Intergovernmental Oceanographic Commission
Workshop Report No. 167

IOC-Flanders First ODINAFRICA-II Planning Workshop

Dakar, Senegal
2-4 May 2000

UNESCO

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1. OPENING

The first ODINAFRICA II planning workshop, was held at the conference room of the UNESCO Bureau for Education in Africa (BREDA) in Dakar, Senegal from 2-4 May 2000 and attended by participants from: Benin, Cameroon, Comoros, Côte d'Ivoire, Gabon, Ghana, Guinea, Kenya, Madagascar, Mauritania, Mauritius, Morocco, Mozambique, Nigeria, Senegal, Seychelles, South Africa, United Republic of Tanzania, Togo, Tunisia. There were also representatives of the Organization of African Unity (OAU) and institutions in Australia and Belgium, which will be providing external expertise for the project (List of participants in Annex II). The workshop reviewed the project document and adopted a work plan, budget and management structure that will be used for the implementation of the project.

Welcoming the participants, Dr Ndiaga Gueye, the Director of the Department of Oceanography and Marine Fisheries, and Chairman of IOC Regional committee for Central Eastern Atlantic (IOCEA), expressed Senegal's pleasure hosting the workshop. Senegal attaches great importance to the collection analysis and dissemination of ocean data and information. Dr Gueye expressed gratitude to the donor community who have agreed to fund the project. He recalled the lively discussions during the sessional group meeting, which took place in Paris before the IOC Assembly adopted the project. Dr Gueye drew attention to the communication difficulties in the IOCEA region and hoped that the project will be able to address this.

Mr Mika Odido, the Head of IOCINCWIO Project Office, thanked the government of Senegal agreeing to host the workshop. Mr Odido pointed out that both IOCEA and IOCINCWIO have since their inception emphasised the need to develop capacity for ocean data and information management to enable member states to utilise research results maximally for socio-economic development. The ODINAFRICA project aims at addressing the gaps identified at various meetings in the region. He emphasised the need to come up with clear decisions and recommendations that will assist in rapid implementation of the project.

The Director *a.i.* of UNESCO Bureau for Education in Africa (BREDA), Mr Jan de Bosch Kemper, pointed out that the development of science is unthinkable without continuous and efficient exchange of data and information. As oceans do not respect national borders, the programmes of IOC of UNESCO which are region oriented and concentrate on joint policy definition and human capacity building with a regional perspective provide an essentially framework for managing coastal areas. The various scientific programmes are expected to generate amounts of data, which will have to be quality controlled, archived, analysed, repackaged and disseminated at national, regional and international levels. The African member states have identified and expressed their requirements for capacity building for data and information exchange at several occasions such as IOCEA-IV, IODE-XV, GODAR-VI, IOCINCWOI-IV, IOC-XIX, IOC-XX and PACSICOM. Mr de Bosch Kemper noted that during the past two years the African member states have taken the initiative to prepare a comprehensive project proposal called 'Ocean Data and Information Network for Africa- Phase II' (ODINAFRICA-II). The accomplishment of preparing such an excellent document in a group of not less than 18 countries has given a clear signal not only to UNESCO but also to at least one donor, the Government of Flanders that Africa has taken charge of its own future. UNESCO and its IOC fully support and endorse your initiative (full text of speech is included as Annex III).

1.1 ADOPTION OF THE AGENDA

The participants considered and adopted the agenda and timetable for the meeting.

1.2 WORKING ARRANGEMENTS

It was agreed that the workshop would work in plenary as much as possible. Mr Odido was designated as the Technical Secretary for the workshop.

2. DESCRIPTION OF ODINAFRICA-II PROJECT

2.1 INTRODUCTION

The utilization of available data and information for management and exploitation of the marine environment and resources is one of the major challenges facing IOC member states from Africa. The success of development strategies will depend to a great extent on the availability and use of scientific and technical information in a form that can be readily understood and applied. This information which can either be acquired through own research or from other sources must therefore be analyzed and interpreted to prepare such products. The users can then provide feedback, enabling further advances in science and technology. The member states need to establish mechanisms for collection, quality control, analysis, interpretation and dissemination of data and information.

Though several programmes initiated at the national, regional and global level have generated tremendous amounts of data and information, these have not been effectively used for national development. This has mainly been due to limited access to data collected in the framework of these programmes, and the lack of skills for analysis and interpretation of the data.

The ODINAFRICA-II project aims at enabling Member States in Africa to get access to data available in other data centres, develop skills for manipulation of data and preparation of data and information products, and develop infrastructure for archival, analysis and dissemination of the data and information products. This will ultimately lead to a reduction of situations where decisions are based on scanty information and will assist in disaster preparedness, and provide information for applied research (fisheries, aquaculture, mineral resources, exploitation levels and potentials etc)

The development of a network of functioning data and information centres which is envisaged by ODINAFRICA-II will address concerns expressed in various regional and international programme as outlined below:

2.1.1 IOC Regional Committee for the Central Eastern Atlantic (IOCEA)

IOCEA at its first session in 1987 requested assistance for development of marine information capabilities, including a regional centre. The second session in 1990 approved the establishment of a regional data centre in Conakry, Guinea. The need for the centre was reiterated at the third session in 1993, which also endorsed the implementation of a project on Regional Cooperation in Scientific Information Exchange in the Central and Eastern Atlantic (RECOSCIX-CEA). The fourth session of IOCEA stressed the need for continuous progress, and importance of inter-regional exchange.

2.1.2 IOC Regional Committee for the Cooperative Investigation in the North & Central Western Indian Ocean (IOCINCWIO)

The second session of IOCINCWIO in 1987, recommended the implementation of the project on Regional Cooperation in Scientific Information Exchange in the Western Indian Ocean (RECOSCIX-WIO). The project was launched in 1989. The third session of IOCINCWIO identified the need for development of capacity for data management, and especially expressed concern that few institutions/scientists in the region have been able to access or analyze/interpret the data acquired from global programmes like TOGA and WOCE for use in national planning and development. These issues were again raised at the fourth session in 1997 which adopted a proposal for development of an Ocean Data and Information Network in Eastern Africa (ODINEA) as a step towards addressing these concerns. The implementation of ODINEA commenced towards the end of 1997.

2.1.3 PanAfrican Conference on Sustainable Integrated Coastal Management (PACSICOM)

PACSICOM which was convened in Maputo, Mozambique in 1998 as part of a region wide effort to give impetus to the management of the seas and coasts of Africa also reiterated the importance

of strengthening of the collection and dissemination of scientific information as a basis for effective management of coastal areas through:

- *Collection, use and protection of indigenous knowledge;*
- *Supporting sustained routine and long-term measurements and monitoring of environmental variables as a basis for forecasting change;*
- *Use of appropriate information delivery mechanisms;*
- *Sharing of information, data and experience on integrated coastal area management programmes and projects;*
- *Identification of common methodologies and harmonizing activities in information collection.*

PACSICOM further highlighted the following specific recommendations of the technical committees concerning information and data management:

Provision of a sound information base for local and regional planning requires:

(a) formation of an Africa-wide network of national ocean data centres;
(b) …
(c) creating a network of specialists trained in the use of data acquired by remote sensing from space satellites;
(d) facilitating the further implementation of modern electronic communication systems such as Internet connections and data transfer mechanisms.

In order to enhance the integration and sustainability of projects, it is essential:

(a) ….
(b) To enhance the quality and quantity of information transfer between the Government's institutions, their agents, international bodies and non governmental organizations interested in project implementation, through the use of information and communication technologies;
(c) ….

2.1.4 International Oceanographic Data and Information Exchange (IODE)

One of the initial tasks that were outlined for the Intergovernmental Oceanographic Commission of UNESCO when it was established in 1960 was the setting up of structure to co-ordinate international oceanographic data exchange. This led to the development of the International Oceanographic Data and Information Exchange (IODE) system whose primary goal is to enhance marine research, exploration and development by facilitating the exchange of oceanographic data and information between participating member states.

The IODE system comprises a global network of (1) National Oceanographic Data Centres (NODCs), and Designated National Agencies (DNAs) which are national centralized facilities for providing, on a continuing basis ocean data/information in a usable form to the wider user community, (2) Responsible National Oceanographic Data Centres which are NODCs which have accepted additional special responsibilities like being in charge of specific data types or specific ocean regions, and (3) World Data Centres which receive data and inventories from NODCs/RNODCs, marine science organizations and individual scientists. The WDCs also provide data and services to NODCs/DNAs, RNODCs and international co-operative programmes in addition to monitoring the performance of the international data exchange system.

ODINAFRICA-II will enable participating member states to establish and strengthen NODCs and DNAs, which will be part of the IODE system.

2.1.5 Global Ocean Observing System (GOOS)

GOOS is an internationally co-ordinated system for systematic operational data collection (measurements), data analysis, exchange of data, generation of data products, technology development and technology transfer. GOOS is implemented largely through nationally or regionally owned and operated facilities and services. During PACSICOM, a GOOS-Africa committee was established with the following terms of reference:

(i) develop GOOS-Africa strategy and action plans,
(ii) link various modules of GOOS into regional and national GOOS committees,
(iii) create a GOOS-Africa network as the basis for communication about GOOS,
(iv) establish communications with appropriate GOOS and related bodies (e.g. IOCEA, IOCINCWIO, Indian Ocean Commission, CLIVAR-AFRICA etc),
(v) develop a biennial work programme and budget,
(vi) through lobbying and by other means promote development and funding of GOOS activities in Africa.

ODINAFRICA can play a key role in archival and processing of the data collected within the GOOS programme.

2.1.6 United Nations Conference on Environment and Development (UNCED)

The need to develop capacity for collection, analysis, interpretation and distribution of data and information from the oceans and all seas was one of the issues addressed by Agenda 21 of the United Nations Conference on Environment and Development (UNCED) held in Brazil in 1992. This was to be done through:

- Strengthening of national scientific capabilities for data collection and analysis
- Creation of national databases
- Linking of these national databases to existing data and information services and mechanisms
- Cooperation with a view to the exchange of data and information and its storage and archiving through the regional and world data centres

2.2 NEEDS IDENTIFIED BY THE AFRICAN MEMBER STATES

The data and information management requirements for Africa can be summarized as follows:

Requirement 1 *Provision of Internet access to marine scientists in Africa;*

Requirement 2 *Providing assistance in the development and operation of National Oceanographic Data Centres and establish their networking in Africa;*

Requirement 3 *Providing training opportunities in marine data and information management applying standard formats and methodologies as defined by the IODE;*

Requirement 4 *Assist in the development and maintenance of national, regional and Pan-African marine metadata and data holding databases;*

Requirement 5 *Assist in the development of marine data and information products responding to the needs of a wide variety of user groups;*

Requirement 6 *Reinforce the RECOSCIX-CEA and RECOSCIX-WIO networks as mechanisms for the dissemination of marine data and information to various user groups in Africa;*

Requirement 7 *Assist in the development of linkages with other international projects with similar objectives (e.g. GOOS-Africa; Gulf of Guinea LME, etc)*

The African Member States have identified and expressed these national and regional requirements for data and information management capacity building at several occasions, a few of which are cited below:

2.2.1 IOCEA-IV (May 1995)

(Ref. IOC Regional Committee for the Central Eastern Atlantic, Fourth Session. Las Palmas, Gran Canaria, Spain, 8-12 May 1995 - Document available at http://ioc.unesco.org/iocweb/IOCpub/iocpdf/giocea04.pdf)
We refer to item 4.2 SERVICES AND GOOS (paras 114 to 132) and to the Annex to Recommendation IOCE-IV.1 (Programme of Work 1996-1997), in particular:

6) Communications		
Establishment of an E-mail network in the Region	*Very High Priority*	*- Donors; IOC - All Member States*
7) Ocean observations		
Preparation of regional inventories of on-going ocean observations	*High priority*	*National efforts; RECOSCIX-CEA*
8) IODE		
Establishment of a regional centre In Conakry, Guinea	*High priority*	*IOC, all member states*
Assistance to the establishment of National data centres	*High priority*	*IOC; Donors; National efforts*
Preparation of inventories of courses, Training centres, existing institutions and equipment	*High Priority*	*RECOSCIX-CEA*
Training Workshop on Archiving and Transfer of Oceanographic Data and Information	*Medium/High priority*	*IOC; RECOSCIX-CEA*

2.2.2 IODE-XV (January 1996)

(Ref: IOC Committee on International Oceanographic Data and Information Exchange, Fifteenth Session. Athens, Greece, 23-31 January 1996 - Document available at http://ioc.unesco.org/iocweb/IOCpub/iocpdf/giode15.pdf)
We refer to the Recommendation IODE-XV.11 (Programme and budget for 1996-1999) items:
- *GODAR-VI for Western Africa*
- *RECOSCIX-CEA*
- *OceanPC course Eastern Africa*
- *OceanPC course Western Africa*
- *ODINEA Project*

2.2.3 GODAR-VI (April 1997)

(Ref: IOC Regional Workshop for Member States of Western Africa - GODAR VI (Global Oceanographic Data Archaeology and Rescue Project. Accra, Ghana, 22-25 April 1997 - Document available at:

http://ioc.unesco.org/iocweb/IOCpub/iocpdf/w136.pdf)
We refer to the Conclusions and Recommendations where (a more extensive extract from the report is included as Annex 1)

- *To overcome the problem of communication within the region **it was recommended** that assistance should be provided to the countries to acquire electronic mail facilities.*
- ***The Workshop recommended** that the IODE Regional Co-ordinator and the GODAR Project Leader discuss and agree on the most effective ways of co-operation with the UNIDO-UNDP/GEF LME Gulf of Guinea Project.*
- ***The Workshop recommended** that WDC-A, Oceanography, be invited to help Member States in creation of a CD-ROM of oceanographic data for the region. This project will include compilation, digitization, evaluation of data and a training component with the involvement of national experts at all stages of implementation.*
- ***The Workshop strongly supported** the decisions of the IOC Regional Committee for IOCEA relevant to the ocean data collection and management and **urged** Member States and IOC to continue to extend assistance to Western Africa in establishing RECOSCIX-CEA and not to spare any effort for meeting the communication needs.*
- ***The Workshop recommended** that all necessary actions should be taken for completion and publication of CEADIR and its inclusion in the GLODIR on-line system*
- ***The Workshop noted** that there are large volumes of oceanographic data in the domain of private industries and **recommended** that authoritative national institutions take necessary action in pursuing these industries to release data to the public domain.*
- ***The Workshop recommended** that the IODE Regional Co-ordinator and the GODAR Project Leader working in concert with the IODE Chairman should contact the NODCs of the IOC Member States which have conducted research in the Eastern Atlantic and coastal waters of Western Africa, e.g., USA, Russia, Germany, Norway, etc., and invite them to co-operate in the development of an oceanographic databank for Western Africa.*
- ***The Workshop invited** UNIDO and IOC to co-operate in establishing national oceanographic data and information management infrastructure which will create the necessary environment for establishing an effective Regional Oceanographic Data Centre,*
- ***The Workshop requested** the LME of the Gulf of Guinea Project to continue supporting RECOSCIX-CEA to become fully operational and **urged** RECOSCIX-WIO to share experiences with Western Africa in the development of the dispatch centre and assist with training.*
- ***The Workshop noted** an urgent need in providing training to experts from the region in oceanographic data and information management including the use of the IODE tools and procedures, e.g., OceanPC.*
- ***The Workshop felt a need** for a co-ordinated regional training programme which could knit together the needs and resources available in the region.*

2.2.4 IOCINCWIO-IV (May 1997)

(Ref: IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Fourth Session. Mombasa, Kenya, 6-10 May 1997 - Document available at http://ioc.unesco.org/iocweb/IOCpub/iocpdf/gwio04.pdf)

119 ***The Regional Committee adopted** the [ODINEA] Project Proposal*

126 ***The Regional Committee recommended** that support be secured for the RECOSCIX-WIO project in order to maintain its services and products.*

128 ***The Regional Committee recommended** that e-mail support be provided where necessary*

.2.5 IOC-XIX (July 1997)

(Ref: Nineteenth Session of the Assembly, Paris, 2-18 July 1997). We refer to paragraphs:

216 ***The Assembly identified*** *the strengthening of data and information management in developing countries as a priority and supported IODE's efforts in this area. Particular note was made of the commencement of negotiations by the Flemish Community of Belgium with UNESCO to provide approximately $250,000 in support of developing marine data and information management structure in Africa.* ***The Assembly noted*** *with appreciation the planned framework agreement and* ***looked forward*** *to its signature and implementation.*

221 ***The Assembly urged*** *the IOC Executive Secretary to continue supporting IODE activities in developing countries specifically with the development of NODCs. The development of regional networks was encouraged and the success of RECOSCIX was given as an example.* ***The Assembly also noted*** *that many developing countries have limited access to the Internet and it was recommended that for those countries, data and information continue to be provided in more traditional means, including as CD-ROMs.*

303 ***The Assembly adopted*** *Resolution IOC-XIX-10*

(Resolution IOC-XIX-10: Fourth Session of IOCINCWIO and its recommendations)

2.2.6 PACSICOM (18-22 July 1998)

The PACSICOM conference was convened as part of the region-wide efforts to give greater impetus to the management of seas and the coasts in Africa. It brought together ministers and senior officials from 48 African States, as well as from many international agencies, non-governmental organizations and from bilateral financial institutions. The Conference offered a unique opportunity for discussing the state of the coastal and marine environment in Africa, with special focus on the need for concerted intergovernmental dialogue.

PACSICOM represents a major contribution by Africa to the observance of the International Year of the Ocean, placed in the global calendar of events by the United Nations General Assembly. in recognition of the importance worldwide of the need to protect and sustainably manage of the marine and coastal environment. In that context, PACSICOM and its entire process provide a unique opportunity for African countries to reinforce intergovernmental dialogue on the increasing threats to the marine and coastal environment and on the measures required to meet the complex challenges and bring the crisis emerging in Africa's coastal areas to the widest possible audience.

PACSICOM enabled the ministers and senior officials and other stakeholders to build consensus on common perspectives for policy responses and political commitment. The Conference was organized in three parts: first, technical workshops, from 18 to 20 July, to address specific themes; second, a workshop on crosscutting issues and interlinkages; and, third, on 21 and 22 July, a Ministerial Conference, which considered political implications and socio-economic factors.

The workshops addressed the linkages between the natural, social and educational sciences, with an emphasis on a culture of peace, community participation and sharing of resources and knowledge. Themes included: global observing systems for sustainable development in Africa, freshwater availability, infrastructure and capacity-building, culture and society and geological parameters for environmental protection and sustainable coastal development in coastal zones and areas influenced by marine and coastal processes in Africa

PACSICOM made the following recommendations directly relevant to the current project proposal:

1. *To strengthen the collection and dissemination of scientific information as a basis for effective management of coastal areas, through:*

   a) …
   b) Collection, use and protection of indigenous knowledge;
   c) Supporting sustained routine and long-term measurements and monitoring of environmental variables as the basis for forecasting change;
   d) Use of appropriate information delivery mechanisms;
   e) Sharing of information, data and experience on integrated coastal area management programmes and projects;
   f) Identification of common methodologies and harmonizing activities in information collection;
   g) …

2. *Provision of a sound information base for local and regional planning requires:*
   a) Formation of an Africa-wide network of national ocean data centres;
   b) …
   c) Creating a network of specialists trained in the use of data acquired by remote sensing from space satellites;
   d) *Facilitating the further implementation of modern electronic communication systems such as Internet connections and data transfer mechanisms.*
   e) …

3. *In order to enhance the integration and sustainability of programmes and projects, it is essential:*
   a) …
   b) To enhance the quality and quantity of information transfer between the Government's institutions, their agents, international bodies and non governmental organizations interested in project implementation, through the use of information and communication technologies; and
   c) …

2.2.7 IOC-XX (29 June- 9 July 1999)

The ODINAFRICA-II proposal (version 2, March 1999) was discussed extensively during the Twentieth Session of the IOC Assembly in various agenda items such as IODE, the IOC Regional Subsidiary Bodies IOCINCWIO and IOCEA, and Priority Africa. Many Member States expressed their strong support for ODINAFRICA.

Three sessional meetings were organized by the African Member States to discuss the project proposal and to prepare a draft resolution. The sessional groups requested IOC to translate the draft proposal into French and to distribute it to the African Member States for endorsement.

The Assembly adopted Resolution XX-22 as drafted by the Sessional Group (see below)

On 11 August 1999 the IOC Secretariat sent out the Proposal in English and French to 31 African Member States (Algeria, Angola, Benin, Cameroon, Cape Verde, Congo, Côte d'Ivoire, Egypt, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Libya, Madagascar, Mauritania, Mauritius, Morocco, Mozambique, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Togo, Tunisia and Tanzania).

