



**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of UNESCO)**

**GUIDELINES FOR THE PRESENTATION OF  
IOC PUBLICATIONS AND REPORTS**

When IOC publications and/or reports are prepared at Headquarters, there is no problem of layout, since every secretary knows the specifications to apply when keying in an IOC document.

It becomes more complicated when the report or publication is keyed in outside headquarters, since the same type of layout must be adopted for all documents. IOC should receive a camera-ready copy of the text, together with the corresponding diskette which may be used for eventual slight amendments in the text, and for further use in the preparation of a CD-ROM of all IOC publications.

The following points should be kept in mind before commencing:

- (i) Texts should be submitted in WORDPERFECT 5.1.
- (ii) Use the European format A4 (21 x 29.5 cm).
- (iii) Each page should contain as much text as possible, using a small font, so as to be acceptable for printing in the UNESCO printing workshops.

IOC publications have a very large runoff and sometimes also appear in four language versions. It is, therefore, vital to save money on printing paper, and to avoid having to produce the documents with square spines - the total number of pages should be limited to 180 - which are very costly and time-consuming to produce, as such work is done outside UNESCO. The American format, with smaller pages and less text per page, is not acceptable: 8 to 10 cm. of blank space remain at the bottom of each page: waste of paper, and aesthetically imbalanced.

**SPECIFICATIONS, A4 FORMAT****1. Code numbering, pagination**

Each page should be coded and page-numbered: on the right at the top for recto pages, and on the left at the top for verso pages, at 1.5 cm from the top of the page.

The text of the Summary Report itself starts as page 1. Previous pages (= eventual Foreword, Executive Summary, and Table of Contents) are numbered as pages (i), (ii), (iii), etc. See model 1 a and b for Table of Contents (Summary Report AND List of Annexes).

**2. Quantity of text per A4 page**

Start keying in the text at 3.0 cm from the top. End the typed page at 2.0 cm from the bottom of the page. Use small fonts (e.g., CG Scalable 10.5, Courier 12 cpi or equivalent in size) or smaller for very long reports. See model 2.

**3. Right and left margins on each page: 2.0 cm from the edge.****4. Indenting: 10 spaces.****5. Headings and Sub-headings: Always use a numerical system, as follows:****1. TITLES (Caps, boldface)****1.1 FIRST LEVEL SUBTITLES (Caps, no boldface)****1.1.1 Second Level Subtitles (Lower case, boldface).**

For each type of character to be used, see model 2.

We never use the sign "-" in an enumeration, but we use the following symbols:

- (i) .....
- (ii) .....
- (iii) .....

and then, at the next level, if necessary:

- (indent) a) .....
- b) .....
- c) .....

See model 3.

**6. Annexes**

Never use Roman numerals for titles and subtitles. Use them exclusively to number Annexes (ANNEX I, ANNEX II, etc.). The following ANNEX numbering is used in IOC reports:

- (i) ANNEX I is reserved exclusively for the Agenda of the meeting or the Workshop Programme.
- (ii) ANNEX II is reserved for Resolutions and/or Recommendations, if any.

(iii) The List of Acronyms always figures as the last Annex.

(iv) The title of an Annex must appear in Caps., boldface.

See model 4.

7. Use *italics* only for Latin locutions, species names, and for citations. A citation is valid only if its specific source is provided at the same time.

See model 5, (i) and (ii).

8. Never underline. Replace underlining by boldface.

See model 5, (iii).

9. Resolutions and/or recommendations

These must always follow exactly the same layout as model 6. Note that the preambular paragraphs (first word ending in "...ing") have a comma at the end, whereas the operative paragraphs have a semi-colon, except for the last paragraph.

The reference to adoption of the Resolution/Recommendation is "Redlined" (in Wordperfect 5.1, use Ctrl. F8, 2,8) in the body of the Summary Report to make it easier to find.

See model 7.

10. Figures

They should be incorporated in the text, following as closely as possible the paragraph where they are first mentioned. Each figure should bear its arabic number (1, 2, 3, etc.) and its own caption. IOC never prints a List of Captions separately.

