

Intergovernmental Oceanographic Commission

Workshop Report No. 82

**Programme on Ocean Science in
Relation to Non-Living Resources
(OSNLR)**

BORDOMER 92

**International Convention on
Rational Use of Coastal Zones
A Preparatory Meeting for
the Organization of an International
Conference on Coastal Change**

Bordeaux, France -30 September -3 October 1992

UNESCO

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INTRODUCTION: BACKGROUND AND OBJECTIVES

The coastal environment is a naturally evolving system, highly vulnerable and sensitive to human impact and climatic, oceanic and atmospheric changes. Shorelines and Exclusive Economic Zones (EEZs) are vital to many indigenous communities, particularly those in developing countries. Notwithstanding efforts on the part of managers and decision-makers, current approaches to the management of the coastal zone have not, up to now, ensured its sustainable development, and coastal systems in many countries are being rapidly degraded.

The Assembly, at its Sixteenth Session, endorsed in principle the organization by IOC in 1994 of a Conference on "Coastal Changes: Past, Present and Future - Scientific Appraisal for Effective Coastal Management". The Assembly also requested the Chairman of the Guiding Group of Experts of OSNLR to draw up a detailed plan for the organization of this Conference for submission to the Twenty-fifth Session of the Executive Council. The detailed plan (Document IOC/INF-871, Annex V) which had anticipated, in as far as possible, the recommendations contained in Chapter 17 of UNCED Agenda 21, was endorsed by the Executive Council, which also instructed the Secretary IOC to arrange a preparatory meeting for the Conference on the occasion of the Marine Exhibition (BORDOMER, Bordeaux, October 1992/Document IOC/EC-XXV/3, para. 64), taking fully into account the outcome of UNCED.

An International Colloquium on the Rational Use of the Coastal Zone was accordingly organized in Bordeaux from 30 September to 3 October 1992, as part of BORDOMER, jointly with the Council of the Aquitaine Region and the Urban Community of Bordeaux.

Following the recommendations in UNCED Agenda 21, Chapter 17, BORDOMER 92 aimed at reviewing, through examples, the current knowledge, management practices and development of the coastal environment and present scientific studies of coastal changes, impact assessments, and prediction of future changes.

The Workshop, jointly organized by IOC as part of the OSNLR Programme, and Aquitaine Region (INTERCO Aquitaine Organization), provided an opportunity to discuss, on an inter-disciplinary basis, topics including:

- (i) oceanic coastal processes and changes, natural vis-man-made effects;
- (ii) hydrography, hydrodynamics and construction in the coastal zones;
- (iii) management and protection of the coastal environments;
- (iv) training, education and mutual assistance (particularly for developing and transitional economies).

In conjunction with the Workshop, two round-table discussions were organized on the topics of co-operation with developing countries; technical needs of research vessels and monitoring operations in the coastal zone.

BORDOMER 92, besides offering an opportunity to prepare for the 1994 Conference on Coastal Change, also had the immediate following objectives:

- (i) to establish a dialogue between scientists, managers, politicians, and technicians;
- (ii) to identify major problems related to coastal zone management;
- (iii) to explore ways to improve co-operation with developing countries in the domain of coastal zone evolution and management.

1. OPENING

The Chairman of the Organizing Committee for the Workshop, Prof. M. Vigneaux, called the Session to order at 9.30 on 30 September 1992, at the Hôtel de Région, Bordeaux. Mr. J. Valade, President Regional Council of Aquitaine, welcomed the participants. He emphasized the economic and environmental importance of the coastal zone and recalled the efforts of the Aquitaine Region in favor of research on topics related to the oceans.

4.1 INTRODUCTORY SESSION

Dr. G. Kullenberg, Secretary IOC, focused the objectives of the Workshop on the results of UNCED, particularly on Agenda 21, Chapter 17. This Chapter addresses threats posed by sedimentation, pollution, harmful fishing practices and climate changes. One obvious result of UNCED is the increased awareness of the importance of the coastal marine environment, and its socio-economic implications. While processes may be considered on a global scale, coastal changes themselves have to be studied on a local basis. In this respect, ocean-related problems are not yet accorded a sufficiently high priority on the part of national decision-makers.

Much effort was devoted by the IOC to preparations for UNCED 92 and input to the negotiations for the Framework Convention on Climate Change (FCCC). The IOC actively participated in UNCED and was identified by name as having the leading role to play, in co-operation with WMO, UNEP and ICSU in the development of the Global Ocean Observing System (GOOS). Specific reference is made to the need for IOC to fully formulate a strategy to provide training and technical assistance for developing countries through its TEMA Programme (Agenda 21, Chapter 17, para. 17.103). The IOC is also referred to in the context of the role of the oceans and all seas in attenuating potential climate change and the need to carry out analyses, assessments and systematic observations of the role of oceans as a carbon sink (Agenda 21, Chapter 17, para. 17.102). All of these matters are also of great relevance to the implementation of the UN FCCC.

The programmed of the IOC have a critical role to play in all other parts of Agenda 21, Chapter 17, as demonstrated by the contributions of GIPME, OSLR, IODE and OSNLR to the preparation and drafting of that Chapter. The IOC can play an active role in the implementation of several other Chapters of Agenda 21, for example, Chapters 9, 31, 36 and 37.