Resolution XX-22

OCEAN DATA AND INFORMATION NETWORK FOR AFRICA - SECOND PHASE (ODINAFRICA-II)

The Intergovernmental Oceanographic Commission,

Recalling:

(i) the recommendation of the IOCINCWIO Member States, during the Second Session of IOCINCWIO, to establish a regional network for marine information exchange,
(ii) the request by the IOCEA Member States, during the Second Session of IOCEA, to investigate the possibility to develop a RECOSCIX network for the IOCEA region,
(iii) the endorsement by IOCEA-III, of a project proposal for the development of a RECOSCIX network for the IOCEA region,
(iv) the recommendation of the IOCINCWIO Member States, during the Fourth Session of IOCINCWIO, to develop the ODINEA project (Ocean Data and Information Network for Eastern Africa),
(v) the endorsement of the ODINEA project proposal by IODE-XV,
(vi) the successful implementation of the RECOSCIX-WIO, ODINEA and RECOSCIX-CEA (ODINEA and RECOSCIX-CEA within the framework of the ODINAFRICA project),
(vii) the requests made by African Member States on many occasions, for the IOC to assist with the development of national and regional data and information management facilities,
(viii) the recommendations made by PACSICOM identifying the need to *inter alia*:
- the formation of an Africa-wide network of National Ocean Data Centres,
- facilitating the provision of modern communication systems such as Internet connections and data transfer mechanisms.
-

Acknowledging:
(i) the efforts by the IOC Secretariat in securing support for the implementation of the RECOSCIX-WIO, RECOSCIX-CEA and ODINEA projects (ODINEA and RECOSCIX-CEA within the framework of the ODINAFRICA project),
(ii) the support provided by Belgium, Sweden and Flanders for the development of the RECOSCIX-WIO, RECOSCIX-CEA and ODINAFRICA projects (ODINEA and RECOSCIX-CEA within the framework of the ODINAFRICA project),

Noting the draft proposal 'OCEAN DATA AND INFORMATION NETWORK FOR AFRICA - Second Phase (ODINAFRICA-II)', prepared with the collaboration of African experts, in consultation with, and guidance of the IOC Secretariat,

Noting with appreciation the objectives of the ODINAFRICA-II Project Proposal:

(i) providing assistance in the development and operation of National Oceanographic Data (and Information) Centres and establishing their networking in Africa,
(ii) providing training opportunities in marine data and information management, applying standard formats and methodologies as defined by the IODE,
(iii) providing support for access to the Internet for communication, exchange and dissemination of data and information,
(iv) Assisting in the development and maintenance of national, regional and Pan-African marine meta-data, information and data holding databases,
(v) Assisting in the development and dissemination of marine data and information products responding to the needs of a wide variety of user groups at the national and regional levels and responding to national and regional priorities,

Acknowledging that ODINAFRICA will provide national and regional structures, mechanisms, services and products contributing towards the sustainable management of ocean resources and coastal zones,

Urges African Member States to:

(i) review and finalize the ODINAFRICA-II proposal for submission to interested donors;
(ii) identify substantial counterpart contributions and secure government commitment in order to ensure the long-term sustainability of national and regional data and information management facilities, developed within the framework of the project;
(iii) ensure that the data and information management infrastructures, services and products serve well-defined national and regional science and management priorities

Urges IOC Member States, donors and other International Organizations to provide support for the successful implementation of the ODINAFRICA-II project, possibly through complementary activities to strengthen the services and products, with special emphasis on serving the needs of ICAM;

Instructs the Executive Secretary IOC to:

(i) provide guidance to African Member States in the finalization of the ODINAFRICA-II project proposal;
(ii) submit, as soon as possible, the ODINAFRICA-II project proposal to (an) interested donor(s) on behalf of the African Member States.

Financial implications for 2000-2001: US$140,000 from Regular Programme and Non-earmarked Trust Fund
US$1,360,000 from Trust Fund (to be obtained)

2.3 CURRENT STATUS

Figure 1 shows the current status of IODE Data Centres in Africa. Whereas we now have 7 Data Centres for 8 Member States in the IOCINCWIO region (Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa and Tanzania) -not including Somalia-, we have only 5 (Ghana, Guinea, Morocco, Nigeria and South Africa) for 18 Member States in the IOCEA region. Furthermore of these 5 only a few are operational. There is an additional 1 data centre in Egypt.

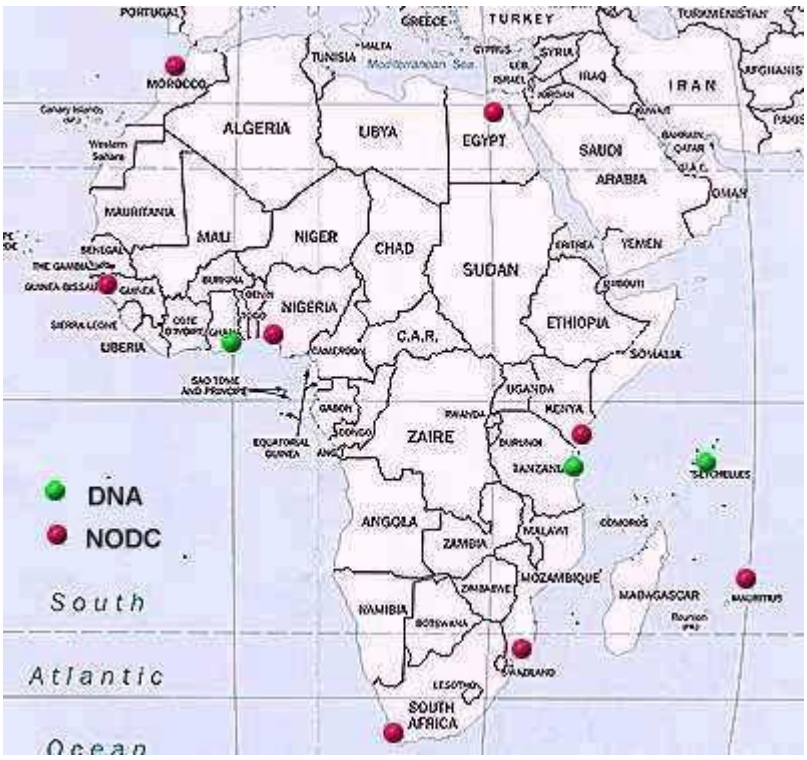

Figure 1: Data Centres in Africa

2.3.1 Marine Data Management in Africa

IOCINCWIO REGION

Several projects developed by the IOC as far back as 1989 have, to some extent, contributed to responding to the needs included in the ODINAFRICA-II project objectives. In this regard we mention the RECOSCIX-WIO project which, in the IOCINCWIO region, has developed a regional network providing bibliographic information services and producing information products (e.g. Regional Directory of Marine Scientists, WINDOW Newsletter,…). By creating linkages between institutions as well as scientists in- and well as outside its focus region RECOSCIX-WIO has also acted as a catalyst: whereas RECOSCIX-WIO during its inception was restricted to (bibliographic) information exchange the region, realizing the potential of the network, requested the expansion of the project's terms of reference to include data exchange, leading to the development of the ODINEA project. Formulated by the region and endorsed by IODE-XV, ODINEA was successfully submitted for funding to the Government of Flanders and was started in 1997/98.

ODINEA's main objectives can be summarized as follows:

- establish an operational data management structure, composed of a regional data centre as well as national data centres
- build and maintain regional human and infrastructural capacity to collect, quality control, archive, analyse, repackage and disseminate the data and information and the international, regional, national and local levels
- actively search, retrieve and archive historical ocean data sets in- and outside the region related to Eastern Africa
- provide access to the Internet for marine scientists in the Eastern Africa region
- ensure inclusion of scientific information produced in Eastern Africa (and South Africa) in the bibliographic database ASFA

The ODINAFRICA Project Document provides extensive information on the planned activities. The ODINAFRICA Annual Report 1998 provides information on the achievements of 1998.

By the end of the ODINAFRICA-I project we expect the following results:

- Operational National Oceanographic Data Centres (or Designated National Agencies) in Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa and Tanzania (**we mention that by September 1999 this has been achieved by all countries except Madagascar**);
- Operational regional data dissemination centre (Mombasa, Kenya)
- Trained data managers in the above mentioned data centres;
- Operational national and regional ocean meta databases for the IOCINCWIO region;

IOCEA REGION

In terms of data centres very little has been achieved in the IOCEA region. Due to lack of funds both at the local level and at the IOC no substantial efforts could be made to develop data management capabilities in the IOCEA region. The ODINAFRICA-I project's terms of reference did not include data management, only information management (see 4.2).

The existing data centres (Ghana, Guinea, Morocco, Nigeria, South Africa) have been formally established but most (except South Africa) are poorly equipped and are in need of equipment, operational support and trained manpower.

MEDITERRANEAN AND RED SEA AREAS

The IOC does not have a regional subsidiary body for the Mediterranean nor for the Red Sea area. Nevertheless countries from the Mediterranean region have been given opportunity to participate in a number of IODE-related activities such as the 'Training Course on Management of Marine Data and Information for the Mediterranean Region, Malta, 10-21 April 1995'. Nevertheless only 2 data centres have been established in these two areas: Morocco and Egypt.

2.3.2 Information Management

IOCINCWIO REGION

The RECOSCIX-WIO project, developed by the IOC in 1989, following the recommendation by the region at IOCINCWIO-II (1987) and subsequently funded by SAREC of Sida through IOC (1989-1992, 1998-…) and Belgium (1992-1999), has been extremely successful in developing marine information capacity as well as in providing services and developing products. Whereas the training component under RECOSCIX-WIO ended in 1997, additional training has been provided under ODINEA (1999).

Within the framework of ODINEA (ODINAFRICA-I) the following results are expected:

- Internet connectivity for marine scientists in the IOCINCWIO region
- Inclusion of indigenous scientific publications in ASFA through the regional ASFA input centre (Mombasa, Kenya)
- Trained manpower in marine information centres

In order to streamline data and information management activities the project will further aim at developing integrated data and information management centres.

Between 12 and 17 April 1999 the ‘IOC-LUC-KMFRI Workshop on RECOSCIX-WIO in the 2000 and beyond (and training course for librarians)’ was organized in Mombasa, Kenya (within the framework of ODINEA/ODINAFRICA-I). The Workshop made the following recommendations:

The participants noted the achievements made by the RECOSCIX-WIO Project in the region, and expressed their appreciation to the Intergovernmental Oceanographic Commission (IOC) of UNESCO, the Government of Belgium through the "Limburgs Universitair Centrum" (LUC), and the Kenya Marine and Fisheries Research Institute (KMFRI) for the support that they have provide to the project.

Recognizing that the next phase of the project should strongly address the agenda of sustainability, future activities must be tailored into a transition phase that would entail the development of a regional information and data exchange network utilizing mainly the Internet. The participants therefore urged the IOC and other donors to provide support for the implementation of this transition phase.

Recognizing further the need for a similar service to freshwater scientists, the participants recommended that ways should be explored to either develop a freshwater component of the project, or formally incorporate freshwater into the project.

Recalling that the project had provided hardware, software and training to the cooperating institutions in the region, the participants noted that with the rapid change in technology most of these equipment are now outdated and should be replaced.

The participants stressed the need for training and retaining personnel to manage the library and information centres in the institutions participating in the project. The participants noted that though the training workshops and the MIST course introduced librarians to various subjects, there is a need for more in-depth training. However, since most of the libraries have limited staff, extended training away from the institutions would adversely affect their operations. Local training opportunities, and distance learning programmes should therefore be considered to strengthen the capacity of the libraries.

The participants noted that the original objectives of RECOSCIX-WIO are still valid.

- provide marine scientists in the region with the necessary scientific information;
- enhance the use of indigenous scientific information in the region;
- promote and facilitate communication between the scientists, both intra- and inter-regionally;
- disseminate information on scientific research activities in the region.

The participants recommended the implementation of the following actions:

(i) Setting up and or strengthening and electronic communication system for all CIs. This involves:
- dedicated and up-to-date equipment
- dedicated e-mail access
- adequate software
- dedicated staff
- development of a listserv and Web-site

(ii) Converting all the products and services previously developed by RECOSCIX-WIO Project into electronic form and making them available on RECOSCIX-WIO Web-site;

(iii) Document request and delivery should be done electronically where possible;

(iv) With continued support from IOC, the publication of the paper version of the *WINDOW* Newsletter should continue. Scientists are urged to contribute articles regularly for publication.

(v) Formal agreements should be made between RECOSCIX-WIO and CIs. Such agreements should include a work plan and a budget. Output targets should be clearly specified.

(vi) The CIs should complete the development of their library catalogue using the WIOLib structure agreed on during the workshop.

(vii) CIs will regularly send publications to KMFRI for inclusion into ASFA.

(viii) Adequate provision should be made for training and/or workshops including internships for CIs.

IOCEA REGION

Whereas substantial support has been provided for the development of marine information management capabilities, services and products in the IOCINCWIO region, very little has been achieved in the IOCEA region due to shortage of funds. Despite its endorsement during IOCEA-III no activities were implemented. Fortunately it was possible to include a marine information management (RECOSCIX-CEA) component in the ODINAFRICA-I project, funded by the Government of Flanders and the IOC.

The RECOSCIX-CEA objectives and expected achievements can be summarized as follows:

- provision of information retrieval service
- provision of document delivery service
- provision of Internet access support
- development of regional directory of marine scientists
- directory of marine libraries and information centres
- catalog of library holdings
- catalog of scientific and technical publications
- regional newsletter

During the ODINEAFRICA-I project substantial progress has been made in the development of the RECOSCIX-CEA products and services. Furthermore, an agreement was made between FAO, IOC and Cambridge Scientific Abstracts to provide, free of charge and for a period of not less than two years, free copies of the 'Aquatic Sciences and Fisheries Abstracts' ASFA, to African Member States. This represents an in-kind contribution of approximately US$ 2000/country/year.

MEDITERRANEAN AND RED SEA AREAS

No RECOSCIX related activities have been implemented in these areas.
they expressed strong support for the project.

2.4 ODINAFRICA-II OBJECTIVES

The objectives of the project are;

- Providing assistance in development of NODCs and establish their networking in Africa
- Providing training opportunities in marine data & information management applying standard formats and methodologies as defined by IODE
- Assist in development and maintenance of national, regional and Pan-African meta data, information and data holding data bases
- Assist in development and dissemination of marine data and information products responding to the needs of a wide variety of user groups using national and regional networks

2.5 PARTNERSHIPS

One of the key objectives of the project is to develop local capacity for data and information management which will be able to sustain the network beyond the project's life. External capacity building & training expertise will be required for this. Accordingly a number of Flemish and other Universities and Research facilities have been invited to participate as 'external expertise Partners'. The following have responded positively and have indicated their fields of expertise:

BELGIUM (Flanders)

1- Vlaams Instituut voor de Zee / Flanders Marine Institute (VLIZ)
Victorialaan 3

B-8400 Oostende
Belgium

Coordinator: Dr Edward Vanden Berghe
Manager Flanders Marine Data Centre

Available Expertise & services :
- Coordination: coordination of Flemish Partners
- Teaching: oceanographic data and information management (general)
- Teaching: taxonomic databases of marine organisms
- Teaching: networking and intra/internet applications

2- Limburgs Universitair Centrum (LUC)

Universitaire Campus, gebouw D
B-3590 Diepenbeek
Belgium
Coordinator: Prof. Dr. L. Egghe
Chief Librarian LUC

Available Expertise & services: (mainly library oriented)
- Services: query handling and document delivery services

3- Vrije Universiteit Brussel (VUB)
Pleinlaan 2
B-1050 Brussel
Belgium

Coordinator: Prof. Paul Nieuwenhuysen

Available Expertise & services: (mainly library oriented)
- Teaching: documentary information; libraries; assessing the impact of journals; information flows; principles of databases and information retrieval; information technology: computers; information technology: software; presenting information; presentation software; CD-ROM, CD-R, CD-RW; Internet: use of World-Wide Web (WWW); saving information; variations among browsers; arching for information through WWW (free as well as and fee-based information; book databases; journal article databases; electronic journals;...); development of WWW sites (including sites for distance learning); development software; guidelines; image development; using sites that include extensions of WWW (interactive sites, atlases online, Java, ...); electronic mail Internet-based discussion groups, communication and co-operation; evaluation of search actions; document delivery systems; interlibrary lending
- Services: query handling and document delivery

AUSTRALIA

Institution: Australian Oceanographic Data Centre (AODC)
Maritime Headquarters
Wylde St, Potts Point
Sydney, NSW 2011
Australia

Coordinator: Ben Searle, Greg Reed

Available Expertise & services:

- Teaching: database management; data centres management; web-enabling of databases; IODE; data quality control; XML; Internet technology; Java scripting, development ODINAFRICA Resource Kit; hosting of internships [all activity 4]
- Assist in the development and maintenance of national and regional marine metadata holdings [activity 4]
- Services: training course follow-up (technical support)

Note: additional experts, from the Partner Countries in Africa or others, may be used on a contractual basis for specific tasks.
Already contacted partners include:
- Phoenix Training Consultants, USA (M. Brown, J. Withrow)
- Universitaire Insteling Antwerpen (UIA) Library, Antwerp, Belgium (J. Van Borm)

2.6 ODINAFRICA-II PROJECT ACTIVITIES

The following are the activities envisaged in this phase of the ODINAFRICA project:

MAIN ACTIVITY 1: Project Management
- Sub-activity 1.1: Annual Project Management Workshop
- Sub-activity 1.2: Project Staffing and Management costs

MAIN ACTIVITY 2: Providing assistance in the development and operation of National Oceanographic Data (and Information management) Centres and establish their networking in Africa
- Sub-activity 2.1: Organization of national coordination meetings to identify suitable host institutions for NODC/DNA (including information management)
- Sub-activity 2.2: Formal establishment of NODC/DNA (including information management centre)
- Sub-activity 2.3: Provision of Hardware and Software Package
- Sub-activity 2.4: Provision of support for operational expenses data and information centre

MAIN ACTIVITY 3: Providing training opportunities in marine data and information management applying standard formats and methodologies as defined by the IODE
- Sub-activity 3.1: Development of ODINAFRICA/IODE Resource Kit
- Sub-activity 3.2: Regional Data Management Training Course
- Sub-activity 3.3: Regional Data Management Training Course Follow-up and Support
- Sub-activity 3.4: Regional Information Management Training Course
- Sub-activity 3.5: Regional Information Management Training Course Follow-up and Support

MAIN ACTIVITY 4: Assist in the development and maintenance of national, regional and Pan-African marine metadata, information and data holding databases
- Sub-activity 4.1: GODAR Participation: identification, repatriation and digitization of Africa related datasets from outside (and within) Africa
- Sub-activity 4.2: Development of national and regional meta databases
- Sub-activity 4.3: Development and maintenance of national and regional data archive

MAIN ACTIVITY 5: Assist in the development and dissemination of marine data and information products responding to the needs of a wide variety of user groups using national and regional networks
- Sub-activity 5.1: Support for national workshops on data/information service/product requirements for the sustainable management of coastal resources and the coastal zone
- Sub-activity 5.2: Support to the RECOSCIX networks
- Sub-activity 5.3: Support for development of data and information products
- Sub-activity 5.4: Support for public awareness creation on the project services and products

3. NATIONAL PRESENTATIONS

The presentations from the participants illustrated that there is a large variation in the capacity level of the different member states. (National presentations are in Annex V). These ranges from those that lack even basic data collection mechanisms or even research facilities, while others already have operational data centres and require support to strengthen their operations. It was therefore reiterated that ODINAFRICA-II's main objectives is to provide support for data and information management serving national requirements, but in a regional and international coordinated framework, to ensure the use of standard and internationally accepted methods and standards.

It was noted that many of the member states cooperated in national, regional and international scientific programs. It was stressed that ODINAFRICA-II should not duplicate or replace the data and information management components of these programmes, but rather support and reinforce them.

In order to ensure sustainability of the data centres, each of the members states will have to identify its priority data types and data products. The project must ensure that standard methodologies for data management, including quality control are implemented to enable exchange of data between the centres, and between them and others in the IODE system. Some participants suggested that a minimum set of data types and products to be handled by the data centres should be identified.

Participants expressed concern that a number of member states that had been invited to participate in the project consortium did not respond to the invitation. It was observed that communication channels between the IOC Secretariat and the Member States through the Action Addresses need improvement. The Member States stressed the need to continue efforts to bring more African members states into the network.

The Member States were informed that Comoros had not been invited to participate during the first round of preparation of the project document, as it was not an IOC Member State at that time. In the case of Togo, the representative said his country had not received the invitation. The member states recommended that Togo and Comoros be included in the network and that the cost of their participation be absorbed by the existing budget. Discussions on the practical details in this regard were referred to agenda item 5.

The Member States agreed that one of the products of the project should be an ODINAFRICA-II website through which information about available data sets and project activities can be accessed, within the framework of IODE and the planned data and information portal.

The possible problems caused by language, especially in the IOCEA region were discussed at length. However, the member states decided that language should not constitute a major problem in the region, and should be addressed at the individual level.

4. MANAGEMENT STRUCTURE

The IOC Member States participating in the second phase of ODINAFRICA-II include:

1. Benin
2. Cameroon
3. Comoros (*)
4. Cote D'Ivoire
5. Gabon
6. Ghana
7. Guinea
8. Kenya
9. Madagascar
10. Mauritania
11. Mauritius
12. Morocco
13. Mozambique
14. Nigeria
15. Senegal
16. Seychelles
17. South Africa
18. United Republic of Tanzania
19. Togo (*)
20. Tunisia

(*) have requested participation April 2000

These can be divided into: four geographic groups, two IOC Regional subsidiary bodies, or two language groups (English and French). The possible groups membership would be as follows:

♦ *FOUR GEOGRAPAHIC GROUPS*

1. *Northern Africa*: Mauritania, Morocco, Senegal, Tunisia (4);
2. *Western Africa*: Benin, Cameroon, Côte d'Ivoire, Gabon, Ghana, Guinea, Nigeria, Togo (8);
3. *Southern Africa*: Madagascar, Mauritius, Mozambique, South Africa (4);
4. *Eastern Africa*: Comoros, Kenya, Seychelles, Tanzania (4)

Apart from the Western Africa group, the groups are small and thus easier to handle for Regional Coordinator. Three of the groups have both Anglophone and Francophone members states (2, 3 and 4).

♦ *IOC REGIONAL SUBSIDIARY BODIES*

IOCINCWIO and South Africa: Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, Tanzania (8).
IOCEA and North Africa: Benin, Cameroon, Cote d'Ivoire, Gabon, Ghana, Guinea, Mauritania, Morocco, Nigeria, Senegal, Togo, Tunisia (12)

The advantage of this structure would be that member states are within the same IOC regional subsidiary body (except for Tunisia) and can therefore synchronize their activities within ODINAFRICA with regional (IOCEA and IOCINCWIO) programmes. It will also be easier to organize data management for specific marine science activities being undertaken by the relevant regional subsidiary body. The environments being dealt with by member states in each group would be more or less similar. Hence it will be easier to source literature and data sets relevant to members of a group. Language may still be a problem as both groups have both Anglophone and Francophone member states.

♦ *LANGUAGE GROUPS:*

Anglophone: Ghana, Kenya, Mauritius, Mozambique, Nigeria, Seychelles, South Africa, Tanzania (8)
Francophone: Benin, Cameroon, Comoros, Côte d'Ivoire, Gabon, Guinea, Madagascar, Mauritania, Morocco, Senegal, Togo, Tunisia (12)
* Mozambique is included among the Anglophone countries since Portuguese is not one of the official IOC working languages.

