

**Mediterranean network to Assess and  
Upgrade Monitoring and forecasting  
Activity in the region**

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**Laboratoire d'Etudes Maritimes**

**L.E.M.**

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**MB 16**

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**Report for the Kick – off meeting**

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**11 – 13 March 2002**

**Paris – France**

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## **I - Presentation on activities of L.E.M. in relation to current or projected activities related to ocean and coastal monitoring and to operational oceanography**

L.E.M. was founded in 1979 as public Consulting Engineer under the administrative authority of the Ministry of Public Works.

L.E.M. became autonomus as public economic firm in February 1989.

According to its statute, the Laboratory has the following activities :

- **planning and design of ports and maritime structures**
- **Environnement Impact Assessment for dredging and maritime projects**
- **Studies for restoration of eroded beaches and for port accretion**
- **Physical and numerical modelling of seastates (Waves and currents)**

Its principal partners in the maritime field activities are the different Directories of Public Works and the Ports Authorities (Ministry of Transport).

At present L.E.M. has 140 employees from whom about 50 Engineers.

To fulfill its mission, its organisation include :

- **The Center for physical models** (Hydraulic Laboratory) wich has two large covered halls of respectively 50 x 70 m and 30 x 60 m for 3 D models and two flumes of 40 x 1 x 0,6 m for 2 D models.

Complete equipment is available for Wave generation and data acquisition (Waves, currents, pressures..... in the models).

- **The Engineering Center** deals with design and expertise of maritime structures including ports, Environnement assessment, marine works commissionning, numerical modelling.

For this purpose the following softwares are used :

- **MIKE 21 software** : Complete package for simulation of wave refraction, wave agitation, littoral sediment transport and port silting.
  - **EFFEL software** : for static and dynamic calculations of maritime structures.
  - **Other software** for waves deformations and jetties, quays etc ... design.
- **The Center for field measurements** which undertakes surveys for bathymetry, sampling and analysis of sediment, currents and waves measurements and seismic reflexions.

**For this purpose the following equipment is used :**

- **positioning systems**
- **strada software for mapping**
- **hydrographic sounder**
- **curentmeter**
- **thermograph**
- **waverider**
- **chemical and biological tests of water and sediment samples are subcontracted to specialised laboratories**

## **II – Main marine research Centres and national oceanographic data centre :**

The main marine research Centres and national oceanographic data Centres may be identified by sectors of activities as follows :

### **II.1 Education and Research in universities and institutes**

The main Institutes dealing with marine science and depending from the Ministry of Higher Education and Scientific Research are :

- a - **The institute for Marine Science and Coastal Management (ISMAL)** undertakes education and research in marine biology, oceanography, marine environmental pollution and marine geology. A laboratory is devoted to each of these activities.

ISMAL has excellent naval supports for marine survey among them a vessel for oceanographic research (25 meters long and 36 square meters for in situ laboratories).

However, these means are used only for short term scientific cruises and the effectiveness for operational research and economic development remain limited.

ISMAL was already involved in international programmes such MEDAR/MEADATLAS/MEDPOL.... and has interesting experience and databank on :

- ❖ Hydrodynamics in sensitive coastal ecosystems (estuaries and bays)
- ❖ Marine pollution with hydrocarbons and heavy metals.

#### **b - The Institute for Sciences of Nature (INS) depending of the Scientific and Technical University of Bab Ezzouar (USTHB)**

Four Laboratory are active for :

- ❖ Biology and Marine Ecology
- ❖ Benthology
- ❖ Planctology
- ❖ Pelagic Ecosystem

The ISN has an important role for marine Living Ressources – To assess and control MLR, the ISN began to use satellite imagery for climatic (Temperature) variability in relation with Space Technique National Center (CNTS).

Additively to the above institutions two departments of marine Biology exist respectively at Annaba University and Oran Scientific and Technical University.

### **II.2 – Sea Climatology and meteorology**

The relevant body for forecasting seas is the National Office for Meteorology (ONM) wich has a wide climatological stations network. Synoptic data are overspread every six hours for specific users.

