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by Mr Kemal Timur, Dr Riccardo Ceccarelli and Mr Mark Jaccarini

The Intergovernmental Oceanographic Commission (IOC) and its work in the Mediterranean

The Intergovernmental Oceanographic Commission (IOC) was established in 1960 as a body with functional autonomy within the United Nations Educational, Scientific and Cultural Organization (UNESCO). Its programme is approved by the General Conference in the framework of the latter's adopted budget. The purpose of the Commission is to promote marine scientific investigations and related ocean services with a view to learning more about the nature and resources of the ocean, through the concerted action of its members.

IOC is unique in the UN system, in that it is set up to deal specifically with the oceans and the marine environment as a whole. Its member states are strongly engaged in the formation and execution of programmes, through IOC's own governing bodies, the Assembly and Executive Council and through national commitments. These bodies represent the marine science and ocean services expertise of member states. Furthermore, it is important to keep in mind that IOC serves as a joint specialized mechanism for the UN Organization in accordance with the Inter-Secretariat Committee for Scientific Programmes Relating to Oceanography, the so called ICSPRO agreement of which UNESCO is depositary.

The programmes of the IOC are too broad in topical and geographical scope to make a summary of all of them. An absolute requisite for the exploration of ocean properties and national utilization of resources is the availability of reliable charts of topographical, bathymetrical and general oceanographical properties of the oceans.

In cooperation with the International Hydrographic Organization, the IOC is preparing regional bathymetric charts of the world's oceans. The International Bathymetric Chart of the Mediterranean (IBCM) was published in 1981 under the authority of IOC and a new edition is under preparation, with publication planned for 1995. The chart is Mercator standard parallel and the scale is 1:1000000. The Black Sea is also included at a 1:2000000 scale. In 1987 a reduced variant of IBCM was published at a scale of 1:5000000. Digitization of the IBCM contours has been completed and the magnetic tapes will be available to the scientific community in 1989-1990. Five separate charts (each consisting of 10 sheets) of the geological/geophysical series of the IBCM are now in preparation and publication is planned for 1992.

Another area of major achievement is in the field of marine

pollution research and monitoring through the Global Investigation of Pollution in the Marine Environment (GIPME) programme.

In the Mediterranean Sea, IOC develops and supports activities in the field of physical and chemical oceanography, modelling, ocean mapping and pollution research and monitoring, in co-operation with other organizations, particularly with UNEP-MAP, IAEA, FAO and the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM). At present, there are two major international projects addressing the physical oceanography of the Mediterranean Sea; these are POEM and PRIMO. POEM is the Programme on Physical Oceanography of the Eastern Mediterranean, co-sponsored by IOC and UNESCO. PRIMO is the acronym of the French name for International Research Programme in the Western Mediterranean which is co-sponsored by IOC and ICSEM.

The programme of investigation of POEM initiated an intense measurement and modelling effort to describe and interpret the circulation features of the eastern Mediterranean Basin. The first phase of POEM ends in December 1990. Initiation of co-operative interdisciplinary research will take place with the start of POEM Phase II. This research will make use of the new knowledge of the physical transports in order to study the biology and chemistry of the water column as related to physical forcing mechanisms. Phase II of POEM is planned for 1991 through 1997.

IOC took the initiative of convening a group of experts particularly interested in the oceanography of the Western Mediterranean to draft a reference document on the state of knowledge of the physical oceanography of this basin, and to prepare a proposal for a programme of research that could complement POEM. Numerical modelling is a basic component of the programme's strategy. The first phase of PRIMO will aim at elucidating seasonal variability. The fifteenth session of the IOC Assembly approved the proposal on PRIMO with the joint co-operation of IOC and ICSEM and the establishment of an Ad Hoc group of experts to develop, promote and co-ordinate this project.

On the hand, in support of MEDPOL, several research projects have been co-ordinated by IOC. As a joint activity with IOC and MAP a training course on modelling of outfalls and coastal water quality was organized in Athens, Greece in October 1987. This activity was organized with direct reference to the Genoa Declaration on sewage outfall construction. A workshop was organized jointly by IOC, FAO and MAP in Piran, Yugoslavia, in June 1988, on statistical analysis of benthic monitoring data in coastal zones. The second training workshop on the same subject took place in Athens, September 1989. These activities are

organized under the guidance of IOC's Group of Experts on Effects of Pollutants (GEEP).

