Second Scientific Workshop on “Responses of Marine Hazards to Climate Change in the Western Pacific” (WESTPAC-ROSE-MaHaz)
Qingdao, China, 5-6 December 2009

The Second Scientific Workshop of WESTPAC on “Responses of Marine Hazards to Climate Change in the Western Pacific” (WESTPAC-ROSE-MaHaz) began in the morning of 5 December 2009, in Qingdao, China. The workshop was jointly organized by the IOC/WESTPAC and the First Institute of Oceanography, China. A total of 43 participants from Australia, China, Indonesia, Japan, Malaysia, Russia, Thailand, United States, and Vietnam participated in this workshop. The workshop was designed as a follow-up activity of the WESTPAC Project on Response of Marine Hazards to Climate Change, aiming to, in addition to reviewing the progress made in the last year, exchange scientific knowledge and further identify cooperation opportunities of observations and research in the year 2010 and beyond. For more information, please contact Prof. Fangli Qiao, IOC/WESTPAC Project Leader (E-mail: qiaofl[at]fio.org.cn).
Coral Bleaching in Andaman Sea

Somkiat Khokiattiwong and Weidong Yu, IOC/WESTPAC MOMSEI Project

The preliminary coral survey of Phuket Marine Biological Center (PMBC) in Andaman Sea shows coral bleaching at many sites both off-shore and near-shore, spanning from the north of Thailand’s border to the south of Phuket. The coral bleaching situations is gradually developing from weak to strong category since the second week of the April, 2010. The survey is still continuing in Thai waters.

Figure 1. Five-day averaged SST over 24-28 Apr. 2010, illustrating the dominant thermal impact in the central Bay of Bengal and Andaman Sea

Some publications documented that high SST (exceeding 31°C) for long period can cause the coral bleaching. The SST monitoring shows (Figure 1) that the central of Bay of Bengal and the Andaman Sea is recently dominated by abnormally warm water, with SST over 31°C. Some regions (especially in the Andaman Sea) are shown to have extreme SST exceeding 32°C. The extreme SST is well observed by the buoy at (90°E, 12°N), which is one component of RAMA array developed under the coordination of CLIVAR-GOOS Indian Ocean Panel. It shows (Figure 2) that the SST at the buoy site reaches its peak in April 2010 and is significantly higher than that in years 2008 and 2009. This high SST is one consequence of the late monsoon onset over Bay of Bengal and Andaman Sea where monsoon normally onsets around in the mid-April. But the year 2010 did not see the onset until the end of April. The high thermal pressure by the anomalous high SST could be the main cause of coral bleaching in Andaman Sea. The PMBC survey has revealed that the off-shore and near-shore water exceeded 31°C, which is the critical point of coral bleaching. This situation is expected to occur also in Myanmar and probably in Malaysia as well.
UNESCO/IOC Sub-Commission for the Western Pacific (WESTPAC) is conducting one regional project entitled “Monsoon Onset Monitoring and its Social and Ecosystem Impacts” (MOMSEI) under its SEAGOOS programme. MOMSEI project aims to improve the observation capability in the Bay of Bengal and Andaman Sea region in order to improve the understanding and forecasting the monsoon onset in the Southeastern Asia. It is expected that one monitoring buoy will be deployed in the Andaman Sea. This MOMSEI buoy, together with the RAMA buoys, will significantly improve the regional capability of ocean monitoring in the SEAGOOS region. The monsoon related drought/flood and coral reef bleaching are the top two priorities within MOMSEI. It is anticipated that MOMSEI will aid to give a better risk monitoring and assessment on the regional coral reef bleaching events.

Figure 2. Time series of the daily SST observed by Buoy in central Bay of Bengal, particularly at (90°E, 12°N), from 1 January 2008 to 29 April 2010, illustrating the extremely high SST (over 32°C) during April 2010

Figures 3a-b. The SST in Andaman Sea of Thailand was found exceeding the 31°C, which is a critical point of coral bleaching. (a) Maiton Island (southwest of Phuket Island) (b) south of Phuket, PMBC.
Developing parameter for measuring coastal resilience by using community based perceptions and tsunami run-up modeling

Rahman Hidayat¹ and Kimiro Meguro²

¹ Agency for the Assessment and Application of Technology of the Republic of Indonesia, Coastal Engineering Laboratory, Jl. Grafika 2, Yogyakarta 55281, Indonesia.
E-mail: rahman_hidayat2002 [at] yahoo.com

² Meguro Laboratory, Institute of Industrial Science, the University of Tokyo, Komaba 4-6-1, Meguro-ku, Tokyo 153-8505, Japan.

