

Sensors and satellite outside of the NOWPAP region

Country	Satellite	Sensor name	Sensor type	Launch	Application
US	Landsat	MSS	optical	1972-1984	Land cover, coastal coastal environment
		TM		1984	
		ETM		1993	
		ETM+		1999	
		Orbview-2		SeaWiFS	
	TERRA	MODIS	1999	water quality, eutrophication, red tide	
	AQUA	MODIS	2002		
	NPOESS CI/C2	VIIRS	2015-2018		
	Envisat	MERIS	Ocean color		2011
	Sentinel-1	SAR	SAR		2013
EU	Sentinel-2	MSI	Multi spectrum	2013	water quality, eutrophication, red tide
	Sentinel-3	SLSTR		2013	
	Sentinel-4	TBD		2019	
	Sentinel-5	TBD		2020	
India	Oceansat-2	OCM	ocean color	2009	water quality, eutrophication, red tide

## 3. Data distribution systems

MODIS Near Real Time Database\*

Korea Ocean Satellite Center Ocean Satellite Data Service

Marine Environmental Watch

Bio-optical characteristic of the Barents, White, Black, and Caspian seas from data of satellite ocean color scanner

## 4. Algorithm development, validation and application

Composite Pollution Index Chen et al. (2007)

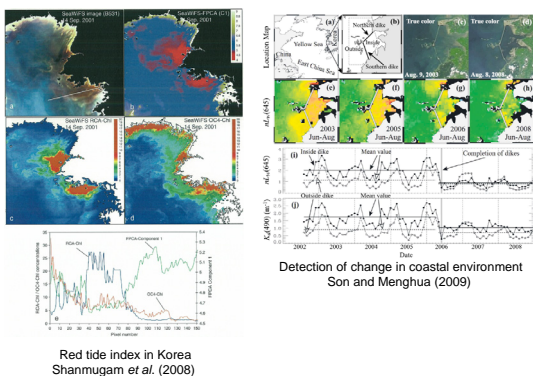
Green macroalgae Hu et al. (2010)

Eutrophication index Terauchi et al. (2011) (in review)

Red tide index Takahashi et al. (2009)

Red tide index Ishizaka et al. (2010)

## 4. Algorithm development, validation and application



## 5. Regional activities

Website on oil spill monitoring by POI and CEARAC

Oil spills from the Penglai 19-3 oil filed





## 6. Budget

4,000 US\$ is required to hire a consultant

## Draft Integrated report on eutrophication assessment in selected sea area (including evaluation of land-bases sources of nutrients) in the NOWPAP region

Genki Terauchi  
NOWPAP CEARAC

9<sup>th</sup> CEARAC Focal Point Meeting, September 6-7, 2011 in Toyama, Japan

## Table of contents of the Integrated Report (1/2)

1. Introduction
2. Assessment method and data
  - 2.1 Eutrophication classification with the uses of the Common Procedures
  - 2.2 Selection of target sea areas in the NOWPAP members states
  - 2.3 Data and parameter used in each selected sea area
  - 2.4 National standards in the NOWPAP member states
  - 2.5 Reference values used in selected sea areas
3. Eutrophication status and trend in selected sea areas of the NOWPAP region
  - 3.1- 3.5: (China, Japan, Korea and Russia)
  - 3.6 Comparison of eutrophication assessment results in the selected sea areas of the NOWPAP member states
  - 3.7 Nutrients loadings in each selected sea area

## Table of contents of the Integrated Report (2/3)

4. Evaluation of eutrophication status and the Common Procedures
  - 4.1 Evaluation of eutrophication status in the selected sea areas in NOWPAP member states
  - 4.2 Nutrients sources and loads
  - 4.3 Evaluation of the NOWPAP Common Procedures
5. Existing policies related to management of eutrophication in the NOWPAP member states
6. Conclusions and recommendations
  - 6.1 Conclusion
  - 6.2 Recommendations for management actions for NOWPAP

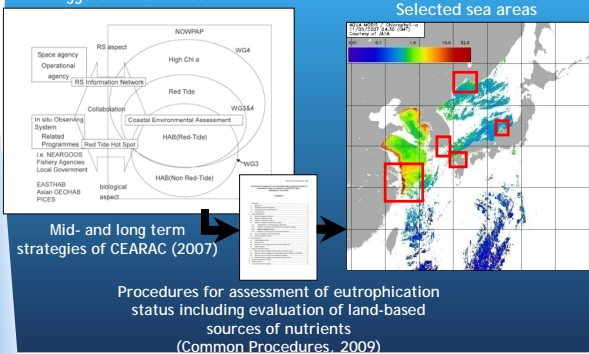
## Table of contents of the Integrated Report (3/3)