Follow-up to UNCED has been initiated. As regards GOOS development, this is a continuing effort. The TEMA components of GOOS, emphasized by the Assembly, is being developed as a priority.

UNCED confirmed that in the context of an action-oriented programme focussing on environment and development, the oceans cannot be considered without taking into account their links and interactions with the rest of the planet. The Conference also clearly recognized the critical role the oceans play in maintaining conditions of life on Earth; that without a healthy ocean there is no healthy global or regional environment; that the present understanding of interactions between the oceans, the land (especially coastal zone) and the atmosphere is insufficient for adequate forecasting of changes and consequences of human action.

UNCED put capacity building in focus, including the development of increased knowledge; education, research, infrastructure, equipment, expertise. It recognized that the establishment of knowledge and the capacity to use it means much for the social and cultural development of a country. Capacity building in poor countries is therefore most important. A co-operation programme between IOC and SAREC addresses this issue and, is an example of an implementation mechanism.

UNCED also acknowledged that sustainable development and rational use, or management, requires an information basis which has been obtained through the use of scientifically valid methods. Sustainable use of natural resources must be founded on knowledge about the resources base, origin, function and dynamics.

A number of issues of relevance to the marine environment can be defined on the basis of UNCED results:

- (i) population pressure on the coastal area is increasing, especially in tropical and sub-tropical zones. About two billion people, mostly in the poorest countries, are wholly dependent on marine protein, 50-90 % of the protein in developing countries comes from marine fishes;

- (ii) marine pollution and effects of land-based activities on coastal zone conditions are major problems in most regions of the world. These threaten the natural resources in the coastal zone. This issue is of course linked to the first issue;
- (iii) the effects of climate variability and change are potentially very important for the coastal area through changes of sea-level, meteorology, seasonality, precipitation levels, events like storm surges, cyclones, shifts in marine living resources, coastal erosion and general degradation;
- (iv) the role of the oceans in the climate system and the possibility of forecasting climate changes and variability from adequate ocean observations and modelling can, in combination with economical modelling, help remedy impacts of changes and define economically-valid counter measures and useful response strategies;
- (v) changes in the radiation budget, especially UV radiation, can influence the productivity of marine ecosystems and their composition. This cannot as yet be quantified;
- (vi) maintenance of marine living resources in coastal and shelf seas and the open ocean; this issue is mainly related to the management of fisheries, i.e., of those doing the fishing;
- (vii) maintaining the biological diversity and ecosystem integrity in heavily exploited and stressed near-shore and coastal ecosystems, e.g., certain fish species in areas of over fishing, as well as certain marine mammals;
- (viii) the ocean and marine environment uses are intersectoral and normally there is no single national authority dealing with marine affairs. Many different sectors of society have an interest in this part of the environment. Co-ordination and co-operation at national and international levels are therefore very important in order to ensure the best use of limited resources and capacities.

UNCED has underlined the necessity of a global solidarity which does not exist at present. It is impossible to consider the northern marine environment without simultaneously considering the southern marine environment. Consequently, developing countries should have at their disposal sufficient resources to manage their coastal environments. Capacity-building including education, research programmed and infrastructures - is an absolute necessity.

The intervention of Dr. M. Ruivo, as well as subsequent discussions, clearly showed the importance of international co-operation in achieving sustainable development of the coastal zone and management of the oceans as an integrated system. Knowledge and understanding of processes governing conditions are now clearly recognized as necessary prerequisites for development. Nevertheless, as far as oceanic research and knowledge are concerned, it is obvious that the level of financial support provided by countries and international funding agencies for training and education is far from adequate. In the framework of a true partnership, scientists should contribute to political decisions and play a social role. This is important in order to achieve an implementation of intentions as regards ocean and coastal environment. This is also true for researchers in developing countries. It is therefore of prime importance that, in the framework of international co-operation, senior scientists should be trained to associate scientific concepts and legal approaches and to participate in international negotiations on an equal footing with politicians and diplomats.

4.2 THEME 1: COASTAL DETERIORATION AND CHANGES

The question of coastal zone definition is a good example of the importance of linking scientific knowledge and the legal context. While referring to the official definition of the Exclusive Economic Zone (EEZ) in his keynote address, Dr. P. Cook, Acting Chairman for OSNLR of IOC, also considered the geological history and marine processes related to sea-level changes during the Holocene period, as criteria for characterizing the coastal zone. A present factor to take into account is the human activity which is responsible not only for the physical but also of the chemical changes of the coastal zone. Not only is the coastal zone affected by direct activities such as coastal engineering and pollution, but it can also be profoundly influenced by the impact of distant inland developments (e.g., damming of rivers). In order

to forecast coastal changes, the participation of geologists is essential; for this reason the coastal zone, its geological evolution and its resources are the key targets of the OSNLR Programme. Many other earth sciences-related programmes are also concerned with the coastal changes, such as Land-Ocean Interaction Study (LOIS) of the UK Natural Environment Research Council (NERC) which the British government has agreed to support at a level of £15 million over 3 years. In conclusion, Dr. Cook proposed that a better understanding of coastal changes and coastal resources could be achieved by:

- (i) using the past as a key for the future;
- (ii) geoscientific mapping of the coastal zone in a comprehensive, uniform, and high-quality manner;
- (iii) seeking solutions that work with, rather than against, coastal processes.

