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TASK TEAM ON RESOURCES

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REGIONAL COOPERATIVE PROJECTS

(Submitted by the Secretariat)

Summary and Purpose of Document

This document reviews the objectives and status of existing regional cooperative capacity building projects for South East Asia and the Western Indian Ocean. It invites comments and discussion on the general concept of such projects, as well as suggestions for future projects in other regions.

ACTION PROPOSED

The Task Team on Resources is invited to:

- (a) Note the information provided;
- (b) Review the general concept of regional cooperative projects;
- (c) Advise on possible funding mechanisms and procedures.

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- Appendices:** A. South East Asian Centre for Atmospheric and Marine Prediction (SEACAMP)
B. Western Indian Ocean Marine Applications Project (WIOMAP)

DISCUSSION

Existing projects

1. The former Commission for Marine Meteorology, and subsequently JCOMM-I, both strongly endorsed the concept of regional cooperative projects to enhance marine observing systems and marine services, as being a very cost-effective approach to the expansion of national and regional capacity in marine meteorology and oceanography among countries with common marine interests and concerns. Through such cooperation, much more can be achieved in terms of national development for the same resources, while at the same time better serving the interests of regional marine user communities and regional and global programmes such as GOOS and GCOS.

2. Two such projects are already underway, although at different stages of development: the South East Asian Centre for Atmospheric and Marine Prediction (SEACAMP), for country members of the ASEAN sub-regional grouping; and the Western Indian Ocean Marine Applications Project (WIOMAP), for island and littoral countries in the western Indian Ocean sub-region. Both projects are supported jointly by WMO and IOC, under the auspices of JCOMM, and both are regarded as being important contributions to the respective regional GOOS alliances (SEAGOOS and IOGOOS). Summaries of the objectives and status of the two projects are given in Appendices A and B respectively.

Future developments

3. The Team is invited to review the overall concept of and approach to regional cooperative capacity building projects under JCOMM, in particular in the light of the experience to date with SEACAMP and WIOMAP. If it is agreed that the concept is valid, and the approach is generally appropriate to regional and national development requirements in marine meteorology and oceanography, the Group should advise the Commission on potential funding mechanisms, including their formats and procedures.

South East Asian Centre for Atmospheric and Marine Prediction (SEACAMP)

Project objective

1. The project proposes to establish expert marine meteorological and physical oceanographic capabilities for the ASEAN countries. This will be achieved by creating a central ASEAN specialized agency, The South East Asian Centre for Atmospheric and Marine Prediction (SEACAMP), in Singapore.
2. SEACAMP will be staffed by suitable ASEAN specialists who will be given further training and tools, and charged with the tasks of tool/model development, monitoring, analysis and prediction. Future work at SEACAMP will be applied, that is, not general research but research tailored to cater to primary user needs.
3. All ASEAN nations can provide some hardware themselves and well-educated people exist who only need their knowledge upgraded/refined. Thus, coordination and contribution according to means, of resources and of expertise, will give each participant access to the highest common denominator and the total. This principle has been central in the formulation of the project, especially since it favours the scientifically and technically least developed nations.
4. The Centre will be self-sustaining with future running costs for SEACAMP and data acquisition systems covered by ASEAN or target countries. Hence reliable and realistic funding plans will need to be formulated within the project framework.

Project development

5. An expert mission to all ASEAN countries was undertaken in the early 1990's by the then president and vice-president of the Commission for Marine Meteorology, Mr Robert Shearman and Dr Lim Joo Tick. This mission provided a detailed assessment of the status of operational marine meteorological and oceanographic observing systems and services in the sub-region, and proposed the development of a cooperative project to enhance the capabilities of countries to address local user needs for such data and services. Based on the report of this mission, a draft project proposal was prepared by Mr Koo Hock Chong (Singapore) and reviewed at a first Implementation Planning Meeting (Bangkok, July 1995). Following further revision, the proposal was again reviewed and adopted in principle at a second Implementation Planning Meeting, Singapore, May 1996. Following this meeting, the project document was formally submitted to the ASEAN Sub-Committee on Meteorology and Geophysics (SCMG), which recommended that the proposal should be modularized, to assist in funding and implementation. This additional work was undertaken by the Meteorological Service Singapore, which is the lead agency for the project. The project has been formally adopted by ASEAN, whose Secretariat now has responsibility for identifying the appropriate resources for implementation.