Division of the groups along language lines may make communication easier. However, the disadvantage of this would be that the member states in a group would not share the same type of environment. Similarly the regional programmes implemented by the member states in a group will differ since they are part of different IOC Regional Subsidiary bodies. The discussions towards a decision on this matter were lengthy with a wide variety of views. A vote was able to resolve the issue and **the member states decided on the creation of two groups based on IOC Regional Subsidiary bodies (IOCEA and IOCINCWIO).**

Tunisia agreed to become part of the IOCEA group but, in order to accommodate the specificity of the Mediterranean member states, decided to form an informal sub-group within the IOCEA group of which the purpose would be to promote the project in the Mediterranean region with the view of attracting more members states to the network. The sub-group could be up-graded at a later stage if and when a sufficient number of other Mediterranean member states will have joined the network.

With regard to the need for coordinators and after some discussion, **the member states decided to identify two regional coordinators, one for each regional group. The Member States decided that a general coordinator would not be required at this time.** Some member states expressed concern that the IOCEA group is large which may make it difficult to coordinate effectively.

The member states stressed the need to clearly define the Terms of Reference for the regional coordinators. These should include, *inter alia*:

(i) administrative management of the project,
(ii) monitoring progress,
(iii) organizing training courses and workshops,
(iv) ensure effective follow-up to training activities, and
(v) promoting extensive communication and exchange of expertise between the project Partners.

The regional coordinators will have to communicate regularly with each other, and with the National Coordinators to ensure that the implementation of the project runs smoothly. The institution hosting the regional project coordination office will provide the following minimum requirements:
(i) office space,
(ii) office furniture,
(iii) personal computer and printer,
(iv) office stationery and other operational consumables,
(v) telephone and fax, and
(vi) full Internet access, without cost to the project.

The representative of Seychelles, seconded by the IOCINCWIO Partners, proposed Kenya to host the regional coordination office for IOCINCWIO in view of the fact that it already hosts the IOCINCWIO Projects Office and has been coordinating the ODINEA project successfully. Kenya accepted the request and **the IOCINCWIO Partners elected Mr Odido of Kenya as the ODINAFRICA-II regional coordinator for the IOCINCWIO region.**

There were three offers to host the regional coordination office and for the regional coordinator for IOCEA. These were:-

- Côte d'Ivoire with Yacouba Sankare (Centre de Recherches Océanologiques - CRO, Abidjan);
- Guinée with Sekou Cisse (Centre de Recherche Scientifique de Conakry - Rogbané - CERESCOR, Conakry);
- Nigeria with Larry Awosika (Nigerian Institute for Oceanography and Marine Research - NIOMR, Lagos).

To reach a decision it was decided to bring this matter to a vote. Unfortunately, twice the vote ended in a draw between Côte d'Ivoire and Guinea. In order to resolve this problem Mr. Yacouba Sankare gracefully withdrew his candidature, **leading to the election of Dr. Sekou Cisse of Guinea as the ODINAFRICA Regional Coordinator for the IOCEA region**.

Both nominees thanked the member states for their confidence. Dr Cisse expressed his special gratitude to Mr. Sankare and declared that he will work hard to achieve the objectives of the project.

5. WORKPLAN AND BUDGETS

Mr Odido presented the ODINAFRICA-II Work Plan and Budget in great detail (see Annex IV), providing extensive information on all activities and their calculated budget.

With regard to adding Comoros and Togo to the list of Partners, he pointed out that since the member states had accepted the participation of Comoros and Togo, some of the budget lines will have to be revised to reflect this. In this regard he noted that the extra cost per additional Partner was estimate at approx. US$90,000 (over a period of 4 years). It was pointed out however, that some of the extra cost might be absorbed by the lower than average (as calculated) requirements of some Partners. This has also been experienced in the ODINEA project (ODINAFRICA-I) and was caused by the different level of development.

To make a more precise assessment of the budget shortfall caused by adding Togo and Comoros, all members states were requested to prepare detailed activity envelops, indicating the funds that will be required to implement them and submit these as soon as possible (in any case no later than the end of

June 2000) to their respective regional coordinator. (These national envelopes are, to a large extent, included in Annex V.)

Recognizing the key role that the National Coordinators will play in the project, the issue of providing incentives to national coordinators and data centre personnel was discussed at length. It was agreed that financial incentives should normally be the responsibility of the member states. Nevertheless it was recognized that in some countries salaries were very low and accordingly some limited provision could be made for overtime payments. It was also pointed out that the centres could utilize their expertise in the development of information products.

Participants felt strongly that sustainability of the data centres beyond the donor funding would be difficult if the centre relies solely on donors to provide financial incentives for its personnel.

With regard to transfer of funds to the Partner institutions it was observed that, in some countries rigid administrative procedures had proved to hamper effective implementation of projects. Some discussions revealed substantial differences between the member states in the way external funds were received and managed and that no uniform model could be used. Accordingly the national coordinators were requested to discuss this matter at the institutional management level and identify the most effective modalities for funds transfer and management. This could include bank transfer to an institutional account, establishing special accounts, or obtaining funds directly from national UNESCO or UNDP offices (decentralized funds). It was pointed out that funding would in general be provided through contracts, which would adhere to UNESCO rules and regulations.

The date and venue of the next planning workshop and the training workshops will be decided upon through consultation after final approval of project by the Government of Flanders. Mauritania and Morocco offered to host one of these activities. (Details of requirements to host ODINAFRICA-II activities is provided in Annex I).

The participants agreed on the need for a project website and logo. Entries will be invited for a logo design competition, with a token prize offered for the winning design. The web site has to demonstrate an African identity of the project, and should be dynamic. The management of the site was assigned to the Regional Coordinators with input from Member States.

6. CLOSING

In his closing address, the Executive Secretary of the Intergovernmental Oceanographic Commission of UNESCO, Dr Patricio Bernal, reminded the participants that one of the major challenges facing them is to keep up with speed of technology change. Information Sciences is changing so rapidly that more useful scientific products that will be required within the next ten years will require a sophisticated level of information and data management, including tools not readily available in most parts of the world. The Global Ocean Observing System (GOOS), for example, will produce immense amounts of data. Many of the products will be of significant importance for planning activities of African countries. It is therefore necessary to develop the necessary capacity. UNESCO is focusing on Africa and IOC is pleased to contribute towards this initiative. Major marine science institutions worldwide have also expressed their willingness to cooperate in training, and development of long term capacity building infrastructure through the programme on Partnership for Global Observation in the Ocean (POGO). Dr Bernal closed the Session by thanking the host country Senegal, and the UNESCO BREDA Office for their support to the Workshop.

ANNEX I

MINIMUM REQUIREMENTS FOR HOSTING ODINAFRICA-II ACTIVITIES

▪ REGIONAL PROJECT COORDINATION OFFICE

Support by the project to an ODINAFRICA-II Regional Project Coordination Office will be limited to staff support (P-3 consultant, 40% = US$ 16,795/year) and US$ 5,000 for travel in the region for the project.

Accordingly the host institution of the Office will need to provide:

(i) office space
(ii) office furniture
(iii) 1 Personal Computer and printer
(iv) office stationary and other operational consumables
(iv) telephone and fax
(v) full Internet connection

In view of the need to develop a long-term and sustainable management structure for data and information management in Africa, the ability of the host institution to provide the above-mentioned facilities is of crucial importance.

In order to enable forward planning, offers will be required from member states that can host ODINAFRICA-II activities: (i) information and data training workshops, (ii) annual planning workshops. The requirements for hosting these activities are as follows:

▪ ANNUAL PLANNING WORKSHOP

- Simultaneous interpretation
- Overhead projector + LCD projector (+ PC)
- Secretariat facilities
  - PC/printer
  - Photocopier
  - Telephone/fax
  - Email/Internet

▪ DATA AND INFORMATION TRAINING WORKSHOPS

- Internet access on all PCs
- Networked PC’s (1 for each participant+1 for resource persons)-can be rented
- Video projection for PC
- Overhead projector
- Flip charts

ANNEX II

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ANNEX III

OPENING SPEECH ODINAFRICA-II WORKSHOP

by Mr Jan de Bosch Kemper,
Director *a.i.* UNESCO BREDA Office

On behalf of UNESCO's Director General, Mr Koïchiro Matsuura, and Dr Patricio Bernal, Executive Secretary of UNESCO's Intergovernmental Oceanographic Commission, it is a great pleasure for me to welcome you to the First Planning Workshop of the 'Ocean Data and Information Network for Africa – Phase II' (ODINAFRICA-II).

The advancement of science is unthinkable without continuous and efficient exchange of data and information. There is no point in developing scientific programmes and in undertaking scientific research activities unless the research findings can be communicated to the scientific community, and, with increasing importance, to the policy makers and general public. This was clearly stated during UNCED and we can only repeat it here.

The IOC's activities in developing countries are mostly organized in a regional fashion. In the African context I refer here to IOCINCWIO (North and Central Western Indian Ocean - 'Eastern Africa') and IOCEA (Central Eastern Atlantic - 'Western Africa' regional bodies.

The keyword in IOC support to developing countries is capacity building. This includes to some extent institutional capacity building, through providing equipment, but the majority is concentrated on technical assistance. This is done through the organization of training courses, workshops, providing individual travel and study grants, etc. The objective is always to frame such activities within regional scientific research or management programmes to ensure effective output and relevant activities after the training.

The IOC of UNESCO is not a donor but a 'facilitator'. The linkage between bilateral projects which concentrate on national infrastructure and human capacity building, and those IOC programmes which are region oriented and concentrate on joint policy definition and human capacity building with a regional perspective make the efforts mutually reinforcing. As oceans do not respect national borders, carrying out research and defining policy in a regional framework is obviously essential to manage the coastal areas.

The various scientific programmes are expected to generate substantial amounts of data. It is at this stage that we need to ensure accessibility to these data and information to decision makers at all levels. This will require capacity to collect, quality-control, archive, analyze, repackage and disseminate the data and information at the international, regional, national and local levels.

The African Member States have identified and expressed their national and regional requirements for data and information management capacity building at several occasions such as IOCEA-4, IODE-15, GODAR-6, IOCINCWIO-4, IOC-19, IOC-20 and of course PACSICOM.

The PACSICOM conference was convened as part of the region-wide efforts to give greater impetus to the management of seas and the coasts in Africa. It brought together ministers and senior officials from 48 African States, as well as from many international agencies, non governmental organizations and from bilateral financial institutions. The Conference offered a unique opportunity for discussing the state of the coastal and marine environment in Africa, with special focus on the need for concerted intergovernmental dialogue

PACSICOM represents a major contribution by Africa to the observance of the International Year of the Ocean, placed in the global calendar of events by the United Nations General Assembly, in

recognition of the importance worldwide of the need to protect and sustainably manage of the marine and coastal environment. In that context, PACSICOM and its entire process provide a unique opportunity for African countries to reinforce intergovernmental dialogue on the increasing threats to the marine and coastal environment and on the measures required to meet the complex challenges and bring the crisis emerging in Africa's coastal areas to the widest possible audience.

PACSICOM enabled the ministers and senior officials and other stakeholders to build consensus on common perspectives for policy responses and political commitment. The Conference was organized in three parts: first, technical workshops, from 18 to 20 July, to address specific themes; second, a workshop on cross-cutting issues and interlinkages; and, third, on 21 and 22 July, a Ministerial Conference, which considered political implications and socio-economic factors.

The workshops addressed the linkages between the natural, social and educational sciences, with an emphasis on a culture of peace, community participation and sharing of resources and knowledge. Themes included: global observing systems for sustainable development in Africa, freshwater availability, infrastructure and capacity-building, culture and society and geological parameters for environmental protection and sustainable coastal development in coastal zones and areas influenced by marine and coastal processes in Africa. The technical workshops were opened by a plenary address on the theme: "Science in relation to the social, cultural and educational dimension of sustainable development" and a keynote address: "Diamond mining in littoral zones".

One the main outcomes for IOC is that the majority of the recommendations by IOC Governing and Major Subsidiary Bodies (as listed above) were restated during the Technical Workshops and endorsed by PACSICOM.

The ministers and senior officials, together with representatives of regional institutions, non governmental organizations and the stakeholders, unanimously adopted, on 24 July 1998, the **PACSICOM Statement and resolutions** as well as the **Maputo Declaration**, all aimed at moving the protection, management and development of Africa's marine and coastal environment from the margins to the centre stage of decision/policy-making. Furthermore, they agreed with and endorsed, first, the Portfolio of Action Proposals from the workshop on cross-cutting issues and, second, the summary Statement, as well as specific recommendations from the Technical Workshops.

PACSICOM made the following recommendations directly relevant to the current project proposal:

They recommended ‘TO STRENGTHEN THE COLLECTION AND DISSEMINATION OF SCIENTIFIC INFORMATION AS A BASIS FOR EFFECTIVE MANAGEMENT OF COASTAL AREAS, THROUGH: the collection, use and protection of indigenous knowledge; by supporting sustained routine and long-term measurements and monitoring of environmental variables as the basis for forecasting change; through the use of appropriate information delivery mechanisms; by sharing of information, data and experience on integrated coastal area management programmes and projects; and through identification of common methodologies and harmonizing activities in information collection.’

They stated that the provision of a sound information base for local and regional planning requires: the formation of an Africa-wide network of national ocean data centres; creating a network of specialists trained in the use of data acquired by remote sensing from space satellites; and facilitating the further implementation of modern electronic communication systems such as Internet connections and data transfer mechanisms.

Finally, they concluded that. in order to enhance the integration and sustainability of programmes and projects, it is essential to enhance the quality and quantity of information transfer between the Government's institutions, their agents, international bodies and non governmental

organizations interested in project implementation, through the use of information and communication technologies.

During the past two years you, as African Member States have taken the initiative to prepare a comprehensive project proposal called 'Ocean Data and Information Network for Africa- Phase II' (ODINAFRICA-II). The accomplishment of preparing such an excellent document in a group of not less than 18 countries has given a clear signal to not only UNESCO but also to at least one donor, the Government of Flanders, that Africa has taken charge of its own future. Rather than relying fully on external expertise to draft this document, African experts themselves have defined Africa's needs, Africa's priorities.

UNESCO and its IOC fully support and endorse your initiative: during the 20th Session of its Assembly, the IOC adopted Resolution IOC-XX-22 on ODINAFRICA-II requesting the IOC Executive Secretary, *inter alia*, to submit the project proposal to interested donors on behalf of the African Member States. As you all know, the IOC has submitted the project to the Government of Flanders, requesting a financial contribution of US$ 2.3 million, corresponding to about 50% of the project budget. In this regard the donor was most impressed with the substantial contributions pledged by the African Member States, recognizing the importance given by Africa to long-term sustainability of the capacities which shall be developed by the project during the next 4 years.

I also wish to welcome the experts from Belgium and Australia who, as external expertise Partners, will assist in the many training activities during the next 4 years, as well as observers from other projects and organizations who will hopefully take this as an invitation to join ODINAFRICA-II in building Pan African capacity in Ocean Data and Information Management.

I have been informed that the Project has already been highly recommended for approval by the UNESCO-Flanders Cooperation Steering Group. It has been formally submitted to the Government of Flanders within the framework of the UNESCO-Flanders Cooperation Agreement and we expect it to be formally approved by the end of May or early June 2000, after which the funds will become available immediately.

The work you will undertake these 3 days will be extremely important for the Project. You, as Partners in this project will decide on various important matters related to ODINAFRICA-II such as the Management Structure, the relevance of the project within national, regional and global programmes and priorities, and of course the work plan and budget. I have been informed that, at the end of this Workshop, you will have identified some concrete recommendations which will subsequently be submitted to IOCEA-V which will start at the end of this week, and to the IOC Executive Council's 33rd Session in June.

I will end here by wishing you a very successful meeting and I will look forward to reading the proceedings.

ANNEX IV

ODINAFRICA WORKPLAN, TIMING AND BUDGET

The budgets are based on 18 national partners and 4 external expertise partners.

Note: ■ indicates time period when activity takes place or which financial support covers
Note: ♦ indicates external expertise is required for this activity

MAIN ACTIVITY 1: Project Management

- **Sub-activity 1.1: Annual Project Management Workshop ♦**

  Rationale: During the annual Project Management Workshop the Member States and the donors will evaluate the progress of the project, as well as discuss and agree upon the workplans and budgets for the activities to be implemented the following year(s). Note that during the first this event will be organized to discuss and agree upon the Project Management structure (see 6.1).

  Budget: Each workshop will last for 4 days and will be attended by all participating Member States (18). Cost estimate is based on DSA of USD 100/day, ticket of USD1000; local arrangement costs of USD 20,000; IOC/IODE experts US$ 5000.
  Total: (((($100x4)+$1000) x24)+$20000+$5000= $58600/workshop.

  Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 1.2: Project Staffing and Management costs**

  Rationale: This includes the cost of project staff, both at the local (national) level and at the regional level. The national project staff cost will be absorbed totally by the cooperating institutions.

  Budget: Cost for staff 18 national data centres and for 2 regional coordinators and 1 general project coordinator and their travel. National data centre staff cost will be covered by participating member states as part of their in-kind contribution. Cost for national staff: See Annex III. Regional Coordinators: UNESCO P-3 consultant rate (US$ 3499/month) at 40% = US$16795 x 2 = US$33590 (year 2000: IOCEA regional coordinator 6 months; IOCINCWIO: 10 months)
  General Coordinator: UNESCO P-3 consultant rate (US$ 3499/month) at 60% = US$25193.
  Travel costs: US$ 5,000/year x 2 = US$ 10,000/year. (year 2000: US$ 8000)
  Total staff cost national data centres: 2000:$232967; 2001:$234917; 2002: $236367; 2003: $237817.
  Evaluation Mission planned for 2003. at cost 30193.
  IOC Management cost contribution: See Annex V)

  Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

MAIN ACTIVITY 2: Providing assistance in the development and operation of National Oceanographic Data (and Information management) Centres and establish their networking in Africa

- **Sub-activity 2.1: Organization of national coordination meetings to identify suitable host institutions for NODC/DNA (including information management)**

  Rationale: in order to fully benefit from the IODE system and the project Member States will be requested to formally establish NODCs or DNAs (including information management centre) as per IODE guidelines. Financial assistance (and expertise, where required) will be provided for the organization of national coordination meetings to decide on the most suitable host institution for the NODC/DNA.

  Budget: Budget of USD 2000 per country (includes countries that do not have NODC or DNA only= 18 – 12 (7 IOCINCWIO, 5 IOCEA)). Total: $ 2000x6= $12000

  Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 2.2: Formal establishment of NODC/DNA (including information management centre)**
-

  Rationale: in order to fully benefit from the IODE system and the project Member States will be requested to formally establish NODCs or DNAs (including information management centre) as per IODE guidelines.

  Budget: No cost

  Timing:

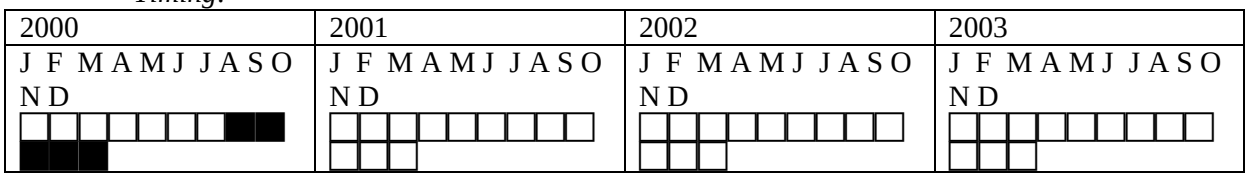
2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 2.3: Provision of Hardware and Software Package**

  Rationale: in order to ensure that the data and information centres can fully participate in the technical aspects of the project (and in a harmonized way) a standard hardware and software package will be provided. This will also facilitate problem solving. Hardware will be provided for both the data and information centres.

  Budget: Budget of USD 5000/institution (excludes ODINEA participants= 18-7) for data management centres. Subtotal= $ 4000x11 = $44,000.
  Budget of USD 4000/institution for information management centres. Subtotal= $4000x18= $72000. Total: US$ 116,000

Timing:

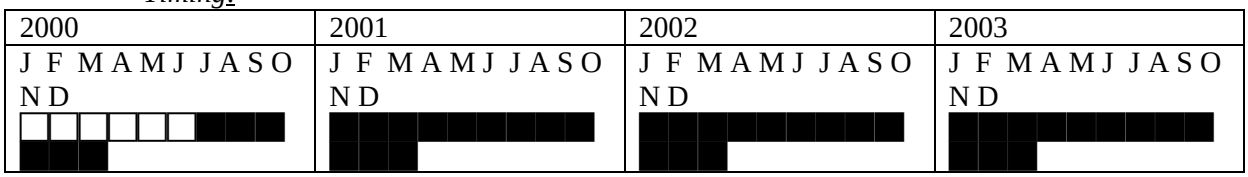


- **Sub-activity 2.4: Provision of support for operational expenses data and information centre**

  Rationale: support will be provided for day-to-day operational expenses required to operate the data and information centres (telecom, Internet access, office supplies, overtime,…). Emphasis will be placed on development of products and services leading to self-support of the data and information centres.

  Budget: Includes infrastructure (office space, office furniture, existing computer equipment, computer operation and maintenance, utilities, telephone/fax equipment and use, Internet access, and local travel). During first year support excludes ODINEA member states. Costing: in-kind contribution by cooperating member states: 2000: $245617; 2001: $102886; 2002: $ 99786; 2003: $98856. Supplemental support. During first year: excludes ODINEA: Cost: US$4000x11=$ 44,000 (2000); US$ 4000x18=US$ 72000 (2001-2003)

  Timing:



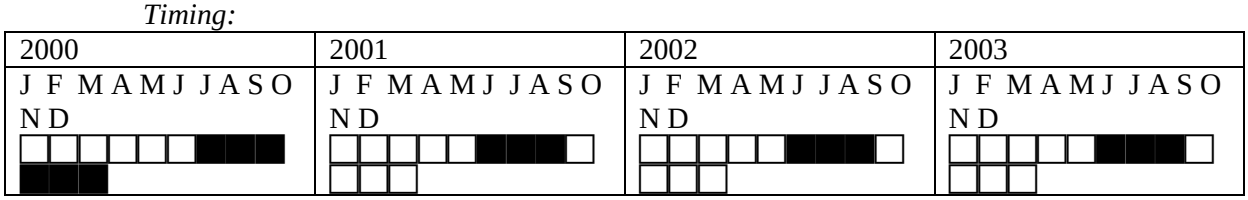
MAIN ACTIVITY 3: Providing training opportunities in marine data and information management applying standard formats and methodologies as defined by the IODE

- **Sub-activity 3.1: Development of ODINAFRICA/IODE Resource Kit** ♦

  Rationale: In order to ensure standardization of software, formats methodology as well as training curricula, and to enable students to self-study subsequent to group training courses, a comprehensive PC-based training package (CD-ROM) will be developed by a group of IODE experts based on the IODE Resource Kit. The ODINAFRICA Kit will include substantial data and information sets relevant to Africa. The kit will be updated annually.

