

THE DEVELOPMENT OF REGIONAL GOOS IN SOUTHEAST ASIA THE NEED OF PARTNERSHIP AND CAPACITY BUILDING

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Abstract

In recent years an international programme called GOOS (Global Ocean Observing System) are being developed to prepare the permanent of global framework of observations, modelling and analysis of variables in the ocean and coastal areas needed to support operational ocean services wherever they are undertaken around the world. This paper briefly summarizes the international GOOS programme and the problems and potential in developing the programme in Southeast Asia

The Southeast Asian Seas play important role and influences the regional and global oceanography and climate. In order to improve our knowledge and predictive capabilities that will be enable to manage on sustained use of the marine and coastal environments, a systematic global ocean observing system (GOOS) should be developed in the region.

I. INTRODUCTION

There s a growing demand for environmental information on the ocean and coastal waters in the region to serve customers in both public and private sector. In recent years there has been rapid development of technologies used in observations and modelling, resulting that the information provided to customers has increasing spatial and temporal resolution and includes an increasing range of information.

It is expected that these advances in technology will lead to a rapid growth of local area marine information services in the next few decades. The will serve the need of government, such as for defence and in meeting the statutory commitments regarding the use of the sea, coastal areas, and industry, in particular for reducing coast of meeting environmental hazards and meeting the legislation requirements.

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II. THE DEVELOPMENT OF GOOS

The ability to determine the present state of system and predict their future conditions is the key for adequately protecting and managing ocean and coastal areas for rational use and development of their living resources. Effective management of ocean and coastal areas at present is often limited by the high degree of uncertainties. It urgently needs to develop the ability to assess and predict both natural and anthropogenic changes in the marine and coastal ecosystems. It should be realized that without predictive capabilities, it will be difficult to attain sustainable balance between environmental protection on one hand and economic development on the other (GOOS support office and Kullenber, 1996). Therefore, the development of a systematic global observations of the world oceans area required to improve the knowledge and predictive capabilities as a basis for more effective and sustained use of the marine and coastal environments with the associated economic benefits.

In recognition of the need, in 1989 the IOC (Intergovernmental Oceanographic Commission) Assembly had called for initiation of GOOS. It was officially launched in the Second World Climate Conference in 1990. The UNCED (UN Conference on Environment and Development) in 1992 has called for the development of a global ocean observation system (GOOS) to help develop understanding and monitor change. Chapter 17.102 of the UNCED urged states to support

The role of the IOC in cooperation with WMO, UNEP and other international organizations in the collection, analysis and distribution of data and information from the oceans and all seas, including as appropriate, through the Global Ocean Observing System, giving special attention to the need for IOC to develop fully the strategy for providing training and technical assistance for developing countries through its TEMA (Training and Education and Mutual Assistance) programme”.

In addition to addressing the needs of coastal offshore activities for marine environment information, the GOOS will also provide the ocean component of the Global Climate Observing System (GCOS).

As a basis for organization, for use-friendliness and ease of planning, GOOS has been defined in terms of five modules:

1. Climate Monitoring, Assessment and Prediction;
2. Monitoring and Assessment of Marine Living Resources;
3. Monitoring of Coastal Zone Environment and its Changes;
4. Assessment and Prediction of Health of the Ocean;
5. Marine Meteorological and Oceanographic Operational Services.

It should be noted that these modules are interrelated and will share observations, data networks and facilities, as needed, within the one integrated system.

Substantial progress has been achieved in scientific design of the GOOS Climate module, which constitutes the oceanographic component of GCOS. Actions are under way to prepare an implementation programme for this module.

Health of the Ocean Module is in a advanced state of development. Steps have been taken to initiate the design of Living marine Resources Module and Ocean and Marine Meteorological Services Module.

Coastal module is a especially difficult aspect of GOOS. The GOOS Coastal Module require an interdisciplinary approach and is aimed at providing the necessary infrastructure needed for service providers to a wide range of coastal area management. This module has a high priority to many coastal states, such as in the Southeast Asia Region, because of the importance of the coastal changes on economic development and human habitation. Present efforts of international community are focused on formulation of an approach to planning GOOS Coastal Module, description of practical problems and economic and social implications, justification of the need for a global coastal GOOS and its relationship with other GOOS modules.