A close cooperation with WMO is present. Satellite Techniques are commonly used.

For high seas a special meteorological bulletin is sent to all concerned parties.

However Waves forecasting is estimated empirically, a developpment of appropriate numerical model calibrated on algerian coast is necessary.

Precise parameters of waves spectrum and long waves distribution remain unknow although the Wave Climat near the coastline is very severe.

The requirements for operational network are the installation and maintenance of at least three Waverider buoys and their necessary data management. ONM has project on this matter.

ONM is used to work intensively in real time network and have skilled personal on computing communications.

### **II.3 – Coastal management and Marine Services**

The continental shelf is narrow in most part of the coastline. The consequence is the limited biomass available along the algerian coast. Due to the pressures of demographic concentration, urban and industrial growth and tourism perspective a careful coastal management for a sustainable developpement is made necessary. The following institutions are involved for this purpose.

#### **(a) – Hydrographic Service (National Navy)**

The Navy has an efficient service in charge with coastal bathymetry by using a large oceanographic research vessel.

The task is to update marine charts edited by the National institute of Cartography.

The Hydrographic Service has also tide gauges inside the principal ports. Some of them are operated continuously.

#### **(b) – Laboratory for maritime Studies (LEM)**

LEM is a Public Consulting Engineer wich acts closely with the Directorate of Maritime Infrastructure (Ministry of Public Works) and the Ports Authorities (Ministry of Transports).

Its activities are :

- ❖ planning and design of ports
- ❖ Environment Impact Assessment for dredging, waster management and maritime projects
- ❖ Studies for Restoration or eroded beaches and port accretion
- ❖ Physical and numerical modelling of seastates.

For these activities, LEM undertakes surveys for bathymetry, sampling and analysis of sediment, currents and Waves measurements.

## II.4 – Environment and Health of the Sea : (Ministry of Environnement)

The Directorate of Environment is in charge to :

- ❖ Develop sound management approches and proper strategies for sustainable Development in respect with UNCED recommandations, Agendas 21 and ratified Conventions signed par Algeria.
- ❖ Consequently, elaborates norms and gives green light to economic projects in respect with these norms.
- ❖ Awareness and Education of the public in relation with the other institutions.

## III - Organisational structure of marine affairs in Algeria

The key ministries and marine authorities that have responsibilities related to the sea are :

- **The Ministry of Equipment and Environment** wich is responsible for the preservation of the health of the sea and the coastal zone management. Its agreement is necessary for all important projects including operations of dredging.

A law on the management of the coastal zone refering to Agenda 21 initiated by this Ministry has been recently signed.

To preserve marine biodiversity a number of coastal zone are declared natural reserves.

He has representatives (Director of Environment) in each prefecture.

- **The Ministry of Transport** wich is responsible for the security of the navigation and Weather forecast. The office of National Meteorology is under its auspices.

This Ministry has also representatives in each prefecture.

- **The Ministry of fisheries** coordinate and develop fishing activities and keep control and regulate the techniques used.

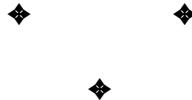
This Ministry has representative in coastal prefectures.

- **The Ministry of Public Works** has in charge the management of the maritime public domain.

Ports planning and their implementation are also from its duty. It develops techniques for design and edicts the necessary norms for infrastructures design. The ONSM (Office for light houses) is under the auspices of this Ministry.

- **The Ministry of Defence** is responsible for the control of navigation and the supervision of marine activities.

Under its auspices are the National Institute for Cartography and the hydrographic service wich are in charge to up date marine maps and charts.



MAMA project is very ambitious for newcomers to EU projects as Algeria. However, LEM will do the best as focal point to coordinate the different work packages as we are convinced of the potentiel benefit for all mediterranean countries.

But as too many sectors of activities are involved, more efforts shoud be done to drive the consultation process and awareness programs at the highest level.

A visit of the coordinator is welcomed in order to anticipate MAMA Commitments Conference.