

1. General Briefing

Background

The Special Monitoring and Coastal Environmental Assessment Regional Activity Centre (CEARAC) is one of the four Regional Activity Centres (RACs) to coordinate activities relevant to specific components of the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Action Plan (NOWPAP). CEARAC was founded in 1999 and is hosted by the Northwest Pacific Region Environmental Cooperation Center (NPEC), which was established in 1998 in Toyama, Japan, under the auspices of the Ministry of the Environment, Japan.

Following the Resolution of the 7th Intergovernmental Meeting (IGM) (March 2002, Vladivostok, Russia), which allows NOWPAP to evolve toward a RAC-based rather than an Activity-based structure, the CEARAC Focal Points Meeting (FPM) was established in order to promote smooth and effective implementation of special monitoring and assessment of the marine and coastal environment. The 1st CEARAC FPM (February 2003, Toyama, Japan) defined the priorities and initial steps of CEARAC activities. Following the decision of the 1st CEARAC FPM, CEARAC has been working on monitoring and assessing Harmful Algal Blooms (HAB) under Working Group 3 (WG3), and developing new monitoring tools using Remote Sensing (RS) under Working Group 4 (WG4). Since 2008, development of a new assessment method of eutrophication status in the NOWPAP region was included in CEARAC activities as a joint activity of WG3 and WG4. Also, taking into consideration increase of the global focus on with eutrophication, marine biodiversity, pollution by hazardous substances and maritime activities as ways of marine environment assessments and organization of CBD COP 10 (October, 2010, Nagoya-Aichi, Japan), CEARAC has been seeking appropriate works for conserving marine biodiversity which can be in line with CEARAC's responsibility as a specialist of monitoring and coastal environment assessment.

Activities of CEARAC in the workplan such as CEARAC Focal Points Meetings, expert meetings, specific activities for WG3 and WG4, and other intersessional work are funded by the NOWPAP Trust Fund and supported by in-kind contribution by NPEC, originated from the Ministry of the Environment, Japan, Toyama Prefectural Government and Japan Fund for Global Environment, and operation of CEARAC is financially supported by Toyama Prefectural Government, including the personnel salaries and other miscellaneous costs.

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2. CEARAC Activities for the 2010-2011 Biennium

At the 14th NOWPAP IGM (8-10 December 2009, Toyama, Japan), the following activities were approved for CEARAC for the 2010-2011 biennium.

Table 1 CEARAC Activities for 2010-2011 approved at the 14th IGM

Activities	Actions	Time
<u>Meetings</u> 2 FPMs with Expert Meetings	- Organizing FPMs with CEARAC FPs for review and discussion of implementation of entire activities. - Organizing Expert Meetings with experts on HAB, Ocean RS, Eutrophication and Marine Biodiversity for review and discussion of specific activities	Sep. 2010 Sep. 2011
<u>Web Maintenance</u> WG3 (HAB) WG4 (RS)	- Updating HAB Integrated Website - Developing the website in each language - Updating Ocean Remote Sensing Portal Site - Updating Website on the RS Educational Materials	throughout 2010-2011
<u>Specific projects</u> Biodiversity WG3/4(joint) WG3 WG4	- Developing the new marine assessment method focusing on marine biodiversity - Implementing the assessment of eutrophication status by the NOWPAP member states - Updating the Integrated Report on HAB - Updating the Integrated Report on Ocean RS - 3 rd NOWPAP Training Course on RS Data Analysis	throughout 2010-2011
<u>Publication</u> 2 Newsletters		autumn, 2010 & 2011

RAP MALI Activities	<ul style="list-style-type: none"> - Revising “Marine Litter Guidelines for Tourists and Tour Operators in Marine and Coastal Areas” - Updating the pamphlet “Current situation on marine litter in the NOWPAP region” - Compiling and harmonizing marine litter monitoring data on beaches (provided by member states) and submitting collected data to DINRAC - Providing information on best practice to reduce marine litter generation from land-based sources 	throughout 2010-2011
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2-1. Meetings

2-1-1. 8th FPM and Expert Meeting on Assessment of Eutrophication Status and Marine Environment focusing on Marine Biodiversity (13-15 September 2010, Toyama, Japan)

The 8th CEARAC FPM was held to review the progress of CEARAC activities being implemented for the 2010-2011 biennium. During the meeting, the final outcome and expenditure of CEARAC activities for the 2008-2009 biennium were explained and the brief interim report of the current activities was made.

