

**INTERNATIONAL WORKSHOP-CUM-TRAINING COURSE ON:
'COASTAL ECOSYSTEM: HAZARDS MANAGEMENT AND REHABILITATION'
PURWOKERTO (INDONESIA), AUGUST 8-17, 2006**

PARTICIPATING COUNTRIES: 14 (Including 11 countries of the NAM S&T Centre)

NUMBER OF PARTICIPANTS: 43 scientists from 14 countries

The land-sea interface is represented on geographic maps as a thin coastline but the term 'coastal zone' or 'coastal area' is more appropriate with reference to the study of various facets of coastal dynamics. Within the coastal zone, ecosystems areas such as salt marshes, mangroves and coral reefs are subjected and influenced by more intense land-sea interactions than the others such as for example, rocky shores. These ecosystems provide many services and products that are of enormous economic relevance and it is estimated that a significant part of the world's new economic potential resides in the coastal zone

However, the coastal systems are affected by human activities and acts of nature. Human activities that currently affect the coastal zones are fishing, aquaculture, coastal agriculture, forestry, hydro-technical engineering and coastal construction, mining, shipbuilding (in dockyards), oil extraction, transfer and transportation, electric power generation, navigation, seaport and naval operations, tourism and recreation. The natural processes which leave their imprint in a big way on the coastal zones are climatic fluctuations and associated effects, accretion and erosion from extreme events such as severe tropical storms and related storm surges, earthquakes and tsunami waves. All these affect many of regulatory and social and economic functions of coastal zones.

The need for ocean resources is steadily increasing and the resulting increase in economic activity within the coastal zones leads to costly damages to property, society, economy and environment. This combination of natural and human forces and the uncertainties involved in their origins and impacts present major challenges to coastal managers. Needed are the efforts towards better understanding the structure and functioning of coastal systems in their complexity and interactions, their response to natural and anthropogenic pressures and devising ways to restore their functionality to provide services and products. In the short term however, it will be necessary to create the basic institutional framework and infrastructure to combat the adverse impacts of natural hazards on coastal populations and to provide them adequate relief and rehabilitation facilities in the immediate post hazard period. The integration of environmental and livelihoods concerns should be a major objective that can be best achieved by promoting and strengthening partnerships between governmental and non-governmental organisations involved in implementing sustainable coastal zone management measures.

In this context, the Centre for Science and Technology of the Non-Aligned and other Developing Countries (NAM S&T Centre) with the approval of its Governing Council organised a 10-day international workshop-cum-training course on Coastal Ecosystems: Hazards Management and Rehabilitation during 8-17 August, 2006 at Purwokerto, Indonesia, jointly with Zentrum für Marine Tropenökologie (ZMT) (Center for Tropical Marine Ecology), Bremen, Germany and Jenderal Soedirman University (UNSOED), Purwokerto, Indonesia. The training workshop was aimed at facilitating the exchange of information on the status of developments made in developing countries in the field of integrated coastal zone management concepts with particular reference to Hazards Management and Rehabilitation, and impart appropriate skills to the participants and professionals on various issues on coastal zone management, warning systems and effects of natural hazards on coastal zone ecosystem, management of natural hazards and post hazard rehabilitation of affected people. The areas covered in the training workshop were coastal zones, their regulatory and socio-economic functions from the perspective of global change; issues for sustainable management of the coastal zone; warning systems, setting up of platforms for oceanographic observation and data acquisition and exchange; integrated analyses of in situ observations and modelling to identify key elements in ecosystems; integrating social – ecological systems for disaster management and rehabilitation; and integration of lessons learnt – Ecosystems as natural defences, the role of resilient systems in mitigating effects of extreme events

Prof. Dr. Nurul Anwar, Vice-Rector UNSOED inaugurated the training course with beating the ceremonial gong, welcome remarks by Prof. Dr. Rubiyanto Misman from UNSOED and address of Prof. Dr. Arun P. Kulshreshtha, Director, NAM S&T Centre and Prof. Dr. Venu Ittekkot, Director ZMT-Bremen. A keynote address was given by Dr. Ricky Avenzora, Director, Directorate for Conservation of Forestry, Terrain and Off Budget on the third day of the training course programme.