### Annex

1. Case study report in each selected sea area
2. Procedures for assessment of eutrophication status including evaluation of land based source of nutrients for the NOWPAP region
3. Evaluation of preliminary eutrophication assessment by satellite in each selected sea area

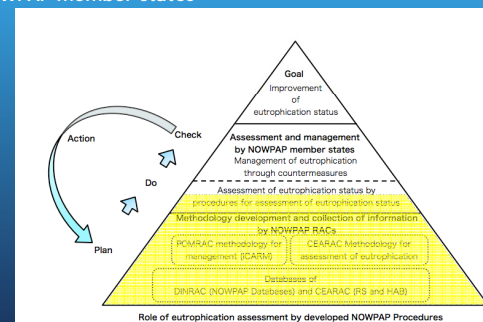
## 1. Introduction (1/2)

### Suggestions & Directions

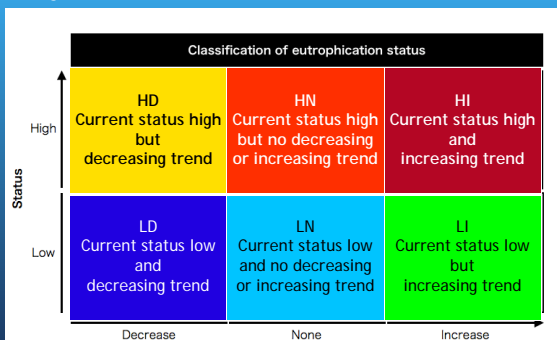


## 1. Introduction (2/2)

- to apply the Common Procedures and to evaluate of suitability of suggested methodology for assessment of eutrophication status in the selected sea areas in the NOWPAP member states

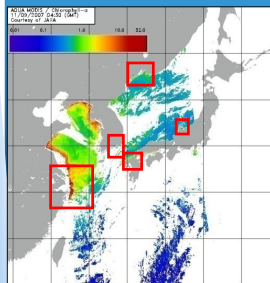


## 2. Assessment method and data Classification of eutrophication status by the Common Procedures



## 2. Assessment method and data Selection of target sea area in the NOWPAP member states

### Selection of area for assessment



Selected areas	Nominated experts
Yangtze River Estuary and adjacent area, China	Dr. Zhiming YU, Chinese Academy of Science, Institute of Oceanology
Northwest Kyusyu sea area, Japan	NPEC with consultant
Toyama Bay, Japan	
Jinhae Bay, Korea	Dr. Youngtae Park, South-east Sea fisheries Research Institute, NFRDI
Peter the Great Bay, Russia	Dr. Pavel Tishchenko, Hydrochemistry Laboratory, Department of the Ocean Geochemistry and Ecology, POI

8

## 3. Eutrophication status and trend in selected sea areas of the NOWPAP region Summary of assessment results

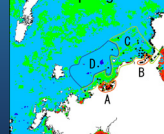
Nation	Area	Sub-area	Parameter identification					
			DIN	DIP	DIN/DIP ratio	Max. Chl-a	Mean Chl-a	Surface DO
China	Changjiang River Estuary	-	HI	LI	HN	HN	LI	LN
Japan	Northwest Kyushu sea area	Hakata Bay	HI	LN	HI	HD	HD	LN
		Dokai bay and Kanmon Strait	-	-	-	HN	HN	LN
		Intermediate area	LN	LD	HN*	LN	LN	LN
	Toyama Bay	Offshore area	-	-	-	N	N	HN
		Coastal area	LN	LN	HN*	LN	LN	LN
		Intermediate area	LN	LN	HN*	LN	LN	LN
Korea	Jinhae Bay	Offshore area	LN	LN	HN*	LN	LN	LI
		Jinhae Bay	LD	LD	LD	-	HD	LD
		Masan-Haengum Bay	LD	LD	LD	-	HD	LD
Russia	Peter the Great Bay	Amurskiy Bay	HI	HI	-	-	LI	HI
		Ussuriyskiy Bay	LN	LN	-	-	LN	LD
		Southern part of the PGB	LN	LN	-	-	L	LN

## 4. Evaluation of eutrophication status and the Common Procedures

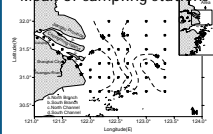
- Reference values
  - China, Korea and Japan follows national standard
  - Russia calculated reference values from DO level that will not cause Hypoxia
- Category identification
  - One out, all out principle?
- Assessment data used in each selected sea area

