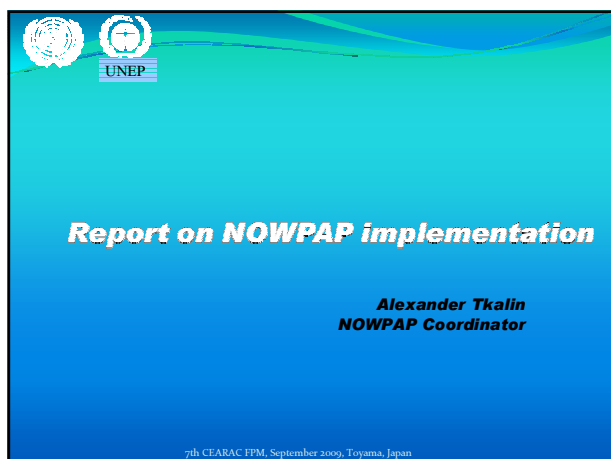


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All the Appendices are the original PPT copies shown during the 7<sup>th</sup> CEARAC FPM, and some descriptions are not matched to documents in this booklet which were revised after the meeting in accordance with the adopted report of the 7<sup>th</sup> CEARAC FPM.



## DINRAC (1)

DINRAC has continuously developed and maintained the following **databases** (available at the DINRAC website):

- Database on NOWPAP Institutions: <http://dinrac.nowpap.org/NowpapInstitution.php3>
- Database on NOWPAP Experts: <http://dinrac.nowpap.org/NowpapExpert.php3>
- Database on NOWPAP Coastal and Marine Environmental Geographic Information Systems (GIS) and Remote Sensing (RS) Applications: <http://dinrac.nowpap.org/NowpapGIS.php3>
- Database on Marine Litter: [http://dinrac.nowpap.org/MALITA\\_WhatIs.htm](http://dinrac.nowpap.org/MALITA_WhatIs.htm)
- Database on Coastal and Marine Nature Reserves: <http://dinrac.nowpap.org/NowpapNatureReserve.php3>

7th CEARAC FPM, September 2009, Toyama, Japan

## DINRAC (2)

**Reference Databases** on Atmospheric Deposition (AD) & River and Direct Inputs (RDI) have been established and maintained through cooperation with POMRAC:

- Atmospheric Deposition (AD): <http://dinrac.nowpap.org/NowpapReferenceAD.php3>
- River and Direct Inputs (RDI): <http://dinrac.nowpap.org/NowpapReferenceRDI.php3>
- Integrated Coastal and River Basin Management (ICARM): <http://dinrac.nowpap.org/NowpapReferenceICARM.php>

DINRAC had its 8<sup>th</sup> FPM on 19–21 May in Beijing and the meeting suggested the **new activities** for the next biennium related to web-based GIS and marine invasive species (MIS). MIS Working Group has been formed after the FPM.

7th CEARAC FPM, September 2009, Toyama, Japan

## MERRAC (1)

**MERRAC has been implementing the following Specific Projects:**

- Minimum Level of Preparedness (led by China and Russia);
- HNS Response Operation Guidelines (led by China and Russia);
- HNS Database (led by Korea);
- HNS Training Manual (led by Japan);
- Regional Report on HNS Preparedness and Response (led by MERRAC Secretariat);
- Regional Report on Sea-based Marine Litter (led by MERRAC Secretariat).

7th CEARAC FPM, September 2009, Toyama, Japan

## MERRAC (2)

MERRAC has also been implementing the NOWPAP Regional Action Plan on Marine Litter (with other RACs and RCU).

MERRAC has maintained several databases, available at the MERRAC website (oil spill response equipment, institutions and experts in the field of marine pollution preparedness and response; oil spill accidents over 10 tons).

NOWPAP BRAVO (communication) exercise was conducted in April 2008, led by Russia; in January 2009 led by Japan; and in April 2009, led by Korea.

The 2nd Joint NOWPAP Oil Spill Exercise was conducted in Qingdao, People's Republic of China, on 2 September 2008.

MERRAC had its 12<sup>th</sup> Focal Points Meeting and 4<sup>th</sup> CNA meeting on 1–5 June 2009 in Daejeon, Republic of Korea, where work plan and budget for 2010–2011 were adopted (to be approved by the 14<sup>th</sup> NOWPAP IGM in December 2009). An international workshop on response to marine pollution in the NOWPAP region was held at the same time.

7th CEARAC FPM, September 2009, Toyama, Japan

## POMRAC (1)

7<sup>th</sup> POMRAC FPM had been held last week in Kanazawa, Japan. **The meeting discussed the following draft documents:**

- Regional Overview on Atmospheric Deposition Models in the NOWPAP Region;
- Regional Overview on River and Direct Inputs of Contaminants to the Marine and Coastal Environment in the NOWPAP Region (with Special Emphasis on the Land Based Sources of Pollution);
- Regional Overview on ICARM (based on National Reports).