Following the FPM Day 1, the Expert Meeting on Assessment of Eutrophication Status and Marine Environment focusing on Marine Biodiversity was held on the 14th of September. The Expert Meeting is a substitution of former Working Group Meetings. In line with conducting a joint activity of WG3 and 4 and expansion of CEARAC activities besides existing activities on HAB and RS, consultation and information sharing with experts of wider topics are necessary.

Therefore, the participants of the Expert Meeting consisted of experts on HAB, remote sensing, eutrophication and marine biodiversity in the NOWPAP member states. The main agendas were interim progress reports and discussion on the 2 CEARAC activities: implementation of the assessment of eutrophication status by the NOWPAP member states and development of the new marine environmental assessment method focusing on marine biodiversity.

During the expert meeting, the participants considered the feasibility of the eutrophication status assessment methods, the “NOWPAP Common Procedure,” which CEARAC developed in the 2008-2009 biennium, and their usefulness in implementing real assessment in each member state. The experts agreed on feasibility of the Common Procedures; however, there was one suggestion to this activity with including evaluation of land-based sources of nutrients in the eutrophication status assessment. For the activity of developing the new assessment method focusing on marine

biodiversity, several participants expressed their concern about the availability of useful data.

Then, there was a suggestion to consider effective cooperation of the 2 topic activities by sharing useful data. The meeting asked the Secretariat to modify this project and the assessment method, based on the recommendation and advice by CEARAC focal points and experts of marine biodiversity in the NOWPAP member states through e-mail communication.

2-1-2. Expert Meeting on Marine Biodiversity and Eutrophication in the Northwest Pacific Region (4-5 August 2011, Toyama, Japan)

15 experts on marine biodiversity and eutrophication in the NOWPAP member states and representatives of NOWPAP RCU and POMRAC and other international organizations, such as Helsinki Commission (HELCOM), North Pacific Marine Science Organization (PICES), and National Oceanic and Atmospheric Administration (NOAA) of the United States participated in the meeting.

Following the presentations on conservation of the marine environment and marine ecosystems in the world and in the NOWPAP region, there were discussions on potential activities of CEARAC for the next biennium (2012-2013) and beyond while useful advice and suggestions were provided from the participants for developing workplans on marine biodiversity and eutrophication assessment to meet the needs of the NOWPAP region. There were also presentations on the results of the eutrophication assessment by the experts of the member states, using the Common Procedures which CEARAC has developed for conducting a standardized eutrophication assessment in the NOWPAP region.

Based on the comments and suggestions during the meeting, CEARAC prepared draft workplans on marine biodiversity and eutrophication assessment for the 2012-2013 biennium and presented them at the 9th NOWPAP CEARAC FPM.

2-1-3. 9th FPM (6-7 September 2011, Toyama, Japan)

Following the report of the implementation and expenditure of CEARAC activities for the 2010-2011 biennium, drafts of three integrated reports (revision of HAB and RS, and eutrophication assessment) were presented for review. After provided comments and suggestion were reflected and some modifications were added, these reports were published.

Next, draft workplan with two budget options for CEARAC activities for the 2012-2013 biennium were explained. The workplan included proposals of new activities:

(1) refinement of the Common Procedures for eutrophication assessment towards assessment of the whole NOWPAP region; (2) organization of the fourth training course on remote sensing data analysis, and (3) two activities on marine biodiversity, as well as organization of meetings and maintenance of CEARAC websites. The meeting discussed how to construct more practical workplan of the activities and suggested to develop a new activity plan on marine biodiversity by combining 2 presented drafts, and the meeting adopted CEARAC's workplan and two budget options for 2012-2013.