In his talk, Dr. M. Collins underlined the fact that dynamics of near-shore sediment movement had been treated only during the past 20 years. Important shoreline processes can be investigated in terms of coastal sediment budget, and their understanding can enhance the design and maintenance of beach replenishment or coastal protection schemes. In terms of physical processes, important parameters to be considered are wave modification near the coastline, tidal range and wave height. With a growing requirement to define boundary conditions in predictive models of the coastal zone, there is an increased need to obtain detailed field measurements. In particular, the predictive ability of models for storm-induced changes is low; nevertheless, field measurements in the nearshore and the shallow offshore zone are now undertaken through the use of frames/tripods, sensors and high-frequency monitoring.

For Dr. S. Djenidi, ambitious inter-disciplinary research programmed on the coastal zone, launched in various countries such as France, USA and UK over the past years, will have to face the problem of co-ordinating and integrating the work of specialists of different disciplines, ensuring that they have a common understanding of the time, length and scale of work. A mathematical model can provide the natural framework for such co-ordination and programme management. Applications of the GHER model to the Northern Bering Sea, the North-Western European Continental Shelf and the Western Mediterranean Sea have shown that the model used in metagnostic simulations successfully reproduces the main trends of the general circulation - thus providing valuable information for inter-disciplinary surveys and management.

Dr. J. van der Weide's talk was devoted to effects of climate change and accelerated sea-level rise (ASLR) on the coastal zone which will be most sensitive to climate changes. As a large part of the world's coastline consists of loose alluvial deposits, the balance between tidal forcing and fluvial discharge will be disrupted by ASLR. Consequences on coastal plains where socio-economic activities are concentrated are of major importance. Moreover, intertidal areas and marginal seas are valuable ecosystems, vital for biomass production and indispensable for the survival of many species. In order to forecast consequences of various scenarios for ASLR, a global vulnerability assessment was made by Delft Hydraulics and the Tidal Water Division of Rijkswaterstaat (Netherlands) focusing on the flood-prone areas, the number of people at risk, and the area of vulnerable coastal wetland. The results of the study, published just before UNCED, indicated that some 100 to 200 million people are living in a once-a-year flood-prone coastal area defined as the area below sea-level. The number will increase by about 50% for an ASLR passing from 0.3 to 1m. The uncertainty in the definition of the input scenarios, and the complexity of the physical and socio-economic aspects, show that a system analysis is most appropriate for such an approach. Tools for such impact assessment and policy analysis have now been developed.

Regarding chemical degradations and pollutions in the nearshore areas, two papers (Dr. C. Alzieu and Dr. C. Vale) were presented on the bio-chemical effects of pollutants on marine benthic organisms: TBT, PCB, and heavy metals. Traces and even infratraces are concentrated in these organisms which, in turn, provide the first indication of deterioration of the coastal environment.

4.3 THEME 2: CASE STUDIES AND SPECIFIC SYSTEMS

Economic and social consequences of coastal deterioration clearly appear through examination and comparison on a regional scale. Marine erosion of late Holocene beach deposits is a common problem on the equatorial coasts of the **Western Indian Ocean** (R. Arthurton), damaging and threatening tourism-related investment and communication infrastructure. On the **West African Coastline** (12 coastal countries

from Senegal to Cameroon), coastal erosion is also widespread along most of the low-lying coastline and even along some of the cliffed beaches (L. F. Awosika). The causes, which vary from one place to another, include: the topography; intense wave and tidal climate; anthropogenic activities (mainly damming of rivers); vulnerable soil texture.

The consequences of coastal erosion are particularly damaging for island countries such as **Cyprus** (A. Panayiotou), where the coastal zone is extremely fragile and subject to increasing misuse and over-exploitation because of housing construction, tourist and private urban expansion and, industrial and port developments.

From the examples discussed during the Session, it appeared that governments pay insufficient attention to problems relating to coastal zone deterioration. Scientists should therefore inform politicians on actions aimed at remedying the problem by strengthening the links between the relevant ministries and institutions, including those responsible for management and exploitation of the various coastal resources.

Two particular coastal environments were carefully examined during the Session: **lagoons** and closed **or semi-enclosed seas**. The economic importance of lagoons is obvious, particularly those with a tourism potential such as Venice (A. Forti) and the large Lagoon dos Pates in Brazil (P. Baisch). Numerous studies have been made on these two examples which can be considered as models for improving knowledge on lagoonal systems (hydraulic behavior, sedimentary dynamics, degradation, etc.).

As far as the problem of evolution of **semi-enclosed seas** is concerned, the particular importance of the human was highlighted. For the **Mediterranean** (F. Doumenge) as well as the Black Sea (T. Balkas), human interference is drastically modifying their evolution. The depth of the *anoxic* water masses in the Black Sea is decreasing and this could be a sign of a more widespread crisis affecting the whole Mediterranean basin. Geological history suggests a possible scenario of overall degradation. It is well-established that numerous *Sapropel* crisis have occurred in past geological time and such a crisis could now be brought about by man over a short-term time-scale. While trying to avoid pessimism, an accelerating degradation is obvious. Scientists should mobilize efforts and propose an urgent plan of action in order to control the problem. A multi-disciplinary approach is necessary, as well as the creation of a scientific network. However, in view of the urgency of the problem, the Workshop recommended the development of an emergency procedure in order to improve the established but complex bureaucratic international co-operation mechanisms.

