

United Nations
Environment
Programme



Distr.
RESTRICTED

UNEP/WG.46/INF.9
12 January 1981

ENGLISH
Original: FRENCH

Meeting of Experts to Evaluate
the Pilot Phase of MED POL and
to Develop a Long-Term Monitoring
and Research Programme for the
Mediterranean Action Plan
Geneva, 12-16 January 1981

PROGRAMME OF LONG-TERM INTERNATIONAL CO-OPERATIVE ACTION
TO STUDY MARINE POLLUTION IN THE MEDITERRANEAN

AND

OCEANOGRAPHIC CAMPAIGNS PLANNED FOR 1981

(Transmitted by ICSEM)

PROGRAMME OF LONG-TERM INTERNATIONAL CO-OPERATIVE ACTION
TO STUDY MARINE POLLUTION IN THE MEDITERRANEAN

1. General objective

With a view to promoting better knowledge of the repercussions of pollution on the living resources and the quality of the marine environment in the Mediterranean, ICSEM has developed a research programme whose objective, for the next 10 years, is to define and determine the mechanisms for the transfer of the most significant pollutants.

Account will be taken of pollutant exchanges and flows between the atmosphere and the sea, within the sea itself, and between sediment and the sea, in order to evaluate the long-term decline in the quality of the Mediterranean.

2. Introduction

This programme is international. It is based on a multidisciplinary approach to the various phenomena affecting pollutant transfer in the Mediterranean.

The fields involved will be oceanology and meteorology.

The methods by which the chosen parameters are to be evaluated are principally those of biology, chemistry, physics, sedimentology and volcanology.

A multidisciplinary approach to the processing of the data obtained will permit the building of realistic models of the movements and evolution in open water of the pollutants concerned.

3. Measurement strategy

The Group of Experts recommends a few geographical areas for research, rather than some diffuse network of measuring points covering the entire Mediterranean.

These research areas are representative of the circulation of water bodies in the Mediterranean basins. They correspond either to permanent situations or to clear seasonal patterns whose study will, it is hoped, lead to the more precise evaluation of all the potential flows through the boundaries of a box model of the type shown in annex A.

The zones proposed and the specific criteria which governed their selection are shown in annex B. Three of the zones are in the western basin, four in the eastern basin, and one lies between the Adriatic and Ionian Seas.

The Group recognizes that, while zones one to four are already well documented as regards oceanology and meteorology, that is not the case with the other zones.

The Group proposes that, for the sake of efficiency, efforts should initially be concentrated on the first four zones and that the research to be undertaken under the programme in zones five to eight should be determined over the coming years on the basis of the experience so acquired. The Group hopes that as many countries as possible will participate in the joint campaigns during the initial phase.

The research areas will contain two kinds of research stations:

"Heavy equipment" stations, for measurement of the maximum number of parameters, regularly visited by scientists from the participating countries;

"Light equipment" stations for taking only such samples and readings as the means on board permit; these will be manned during campaigns in the vicinity.

The number, location and classification of the research stations and the parameters to be measured may be amended in the light of experience.

4. Parameters to be measured

At the heavy equipment stations sampling depths will be determined by the continuous profiles provided by CTD recorders in order to optimize the number of measurements.

In the case of the light stations, should CTD recorders not be available, sampling depths will be pre-selected on the basis of knowledge of the hydrology of the region.

4.1. Atmosphere

Physics: Wind speed and direction, pressure, dry and wet bulb temperatures, temperature gradient, and duration of sunshine;

Chemistry: Heavy metals, radionuclides, hydrocarbons, organochlorine compounds, oxidants, sulphur compounds, material of volcanic origin present in the air and/or in particles filtered from large volumes of air.

Ocean/air interface

Physics: Optical properties, temperature;

Chemistry: Composition of aerosols and of the surface film: hydrocarbons, organochlorine compounds, radionuclides, heavy metals and chlorophyll;

Biology: Neuston and hyponuston (composition, chemical analyses).

4.3. Water column

Physics: Standard measurements of σ_t and O_2 , preferably obtained in a continuous profile by the CTD system;

Measurements of the horizontal and, if possible, vertical speeds of water bodies;

Turbidity measured by an optical method. Fluorescence.
Total weight of suspended particles, granulometry.

Chemistry: Hydrocarbons, organochlorine compounds, nitrogen, phosphates, silicates, heavy metals, radioelements (thorium, caesium, etc.), calcium, aluminium, particulate and dissolved carbon, material of volcanic origin.

Biology: Sampling should preferably be guided by the physical and chemical parameters. Measurements should cover the various aspects of the biomass.