Besides the discussion on the workplan, the meeting expected more collaboration among NOWPAP RACs and RCU and relevant regional and international organizations for implementing future activities. CEARAC has taken and will continue taking every opportunity to facilitate more information sharing and to explore possibilities of collaborative work with other RACs and organizations for more useful outcomes.

2-2. Maintenance of CEARAC Websites

There have been more than 2,500 page views per month to CEARAC websites, including HAB Integrated Website, *Cochlodinium* Homepage, Ocean RS Portal Site, Homepage of RS Educational Materials and Marine Environmental Watch Project (based on the statistics obtained from 1 January 2008 to 31 July 2010). One of the tasks of these web pages is to disseminate latest information to people concerned about the marine environment. Therefore, CEARAC conducts maintenance and management work on these websites in order to update and disseminate information on a regular basis. CEARAC has been collecting latest information through every possible channel and several new pages and functions were constructed, including *Cochlodinium* homepage in English and 4 NOWPAP languages, NOWPAP Ocean Remote Sensing Portal, Page on marine biodiversity, Page on eutrophication and Icons of 4 NOWPAP languages on Top Page.

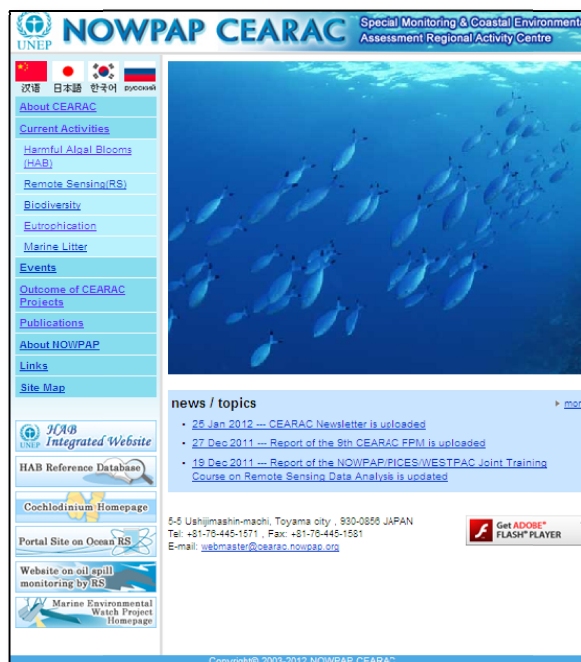


Figure 1: CEARAC Websites

2-2-1. HAB Integrated website

Updating of HAB Integrate Website has been conducted based on the rule for updating HAB Integrated Website. Newly updated contents in the current biennium are as follows:

(a) HAB Case Study Database

Based on the updated HAB Case Study Report from each member state, the database has been updated with the latest information.

(b) HAB Reference Database

Published papers on harmful algal blooms in the NOWPAP region in 2006-2008 were added.

(c) *Cochlodinium* Homepage

Cochlodinium Homepages in Chinese, Korean and Russian languages were newly established with kind support from CEARAC FPs.

2-2-2. Ocean Remote Sensing Portal site

A new page was developed by combining the existing two pages: Portal Site on Ocean RS, and Education materials for utilization of RS, and was opened in the second half of 2011. There are icons of four NOWPAP languages on top.