  Budget: Development cost (sub-contracting) at USD 4000/month. First year requires 6 months; second year requires 6 months (continued and update), Third and fourth year requires 3 months (update)

  Timing:



- **Sub-activity 3.2: Regional Data Management Training Course** ♦

Rationale: Three regional data management training courses will be organized covering all responsibilities and their technical aspects covered by NODC/DNA as well as data product development.

Budget: This training will only be given for the IOCEA and Mediterranean member states during years 1 and 2 as data management training for the IOCINCWIO region was provided under ODINEA (1998-2000). Training course for 11 participants: DSA USD 100/day + ticket USD 1000 + local arrangements USD 10,000+ lecturers (3 p contract + travel). Costing years 1 and 2: (((\$100x10)+\$1000)*11)+\$10000 + \$10000= \$42000. Years 3 and 4: \$ 56000

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 3.3: Regional Data Management Training Course Follow-up and Support** ♦

Rationale: In order to ensure that the trainees can make optimum use of the knowledge gained during the training courses and to ensure implementation of 'take home' tasks assigned during the courses a small team of experts shall be contracted to provide Internet-based follow-up and support.

Budget: Sub-contracting experts at USD 2000/month. As from 2001: 10 months

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 3.4: Regional Information Management Training Course** ♦

Rationale: Three regional information management training courses will be organized covering all responsibilities of RECOSCIX cooperating institutions, as well as library management and library services.

Budget: This training will only be given for the IOCEA and Mediterranean member states during years 1 and 2 as data management training for the IOCINCWIO region was provided under ODINEA (1998-2000). Training course for 11 participants: DSA USD 100/day + ticket USD 1000 + local arrangements USD 10,000+ lecturers (3 p contract + travel). Costing years 1 and 2: (((\$100x10)+\$1000)*11)+\$10000 + \$10000= \$42000. Years 3 and 4: \$ 56000

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 3.5: Regional Information Management Training Course Follow-up and Support** ♦

Rationale: In order to ensure that the trainees can make optimum use of the knowledge gained during the training courses and to ensure implementation of 'take home' tasks assigned during the courses a small team of experts shall be contracted to provide Internet-based follow-up and support.

Budget: Sub-contracting experts at USD 2000/month. As from 2001: 10 months

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

MAIN ACTIVITY 4: Assist in the development and maintenance of national, regional and Pan-African marine metadata, information and data holding databases

- **Sub-activity 4.1: GODAR Participation: identification, repatriation and digitization of Africa related datasets from outside (and within) Africa** ♦

Rationale: a large amount of data relevant to Africa are archived throughout the world but are not available to African scientists. This sub-activity will assist in the identification, repatriation and digitization of these data, within the framework of the GODAR project.

Budget: Support for identification and retrieval of historical data relevant to Africa from various sources (African and external experts). Costing: US$ 15,000/year

Timing:

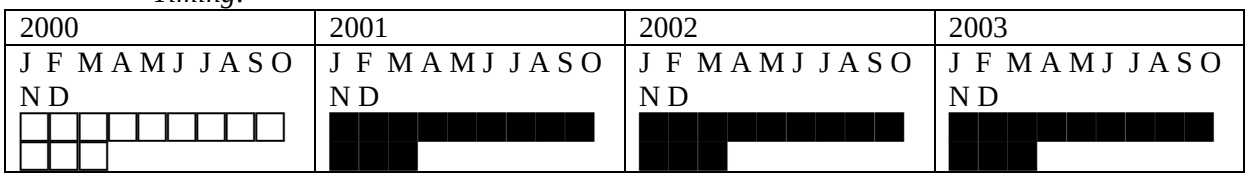
2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 4.2: Development of national and regional meta databases**

Rationale: the MEDI format and MEDI software will be used to develop national and regional metadata bases covering national data holdings (describing also the data sets recovered under sub-activity 4.1). One volunteer data centre will host the regional (African) metadatabase on a WWW site.

Budget: Contracts to data centres in regions at USD 3000/institution to develop national oceanographic meta databases in standard format. Costing excludes ODINEA member states as covered under ODINEA project. Costing: US$3000/country for 2001 (sub-total US$ 3000 x 11= US$ 33,000) , US$2000/country for years 2002 and 2003 (sub-total US$ 2000 x 11 = US$ 22,000).

Timing:

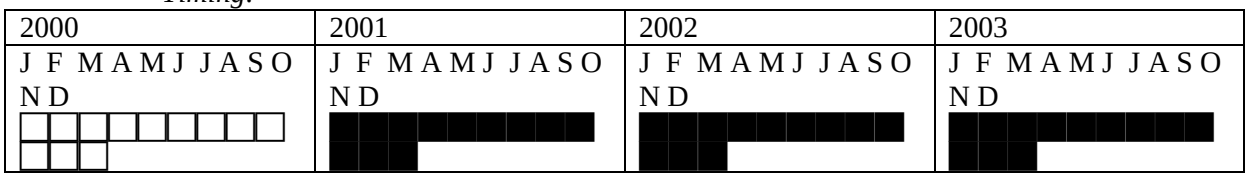


- **Sub-activity 4.3: Development and maintenance of national and regional data archive**

  Rationale: in order to ensure the easy availability of datasets for the preparation of data and information products a computerized database system will be developed at the national (and possibly regional) level.

  Budget: Contracts to data centres in regions at USD 3000/institution/year. Costing: years 2001,2002,2003: $54,000.

  Timing:



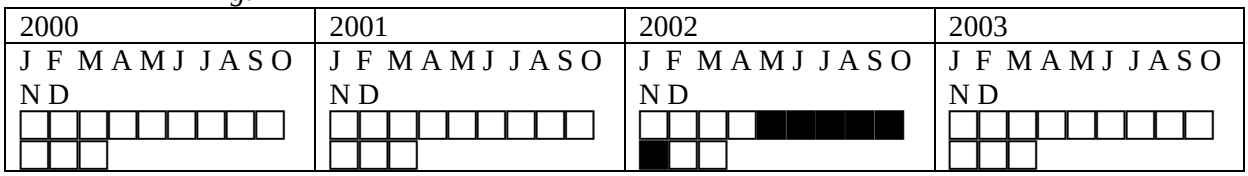
MAIN ACTIVITY 5:Assist in the development and dissemination of marine data and information products responding to the needs of a wide variety of user groups using national and regional networks

- **Sub-activity 5.1: Support for national workshops on data/information service/product requirements for the sustainable management of coastal resources and the coastal zone**

  Rationale: support will be provided for workshops at the national level to identify data and information product requirements based on national ocean programmes, ICAM plans and other relevant policy documents and policies.

  Budget: Support for national workshops at USD 3000/member state (18 member states). Cost: $3000 x 18 = $54,000 (years 2002,2003)

  Timing:



- **Sub-activity 5.2: Support to the RECOSCIX networks** ♦

  Rationale: the RECOSCIX networks will be provided with support to continue their 'traditional' information services (query handling, document delivery), as well as to assist in the effective dissemination of information products to end users.

  Budget: The costs will be in three parts- I) operational expenses RECOSCIX-WIO RDC Mombasa. Cost: $ 20,000 as from 2001; ii) operational expenses RECOSCIX-CEA RDC Abidjan (as from second year only as first year is covered by ODINAFRICA-I). Cost: $

36000 as from 2001; and iii) provision ASFA, cost for annual subscriptions at USD 2000/copy. Not necessary for first year as provided free of charge in trial period for IOCEA region and covered by ODINEA for ODINEA member states.

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 5.3: Support for development of data and information products**

Rationale: As a follow-up to sub-activity 5.1 support will be provided for the development of specific data and information products.

Budget: Support contracts for data centres at USD 2000/member state x 18 (as from 2001)= US$36,000

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

- **Sub-activity 5.4: Support for public awareness creation on the project services and products**

Rationale: support for specific activities by the data and information centres to publicize the products and services provided/developed by the project and the centres. Emphasis will be placed on development of products and services leading to self-support of the data and information centres.

Budget: Support contracts for data centres at USD 2000/member state x 18 (as from 2001)=US$36,000

Timing:

2000	2001	2002	2003
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D

BUDGET

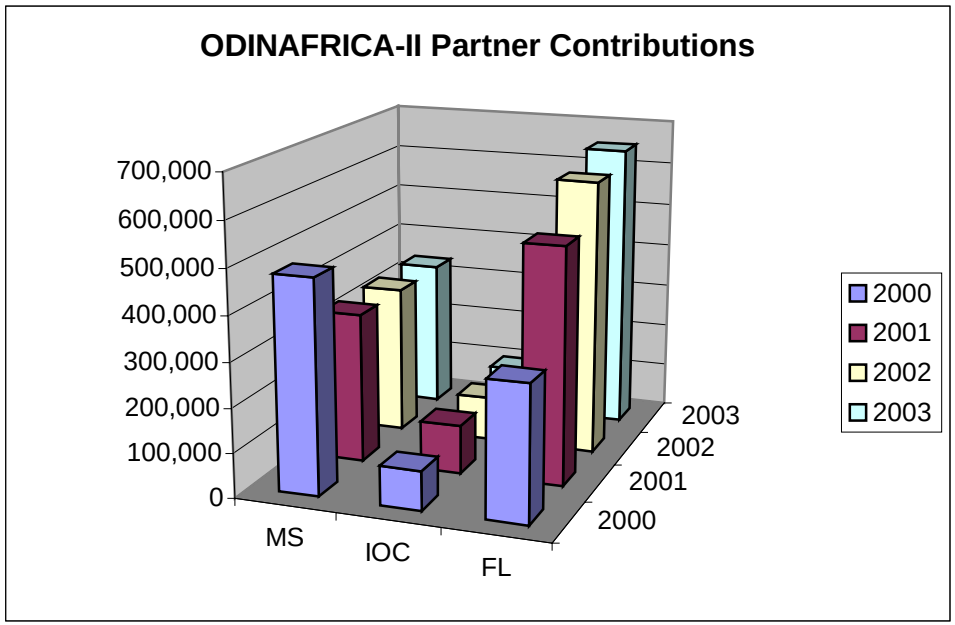
BUDGET OVERVIEW TABLE (US$)

	2000				2001			
	MS	**IOC**	**FL**	**TOTAL**	**MS**	**IOC**	**FL**	**TOTAL**
SA 1.1: Annual Project Management Workshop	0	20,000	38,600	**58,600**	0	10,000	48,600	**58,600**
SA 1.2: Project Staffing and Management costs	232,967	67,390	11,397	**311,754**	234,917	79,388	21,795	**336,100**
SA 2.1: National coordination meetings NODC est	0	0	12,000	**12,000**	0	0	12,000	**12,000**
SA 2.2: Formal establishment of NODC/DNA	0	0	0	**0**	0	0	0	**0**
SA 2.3: Provision of Hardware and Software Package	0	0	116,000	**116,000**	0	0	0	**0**
SA 2.4: Operational expenses data and information center	245,617	0	44,000	**289,617**	102,886	0	72,000	**174,886**
SA 3.1: Development of ODINAFRICA/IODE Resource Kit	0	0	24,000	**24,000**	0	20,000	4,000	**24,000**
SA 3.2: Regional Data Management Training Course	0	0	42,000	**42,000**	0	0	42,000	**42,000**
SA 3.3: Regl Data Mangmt Training Course Follow-up	0	0	0	**0**	0	0	20,000	**20,000**
SA 3.4: Regional Information Management Training Course	0	0	0	**0**	0	0	42,000	**42,000**
SA 3.5: Regl Information Mangmt Training Course Follow-up	0	0	0	**0**	0	0	20,000	**20,000**
SA 4.1: GODAR Participation	0	0	15,000	**15,000**	0	0	15,000	**15,000**
SA 4.2: Development of national and regional meta databases	0	0	0	**0**	0	0	33,000	**33,000**
SA 4.3: Development & maintenance national/regional data archive	0	0	0	**0**	0	0	54,000	**54,000**
SA 5.1: National workshops on data/information service/product requirements	0	0	0	**0**	0	0	0	**0**
SA 5.2: Support to the RECOSCIX networks				**0**				**0**
- operational expenses RECOSCIX-WIO services	0	0	0	**0**	0	0	20,000	**20,000**
- operational expenses RECOSCIX-CEA services	0	0	0	**0**	0	0	40,000	**40,000**
- provision ASFA	0	0	0	**0**	0	0	14,000	**14,000**
SA 5.3: Support for development of data and information products	0	0	0	**0**	0	0	36,000	**36,000**
SA 5.4: Public awareness creation on the project services & products	0	0	0	**0**	0	0	36,000	**36,000**
TOTALS	**478,584**	**87,390**	**302,997**	**868,971**	**337,803**	**109,388**	**530,395**	**977,586**

2002				2003				
MS	**IOC**	**FL**	**TOTAL**	**MS**	**IOC**	**FL**	**TOTAL**	**GRAND T**
0	10,000	48,600	**58,600**	0	10,000	48,600	**58,600**	**234,400**
236,367	79,388	21,795	**337,550**	237,817	79,388	51,988	**369,193**	**1,354,597**
0	0	12,000	**12,000**	0	0	12,000	**12,000**	**48,000**
0	0	0	**0**	0	0	0	**0**	**0**
0	0	0	**0**	0	0	0	**0**	**116,000**
99,786	0	72,000	**171,786**	98,856	0	72,000	**170,856**	**807,145**
0	10,000	2,000	**12,000**	0	10,000	2,000	**12,000**	**72,000**
0	0	56,000	**56,000**	0	0	56,000	**56,000**	**196,000**
0	0	20,000	**20,000**	0	0	20,000	**20,000**	**60,000**
0	0	56,000	**56,000**	0	0	56,000	**56,000**	**154,000**
0	0	20,000	**20,000**	0	0	20,000	**20,000**	**60,000**
0	0	15,000	**15,000**	0	0	15,000	**15,000**	**60,000**
0	0	22,000	**22,000**	0	0	22,000	**22,000**	**77,000**
0	0	54,000	**54,000**	0	0	54,000	**54,000**	**162,000**
0	0	54,000	**54,000**	0	0	54,000	**54,000**	**108,000**
			0				**0**	**0**
0	0	20,000	**20,000**	0	0	20,000	**20,000**	**60,000**
0	0	40,000	**40,000**	0	0	40,000	**40,000**	**120,000**
0	0	36,000	**36,000**	0	0	36,000	**36,000**	**86,000**
0	0	36,000	**36,000**	0	0	36,000	**36,000**	**108,000**
0	0	36,000	**36,000**	0	0	36,000	**36,000**	**108,000**
336,153	**99,388**	**621,395**	**1,056,936**	**336,673**	**99,388**	**651,588**	**1,087,649**	**3,991,142**

	2000	2001	2002	2003	TOTAL
Counterpart contributions Cooperating Member States	478,584	337,803	336,153	336,673	**1,489,213**
Contribution IOC	87,390	109,388	99,388	99,388	**395,554**
Contribution external expertise partners	*41,900*	*41,900*	*41,900*	*41,900*	***167,600***
Contribution Flemish Government project expenses	302,997	530,395	621,395	651,588	**2,106,375**
10% overhead for Flemish contribution	30,300	53,040	62,140	65,159	**210,638**
Requested from Flemish Government	**333,297**	**583,435**	**683,535**	**716,747**	**2,317,013**
TOTAL PROJECT BUDGET	**941,171**	**1,072,526**	**1,160,976**	**1,194,708**	**4,369,380**

(*) the contributions of external expertise partners are not included in the main table as these contributions are provided through the capacity building activitiesand their preparation



5. Implications of additional Partners on the budget

The current budget provides for 18 national Partners in Africa. This number is based on letters of confirmation of interest to participate in the project. (replies to the letter of August 1999). Since then, 2 additional requests to participate in the project have been received: Comores and Togo.

Inquiries have been received also from Namibia (currently not an IOC Member State) and Angola. The Workshop will be requested to recommend ways and means to respond to the requests received from Comores and Togo, and to any future request from other African IOC Member States, currently not included in the Partnerships.

Below we provide some information on the financial repercussions of additional Partners, utilizing project funds.

INCREMENTAL COST PER ADDITIONAL PARTNER					
	2000	**2001**	**2002**	**2003**	**Total**
SA 1.1: Annual Project Management Workshop	1,400	1,400	1,400	1,400	**5,600**
SA 1.2: Project Staffing and Management costs	0	0	0	0	**0**
SA 2.1: National coordination meetings NODC est	2,000	2,000	2,000	2,000	**8,000**
SA 2.2: Formal establishment of NODC/DNA	0	0	0	0	**0**
SA 2.3: Provision of Hardware and Software Package	8,000	0	0	0	**8,000**
SA 2.4: Operational expenses data and information centre	4,000	4,000	4,000	4,000	**16,000**
SA 3.1: Development of ODINAFRICA/IODE Resource Kit	0	0	0	0	**0**
SA 3.2: Regional Data Management Training Course	1,400	1,400	1,400	1,400	**5,600**
SA 3.3: Regl Data Mangmt Training Course Follow-up	0	0	0	0	**0**
SA 3.4: Regional Information Management Training Course	0	1,400	1,400	1,400	**4,200**
SA 3.5: Regl Information Mangmt Training Course Follow-up	0	0	0	0	**0**
SA 4.1: GODAR Participation	0	0	0	0	**0**
SA 4.2: Development of national and regional meta databases	0	3,000	2,000	2,000	**7,000**
SA 4.3: Development & maintenance national/regional data archive	0	3,000	3,000	3,000	**9,000**
SA 5.1: National workshops on data/information service/product requirements	0	0	3,000	3,000	**6,000**
SA 5.2: Support to the RECOSCIX networks	0	1,000	1,000	1,000	**3,000**
- provision ASFA	0	2,000	2,000	2,000	**6,000**
SA 5.3: Support for development of data and information products	0	2,000	2,000	2,000	**6,000**
SA 5.4: Public awareness creation on the project services & products	0	2,000	2,000	2,000	**6,000**
TOTALS	**16,800**	**23,200**	**25,200**	**25,200**	**90,400**

Note: the cost does not take into consideration the 'in kind' counterpart contributions .
Accordingly, in order to enable Comores and Togo to participate fully in the Project two options can be identified:

- seeking US$ 180,800 from other donors
- reducing the individual budget items throughout to incorporate the additional financial requirements

The Workshop will be requested to recommend an action in this regard

ANNEX V

NATIONAL ACTIVITY ENVELOPES FOR PARTICIPATING MEMBER STATES

BENIN

by Mr Roger Djiman
Permanent Secretary of the National Oceanographic Committee

INTRODUCTION

The need to develop a capability for the gathering, analysis and distribution of data and information on the oceans and the coastal zone of Benin was one of the subjects developed in National Agenda 21.

The southern shoreline of Benin extends along 125 km of the Gulf of Guinea (Atlantic Ocean). Benin does not possess a real national centre for ocean research. To remedy this situation, the country has established a national oceanographic committee working with the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

This committee was established by ministerial decree dated 2 September 1988 and is placed under the authority of the Benin Centre for Scientific and Technical Research (CNO/CBRST). Within the committee, a number of oceanographic activities are carried out by multidisciplinary teams.

Despite these efforts, the small amount of ocean data in existence is poorly maintained and is unusable.

For this reason, Benin has warmly welcomed the idea of the ODINAFRICA-II project and fully subscribes to it with a view to a fruitful exchange of experience with other countries of Africa and elsewhere.

MAIN ACTIVITIES

1) SETTING UP AND OPERATION OF A BENIN NATIONAL CENTRE FOR THE MANAGEMENT OF OCEANOGRAPHIC DATA AND INFORMATION

- **Organization of two or three national meetings or workshops on the coordination of information**

(All structures producing information and potential users of information will be invited)

- **Official creation of the national centre for oceanographic data**

(The experience of the National Oceanographic Committee, set up by decree following several consultation meetings, should be useful to us)

- **Purchase of appropriate hardware and software**

Operating expenses of the Centre (telecommunications, Internet access, office supplies, payment of overtime)

Estimated cost I: US $60,000 per year over three years.

2) PARTICIPATION IN REGIONAL TRAINING COURSES IN DATA MANAGEMENT AND FOLLOW-UP

- Selected researchers and technicians will participate in the courses offered, as appropriate.

Estimated cost II: US $30,000

3) SETTING UP AND MAINTENANCE OF NATIONAL OCEANOGRAPHIC DATABASES

- Inventory of existing physical and biological ocean data scattered over various national departments, structures and projects

- Inventory of equipment and human resources available nationally
- Updating of the framework study on traditional methods of fishing
- Establishment of a permanent coastal site for the observation and recording of the physical parameters of sea water (temperature, salinity, etc.)
- Control of the quality, formatting, storage and treatment of the oceanographic data collected

- Development and distribution of marine data and information

- Popularization of the products thus obtained. Raising public awareness of the services offered by these products.

Estimated cost III: US $85,000.

TOTAL COST: I + II + III = (60,000+30,000+85,000) = US $175,000

National contribution: US $92,100

Desired counterpart contribution from the project: US $91, 925

CAMEROON

by Dr Jean Folack, National Coordinator
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INTRODUCTION

Cameroon has responded favourably to the invitation of the Executive Secretary IOC to participate in the ODINAFRICA-II project (Ocean Data and Information Network for Africa).

Cameroon, it is true, has fallen behind in the management of ocean data and information. The Research Station for Fisheries and Oceanography, Limbe (SRHOL) of the Agricultural Research Institute for Development (IRAD) could play a decisive part at the national level as well as at the level of the Central African subregion, because it is the only national station for oceanographic research in the region. This subregion includes several coastal States such as Angola, Cameroon, Congo (Brazzaville), Gabon, Equatorial Guinea, the Democratic Republic of the Congo (with only 47 km of coastline) and Sao Tome and Principe.

This document describes the main activities to be pursued in Cameroon during execution of the project. It describes the present state of management of oceanographic data and information in Cameroon, priority activities and the timetable for their execution, the budget requested from IOC and Cameroon's own counterpart contribution. Conditions for the administrative management of the project in Cameroon will be defined by the Director-General of the Agricultural Research Institute for Development (IRAD) according to the directives and decisions originating at the first planning workshop of this project, held at Dakar from 2 to 5 May 2000 and attended by all 20 countries participating in this pilot phase.