Context

6. The project is multi-sectoral but classified in the Science and Technology sector, subsector Meteorology and Oceanography. Because of its basic nature, the project has far-reaching effects, and accordingly, it addresses a host of issues, directly or indirectly. They include:

- Human resources management;
- Environmental management;
- International, regional and sub-regional cooperation and coordination;
- Scientific and technological transfer;
- Integrated management and development of resources;
- Science integration;
- Long-term climate variability research;
- Improved scientific basis for decisions made regarding environment and climate change.

The present situation

7. Presently, marine meteorological and oceanographic expertise exists in the sub-region. However, the expertise is unevenly distributed and not always able or organized to provide the strong support required by the various economic and other important activities of member countries. These include climate monitoring, environmental protection, resource management, oil and gas exploration, shipping and fisheries, pollution monitoring, disaster mitigation, and many others. Consequently, operational efficiency and effectiveness and safety are often adversely affected by inadequate marine meteorological and oceanographic information or inaccurate forecasts.

8. The project addresses the following areas of concern, many of which relate to the implementation of the marine meteorological and physical oceanographic aspects of Agenda 21 (UNCED, 1992) in the sub-region:

- Quality, quantity and areal distribution of marine meteorological and physical oceanographic information, expertise and tools;
- Optimization, coordination and cooperation of marine meteorological and oceanographic organizations, facilities, systems, expertise and personnel;
- Expert marine services in support of resource management, oil and gas exploration, industrial development, sea transport, pollution monitoring, disaster mitigation, climate monitoring, environmental protection;
- Risk of widening of the marine know-how gap between the ASEAN countries and the developed countries;
- Abilities to effectively make use of, and benefit from foreign aid;
- Degree of participation in, and contribution to international and regional marine programmes.

Expected outcome

9. At the end of the proposed project, a number of strategically located marine meteorological and physical oceanographic observation stations and facilities will have been established in the sub-region to provide ASEAN national meteorological and oceanographic agencies crucial and quality data on a long-term basis.

10. The marine meteorology and physical oceanography centre will have built up the infrastructure for better monitoring, assessment, modeling and forecasting capabilities in ASEAN. It will constitute a body within which data, predictions, know-how, experiences and products are developed and exchanged, thereby making available meteorological and oceanographic resources at the national level for the strengthening of the scientific and technological capabilities of the ASEAN states.

11. The centre will be able to provide marine products, for example, sea surface wind and ocean wave fields, sea surface temperatures and upper ocean heat content, and sea level and ocean colour fields, to assist ASEAN countries in the provision of quality services in support of resource management, industrial development, shipping and fisheries, pollution monitoring and disaster mitigation, climate monitoring and research, and environmental protection.

12. It will also help in the assimilation of scientific advances and modern technologies in the ASEAN countries by allowing increased participation in international cooperative programmes, such as the Global Climate Observing System (GCOS) and the Global Ocean Observing System (GOOS) which are vital for the study and a better understanding of the nature and causes of inter-annual variability of climate and climate change, and for the reliable prediction of climate.

13. The proposed centre will maximize the use of existing staff, computing facilities and computer applications software, and equipment of national institutions. In addition to permanent scientists, selected ASEAN staff will also be seconded to work in the centre and help in its development. Experts from advanced countries will be invited to work in the centre as part of the process of technology

transfer. Initially, the centre will adapt as much as possible knowledge and computer models from advanced centres.