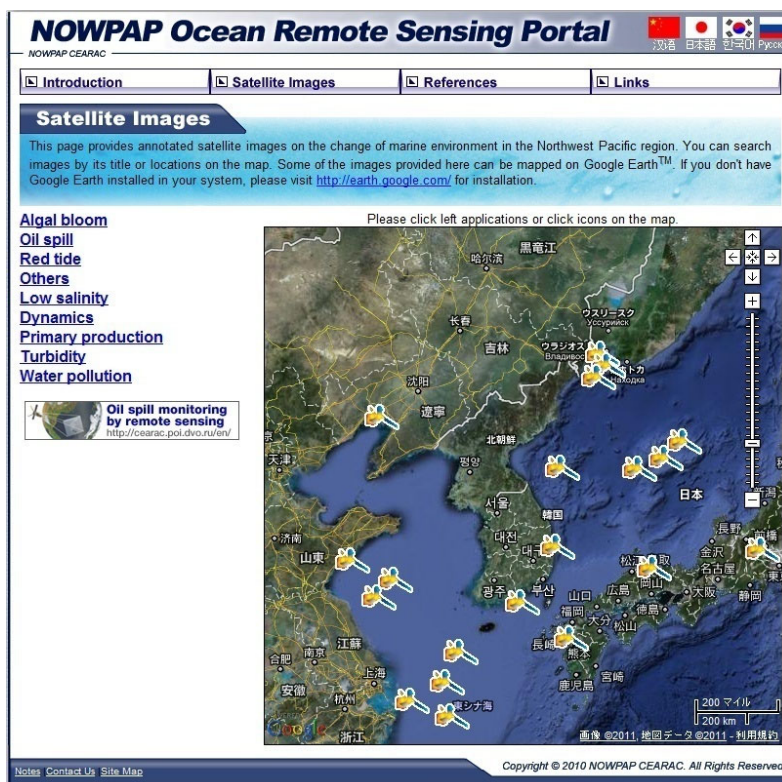


Figure 2: NOWPAP Ocean Remote Sensing Portal

2-2-3. Website on oil spill monitoring by remote sensing

In response to huge oil spill incidents in Gulf of Mexico in April 2010 and Bohai Sea in June 2011, several satellite images were analyzed by V.I.II'chev Pacific Oceanological Institute of Far Eastern Branch of the Russian Academy of Sciences (POI FEB RAS) and uploaded on CEARAC website on oil spill monitoring by remote sensing. The images of Bohai Sea was also sent to MERRAC immediately after those incidents occurred.

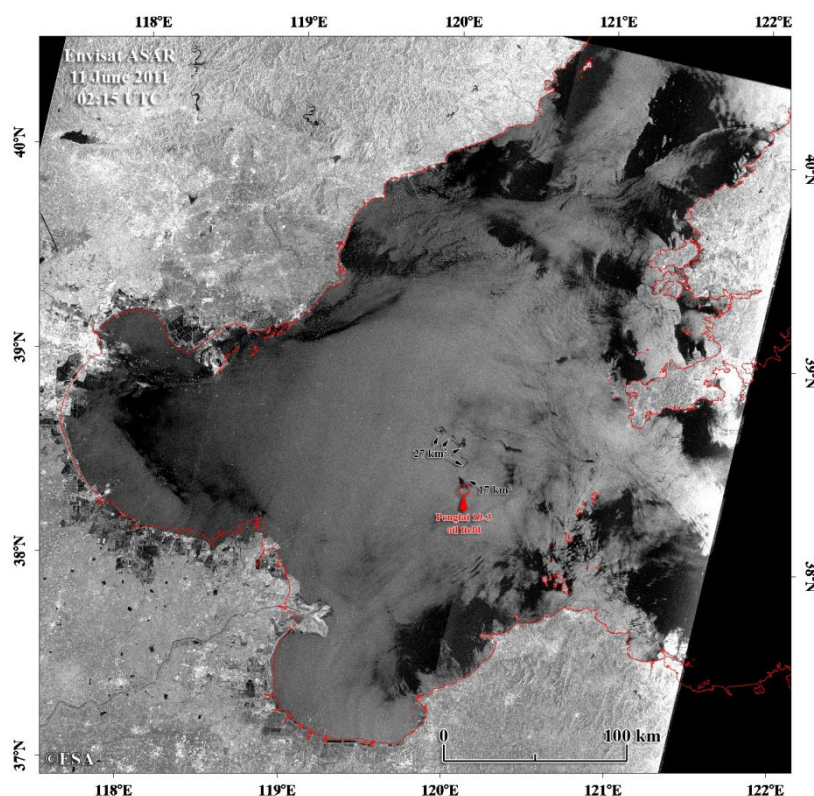


Figure 3: Bohai oil spill on the ASAR Envisat images

11.06.2011 ([View in Google Earth](#))