Reference Database on ICARM will be established in cooperation with DINRAC.

7th CEARAC FPM, September 2009, Toyama, Japan

## POMRAC (2)

POMRAC will co-organize:

- A workshop on ICARM during the 2009 East Asian Seas Congress (23-27 November 2009, Manila, Philippines); and
- A session with PICES on Marine Spatial Planning in Support of Integrated Management - tools, methods, and approaches in Jeju, Republic of Korea on 30 October 2009

POMRAC has also maintained its website, including reference databases developed in cooperation with DINRAC.

7th CEARAC FPM, September 2009, Toyama, Japan

## Partnerships

Close relations were established between NOWPAP and the following partners (in alphabetical order):

- East Asian Seas Regional Coordinating Unit (EAS/RCU);
- North East Asian Regional – Global Ocean Observing System (NEAR-GOOS);
- 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).

Partners were involved in co-organizing of numerous events, which improved sharing of information, coordination of related activities (e.g., on HAB, RS, ICARM and other issues) and raising public awareness.

7th CEARAC FPM, September 2009, Toyama, Japan

## Public awareness (1)

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 was 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).

Information about NOWPAP publications has been sent through UNEP HQ to ASF (Aquatic Sciences and Fisheries Abstracts) and is available online.

7th CEARAC FPM, September 2009, Toyama, Japan

## Public awareness (2)

Several brochures, leaflets, posters about NOWPAP activities were prepared and widely distributed. In addition to English, local languages were used when appropriate.

While attending a few global and regional meetings (e.g., World Ocean Conference 2009) as well as local events, RACs and RCU staff contributed to increasing NOWPAP visibility and attracting public attention to marine environment conservation by introducing the NOWPAP activities.

RACs and RCU staff also contributed articles to magazines, newspapers and newsletters and lectures/presentations at a local level.

7th CEARAC FPM, September 2009, Toyama, Japan

## Resource mobilization/ financial support

Several potential funding agencies/foundations were approached by the NOWPAP RCU and relevant information has been introduced to the RAC Directors and Marine Litter Focal Points.

In response to NOWPAP RCU request, UNEP Regional Seas Programme (RSP) provided financial support (US\$ 15,000) for the performance review of NOWPAP RCU (a consultant has been contracted to undertake the evaluation in April-June 2009).

UNEP RSP also supported (~US\$ 25,000) NOWPAP brainstorming WS on biodiversity conservation on 17 September 2009.

Ministry of Foreign Affairs of Japan provided an earmarked contribution of US\$ 52,000 to support NOWPAP International Coastal Cleanup and Training Workshop in 2009.

7th CEARAC FPM, September 2009, Toyama, Japan

## NOWPAP RAP MALI (1)

NOWPAP RAP MALI has been approved by member states in March 2008.

DINRAC has translated sectoral guidelines (which were developed by MERRAC) into Chinese language; POMRAC has translated several CEARAC and MERRAC guidelines into Russian; and MERRAC has translated the guidelines and brochure into Korean language.

Regional Overview on Marine Litter in the NOWPAP region has been updated and published in May 2008.

Another publication, "Marine Litter in the NOWPAP Region", which was composed of the regional ML overview and NOWPAP RAP MALI, was published in August 2008 with the financial support of UNEP Headquarters.

7th CEARAC FPM, September 2009, Toyama, Japan

## NOWPAP RAP MALI (2)

**MERRAC published two reports in 2008:**

- Marine Litter Management - the approach of Incheon City, Republic of Korea; and
- Regional Report on Sea-based Marine Litter in the NOWPAP Region.

**The following NOWPAP marine litter-related events were implemented in 2008, where representatives from member states, international organizations and partners actively participated:**

- NOWPAP Marine Litter Monitoring, Prevention and Control Meeting and International Coastal Cleanup in Dalian (China) on 11-12 September 2008;
- NOWPAP International Coastal Cleanup and Training Workshop in Vladivostok (Russia) on 26-28 September 2008.

7th CEARAC FPM, September 2009, Toyama, Japan

## Administrative issues

Rotation of Coordinator and Deputy Coordinator between Toyama and Busan RCU offices has been completed in December 2008.

Two new P3 staff members in RCU Toyama and Busan offices (Mr. Masakatsu OHYAMA and Mr. Sangjin LEE, respectively) were recruited and they have started their duties in May 2009.

Ms. Jeung Sook Park and Mr. Norio Baba have returned to their national institutions.

7th CEARAC FPM, September 2009, Toyama, Japan

Thank you!