In co-operation with UNEP, IOC organized a Review Meeting on Oceanographic Processes of Transport and Distribution of Pollutants in the sea (Zagreb, May 1989). Attention has recently focused on the increasing amounts of man made debris which litters the world's oceans and coastlines. This debris consists mainly of persistent material, such as plastics, metal, glass and rubber. Recognizing the lack of information on marine and coastal debris in the Mediterranean, IOC, FAO and UNEP convened an Ad Hoc meeting on persistent synthetic materials in the framework of the Mediterranean Action Plan activities (Athens, October 1987) which recommended a pilot monitoring programme of litter in selected Mediterranean areas. The selected areas are in Cyprus, Israel, Sicily (Italy), Spain and Turkey. The purpose of the survey which was co-ordinated by IOC was to assess the quantity of persistent garbage which litters the Mediterranean coastline, to evaluate its geographic distribution, to investigate the seasonal variation of the litter quantity, and to define its sources. The results of the survey were reviewed at a meeting organized by IOC, FAO and UNEP (in Haifa, Israel, June 1989.) The main recommendations of the meeting were:

- all countries bordering the Mediterranean Sea should ratify Annex V of the MARPOL Convention, and the Convention itself if they have not already done so. According to this Annex, no plastics should be dumped in the sea and discharges of types of litter are restricted;
- the presence of garbage dumps on the coast should be prohibited.

On the other hand, it is obviously necessary that coastal states have the capacity and the opportunity to evaluate the potentialities of living and non living resources in their Exclusive Economic Zones. National utilization and management of living and non-living resources are strongly dependent on the application of science. IOC has therefore, in co-operation with FAO, engaged in a major programme on ocean sciences in relation to living resources, the so-called OSLR programme and with the UN Office on Ocean affairs and Law of the Sea in the programme for non-living resources (OSNLR programme). In order to implement the OSNLR programme in the Mediterranean Region, there is joint co-operation of IOC and ICSEM. At the third session of the Guiding Group of Experts on OSNLR held in Bordeaux, France, February 1989, it was proposed that a programme should be developed to hold an IOC-ICSEM Workshop on this subject in conjunction with the ICSEM General Assembly - Congress in October 1990.

The coastal zone is extremely sensitive to change, whether

natural or human-induced. Because of the concentration of human habitations and activities in the Mediterranean coastal region, variability and susceptibility to change are of utmost importance for life in the Mediterranean countries.

For the next 50 years, the estimated rise of sea level due to the well known "greenhouse effect" will mean a considerable loss of the economic potential of several Mediterranean countries. The OSNLR sub-programmes of particular concern to the Mediterranean coastal environments are the following:

1st sub-programme: Environments, Aesthetic changes, Tectonics and Resources (SETR). This programme will include the scientific studies on several variables, such as: compaction of sediments (e.g., deltaic sedimentation), long-term coastal movements, episodic seismotectonic events, etc. Any positive or negative movement of the land surface to the sea level will cause corresponding falls and/or rises of the relative sea level and that will affect coastal evolution.

2nd sub-programme: Shelf and Upper Slope Dynamics (SUSD): This project is of particular concern for the Mediterranean system which, for a large part, is characterized by a narrow continental shelf and very often a continental slope, very close to the coastline.

IOC is also interested in some possibilities for future scientific investigations, such as: the transport and depositions of sahara dust and other particulate matter from North Africa; the coastal zone and its management; climatological research on processes related to climate in the Mediterranean area; and global changes and development of prediction modelling.

### ALECSO

The foundation of the Arab League Educational, Cultural and Scientific Organization (ALECSO) dates back to the first Pan Arab Cultural Treaty concluded in 1945. The organization was formally announced at the first conference held in Cairo on 25th July 1970, where the basic framework for its role, programme of activities and other financial and administrative matters were approved.

ALECSO is responsible for the promotion and co-ordination of educational, cultural and scientific activities at the regional level in the Arab world, comprising 22 countries, 9 in Africa and 13 in Near-East Asia.