2-3. Specific Activities

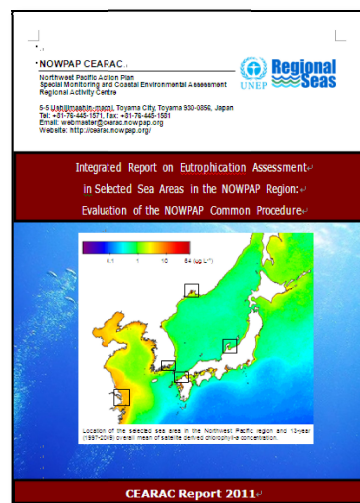
2-3-1. Developing a Methodology for Coastal Environmental Assessment focusing on Marine Biodiversity

CEARAC conducted a pilot study in Toyama Bay in 2010 and developed a new methodology for assessing coastal environment focusing on marine biodiversity. The methodology was reviewed by marine biodiversity expert and CEARAC FPs. They

suggested that data and information on marine biodiversity in the NOWPAP region is very limited, so it is required to look for available common indicators. Taking these suggestion into consideration, CEARAC decided to search appropriate indicators for the assessment focusing on marine biodiversity by collaboration with PICES newly established Working Group; WG28: Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors (2011-2013).

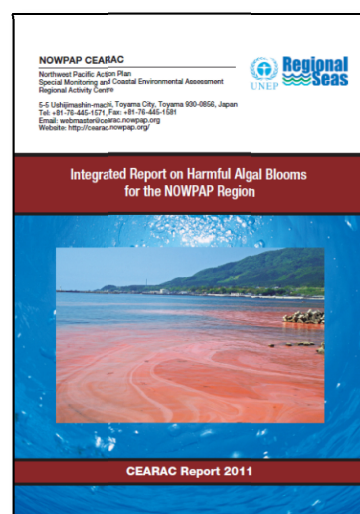
2-3-2. Assessment of Eutrophication Status in Selected Sea Areas

Assessment of the eutrophication status in the selected sea areas was conducted in 2010 by the contracted expert of the NOWPAP member states. Then, in the expert meeting in August 2011, the final results of the assessments were presented. A draft Integrated Report on eutrophication status in selected sea area in the NOWPAP region was also presented at the meeting, based on the results of respective assessment in each selected area. Some of the meeting participants requested CEARAC to circulate the draft Integrated Report before its finalization. The report was planned to be finalized and published at the end of 2011; however, because of extra time for thorough review and revising work, they were finally published in March 2012.



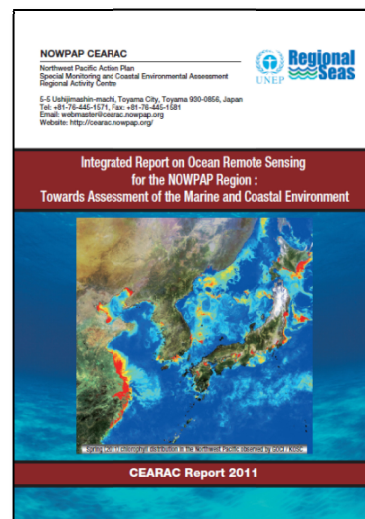
2-3-3. Updating the Integrated Report on HAB

As five years have passed since the first publication of the Reports, CEARAC decided to update the contents with latest information. For the new reports, target sea areas were selected and MoU was concluded with experts to make a new HAB Case Study Reports. Based on these reports and the latest HAB occurrence data submitted to CEARAC Secretariat by the contracted experts from the member states, a draft integrated report was prepared and circulated among the CEARAC FPs. The publication of the report was planned at the end of 2011; however, because of extra time for thorough review and revising work, they were finally published in February 2012.