MANAGEMENT OF OCEANOGRAPHIC DATA IN CAMEROON

In Cameroon, management of marine and coastal data and information is still at the embryonic stage (Table 1.), a state of affairs which has motivated Cameroon to participate in the ODINAFRICA-II project.

Table 1. **Some examples of management of oceanographic data in Cameroon**

Types of parameters	**Data gathering method**	**Processing method**	**Conservation and dissemination**
Temperature, salinity, pH	Reversing thermometer/canister	Direct readings: thermometer, salinometer, pH meter	Diskettes, publication, annual reports, workshops, seminars, conferences
Nutritional salts	Samples taken *in situ*	Analysis - Technicon and others	
Heavy metals, pesticides	Samples taken *in situ*	Atomic Absorption Spectrophotometer (AAS)	
Solid and liquid effluents	Inventories at source (factories)	Calculation according to formulae	
Chlorophylls	Samples taken *in situ*	Colorimetry	Diskettes, publication, annual reports, workshops, seminars, conferences
Biomass of phytoplankton	Plankton net	Utermöhl et al.	
Primary production	Incubation *in situ*	Oxygen count	
Evaluation of stocks	Measurement on disembarkation	Holden and Bravington (1992) et al.	
Growth	Measurement on disembarkation	SLCA, ELEFAN, etc.	
Mortality	Measurement on disembarkation	Pauly (1980) et al.	
Type and life expectancy of fishing devices	Surveys, questionnaires, interviews, participative approach	Processing by computer program	Diskettes, publication, annual reports, workshops, seminars, conferences
Replacement cost of equipment			

Types of parameters	Data gathering method	Processing method	Conservation and dissemination
Number and type of fishing devices			
Nationality, sex and age distribution of fishing personnel			
Type of canoes			
Number de camps set up			
Size of crew			
Sharing system			

SLCA: Structure Length Composition Analysis ; ELEFAN: Electronic Length Frequency Analysis

PRODUCTS AND SERVICES

Table 2. gives some examples of types of oceanographic data existing in Cameroon in the area of oceanographic data exchange.

Table 2. **Some examples of types of oceanographic data and products in Cameroon**

Type of data	Institution gathering data	Type of product	Principal users
Air temperature, wind speed, pluviometry	ASECNA, ONPC, DMN	Climate maps	Airlines, shipping companies
Height of tides	ONPC	Tide tables	Shipping companies, fisheries
Depth of water	ONPC/INC	Bathymetric charts	Shipping companies, fisheries, national navy
Temperature, salinity	SRHOL	T-S diagram	Scientists
Marine pollution	SRHOL, SPM, IMPM	Pollution maps	Scientists, the public, industry, etc.
Fishing	SRHOL, (MINEPIA)	Fishing area maps, disembarkation centres, age on first capture, etc.	Fishing personnel, fisheries managers, scientists, etc.

ASECNA: Agency for Air Safety in Africa and Madagascar
ONPC: Cameroon National Port Authority
DMN: National Meteorological Office
INC: National Cartographic Institute
SPM: Provincial Mining Authority
IMPM: Institute of Medical Research and Medicinal Plants

MINEPIA: Ministry of Livestock, Fisheries and Animal Husbandry
SRHOL: Research Station for Fisheries and Oceanography, Limbe

PRIORITY ACTIVITIES

Having regard to the present state of the management of oceanographic data in Cameroon, the principal national activities to be conducted under the project will be the following:

Activity 1. Organization of national workshops bringing together all national organizations and institutions involved directly or indirectly in collecting oceanographic data and information.
Timetable: July-August 2000, 2001, 2002 and 2003

Activity 2. Preparation of a national directory of potential holders of oceanographic data and information; updating of the directory during the lifetime of the project.
Timetable: October 2000, 2001, 2002 and 2003

Activity 3. Creation of a national oceanographic data centre (NODC) or Designated National Agency (DNA). The purpose here is to strengthen capacities in terms of equipment and staff training at the Research Station for Fisheries and Oceanography at Limbe (SRHOL), and to have it recognized by IOC as an NODC.
Timetable: November-December 2000

Activity 4. Introductory training and further training of staff assigned to the ODINAFRICA-II project using the set of teaching materials provided by the Project. Recourse will be had to the services of a national expert to help these members of staff make better use of this teaching kit.
Timetable: February 2001, 2002 and 2003

Activity 5. Compilation of all marine and coastal data and information on Cameroon in existence in foreign countries. This activity requires such data to be brought back to Cameroon and digitized.
Timetable: 2001-2002

Activity 6. Establishment of a national database of metadata. Recourse will be made to the services of a national expert to help staff assigned to the project make better use of the MEDI format and software to set up database.
Timetable: 2001-2003

Activity 7. Setting up of a computerized system of databases: creation and maintenance of national archives. Use will be made of the services of a national expert.
Timetable: 2001-2003

Activity 8. Organization of a national workshop on needs for products and services in the area of marine and coastal data and information.
Timetable: September-October 2002

Activity 9. Development of certain coastal and marine data and information products.
Timetable: 2001-2003

Activity 10. Raising awareness among the public and potential users concerning the services and products offered under the project.
Timetable: 2001-2003

BUDGET

IOC contribution

The contribution needed from IOC to execute the project in Cameroon is detailed in Table 3 by activity, numbered from 1 to 10, to which must be added hardware and software costs (US $4,000) and operating costs (US $4,000 per annum). These operating costs include telephone, Internet and e-mail charges, the overtime costs of staff assigned to the project, and maintenance costs for equipment. The following are not included in this budget: participation of the coordinator in annual project meetings and participation of representatives of Cameroon in training workshops, since this budget is managed directly from the project head office in Paris.

Table 3. **IOC contribution to the ODINAFRICA-II project in Cameroon**

Activity no.	**Cost in US $**				
	2000	**2001**	**2002**	**2003**	**Total**
1-2	2,000	2,000	2,000	2,000	8,000
4	-	2,000	2,000	2,000	6,000
5(GODAR)	-	3,000	3,000	-	6,000
6	-	3,000	3,000	3,000	9,000
7	-	3,000	3,000	3,000	9,000
8	-	-	2,000	-	2,000
9	-	2,000	2,000	2,000	6,000
10	-	2,000	2,000	2,000	6,000
11.Hardware/software	4,000	-	-	-	4,000
12. Operating costs	4,000	4,000	4,000	4,000	16,000
TOTAL	**10,000**	**21,000**	**23,000**	**18,000**	**72,000**

THE COUNTERPART CONTRIBUTION OF CAMEROON TO THE PROJECT

The counterpart contribution of Cameroon will consist of furnished offices, the salaries of staff members paid by the Government and assigned to the project, and water and electricity costs as indicated in Table 4.

Table 4. **Estimated breakdown of the Cameroon counterpart contribution based on the project model supplied**

Staff	**Year 2000**	**Year 2001**	**Year 2002**	**Year 2003**	**Total**
Coordinator	3,000	5,000	5,000	5,000	18,000
Technical staff (2)	3,000	6,000	6,000	6,000	21,000
Support staff (3)	1,500	3,000	3,000	3,000	10,500
Offices	1,200	1,200	1,200	1,200	4,800
Office furniture	2,800	-	-	-	2,800
Electricity, water	1,000	1,000	1,000	1,000	4,000
Total	**12,500**	**16,200**	**16,200**	**16,200**	**61,100**

CONCLUSION

The ODINAFRICA-II project will enable the Agricultural Research Institute for Development (IRAD), through its Ekona Centre, and the Research Station for Fisheries and Oceanography, Limbe (SRHOL) to undertake the management of oceanographic data and information in Cameroon, including:

- The development and conservation of national archives of oceanographic data and information
- Regular production of a directory and inventory of these data
- Availability to users of these data and information in an exploitable format
- Regular quality control of data and information in order to identify possible errors
- Functioning as a reference centre for other national and international institutions for the exchange of oceanographic data and information.

BIBLIOGRAPHY

Holden, S. and Bravington, M.V. 1992. The LFDA package length-frequency distribution analysis. Version 3.10. Produced by MRAG Ltd, 27 Camden Street, London W8 7EP, UK

Pauly, D. 1980. On the relationship between natural mortality, growth parameters and mean environmental temperature in 175 fish stocks . J. Cons. CIEM. 39(3): 175-192

Utermohl, 1958. Zur Vervollkommung der quantitativen phytoplankton-Methodik. Mitt.Int.Ver.theor. angew Limnol, Vol. 9:1-38, pl.1

COMOROS

PROJECT OBJECTIVES

The general objective is the setting up of a centre for oceanographic data in the Comoros.

INTERVENTION OBJECTIVES

- Analyse and present data in a form which can be easily understood and used by all partners with a view to integrated coastal area management;
- Make available to decision-makers and users an up-to-date oceanographic database;
- Develop a network for oceanographic measurement;
- Disseminate marine data and information products corresponding to the needs of a wide variety of users by means of national networks (coral reefs, ecotoxicology, meteorology) and regional and international networks.

EXPECTED RESULTS

- Make available quantitative and qualitative data on nutritional and mineral resources and their renewal rates;
- Make available data on the distribution of primary productivity of territorial waters;
- Understand how human activity interacts with the ocean environment and the dangers to which we expose oceans through the disturbance caused by this activity;
- Identify indicators of the state of health of our fishing resources;
- Offer services suited to the needs of users (fisheries, tourism) on the basis of efficient use of new information technologies (Internet, GIS).

ACTIVITIES PLANNED

- *Equipment of the office (contribution by the State)*

The laboratory will be housed by the National Centre for Scientific Research and Documentation (CNDRS). The building and furniture will be contributed by the State.

- *Setting up of a marine biology laboratory*

This laboratory will have to be provided with field equipment for sampling campaigns, and apparatus for measurement and analysis, data capture and data output from the field excursions.

- *Organizing the work*

Phase one consists of choosing hydrological stations for the measurement of temperature, salinity, depth and dissolved substances (nutritional substances and oxygen).

Later, samples of surface water and deep water are to be taken (requiring diving) as well as samples of benthos for the purposes of estimating biomass.

The second phase, in the laboratory, will consist of analysis, capture and interpretation of the data collected.

The final phrase is the integration of these data into a GIS database.

PARTNERS

Preliminary studies have already been carried out by departments which exploit the marine environment or which have worked on oceanography campaigns (research on the coelacanth, fisheries, etc.) and the involvement on the part of these services in the project will be beneficial. To capitalize on this research, the following institutions will be the main partners in the project: the National Centre for Scientific Research and Documentation (CNDRS), INRAPE, DGE, AIDE (the focal point of IOC and CORDIO where coral reefs are concerned), environmental programmes in progress, associations such as WIOMSA (which is currently financing certain marine research projects), member countries of ODINAFRICA-II and IOC.

IMPLEMENTATION

The project will be implemented by a multidisciplinary committee consisting of oceanologists, biologists, geologists, fisheries experts, specialists in geographical information systems, etc.

The project will be led by a national oceanology expert, Mr AHMED Abdoulkarim, who gained his Master's degree in oceanology from the Endoume marine station (under the local education authority of Aix-Marseille II). He is currently a member of the national coral reefs network and a consultant on current environmental programmes. He also works for the CNDRS.

All these executives belong to the institutions mentioned as partners.

RESOURCES

Human Resources

3 laboratory technicians, qualified in deep-sea diving in order to be able to take samples and analyse the data collected;
1 technician for the maintenance of laboratory equipment;
1 IT expert;
1 secretary (contributed by the Comoros Government).

To achieve the desired results, a project such as this must be executed on a relatively wide scale in order to ensure its continuity. It is therefore necessary to envisage special training in standard IOC methods:

- Sampling and data analysis methods
- Data capture methods.

In order that these data may ultimately be integrated into a worldwide database, this training will be needed for the three laboratory technicians and the maintenance technician. Training will also be necessary for the maintenance function.

Material resources

- Deep-sea diving equipment (to be contributed by the Comoros Government)

- 4 air cylinders
- 4 diving suits
- 4 regulators
- 4 sets of flippers, masks and snorkels
- compressor (INRAPE)

Boat (to be contributed by the Comoros Government)
Motor (projected).

- Laboratory equipment
- Mercury thermometer for fieldwork
- Refractometer for fieldwork
- 30 cm diameter Secchi disk
- Chromatograph
- Spectrophotometer
- Glass items (separatory funnels, graduated cylinders, test tubes, pipettes)
- Culture dishes

- Various reagents.

- Operations
- Office and laboratory supplies (projected)
- Communications expenses (projected)
- Travelling expenses (projected)
- Indemnities for the project leader, technicians and IT experts (projected)

PROJECT EVALUATION

At the end of the project, an evaluation expert will be asked to analyse the results obtained and to make recommendations for the post-project period. A mid-term evaluation would be desirable.

COST

It is impossible for us, given the time factor, to evaluate precisely the cost of the project. This would require the assistance of an appropriate expert.

COTE D'IVOIRE

by SANKARE Yacouba
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and Coordinator of the RECOSCIX-CEA project
Oceanological Research Centre (CRO), 29, rue des Pêcheurs
BPV 18 Abidjan (Côte d'Ivoire)

Following the recommendations of the first workshop on planning the second phase of the Ocean Data and Information Network for Africa (ODINAFRICA-II), I send you herewith the activity project and national budget for Côte d'Ivoire.

WHAT ARE THE CRO'S NEEDS AS REGARDS THE MANAGEMENT OF OCEANOGRAPHIC DATA?

The needs of the Oceanological Research Centre as regards the management of oceanographic data can be summarized as follows:

- technical assistance;
- financial assistance;
- training in data management;
- help with the management and distribution of data and documents.

WHAT ACTIVITIES DOES THE CRO EXPECT TO PUT IN PLACE UNDER THE ODINAFRICA PROJECT?

Activity 1: Organize visits to national organizations and send them invitations to participate. Identify the national organizations involved in the management of oceanographic data (data gathering, processing and distribution).

Activity 2: National workshop to identify national organizations which are potential contributors.

Activity 3: Identify personnel.

- Appoint a person to be responsible for the project in Côte d'Ivoire. Mr Amon Kothias Jean-Baptiste has been selected to perform this task.
- Appoint a national coordinator. Mr Sankaré Yacouba has been selected to perform this task.
- Appoint a national technical coordinator, i.e. a technical supervisor in charge of the technical coordination of oceanographic data management at the national level. Ms Séry has been selected for this task.
- Appoint technical managers. We expect there to be one technical manager per organization (note: this assumes that each organization gathers specific data).
- Set up a monitoring and evaluation committee to be the scientific guarantor of the oceanographic data gathered under the project. As such, the committee keeps a watch on and regularly evaluates the progress of work undertaken in the framework of the project. It will comprise, at national level, five (5) members, including one researcher and one teacher.

Activity 4:

- Set up the National Oceanographic Data Centre for Côte d'Ivoire (NODC-CI).
- Identify an organization on which to base the NODC-CI. The Ocean logical Research Centre (CRO) is an obvious candidate, since it already possesses an office set up for the ODINAFRICA project. However, it will be necessary to strengthen its capacities in terms of equipment and staff training.
- Identify equipment requirements specific to the NODC-CI.
- Identify equipment to be purchased.
- Purchase equipment.

Activity 5:

- Introductory staff workshop and staff training
- Training in data management
- Training in information management.

Activity 6:

List, gather and describe data in existence at the national level (important: must include verification of accuracy of data before archiving).

Activity 7:

List, gather and describe data in existence on Côte d'Ivoire at the international level (important: must include verification of accuracy of data before archiving)

Activity 8:

Compile, digitize and evaluate data, and [publish on] the Internet.

Activity 9: Products

- Computerized database system
- National database
- National database of metadata
- Directory of national organizations possessing marine data or data possibly concerning the sea
- Catalogue of sources of marine data (whether available or not)
- CD of oceanographic data
- National plan for the management of marine data, including details of:
  - list of disciplines

- type of data (surveillance, research, climatological, synoptic, etc.)
- type of presentation (tables, graphs, measurements, maps, etc.)

Activity 10: Information workshop

- To inform and increase awareness on the part of scientists
- To inform and increase awareness on the part of other users

Activity 11: Distribution of products (Internet, etc.)

- through traditional channels (papers, etc.)
- through modern channels (websites, the Internet etc.)

The following table shows proposed activities, products and timing for the management of oceanographic data in Côte d'Ivoire.

Activities/Products	**2000**	**2001**	**2002**	**2003**
1. Visits to national organizations and letters of invitation	+			
2. National workshop	+			
3. Identification of personnel	+			
4. Setting up of NODC-CI	+			
5. Introductory and training workshops		+	+	
6. Inventory, gathering and description of national data		+	+	+
7. Inventory, gathering and description of international data		+	+	
8. Compilation et digitization of data		+	+	+
9. Products		+	+	+
10. Information workshop		+	+	
11. Distribution of products		+	+	+

What are the financial needs of the CRO to enable it to carry out this work over four years?

Contribution of IOC and the Government of Flanders to the ODINAFRICA-II Côte d'Ivoire project (in US $)

Activities/Products	**2000**	**2001**	**2002**	**2003**	**Total**
1. Visits to national organizations and letters of invitation	**500**	**-**	**-**	**-**	**500**
2. National workshop	**3,000**	**-**	**-**	**-**	**3,000**
3. Identification of personnel	**-**	**-**	**-**	**-**	**-**
4. Setting up of NODC-CI	**-**	**-**	**-**	**-**	**-**
5. Introductory and training workshops		**4,000**	**4,000**	**-**	**8,000**
6. Inventory, gathering and description of national data	**-**	**1,000**	**1,000**	**1,000**	**3,000**
7. Inventory, gathering and description of international data	**-**	**3,000**	**2,000**	**2,000**	**7,000**
8. Compilation et digitization of data		**3,000**	**3,000**	**3,000**	**9,000**
9. Products		**2,000**	**2,000**	**2,000**	**6,000**
• national and regional databases for metadata	**-**	**3,000**	**1,000**	**1,000**	**5,000**
• GODAR	**-**	**-**	**4,000**	**-**	**4,000**
10. Information workshop					
11 – Distribution of products		**2,000**	**2,000**	**2,000**	**6,000**
• internet		**2,000**	**2,000**	**2,000**	**6,000**
• communication	**2,000**				
12 – NODC-CI operating costs		**6,000**	**6,000**	**6,000**	**20,000**
13 – Operational supplies	**2,000**				
14 – Equipment	**10,000**	**2,000**	**2,000**	**2,000**	**8,000**
GRAND TOTAL					**10,000**
					95,500

The Côte d'Ivoire counterpart contribution is that indicated in the project analysed in Dakar during the first planning workshop of the ODINAFRICA-II project.

GABON

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NATIONAL PRIORITIES

Gabon has fallen considerably behind in the promotion of marine and coastal sciences. Indeed, it possesses no oceanographical research centre, and therefore the gathering and management of data and information on the state of the ocean and coastal areas pose enormous problems to users.

Taking advantage of the ODINAFRICA-II project, the following actions have been launched.

Setting up of a coastal observatory

The purpose of this observatory is to improve the quality of planning and management of marine and coastal resources by helping the Government of Gabon to tackle the following problems:

- low incidence of sharing of existing environmental knowledge and information;
- inaccuracy of information used as a basis for taking decisions concerning the marine environment and coastal areas;
- considerable gaps in both basic and specialist information on biological and natural resources;
- limited national capabilities for the production and management of oceanographic data and information.

Its mission will be to:

- organize surveillance of marine and coastal areas;
- provide a technical and participative framework within which marine and coastal research will be organized;
- provide a cognitive framework for the constraints and opportunities afforded by coastal resources;
- analyse existing data and gather new data;
- distribute the results of analysis in statistical form;
- distribute complete sets of information which can be immediately used by local authorities;
- publish reports to raise awareness of the need to protect coastal zones.

The long-term aim is to mobilize all national organizations concerned by marine and coastal areas, and to encourage them to make plans for active interventions linked to risks of natural disaster and pollution.

The tasks in connection with risks of pollution include compiling:

- an inventory of flora and fauna;
- vegetation maps;
- an atlas showing environmentally sensitive areas on the Gabonese coast.

Long-term management of fisheries resources

In conformity with the objectives of the ODINAFRICA-II project, Gabon's needs in setting up a national oceanographic data and marine information centre take account of:

THE CONTEXT OF DATA MANAGEMENT AT THE NATIONAL LEVEL

Gabon occupies a strategic position in the Gulf of Guinea in relation to areas where stocks of tuna congregate during their large-scale migrations within the Central Eastern Atlantic.

Data and information on these resources and their environment are held by foreign fleets operating in the area.

As a coastal country, Gabon possesses no management tool enabling it to pursue the sustainable development of these resources or to monitor changes in the environment.

Thus, Gabon desires, within the framework of the ODINAFRICA-II project:

- **to have at its disposal a framework which will enable the country to gather data and information for better management of the marine environment and coastal areas;**
- that these data should be stored, computerized and archived at some central point;

- that specific training for these tasks be given to the nation's scientists;
- to have access via the Internet to data and information available at IOC;
- to receive help in accessing oceanographic data and information on Gabon which is scattered around the world.

ACTIVITIES IN PROGRESS

- Compilation of a list of national experts able to contribute to the promotion of marine and coastal research and to help implement the ODINAFRICA-II project;

- Preparation of a bibliography at the national level and in the centres of ORSTOM, BRGM (the French bureau for geological and mining research), SORBONNE, IFREMER (the French Institute of Research and Exploitation of the Sea) and FAO.

GHANA

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INTRODUCTION

The Republic of Ghana has 550 Km of coastline with a narrow continental shelf extending outward to between 25 Km in the East and 35 Km in the West except off cape coast where it reaches up to 80 Km The main primary activity of the coastal zone is fishing. Other activities of importance include agriculture, oil and gas exploration, salt production, recreation and tourism as well as waste disposal- domestic and industrial. Different kinds of Oceanographic data are collected by some of the 17 members Institutions of the Ghana National Committee for the Intergovernmental Oceanographic Commission, the body that co-ordinates oceanographic research in Ghana. The most important of these institutions is Fisheries Research and Utilisation Branch (FRUB) of the Fisheries Department of the Ministry of Food and Agriculture (the current name of FRUB is Marine Fisheries Research Division : MFRD). MFRD has been collected oceanographic data since its inception in 1962. Available data include temperature, salinity current, wind characteristics, oxygen, plankton, water turbidity and fish stocks. Most of data except data on fish stocks are in manuscript form. Steps are being taking to computerize all the data but very little progress has been made.

