



REGIONAL  
SEAS

---

UNITED NATIONS ENVIRONMENT PROGRAMME

*The state of marine pollution  
in the Wider Caribbean region*

*UNEP Regional Seas Reports and Studies No. 36*

*Prepared in co-operation with*



ECONOMIC COMMISSION FOR LATIN AMERICA

---

UNEP 1984

Note: This document has been prepared jointly by the United Nations Environment Programme (UNEP) and the Economic Commission for Latin America and the Caribbean (ECLAC) under projects FP/0503-77-03 and FP/1000-77-01 as a contribution to the development of an action plan for the protection and development of the marine and coastal environment of the Wider Caribbean Region.

The designations employed and the presentation of material in this document do not imply the expression of any opinion whatsoever on the part of UNEP or (ECLAC) concerning the legal status of any State, territory, city or area or of its authorities, or concerning the delimitation of their frontiers or boundaries.

For bibliographic purposes, this document may be cited as:

UNEP/ECLAC: The state of marine pollution in the Wider Caribbean Region. UNEP Regional Seas Reports and Studies No. 36. UNEP, 1984.

## PREFACE

The United Nations Conference on the Human Environment, which took place in Stockholm, 5-16 June 1972, adopted the Action Plan for the Human Environment, including the General Principles for Assessment and Control of Marine Pollution. In the light of the results of the Stockholm Conference, the United Nations General Assembly decided to establish the United Nations Environment Programme (UNEP) to "serve as a focal point for environmental action and co-ordination within the United Nations system" (General Assembly resolution 2997(XXVII) of 15 December 1972). The organizations of the United Nations system were invited "to adopt the measures that may be required to undertake concerted and co-ordinated programmes with regard to international environmental problems", and the "intergovernmental and non-governmental organizations that have an interest in the field of the environment" were also invited "to lend their full support and collaboration to the United Nations with a view to achieving the largest possible degree of co-operation and co-ordination". Subsequently, the Governing Council of UNEP chose "Oceans" as one of the priority areas in which it would focus efforts to fulfil its catalytic and co-ordinating role.

The Regional Seas Programme was initiated by UNEP in 1974. Since then the Governing Council of UNEP has repeatedly endorsed a regional approach to the control of marine pollution and the management of marine and coastal resources and has requested the development of regional action plans.

The Regional Seas Programme at present includes eleven regions <sup>1/</sup> and has over 120 coastal States participating in it. It is conceived as an action-oriented programme having concern not only for the consequences but also for the causes of environmental degradation and encompassing a comprehensive approach to combating environmental problems through the management of marine and coastal areas. Each regional action plan is formulated according to the needs of the region as perceived by the Governments concerned. It is designed to link assessment of the quality of the marine environment and the causes of its deterioration with activities for the management and development of the marine and coastal environment. The action plans promote the parallel development of regional legal agreements and of action-oriented programme activities.

By decision 8(II) of 29 March 1974, the Governing Council of UNEP decided that priority should be given, in the fields of oceans, to regional activities and stressed the importance of the Caribbean region.

After a preparatory process, which included a number of expert meetings, missions and preparation of sectorial studies on resources and environmental problems of the Caribbean region, the Intergovernmental Meeting on the Action Plan for the Caribbean Environment Programme (Montego Bay, Jamaica, 6 - 8 April 1981), attended by representatives of Governments from 22 States of the region, adopted the Action Plan for the Caribbean Environment Programme and three resolutions dealing with (a) programme implementation, (b) institutional arrangements, and (c) financial arrangements related to the implementation of the Action Plan <sup>2/</sup>.

---

<sup>1/</sup> Mediterranean, Kuwait Action Plan region, West and Central Africa, Wider Caribbean, East Asian Seas, South-East Pacific, South Pacific, Red Sea and Gulf of Aden, East Africa, South-West Atlantic and South Asian Seas.

<sup>2/</sup> UNEP: Action Plan for the Caribbean Environment Programme. UNEP Regional Seas Reports and Studies No. 26. UNEP, 1983.

The present document (issued as UNEP/CEPAL/WG.48/Inf.4) served as one of the documents prepared to facilitate the negotiations which led to the adoption of the Action Plan.