Country	Assessment parameters	Group size	Reference	Trend	Reference	Category
China	Changjiang River Estuary	10	1.0	LI	1.0	LI
	Northwest Kyushu sea area	10	1.0	LI	1.0	LI
	Toyama Bay	10	1.0	LI	1.0	LI
	Jinhae Bay	10	1.0	LD	1.0	LD
Korea	Jinhae Bay	10	1.0	LD	1.0	LD
	Masan-Haengum Bay	10	1.0	LD	1.0	LD
Russia	Amurskiy Bay	10	1.0	HI	1.0	HI
	Ussuriyskiy Bay	10	1.0	LN	1.0	LN
	Southern part of the PGB	10	1.0	LN	1.0	LN

Each sampling station



Mean of sampling stations



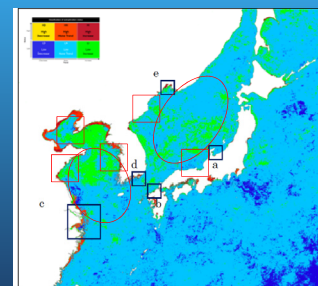
## 5. Existing policies related to management of eutrophication in the NOWPAP member state

- China
  - Guidance for Introducing the Total Pollutant Load Control System (TPLCS)
- Japan
  - Water Pollution Control Act
- Korea
  - Total pollution load management system
- Russia
  - Maximum permission concentration

## 6. Conclusions and recommendation

- Integrated assessment of eutrophication status of the whole NOWPAP region

- Expansion of case study area
- Revised parameters and harmonized reference values
- Adjusted algorithms



## 6. Conclusions and recommendation

Delivering results of eutrophication assessment for Integrated Coastal and River Basin Management

Name	Area	Sub-area	Transboundary assessment									
			Area	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub
Danish	Cherbourg River Estuary	Danish Bay	Area	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	
Polish	Gulf of Gdansk	Gulf of Gdansk	Area	Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub	
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
Polish	Puck Bay	Puck Bay	Area	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
Polish	Puck Bay	Puck Bay	Area	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		
			Sub	Sub	Sub	Sub	Sub	Sub	Sub	Sub		



Activities on Integrated Coastal and River Basing Management

Assessment results in each case study areas

## 6. Conclusions and recommendation

Assessment of negative impact of eutrophication to marine environment in the NOWPAP region

### Interactive Map of Eutrophication & Hypoxia

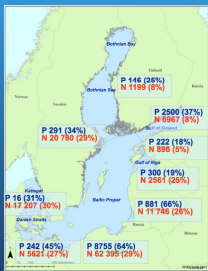
Quantifying negative impact of eutrophication

- Number of red tide events
- Records of hypoxia or anoxia
- Records of fish kills

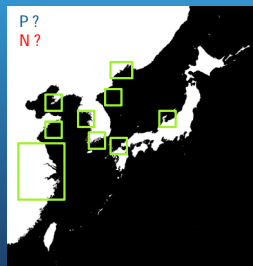


## 6. Conclusions and recommendations

Introduction of ecological modeling to set appropriate nutrients control (reduction) target



Nutrients control target has been set by ecological modeling in Baltic



What about in In NOWPAP Sea area?

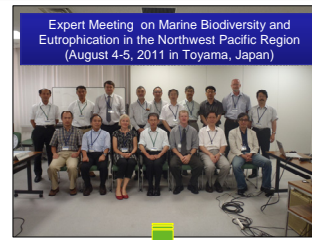




## Proposal for refinement of the Common Procedures for eutrophication assessment towards assessment of the whole NOWPAP region

CEARAC  
September 6, 2011

## 1. Background



Refinement of the Common Procedure to improve its suitability towards assessment of eutrophication status of the whole NOWPAP region was suggested.

2

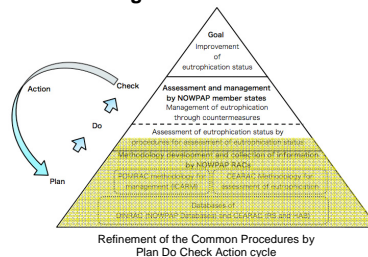
## 1. Background

- Conclusions and recommendations in the Integrated Report on eutrophication assessment
  - ♦ [6.-2-1 Integrated assessment of eutrophication status of the whole NOWPAP region.](#)
  - ♦ 6.-2-2 Delivering results of eutrophication assessment for Integrated Coastal and River Basin Management
  - ♦ 6.-2-3 Assessment of negative impact of eutrophication to marine environment in the NOWPAP region
  - ♦ 6.-2-4 Introduction of ecological modeling to set appropriate nutrients control (reduction) target

3

## 2. Objective

- to improve the suitability of NOWPAP Common Procedures by refinement and to apply the refined Common Procedures in expanded and existing selected sea areas towards assessment of eutrophication status of the whole NOWPAP region.