Apart from national user such as the Government Banks, individual fishermen and consultants, various data are sent to FAO, ICCAT and IOC World Data Centre A.

Other institutions also collect oceanographic data research, regulatory and or commercial purposes. The latter includes the National Petroleum Corporation, Meteorological Services Department and Survey Department and the former include universities and the Environmental Protection Agency (EPA). See tables 1. and 2.

Due to lack of facilities for Open Ocean research the activities of some of the research institutions are restricted to the coastal zone ie the immediate inshore areas and associated wetlands lagoons and estuaries. Data generated by such institutions in resent times are at least stored on diskettes etc …

From the above account that various research programmes have generated large amount of data and information that should be properly managed to give maximum benefit to all the end-users. However Ghana lacks the capacity to do this on her own due to lack of adequate trained manpower

and equipment. Ghana therefore fully supports the ODINAFRICA II Project whose objective is to build the capacity of the various countries involved to be able to manage their data and information.

ACTIVITIES

In order to achieve Ghana's National Priorities, the following activities are planned.

1. Organization of one national workshop on oceanographic and coastal data collection involving all institutions that are known to collect data
2. Identification of the various types od data held by institutions as well as individuals
3. Identification of possible DNA's and NODC/Establishment of DNA's/NODC's under IOC guidelines
4. Identification of possible co-ordinating body for the project
5. Building of capacity of DNA's/NODC
   - Manpower development
   - Equipment
6. Collection evaluation and archiving of all available data- national and international to create data and meta-database for Ghana. This can be done with the help of a national or regional experts
7. Organization of national workshop to inform scientists and the public of available data and information and identification of needs of end-users
8. Repackage data and information into products with the help of national or foreign experts
9. Sensitization of all end-users about the available products etc…
10. Participate in annual workshop on management of the project.

EXPECTED OUTPUT

- A functional NODC established
- A directory of national oceanographic scientists produced
- A directory of oceanographic institutions produced
- Oceanographic data and meta database developed
- Oceanographic data and meta-data made available to national and regional scientists

CONCLUSION

It is expected that is successfully implement the ODINAFRICA II project shall help build the capacity of Ghana to be able to efficiently manage her coasted and oceanographic data for the protection and sustainable management of the coastal zone.

Table 1**: Data Situation (FRUB has the following data in store)**

Type of data	Year	Metod of storage
a) Sea Surface Temperature	1962 to date	Processed data files and charts
b) Wind speed and direction	1973-1995	Raw data files
c) Current speed and direction	1973/1974	Raw data files/publications
d) Oxygen (dissolved)	1964/1995	Processed data files, publications
e) Salinity	1963 to date	Processed data files, publications
f) Zooplankton	1966/1995	Processed data files, publications
g) Phytoplankton systematics, chlorophyll	1973 to 1988	Processed data files, publications
h) Primary production i) Fish species	1963 to date	Processed data files, publications, Diskette
j) Fish Production	1972 to date	Processed data files, publications, diskettes
k) Stock Assessment (trawling & acoustic Surveys)	1963 to date	Processed data files, publications
Note: 1. There are gaps in the time series for environment data due to breakdown of Research Vessel; Note 2: The surveys are irregular		

Table 2**: Data situation in other organizations**

Type of data	Name of Institution	Year	Method of Storage
Plankton	Department of Oceanography & Fisheries, UG	1991 to date	Processed data files and publications; diskettes.
Seaborne Gravity & Magnetic data	Ghana National Petroleum Corporation	1967/1990	Raw field tapes, Processed magnetic tapes and paper copies of processed tapes (stored with foreign data management company in the U.K.
Sea level changes	Survey Department	1927	Publications; Data sent to Permanent Service for Mean Sea Level, U.K.
Bathymetric data	Ghana Ports & Harbours Authority		Resource maps
Ambient temperature, humidity and rainfall	Meteorological Department		
Industrial effluent discharge	Environmental Protection Agency	1996 to date	

Table 3**: Budget (Ghana Counterpart Funding)**

BUDGET ITEM	YEAR			
	2000	2001	2002	2003
STAFF				
Head of Data center	2500	3000	3000	3000
Technical Support Staff	4000	4000	4000	4000
Secretarial & General Support Staff				
INFRASTRUCTURE				
Office space	500	500	500	500
Office furniture	2000			
Computer equipment	5000			
Computer operation & maintenance	1000	1100	1200	1200
Electricity, water & air-conditioning	2500	2750	3000	3000
Telephone/fax equipment	2000			
Telephone/fax usage	120	120	120	120
Running & maintenance of vehicle	1500	1500	1500	1500
SUBTOTALS	21120	12970	13320	13320

TOTAL US $60, 730

GUINEA

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PRIORITY NATIONAL ACTIVITIES IN MARINE AND COASTAL RESEARCH

The overall package of national activities concerns current priorities in marine and coastal research in the Republic of Guinea. These priority objectives will be achieved through the execution of certain research programmes which have either been completed or are in progress, by subject groups at CERESCOR (the Conakry-Rogbané centre for scientific research) in collaboration with other national organizations with interests in the marine sciences.

In this paper, we present the overall objectives of the constituent parts of the different programmes – on the one hand, those on marine, coastal and coastal environmental research, and on the other, the assistance anticipated from the ODINAFRICA-II project to enable the CERESCOR NODC to improve its oceanographic data management activities. As a prerequisite, the NODC's capabilities need to be strengthened.

These various programmes have a role in the setting up of a transverse programme which aims to create databases, to keep them up to date, and to identify and exploit opportunities for the strengthening of the NODC's data management capabilities (digital, documentary, etc.)
Marine research

This programme, on the bioproductivity of the coastal area, consists of five parts:

Overall objectives:

To improve knowledge of the various hydrophysical and hydrochemical processes which fuel biological productivity in the economic area of Guinea. To provide scientific assistance for the

maintenance of balance in the ecosystem, and thereby to help qualify the exploitation of fishery resources.

The contribution of Guinea: infrastructure, laboratory equipment, human resources (researchers and support staff) , micro-subventions for the execution of specific parts of the programme.

Anticipated assistance from the ODINAFRICA-II project

Financial assistance for the continuation and improvement of data gathering and archiving as part of a general drive to build up a store of marine information: data gathering, updating of existing databases (oceanographic, digital and documentary).

Cf. 6.2.2. MAIN ACTIVITY 2, Sub-activity 2.4
Coastal research:

This programme on integrated coastal management consists of five parts:

Overall objective:

To provide a multidisciplinary study of various sites in the coastal ecosystem with a view to improving knowledge of the functional links between the various components. To formulate the foundations of a process of integrated coastal area management in order to achieve sustainable development.

The contribution of Guinea: infrastructure, laboratory equipment, human resources (researchers and support staff), micro-subventions for the execution of specific parts of the programme.

Anticipated assistance from the ODINAFRICA-II project

Additional financial assistance

- for missions to gather the data produced by multidisciplinary studies (either completed or in progress) at various sites of the coastal ecosystem;
- for the creation of databases on coastal issues: digitized and documentary information on various sites.

Cf. 6. MAIN ACTIVITY 2, Sub-activity 2.4
Research on coastal environments:

This ten-part programme concerns the environment of the coastal area.

The contribution of Guinea: infrastructure, laboratory equipment, human resources (researchers and support staff), micro-subventions for the execution of specific parts of the programme.

Anticipated assistance from the ODINAFRICA-II project:

Additional financial assistance

- for missions to gather data produced by environmental studies (either completed or in progress) at various sites of the coastal ecosystem;
- for the creation of databases on the coastal environment: digitized and documentary information on various sites.

Cf. 6.2.2. MAIN ACTIVITY 2, Sub-activity 2.4
On the basis of these three programmes, groups from the NODC work on the management of the digitized and documentary information produced. This feeds into three databases:

Ocean (data on oceanographic, hydrochemical, current-related and plankton parameters);
Coastal (data on tides, currents, the biological resources of estuaries and ecosystems, hydrosedimentology);
Fondoc: documentary information on scientific reports and other work ("grey" literature);
Publiscient: documentary information on the scientific publications of subject groups and individual researchers.

Strengthening of the capabilities of the NODC

Overall objective:

- to secure the assistance necessary to set up an RNDOC for the IOCEA region at CERESCOR;
- to improve the qualifications of the NODC's human resources through training courses in oceanographic data management, in order to introduce them to the use of IODE tools and enable them to take part in the work of the IODE and RECOSCIX networks;
- to acquire IODE tools and other computer-based resources;
- to elaborate products and provide services.

The contribution of Guinea: infrastructure, IT equipment, human resources (researchers, managers of oceanographic data and other support staff), micro-subventions for the execution of specific parts of the programme.

Anticipated assistance from the ODINAFRICA-II project

Supporting financial assistance for:

- *RNODC staff training for the IOCEA region*

Cf. 6.2.2. Activity 2, Sub-activity 2.2 relative to the formalization of the establishment of NODCs.
Timetable: May 2000.

- *acquisition of IODE tools*

Cf. 6.2.2 Activity 2, Sub-activity 2.3 relative to the supply to NODCs of hardware and software to facilitate their participation in network activities
Timetable: March-August 2000.

- *support for the functioning of the NODC*

Cf. 6.2.2 Activity 2, Sub-activity 2.4 relative to the expenses of rendering the NODC operational (telecommunications, Internet access, office supplies, overtime, etc.)

Timetable: 2000-2003.

- participation of two NODC experts in various training courses planned within the framework of IODE

Cf. 6.2.3 Activity 3: training opportunities; Sub-activity 3.2 relative to training at the regional level.

Timetable: November 2000 and November 2001.

- participation in the work of groups of experts in execution of service contracts (follow-up)

Cf. 6.2.3 Activity 3, Sub-activity 3.3 relative to the monitoring of human resources.
Timetable: January-October 2001; January-October 2002.

- participation of two experts from the CERESCOR documentation centre in RECOSCIX training courses

Cf. 6.2.3 Activity 3, Sub-activity 3.4 relative to training in RECOSCIX methods.

- participation in the work of groups of experts on service contracts (monitoring)

Cf. 6.2.3 Activity 3, Sub-activity 3.5 relative to the monitoring of human resources.

Timetable: January-October 2001; January-October 2002.

SUPPORT FROM GODAR

The support requested from GODAR will concern the review of the project to return to the NODC at CERESCOR the oceanographic data on the Guinea economic area and adjacent sectors of the Atlantic obtained during the period of cooperation with the Marine Hydrophysical Institute of Sebastopol (ex-USSR).

ANTICIPATED ASSISTANCE FROM THE ODINAFRICA-II PROJECT AND FROM GODAR

- Organization of a series of meetings between experts from CERESCOR headquarters and NODC Guinea, and experts from the Marine Hydrophysical Institute of Sebastopol (Ukraine) and GODAR for the design and development of the project, its evaluation and implementation;
- Evaluation and planning of the project.

Note: These priorities are expressed in the proposed implementation of three research programmes by CERESCOR and certain Guinean organizations active in the area of marine sciences.

KENYA

INTRODUCTION

A large proponent of marine and coastal research in Kenya is carried out at the Kenya Marine and Fisheries Research Institute. Work going on currently comprises estuarine and coastal ecological monitoring for productivity, nutrient exchange processes, and coral reef. The other projects consist of sea-level monitoring, and hydrodynamics processes. Deep water studies are rarely undertaken unless there are visiting sea-going research vessels.

The other work is carried out by private initiatives and the public Universities.

Other ocean parameters are collected within the activities of the meteorological department.

The resulting data sets are of immense use to coastal management plans and other secondary data needs.

The Kenya National Oceanographic Data Center hosted at KMFRI will initiative management process for these diverse data sets.

MAIN OBJECTIVES OF ODINAFRICA II

Assistance in the development of National Oceanographic Data (and Information) Centers and establish their networking on Africa

The need for ocean data management has now been answered by establishing the Kenya National Oceanographic Data Center. The need for networking data management activities nationally has been recognsied by KeNODC. This is necessitated by the fact that there are several organizations and individuals who collect or need ocean and coastal data. Some of the networking facilities required include regular meetings and Internet connectivity. These would be implemented whenever resources are available.

Providing training opportunities in marine data and information management applying standard formats and methodologies as defined by IODE

A large number of skills are required to convert the ideals of the data center into a reality. A number of training has been conducted within ODINAFRICA I for core staff of the data center. Follow-up training need to be organized as required.

Assist in the development and maintenance of national, regional and Pan-African marine metadata, information and data holding databases

The data center has already implemented a MEDI-structure meta-database of data holdings from a number of scientists and organizations in the country. Availability of these databases nationally will help in increasing the participation of data originators by demonstrating the ease of pin-pointing data sets. KeNODC is already working on web-page for eventual on-line availability.

Assist in the development and dissemination of marine and coastal data and information products responding to the needs of a wide variety of user groups using national and regional networks

The coastal zone management practitioners as one of the most important users of information will benefit a great deal from enhanced information dissemination. Already there are a number of these programs developing environment and resource profiles of the coastal area in Kenya.

Data and Information Activities

The KeNODC has implemented its pioneer meta-data of marine and coastal data of Kenya. The MEDI field format description was used to implement the database in MS-ACCESS. An equivalent structure is now being adopted in FileMaker software, to make it easier for on-line use of the database.

Expansion of the meta-database is going on

The KeNODC has identified large sets of marine oceanographic and meteorological data collected by WMO programs of Voluntary Observer Ships (VOS) and Ships of Opportunity (SOOP). More data from the Kenya Navy and Kenya Ports Vessels exist in the respective institutions some of which date as far back as twenty years ago. The data center has began to digitize some of this data sets. This is in-line with the GODAR initiatives of the IODE program. More of this data rescue will be undertaken.

Services and products from KeNODC

The Data Center has also printed out the data holdings in a hard-copy form for distribution, as an alternative to on-line availability.

The Data Center will also maintain data sets from various sources both locally and internationally and advice of there existence through the web home page.

KeNODC homepage is setting up links on various subjects as a way of accessing thematic data sets contributed by Kenyan scientists and various research programs.

A number of data requests have been handled from scientists and coastal management practitioners. Most of these are in GIS formats.

MADAGASCAR

No information was provided by Madagascar.

MAURITANIA

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CONTEXT

The EEZ (Exclusive Economic Zone) of Mauritania constitutes an area of transition between two large ocean systems, the cold Canaries current from the north and the warm Guinea current from the south. It is situated in an area where the trade winds induced by the anticyclone of the Azores generate phenomena of upwelling of cold water rich in nutritional salts which, in contact with solar radiation at the surface, develop through photosynthesis primary ocean productivity which is among the most prolific in the world's oceans.

The upwelling and marine plant life, notably in the Banc d'Arguin, may well be the cause of the rich complexity of the Mauritanian EEZ. This rich complexity is characterized by great ecological diversity, both of flora and of fauna. It includes a considerable quantity of vegetation, invertebrates, birds, marine mammals, turtles and fish.

With a view to a proper understanding of ecosystems and the various oceanographic phenomena which characterize the Mauritanian EEZ, the National Centre for Fishery and Oceanographic Research (CNROP) (see Appendix 1), in keeping with its mission, in its five-year development plan (1998-2002) places emphasis *inter alia* on the implementation of research programmes on the understanding of populations and the functioning of the environment, and into problems of biodiversity.

To support the implementation of these research programmes, priority is given to the development of a functional information system, scientific production (publication of statistical and scientific bulletins, archives and other works, etc.) and the development of subregional, regional and international cooperation on research.

Concerning the question of the development of a functional information system, a hydrological database is in the process of being implemented. This concerns the organization, evaluation and return of data, in particular data gathered in research programmes on the characterization of the spatio-temporal dynamics of upwelling, a description of the productivity of the waters of the Mauritanian continental shelf and a description of the movements of the thermal front at the level of the area of major environmental concern.

These data are gathered in the course of oceanographic campaigns (CNROP has programmed more than 300 days at sea in the year 2000 with its two research ships, and a further 20 days with foreign research ships): data from coastal stations to monitor the quality of the marine environment, meteorological data, data from tide gauges in ports, etc.

A programme to repatriate historical data has commenced operations, and concerns in particular data gathered by AtlantNIRO (former Soviet Union) under the auspices of a joint research programme by Mauritania and the Netherlands, and data gathered by institutions which have worked on the Mauritanian EEZ: the Research Institute for Development (IRD), the French Institute of Research and Exploitation of the Sea (IFREMER), the Spanish institute for oceanography (IEO) and the Portuguese research institute for fisheries and the sea (IPIMAR) in the framework of the SIAP (fisheries information and analysis system) project of the Sub-Regional Fisheries Commission.

PRIORITY ACTIVITIES

- set up a system to gather and manage oceanographic data within the INFORMATION SYSTEM in the fisheries and oceanography sector in Mauritania;
- organize two workshops at national level in order to create a network of institutional sources of oceanographic data, and to define the products needed by different users of oceanographic information;
- train the staff assigned to the ODINAFRICA-II project and involved in the management of the oceanographic database and in the documentation centre;
- create a web site on oceanography;
- equip according to their needs the NODC and the documentation centre, in particular in IT resources (computers, software, etc.);
- set up an operating budget for the NODC and the documentation centre.

ANTICIPATED PRODUCTS AND SERVICES

- designation of CNROP as the NODC (National Oceanographic Data Centre) by the competent authorities,
- creation of a website available to users,
- development of various oceanography-based products (an atlas, information sheets, guides, maps).

Appendix 1

NATIONAL CENTRE FOR FISHERY AND OCEANOGRAPHIC RESEARCH – CNROP – NOUADHIBOU

(a) Postal Address	BP 22 Nouadhibou Cansado
(b) Telephone	(222) 745 124
(c) Telex	
(d) Fax	(222) 745 081, 745 379
(e) E-mail	Cnrop@toptechnology.mr
Date of establishment	1978
Name and title of person responsible	Dr Mohamed M'Bareck Ould Soueilim, Director
Staff numbers and professional categories	• The CNROP employs 136 people, including scientific and technical staff (75), administrative and service staff (36) and boat and flight crews (25).
Field Divisions/Stations (where these exist) and their Directors	• Director-General • Deputy Director • CNROP office in Nouakchott • Operations and equipment department (DEA) • Live resources and environment department (DRVE) • Statistics and IT department (DSI) • Medical inspection and development department (DVIS) • Scientific documentation and information department (SDIS) • Administration and equipment department • Accounts department
Principal objectives of the institution	Study of biology, ecology and statistics of the principal commercial species; evaluation of stocks, population dynamics, fisheries economics; technology of products and studies for the introduction of new fishing techniques; physical and chemical studies of marine and continental waters; quality and public health control of fishing products.
Working language	Arabic and French
Admission of students/researchers	Internships possible
Training/research facilities	

Head Office (Cansado-Nouadhibou)	The Head Office of the CNROP is built on a 10-hectare site and comprises the following infrastructures: • general administration • researchers' and technicians' offices • resource centre • conference room with simultaneous interpretation into three languages (100 seats) • projection room • conference room (20 seats) • reprography room • equipped computer room • general services • demonstration shed • photographic laboratory
DRVE (former Head Office)	A building comprising: • Researchers' offices • 2 wet laboratories • 1 physical oceanography laboratory • 1 fish-ageing laboratory • 1 museum/aquarium • 1 conference room • 1 documentation room • 1 computer room • 1 machine shop • 3 stores
DVIS (Nouadhibou/Town)	A building comprising: • researchers' offices • 1 public health inspection laboratory • 1 central chemistry and microbiology laboratory • 1 product technology laboratory
Boats	• A1 - AWAM (37 m sea-going ship) • Amrigue (catamaran) 16 m coastal ship • Arguin (traditional dugout canoe)
Nouakchott Office	Represents the CNROP to the Ministry and to national and international organizations. All the departments of the CNROP are represented at the Nouakschott Office. • offices • 1 laboratory based at the Nouakchott fish market
Hospitality facilities (at Head Office)	• 10 studio apartments • 48 rooms • restaurant – kitchen • laundry
National and International Institutions collaborating with CNROP at national level	The CNROP works together with a number of research structures of oceanographic or international organizations with a view to developing the resources resulting from the aquatic environment. • Nouakchott faculties of science and technology (FST) • National centre for veterinary research (CNRV) • National park of the banc d'Arguin (PNBA)

At international level	• INRH (Morocco) • INSTM (Tunisia) • CRODT (Senegal) • INDP (CapeVerde) • CNSHB (Guinea) • CIPA (Guinea-Bissau) • Research. Env. Fish. Dept. (Gambia) • IFREMER (France) • IRD (France) • AtlantNIRO (Russia) • FAO • French *coopération* (voluntary service overseas) • Canadian institutions • UBO (University of Brest, France) • IEO (Spain) • IPIMAR (Portugal) • Contacts have been established with Algeria, Libya and Tunisia
Remarks	Built in 1950 and inaugurated on 5 January 1952, the Nouadhibou fisheries laboratory (currently the DVIS) originally pursued a dual mission: • to inspect livestock. Within this framework it acted as a veterinary clinic and carried out public health inspections; • to carry out oceanographic research, confined to hydrological measurements in the Baie du Lévrier on account of inadequate resources. Since 23 November 1978, the institution has enjoyed the status of a Public Establishment of administrative character called the National Centre for Fishery and Oceanographic Research (CNROP). It was restructured in 1994 by decree No. 94/035.

MAURITIUS

INTRODUCTION

Effective organization of oceanographic information is critical to management of the Mauritian territory. This information will be needed to support both sustainable development of the marine resources and sustainable management of the marine environment, and to identify and mitigate marine hazards. The recently established Mauritius Oceanography Institute (MOI) has been given the responsibility through the MOI Act to coordinate oceanographic information management in Mauritius. The NODC of Mauritius, based at the University of Mauritius, will, henceforth, work in close collaboration with the MOI to better achieve the goals set by ODINAFRICA.

As far as progress in ODINAFRICA-I is concerned, a National Committee, which is so essential to create a good network of communication and exchange among donor institutions and

individual scientists, is still in the process of being set up. Otherwise, there has been much progress in terms of practical work as set in the workplan.