7th CEARAC FPM, September 2009, Toyama, Japan

**Report on Implementation  
and expenditure of  
CEARAC activities for the  
2008-2009 biennium**

**NOWPAP CEARAC**

**14-15 September 2009**

**Outline of CEARAC Activities  
for the 2008-2009 biennium**

- ◆ Organization of CEARAC 6<sup>th</sup> and 7<sup>th</sup> FPMs and 4<sup>th</sup> WG3 and WG4 Joint Meeting
- ◆ CEARAC Projects
  - WG3
    - HAB Case Studies
    - HAB Integrated Website
  - WG4
    - Educational materials for utilization of RS data for coastal environment conservation
    - 2<sup>nd</sup> RS Training
  - WG3 and WG4 (joint)
    - Procedures for assessment of eutrophication status
- ◆ CEARAC Activities on RAP MALI
- ◆ Other Intersessional Activity
- ◆ Cooperation and Coordination
- ◆ Publication of CEARAC Newsletters

**Main Achievements of  
the 6<sup>th</sup> FPM**

**(Toyama, Japan, 6-8 March 2008)**

- ◆ Reported implementation of CEARAC activities in 2007 and expenditure for the 2006-2007 biennium
- ◆ Reported intersessional activities of NOWPAP WG3(HAB) and WG4(RS)
- ◆ Approved the detailed workplan and budget of CEARAC for the 2008-2009 biennium
- ◆ Introduced CEARAC approaches on how to implement future activities



**Main Achievements of  
the 4th WG3 and WG4 Joint Meeting  
(Toyama, Japan, 10-12 September 2008)**

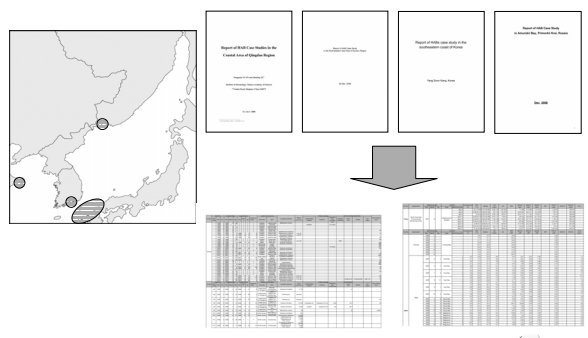
- ◆ Explained the workplan and budget for the 2008-2009 biennium
- ◆ Reviewed the interim progress of respective activities
- ◆ WG3: Recommended the CEARAC website be revised to be a new structure
- ◆ WG4: Encouraged to work with other relevant organizations such as YSLME and IOC/WESTPAC



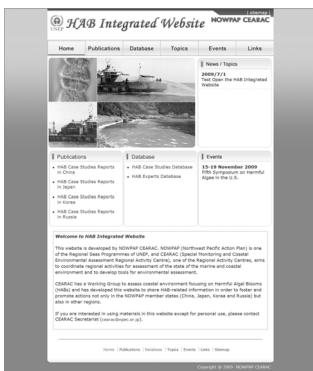
### Activities of WG3

- ◆ HAB Case Studies
- ◆ HAB Integrated Website

### HAB Case Studies



### HAB Integrated Website

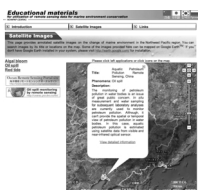


### Activities of WG4

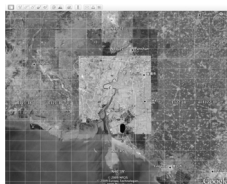
- ◆ Educational materials for utilization of RS data for coastal environment conservation
- ◆ 2<sup>nd</sup> RS Training

### Educational materials for utilization of RS data for coastal environment conservation

Web-based educational materials are being developed. GIS-compatible annotated satellite images concerned with the issues of eutrophication, oil spill and red tides will soon be provided.



Mapping on Google Map



Mapping on Google Earth

### 2<sup>nd</sup> RS training on data analysis

1-5 Nov. 2008 at Cheju National University in Korea

23 trainees and 12 lecturers



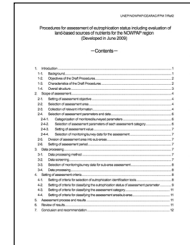
- Main topics -  
RS data analysis for eutrophication, red tide and oil spill

## Activities of WG3 and WG4 (joint)

- ◆ Procedures for assessment of eutrophication status including evaluation of land based sources of nutrients for the NOWPAP Region

## Procedures for assessment of eutrophication status

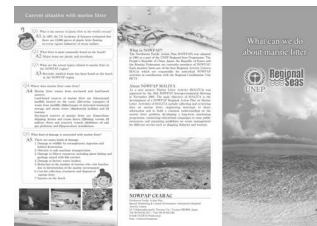
Draft procedures were developed by the Northwest Pacific Region Environmental Cooperation Center (NPEC) and reviewed and refined by the nominated experts in FY 2008. The procedures were finally completed in June 2009.