The **Baltic Sea** (K.C. Emeis) represents a good example of an almost landlocked sea, strongly affected by freshwater inputs from rivers. It is typical of an estuarine nutrient-trap circulation system. Nevertheless, it appears that there is no unambiguous record of long-term increases in primary production for the open Baltic sea for the last decade. Using the criteria of laminated *sapropel* sediments on the sea floor, it can be seen that several periods of prolonged *anoxia* have occurred in the Gotland Basin throughout the sub-recent geological past, and at times when the anthropogenic pollution was not a factor contributing to biological productivity. Thus, the participants at the Session underlined the necessity estimating the magnitude of individual sources and sinks of pollutants in the framework of a knowledge of the natural hydrological systems. To this end, a comparison of various examples is recommended. The European participants proposed the development of a European network on the basis of the already existing programmed or through the preparation of new proposals.

4.4 THEME 3: COASTAL DEVELOPMENT, MANAGEMENT AND TRAINING

Estuaries are other examples of coastal environments having a particular economical value and, at the same time, a very high fragility (J. A. Feral; J. L. Mauvais). Thus, as a result, there is always continuing antagonism between management and conservation interests. It is necessary to have a good knowledge of the behavior of each system and, at the same time, of the economic data, in order to make sound choices. If the existing basic knowledge on the physico-chemical processes controlling estuarine systems is considered adequate, two approaches should be followed:

- (i) take into account simultaneously, the estuary itself, its entire drainage basin and relevant man-made effects;

- (ii) maintain a continuing dialogue between scientists, users and decision-makers regarding the management of these systems.

Coastal management everywhere is facing the same problems; one of these is an inheritance whereby past management was carried out according to administrative limits and not to natural boundaries. Moreover, management of coastal processes has often run contrary to marine processes instead of seeking solutions in sympathy with nature. Such conditions give contradictory results requiring constant maintenance which, in turn, leads to a "snowball" effect (B. Bellessort). Given all these reasons, effective coastal management implies continuing dialogue between all the parties concerned.

In order to assess the consequences and costs of management, the imprecision surrounding policy decision is as much a product of economic uncertainty as of physical uncertainty. To be able to provide the first estimate on the nature and scale of the consequences of sea-level rise on the south coast of England (M.J. Clark), a team of scientists and economists has been co-ordinated to assemble and analyze the massive information base that is needed to achieve an initial calculation. Cost benefit analysis is routinely required as a basis for assessing proposals for coastal protection, but the scale of calculation necessary to evaluate the economic consequences of sea-level rise in order of magnitude is greater. Finally, two specific problems of coastal zone management have to be underlined:

- (i) the problem of multi-agency responsibility for the coastal zone;
- (ii) the emerging problem of the resources and strategic values of coastal zone information.

This, once more, emphasizes the particular and increasing responsibility of scientific community to provide good science with a view to obtaining good policy. Through multi-disciplinary networks, improved information must be provided to decision-makers. Moreover, dialogue between the various partners at the national level should be enlarged at the regional and international levels. Considering the aspects of the law of the sea (M. Dejeant-Pens), it is obvious that an international strategy for the coastal zone should guide the regional initiatives taken in various coastal states. UNCED Agenda 21 proposes that international organizations should assist coastal states upon their request, regarding integrated management and sustainable development of the coastal environment, particularly in developing countries.

Training and improvement of research capabilities in coastal oceanography imply inter-disciplinarity and teamwork at the international level (A. Disteche-Ph. Polk). Co-operation is needed in education, the provision of equipment and research activities which are linked and need to be developed actively. As far as developing countries are concerned, to develop one without the other not only makes no sense, but also is a waste of time and money and, most of all, leads to frustration of human resources.

Co-operation entails the following aspects: the survey of the existing human capabilities in the industrialized countries and the co-ordination of these existing efforts to ensure complementary specialization; the transfer and the adaptation of these complementary skills to the needs of developing countries; and the integration of these efforts into international research programmed.

Regarding co-operation, BORDOMER 92 provided the opportunity to discuss the problem through two European examples: the Mediterranean Action Plan and relevant international strategy (S. Busuttill); and, the European Co-operation regarding major risks relative to the sea (J .P. Massue).

It was underlined that international action in relation to environmental problems requires the development of an innovative legal approach, such as that of a public trust, accommodating political, socio-economic and scientific concerns. Despite their regional character, the Barcelona Convention System and the Mediterranean Action Plan, if properly approached and discussed, offer interesting guidance towards the achievement of this goal. They can serve as examples for many other co-operative action plans.

5. RECOMMENDATIONS

Based upon discussions following the presentations and open forum of Round-tables, the recommendations listed below were adopted as a response to the various points highlighted by the audience:

- (i) creation, through relevant UNESCO and EEC programmed, of scientific, technical and co-ordination networks devoted to the main coastal zone problems;
- (ii) reinforcement of international co-operation, particularly in the framework of the North-South exchanges and relationships;
- (iii) choice of Bordeaux for the venue of the International Conference on Coastal Change in 1994;
- (iv) use of Aquitaine coast as a model area for coastal environment and development monitoring.