If the figure (or table) is too wide to insert in the "Portrait" frame, try a slight XEROX reduction, but keep this reduction large enough to be clearly readable.

If the figure has to be printed in "Landscape" orientation, the top of the figure should appear at the left of the page. See model 8. Nevertheless, the code and page numbering remain at the top right- or left-hand corner of the page.

11. IOC Technical Series

This is the only Series which is printed in two columns. Take as a model "IOC Technical Series no.40".

Either: insert the figures using one or both column(s) width, and provide camera-ready (which would allow the printing to be done in five weeks). See model 9.

Or: provide a diskette in Wordperfect 5.1, showing clearly where the figures should be inserted. Provide figures separately on paper or as TIF/BMP files. These insertions will be carried out by the Draughtmen's Office of UNESCO, but, understandably, since we are not the only users of the Office's services, this will take more time before final printing.

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### 9. CO-OPERATION WITH OTHER ORGANIZATIONS OF THE UNITED NATIONS SYSTEM AND OTHER BODIES

#### 9.1 THE INTER-SECRETARIAT COMMITTEE ON SCIENTIFIC PROGRAMMES RELATING TO OCEANOGRAPHY (ICSPRO)

##### 9.1.1 Sessions of ICSPRO and Related Co-operation with the ICSPRO Agencies

374 The Secretary IOC introduced the item referring to Document IOC-XVII/8, paras 194-198. He informed the Assembly that a Special Session of ICSPRO was held in UNESCO, 1-2 September 1992, but that due to various constraints no subsequent regular session had been held in 1992, as originally planned.

375 The Special Session had been convened to consider mainly the co-ordination of the follow-up to UNCED.

376 The renewed interest in the oceans, the marine environment as a whole and its resources, calls for all agencies and bodies in the UN system with programmes relevant to the oceans, to intensify and strengthen their co-operative efforts, and to co-ordinate and harmonize reporting functions so that a coherent response to Agenda 21 can be ensured.

377 The Special Session agreed that, in the light of the decisions of UNCED regarding International Institutional Arrangements (Chapter 38), a co-ordination and reporting mechanism solely devoted to ocean and coastal area concerns is required within the UN system. While the purview of this mechanism would naturally focus on Chapter 17, other relevant issues should be considered in its work, notably those marine-related in the UN Framework Convention on Climate Change and the UN Convention on Bio-Diversity, as well as implementation of the UN Convention on the Law of the Sea. The functions of such a mechanism should respond to the need to ensure a co-ordinated system-wide response to Agenda 21 and also assist the Administrative Committee on Co-ordination (ACC) in fulfilling the functions proposed in Chapter 38 (paras 16 and 17) in relation to marine affairs.

378 Co-operation within the context of efficiency, work-sharing and joint programming is even more important now than when ICSPRO was first established and is extremely relevant to the decisions of UNCED regarding institutional arrangements. The Special Session of ICSPRO explored various mechanisms that could achieve the objective in Chapter 38 of Agenda 21 (para. 38.8(g)):

*"to establish effective co-operation and exchange of information between United Nations organs, organizations, programmes and the multilateral financial bodies ...".*

379 The following proposals were made for such mechanism :

- (i) ICSPRO with its present terms of reference;
- (ii) ICSPRO with an expanded composition and revised mandate (UNEP and IAEA have been invited to become members of ICSPRO);
- (iii) revival of the ACC Sub-Committee on Marine Affairs;
- (iv) a new body.

380 Having considered the four options, the Special Session of ICSPRO was of the view that the second and third options are the most efficient and cost-effective. The ACC Task Force noted the proposal to use a transformed ICSPRO and included a reference to this in its report to the ACC.

381 The Chairman invited a statement from the Representative of the WMO who said that ICSPRO as it had been originally conceived had served well. He noted that, in order to ensure its follow-up, UNCED had placed much broader and more complex requirements on the UN system than ever before.