Introduction

Up to now, there has been no standardized and general agreement to measure the resilience of coastal communities from disaster. Approximately 3 years after the Indian Ocean tsunami 2004 US-AID with governments and communities in Southeast Asia countries within the framework of Indian Ocean Tsunami Early Warning System (IOTWES) cooperation was released draft guidance to the resilience of coastal communities (Coastal Community Resilience, CCR-IOTWES). The concept of disaster risk reduction and community resilience to disasters are considered broad concepts and relatively new, in which the concepts are not an easy to be implemented. By referring to the CCR-IOTWES concept, we develop parameters to measure coastal community resilience to natural disasters (earthquake-tsunamis) that easily understood and applied by multi-stakeholders in the local context.

Methodology and Approaches

This paper is an initial report on the study of coastal community resilience in Cilacap Regency, Central Java-Indonesia. Cilacap Regency is one of the small numbers of regency in Indonesia, the first in Central Java, which has disaster management office established in accordance to Indonesia’s Law number 24 of 2007 on Disaster Mitigation. Cilacap City, as part of the Cilacap Regency, is one of the most important cities located on the southern of Java Island considering the city has some industries such as oil refining industry, petroleum distribution; cement factories, fishing industry, power plants etc.

The data used in this study was primary and secondary data. Primary data were the data collected through fieldwork and field survey. Field observations were conducted on the period of post-
The questionnaire distribution to get input and perception from the communities in order to determine the resilience of coastal communities to disasters was carried out between March and April 2009. The distribution of the questionnaire was carried out in four villages in four sub-districts namely Nusawungu, Binangun, Bunton, and South Cilacap, and detail of study location as shown in Figure 1. The locations were selected by considering that these regions were suffered most casualties during the tsunami of July 17, 2006. The TUNAMI-N3’s modelling (model for investigation of near-field tsunami with varying grids, developed by Tohoku University) results are also being used to input data for questionnaire sheet used in the field survey in Cilacap Regency.

Results and Discussion

Based on simulation results of hypothetical tsunami, with a worst-case scenario earthquake 8 Mw, a maximum tsunami run-up around 3-4 m height can reach around two kilometer inland of Cilacap. The results from tsunami modeling mainly utilized for tsunami hazard mitigation such as establishing the tsunami flood zones of vulnerable region, setting down evacuation routes, as well as long-term coastal community planning. By referring to the CCR-IOTEWS concept, there are eight elements indicators to measure the level of resistance (resilience) coastal communities. The eight elements are governance, social-economy and livelihood, coastal resources management, land use and structural design, risk knowledge, warning and evacuation, emergency response, and disaster recovery. The results of these measurements are presented in the graph as shown in Figure 2. From the graph, it appears that of all the locations in the observed area shows the average resilience rate of less than two, which is categorized as below the threshold resilient.

Despite the fact that every coastal area has their own specific site, coastal protection methods may not be applied uniformly without considering community uniqueness. The selected parameters resulted from this initial study may provide guidance for tsunami mitigation in prone areas.
results of the study also indicate that local parameters are needed to be developed together by both scientists and policy makers, as well as involving the community participation to understand local community values to improve community resilience. Coastal managers and decision makers have different backgrounds. In view of this, scientific information in terms of database is needed to develop proper decisions related to the use of coastal resources, coastal environment protection, and improvement of the quality of life in framework of coastal community resilience. One possible method is to translate and disseminate scientific information by integrating local wisdom that easily understood by decision-makers and communities.

Figure 2 Spider Diagram of Coastal Community Resilience of Cilacap Regency based on the results of the survey from March to April 2009 (left picture). Detailed of each elements of resilience at each sub-district in Cilacap Regency shows that governance, coastal resources management and emergency response has higher values than other elements (right picture). (Notes: Gov.= governance; SEL=, social-economy and livelihood, CRM=coastal resources management, LSD=land use and structural design, RK=risk knowledge, WnE=warning and evacuation, ER=emergency response, DR= disaster recovery)

References:
**In Focus**

Interannual Chlorophyll-α Variation at the Southern Java Island

By Chun Knee Tan, Chief Operation Officer (COO), GEEOC Sdn. Bhd., Malaysia
(Email: gs04127[dot]hotmail.com)

At the Southern Java Island, coastal upwelling event occurs every boreal summer is attributed to the monsoon wind. This upwelling causes the enrichment of surface water, followed by the increment of primary productivity. The interannual chlorophyll-α variation shows there is large variation from year to year (Figure 1). These variations are closely linked to the ocean-atmospheric dynamics in both Pacific and Indian Ocean.