6. CLOSURE

The Closing Session was chaired by Mr. J. Valade, President of the Aquitaine Council; Mr. F.M. Pandolfi, Vice President - European Communities Commission; Mr. F. Mayor, Director-General of UNESCO; and Mr. J. Chaban-Delmas, Mayor of Bordeaux, successively addressed the plenary session after the presentation of the main results of BORDOMER 92 by Dr. M. Vigneaux, Chairman of the Workshop.

It was unanimously agreed that the goal of preparing an International Conference on Coastal Change had been achieved.

In closing the Session, the Director-General of UNESCO and the Chairman of the Workshop expressed their appreciation for the excellent facilities and hospitality provided by the Aquitaine Council and commended all attendees, invited speakers and contributors, on their active participation.

The Meeting was closed at 12.00 on 3 October 1992.

ANNEX I

BORDOMER 92 WORKSHOP PROGRAMME

MERCREDI 30 SEPTEMBRE

- Hôtel de Région -

ma tin

LES ENJEUX DE L'OCEANOLOGIE COTIERE
THE COASTAL OCEANOLOGICAL CHALLENGE

- 9H 30-**
OUVERTURE DES RENCONTRES INTERNATIONALES
Jacques VALADE, Sénateur, Ancien Ministre,
Président du Conseil Régional d'Aquitaine
- 10 H 00-**
RESULTATS DE LA CONFERENCE "ENVIRONNEMENT ET DEVELOPPEMEN~
(Rio, juin 1992)
Manuel MURILLO, Président de la COI,
Gunnar KULLENBERG, Secrétaire de la COI
- 10 H 40 -**
LA COOPERATION DANS LE DOMAINE DE L'OCEANOLOGIE COTIERE
Mario RUIVO, Conseil de coordination de la Commission Nationale Portugaise
pour l'UNESCO
- 11 H 15-** *Pause cafe*
- 11 H 30-**
L'ENVIRONNEMENT MARIN COTIER DANS LE CONTEXTE DE LOME IV
Ghebbray BERHANE, Secrétaire Général Groupe ACP, Bruxelles
- 12 H 00-**
SUSTAINING THE COASTAL ZONE AND ITS RESOURCES
Peter COOK, British Geological survey, Nottingham - Grande-Bretagne -
- 13 H 00-** *Déjeuner*

MERCREDI 30 SEPTEMBRE

- Hôtel de Région -

après-midi

**THEME 1- PROCESSUS D'ALTERATION ET DE
MODIFICATION DES LITTORAUX**

COASTAL DETERIORATION AND CHANGES

Session - 1

**President : Umit UNLUATA, Institute of marine Sciences - Turquie -
Vice-President : Jean-Guy FAUGERE, Institut Européen de l'environnement de Bordeaux
Rapporteur : Alain-Yves LE ROUX, University de Bordeaux I - France -
Rapporteur ad joint : Soren FLODERUS, University of Uppsala - Suède -**

**14 H 30-
HYDRODYNAMICS AND SEDIMENTARY DYNAMICS IN THE COASTAL ZONE
Michael COLLINS, Université de Southampton - Grande-Bretagne -**

**15 H 15-
COASTAL OCEAN MODELLING
Jacques NIHOUL, University de Liege - Belgique -**

**16 H 00 -
EFFECT OF CLIMATE CHANGES & SEA LEVEL CHANGES TO THE COASTAL
ZONE
Jentje VAN der WEIDE, Delft Hydraulics, Emmerloord - Pays-Bas -**

16 H 45- *Pause cafe*

Session -2

**President : Gunnar KULLENBERG, Secrétaire de la COI
Vice-President : Bernard ROUSSEAU, CEMAGREF Cestas - France -
Rapporteur : Chantal PUECHMAILLE, Université de Bordeaux 1- France -
Rapporteur-adjoint : Christien ABSIL, Netherlands Institute for estuarine & marine
Ecology - Pays-Bas -**

**17 H 00-
LES TOXIQUES A L'ETAT DE TRACE EN MILIEU MARIN :
INDICATEUR BIOLOGIQUES & BIOCHIMIQUES D'EXPOSITION
Claude ALZIEU, Institut Français pour la Recherche et l'Exploitation de la Mer,
Centre de Nantes - France -**

**17 H 45-
BIOACCUMULATION OF POLLUANTS IN THE COASTAL ZONE
Carlos VALE, Instituto nacional de investigação das pescas, Lisbonne - Portugal -**

JEUDI 1er OCTOBRE

- Hotel de Region -

matin

**THEME 2- ETUDE DE CAS REGIONAUX ET SYSTEMES SPECIFIQUES
CASE STUDIES AND SPECIFIC SYSTEMS**

Session - 1

**President : Michael COLLINS, Université of Southampton - Gde-Bretagne -
Vice-President : Jean-Pierre TASTET, University de Bordeaux I - France -
Rapporteur : Michel PUJOS, Université de Bordeaux I - France -
Rapporteur ad joint : Nilgun SUMMAK, Middle East Technical University. Turquie**

9H00 -

**COASTAL EROSION IN WEST AFRICA :
CAUSES, EFFECTS & RESPONSE MEASURES
Larry F. AWOSIKA, Nigerian Institute for Oceanography & marine research, Lagos,
Nigeria**

9H 45-

**BEACH EROSION : CASE STUDIES ON THE EAST AFRICAN COAST
Russel S. ARTHURTON, Coastal Geology group British geological survey,
Nottingham - Grande-Bretagne -**