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### Resolution XV-3

#### OCEAN DYNAMICS AND CIRCULATION ON THE CONTINENTAL SHELF

The Intergovernmental Oceanographic Commission,

Having considered the proposal on "An International Programme for the Dynamics and Oceanography of Coastal and Shelf Seas and Exchanges: Rationale and Elements" (Document IOC/INF-769 and Corrigendum) prepared, on the initiative of the Commission, by an ad hoc Group of Experts.

Having received a recommendation from the Technical Committee on Ocean Processes and Climate that the IOC Assembly endorse such a programme,

Noting the importance of establishing such a programme and its great potential value for coastal zone management, exploration and exploitation of living and non-living resources in the coastal zone and shelf seas as well as for the programmes dealing with the global study of ocean and climate, such as GIPME, WOCE, JGOFS,

Decides to establish an ad hoc Group of Experts:

- (i) to assist in the organization of a Workshop on Ocean Dynamics and Circulation on the Continental Shelf so as to provide:
  - a) a comprehensive review on a worldwide basis of the state of knowledge of coastal seas in the major regions;
  - b) a comprehensive review of the state of knowledge of the dynamics of basic relevant processes;
  - c) a review and assessment of existing methodologies;
  - d) an evaluation of existing capabilities, needs and opportunities for training; infrastructure development; transfer of technologies and methodologies; and
- (ii) to follow-up the recommendations of the workshop by preparing strategies and a draft programme plan, for presentation to the Sixteenth Session of the IOC Assembly;

Instructs the Secretary to:

- (i) organize the Workshop in 1990 or in the first quarter of 1991.
- (ii) involve the widest possible participation of scientists from developing and developed countries;
- (iii) assure effective interaction with relevant programmes of Unesco, FAO and WMO, as well as with the Scientific Advisory Bodies of the Commission;
- (iv) support the implementation of IOC regional projects in coastal oceanography already initiated or proposed by IOC regional bodies.

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Annex III

## ANNEX III

### SPEECHES

**A. Opening address by Professor Manuel M. Murillo  
Chairman, Intergovernmental Oceanographic Commission (IOC)  
5 July 1994**

Professor Federico Mayor, Director-General of UNESCO,  
Distinguished delegates to the Twenty-seventh session of the Executive Council  
of the Intergovernmental Oceanographic Commission,  
Representatives and Observers,  
Ladies and Gentlemen,

I am delighted to extend to you respectful greetings and a cordial welcome to this twenty-seventh session of the Executive Council of the Intergovernmental Oceanographic Commission.

On behalf of the Member States of the Commission, I should like to greet the Director-General, whose presence at this opening meeting fills us with pride and betokens the excellent relations that exist between UNESCO and IOC, which stimulates our commitment to contribute to the attainment of the goals of the Organization.

We are attending this session of the Executive Council fully aware of the importance of our work to the strengthening of the Commission through decisions that expand its various programmes and activities and make them more effective. Our goal is to respond in a timely manner to the expectations of Member States and of the international community at a time when it is particularly important to strengthen co-operation and co-ordination in order to contribute to knowledge, promote development and contribute to the overall protection of the marine environment.

An exhaustive account of the activities carried out by the Commission goes beyond the scope of this address, since that will form part of our work during the next nine days. I should, however, like to draw attention to some key issues that require a contribution and guidance from the distinguished delegates attending this session.

The process of analysing and monitoring the functioning, structure and development of the Commission within the framework of Resolution XVII-20 adopted by the Assembly is essential if IOC is to be geared adequately to the measures formulated by its Member States and those arising from UNCED and from the entry into force of the United Nations Convention on the Law of the Sea (UNCLOS).

That is why the Assembly, when the DOSS report was submitted to it at its seventeenth session, held a major debate and adopted key measures to reaffirm the status of IOC as a body having functional autonomy within UNESCO and a clear mandate to conduct, in an integrated and interdisciplinary way, ocean research, systematic ocean observations, related ocean services and capacity building so as to cover the whole of the ocean including the coastal zone and its interactions with the atmosphere and the land.