Figure 1 shows that high mean chlorophyll-α always recorded during the coupled event of both El Niño and positive Indian Ocean Dipole. The magnitude of phytoplankton bloom during this period can be 2-4 times than normal upwelling at Southern Java Island.

Figure 2 shows the high chlorophyll-α extended far into the open ocean in 1997 and 2006. The phytoplankton bloom in 1997 found to be almost two times higher than the event in 2006.

The moderate El Niño in 2009 seems do not contribute much to the increment of surface chlorophyll-α. During La Niña year (e.g. 1998), the chlorophyll-α at Southern Java Island is much lower than the average (Figure 1).

---

Image courtesy: NASA GFSC Ocean Biology Processing Group
Funding Opportunity

APN 2010 Special Call for Proposals for Focussed Activities

In celebrating the completion of the APN’s Second Strategic Phase and moving dynamically into its Third Strategic Phase, APN launched the specially Call for Proposal for following two new scientific themes:

• Theme 2: Ecosystems, Biodiversity and Land Use
• Theme 4: Resources Utilization and Pathways for Sustainable Development

Deadlines: May 23, 2010
Contact: Dr. Linda Anne Stevenson
Email: lastevenson[at]apn-gcr.org
For details, please visit http://www.apn-gcr.org/newAPN/opportunities/opportunities.htm

Capacity Building

NOWPAP-CEARAC website for educational materials for utilization of remote sensing data for marine environmental conservation

This website was developed as one of activities of the Special Monitoring and Coastal Environmental Assessment Centre (CEARAC) of the Northwest Pacific Action Plan (NOWPAP) of United Nations Environmental Program. Objective of this website is to help utilize remote sensing techniques for monitoring and assessment of marine environment in the Northwest Pacific region.

For details, please visit http://www.cearac-project.org/wg4/em/index.php

Job Opportunity

(1) Postdoctoral Fellow - Ocean Process Studies, The Department of Physics at the University of Massachusetts Dartmouth has an immediate opening for a postdoctoral research associate to study oceanic submesoscale processes, their implications for vertical fluxes on scales of 100 m - 10 km, their interaction with mesoscales and dependence on mixing, using modeling and analysis. Contact Professor Amit Tandon (atandon[at]umassd.edu) http://www.umassd.edu/hr/jobs.cfm

(2) Coordinator (Marine Ecosystem), P-5, UNEP Division of Environmental Policy Implementation, Nairobi, Kenya. Due date: 17 May 2010.

(3) Deputy Executive Secretary, P-5, UNEP Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals, Bonn, Germany. Due date: 19 June 2010.

IOC/WESTPAC

Announcement

Eighth Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VIII)

The Eighth Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VIII) will be held from 10 to 13 May 2010 in Bali, Indonesia with the generous host of the Government of Indonesia.

The Session will review the implementation and development of the WESTPAC activities since the last session of the Sub-Commission in Sabah, Malaysia, 26-29 May 2008 and evaluate the new project proposals based on common interests and examine the possibility of forming WESTPAC Working Groups deliberating on a focused scientific topic. The Sub-Commission finally will formulate a new work plan and elect its officers for the next Biennium.

Date: 10-13 May 2010
Venue: Bali, Indonesia
Contact: Wenxi Zhu
Email: w.zhu@unesco.org


IOC/WESTPAC Training Course “Impact of Sedimentary Dynamics and Biogeochemistry on Coral Reefs”

The IOC/WESTPAC-CorReCAP Project aiming to safeguard the health of coral reef ecosystems, and carry out cost-effective management procedures and policies to maintain the sustainability of coral reefs, with a well-coordinated network within the Western Pacific Region.

This training activity was designed to:
• Build capacity on the impacts of sediment on coral reefs for the WESTPAC member states;
• Establish an international research network in the field of sedimentary dynamics on coral reefs

Date: 15-18 June 2010
Venue: Koh Samui, Thailand.
Contact: Wenxi Zhu
Email: w.zhu@unesco.org

Second IOC/WESTPAC Workshop on the “Coral Reefs under Climate and Anthropogenic Perturbations” (IOC/WESTPAC-CorReCAP)

The second workshop of IOC/WESTPAC-CorReCAP will take place on 22-24 June 2010, Phuket, Thailand with generous support of the Ramkhamhaeng University, Thailand and East China Normal University, China.

The workshop will last for three days with oral presentations and open discussion on day one. The second half of this workshop will focus the discussion on the special issue of publication on coral reefs in the WESTPAC region, the preparation of one synthesis document to assess the actual situation of coral reefs and to identify the hot topics of research in the region.

Date: 22-24 June 2010
Venue: Phuket, Thailand.
Contact: Wenxi Zhu
Email: w.zhu@unesco.org