Project Strategy and Implementation Arrangements

14. Although the project has a marine emphasis, it will mainly be implemented within a meteorological framework. This is because the demands for applied services are mainly referred to the meteorological agencies which can also provide a better organizational structure on which to build the facility.

15. The project was originally envisaged as regional since the participating nations have common interests, and because they should complement each other's strengths and weaknesses. It was then limited to the ASEAN countries in order to facilitate formulation, specification and implementation. It is hoped that this will ease the future running and stability of the centre.

16. Even though other sites are possible, it has been assumed that the centre will be co-located with the ASEAN Specialised Meteorological Centre (ASMC), which in turn is located with the Meteorological Service Singapore (MSS).

Supporting modules

17. The communications module proposes to establish a network for the exchange of marine meteorological and physical oceanographic data amongst the ASEAN countries to effect better support to their maritime industry. This module will help to enhance the technical collaboration amongst the ASEAN countries as well as the transfer of technology. The primary objective is to further develop the marine meteorological and physical oceanographic capabilities of the participating agencies of ASEAN countries.

18. The training module, expected to be implemented over a period of a year, proposes to generate customized numerical model products for marine meteorology and oceanography and provide them to ASEAN countries to effect better support to their maritime industry. In this project, there will be a training component on the use and interpretation of numerical model products for marine meteorology and physical oceanography. This module will help to enhance the technical collaboration amongst the ASEAN countries as well as the transfer of technology. The primary objective is to further develop the marine meteorological and physical oceanographic capabilities of the participating agencies of ASEAN countries.

19. The observations module proposes the upgrading of old, and installation of new, data acquisition systems for marine meteorology and physical oceanography in ASEAN countries to effect better support to their maritime industry and to help implement the UNCED 1992 actions. National institutions that participate in this project and receive the data acquisition and equipment systems, hereinafter referred to as the "host countries", are required to run and maintain equipment and systems. Staff who are responsible for these systems will be project trained. This project will help to strengthen the technical collaboration amongst the ASEAN countries as well as the transfer of technology. The primary objective is to further develop the marine meteorological and physical oceanographic capabilities of the participating agencies of ASEAN countries.

Future developments

20. As noted earlier, prime responsibility for project implementation is now shared by the ASEAN secretariat and the Meteorological Service Singapore. It is understood that MSS is considering a partial implementation of the SEACAMP centre within the existing ASMC structure. In addition, some external national aid agencies have expressed an interest in supporting parts of the overall project. Finally, some contacts have been made with IMO and other agencies developing a Marine Electronic Highway project in South East Asia, with a view to inter-linking the projects. It is therefore hoped that project implementation will be underway in the near future.

Western Indian Ocean Marine Applications Project (WIOMAP)

Project aims

1. The project will contribute to the sustainable development of marine resources to alleviate the problem of food security, better long term planning and management to minimize the impacts of extreme weather events (such as storm surge from tropical cyclones, flood and drought) and the monitoring of long term changes of the marine environment and accelerated sea level rise. This will be achieved through improved climate and marine predictions and enhancement of the coastal and open ocean observing system. It will also focus on capacity building of national institutions to enable them to take advantage of modern technology in ocean monitoring and development of ocean modelling. WIOMAP will ensure that ocean observations in support of GCOS are sustained and utilized in weather modelling activities, coordinated through a Specialized Application Centre located in the West Indian Ocean.

Context

2. The Eastern and Southern Africa region comprises many islands, members of the Indian Ocean Commission (IOC) – Comoros, Madagascar, Mauritius, Reunion (France), Seychelles – and coastal and landlocked countries, Member States of SADC and IGAD. Most of them are developing countries where the main concern is food and housing security. The Indian Ocean in general, and the Western Indian Ocean in particular, exerts a profound influence on weather and climate of these countries. The WIO contains enormous potential of marine resources, which have yet to be fully exploited in a sustainable manner. Among these are fisheries, ocean energy, mineral resources and coastal tourism. As the population in the region increases and the shortage of land for cultivation purposes becomes more acute, there is no doubt that a resort to marine resources for food supply in the region will gradually become inevitable. The island states and coastal countries have been provided with opportunities and additional responsibilities with the adoption of the United Nation Convention on the Law of the Sea (UNCLOS) which, in defining the Exclusive Economic Zone (EEZ), has given them the right and obligation to protect and manage their marine resources within at least 200 miles of the coast.