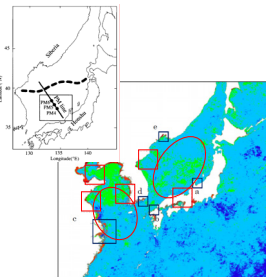
## 3. Main tasks (1/2)

- **3.1 Refinement of the Common Procedures**
  - ♦ Revised parameters
    - Common parameters?
    - Surface or bottom?
    - Seasonal variation?
  - ♦ Improvement of consistency of reference values
    - Different national standards among 4 member states
    - Scientific approach for DO level
    - Background values?
  - ♦ Improvement of consistency in classification (grading) system
    - Adaption of one out, all out approach?
    - Adoption of rating system?

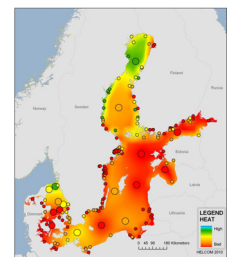
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## 3. Main tasks (2/2)

- **3.2 Application of the refined Common Procedures to assess eutrophication status**



Expansion of target sea area



Good example from HELCOM Eutrophication status in Baltic

## 4. Expected outcomes

- The obtained assessment results from each NOWPAP member state will be updated in integrated report on eutrophication assessment in selected sea areas in the NOWPAP region.
- Eutrophication status of each case study area will be summarized on CEARAC website and it will be made available for the public.

7

## 5. Potential partners

- NOWPAP RACs, especially POMRAC
- HELCOM Secretariat
- Local governments

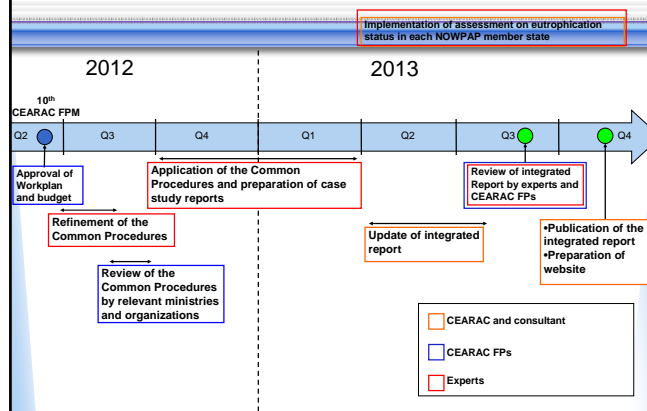
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## 5. Potential partners

- NOWPAP RACs, especially POMRAC
- HELCOM Secretariat
- Local governments

9

## 6. Schedule



## 6. Budget

Contract	Timing	Output	To be completed	Counterpart	Budget (US\$)
Refinement of Common Procedures and application of refined Common Procedures in each selected sea area of NOWPAP member states	2012 Q2	Refined Common Procedures and results of eutrophication assessment in each selected sea area	2013 Q1	Expert or organization in China	4,000
				Consultant in Japan	4,000
				Expert or organization in Korea	4,000
				Expert or organization in Russia	4,000
Preparation of updated integrated report on eutrophication assessment in selected sea areas	2013 Q2	Updated integrated report on eutrophication assessment in selected areas in the NOWPAP region	2013 Q4	CEARAC and consult	4,000
Total					20,000

**Workplan related to the conservation  
of marine biodiversity  
for the 2012-2013 biennium**


CEARAC

The 9<sup>th</sup> CEARAC FPM  
6 September 2011

### Background 1


CBD COP10 held in Nagoya, Japan (Oct. 2010)

- Post 2010 Targets (Aichi Targets)  
Target 11: "10% of the world sea areas are designated as MPAs by 2020"
- Decision X/29 (Decision on marine and coastal biodiversity): Ecologically and biologically significant areas



NOWPAP


- "Threats to Marine and Coastal Biodiversity in the NOWPAP region"
- Medium-term Strategy



### Background 2

Conservation of marine biodiversity in other regions (HELCOM, OSPAR)

- ➔ Assessment of marine biodiversity and environment in their regions based on enough monitoring data



In the NOWPAP region

Pilot Study in Toyama Bay for developing a new marine environmental assessment method (2010)

- ➔ Lack of data/information on marine environment and marine life for assessment in this region

### Background 3

We have to think

- What kind of activities can be done in the NOWPAP region?  
What we can do based on the situation of monitoring structure and existing data
- What kind of activities should be done in the NOWPAP region?  
What the NOWPAP member states need
- How to collaborate with NOWPAP partners, such as PICES and YSLME?  
How to produce synergic effect for the marine biodiversity conservation