III. THE PHYSICAL SETTING OF SOUTHEAST ASIA

Geographically, Southeast Asia is located between 15oS to 25oN latitude and from 92oE to 145oE longitude covering an area of approximately 18 millions km². The region is located between the Asian and Australian continents and the Pacific and the Indian Oceans, The regions consists of highly fragmented land area interspersed among wide stretches of sea surface and extremely long coastline. Physically, the region is divided into a continental part of the mainland Asia, which consists of Myanmar (Burma), Thailand, and the Indo_China states of Laos, Camboja, and Vietnam. The rest of the region, including Peninsular Malaysia, Brunei, Singapore, Indonesia and the Philippines, is regarded as archipelago parts of Southeast Asia (Chia and MacAndrews, 1979).

Southeast Asia is considered to be one of the centre of the remaining tropical rain forests in the world. These forests are the centre of biodiversity. In addition, the marine and coastal areas of the Southeast Asian region area among the most productive in the world. The warm, humid tropical climate and high rainfall allow extensive coral reefs, dense mangrove and other ecosystems to flourish along the coastline. These ecosystems are the most productive ecosystems, but unfortunately also very sensitive and vulnerable to environmental changes and pressures. Due to the economic benefits that could be derived from those ecosystems, the coastal zones of Southeast Asia are densely populated. Over 60 percents populations in the region live in the coastal areas resulting in rather high level of the exploitation on the natural resources, and degradation of the environment.

This situation becomes apparent when population pressure with the associated economic activities have increased considerably in the last decade. Large scale destruction of the region's valuable resources has caused serious degradation of the environment (Chua and Scura, 1992).

Due to the geographic location, Southeast Asia is strongly influenced by the monsoons. Thus, the region is an ideal site for studying the monsoons and their effects on agriculture, navigation, fisheries as well oceanographic feature of the Southeast Asian seas. In addition, storms and typhoons are recorded frequently over the northern part of Southeast Asia, in particular the Philippines and the South China Sea, and the northern part of Australia. Both monsoons and the typhoons have marked influences on the state of the seas, as well as the general conditions in the coastal areas of Southeast Asia (Soegiarto, 1985).

The Southeast Asia Region, in particular the Indonesian archipelago, also provides the only inter-ocean link between a reservoir of warm water pool of the Western Pacific Ocean with the Eastern Indian Ocean. The heat flux and water mass transfer between the two oceans through this link is estimated to be considerable and has a large, perhaps even global scale impacts on the climate. Another phenomenon, as part of the Pacific-Indian oceans interaction, is the “EL NINO Southern Oscillation” or ENSO. This phenomenon generates adverse climate effects regionally, the whole Pacific basin, and even also globally. Thus, Southeast Asia is also ideal for conducting research on the fundamental question on factors causing the ENSO, the relationship between ENSO and Asia Monsoon, as well as the impacts of ENSO on agriculture, water availability, and other human activities (Soegiarto, 1997).

IV. BASIC APPROACH AND STRATEGY FOR DEVELOPING REGIONAL GOOS

The Intergovernmental Oceanographic Commission (IOC) has emphasized that the major elements of GOOS are operational, oceanographic observations and analysis, timely distribution of data and products, data assimilation into numerical models leading to prediction and capacity building within participating IOC Member States in developing analysis and application capability (GOOS Support Office and Kullenberg, 1996).

GOOS is based on the principle that by encouraging nations to commit part of their national observational efforts to a coordinated and integrated plan, and by sustaining that commitment on an on-going basis, benefits for all will accrue beyond the mere sum of the contributions. The implementation of GOOS presents far too formidable a task to be undertaken by one nation or even by a few nations.

GOOS is being established by participating IOC Member States, implemented almost entirely through nationally-owned and operated facilities and services, and makes use wherever possible, of operations and scientific data gathering systems/bodies already in place, such as IGOSS (integrated Global Ocean Services System), IODE (International Oceanographic Data Exchange), GLOSS (global Sea Level Observing System), WCRP (World Climate Research Programme), etc. Coordination is being provided by IOC in cooperation with WMO (World Meteorological Organization), UNEP (United Nations Environment Programme) and ICSU (International Council of Scientific Union).