3. Ocean circulation and coastal processes in the Western Indian Ocean are unique. In its northern part, there is an annual reversal of wind direction and ocean current. The Agulhas current off the South East Coast of South Africa is an important feature of the ocean circulation in the southern part. For this reason, the region is considered by marine scientists as a natural laboratory for research purposes. In spite of that, the Indian Ocean is the least studied ocean, mainly due to lack of data.

4. The tropical region of the WIO lies in the belt of tropical cyclones, which derive their energy from the ocean. This is the most devastating weather system, which can cause enormous loss of life and widespread damage to property, crippling the economy of a country for years. The recent flooding in Madagascar, Mozambique, South Africa and Zimbabwe, due to the passage of cyclones Connie, Eline, Gloria and Hudah, from January to April 2000, causing millions of US dollars damage to property and more than one thousand deaths in Mozambique, is a vivid illustration of the vulnerability of those countries to tropical cyclones. On average, about 10 formations occur annually in the region during the cyclone season which extends from November to May.

5. The importance of the ocean in the life system of the earth cannot be over-emphasized. It influences almost every facet of the economic and social development of any country and its role in understanding weather and inter-seasonal and inter-annual climate variability is well known. By its very nature, ocean circulation does not recognize any geopolitical boundaries. Pollution which originates from one state often becomes the concern of others as the contaminants are carried throughout the region by the prevailing winds and currents.

6. The ability to understand and predict weather and climate and enhance the effective exploration and exploitation of living and non-living marine resources, requires close collaboration and cooperation at regional and international level involving both meteorological and oceanographic

Institutions and agencies. Other areas which require a regional grouping of countries, include monitoring of marine pollution, predicting oil movement in case of an oil spill accident, understanding ocean and coastal processes for coastal protection and management and ensuring the safety of life and property at sea. This is particularly true in the Western Indian Ocean (WIO) region where most countries are developing states.

7. Under such circumstances, it would be almost impossible for a single country in the region to establish the necessary infrastructure and make available the required human resources to meet the growing demand for marine data and services from a wide spectrum of marine users in an efficient and most cost-effective fashion, even at the local level. User demands are expected to become even more stringent in the years ahead. The most appropriate option is a regional approach. This is a global trend today, which is being encouraged in the marine field to share and co-sponsor sophisticated equipment and specialized support institutions regionally.

Project Development

8. Following the successful development of the SEACAMP project, the eleventh session of the WMO Commission for Marine Meteorology (Lisbon, April 1993) recommended that studies be undertaken on the possibility of developing similar projects in other geographical regions, in particular East and West Africa. Subsequently, a major survey was undertaken in the Western Indian Ocean region of both user requirements for marine data and services, and also the existing capabilities of national agencies and institutions to meet these requirements. The summarized results of this survey were reported to CMM-XII (Havana, March 1997), which endorsed the convening of a meeting to discuss the possible establishment of a cooperative project in this region.

9. A first WMO/IOC Implementation Planning meeting for a Western Indian Ocean Marine Applications Project (WIOMAP) was held in Mauritius in May 1997. Participants were from Meteorological Services and Oceanographic Institutions from Comoros, France, Kenya, Mauritius, Mozambique, Seychelles, South Africa, Tanzania and representatives from Institut Francais de Recherche Scientifique pour le Developpement en Cooperation (ORSTOM) and Regional Co-operation in Scientific Information Exchange (RECOSCIX) in the Western Indian Ocean. The main conclusions were:

- (i) The need for a regional project as a regional contribution to the Global Ocean Observing System (GOOS) to enhance the provision of marine services for the benefit of a diversity of national, regional and global users;
- (ii) Development of a Specialized Marine Modelling and Product Preparation Centre, with various Sub-Regional Marine Centres for the preparation and distribution of marine products.