CONTENTS

	<u>Page</u>
1. DESCRIPTION OF THE REGION	1
1.1 Definition of the region	1
1.2 Hydrography	1
1.3 Ecosystem distribution	8
2. TYPES, SOURCES AND LEVELS OF POLLUTANTS	15
2.1 Socio-economic development of the region influencing or influenced by marine pollution	15
2.2 Industrial waste	17
2.3 Domestic waste	17
2.4 Agricultural waste	22
2.5 Pollutants carried by rivers	24
2.6 Oil pollution	24
2.6.1 Production	24
2.6.2 Refining	27
2.6.3 Transportation	27
3. EFFECTS OF POLLUTANTS ON THE MARINE ENVIRONMENT OF THE REGION	33
3.1 Effects on human health	33
3.2 Effects on marine and coastal ecosystems	34
3.3 Effects on socio-economic activities	35
4. ADMINISTRATIVE AND LEGAL TOOLS FOR CONTROL OF MARINE POLLUTION	36
4.1 Policies and management practices relevant to the control of marine pollution	36
4.2 Infrastructure (institutional framework) used for assessment of marine pollution	36
4.3 International legal instruments relevant to the control of marine pollution	37
5. CONCLUSIONS AND RECOMMENDATIONS	37
REFERENCES	40

## 1. DESCRIPTION OF THE REGION

### 1.1 Definition of the Region

The Wider Caribbean is defined for the purpose of this overview as the coastal and open waters of the Caribbean Sea proper, the Gulf of Mexico and adjacent waters of the Atlantic Ocean. The coastal areas included are those of East Mexico, Central America, Panama, the Bahamas and Antillian Archipelago, South America from Columbia to French Guiana and the Southern United States (figure 1).

### 1.2 Hydrography

The Wider Caribbean is a semi-enclosed body of water consisting of several deep basins separated by major sills (figure 2). The deepest point, 7,100 metres, is in the Cayman Trench; the average depth is approximately 2,200 metres. The two major basins are the Caribbean Sea and the Gulf of Mexico. Jointly, these two basins have been called by some the "American Mediterranean" (R. Holgson, 1973). The total sea surface of the area is approximately  $4.24 \times 10^6 \text{ km}^2$  ( $1.60 \times 10^6 \text{ km}^2$  for the Gulf of Mexico and  $2.64 \times 10^6 \text{ km}^2$  for the Caribbean proper - J. L. Harding and W. D. Nowlin, 1966). Therefore, the total volume of water is approximately  $9.3 \times 10^{18}$  litres. By comparison, the Mediterranean Sea is about  $3.0 \times 10^{18}$  litres.

The dynamics of the water masses and related phenomena have been summarized in the supplement to the Report of the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions (UNESCO, 1977) as follows:

"The most striking hydrographic feature in the region is the continuous flow of water through the area from east to west in the Caribbean Sea proper, followed by a movement from south-east to north-east in the Yucatan Basin, and finally, in the Gulf of Mexico, a strong flow to the east again through the Straits of Florida, after an anticyclonic movement of most of this water in the western area of the Gulf.

"Approximately  $3.0 \times 10^7$  cubic metres of water per second ( $9.4 \times 10^{17}$  l/year) pass through the various passages between the islands of the Lesser Antilles, transported to them by the combined equatorial currents. The general movement of this water, which is stable all the year round, although some seasonal changes can be found in the velocities, is shown schematically in figure 3 in which an area of continuous flow is indicated by a dotted line. The velocities given are mean velocities during the year. Seasonal changes can be expected however, and much higher velocities will be found, especially where the water is forced through narrow passages, such as the Yucatan Channel or the Straits of Florida; velocities up to 3.5 and 4.5 km, respectively, are observed in the current core in these two areas.

"Outside the dotted line, currents are weaker and also unstable. During certain months, large vortices are formed off the coast of Costa Rica, Panama and Colombia, and similarly in some parts of the Gulf of Mexico. The main circulation in the latter, as already pointed out, forms an anticyclonic movement flowing through the western part of the area and, eventually, combines its flow in the Straits of Florida with the water masses which turn after passing through the Yucatan Channel immediately to the east, the latter movement being more pronounced during the northern hemisphere winter months.