Further vital action in the process of consolidating the Commission's functional autonomy, understood as the status that gives it the necessary flexibility to accomplish its objects and priority activities; is guaranteed access to sufficient financial resources for implementing the short- and medium-term programme and for making longer term plans. This guaranteed access to resources includes both the securing of a subvention or financial assistance from the Organization and receipt of the contributions made by Member States within the framework of the measures they propose within the Commission. We hope to continue the dialogue relating to this priority topic with the Director-General in order to find feasible options for reaching a consensus formula. Similarly, it is vitally important that in the context of the Commission's programme Member States should look into the most appropriate means of making the required contributions and, in the case of Member States that are not members of UNESCO, the expected contribution to the IOC Trust Fund.



steps taken by the Secretary to solicit views from Member States and IOC subsidiary bodies. Reference was also made to the proposals of DOSS in this regard.

507 The Assembly instructed the Secretary to prepare a draft of the IOC contribution to the UNESCO Medium-Term Plan for presentation to the Chairman and Vice-Chairmen and drawing upon the proposals agreed to under Agenda Item 12. The Assembly decided that the Twenty-seventh Session of the Executive Council should receive a report on this matter and provide necessary guidance to the Secretary and Member States, taking into account intersessional developments and UNESCO planning.

## 12. ENHANCING THE ROLE OF THE COMMISSION

508 (i) The Chairman of DOSS, Dr. Ulf Lie, introduced this agenda item by giving a brief overview of developments. He reminded participants that, at its Sixteenth Session, the IOC Assembly considered the final report of the *ad hoc* Study Group on Measures to Ensure Adequate and Dependable Resources for the Commission's Programme of Work (FURES) (Document IOC/FURES-III/3). The Assembly appreciated the considerable progress that had been achieved by FURES, but noted also that there were a number of important issues which needed further study before the Governing Bodies of the Commission would be in a position to entertain possible amendments to the IOC Constitution. The Assembly therefore, in its Resolution XVI-19 decided to establish an *ad hoc* Study Group for Development, Operations, Structure and Statutes (DOSS), with terms of reference as found in the Annex to that resolution.

509 In accordance with Resolution XVI-19, the Past Chairman of the Commission served as Chairman of DOSS, and the IOC Chairman designated five additional members of the group. Thus, the composition of DOSS includes : Chairman : Ulf Lie (Norway); Roy M. Green (Australia); John A. Knauss (USA); Guillermo Garcia Montero (Cuba); Mario Ruivo (Portugal); Alexander Yankov (Bulgaria). The Chairman of the Commission, Manuel Murillo; the Secretary IOC, Gunnar Kullenberg; and the Senior Assistant Secretary of the Commission, Natalie Philippon-Tulloch, participated in all three meetings of the *ad hoc* Study Group.

510 DOSS held its first meeting in UNESCO, Paris, 16-18 December 1991; the second meeting in UNESCO, Paris, 2 March 1992, and the third meeting in Bergen, Norway, 26 July-1 August 1992. A progress report was presented to the Twenty-fifth Session of the Executive Council which provided guidance to the Chairman of DOSS, as found in paras 284-291 of the Summary Report of the Council (Document IOC/EC-XXV/3).

511 To provide sufficient opportunity for Member States to consider the issues raised by DOSS and receive clarification on any matters of concern, a one-day open meeting was organized in conjunction with the Twenty-sixth Session of the Executive Council, followed by three periods of plenary debate, one Sessional Working Group and a Sessional Drafting Group on Resolution(s).

512 (ii) In discussing the DOSS Report *QUO VADIS IOC?*, the Assembly recalled that the IOC, according to its Statutes (Article 1.1(a)), "*is established as a body with functional autonomy within the United Nations Educational, Scientific and Cultural Organization*".

513 (iii) In considering the Summary Report of DOSS (Document IOC/DOSS-III/3) and in particular paras. 5 and 6, the Assembly acknowledged that the success of IOC and recognition of the Commission as an important agent in ocean affairs depend primarily on the active participation in programme development and implementation of national institutions for ocean science; effective development of ocean policy in individual Member States; the resourceful, devoted, and imaginative contributions of the Member States through their representatives to the IOC Governing and Subsidiary Bodies; and on the diligence and efficiency of the IOC Secretariat.