NATIONAL MARINE SCIENCE AND COASTAL MANAGEMENT PRIORITIES

The marine science and coastal management priorities at the national level was recently highlighted in a memorandum of understanding in a bilateral agreement between the government of Mauritius and India. The potential areas identified are as follows:

- enlargement and clearance of passes and hydrodynamics of seas around Mauritius
- ocean energy
- sea-bed survey for the delineation of outer limits of the continental shelf of Mauritius
- Integrated Coastal Zone Management
- Remote sensing for ocean observation
- Ocean dynamics and modelling
- Oceanographic studies including physical, chemical, biological, geological processes.
- Coastal erosion and geomorphology
- Coastal and lagoonal pollution monitoring
- Ecosystems studies and protection: mangroves, estuaries, seagrass beds, coral reefs
- Climate changes and modelling
- Coastal planning and development
- Development of a national oceanographic database

OBJECTIVES OF ODINAFRICA-II

- Set up of a National Steering Committee
- Formulation of data policies for the archival and distribution of products and services
- Provide training in marine data management using formats and methodologies as defined by IODE.
- Development and dissemination of marine and coastal data and information products and services with respect to the clients needs – be it policy makers, decision makers or individual scientists etc..
- Make the Mauritian NODC available online

PROPOSED ACTIVITIES IN ODINAFRICA-II

- Maintain and update metadatabase
- Collect, quality control and archive data that can be readily available
- Provide training in marine data and information management to staffs / scientists of contributing institutions
- Provide tools for analysis and interpretation of data
- Web page creation for the NODC which will not only include the marine and coastal metadatabase but will also act as a platform for local scientists to advertise themselves
- Participating in International Oceanographic data and information exchange
- Participation in training programmes/ workshop and internship

PRODUCTS AND SERVICES

The products and services offered by the Mauritian NODC will be mainly based on the requirements of the user.

The main products and services will be:

- Access to the Mauritian NODC online
- User-specific products like:
- Tide tables
- Datasets of ocean observations filtered by area, time frame and variables observed

- Exceedance diagrams of significant wave height of a particular area are usually looked for by individual scientists and university students

MOROCCO

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ACTIVITIES

1. Creation of a national database, with careful monitoring of the quality of data. This requires the purchase of a system (hardware plus software).

2. Creation and maintenance of national data archives, with an index of all theses and publications in the marine sciences. Recovery of data on marine variables (physical, chemical, biological and geological) acquired in the various centres or on the occasion of international campaigns in Moroccan waters.

3. Organization of a national workshop on needs for data/information services/products, and identification of potential customers.

4. Participation in regional training courses in data and information management.

5. Participation in the annual workshop on the management of the ODINAFRICA II project.

ANTICIPATED PRODUCTS AND SERVICES

1. Inventory and archiving of marine environmental data: INRH, the ports authority, and the Ministry of the Environment possess networks for the surveillance of the quality and the health of seawater. These data exist but are scattered and not archived.

2. Development of an Atlas of the Moroccan coastal zone. This Atlas should contain maps showing the distribution of physical, chemical, biological, sedimentological and geophysical marine variables as well as environmental variables and maps of environmental vulnerability, to be used as a basis for development projects of all kinds.

3. Drafting of a guide to integrated coastal area management, in which marine data would be geographically referenced and presented in ways which suit the needs of managers and decision-makers.

4. Creation of a web site to raise awareness among the scientific community as well as among other users of the multiple benefits and advantages of the existence of a reliable

database, by giving concrete examples of use. The site will be not only a source of information but also an invitation to add to this store of information.

MOZAMBIQUE

INTRODUCTION

Mozambique has a long coast with 2700 Km, along the Indian Ocean. The Mozambican coastal zone, stretches from Rovuma River, in the border with Tanzania, until Ponta de Ouro, in the border with South Africa.

In the past, many research cruises were carried out by foreign missions. Unfortunately, most of the data collected by these missions, were taken out to the origin countries of the organizers, without leaving any copy of these data.

MAIN OBJECTIVES

Training in Marine Data Management Using Formats and Methodologies adopted by the IODE. There is a need of training people in data management, in order to accomplish the following main National Marine Activities, within the PGIZCM <<Integrated Coastal Zone Management Program of Mozambique>>.

Identification, repatriation of data in foreign countries. This need will have to be supported by the Government, trough Ministry of Foreign Affairs.

Rescue of other historical data in the national institutions; digitization of related data sets.

Management of new collected data, trough distributed Data Centre.

Keep the track of data collected by different missions trough centralized Metadata Service.

FUNCTIONING OF THE NATIONAL DATA CENTRE

CENADO is the Mozambican Data Centre, which aggregate all National Institutions which deal with marine Data. This Data Centre was designed to be a distributed one, meaning that each member institution (data collector), will have its own database.

CENADO is going to be officialized in June of the current year.

There are some identified projects, with National impact, which will generate several data sets in the near future:

- LAME – Large Marine Ecosystem of Agulhas, which will cover the entire Mozambique Channel;
- Within CRIA <<Clime and Respective Environment Impact>> - an Agency of Portuguese Language Speaking Countries, has recently established a National Nucleus, which will coordinate the implementation of a number of National related Projects.
- Also the plan of recuperation of data which are in foreign countries, will give an increased amount of data management process.

DEVELOPMENT AND DISSEMINATION OF NATIONAL, REGIONAL AND PAN AFRICAN MARINE METADATA

At the present moment, CENADO is mainly involved in METADATA inventory in different institutions. A second phase of this inventory will be the identification of data which are in foreign countries. This is a sensitive case, and it will need an involvement of adequate diplomacy and some facilitation's support from UNESCO, trough IOC.

Presently, CENADO has its own web site - www.CfmNet.co.mz/Inahina, which include institutional metadata. These metadata, can be remotely accessed or can be downloaded, from the mentioned web address

RECOSCIX NETWORK

There is a need of improving the services offered by the Libraries in the national institutions. This can be achieved by giving some assistance to the institutions in the following items:

- Training staff in modern technique of libraries organizations, like electronic libraries
- Inventory , cataloguing, design and implementation of databases
- Query Handling and document delivery

PRODUCTS

One of the most important product within the Data Centre, is metadata. Presently is being published by web pages. In the next future, it will be published a standardized printout format of the metadata.

CENADO, has also identified the need of helping national institutions, in producing related thematic charts. Presently is being produced a Navigation Guide of Zambezi River. Is also planned to produce thematic charts of (1) Marine Geology (Maputo Bay) and (2) the Fisheries Resource Coverage.

CENTRO NACIONAL DE DADOS OCEANOGRÁFICOS DE MOÇAMBIQUE (CENADO) Activities for 2000-2003

1. Participation in annual Project Management Workshop
   - May – 2000; December – 2000 / 2001/ 2002/ 2003

2. Establishment of the National Oceanographic Data and Information Management Center
   - May/June 2000

3. Acquisition of Hardware and software package: (May 2000)
   - 1 Laptop with accessories for communications (modem, network card adaptor); 1 CD Writer

4. Application for support for operational expenses – 2000/ 2001/ 2002/ 2003
   - Communications facilities (internet, fax) ; Consumables (paper, ink for printer, disks, etc); Staff overtime

5. Training in Marine Data and Information Management
   Participation in training – 2 persons

   5.1 Acquisition of ODINAFRICA/IODE Resource kit
   - March to December 2000 ; January to March 2001

5.2 Regional Data Management training course
November 2000/ 2001

5.3 Regional Information Management training course
November 2000/ 2001

6. Participation in GODAR : Identification, repatriation and digitization of related datasets - 2000/ 2001

7. Development of National Metadatabases
   - Standardization of metadata – MEDI format – 2000 to 2003

8. Development and maintenance of data archive – 2001 to 2003
   - Development of institutional computerized database; Linkage of institutional metadatabase

9. National workshop on data / information service/product
   - To identify data and information products requirements within the National Ocean programs, Coastal Zone Management plans – June/July 2000

10. Participation in the Recoscix network
    Organization of institutional Libraries – 2000 to 2003
    - Staff training; Inventory, Catalogue, database; Query handling, document delivery

11. Publications
    Publicize products and services by magazines, www, CD-ROMs, etc.

NIGERIA

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INTRODUCTION

The Nigerian Institute for Oceanography and Marine Research (NIOMR) located in Lagos has the mandate to conduct research into the nature of the marine environment, including marine weather forecasting and topography of the seabed and deposits on or under the seabed. The mandate covers research into coastal water pollution monitoring, impacts, mitigation and prevention. It additionally addresses geo-physical phenomenon of the Nigerian continental margin and contiguous landmass. Work going on currently comprises monitoring of physico-chemical characteristics of inshore and offshore waters along the 853 km coastline; sea-level monitoring and hydrodynamics processes; coastal ecological monitoring, for productivity, sediment and nutrient exchange processes, coastal erosion and bathymetry and pollution monitoring. These efforts are able to provide immense amount of valuable oceanographic and biological data to the ODINAFRICA project.

The designated NODC (National Oceanographic Data Center) was established with the aim of collating and archiving) oceanographic data in the Nigerian Marine environment. In August 1995, NIOMR and NOAA - NODC exchanged a memorandum of understanding on oceanographic data exchange. The types of data exchanged include physical/chemical station data, CTD/STD (or any similar type of sensor), XBT, MBT, biological and marine geological (including remotely sensed) data. The collaboration agreement also includes participation of both agencies in joint projects to build a comprehensive marine database for NIOMR's geographical area and any other agreed area. Our NODC is also engaged in compiling data sets drawn from existing historical data, and evaluation of coastal zone data for a GIS database.

MAIN OBJECTIVES OF ODINAFRICA II

Assistance in the development of national oceanographic data (and information) centers and establish their networking in africa

The need for ocean data management has become critically urgent with our participation in regional and global programmes such as TOGA/WOCE (Shipboard Environmental data acquisition system - SEAS III); NOAA - NIOMR collaborative projects; CLIVAR/PIRATA, IOCA cruise in the Gulf of Guinea, LOICZ projects on climate change and coastal processes and lately coastal GOOS and GOOS-AFRICA. The need for networking data management activities nationally has long been recognised. Several local Universities and organizations collect or need ocean and coastal data especially for Environmental Screening and for preparations of Environmental Impact Assessments. Some of the networking facilities required include regular meetings, e-mail and Internet connectivity. These can only be implemented with improvement in funding and resource allocation.

Providing training opportunities in marine data and information management applying standard formats and methodologies as defined byIODE

In 1991, agreement was reached in principle with IOC on the training of staff under IODE regular training programs for using IODE standard methodologies, and formats in achieving and disseminating data. A large number of skills are required to convert the ideals of the NODC into a reality. A number of training will have to be attended within ODINAFRICA-II for core staff with literacy in Computer usage for the data center. Follow-up training/workshop will also have to be organized as deemed necessary.

Assist in the development and maintenance of national, regional and pan-african marine metadata, information and data holding databases

There is a strong need for the development and dissemination of marine meta-data information. Availability of these databases nationally will help in increasing the participation of data originators. Assistance from ODINAFRICA-II is expected to include the development of meta-data inventories.

Assist in the development and dissemination of marine and coastal data and information products responding to the needs of a wide variety of user groups using national and regional networks

The coastal zone management practitioners, multinational oil corporations, National Ports Authority,. Maritime Authority, Civil Engineering Consortium, the Shipping Council, Private Entrepreneurs engaged in utilization of marine resources and areas, and academia are the most important users of information to benefit from a great deal of enhanced Information dissemination. Already a large number of requests are processed on individual basis and too frequently to necessitate the development of environment and resource profiles to cater for our numerous clientele/stakeholders in the marine environment.

DATA AND INFORMATION ACTIVITIES

1. The main activity of the NODC will continue to be the supply of oceanographic information on tidal levels, currents, waves, winds, physico-chemical, biological and geological data to end-users upon request. There is a need for verifying of oceanographic data collected and submitted to NODC by data originators.

2. Continue with expansion of the meta-database of all oceanographic/environmental data collected, which are to comply with formats to be established during ODINAFRICA-II

training workshops, and make this information readily available to other participating Data centre's via the Internet.

3. Obtain assistance and expertise in the form of training from ODINAFRICA-II in the establishment of meta-data inventories and procedures for the archiving and quality control of oceanographic data.

4. In-line with GODAR initiatives, the NODC is involved in sourcing historical data sets. More of this data rescue will be under taken.

SERVICES AND PRODUCTS FROM NIOMR-NODC

1. A number of data requests have been handled over the years from Government Authorities and Private Entrepreneurs especially stakeholders in coastal and marine areas.

2. Long-term systematic monitoring is one of the key components for certain projects undertaken in NIOMR involving climate change, sea level, marine, meteorological observations etc. It is planned to expand this projects or local network regionally. The systematic monitoring has been recognized as basis for forecasting change (forecasting models) and important basis for strengthening the collection and dissemination of oceanographic information as a basis for effective management of coastal areas and resources.

3. Request for products extracted from oceanographic data maintained by NIOMR-NODC are received also from students, scientists and consultants. These requests are processed internally to the specifications laid down in the requests or as available from NODC

4. There is a need for the recovery (rescue) and digitizing of oceanographic data collected in the past and held by NIOMR. This is mainly concerned with data sets that have been collected from sea cruises and archived by individual scientists, and projects. The main aim will be to enable such data to be catalogued into the meta-data inventory and to enhance the products made available from the main oceanographic database.

5. There is also a need for a meta-data inventory for fisheries and biological data collected at NIOMR along standard formats. The aim is to enable scientists and other interested parties have easy access to information on biological data sets collected from various projects.

SENEGAL

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In Senegal, the principal sources of oceanographic information are the centre for oceanographic research at Dakar-Thiaroye (CRODT) and the directorate of oceanography and maritime fisheries. Accordingly, national activities for effective participation in the ODINAFRICA project will be carried out jointly by these two institutions, in cooperation with other national organizations active in the marine sciences.

The actions envisaged will be based on two main programmes:

(a) A programme to strengthen systems for the gathering, analysis and distribution of oceanographic data by the CRODT:

- research on the rational management of fisheries resources;
- research on integrated coastal area management;

- development of an atlas and nautical charts;
- organization of oceanographic data gathering campaigns;
- databases on coral reefs;
- research on pollution and the deterioration of marine environments.

(b) A programme to strengthen capacities in marine information management at the level of the directorate of oceanography and maritime fisheries.

Assistance from the ODINAFRICA project will enable implementation of the following projects:

- Creation and updating of a national database as an inventory of information and data on the sea (physical, biological, environmental, socio-economic, etc.);
- The listing, gathering and archiving of national oceanographic data produced by or for Senegal;
- Consolidation of the progress achieved in quality satellite coverage (Meteosat, NOAA) for the IOCEA area;
- Creation of an ASFA (Aquatic Sciences and Fisheries Abstract) input centre, which will be a kind of compulsory copyright deposit for all national publications on water-related subjects;
- Organization of a national workshop on the identification of the needs of users of marine data and information services and products;
- Organization of a national workshop on the harmonization of fisheries statistics collected by the CRODT and the directorate of oceanography and maritime fisheries;
- Participation in regional training courses in marine data and information management and in their follow-up:

    - training for staff involved in the project, in particular in the use of software for processing marine data according to the IODE format;
    - training in information management methods and use of specialized documentary software as recommended by the RECOSCIX ECA project;
    - training in the design and management of Web pages for the centre.

- Access to foreign databases on water-related sciences and fisheries in Africa and in the world in general, in the form of CD-ROMs via the Internet;
- Lastly, access to the Internet for improved distribution and promotion of the NODC’s products and services.
- The contribution of Senegal relates to the infrastructures where the CNDO and the information management centre are housed, the IT equipment already in place and the remuneration of personnel (researchers, oceanographic information managers) cf. counterpart contribution budgeted by Senegal.

Estimated budget for operating costs of NODC and the information management centre, in US $

	Project contribution (approximate)		Contribution of Senegal (approximate)	
	2000	**2001**	**2000**	**2001**
PERSONNEL				
Head of Centre	3,000	3,000	-	-
Technical staff	3,000	3,000	-	-
Support staff (2)	6,000	6,000	-	-
INFRASTRUCTURES				
Offices	-	-	2 500	2,500
EQUIPMENT				
- computers and accessories	4,000	-	2 000	800
- maintenance		800	-	-
- photocopier	1,800			-
- workshops	3,000	3,000		
- local data gathering	600	600	600	
- regional training courses in data and information management				-
COMMUNICATIONS				-
- telephone line	300	-	-	-
- Internet connection	300	-	-	-
- purchase of phone/fax	300	-	-	
- communication charges	1,500	1,500	-	
- office supplies/consumables	3,000	500	-	
- water, electricity, air-conditioning	-	-	1,500	1,500
TOTAL	**26,800**	**18,400**	**6,600**	**4,800**

SEYCHELLES

by Rondolph Payet
Seychelles Fishing Authority

INTRODUCTION

The Seychelles, a Small Island State (SIDS) in the South West Indian Ocean officially established it data centre in September 1997 following a request from the Intergovernmental Oceanographic Commission of UNESCO. The Data Centre was created within the Seychelles Fishing Authority, the agency directly related to marine sciences. The centre was established in accordance with the IODE-ODINEAFRICA, I project guidelines.

In collaboration with IOC, the project has been fruitful and rewarding but not without its constraints. To name a few, we obtained training in marine data in accordance with IODE standards

and methodologies; received computer equipment, developed a national metadata database and helped scientists get access to the World Wide Web. However, the most difficult and crucial element is the access and obtaining data or metadata within the country. It is common that data collected are recorded on paper but with frequent turnover of staff in the different agencies, data are lost or misplaced. As such, the Data Centre has important role in rescuing and archiving these data besides other functions.

Overall, we are confident that ODINEAFRICA I has fulfilled it objectives in Seychelles. What remains to be done is continue the work and hopefully make the data access to all natural and social scientists in the region.

As ODINEAFRICA I project concludes, we submit below our National Activity and collaborative budget with IOC/UNESCO for ODINEAFRICA II.

AIM AND OBJECTIVES

The ODINEAFRICA I project somehow neglected data collected by coastal scientists and even social scientist. It is envisaged that this gap will be bridged in ODINEAFRICA II. Therefore, the main aim in terms of Seychelles priorities is to development a comprehensive metadata and data database in coastal and marine environments. This will eventually help in informed decision making.

The objectives of Seychelles in ODINEAFRICA II project are:

- To continue to develop and manage an archive of coastal and marine data and information
- To disseminate and acquire data from national institutions concerned with coastal and marine sciences.
- To develop web-base data archive for access by natural and social scientists.
- To produce inventories, informed scientist of methodologies and guidelines in coastal and marine sciences for data collection and submission.
- To expand the services developed under ODINEAFRICA I and explore for the development of products.
- To train scientist into better management and archiving of data.
- To improve on the existing facilities in term of technology and personnel for data management.
- To improve collaboration and enhance networking with other Data Centres in Africa and elsewhere.

ACTIVITIES SCHEDULE FOR PERIOD 2000- 2003

Activities under ODINEAFRICA II will be a follow up of the ODINEAFRICA I project.

Activity 1: Expand the current metadata and data database to coastal sciences and liaise with coastal management bodies in this respect.

Activity 2: Expand and improve the information technology base to cater for increase in data and information. This involves acquisition of new software and hardware and office facilities.

Activity 3: Training of data manager: Workshops, training programmes and internship in other national Oceanographic Data Centres. Conduct training programmes in data collection and management for local scientist.

Activity 4: Improve and develop new services and products for better management and understanding of marine and coastal data Produce inventories, data catalogues and information leaflets on the project and data.

Activity 5: Conduct a sensitisation programme for scientists, decision makers and NGOs on the usefulness and implications of good data management for research, resource management and decision-making.

Activity 6: Develop an Internet base Meta database for Seychelles coastal and marine data.

BUDGET

The budget has two components, the SFA and IOC. Year 2000 is currently under project ODINEAFRICA 1 budget, therefore the budget under ODINEAFRICA II will effectively run from Year 2001 and 2003.

Table 1: Activity and Budget proposal for ODINEAFRICA II (amounts in US$)

Description	2000		2001		2002		2003	
	IOC	**SFA**	**IOC**	**SFA**	**IOC**	**SFA**	**IOC**	**SFA**
❑ Established contact with coastal agencies	-	-	-	100	-	-	-	-
❑ Acquire data and archiving			-	300				
❑ Develop services for such agencies			-		500		500	300
❑ Improve archiving/back up				500				1000
❑ Software purchase			5000			500		4000
❑ Computers	3250	2000		500	2000	1000	3000	500
❑ Computer Accessories				10,000		7,000		7000
❑ Office space, equipments, overheads	2500		2500	1000	2500	1000	2500	1000
❑ Internet/e.mail/communications	2000	1000	500	500	300	300		
❑ Personnel overtime			1000		1000		1000	1000
❑ Operating Expenses								
❑ Internship at BODC (July-Aug)			5000					
❑ Local training programme					500	500		
❑ Sensitise programme			200	300	200	200	100	200
❑ Meeting/local travel				200		200	200	200
❑ Develop web site		1000	500	1000				
❑ Integrate meta database					300	300	300	
❑ Update web and meta database					300	300		300
❑ Personnel			500			300	300	300
TOTAL	**7,750**	**4,000**	**16,900**	**15,800**	**7,800**	**11,900**	**9,000**	**16,700**

CONCLUSION

The Seychelles is very grateful to IOC and the funding Agencies in the advancement of data and information management in Africa. The overall aim is to help us achieve a standard in such science and enhance our capabilities to make informed decision pertaining to coastal and marine affairs and management. There is no point in enhancing such science (data management) with linking it to coastal and marine resource management. This is the least that Seychelles is hoping to achieve.

SOUTH AFRICA

by Marcel van den Berg
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Secondary Data Centre for South Africa

INTRODUCTION

South Africa is faced with the unique situation of bordering onto both the Indian Ocean (South East Coast) and the Atlantic Ocean (West Coast), and research done by the research component within the Directorate: Marine and Coastal Management (M&CM) covers the entire region bordering the country, and is thus able to provide an immense amount of valuable oceanographic and biological data to the ODINAFRICA project.