The training workshop was conducted in eight technical sessions and five training sessions as well as a field trip and excursion to Baturadan rain forest on the slope of Mount Slamet in Central Java to acquaint the participants with the coastal zone issues in the region.

The overall technical programme of the training workshop was coordinated by Prof. Misman and Dr. Edy Yuwono of UNSOED and Prof. Ittekkot, and was attended by 43 scientists from 14 countries. The overseas participants were from Colombia [Mr. Luis O. Duarte from Laboratorio de Investigaciones Pesqueras Tropicales, Universidad del Magdalena], Cuba [Mr. Fabián Pina Amargós from Coastal Ecosystem Research Centre], Egypt [Dr. Tarek Othman Said, Associate Prof. in Chemistry, National Institute of Oceanography & Fisheries, Alexandria], India [Dr. Rattan Kumar Datta, Founder Director, National Centre for Medium Range Weather Forecasting (NCMRWF) under the Ministry of Science and Technology], Kuwait [Mr. Mahmoud A. R. Al-Khabbaz, Head, Biodiversity Division and Mr. Abdullah Salim Yassen Al-Zaidan, Marine Biologist (Fish Health) at Environment Public Authority, Safat], Malaysia [Mr. Wan Muhammad Aznan Abdullah, Fisheries Officer and Head, Licence & Protection & Resources Management in Fisheries Department, Kedah], Mauritius [Dr. Mardayven Nallee, Ag. Divisional Scientific Officer, Albion Fisheries Research Centre], Myanmar [Ms. Thuzar Win of the Remote Sensing Center, Ministry of Science and Technology, Yangon], Pakistan [Mr. S Moazzam Ali, Senior Research Officer, Ocean Technology & Coastal Zone Management, National Institute of Oceanography, Karachi], Sri Lanka [Prof. Mahinda Sisirakumara Rupasinghe, Head, Dept. of Natural Resources, Faculty of Applied Sciences, Sabaragamuwa University, Buttala], Syria [Dr. Ahmad Kara Ali, Vice Dean, High Institute of Marine Research, Tishreen University, Latakia] and Vietnam [Dr. Nguyen Huu Cu, Head, Geo-Environment Department, Institute of Marine Environment and Resources (IMER), Hai Phong City], who presented their country status reports or scientific papers on a topic related to the workshop. The six Indonesian participants, who made a scientific presentation during the workshop, were Dr. Rudhi Pribadi, Marine Scientist from the Centre for Tropical Marine and Coastal Study, Diponegoro University, Semarang; Mr. Z. A. Muchlisin of the Department of Marine Study, Faculty of Natural Science, University of Syah Kuala; Dr. Windarti of the Faculty of Fishery and Marine Science, University of Riau, Dr. Purnama Sukardi, Director Assistance for Education Affair, Fishery and Marine Study Program, Jenderal Soedirman University, Purwokerto; Agung Damar Syakti; and Dr. M. Suparmoko. Dr. Tim Jennerjahn and Dr. Inga Nordhaus of ZMT Bremen were the German participants, who made their presentation at the workshop.

The training course lectures with practical training with the help of computer simulation were given by the German academicians Dr. Friedhelm Schroeder of the Institute for Coastal Research, GKSS-Research Centre, Geesthacht GmbH; Dr. Peter E. Damm of the Institute of Oceanography, University of Hamburg; Dr. Eberhard Krain and Dr. C. Piou of ZMT, Bremen; and Ms Dewi Yanuarita from the University of Hasanuddin, Makassar.

The presentations at the workshop summarized during the Panel Session confirmed the current knowledge about the state of the coastal seas, especially from a developing country perspective. During the ensuing discussion, the participants identified some specific needs of the developing countries, which included the need to reinforce the research and educational efforts, capacity to conduct integrated analysis of coastal systems and creation of public awareness on coastal zone problems. Based on this, the Workshop recommended the following actions:

- Workshop and training courses on regional issues
- Internships to young scientists and faculty members of the NAM and other developing countries
- Support for university programmes in marine sciences
- Collate and exchange best practices in coping with problems of the coastal zones

- Creation of a “Marine Forum” under the NAM S&T Centre to periodically review and discuss the marine issues in developing countries, with specific reference to food security and disaster management aspects.

The participants thanked the organizers of the Workshop and Training Course and hoped that future events of similar nature would contribute to research and capacity building in their countries.