2-3-4. Updating the Integrated Report on Ocean Remote Sensing

Same as the Integrated Report on HAB, CEARAC decided to update the Integrated Report on Ocean Remote Sensing for the NOWPAP Region, by referring to information to be gathered through maintaining CEARAC websites. References, events, links and educational materials related to ocean remote sensing were also incorporated in the updated report. The publication of the reports was planned at the end of 2011; however, because of extra time for thorough review and revising work, they were finally published in February 2012.



2-3-5. Organizing the 3rd NOWPAP Training Course on Remote Sensing Data Analysis (NOWPAP/PICES/WESTPAC Joint Training Course on Remote Sensing Data Analysis)

The 3rd training course was held at Far Eastern Federal University in Vladivostok, Russia on 8-12 October 2011 with PICES and IOC/WESTPAC as co-organizers.



1 Chinese, 1 Korean, 1 Japanese, 16 Russian from NOWPAP/PICES member countries
1 Indonesian, 1 Filipino from WESTPAC member countries
1 Indian IOCCG funded student

Figure 4: NOWPAP/PICES/WESTPAC Joint Training Course on Remote Sensing Data Analysis (October 8-12, 2011 at Far Eastern Federal University in Vladivostok)

The course was sponsored by NOWPAP, PICES, IOC/WESTPAC and IOCCG. There were 58 applications from 24 countries for the training course and the Organization Committee selected 7 trainees as funded. Besides, 15 self-funded trainees joined the course. The trainees are from the 4 NOWPAP states, India, Indonesia, and the Philippines. With the kind support of the V.I.II'chev Pacific Oceanological Institute of Far Eastern Branch of the Russian Academy of Sciences (POI FEB), the training course was successfully completed.

2-4. CEARAC Newsletters

CEARAC publishes its newsletter annually. The 7th issue was published at the end of 2010. Besides the progress reports on CEARAC activities, this issue featured articles related to CBD-COP 10 held in October 2010 in Aichi-Nagoya, Japan. The 8th issue was published at the end of 2011 to introduce current CEARAC activities.

2-5. Cooperation with International Organizations and Other NOWPAP RACs

Taking every opportunity, CEARAC participated in meetings and/or workshops held by NOWPAP RCU, other RACs, UNEP and relevant regional and international organizations to exchange information and data and introduce past and present CEARAC activities. CEARAC staff participated in the following meetings and/or workshops during the 2010-2011 biennium:

- 2nd Yellow Sea Regional Science Conference (24-26 February 2010, Xiamen, China)
- 2010 NOWPAP International Coastal Cleanup and Workshop on Marine Litter Management (26-28 March, Hirado, Japan)
- 13th North-East Asian Regional Global Ocean Observing System (NEAR-GOOS) Coordinating Committee Meeting (8-10 April, Vladivostok, Russia)
- International Symposium – Climate Change Effects on Fish and Fisheries (25-26 April, Sendai, Japan)
- 8th Intergovernmental Session Intergovernmental Oceanographic Commission (IOC) Sub-Commission Meeting (10-13 May, Bali, Indonesia)
- 8th POMRAC FPM (26-27 May, Busan, Korea)
- 13th MERRAC FPM (8-11 June, Taejeon, Korea).
- 2010 NOWPAP International Coastal Cleanup (ICC) Campaign (1-2 October, Jeju, Korea)
- Marine Biodiversity Forum in the Northwest Pacific Region (16 October in Toyama,

Japan)

- CBD COP10 (18-29 October, Nagoya, Japan)
- North Pacific Marine Science Organization (PICES) 2010 Annual Meeting (22-31 October, Portland, USA)
- 2nd International Conference on Global Change and the Environment in Asia and Pacific (GCEAP): Inland Waters and Coastal Environment (28-29 October, Hong Kong, China)
- 15th NOWPAP IGM (16-18 November, Moscow, Russia)
- 2011 PICES FUTURE Workshop (26-28 April 2011, Hawaii, U.S.A.)
- The 9th DINRAC FPM (26-28 April, Hangzhou, China)
- 14th MERRAC FPM and the 6th Competent National Authorities Meeting (7-10 June, Taejeon, Korea)
- NOWPAP ICC (20-21 September, Lianyungang, China)
- PICES 2011 Annual Meeting: Mechanisms of Marine Ecosystem Reorganization in the North Pacific Ocean (14-23 October, Khabarovsk, Russia) and Workshop on “Remote sensing techniques for HAB detection and monitoring” (15 October)
- 9th POMRAC FPM (25-26 October, Khabarovsk, Russia)
- 16th NOWPAP IGM (20-22 December, Beijing, China)