The main targets of ALESCO are:

- development of human resources in the Arab countries;



- development of Arab economic and social sciences;
- scientific development and modern technology;
- improving the environmental development in the Arab countries;
- exploring new areas of linking Arab-Islamic thought;
- developing culture at home and abroad;
- development of man-made and information systems.

These targets will be reached by 5 strategies:

1. strategy for the development of education;
2. overall plan for the development of the Arab culture;
3. strategy for the development of science and technology;
4. strategy for literacy and adult education;
5. new Arab system of communication.

#### Structure

ALECSO has three main organs:

1. The General Conference
2. The Execution board
3. The Secretariat

There are four major sectors within the Organization, with each sector having departments and other units which are directly responsible for the programmes and projects approved by the General Conference:

1. Service and Programme Support
2. Science and Technology
3. Culture and Social Sciences
4. Education

The science and technology sector comprises three different divisions:

1. The Department of Science is the major body responsible

for administration and planning sector programmes.

2. The Programme of the Red Sea and the Gulf of Aden, with the purpose of co-ordinating efforts relating to marine environment for the Arab countries bordering the Red Sea.
3. The Green Belt Project for North Africa, with the aim of combatting desert encroachment on fertile lands and developing grazing areas.

In the light of long term objectives, the science sector has chosen 10 relevant areas for which continuous programmes have been designed:

1. Overall planning for science and technology including Arabization of material.
2. The administration and development of Arab human resources in the field of science and technology.
3. Establishment of scientific and technological infrastructure in the Arab countries.
4. Optimum utilization of technology in the Arab countries.
5. Transfer of technological and scientific know-how into the Arab Region.
6. The recovery of the Arab scientific and technological heritage.
7. Consolidation of scientific and technological knowledge in the Arab communities.
8. The development of scientific and technological potential in the Arab Region.
9. The effect of modern science and technology in the Arab communities and in the life of the Arab individual and his cultural values.
10. Programmes of developing natural resources and the protection of Arab environment.

This last area has been reflected in 15 continuous programmes dealing with environmental protection of land and sea with particular reference to hydrological, mineral, water and energy resources. The Science and Technology sector is working also on programmes for the development and environmental protection of the Mediterranean Sea.

### Specially Protected Areas

The Protocol concerning Mediterranean Specially Protected Areas entered into force in March 1986, and has been ratified by 10 countries. The Protocol recognizes that archaeological and cultural resources as well as the environment constitute the common heritage of the Mediterranean region. In fact, the Article 1 of the Protocol states that:

the contracting parties ... shall take all appropriate measures with a view to protecting those marine areas which are important for the safeguard of the natural resources and natural sites of the Mediterranean Sea Area, as well as for the safeguarding of their cultural heritage in the region.

Such areas are identifiable as follows:

1. sites of biological and ecological value;
2. the genetic diversity, as well as satisfactory population levels, of species, and their breeding grounds and habitats;
3. representative types of ecosystems, as well as ecological processes;
4. sites of particular importance because of their scientific, aesthetic, historical, archaeological, cultural or educational interest (Art 3).

At the first meeting of focal points held in Athens in June 1987, guidelines concerning the selection, establishment, management and notification of information on marine and coastal protected areas were adopted. The guidelines can be subdivided in accordance with Article 4 as follows:

- selection of protected areas;
- establishment of protected areas;
- management of protected areas;
- notification of information on protected areas.

The main steps for the selection of protected areas according to the guidelines, are:

- establish policies and objectives in accordance with the national goals and the contents of the Protocol;
- create a planning team for selecting and establishing

protected areas;

- survey the marine and coastal environment in order to identify sites worthy of protection;
- evaluate sites and features in accordance with the following criteria: ecological, social, economic, regional and programmatic;
- rank sites. With the Centre's help in order to identify sites of particular regional interest.

The guidelines for the establishment of protected areas suggest that a decision maker

- designate a responsible authority;
- survey potential sites;
- adopt legislation;
- obtain consensus;
- provide financial support;
- establish boundaries;
- identify resources needed;
- establish appropriate legislation;
- notify the Centre;
- offer alternative or compensate displaced activities.