## Activities on RAP MALI

- ◆ Development of public awareness materials
- ◆ Compilation and harmonization of marine litter monitoring data on beaches
- ◆ Interpretation of results of marine litter monitoring on beaches
- ◆ Development of technical materials and introduction of best practices on solid waste management

## Development of public awareness materials



## Compilation and harmonization of marine litter monitoring data on beaches

Monitoring Plan in Japan

Year	Month	Location	Observer	Number of items	Material	Weight	Volume	Number of items	Material	Weight	Volume
2006	10	Yokohama	...	...	...	...	...	...	...	...	...
2007	10	Yokohama	...	...	...	...	...	...	...	...	...
2008	10	Yokohama	...	...	...	...	...	...	...	...	...
2009	10	Yokohama	...	...	...	...	...	...	...	...	...

## Interpretation of results of marine litter monitoring on beaches

**NOWPAP CEARAC**

**Marine Litter**

**What is Marine Litter?**

Marine litter (sometimes called marine debris) is any persistent, manufactured or processed solid material which is discarded, disposed of or abandoned in the marine and coastal environment. Marine litter consists of mostly very slowly degradable waste items such as plastic, polystyrene, metals and glass.

Marine litter is found on the beaches and shores, on the water surface, in the water column and on the seabed. It can be found near the source of input but also can be transported over a long distances with sea currents and winds.

Marine litter causes marine environmental, economic, health and aesthetic problems, including possible transfer of toxic substances and invasive species, destruction of marine habitats and loss of biodiversity. It also threatens marine life through entanglement, suffocation and ingestion as well as poses a risk to human health and life.

**Overview of Marine Litter Activities in NOWPAP**

NOWPAP Marine Litter activity (MALITA)

MALITA Phase I (2006-2007) Assessment of the national situation





**Tentative expenditure of CEARAC budget for the 2008-2009 biennium(2/4)**

Activity	Time	Planned Budget in US\$	Expenditure (expected) in US\$
WG4(RS)	Throughout 2008 & 2009	10,000	10,000
- Educational materials for utilization of RS data for marine environment conservation		15,000	14,515
WG3 and WG4(Joint)	Throughout 2008 & 2009	10,000	10,000
- Procedure for assessment of eutrophication status including evaluation of land based sources of nutrient for the NOWPAP Region			
Intersessional work	Throughout 2008 & 2009		
- Website on oil spill monitoring by remote sensing		2,000	2,000
- Preparing documents for 7 <sup>th</sup> FPM		4,000	4,000

**Tentative expenditure of CEARAC budget for the 2008-2009 biennium(3/4)**

Activity	Time	Planned Budget in US\$	Expenditure (expected) in US\$
Cooperation and Coordination of CEARAC activities	Throughout 2008 & 2009		
- 2008		4,000	3,274
- 2009		4,000	4,726
Publication of CEARAC Newsletter	Autumn 2008 & 2009		
- Fifth issue		2,000	2,420
- Sixth issue		2,000	2,580
<b>Sub-total</b>		<b>140,000</b>	<b>140,000</b>

**Tentative expenditure of CEARAC budget for the 2008-2009 biennium(4/4)**

Activity	Time	Planned Budget in US\$	Expenditure (expected) in US\$
CEARAC activities on RAP MALI	Throughout 2008 & 2009		
- Develop public awareness materials		2,500	2,500
- Compile and harmonize marine litter monitoring data on beaches		4,000	4,000
- Interpret results of marine litter monitoring on beaches		4,000	4,000
- Develop technical materials and introduce best practices on solid waste management, including removal of marine litter on beaches		in-kind	in-kind
<b>Sub-total</b>		<b>10,500</b>	<b>10,500</b>
<b>TOTAL</b>		<b>150,500</b>	<b>150,500</b>



**Draft workplan and budget of  
CEARAC activities  
for the 2010-2011 biennium  
and recommendation to the 14<sup>th</sup>  
NOWPAP IGM**

**NOWPAP CEARAC  
14-15 September 2009**

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

- Organization of CEARAC 8<sup>th</sup> & 9<sup>th</sup> FPM and Expert Advisory Group Meeting
- Maintenance of Websites
- Specific Projects - CEARAC Projects
- Cooperation and Coordination
- Publication of Newsletters

**Organization of  
CEARAC 8<sup>th</sup> & 9<sup>th</sup> FPM and  
Expert Advisory Group Meeting**

- CEARAC 8<sup>th</sup> FPM, Mar. 2010
- Expert Advisory Group Meeting, Summer 2010
- CEARAC 9<sup>th</sup> FPM, Sep. 2011

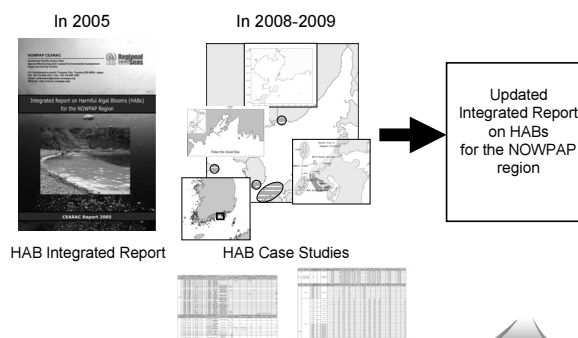
**Maintenance of Websites**

- WG3 - HAB Integrated Website  
WG4 - RS Portal Site
- Homepage of RS Educational Materials
  - Website on Oil Spill Monitoring by RS