2-6. CEARAC Activities on RAP MALI

CEARAC has been conducting its designated activities on marine litter (RAP MALI) under leadership of NOWPAP RCU and cooperation with other RACs.

2-6-1. Revising “Marine Litter Guidelines for Tourists and Tour Operators in Marine and Coastal Areas”

The contents of the original guidelines were general ones on marine litter issue. So, specific issues on marine litter in the tourism industry and good practices for prevention of marine litter generation in this sector were added to the revised guidelines. The revised guidelines were published by the end of 2011 in digital format.

2-6-2. Updating the pamphlet “Current situation on marine litter in the NOWPAP region”

CEARAC published the pamphlet “Current situation on marine litter in the NOWPAP region” which introduces current status based on the data submitted from each member

state in 2009. CEARAC updated this pamphlet using the latest data from NOWPAP member states. The updated pamphlet was uploaded into the CEARAC website.

**2-6-3. Compiling and harmonizing marine litter monitoring data on beaches
(provided by the member states) and submit collected data to DINRAC**

CEARAC submitted the data in 2009 on marine litter monitoring provided by each member state to DINRAC and updated the website “NOWPAP National Monitoring of Marine Litter”. The data in 2010 was submitted to DINRAC after being provided from each member state.

**2-6-4. Providing information on best practice to reduce marine litter generation
from land-based sources**

To reduce marine litter in the NOWPAP region, it is necessary to develop and take countermeasures against litter generation from land-based sources. As the NOWPAP member states have conducted effective countermeasures, CEARAC decided to contract with experts who are nominated by ML FPs and to collect information on best practices of the prevention of marine litter generation from land. Therefore, this activity has been continued during the 2012-2013 biennium. CEARAC will summarize provided information and publish a regional report in the 2012-2013 biennium.

3. Budget and Expenditures for the 2010-2011 biennium

Table 2 shows CEARAC budget for the 2010-2011 biennium and expenditures by the end of 2011.

Table 2 Planned budget and exact expenditures for 2010-2011

Activities	Actions	Planned Budget (in USD)			Expenditures (in USD)		
		In 2010	In 2011	Total	In 2010	In 2011	Total
2 FPMs and Expert MTs		27,000	27,000	54,000	27,000	23,767	50,767
Web Maintenance (WG3) (WG4)	- Update HAB - Site in 4 langs. - Update RS Site - Update Web on RS Educational Materials	3,000	2,000	5,000	0	5,223	5,223
Specific projects - Biodiversity - WG3+4(joint) - WG3(HAB) - WG4(RS)	- new assessment method focusing on marine BD - eutrophication assessment - Updated HAB IR - Updated RS IR - 3rd RS Training Course	In kind 12,000 8,000	in kind 4,000 2,000 4,000 10,000	 (total) 40,000 + In-kind	In-kind 0 0	In-kind 16,000 10,000 4,000 12,316	 (total) 42,316 + In-kind
Cooperation and coordination		2,000	2,000	4,000	213	3,931	4,144
Newsletters		2,000	2,000	4,000	0	4,550	4,550
<u>Sub-TOTAL</u>		54,000	53,000	107,000	27,213	79,787	107,000
RAP MALI	- Revise guidelines - Update pamphlet - Compile and Harmonize ML monitoring data - Provide info. on best practice			5,000 2,500 in-kind 3,000	0 0 In-kind 0	4,500 0 In-kind 6,000	4,500 0 In-kind 6,000
<u>Sub- TOTAL</u>				10,500	0	10,500	10,500
<u>GRAND TOTAL</u>				117,500	27,213	90,287	117,500