10. A project outline of WIOMAP has received endorsement, besides WMO and IOC bodies, from the Directors' meeting of Meteorological Services of the Southern African Development Community (SADC) (Mauritius, 5-8 May 1998) and Meeting of Directors of Meteorological Services of the Indian Ocean Commission (Reunion, 28-29 May 1998). This was approved by the SADC Southern African Transport and Communications Commission (SATCC) Committee of Ministers (January 1999) as a subproject of the Meteorological Programme Project - No AAA 6.0.1, "Integration of weather and climate data, products and information in weather sensitive socio-economic activities." During the Global Climate Observing Systems (GCOS) regional workshop for Eastern and Southern Africa countries (Kisumu, Kenya, 3-5 October 2001), a resolution which includes "that the Western Indian observations be enhanced and becomes an integral part of an Indian Ocean observation strategy" was also approved. GCOS has been recognized by the conference of parties to the UN Framework Convention of Climate Change (UNFCCC) as the primary mechanism to coordinate and assist in national efforts to monitor global climate and climate change.

11. WIOMAP is being designed as a regional contribution to the Global Ocean Observing System (GOOS), which was called for by Agenda 21 of the United Nations Conference on Environment and

Development (UNCED), to aid in sustainable development of ocean and seas. As the next step in project development, Mr Sachooda Ragoonaden, vice-president of the former CMM and member of the interim Management Committee for JCOMM, undertook a mission in late 1999 to institutions and agencies in all countries with a potential interest in the project, to develop a detailed assessment of requirements and needs. He then prepared a first draft of a full WIOMAP project document. Following experience gained with SEACAMP, the full project has again been sub-divided into four separate but inter-linked modules, to assist in funding and implementation. These modules are:

- (i) Capacity building of human capacity through formal training;
- (ii) Expansion of the marine meteorological and oceanographic observing network;
- (iii) Enhancement of communication infrastructure;
- (iv) Establishment of a specialized marine meteorological and oceanographic centre for ocean products.

12. By the end of the project, it is expected that participating National Meteorological Services and oceanographic institutions will have reached a level comparable to other more advanced marine institutions elsewhere in the world. The gaps in terms of human and infrastructure capabilities between institutions in these countries and those in more developed countries will have partially been bridged. Additional marine data, both at the surface and sub-surface will become available in real time as input into regional models to improve marine products for the protection of the marine environment, enhanced maritime safety, and the more effective and efficient exploitation of marine resources. It is expected that the level reached by national institutions and potential regional marine centres at the end of the project, in terms of equipment and trained manpower, would be high enough to ensure self-sustainability. Furthermore, more active participation of countries in the region in national, regional and international marine programmes, which is essential for the success and timely completion of these programmes, would be forthcoming.

Future developments

13. The full draft project document for WIOMAP has been reviewed within the Secretariats of WMO, IOC, GOOS and GCOS. This draft document has been distributed to the heads of all agencies and institutions in the region potentially interested in participating in the project, for their own review and comments. Following receipt of this feedback, the document was submitted to a second project planning meeting, which was convened on 1 November 2002 in conjunction with the Indian Ocean GOOS Conference, Mauritius, 4-9 November 2002. This meeting undertook a further detailed review of the document, and provided numerous proposals for modifications. It generally endorsed the document, and representatives of participating agencies gave provisional agreement on participation. The meeting accepted the offer from Mauritius to eventually submit the document to funding agencies on behalf of all participants. It is expected that the final project document will be available in late 2003 for formal endorsement by agency heads.