514 Furthermore, the Assembly reiterated that the Commission is an organization for and of its Member States, and the success of the programmes of IOC are primarily related to the degree of involvement of Member State institutions in programme formulation, financing and execution. For IOC

### Resolution XVII-1

#### COASTAL ZONE ACTIVITIES

The Intergovernmental Oceanographic Commission,

Recalling Resolution XVI-11 "Co-ordination of Coastal Zone Programmes and Activities" and Resolution EC-XXV.8 "IOC participation in UNCED", which recognized the leading role of IOC in research and systematic observation in relation to "Protection of the Oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational and development of their living resources" and related capacity building,

Taking note of the Report of Expert Consultation for the IOC Programme on Coastal Ocean Advanced Science and Technology Study (COASTS) (IOC Workshop Report No. 73),

Recalling the need to enhance the capabilities of interested Member States to carry out coastal and shelf sea marine studies, based on common scientific methodology, in order to increase scientific understanding and knowledge, and to provide best available scientific advice to effective coastal zone management action at national and regional level,

Noting with satisfaction the progress in co-ordinating IOC programme activities, together with other ICSPRO Agencies, which encourage and facilitate coastal and shelf seas marine sciences and related marine science development and technology transfer on a global basis through GOOS, GIPME, OSLR and OSNLR, as well as through the Commission's regional programmes,

Noting also the programmes developed by ICSU and other organizations, e.g., JGOFS and LOICZ,

Noting further that several important international, regional and multilateral conferences relating to integrated management and sustainable development of the coastal zone and rational uses of coastal resources are being organized with IOC support as follow-up activities to UNCED,

Recognizing that the UNCED Agenda 21 in Chapter 17, particularly sub-chapters A and E, emphasize the important role of national integrated coastal area management programmes in order to achieve sustainable use of the coastal zone for national development, and the need for provision of a scientifically valid information basis, as well as related capacity building,

Decides to set up an *ad hoc* IOC Group of Experts including representatives from the Commission's regional and global programmes to:

- (i) prepare a comprehensive report to the next Assembly outlining the needs for research, monitoring, assessment and services to support integrated coastal zone management;
- (ii) review the contributions toward this goal of IOC programmes, particularly GOOS, GIPME, OSLR, OSNLR and TEMA, and other scientific programmes developed by UNESCO, UNEP, ICSU, etc, particularly LOICZ and JGOFS, and determine appropriate mechanisms for co-ordination of these programmes;
- (iii) consider possible contributions to the Coastal Module of GOOS for integrated coastal zone management, taking into account the scope of the other GOOS modules, particularly Health of the Ocean and Marine Living Resources Module; and
- (iv) recommend a co-operative scientific advisory mechanism to support development of integrated coastal zone management, together with related comprehensive training, education and capacity building;

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Training Course in Ocean Data Management for the Mediterranean in 1995, and Belgium and the United Kingdom for the continuing support to RECOSCIX.

88 The Executive Council was informed of the offer of Russia to host a Training Course on Marine Geophysical and Geological data in 1995 as an important contribution to the objectives of COMSBLACK and the Floating University project, and noted the request of Russia to consider provision of limited support for the implementation of this activity.

89 The Council expressed satisfaction with the actions taken by the Director General of UNESCO in restoring the professional post for Marine Information Management and trusted that it would be filled by the end of 1994 or early 1995 within the staff establishment of the 27 C/5.

90 The Council re-iterated the call to Member States to provide staff and financial assistance to the IODE Programme to enable the Secretariat to cope effectively with new demands and needs for ocean data and information.

91 The Executive Council adopted Resolution EC-XXVII.5.

### 5.4 GLOBAL OCEAN OBSERVING SYSTEM (GOOS) AND GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

92 Prof. Michel Glass, Chairman of I-GOOS, introduced GOOS and presented the important issues resulting from the First Planning Session of the IOC-WMO-UNEP Committee for GOOS (I-GOOS) held in Melbourne, Australia, 18-21 April 1994 (Document IOC/EC-XXVII/12). The GOOS Status Report - December 1993 (Document IOC/INF-958) was made available to participants and a highlighted summary and a concise update for 1994 were presented by Dr. Scherer, Director of the GOOS Support Office.