### Background 4

Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region (4-5 August 2011)  
Representatives from HELCOM, NOAA and PICES  
Experts on marine biodiversity from the member states

Future activities on the marine biodiversity conservation

- To develop criteria for selecting ecologically and biologically significant area
- To develop a framework of common indicators for assessment of the marine environment
- To assess effectiveness of existing MPAs

### Background 5

In the Expert Meeting, 2 candidate activities on the marine biodiversity conservation for the next biennium were proposed

At the 9<sup>th</sup> CEARAC FPM, it is expected

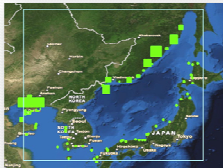
- to modify the workplan based on the comments from each member state
- to set the priority of the two candidate activities

## Activity 1

### Developing the criteria for selecting biologically and biologically significant sea areas in the NOWPAP region

## Background

Country	Number of MPAs	Area (hectares) of MPAs
China	20	1,367,206
Japan	23	436,235
Republic of Korea	22	357,333
Russia	14	1,956,770
<b>Region</b>	<b>79</b>	<b>4,117,544</b>



Source: (Threat to Marine and Coastal Biodiversity in the NOWPAP region)

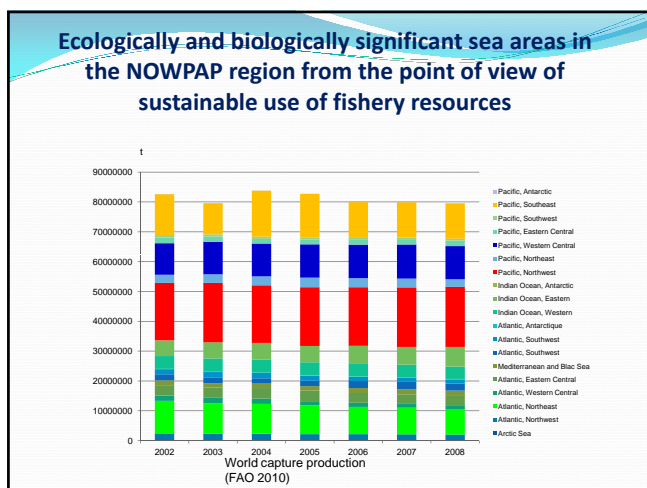
MPAs in the NOWPAP region is only 0.2% of whole area.

↓

Expansion of sea areas for the marine biodiversity conservation is expected.

### CBD Ecologically and Biologically Significant Areas (EBSAs)

Criteria	Example
Uniqueness or rarity	Persistent polynyas, sea mounts
Special importance for life history states of species	Spawning areas, Nursery areas, Wintering or resting areas
Importance for threatened, endangered or declining species and/or habitats	Areas on threatened, endangered or declining species
Vulnerability, fragility, sensitivity, or slow recovery	Deepwater corals, Ice-covered areas
Biological productivity	Frontal areas, Upwellings
Biological diversity	Fronts and convergence zones, Cold coral communities
Naturalness	Natural structure



## Objective

To develop the criteria for selecting ecologically and biologically significant areas in the NOWPAP region based on the criteria of CBD EBSAs

## Main Tasks

1. Organization of Expert Meeting and/or Workshop
2. Collection of information on sea areas significant for the marine ecosystem conservation and sustainable use of fishery resources

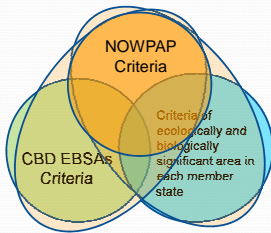
## Organizing Expert Meeting and/or Workshop

To discuss the criteria for selecting ecologically and biologically significant areas in the NOWPAP region

Timing:  
2013 Q1 (Expert Meeting or Workshop)  
+Q3 (Expert Meeting)

Venue: Toyama, Japan

Expected Participants:  
Experts from each member state  
Representative from OSPAR and other relevant international organizations





### Collection of information on sea areas significant for the marine ecosystem conservation and sustainable use of fishery resources

To collect information on sea areas significant for the conservation of marine ecosystems and fishery resources in each member state

- Nomination of experts by CEARAC FPs (2012 Q1)
- Contract with nominated experts (2012 Q1)
- Collection of information (2012 Q2-Q4)
- Presentation at the workshop (2013 Q1)
- Development and submission of report (2013 Q2)