**CEARAC Projects**

- WG3 - Updating the Integrated Report on HAB  
WG4 - Updating the Integrated Report on Ocean RS
- 3rd NOWPAP Training Course on Remote Sensing Data Analysis
- WG3 and WG4 (joint)
- Implementation of the assessment of eutrophication status by the NOWPAP member states
- New marine assessment method focusing on marine biodiversity

**Updating the Integrated Report on HAB**



### Updating the Integrated Report on Ocean RS

**RS Educational Materials**

**Website on oil spill**

Updated Integrated Report on Ocean Remote Sensing for the NOWPAP region (2011)

Reflection of accumulated information through CEARAC activities

**RS Portal Site**

Integrated Report on Ocean Remote Sensing for the NOWPAP region (2005)

### Organization of the 3<sup>rd</sup> NOWPAP Training Course on Remote Sensing Data Analysis

◆ Follow-on of the 1<sup>st</sup> and 2<sup>nd</sup> RS Training Course on Data Analysis

Lecture

Hand-on exercises

### Implementation of the assessment of eutrophication status by the NOWPAP member states

**Potential areas to conduct assessment of eutrophication status in each NOWPAP member state**

- Yangtze River Estuary and adjacent area, China
- North Kyusyu island, Japan
- Peter the Great Bay, Russia

\*Potential area in Korea are being considered by Korean Focal Points

### Developing a new marine assessment method focusing on marine biodiversity

## **Cooperation and Coordination**

## **Publication of Newsletters**

### **Draft workplan and budget of CEARAC for the 2010-2011 biennium (1/2)**

Activity	Planned Budget (US\$)			Tentative Time
	2010	2011	Total	
Organization of CEARAC FPM	18,000	18,000	36,000	Mar. 2010 Sep. 2011
Organization of Expert Advisory Group Meeting	31,000	-	31,000	Summer 2010
Maintenance of Websites	5,000	5,000	10,000	
<b>Specific Projects</b>				
WG3 (HAB)		10,000		
- Updating the Integrated Report on HAB		5,000		
WG4 (RS)		15,000		
- Updating the Integrated Report on Ocean RS				
- 3rd NOWPAP Training Course on RS Data Analysis				
WG3 and WG4 (joint)		15,000	45,000	
- Implementation of the assessment of eutrophication status by the NOWPAP member states				
New marine assessment method focusing on marine biodiversity		in-kind (implemented by NPEC)		

**Draft workplan and budget of CEARAC  
for the 2010-2011 biennium (2/2)**

Activity	Planned Budget (US\$)			Tentative Time
	2010	2011	Total	
Intersessional work	3,000	3,000	6,000	
Cooperation and Coordination of CEARAC activities	4,000	4,000	8,000	
Publication of Newsletter	2,000	2,000	4,000	Autumn in 2010 & 2011
<b>TOTAL</b>			<b>140,000</b>	
Others*				

\*Others (pending approval by the 14<sup>th</sup> NOWPAP IGM and availability of funds) might include marine litter related issues etc.





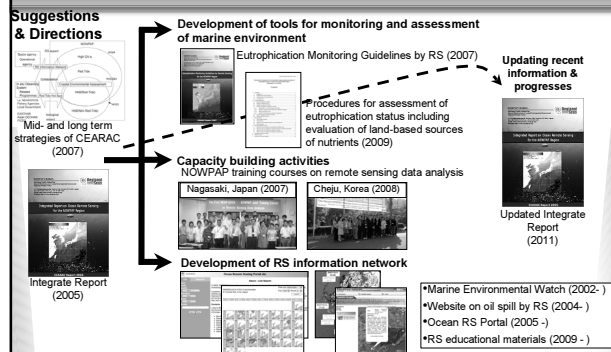




## Proposal for updating the Integrated Report on Ocean Remote Sensing for the NOWPAP Region

CEARAC  
September 14, 2009

## 1. Background



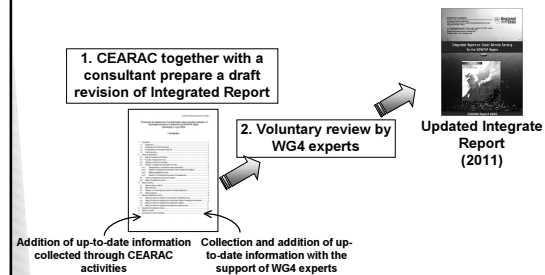
## 2. Objective

- 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

3

## 3. Main tasks



4

## Provisional table of contents of the the updated Integrated Report

1. Introduction
2. Status of Remote Sensing utilization in marine environment monitoring
3. Case examples of RS application in marine environmental monitoring
4. Status of Research and Development on remote sensing technology for marine environment
  - 4.1 Sensor and satellite
  - 4.2 Algorithm for geo-physical Parameters
  - 4.3 Validation of geo-physical Parameters