The designated NODC (National Data Center) for South Africa is SADCO (Southern Africa Data Center for Oceanography) and M&CM has been identified as a Secondary Data Centre for South Africa during the first data management workshop held in Mombasa, Kenya (December 1997) as part of the ODINEA (ODINAFRICA I) project. It was decided at the initial workshop to establish a secondary data center due to the fact that the oceanographic/environmental database collected by the research component of M&CM is immense and includes: discrete bottle data, CTD profile data (discrete and continuous), ocean current data, long term sea surface temperature monitoring data, temperature profiling time-series data, satellite imagery and wind data. Oceanographic data collected are being submitted to SADCO on a regular basis, but only discrete bottle and CTD (discrete and recently continuous) data at this point in time. M&CM is able to contribute to the ONIAFRICA II project by firstly continuing to submit data to SADCO and secondly creating a complete meta-database, that consists of all the various oceanographic related data collected and to extend this metadatabase, at a later stage, to include all the biological data collected within the Directorate.

MAIN OBJECTIVES AND COMMENTS ON ODINAFRICA-II PROJECT

1) Training in marine data management using formats and methodologies adopted by the IODE:

This is undertaken to include quality assurance procedures to ensure that data becomes available to the community in the shortest time possible and GODAR-type data scouting and rescue activities. Increasing the ability of data management trainees to conduct quality checks and data rescue is viewed as an important capacity building activity. In addition, attempts should be made to employ trainees involved in data rescue and archiving as part of the project and to provide the trainees with appropriate computer hardware and software.

2) ***Providing assistance in the operation of National Oceanographic Data Centres and dissemination of the data by means of national and regional networks*:**

SADCO functions as the national data centre, which reflects South Africa's role as a springboard into sub-Saharan Africa and there are established links with our neighbours to the north of us. It has already been established that web access to SADCO is constrained by manpower and funding limitations and that Web enablement is a strong motivating factor for involvement in ODINAFRICA-II. This would allow regional participants in existing collaboration and training initiatives such as BENEFIT (Benguela Environmental Fisheries Interaction & Training program) to gain access to a major portion of the data held at SADCO in the shortest time possible after research cruises. This holds much promise in enhancing the quality of training programmes and is strongly supported by GOOS – South Africa.

3) Assisting in the development and dissemination of national, regional and Pan African marine meta-data information:

There is a strong need for the development and dissemination of marine meta-data information in the BENEFIT countries of South Africa, Namibia and Angola. With M&CM's involvement in the first phase (ODINAFRICA I and ODINEA) of the project experience has been gained by the people involved They will be able to provide assistance to the second phase of the project concerning the development of meta-data inventories.

DATA AND INFORMATION ACTIVITIES FOR M&CM

1. The main activity of the Secondary Data Centre will continue to be the verifying of all forms of oceanographic data collected for submission to the NDC, SADCO.
2. Continue with the expansion of the meta-database of all oceanographic/environmental data collected, complying with the formats established during the ODINEA training workshops during the first phase of the project and to make this information readily available to other participating Data Centre's via the Internet.
3. Supply assistance and expertise in the form of training to other BENEFIT countries with the establishment of meta-data inventories and procedures for the archiving and quality control of oceanographic data.

SERVICES AND PRODUCTS FROM M&CM

1. Envisaged as one of the main products is for the publication of meta-data on the Internet, enabling other research institutes and interested organization to obtain information that is available and being collected by M&CM. Creating a web page, which would be linked to the M&CM homepage, containing data in a graphical format of all the long-term environmental monitoring projects undertaken by M&CM, is also planned.
2. Long-term environmental monitoring is one of the key components for certain projects undertaken by M&CM involving climate change. It is planned to expand this project or local network, firstly to countries bordering onto the Indian Ocean, and depending on its success, expansion to countries along the Atlantic Ocean.Creating a long-term environmental monitoring network throughout the whole of Southern Africa, enabling the long-term monitoring of the effects of climate change on localised conditions and management of these areas and resources. This will take place mainly in the format of providing training (expertise) and hopefully equipment to enable participating countries to maintain the local aspects of the network, which would then be controlled from a centralised location. The sustained routine and long-term measurements and monitoring of environmental variables as the basis for forecasting change, has been identified as an important basis to strengthen the collection and dissemination of scientific information as a basis for effective management of coastal areas.
3. Request for products extracted from oceanographic data maintained by M&CM are received mainly from scientist and students doing collaborative work with the research component of the Directorate. These requests are either completed internally to the specifications laid down in the requests or are forwarded to the NODC, SADCO.
4. A program for the recovery (rescue) and digitising of oceanographic data has recently been started within M&CM. This is mainly concentrated at data sets that have been collected and archived by individual scientists, projects, and data sets that are only available in hard-copy format. The main aim of this project is to enable the data to be catalogued into the meta-data inventory and to enhance the products produced from the main oceanographic database. These include long-term averages and other analysis.
5. A project has recently been initiated to create a meta-data inventory for the biological data collected by M&CM., along IODE guidelines. The aim of this project is to enable scientists and other interesting parties to have easy access to information on biological datasets collected for various projects.

TANZANIA

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Abstract

Tanzania, like many other developing coastal countries is facing a rapid increase in the amounts of data and information generated from its many ocean and coastal research/monitoring projects and programmes. In order to ensure full, efficient and wide utilization/dissemination of these data and information, these research/monitoring programmes and projects must be supported by an efficient data and information management system in the country. Establishment of a National Coastal and Oceanographic Data Centre (NODC) is considered to be the best option. However, because coastal oceanographic data and information management is rather a new field in our country coupled with our poor economy, Tanzania needs to get some assistance in achieving its goal of efficient management of its ocean and coastal environment. The ODINAFRICA-II project which focus on helping African countries toward that end is important to Tanzania, and the government of Tanzania fully supports the project.

INTRODUCTION

The Institute of Marine Sciences (IMS) was nominated by the government of Tanzania in 1996 to be the country's Designated National Agency (DNA). Currently, efforts are being done through the ongoing Oceanographic Data Information Network for Eastern Africa (ODINEA) project to lay foundations for the establishment of a full National Oceanographic Data Centre (NODC) for Tanzania at IMS. This includes the establishment of a functional coastal and marine resource and environmental meta-database at IMS, among others.

The IMS is part of the University of Dar es Salaam. It was established on July 1st, 1979 and is based in Zanzibar. The objectives of its establishment were to undertake research in all aspects of marine sciences as a lead institute, to provide postgraduate and undergraduate training, and to provide advisory and consultancy services in marine affairs. IMS has been involved in coastal zone management programmes at national level as well as at regional level.

The great advancement in science and technology has brought with it efficient methods of scientific data collection, and establishment of many ocean and coastal scientific/research/monitoring programmes (see for example in the Tanzania meta-database). These programmes generate large amounts of data that need to be managed properly if they are to be utilized efficiently and widely. This has caused a great impetus on the concept of data and information management. Although, the concept is common in most of the developed countries, it is relatively/quite new in our region, and so there is a serious shortage of manpower in this field, especially as far as coastal and oceanographic data and information is concerned. Recognizing this weakness and the need and importance for efficient management of her coastal and oceanographic data and information, the government of Tanzania fully supported both, the ODINEA project and ODINAFRICA-II proposal/project. The government has established policies that emphasis on coastal and oceanographic data archive, retrieval and dissemination. In particular is the coast management policy that has already been submitted to the government for review and endorsement.

NATIONAL NEEDS AND PRIORITIES

In line with the above-mentioned advances in science and technology, and the weakness of the country in managing coastal and oceanographic data and information, the major objective and priority of Tanzania is to be able to efficiently manage and utilize coastal and oceanographic data and information from her ocean. This involves collection, quality-control, archiving, analyzing,

repackaging and dissemination of the data and information at local, regional and international level as an essential step towards sound management of the oceans. This will also ensure accessibility of these data and information to decision makers at all levels. In order to achieve it major need/objective, Tanzania needs to do several things that most of them require external support as follows:

a) Capacity building

i) Efforts need to be done on human capacity building in the country by training data managers. Data and information management is a fast changing/developing field that require managers to undergo regular training workshop to keep themselves up-to-date with the new developments including new software. This is currently done through ODINEA and Tanzania hopes that it will continue with ODINAFRICA-II. Internships at major data Centres is also an important way of building capacity in our countries and we hope ODINAFRICA-II will continue it.

ii) The collection, quality-control, archiving, analyzing, repackaging and dissemination of coastal and oceanographic data and information require appropriate infrastructure which is currently lacking. There is therefore a need to develop this infrastructure in the country. In 1998/99 received several computer equipment and accessories along this line from IOC of UNESCO. As these facilities are not yet sufficient, we believe infrastructure support should remain an important component in ODINAFRICA-II.

b) Establishment of a function National Oceanographic Data Centre

Tanzania is now doing efforts to upgrade its DNA (at IMS) to a full NODC. To complete this exercise successfully Tanzania needs to continue receiving support from IOC through ODINAFRICA-II in various forms e.g. (a) above and in terms of advice etc.

c) Networking among coastal and marine scientists and DNAs and NODCs

Networking of coastal and marine scientists in Tanzania, the East Africa region and international is an important component to ensure the successful attainment of the major objective/need of Tanzania. This is because there is really one ocean, and the ocean does not know boundaries. We note that while there is some networking at international level, nothing is in place at national level in Tanzania.

d) Assistance in the development and production of various marine data and information products based on the needs of the user groups

e) *For (c) to function swiftly we need to have reliable and efficient communication between scientists, DNAs and NODCs*

Based on the current developments emails connectivity among these entities is essential, and should be considered to be basic. However, because currently many data and information are published on the internet, we need to have full access to the internet, to make full use of the information highway. This will allow our DNAs to publish its products, works etc, and enable their wide circulation.

f) *After the DNA collects the various data and information from the various sources, these data and information need to be kept in such a way they are readily available when needed*

This requires having a well structured, functional and reliable database and/or meta-database. Although these efforts have started, we still need assistance in developing and maintaining our meta-database.

THE EXPECTED OUTPUT

If the above enlisted national need and priorities are met, several output are expected towards the major goal/need/objective of Tanzania, i.e., to efficiently manage and utilize coastal and oceanographic data and information from her ocean, as follows:

- A fully functional NODC will be established.
- The NODC will establish an efficient coastal and oceanographic data and information management structure in the country.
- Through conducting training workshops and seminars the NODC will help build and maintain human capacity to collect, quality-control, archive, analyze, repackage and disseminate data and information at national level.
- The NODC will search, retrieve and archive old and historical ocean data related to Tanzania, the East African region and Africa in general.
- Will make important ocean data readily available to decision makers, scientists and researchers at all levels as raw data or in form of data and information products.
- The NODC will help promote networking of marine scientists in Tanzania, the East Africa region, Africa and international.

CONCLUDING REMARK

Tanzania is currently doing efforts to ensure efficient management and utilization of coastal and oceanographic data and information from her ocean. Among others, these efforts will also lead to the protection and sustainable management of the marine and coastal environment. However, because coastal and marine data and information management is relatively new in Tanzania, coupled with the weak economy of the country, Tanzania needs assistance in various areas to realize its major goal. It is along these lines that ODINAFRICA-II project is very important to Tanzania, and received full support of the government.

REFERENCES

IOC of UNESCO, 1999: Ocean Data and Information Network for Africa Second Phase (ODINAFRICA-II) draft proposal, IOC of UNESCO.

Masalu, DCP and Muhando, C., 1999: Collection of Data and Information From Coastal Districts, Research and Training Institutions, Parastatals, NGOs as Part of ODINEA Activities in Tanzania., sub-proposal submitted to IOC of UNESCO, Institute of Marine Sciences, University of Dar Es Salaam, Tanzania.

Masalu, DCP and Muhando, C., 1998: Development of Tanzania National Oceanographic Data Center based at the Institute of Marine Sciences, Zanzibar, proposal submitted to IOC of UNESCO, Institute of Marine Sciences, University of Dar Es Salaam, Tanzania.

Tanzania Coastal Management Partnership, 1999: Tanzania Coastal Management Policy –Draft TCMP working Document No. 5001, October, 1999, Dar Es Salaam, Tanzania.

TOGO

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The University of Benin, on behalf of Togo, has agreed to take part in the second phase of the ODINAFRICA-II project.

Togo holds a great deal of oceanographic data in several different places. These data are, however, difficult to locate and consequently are neither used nor exploited. In several cases they are not well preserved, because the means of preserving them barely exist.

There is a very obvious need today for marine and coastal data for fundamental forecasting studies to improve marine and coastal resource management.

Project ODINAFRICA-II will enable us:

- to solve a series of problems linked to the gathering, processing, management, distribution and conservation of data;
- to make data more readily available to the local, regional and international scientific communities.

The University of Benin thus envisages, within the framework of this project, the creation of a national data management database. To be able to pursue its activities, this division (NODC-TOGO) of the Centre for Integrated Coastal and Environmental Management will have to satisfy certain requirements for equipment, technical and financial assistance, training in data management and distribution and documentary products.

REGIONAL ACTIVITIES

1. annual workshop on the management of the project
2. coordination meeting on the setting up of national data centres
3. regional training courses (data management)
4. regional training courses (information management)

TIMING FOR THE ORGANIZATION OF ACTIVITIES OVER FOUR YEARS

Activities		**2000**	**2001**	**2002**	**2003**
1.	Designate a Coordinator and the national database centre	+			
2.	Identify structures possessing the necessary data on the marine and coastal environment	+			
3.	Form a committee to help recover data	+			
4.	Organize a national conference on the need to set up a national data management centre	+			
5/6.	Organize training workshops in data management Organize training workshops in information management			+ +	 +
7.	Produce a list of papers, studies and reports in the field of marine and coastal sciences	+			
8.	Produce a list of structures with marine and coastal interests, indicating their objectives, activities and relations of interdependence	+			
9.	Draw up inventories, gather, describe and archive data		+	+	+
10.	Create products		+	+	+
11.	Begin recovery of all existing data on Togo held abroad			+	
12.	Purchase equipment as necessary	+			
13.	Organize a workshop to raise awareness among the general public and potential users of products		+	+	+
14.	Train staff in use of teaching equipment		+	+	

TOGO COUNTERPART CONTRIBUTION (TO BE PROVIDED IN KIND) in US $

BUDGET	**2000**	**2001**	**2002**	**2003**	**TOTAL**
Personnel					
Coordinator	6,000	6,000	6,000	6,000	24,000
Technical staff (2)	6,500	6,500	6,500	6,500	26,000
Secretariat and support staff (3)	3,500	3,500	3,500	3,500	14,000
Infrastructure					
Site	2,400	2,400	2,400	2,400	9,600
Office supplies	1,500	-	-	-	1,500
IT equipment and maintenance	9,000	-	-	-	9,000
Electricity, water and air conditioning	1,000	1,000	1,000	1,000	4,000
Telephone, fax	-	-	-	-	-
Subtotal	29,900	19,400	19,400	19,400	**88,100**
TOTAL US $					**88,100**

BUDGET (USD)

Activities	**2000**	**2001**	**2002**	**2003**	**Total**
4. Organize a national seminar on the need to set up a national data management centre	2,000	-	-	-	2,000
5/6. Organize training workshops in data management Organize training workshops in information management	-	-	3,000	3,000	6,000
7. Produce a list of papers, studies and reports in the field of marine and coastal sciences	2,500	-	-	-	2,500
8 Produce a list of structures with marine and coastal interests, with their objectives, activities and interdependencies	2,000	-	-	-	2,000
9. Draw up inventories, gather, describe and archive data	-	3,000	3,000	3,000	9,000
10. Create products	-	2,000	2,000	2,000	6,000
11. Begin recovery of all existing data on Togo held abroad	-	-	2,000	-	2,000
12 . Purchase equipment as necessary	5,000	-	-	-	5,000
13. Organize a workshop to raise awareness among the general public and potential users of products	-	2,000	2,000	2000	6,000
14. Train staff in use of teaching equipment		2,000	2,000		4,000
Internet connection	600	600	600	600	2,400
Operating costs	4,000	4,000	4,000	4,000	16,000
Subscription to ASFA	-	-	2,000	2,000	4,000
TOTAL	**17,900**	**15,400**	**22,400**	**18,400**	**66,900**

TUNISIA

NATIONAL RESEARCH PRIORITIES

Creation of an Observatory of the Sea, with operations centred on a marine geographical data system linked to an advanced information system. This Observatory will be set up at the INSTM (national institute for marine science and technology), and its role will be to manage surveillance and biosurveillance networks for the marine environment, the most important of which are the following:

1. A network for the observation and modelling of hydrological, current and tidal phenomena. This network was set up in 1995 by the INSTM.
2. A network for the continuous surveillance of chemical contaminants, set up in 1996 by the INSTM in collaboration with the ANPE (national agency for environmental protection) and the Institut Pasteur.
3. A network for the surveillance of the microbiological quality of water for seaside bathing, set up in 1986 by the Institut Pasteur.
4. A network for the surveillance of toxic phytoplankton, set up in 1995 by the INSTM, the Institut Pasteur, the institute of veterinary research and the directorate for animal health.
5. A network monitoring the quality of water in commercial and fishing ports and marinas, set up in 1997 by the INSTM and the ANPE.
6. A network responsible for sampling and compiling statistics on fisheries production, set up by the directorate for fishing and aquaculture.
7. The surveillance network monitoring imported species and Lessepsian migrants, set up by the INSTM, the regional directorates for commercial and fishing ports and marinas, and deep-sea diving organizations.
8. Networks monitoring the nesting of turtles and protected species, set up by the INSTM and APAL in 1997.
9. Various networks are in the course of being set up by the INSTM, the agency for coastal conservation, the agency for environmental protection, the directorate of fisheries, the Institut Pasteur, the institute of veterinary research and the Universities of the North, the Centre and the South. These networks are concerned with the biomonitoring of the coast, the quality of marine products, sea level, coastal erosion, submarine cartography and the quality of vegetable and sediment cover.

Note: The Observatory of the Sea will cooperate with the ODINAFRICA II project. It will be housed at the INSTM and will be an arm of the Tunisian observatory of the environment which has been set up at the national level in the ministry of the environment and regional planning.

An experimental system for this Observatory has already been developed at the INSTM. It will become operational once the necessary equipment has been purchased and once the staff working there have received further training.

Strengthening of the capacities and modernization of management methods at the INSTM library. This library, set up in 1924, currently contains more than 40,000 documents on marine science subjects. This international database needs to be upgraded so as to be integrated into the worldwide network of marine information exchange.

Strengthening of institutions to improve the contribution made by research to the sustainable management of the sea:

The maintenance of a high level of national skills requires continual and regular improvement in knowledge of new technologies of data observation, measurement, analysis, processing and modelling. This objective is to be achieved through the organization of training courses and technical workshops, through participation in international training courses and by the setting up of a doctoral school of oceanography and technology transfer unit at the INSTM.

Specific products to be developed by the Observatory of the Sea:

1. *Circulation models of offshore water masses*, in coastal zones and lagoons, including monitoring of the sea level and the development of coastal erosion.
2. *Maps showing the distribution of exploitable fisheries resources* and other natural resources representative of marine biodiversity.
3. *Maps of submarine cartography.*
4. *Reports on the state of the marine environment of endangered species and vulnerable areas* exposed to risks of pollution.
5. *Models, charts, forecasts and reports on the impact of commercial development* on marine and coastal areas.
6. *Atlas of the marine coastal areas of Tunisia:* the products developed by the Observatory of the Sea (charts, reports, CD-ROMs, websites, etc.) will be made available to scientists, users and managers of the sea to be used as instruments of decision support. Researchers will exploit these products in cooperation with the African, Mediterranean and international networks with a view to studying, monitoring and understanding the evolution of oceanographic ecosystems, the overall changes which affect them and those changes which they themselves cause.

ANNEX VI

LIST OF ACRONYMS

AODC	Australian Oceanographic Data Centre
ASFA	Aquatic Sciences & Fisheries Abstracts/FAO-IOC-UN
CD-ROM	Compact Disc with a Read-Only Memory
CERESCOR	Centre de Recherche Scientifique de Conakry - Rogbané (Guinea)
CLIVAR	Climate Variability and Predictability
CRO	Centre de Recherches Océanologiques (Côte d'Ivoire)
DNA	Designated National Agency
GEF	Global Environment Facility
GLODIR	Global Directory of Marine (and Freshwater) Professionals
GODAR	Global Oceanographic Data Archeology and Rescue Project
GOOS	Global Ocean Observing System
GOOS-AFRICA	African Global Ocean Observing System
IAMSLIC	International Association of Aquatic and Marine Science Libraries and Information Centres
ICAM	Integrated Coastal Area Management
IOC	Intergovernmental Oceanographic Comnmission (of UNESCO)
IOCEA	IOC Regional Committee for Central Eastern Atlantic
IOCINCWIO	IOC Regional Committee for the Cooperative Investigation in the North & Central Western Indian Ocean
IODE	International Oceanographic Data and Information Exchange/IOC Committee
KeNODC	Kenya National Oceanographic Data Centre
KMFRI	Kenya Marine and Fisheries Research Institute
LME	Large Marine Ecosystems
LUC	Limburgs Universitair Centrum (Government of Belgium)
MEDI	Marine Environmental Data Information Referral System/IOC
NIOMR	Nigerian Institute for Oceanography and Marine Research
NODC	National Oceanographic Data Centre
OAU	Organization of African Unity
ODINAFRICA-II	Ocean Data and Information Network for Africa – Second Phase (IOC-Flanders)
ODINEA	Ocean Data and Information Network for Eastern Africa
PACSICOM	PanAfrican Conference on Sustainable Intergrated Coastal Management
POGO	Partnership for Global Observation in the Ocean
REOSCIX-CEA	Regional Cooperation in Scientific Information Exchange in the Central Eastern Atlantic/IOCEA
RECOSCIX-WIO	Regional Cooperation in Scientific Information Exchange in the Western Indian Ocean
RNODC	Responsible National Oceanographic Data Centre
RODC	Regional Oceanographic Data Centre
TOGA	Tropical Ocean and Global Atmosphere
UNCED	United Nations Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-BREDA	UNESCO Bureau for Education in Africa (Dakar, Senegal)
VLIR	Flemish Inter-University Council (Belgium)
WDC	World Data Centre
WINDOW	Western Indian Ocean Waters Newsletter
WIODir	Western Indian Ocean Directory of Marine Science Institutions and Scientists
WIOLib	Western Indian Ocean Library Holdings Database
WIOMSA	Western Indian Ocean Marine Science Association
WOCE	World Ocean Circulation Experiment

WOD	World Ocean Database
WODC	World Ocean Database Centre
WWW	World-Wide Web (Internet)