### Candidate ecologically and biologically significant sea areas in the NOWPAP region

Characteristic Oceanic structure

Upwelling region      Thermal Front

Deep Sea Cold water plume

Characteristic Bottom structure

### Candidate ecologically and biologically significant sea areas in the NOWPAP region

Habitat and biomass of snow crab

Distribution of Saifin sandfish

Habitat and fish catch of saifin sandfish

### Expected outcome and future direction

**Expected Outcome**  
The criteria for selecting ecologically and biologically significant areas in the NOWPAP region

**Future Direction (2014 - )**

- Selecting ecologically and biologically significant areas in the NOWPAP region
- Making a list of the ecologically and biologically significant sea areas in the NOWPAP region
- Establishing the GIS map which introduces the marine ecosystem status in the NOWPAP region

### Potential partners

**NOWPAP DINRAC**  
- to use their database on MPA

**OSPAR**  
- to learn their experiences on designing EBSAs in their region

### Schedule

2012      2013      2014-

10<sup>th</sup> CEARAC FPM      11<sup>th</sup> CEARAC FPM & Expert Meeting

FP      Nominating expert      Contract with experts of each member state      Secretariat      Expert

Workshop      Developing criteria for the NOWPAP region      Making report

Review of the draft criteria

-Selecting and listing up sea areas  
- Developing GIS map on marine ecosystem



### Budget

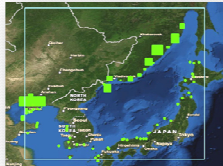
Task	Conduct	Output	Completion	Contractor	Budget (US\$)
Collection of information on sea areas significant for the marine ecosystem conservation and sustainable use of fishery resources	2012 Q2	Information on sea areas significant for the marine ecosystem conservation and sustainable use of fishery resources	2012 Q4	Expert of China	2,000
				CEARAC	
				Expert of Korea	2,000
				Expert of Russia	2,000
Organizing an expert meeting or a workshop to discuss the criteria for the NOWPAP region	2013 Q1	First draft of criteria for the NOWPAP region		CEARAC	14,000
Total					20,000

## Activity 2

### Preparing the status report on MPAs in the NOWPAP region


### Background


Country	Number of MPAs	Area (hectares) of MPAs
China	20	1,367,206
Japan	23	436,235
Korea	22	357,333
Russia	14	1,956,770
<b>Region</b>	<b>79</b>	<b>4,117,544</b>



Source: (Threat to Marine and Coastal Biodiversity in the NOWPAP region)

Target 11 in Aichi Targets: 10% of the world sea areas are designated as MPAs by 2020

  
 Selection and establishment of new MPAs

Provide useful information for member states' new MPAs  


Current situation of MPAs and status of monitoring and management in existing MPAs

### Objective

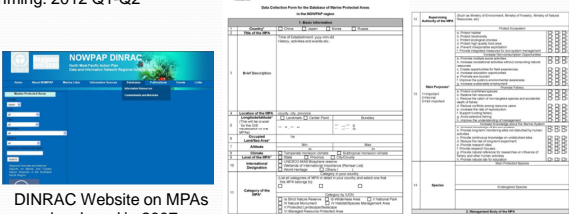
To understand the current status of MPAs in the NOWPAP region through the assessment on the status of monitoring and management in the selected MPAs in the NOWPAP member states

### Main Tasks

1. Making a regional overview on the current status of MPAs in the NOWPAP region
2. Implementing case studies for assessing the status of monitoring and management in the selected MPAs
3. Publishing the status report on MPAs in the NOWPAP region
4. Developing a data inventory on marine ecosystem in the NOWPAP region

### Development of a regional overview on the current status of MPAs in the NOWPAP region

Timing: 2012 Q1-Q2



DINRAC Website on MPAs developed in 2007

Regional overview on the current status of MPAs in the NOWPAP region


- Number
- Area
- Purpose etc.

### Implementation of case studies for assessing the status of monitoring and management in the selected MPAs

- Nomination of experts by CEARAC FPs (2012 Q1)
- Selection of MPAs for case studies by CEARAC FPs (2012 Q2)
- Contract with nominated experts (2012 Q1)
- Case studies by nominated experts (2012 Q3- 2013 Q2)

What will be done in case studies in each member state?

- Collecting information of monitoring in MPAs
  - What organizations conduct monitoring?
  - What kind of parameters are monitored?
- Collecting information on management in MPAs
  - What kind of management is conducted?