93 Prof. Glass stressed the importance of the transition to operational oceanography which requires new relationships with: (i) governments and users; (ii) scientists; (iii) international existing programmes; and (iv) developing countries. He underlined urgent, critical measures discussed at the Melbourne meeting regarding: (i) the clear internal structure required for GOOS, especially in relation to I-GOOS and J-GOOS; (ii) the need to have all co-sponsors sponsor all of GOOS, and not just a part; (iii) the importance of socio-economic studies performed both internationally, i.e. OECD and nationally by individual Member States; (iv) speedy implementation of concrete, specific actions, e.g. the continuation of the post-TOGA Observing System; and (v) adequate support, both in terms of resources and administration, to the GOOS Support Office. There is a need for a clear expression of support for the promotion of growth for GOOS by governments and the intergovernmental and international sponsors. Careful co-ordination of the national, regional and international levels of GOOS development is also critical.

94 The first Vice-Chairman of IOC, Mr. Geoffrey Holland, reported on the discussion of the sessional working group on GOOS Resources, including for the GOOS Support Office. He noted with regret the need to find a replacement for Dr W. Scherer, the Director of the GOOS Support Office, whose secondment term comes to an end in December 1994. He summarized the present commitments of Member States to GOOS, the potential contribution of additional Member States, and their request for a clear definition of the programme of work, including priorities for the GOOS Support Office (see Annex VI). A chart listing these was requested of the Director of the GOOS Support Office. Clearer delineation of interactions between GOOS and existing programmes and activities was also needed. The working group stressed the need to have a strongly supported, highly visible and centralized function for GOOS within the Commission. The need to demonstrate the cost-benefit advantage of GOOS to generate political visibility was also stressed. The working group recognized the need for capacity building among all Member States and, in particular, training and assistance for developing states.

95 Many Member States presented their commitments, including training opportunities and activities related to GOOS and expressed their views on the identified critical GOOS issues. The unanimous interventions by 20 Members confirmed the recommendation by the Executive Council that, within the IOC, GOOS be given top priority and serve as IOC's major response to UNCED and that it be the "flagship" of IOC. Management issues identified centered on the following relationships and their