10 H 30- *Pause cafe*

Session -2

**President : HI-SANG KWAK, Korea Ocean R & D Institute, Kyung-Kido - Rép. de Corée -
Vice-President : Alain LE BROUSSOIS, ESSO Rep, Bègles - France -
Rapporteur : Hélène HOWA, Université de Bordeaux I - France -
Rapporteur Adjoint : Iosu de MADARIAGA, University of Basque Contry - Espagne -**

10 H 45-

**COASTAL MANAGEMENT CASE STUDIES IN MEDITERRANEAN, CYPRUS
Andreas PANAYIOTOU, Geological Survey department, Ministry of Agriculture &
Natural Resources, Ncosie, Chypre**

12 H 15-

**APPORT DE IA TELEDETECTION A L'ETUDE DE IA ZONE COTIERE
Robert PRUD'HOMME, Département de Géologie & d'Ochnologie Université Bx I**

13 H 00- *Dejeuner*

JEUDI 1er OCTOBRE

- Hôtel de Région -

apres-midi

Session -3

**President : Peter COOK, British Geological Survey, Nottingham - Grande-Bretagne -
Vice-President : Jean-Pierre PEYPOUQUET, University de Bordeaux I - France -
Rapporteur : Jean-Marie FROIDEFOND, University de Bordeaux I - France -
Rapporteur Ad joint : Rui QUENTEL MENDES, University of Southampton
- Grande-Bretagne -**

14 H 30-

VENICE LAGOON, AS AN EXAMPLE

**Augusto FORTI, United Nations Industrial Development Organisation. International
Center for Science & High Technology, Trieste - Italic -**

15 H 15-

PATOS LAGOON (BRAZIL). AS AN EXAMPLE

**Luis R. MARTINS, 'Institut Geosciences, University Federal de Rio Grande
do Sul, Porto Aiegre - Bresil -**

16 H 00- *Pause cafe*

Session -4

**President : Jean-Pierre MASSUE, Conseil de l'Europe, Strasbourg
Vice-President : Paul-Charles LEVEQUE, University de Bordeaux I - France -
Rapporteur : Jean-Pierre CARBONEL, Université de Bordeaux I - France -
Rapporteur-Adjoint : Ian HALL, University of Southampton - Grande-Bretagne -**

16 H 15 "

L'EXEMPLE DE LA MEDITERRANEE

Francois DOUMENGE, Musée Océanographique de Monaco

17 H 00-

BALTIC SEA AS AN EXAMPLE

**Kay Ch. EMEIS, Geologisch Palaontologisches Institute und Museum der
Universität, Kiel - Allemagne -**

17 H 05-

BLACK SEA, AS AN EXAMPLE

**Turgut BALKAS, Environmental Engineering Department Middle east Technical
University, Ankara - Turquie -**

VENDREDI 2 OCTOBRE

- Cite Mondiale des vins et spiritueux -

ma tin

THEME 3- AMENAGEMENT, GESTION ET FORMATION

THE COASTAL DEVELOPMENT MANAGEMENT & TRAINING

Session - 1

**President : Ioan NITULESCU, Administration des ports du Danube, Galatzi - Roumanie -
Vice-President : Jean-Yves LE VEN, Port Autonome de Bordeaux - France -
Rapporteur : Jean-Marie JOUANNEAU, University de Bordeaux I - France -
Rapporteur-Adjoint : Hans KLAMER, Ministry of Transport & Public Works - Pays-Bas -**

9H00 -

**INTERACTIONS BETWEEN RESOURCES EXPLOITATION & NATURAL SYSTEMS
IN THE EBRO DELTA (NW MEDITERRANEAN)**

**Miguel CANALS, Research Group on Marine Geosciences, Facultat de Geologia
Barcelone - Espagne -**

9H 45-

**LE FONCTIONNEMENT HYDROBIOLOGIQUE DES GRANDS ESTUAIRES
FRANCAIS**

**Jean-Louis MAUVAIS Institut Français pour la Recherche & l'Exploitation de la
Mer, Centre de Brest - France -**

10 H 30 -

AMENAGEMENT ET GESTION DE LA ZONE COTIERE

**Bernard BELLESSORT, Société Grenobloise d'Etudes et d'Application
Hydraulique, Eychirolles - France -**

11 H 15- *Pause cafe*

Session -2

**President : Mario RUIVO, Conseil de Coordination de la Commission Nationale
Portugaise pour l'UNESCO**

Vice-President : Jacques SOUBEYROL, Université de Bordeaux I - France -

Rapporteur : Michel RICARD, Université de Bordeaux III - France -

Rapporteur Adjoint : Dirk LE ROY, Ecolas - Belgique -

11H 30-

**ASSESSING THE COSTS OF GLOBAL SEA LEVEL RISE : A GEOGRAPHIC
INFORMATION SYSTEM APPROACH FOR THE SOUTH COAST OF ENGLAND**