5

## Provisional table of contents of the the updated Integrated Report

5. Introduction of latest findings
6. Strategies/Plans for RS related activities
7. Challenges and prospects
8. Suggested activities for NOWPAP Region
9. Summary and recommendations

6

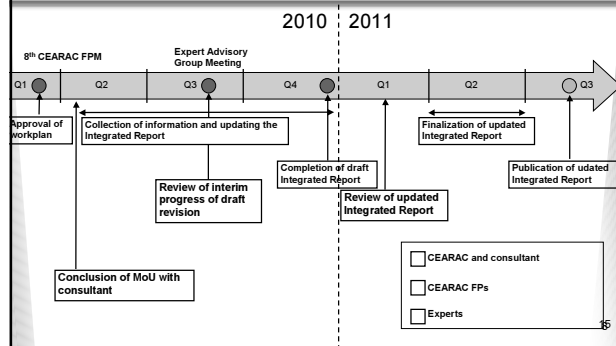


## 4. Expected outcome

- to provide up-to-date information on the recent progress and the status of ocean remote sensing for the NOWPAP region and draw on issues to be addressed towards establishment of a collaborative regional monitoring program in NOWPAP.

7

## 5. Schedule



## 6. Budget

5,000 US\$ is required to hire a consultant

16



Thank you very much

## Proposal for the 3<sup>rd</sup> NOWPAP training course on remote sensing data analysis

CEARAC  
September 14, 2009

## 1. Background

**Suggestions & Directions** → **Implemented capacity building activities**

Mid- and long term strategies of CEARAC (2007)

Integrate Report (2005)

**The First NEAR-GOOS - NOWPAP training courses on remote sensing data analysis**  
Nagasaki, Japan (2007)  
23 trainees from China, India, Indonesia, Japan, Korea, Russia, Thailand and Vietnam

**The Second NOWPAP training courses on remote sensing data analysis**  
Cheju, Korea (2008)  
23 trainees from China, Japan, Korea, Russia, France and Thailand

**Helped implementation other capacity building activity**  
2009 PICES International Summer School on Satellite Oceanography for the Earth Environment  
Seoul, Korea (2009)  
36 trainees from China, Japan, Korea, Russia, Mongolia, Indonesia, India and Italy

## 2. Objective

- to provide opportunities for students, young researchers and coastal managers to help obtain useful skills and knowledge to utilize remote sensing data in monitoring and assessment of the marine environment.



## 3. Main tasks

- Review of workplan
    - ♦ Venue, schedule, budget, etc
  - Review of syllabus
    - ♦ Time for each lecture
    - ♦ Composition of lectures and hands-on practices
  - Nomination of lecturers
  - Recommendation of potential trainees
- 

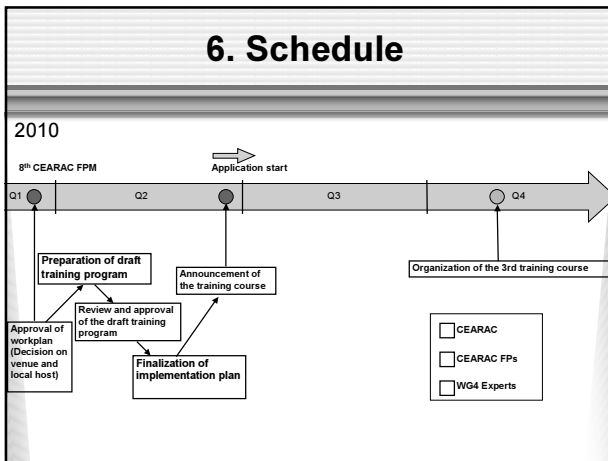
## 4. Potential partnership

- To effectively conduct the training course, CEARAC will look for potential partners.
- Prospective partners will be;
  - IOC/WESTPAC
  - YSLME.....

## 5. Expected outcome

- Contribute to capacity building of the NOWPAP member state for utilizing remote sensing data for marine environment conservation.
- To obtain useful information to consider future direction of CEARAC activities related to remote sensing through feedbacks from trainees

## 6. Schedule



## 7. Budget

15,000 US\$ is requested from NOWPAP Trust Fund. However, it is subject to change depending on availability of other fund sources.