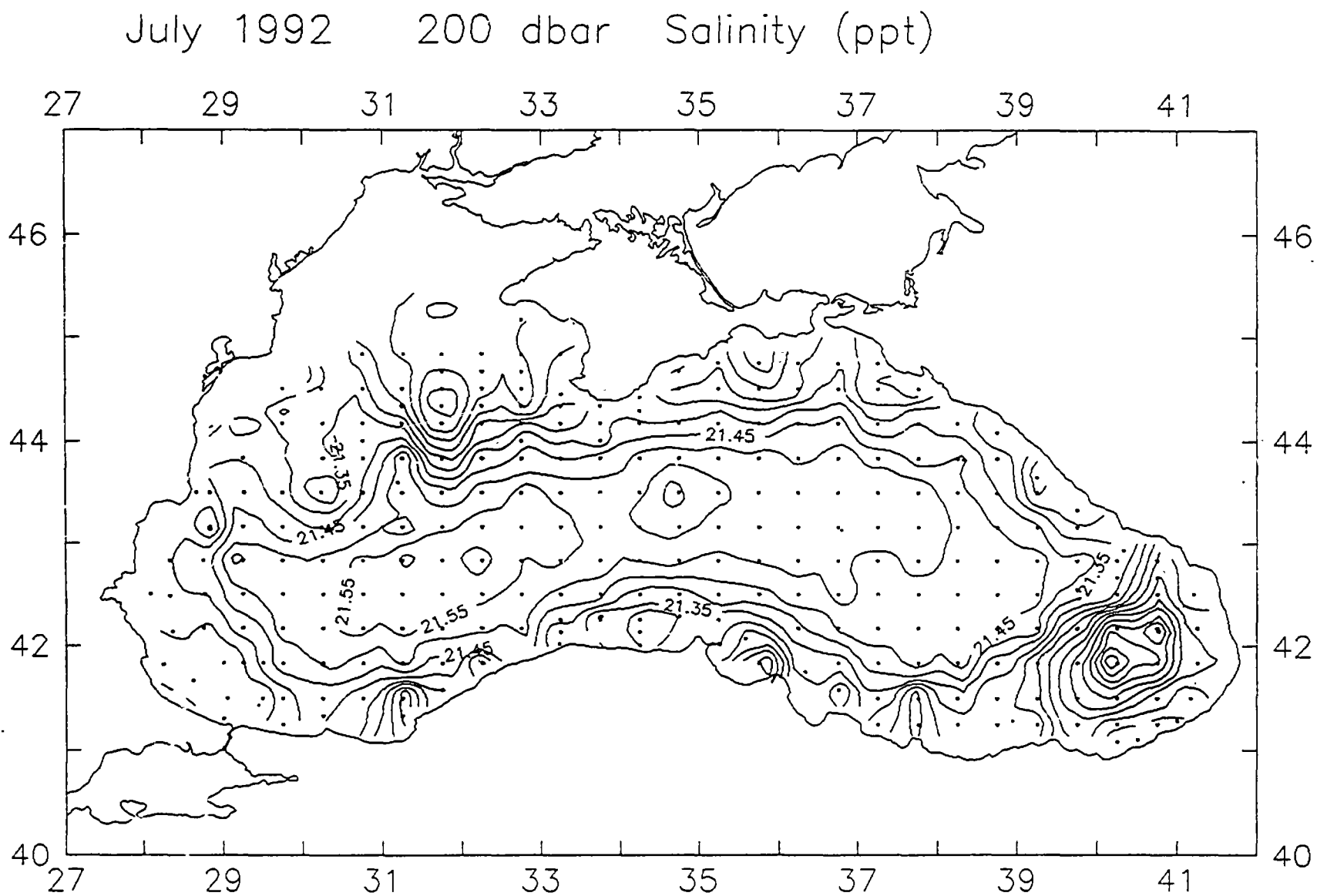


Figure 28b: Horizontal distribution of Salinity at 200 dbar level.

## Model 9

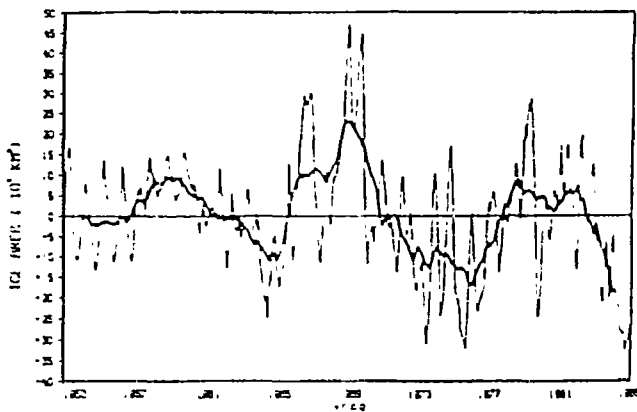
between modelled monthly mass fluxes through the Fugløya-Bjørnøya section, the observed temperatures along the Kola section and the Barents Sea winter ice index over the period 1970-86. Thus these authors suggest that the Barents Sea climate oscillates on a decadal time scale between a warm and a cold state through the feedback mechanism (further evidence of this oscillation is given in Figure 36) and that the formation of bottom water on the Barents Sea shelf is important in determining that state. (Either dense bottom water drains from the shelf allowing Atlantic water to enter, or Atlantic water inflow displaces bottom water.)

### Watermass Changes: West Atlantic

A changing frequency of cold air outbreaks from the North American continent is regarded by Worthington (1977) as responsible for corresponding changes in the formation rate of 18°C mode water and for increases in Gulf Stream transport after the winter of 1976/77. The "18C" mode water history at the Panulirus site (32°10'N, 64°30'W) has been reconstructed after 1954, and shows changes that are coherent with the winds in the Gulf Stream sector. There, the upper water column was denser and colder from 1964 to 1975 than before and after (Talley and Raymer, 1982), and the density of the mode layer increased, although its ventilation rate did not change (Figure 37 from Jenkins, 1982). Changes in other mode waters and other water masses have been found in the eastern Atlantic (Pollard and Pu, 1985), but time series for this region are more difficult to construct.