Michael CLARK. GeoData Institute, University of Southampton - Grande-Bretagne

12 H 15-

GESTION DES COTES : ASPECTS JURIDIQUES

Maguelone DEJEANT-PONS, Conseil de l'Europe. Strasbourg

13 H 00- *Dejeuner*

VENDREDI 2 OCTOBRE

- Cite Mondiale des vins et spiritueux -

apres-midi

Session -3

**President : Jean-Pierre VERNET, Institut FA FOREL, Université de Genève - Suisse -
Vice-President : Robert PRUD'HOMME, Université de Bordeaux I - France -
Rapporteur : Kazuhiro KITAZAWA, UNESCO, COI
Rapporteur - Ad joint : Andrea BELGRANO, University of Gent - Belgique -**

14 H 30 "

**FORMATION ET PERFECTIONNEMENT A L'OCEANOLOGIE COTIERE
Albert DISTECHE, European Institute for advanced studies in oceanography,
Liège - Belgique -**

15 H 15-

**MEDITERRANEAN ACTION PLAN & INTERNATIONAL STRATEGY
Salvino BUSUTTIL, Unité de Coordination du plan d'action pour la Méditerranée
Athenes - Grèce -**

16 H 00- *Pause cafe*

Session -4

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oceanography, Liège - Belgique -
Rapporteur General : Claude LATOUCHE, Université de Bordeaux I - France -
Rapporteur-Adjoint : Jacqueline STEFELS, University of Groningen - Pays-Bas -**

16 H 15-

**LA COOPERATION EUROPEENNE SUR LES RISQUES MAJEURS
Jean-Pierre MASSUE, Conseil de l'Europe, Strasbourg**

17 H 00-

**SYNTHESE DES TRAVAUX
Michel VIGNEAUX, Président des Rencontres
Claude LATOUCHE, Rapporteur Général**

SAMEDI 3 OCTOBRE

- Hôtel de Région -

9 H 30- SYNTHÈSE ET CLOTURE

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Michel VIGNEAUX, Président des Rencontres

Filippo Maria PANDOLFI, Vice-Président de la Commission des Communautés Européennes

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ANNEX II

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ANNEX 111

REPORTS ON THE ROUND-TABLES

BORDOMER 92: ROUND-TABLE No 1

Technical Needs of Research and Monitoring Operations in the Coastal Zone:

The round table chaired by Dr. A. Stefanon, IOC Seconded Staff was held at the Hôtel Pullman in Bordeaux and started at 21.00 on 01 October 1992.

The Chairman briefly welcomed the participants and presented the aims of the Workshop and focused on the technical aspects involved in the research and monitoring activities in the coastal zone. The Chairman having read the list of speakers, asked Mr. Dallaporta, Director, "Istituto per la Dinamica delle Grandi Mare", CNR, (Venice, Italy) to present his intervention. Mr. Dallaporta focused his speech on the different aspects of the coastal oceanography in Italy, where different types of coasts over a length exceeding 8,000 kms - need to be approached in different ways. Along the Tirrean shores, the coastal zone is rather narrow, with possibly a very narrow platform, tipping down to large depths even close to the coastal line. On the contrary, along the Adriatic, the coastal zone is as wide as the sea itself, with very shallow depth and less than 50 meters in the northern sea.

After a brief presentation of the coastal research presently carried out, Mr. Dallaporta stressed the importance of the national research and monitoring activities in the coastal zone and of using specialized boats properly designed, flexible and specifically constructed for that purpose. Presently, only modified boats are in use with some disadvantages. He introduced the joint effort between the Italian National Research Council and the TENCARA Shipyard in Marghera, Italy (a Montedison sub-company specializing in research, development of building techniques of boats and other special structures, i.e., design and construction of the "Moro di Venezia", the sail ship that won the recently WITTON-cup and one of the finalists of the America Cup).

After another brief presentation of the advantages of the small-medium crafts presented by catamarans, Mr. Honsia described the project idea of a research vessel especially designed to be used in the coastal zone (the paper was distributed to participants).

Following discussions, comments and questions given by Misters Dallaporta, Awosika, Jelgersma, Panayiotou, Charlier and the Chairman, it was Mr. Altonsia who specified the price of the catamaran ready for sailing but without scientific instrumentation which would cost between 4-5 million US Dollars. The operating costs could also increase twice as much, if the payload of 10 tons is reduced which could in turn increase fuel tanks; or by reducing the speed to the maximum of 17-18 knots. The overall stability of the ship will allow the mounting on the stern deck of a light drilling rig, as well as the 4 anchors to keep the ship in an exact position. The winches hoisted on the upper deck would allow free space and easier operation on the working deck. Such large weight on the upper deck is an advantage for the catamaran, while a disadvantage or even a danger for a conventional hull. The minimum draught will allow the ship to operate in extremely shallow waters and the type of construction will also permit the ship to lie on the exposed sedimentary sea-bed at low tide.

Mr. Vidali presented his company, specializing in oceanographic winches, and described a new concept of molecular system, where a single hydraulic power supply can operate more than one peripherals, including the crane in which the power supply can be used in an emergency to take back at minimum speed the already deployed instrument. The best advantage of the system is probably the freedom to use different, interchangeable drums with cables in different sizes and types. To change a drum, less than half an hours time is sufficient and the winch is a double drum which can be used in any oceanographic task, including fishery.

Mr. Awosika presented the first IOCEA scientific cruise being carried out on the West African Coasts. He described the ship, the instrumentation and the problems encountered and how they were solved. Mr. Dallaporta, Mrs. Jelgersma and the Chairman also participated in the discussion on the same subject.

The Workshop was closed at 23.00.