Phytoplankton: Biomass (primary production, chlorophyll) and phaeopigments, specific diversity.

Zooplankton: Biomass and specific diversity. Examination for heavy metals and organochlorine compounds.

Micronecton: Biomass and composition of populations. Examination for metals and organochlorine compounds.

Necton: Measurement of pollutants in flesh and stomach contents.

4.4 Water sediment interface

Physics: Gradient of water velocity above the bottom. Turbidity above the bottom, by an optical method.

Chemistry: Proportions of hydrocarbons, heavy metals, organochlorine compounds, radioelements (radon 222), material of volcanic origin.

Biology: Necto-benthos and benthos. Determination of species, proportions of hydrocarbons, organochlorine compounds, heavy metals. Analysis of stomach contents.

Sedimentology: Granulometry of the sediment and of the particles in the superjacent water. Heavy minerals.

Rheology of the surface layer and iron exchange capacity.

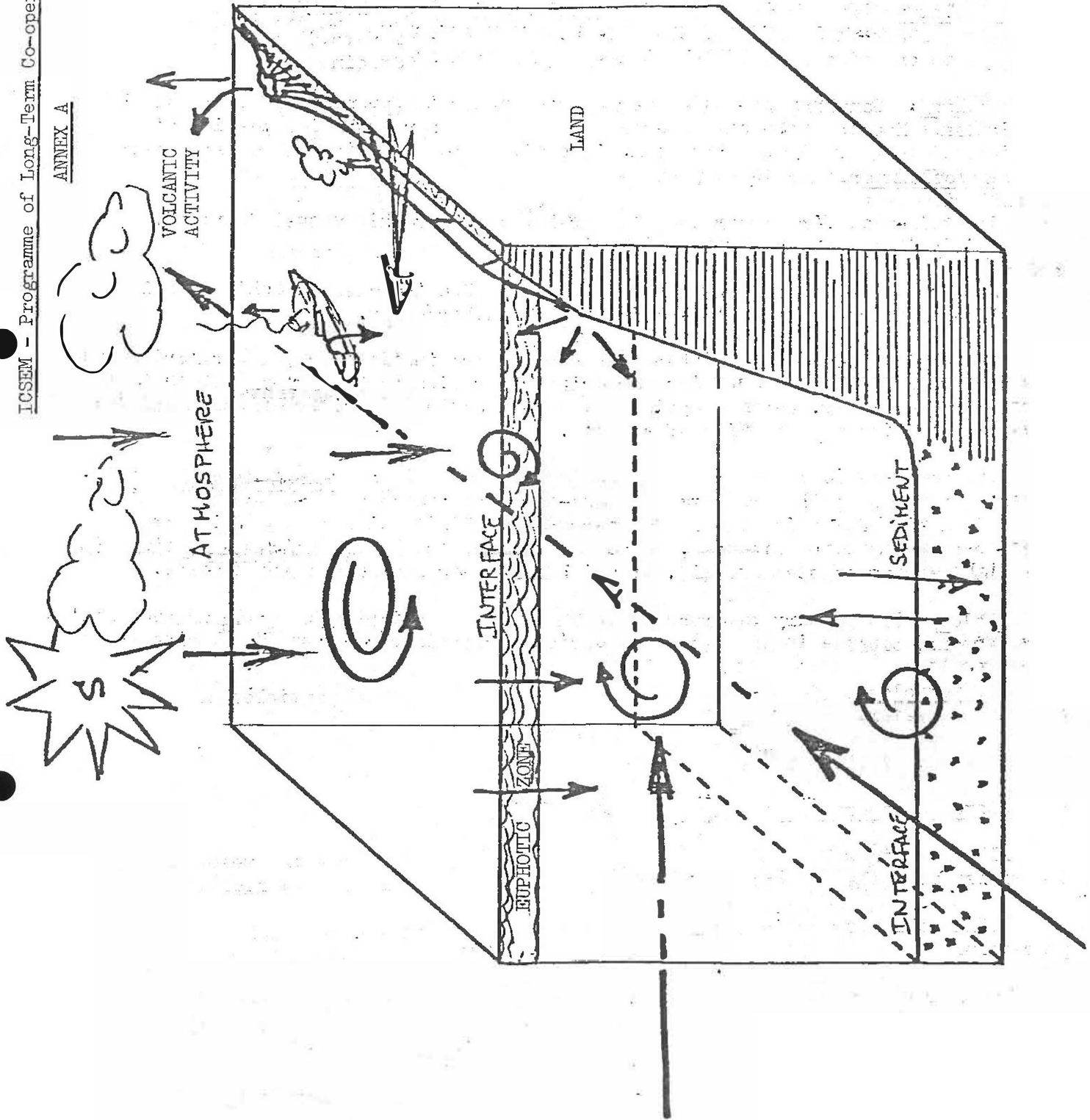
5. Storage and processing of results

All the data will be transmitted to ICSEM, which will give the research results the widest possible dissemination subject to the protection of copyright.