  
 Condition of the marine environment and marine life

### Publication of the status report on MPAs in the NOWPAP region

Timing: 2013 Q3 – Q4

Contents of status report

1. Regional overview on MPAs in the NOWPAP region
2. Case studies for assessing the status of monitoring and management in the selected MPAs
  - 2-1 Case Study in China
  - 2-2 Case Study in Japan
  - 2-3 Case Study in Korea
  - 2-4 Case Study in Russia
3. Analysis on the status of monitoring and management in the selected MPAs in the NOWPAP region
4. Future vision for the NOWPAP region

### Data inventory on marine ecosystem in the NOWPAP region

Timing: 2013 Q3 – Q4

Based on the collected information through case studies, CEARAC develops an data inventory on marine ecosystem in the NOWPAP region

	Monitoring organization	Duration and frequency of monitoring	Monitoring items	Status of marine environment	Availability of data
MPA 1					
MPA 2					
:					

### Expected outcomes and future direction

Expected outcomes

- Case Study report for assessing the status of monitoring and management in selected MPAs
- Status report on MPAs in the NOWPAP region
- Data inventory on marine ecosystem

Future direction (2014 - )

- Selection of indicators for assessment of marine environment
- Implementation of marine environmental assessment

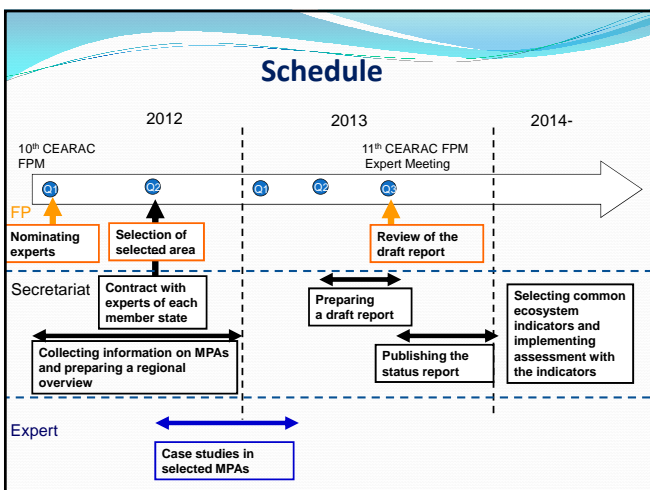
### Potential partners

NOWPAP DINRAC

- to use their database on MPA

PICES

- PICES WG 28 for developing indicators to characterize ecosystem responses to multiple stressors



### Budget

Task	Conduct	Output	Completion	Contractor	Budget (US\$)
Implementing case studies for assessing the status of monitoring and management in MPAs	2012 Q3	Case study report in the selected MPAs	2013 Q1	Expert of China	3,000
				CEARAC	
				Expert of Korea	3,000
		Expert of Russia	3,000		
Publishing the status report on MPAs in the NOWPAP region	2013 Q3	Status report on MPAs in the NOWPAP region	2013 Q4	CEARAC	6,000
Total					15,000



Draft workplan and budget of  
CEARAC activities  
for the 2012-2013 biennium  
and recommendation to  
the 16<sup>th</sup> NOWPAP IGM

NOWPAP CEARAC  
6-7 September 2011

## ➤ 2 budget plans

- ◆ Budget Plan 1 (if IGM decides an allocation to CEARAC is same level as 2010-2011)
  - US 117,000, excluding budget for marine litter
- ◆ Budget Plan 2 (if IGM decides an increased allocation to RACs)
  - US 147,000, excluding budget for marine litter

Outline of CEARAC Activities  
for the 2010-2011 biennium

- ◆ **Organization of CEARAC 10<sup>th</sup> & 11<sup>th</sup> FPM and Expert Meeting**
- ◆ **Maintenance of Websites**
- ◆ **Specific Projects - CEARAC Projects**
- ◆ **Cooperation and Coordination**

Organization of  
CEARAC 10<sup>th</sup> & 11<sup>th</sup> FPMs and  
Expert Meeting

- ◆ CEARAC 10<sup>th</sup> FPM - spring 2012
- ◆ CEARAC 11<sup>th</sup> FPM - Sep. 2013
- ◆ Expert Meeting - 2013

## Maintenance of Websites

- ◆ Latest information on HAB occurrences and references in HAB Integrated Website
- ◆ Latest information on educational materials, website links, references in NOWPAP Ocean Remote Sensing Portal
- ◆ Establishing link to the Chlorophyll Globally Integrated Network (ChloroGIN) from the Marine Environmental Watch
- ◆ Providing CEARAC news periodically

## Additional activity on maintenance of websites (only in budget plan 2)

- In case of the increase of budget allocation,
- ◆ New Web pages in eutrophication and marine biodiversity

## CEARAC Projects

- ◆ **Marine Biodiversity** (combination of 2)
  - Developing the criteria for selecting ecologically and biologically significant sea areas in the NOWPAP region
  - Preparing the status report on MPAs in the NOWPAP region
- ◆ **Eutrophication assessment**
  - Refinement of the Common Procedures for eutrophication assessment towards assessment of the whole NOWPAP region
- ◆ **4<sup>th</sup> NOWPAP training course on remote sensing data analysis**