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BORDOMER 92: ROUND-TABLE N° 2

Remarks on Co-operation with Developing Countries:

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Vice-Chairman: Prof. Dr. Ph. Polk (Free University of Brussels, Brussels, Belgium)

Rapporteur: Mr. P. Pissierssens (Intergovernmental Oceanographic Commission, Paris, France)

It was emphasized at the opening that Education, Equipment and Research should always be linked in development co-operation. Education for students from developing countries should be organized in the developing countries, rather than in the North where the students will be trained to work in environments unrelated to their own. In the intermediate period when training will continue to be organized in the North special attention in courses and dissertations should be given to topics relevant to the South.

International Organizations including the IOC often work at the regional level through regional subsidiary bodies which meet and decide on regional research priorities. However, marine research, competing with health, education, public works, etc. is often not considered as a priority. This brought up the question how the (marine) environment could be brought to the forefront in the after-Rio UNCED period. The IOC is actively interacting with donors and other UN and non-UN bodies in this respect.

An important problem was raised with regard to training: too often it is seen that students from developing countries are trained in the North to return to their home countries where they face lack of facilities to put their training into practice. Lack of funds also keeps them from participating in international scientific conferences which in its turn makes it difficult to publish their research findings. In this respect it was also said that more international scientific conferences should be organized in developing regions to increase the participation of developing countries in such activities.

During the discussions it became clear that there are substantial differences between developing countries and regions with different levels of development and requirements. A variety of problems were identified, occurring in various combinations: lack of trained staff, lack of infrastructure, lack of equipment, lack of sustained research funding, lack of national co-ordination, lack of regional communication, lack of regional co-ordination, lack of contact between scientists and policy-makers, government restrictions, etc. Several of these problems also occur in developed countries and regions.

The definition of co-operation was also put into question. It was remarked that in co-operation there should be mutual respect and common interest. It was said that too often the scientists from donor countries wish to implement projects mainly interesting and relevant to themselves. The receiving developing countries were said to be insufficiently involved in the project design. Furthermore, it was stated that bilateral donors generally do not support regional co-operation between developing countries. It was concluded that for co-operation projects to be successful the North should also listen to the South: local know-how should be appreciated and put to good use.

Where research has been undertaken by foreign researchers (especially during the colonial era) it is sometimes found to be extremely difficult (for the researcher from the former colony) to obtain historical data from the former colonial powers.

Special attention was given to the European Marine Interdisciplinary Network (EMIN) representatives of which were present at, and participated in the round-table. It was discussed whether this network, composed of young European Marine scientists at MSc, PhD and Postgraduate levels working in European marine science institutions and universities, could interact with scientists from developing countries. The EMIN representatives offered to assist in filling the gap in education existing in some developing countries. They emphasized the importance of communication between scientists which is often still lacking in the South. EMIN offered to send their Bulletin to scientists from developing countries and thus start interaction between North and South. It was noted that the same could be done with newsletters in developing regions

(e.g., WINDOW newsletter of Western Indian Ocean region) for EMIN members. They further suggested inviting scientists from developing countries to EMIN scientific meetings, possibly with assistance from the IOC and other International Organizations or donors. In return Dr. Okemwa invited EMIN to visit institutions in developing countries to familiarize themselves with the needs.

The issue of problems of communication and co-ordination between scientists and institutions of higher education was also brought up. The problem of sensitizing policy makers for marine related issues and problems was raised. The interpretation of scientific data for a wider audience would ensure an unquantifiable 'spin-off' from research and would assure the required feedback in the form of funding. It was therefore considered important to ensure preparation of interpretative materials (films, documents ...) for use in (i) sensitizing decision makers; (ii) training environment managers; (iii) teacher training; and (iv) sensitizing and educating both the local population and tourists.

Factors of importance in North-South co-operation strategies

- 1 North-South co-operation must be based on equality, taking into account the specific needs of site, country or region;
- 2 It is important to stimulate small-scale projects which fit in national, regional and global master plans;
- 3 It is important to develop and/or strengthen regional scientific networks which foster communication and collaboration between scientists of developing countries, and between scientists of North and South;
- 4 (Bilateral) donors must be stimulated to support the above-mentioned networks;
- 5 Governments of countries from North and South must be made aware of the importance of marine research in relation to sustainable development and protection of the marine environment, referring to UNCED and its recommendations;
- 6 Policy-makers of developing countries must be stimulated to participate actively in regional meetings (especially in intergovernmental ones like the IOC's regional committee meetings) to define regional priorities, and to actively interact with donors stressing the importance of complementary regional actions;
- 7 Developing countries should strive towards the development of 'centres of excellence' facilitating exchange of scientists in a South-South and North-South framework;
- 8 Developing countries should strive towards the development of regional training courses based in their region, whereby the centres should be involved;
- 9 In marine co-operation projects it must be attempted to twin scientists and institutions from North and South and link education, research and equipment

In addition:

- 10 - The European Marine Interdisciplinary Network (EMIN) and developing countries will commence interaction through;
 - exchange of information on human resources and research activities;
 - exchange of newsletters invitation of scientists from developing countries to EMIN 'meetings participation by EMIN in relevant regional meetings in developing countries;
 - investigating training requirements in developing regions and possible assistance by EMIN members interact closely with relevant UN and non-UN bodies.

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