ICSEM will attempt to facilitate the preparation of the data for computer processing.

Participants will attempt to contribute to the elaboration of models describing the transfer of the main pollutants and the evolution of the quality of the Mediterranean.

Use of the results obtained through the programmes co-ordinated by UNEP would improve this process.



OCEANOGRAPHIC CAMPAIGNS

PLANNED FOR 1981 AS THE INITIAL PHASE OF THE PROGRAMME OF LONG-TERM INTERNATIONAL CO-OPERATIVE ACTION TO STUDY MARINE POLLUTION IN THE MEDITERRANEAN.

In 1981, two campaigns will be conducted under the auspices of ICSEM as the initial phase of the programme adopted by the ICSEM Bureau at its meeting at Cagliari in October 1980. These campaigns will take place in the western basin of the Mediterranean as follows:

In April-May, for 25 days, on the French oceanographic vessel "Suroît", mainly in the Algero-Provençal Basin;

In September-October, for one month, on the Spanish oceanographic vessel "José Cornide de Saavedra", mainly in the Alborán Sea.

The various forms of collaboration between the institutions, laboratories and research workers of the countries bordering the region to be surveyed, both to the north (France, Italy, Monaco, Spain) and to the south (Algeria, Morocco, Tunisia) have been studied at a meeting of experts.

The work stations have been chosen in the light of the recommendations of the experts who drew up the Programme of Long-term International Co-operative Action to Study Marine Pollution in the Mediterranean. Visits will be made, in some instances during both campaigns, to all or some of the heavy equipment stations (L) and light equipment stations (l), of which the co-ordinates are given below.

At the 27th plenary congress of ICSEM held at Cagliari, the Mediterranean States were urged to engage in the broadest possible scientific co-operation during these two campaigns.

ICSEM - Programme of Long-Term Co-operative Action

Initial phase, 1981

PLANNED SAMPLING STATIONS

L = Heavy equipment station

l = Light equipment station

Zone	Station	Latitude	Longitude	Equipment
<u>Zone 1</u>		36°00 N	5°55 W	L
	1 B	36°10 N	4°30 W	L
	1 C	36°30 N	1°00 W	l
	1 D	36°10 N	0°30 W	l
	1 E	35°40 N	4°30 W	l
<u>Zone 2</u>	2 A	42°00 N	4°45 E	L
	2 B	42°30 N	4°45 E	L
	2 C	43°05 N	8°00 E	L
	2 D	43°00 N	9°40 E	l
	2 E	43°20 N	9°40 E	l
	2 F	42°50 N	9°50 E	l
	2 G	43°30 N	9°30 E	l
	2 H	42°40 N	8°20 E	l
	2 I	40°00 N	6°30 E	L
<u>Zone 3</u>	3 A	33°30 N	9°00 E	L
	3 B	37°50 N	11°20 E	L
	3 C	37°20 N	7°40 E	l
	3 D	39°40 N	12°00 E	l
	3 E	36°30 N	12°20 E	l
	3 F	38°00 N	15°35 E	l
	3 G	38°40 N	15°25 E	l

ICSEI: Programme of Long-Term Co-operative Action

ANNEX B

Criteria specific to the proposed research zones

Zone 1: Gibraltar-Alborán

Assessment of all water flows between the Atlantic and the Mediterranean.

Zone 2: Ligurian Sea-Provence

Well documented zone of cyclonic circulation and productivity. Zone of formation of deep waters and of significant coastal inflows.

Zone 3: Strait of Sicily-Tyrrhenian Sea

Border zone between the eastern and western basins. Limits of the Tyrrhenian Sea.

Zone 4: Strait of Otranto-Ionian Sea

Water flows between the Adriatic and Ionian Seas. Northern branch of the cyclonic circulation in the eastern basin.

Zone 5: Crete-Libya

Passage between the Aegean Sea and the eastern basin.

Zone 6:

Zone of formation of intermediate waters. Northern branch of the cyclonic circulation of the Levantine basin.

Zone 7: Levant

Homogenous hydrologic system. Contribution to the formation of Levantine waters.

Zone 8: Black Sea-Mediterranean Sea

Exchange zone between these two Seas.