## Marine Biodiversity

- ◆ Combined project of the following 2
  - Preparing the status report on MPAs in the NOWPAP region
  - Developing the criteria for selecting ecologically and biologically significant Sea areas in the NOWPAP region

## Eutrophication Assessment

- ◆ Refinement of the Common Procedures for eutrophication assessment towards assessment of the whole NOWPAP region



modified based on the discussion of DAY1

## 4th NOWPAP Training Course on Remote Sensing Data Analysis in China in 2013

- ◆ Follow-on of the past and coming training courses on remote sensing data analysis



Lecture



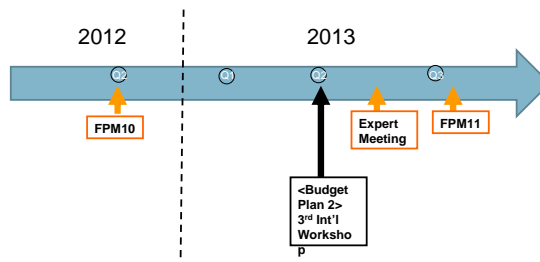
Hand-on exercises

## Additional activity (only in budget plan 2)

In case of the increase of budget allocation,

- ◆ The 3<sup>rd</sup> international workshop on the coastal environment assessment
  - Experts in the field of *eutrophication assessment*, *marine biodiversity* and *ecological modeling* are expected to be invited from NOWPAP member states.

## Time schedule for 2012-2013 events





## Cooperation and Coordination

- with **DINRAC** and/or **PICES** for implementation of marine biodiversity activity
- with **IOC/WESTPAC** and **PICES** for organization of the 4<sup>th</sup> NOWPAP training course on remote sensing data analysis
- with **POMRAC** for preparation of the next “State of Marine Environment Report” (SOMER)
- with **PICES** for sharing info. on HABs and marine ecosystem

## Draft workplan and budget-1 of CEARAC for the 2012-2013 biennium (1/2)

Activity	Planned Budget (US\$)			Tentative Time
	2012	2013	Total	
Organization of 2 CEARAC FPMs and 1 Expert Meeting	27,000	27,000	54,000	FPM10 - Spring 2012 FPM11 - Sep. 2013 EM - 2013
Maintenance of Websites - HAB - RS - CEARAC website including periodical news			In-total 9,000	2012-2013
Specific Projects - Marine biodiversity	TBD	TBD	20,000	2012-2013
- Refinement of the Common Procedures and its application to expanded sea areas	16,000	4,000	20,000	2012-2013
- 4 <sup>th</sup> NOWPAP training course on Remote Sensing Data Analysis		10,000	10,000	2013

## Draft workplan and budget-1 of CEARAC for the 2012-2013 biennium (2/2)

Activity	Planned Budget (US\$)			Tentative Time
	2012	2013	Total	
Cooperation and Coordination of CEARAC activities	2,000	2,000	4,000	2012-2013
Upgrade of Marine Environmental Watch System		In-kind	In-kind	2012-2013
<b>TOTAL</b>	<b>45,000</b>	<b>43,000</b>	<b>117,000</b>	

## Draft workplan and budget-2 of CEARAC for the 2012-2013 biennium (1/2)

Activity	Planned Budget (US\$)			Tentative Time
	2012	2013	Total	
Organization of 2 CEARAC FPMs and 1 Expert Meeting	27,000	27,000	54,000	FPM10 - Spring 2012 FPM11 - Sep. 2013 EM - 2013
Maintenance of Websites - HAB, RS and CEARAC website including periodical news - <b>New web pages on eutrophication and marine biodiversity</b>			9,000 <b>10,000</b>	2012-2013
Specific Projects - Marine biodiversity	TBD	TBD	20,000	2012-2013
- Common Procedures refinement	16,000	4,000	20,000	2012-2013
- 4 <sup>th</sup> NOWPAP training course on RS		10,000	10,000	2013
- <b>3<sup>rd</sup> Int'l workshop on coastal environment assessment</b>		<b>20,000</b>	<b>20,000</b>	2013

## Draft workplan and budget-2 of CEARAC for the 2012-2013 biennium (2/2)

Activity	Planned Budget (US\$)			Tentative Time
	2012	2013	Total	
Cooperation and Coordination of CEARAC activities	2,000	2,000	4,000	2012-2013
Upgrade of Marine Environmental Watch System		In-kind	In-kind	2012-2013
<b>TOTAL</b>	<b>45,000</b>	<b>63,000</b>	<b>147,000</b>	

Thank you