Thank you very much



# Proposal for implementation of the assessment of eutrophication status by the NOWPAP member states

CEARAC  
September 14, 2009

## 1. Background

**Suggestions & Directions**

Mid- and long term strategies of CEARAC (2007)

Development of tools for monitoring and assessment of marine environment

Joint activity between WG3 and WG4

Procedures for assessment of eutrophication status including evaluation of land-based sources of nutrients (2009)

Contents	
1. Objective	1
2. Main tasks	2
3.1 Selection of assessment area	3
3.2 Collection of relevant information	4
4.1 Assessment of eutrophication status	5
4.2 Assessment of land-based sources of nutrients	6
5.1 Assessment of eutrophication status	7
5.2 Assessment of land-based sources of nutrients	8
6.1 Assessment of eutrophication status	9
6.2 Assessment of land-based sources of nutrients	10
7.1 Assessment of eutrophication status	11
7.2 Assessment of land-based sources of nutrients	12
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8.2 Assessment of land-based sources of nutrients	14
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## 2. Objective

- to contribute to improve the eutrophication status of the NOWPAP sea area through reviewing obtained assessment results by NOWPAP member states.

Role of eutrophication assessment by developed NOWPAP Procedures

## 3. Main tasks

- Each NOWPAP member state will be required to conduct an assessment of the eutrophication status in their respectively sea areas based on the common procedures.
- CEARAC will request CEARAC Focal Points to nominate an expert or organization that is capable of undertaking the following work.

### 3.1 Selection of assessment area

- Select an assessment area in each country, where water quality degradation and frequent occurrence of red tides were reported in the past.
- Divide the assessment area into sub areas in necessary.

Potential areas to conduct assessment

e.g in Toyama Bay

### 3.2 Collection of relevant information

- Collect relevant information and data on the assessment area(s) from existing monitoring and survey activities based on the common procedures.

Water quality monitoring

Occurrence of red tide

### 3.3 Selection of assessment parameters and data

Select all the assessment parameters from the collected data, and then categorize them into the 4 categories indicated by the common procedures.

Example of assessment parameters (e.g in Toyama Bay)

Category	Assessment parameter
I	Degree of nutrient enrichment
	Riverine input (TN, TP)
	Total nitrogen/Total phosphorus (TN, TP)
	Winter DIN:DIP concentration
II	Direct effects of nutrient enrichment
	Chlorophyll-a concentration (field data)
	Chlorophyll-a concentration (remote sensing data)
	Ratio of area with high chlorophyll-a concentration (remote sensing data) to the total area
III	Indirect effects of nutrient enrichment
	Red-tide events (diatom species)
	Dissolved oxygen (DO)
	Abnormal fish kill incidents
IV	Other possible effects of nutrient enrichment
	Chemical oxygen demand (COD)
	Red-tide events (Noctiluca sp.) Shellfish poisoning incidents

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### 3.4 Setting of assessment period

Set the assessment period as long as possible in accordance with the assessment objectives and availability of reliable data.

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### 3.5 Data processing

Process the selected monitoring/survey data into assessment values and prepares data sets to conduct assessment.

Example of data sets (e.g in Toyama Bay)

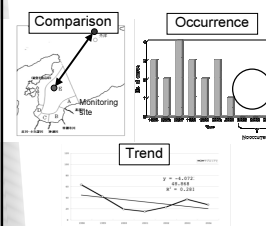
Category	Parameter	Assessment value	Sub-area name	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
II	Chlorophyll-a	Annual mean	Sub area A	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.88
II	Chlorophyll-a	Annual mean	Sub area B	3.92	3.44	2.76	2.86	3.51	3.49	3.44	4.78	2.46	3.82
II	Chlorophyll-a	Annual mean	Sub area C	2.84	3.01	2.65	2.02	2.55	3.32	3.80	3.80	2.15	3.97
II	Chlorophyll-a	Annual mean	Sub area D	1.50	1.23	1.64	1.26	1.34	2.59	2.15	1.99	1.76	1.14
II	Chlorophyll-a	Annual mean	Sub area E	0.88	0.94	0.60	0.56	0.84	0.78	0.77	1.01	0.96	0.51
II	Chlorophyll-a	Annual mean	Background area	0.42	0.41	0.35	0.40	0.44	0.37	0.38	0.50	0.63	0.39

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### 3.6 Setting of assessment criteria

Set the assessment criteria for each assessment parameter, category and area/sub areas based on the common procedures.

Combination of 3 identification tools



Category	Assessment parameter	Assessment value	Identification tools <sup>1)</sup>			Remarks
			Comparison	Occurrence	Trend	
I	Riverine input (TN, TP)	Annual mean				
	Total nitrogen/Total phosphorus (TN, TP)	Annual mean				
	Winter DIN:DIP concentration	Winter mean	✓			✓
	Winter NP ratio (DIN:DIP)	Winter mean	✓			✓
II	Chlorophyll-a concentration (field data)	Annual max. Annual mean	✓	✓		✓
	Chlorophyll-a concentration (remote sensing data)	Annual max. Annual mean	✓			✓
	Ratio of area with high chlorophyll-a concentration (remote sensing data) to the total area	Annual max. Annual mean		✓		✓
	Red-tide events (diatom species)	Annual occurrence Annual min.		✓	✓	✓
III	Dissolved oxygen (DO)	Annual occurrence Annual min.	✓			✓
	Abnormal fish kill incidents	Annual occurrence		✓		✓
	Chemical oxygen demand (COD)	Annual mean	✓			✓
IV	Red-tide events (Noctiluca sp.)	Annual occurrence		✓		✓
	Shellfish poisoning incidents	Annual occurrence		✓		✓

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### 3.7 Preparation of a report on assessment results

Prepare a report on assessment results.