It has been noted that a number of networks of stations and programmes are already in place in Southeast Asia that can be used and developed further into a regional GOOA programme. For example, the network of meteorological stations, tide gauges stations, satellite ground stations, tropical wind profiling and radar stations, network of SEAWATCH monitoring system, monitoring stations on global change : greenhouse gases, ozone, core research sites on Integrated Coastal Management, Land Use, Land Cover Change, etc. (Soegiarto, 1993, 1996 and 1997). Basically, those stations and programmes are operated nationally with a strong components of partnership and cooperation.

V. DEVELOPING REGIONAL GOOS THROUGH PARTNERSHIP AND CAPACITY BUILDING

GOOS has been defined as a global framework for the gathering, coordination, quality control, distribution and the generation of derived products of all kinds of marine and oceanographic data of common utility, as defined by the requirements of a full spectrum of a user groups. In short GOOS is “an array of national observing system, linked by common techniques, protocols and data management”. Thus, GOOS will use a globally coordinated, scientifically-based strategy to allow for monitoring and subsequent prediction of environmental changes globally, regionally and nationally. Implementation will be carried out by IOC Member States through nationally-owned and operated facilities. GOOS data will allow regular global and regional oceanographic analyses and predictions. In order to define national and regional requirements for ocean services, and eventually establish such regional services, as well as to define and coordinate related capacity building activities, a regional approach in planning and follow-up execution of GOOS is recommended.

Regional development in general is premised on a group of nations joining together and combining resources to focus on a single set of objectives and resulting in greater overall benefit than if they acted individually. GOOS regional development is based on this premise, but has the additional benefit of contributing to the global community interests. By providing data and information to a global data and information management systems each contributing region plays an integral role in establishing a global network for monitoring the oceans and coastal areas of the world. Regional development of GOOS will be initiated by nations who agree to undertake a programme of action that is in conformity with the general GOOS principles and policies such as agreement to share data and information in a full and open manner, data and information management specifications.

Nationally, it is recognized that some of the countries in Southeast Asia has the capability of developing and operating the observing facilities. However, in order to increase the effectiveness of the system and to increase the capability of each of the IOC Member States they should be strengthened through partnership and capacity building. There are a number of existing vehicles could be used, e.g. through IOC-WESPAC (IOC Sub commission on the Western Pacific), ASEAN (Association of Southeast Asean Nations), in particular the Sub-committee on Marine Sciences of the ASEAN Committee on Science and Technology (COST) and ASEAN Senior Officials on Environment (ASOEN). In addition, there are many other international organizations which have regional offices, such as UNESCO, UNEP and WMO. They could also be used as regional coordinating mechanism.

IOC Member States from the region are urged to create a national component of GOOS within each country, as well as coordinating mechanism and nomination of GOOS National Focal Point.

At present there are only two regional GOOS activities that have been initiated. The first one is EURO-GOOS, a consortium of European agencies, and the second one is the NEAR-GOOS, a cooperation among four Member State in The Northeast Asia within the IOC-WESTPAC region. It is recommends that a similar step by step approach could be taken in order to develop the SEA-GOOS (Southeast

Asian GOOS). The first is that IOC-WESTPAC Sub-commission organises a sub-regional workshop in Southeast Asia to address regional priority, to develop partnership with more developed IOC Member States (e.g. through EURO-GOOS and NEAR-GOOS), capacity building needs, regional coordinating mechanism, and prepare the socio-economic cost-benefit studies.

VI. CONCLUSION AND ACKNOWLEDGEMENT

The Southeast Asian Seas play important role and influences the regional and global oceanography and climate. In order to improve our knowledge and predictive capabilities that will be enable to manage on sustained use of the marine and coastal environments, a systematic global ocean observing system (GOOS) should be developed in the region. Through partnership and capacity building with EURO-GOOS and NEAR-GOOS a SEA-GOOS or Southeast Asian GOOS could be developed. It is proposed that IOC-WESTPAC Sub-Commission could initiate the SEA-GOOS by organising a Workshop to address the regional priority needs as well as the coordinating mechanism.

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