The guidelines suggest an information model for each protected area:

- implement the management plan;
- use zoning and buffer zones in order to permit the maximum compatible uses of the protected area;
- establish educational and information programmes;
- monitor the effectiveness of protection by the control of critical species, ecosystems and physico-chemical parameters;
- conduct research in order to define baselines for areas and coastal environments or to develop restoration techniques for natural habitats;

- restore damaged areas and resources to their natural state;
- promote the national concern for natural resources.

The guidelines assign information responsibilities to national focal points (Art 14.2 of the Protocol), including information to the centre through the MAP Coordinating Unit and the dissemination of regional recommendations.

In September 1987, the Genoa Declaration on the last 10 years of the Mediterranean Action Plan adopted 10 main objectives to be reached by the next decade. These include:

- the protection of endangered marine species (i.e. monkseal and marine turtle);
- identification and protection of about 100 areas of common and historical heritage;
- identification and protection of about 50 marine areas of Mediterranean heritage.

In order to pursue these aims the Centre has developed case studies on specific islands and species and established expert groups with the following interests:

- Monkseal in Tunisia, Turkey, Greece and Morocco;
- Marine turtle in Tunisia, Algeria, Libya and Egypt;
- Marine vegetation, plants and landscape environments;
- Under-water archaeology with a list of experts and institutes, documents on the methodology for submarine archaeology and the treatment of remains;
- Legislation in order to collect and synthesize the international and national texts dealing with the Mediterranean marine and coastal environment.

#### The Environment Programme for the Mediterranean of the World Bank

A few years ago it was apparent from various reports that the environmental situation in the Mediterranean was deteriorating rapidly. This was when the World Bank and the European Investment Bank decided to carry out an environmental impact report. Teams were sent to all parts of the Basin, excluding Albania, and even to Greece and Spain which are considered to have "graduated" from World Bank aid. From last year the reports started to arrive and the studies revealed that



attention should be given to a) the sea and b) the wasted areas.

A number of resource use problems facing the region were identified. Probably the most explosive issue in the Mediterranean is the degradation and depletion of fresh water resources due to increasing demands from industry agriculture and urbanization. Apparently industry in the Mediterranean uses 70% more water than is necessary and 300% more is used for agricultural purposes.

Probably some form of fiscal management that would do away with pricing water cheaply and bringing it up to its real cost could go some way to rationalising the use of this resource. till not common we continue to use this resource recklessly. Misuse is accompanied by pollution. Pesticides entering ground water and increasing salinity are other forms of fresh water depletion. Thus a falling supply and an increasing demand (population will undergo a 400% increase around the Med) for this precious commodity will exacerbate the problems for the Mediterranean.

The broad range of developmental problems in the region can be traced back to three important factors:

1. economic policies that do not reflect time costs of basic commodities;
2. the inability of nations to implement the many conventions and protocols that they have actually agreed to. It seems that Turkey is setting a good example by acceding to Conventions on environmental protection after it has developed a framework to implement such measures. Also it must be added that the tremendous difficulties in harmonizing laws in countries with different cultures and systems further dampen progress in the area of common policies;
3. lastly, political will is too often lacking.

The World Bank concluded that a priority list was to include (i) minimising public health risks and (ii) avoiding irreversible destruction techniques.

The World Bank is presently financing environmental protection projects through METAP which is its Mediterranean Technical Assistance Programme in the following areas:-

1. The promotion of contingency plans to fight oil pollution;
2. The establishment of reception facilities for waste management in Cyprus, Egypt, Tunisia and Algeria.

3. Reception facilities and disposal of toxic waste in Egypt, Algeria, Turkey, Tunisia and Algeria.

4. Irrigation water systems in Malta, Tunisia and Algeria.

5. Coastal zone management projects in Yugoslavia, Egypt, Greece, Turkey, Cyprus, Syria, Tunisia, Algeria and Morocco.

6. Measures against air pollution in Yugoslavia.

7. Agricultural pesticides control in Turkey, Libya, Tunisia, Algeria and Morocco.

8. Nature Reserve protection in Yugoslavia, Turkey (wetland protection) Cyprus and Egypt.

9. Cultural property and restoration in Yugoslavia, Egypt, Tunisia and Morocco.

At present US\$ 3.5 billion are being allocated to these Mediterranean States at 0.5% interest above commercial rates for the World Bank to be able to cover its administrative costs.