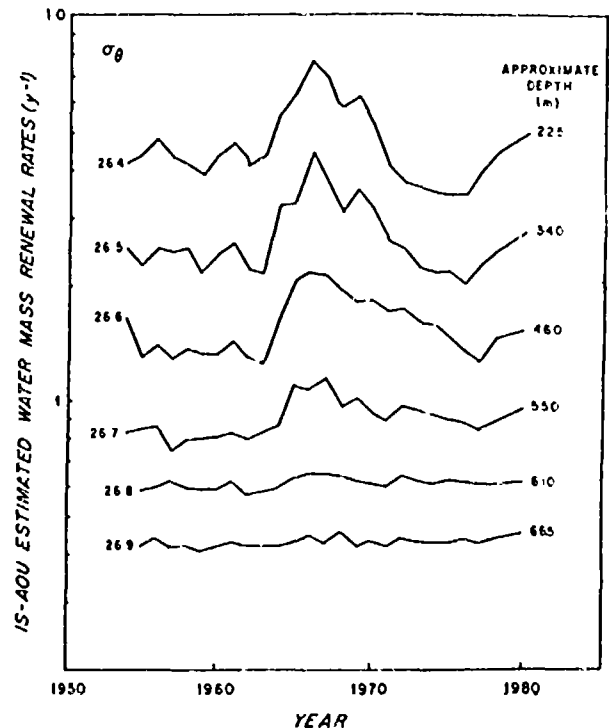
### Midlatitudes and Tropics

In large areas of the tropics, sub-tropics and mid-latitudes of the Atlantic Ocean, sea surface temperature exhibits a significant variability at decadal and

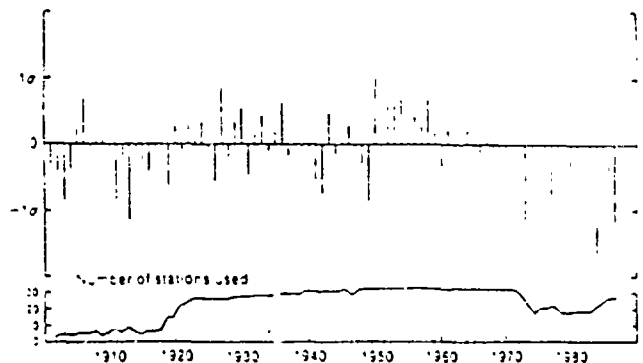


**Figure 36.** Smoothed time series of monthly anomalies of areal sea-ice extent in the Barents Sea clearly showing a decadal-scale oscillation (from Mysak and Manak, 1989). Light and dark curves correspond to 3- and 25-month running means, respectively.

interdecadal periods of a magnitude comparable to the annual fluctuations (though there is little sign of a systematic El Niño response) (Folland and Parker, 1990). These variations are coherent over a larger zonal than meridional domain (Lau and Nath, 1990). Whether they occur simultaneously for the different latitudes is a matter of debate, depending to some extent on the length of the time series analyzed. Simultaneously, large fluctuations of Sahel rainfall have been observed, with lower rainfall between the late sixties and the mid eighties than in the fifties (Figure 38;



**Figure 37.** Watermass renewal rate ( $y^{-1}$ ) as a function of time for  $26.4 < \sigma_t < 26.8$  (from Jenkins, 1982). The renewal (or ventilation) rate was estimated using the IS computed AOU and the oxygen utilization rates obtained from  $^3H$ - $^3He$  dating. Note the logarithmic scale and the alteration of relative amplitude with depth. Note also the increasing relaxation time with depth.



**Figure 38.** Standardized annual rainfall anomalies for the Sahel, 1901-1987 (upper panel). Values to 1984 are from Nicholson (1985); 1985-1987 values are based on CLIMAT reports. The lower panel gives the number of stations used.