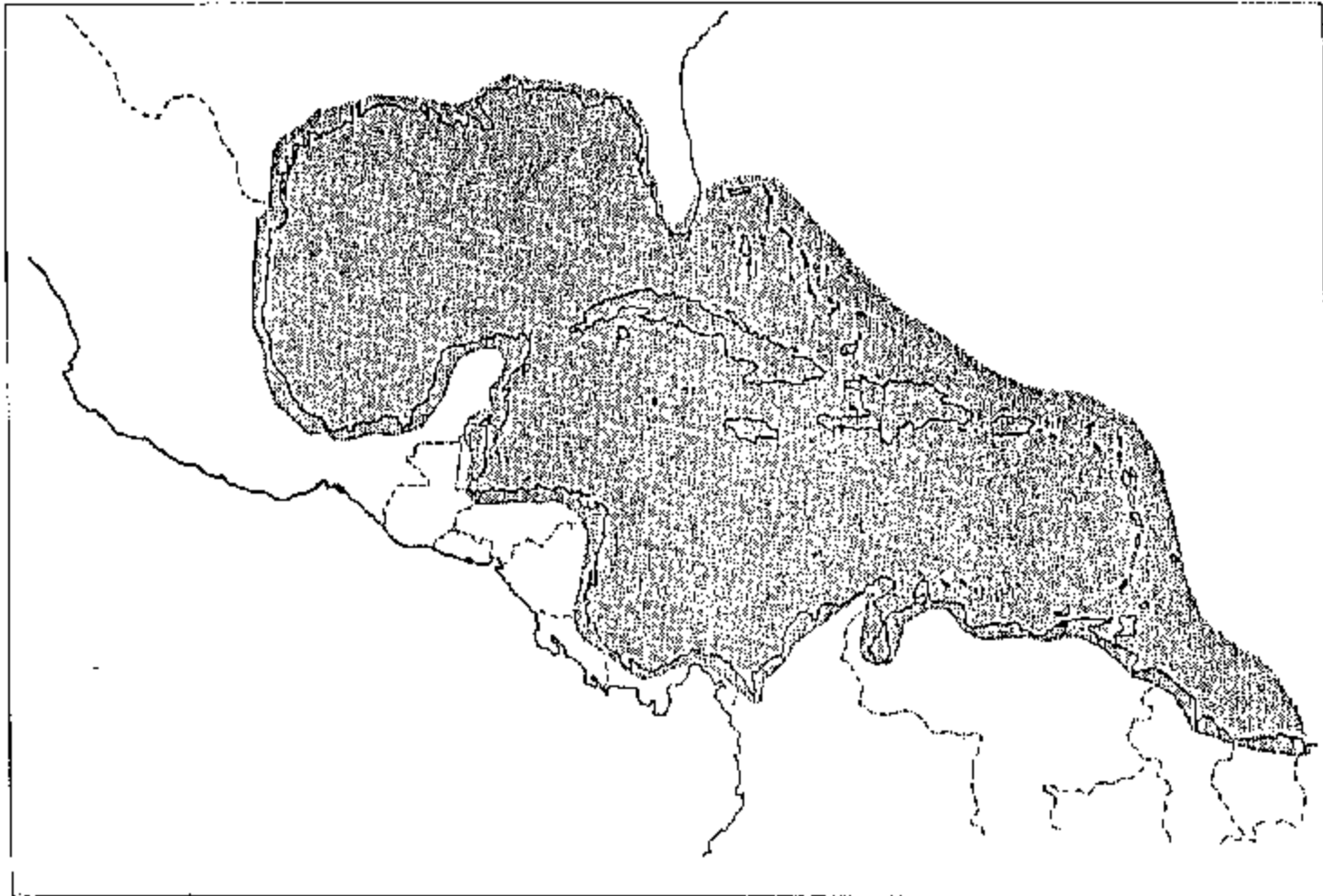


Figure 1: Wider Caribbean Regional Sea



预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index?reportId=5\\_13043](https://www.yunbaogao.cn/report/index?reportId=5_13043)