1. Scope of Assessment
  - 1-1 Selection of assessment area
  - 1-2 Collection of relevant information
  - 1-3 Division of assessment area into sub-areas (if necessary)
  - 1-4 Selection of assessment parameters
2. Data processing
  - 2-1 Organization of collected data
  - 2-2 Screening and sorting of data into sub-areas
  - 2-3 Preparation of data sets for assessment
3. Setting of assessment criteria
  - 3-1 Setting of identification criteria of the assessment data
  - 3-2 Setting of classification criteria of the assessment parameters
  - 3-3 Classification criteria of the assessment categories
  - 3-4 Classification criteria of the assessment area/sub-areas
4. Assessment process and results
  - 4-1 Division of assessment areas and assessment categories
  - 4-2 Assessment results in each sub-area
5. Summary

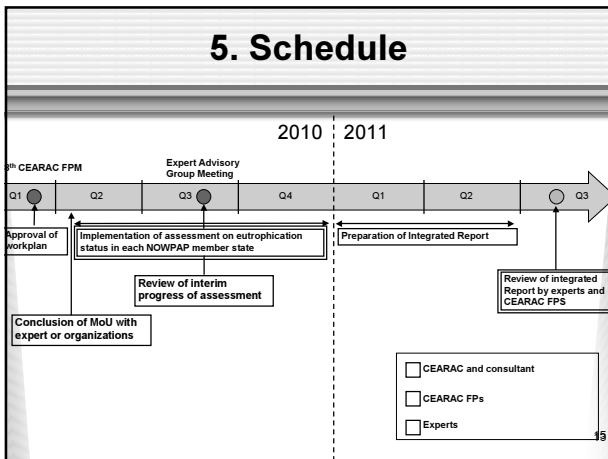
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## 4. Expected outcomes

•The obtained assessment results from each NOWPAP member state will be compiled as an integrated report on assessment of eutrophication status for the NOWPAP region, hoping that it will provide essential information for proper management of the marine and coastal environment in the NOWPAP region.

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## 5. Schedule



## 6. Budget

Contract	Timing	Output	To be completed	Counterpart	Budget(US\$)
Implementation of eutrophication assessment in each NOWPAP member state	2010 Q2	Results of eutrophication assessment in each NOWPAP member state	2010 Q4	Expert or organization in China	3,000
				Consultant in Japan	3,000
				Expert or organization in Korea	3,000
				Expert or organization in Russia	3,000
Preparation of integrated report on eutrophication assessment for the NOWPAP region	2011 Q1	Integrated report on eutrophication assessment for the NOWPAP region	2011 Q3	Consultant	3,000
<b>Total</b>	<b>10,000</b>				<b>15,000</b>

## Proposal for development of procedures for assessment of eutrophication status for the NOWPAP Region

CEARAC  
March 6, 2008

## 1. Background

CEARAC developed the common procedures for assessment of eutrophication status for the NOWPAP region in June 2009.

Eutrophication, biodiversity, hazardous substances and maritime activities etc. give negative influences to the marine environment.



## Background

Northwest Pacific Region Environmental Cooperation Center (NPEC) starts a new project to develop an assessment method focusing on marine biodiversity from 2009 FY.

NPEC expects that this new assessment method will be used in NOWPAP region for appropriate management of this region.

## 2. Objectives

To consider how best to assess the influences of various factors which give impacts on marine biodiversity and marine ecosystem.

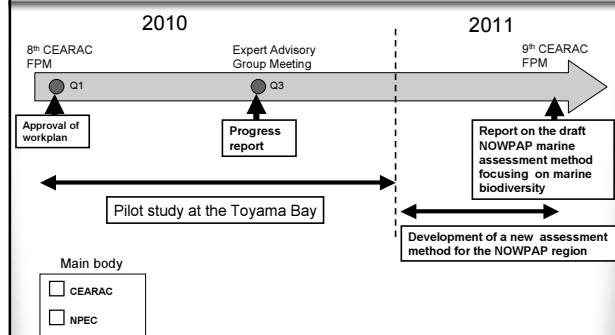
## 3. Main Tasks by NPEC

**2009:** Consideration of a new coastal environmental assessment method focusing on marine biodiversity

**2010:** Implementation of a pilot study in Toyama Bay, and review of assessment indicators and assessment procedure.

**2011:** Development of a draft assessment method for the NOWPAP region based on the results of the pilot study

## 4. Schedule



### **5. Expected outcome**

We can conduct more comprehensive assessment using two assessment methods, namely the common procedures of assessment for eutrophication status and new method focusing marine biodiversity in order to contribute to conservation of the marine environment in the NOWPAP region.

