



SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE  
Fifth session  
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Item 3 of the provisional agenda

## COOPERATION WITH RELEVANT INTERNATIONAL ORGANIZATIONS

### Progress report on research and systematic observation

#### Note by the secretariat

#### I. INTRODUCTION

##### A. Mandate and scope of the note

1. At its third session in July 1996, when discussing "Research and Observation issues", the Subsidiary Body for Scientific and Technological Advice (SBSTA) welcomed the activities of the World Meteorological Organization (WMO), the Intergovernmental Oceanographic Commission (IOC), and other participants developing the Climate Agenda. These organizations were invited to inform the SBSTA on recent activities to coordinate long-term monitoring and research programmes related to the oceans and the atmosphere in support of Article 5 of the Convention, particularly the establishment of capacity and capacity-building mechanisms to assist the full participation of developing countries (see FCCC/SBSTA/1996/13, para. 62).
2. In response to this invitation, WMO, in consultation with IOC, and, to the extent necessary and possible, other organizations participating in the development of the Climate Agenda, has provided information which is presented in the attached annex.
3. This note is an introduction to the information provided by WMO and contains suggestions on possible action which the SBSTA may wish to take in response to that information.

## **B. Background information**

4. Article 5 of the Convention states that "In carrying out their commitments under Article 4, paragraph 1 (g), the Parties shall:

(a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;

(b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and

(c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above."

5. Article 4, paragraph 1 (g) of the Convention states that Parties shall "Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies."

6. At its second session in February and March 1996, the SBSTA took note of the information provided by the WMO and a number of Parties, relevant to the implementation of Article 5 of the Convention. It requested the secretariat to prepare a summary report on research and observation issues, with attention to Article 5, and particularly to Article 5(c) of the Convention, in close collaboration with Parties and concerned organizations, and taking into account the recommendations of the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). This report was to be considered at the third session of the SBSTA and subsequently by the Conference of the Parties (COP) (FCCC/SBSTA/1996/8, para.32).

7. At its third session in July 1996, the SBSTA considered the report and invited WMO, IOC and other participants to provide information as outlined in paragraph one above. Furthermore, the SBSTA requested the secretariat to explore the situation with respect to other areas of research, observation and data processing, relevant to Articles 5 and 4.1(g), and report on this, as appropriate, at a future session or sessions of the SBSTA.

## II. POSSIBLE ACTION BY THE SBSTA

8. The SBSTA may wish to:

- (a) Take note of the information provided in the attached annex;
- (b) Invite the WMO, the IOC and other organizations participating in the Climate Agenda to continue efforts to improve systematic observation of climate and climate change and to promote relevant research on climate change issues;
- (c) Request WMO, IOC and other organizations participating in the Climate Agenda to keep the SBSTA informed on developments regarding systematic observation and research issues relating to climate change and particularly concerning difficulties encountered, inter alia, with respect to the involvement of developing countries;
- (d) Invite Parties to pursue their efforts to meet their commitments under Article 4, paragraph 1(g) and Article 5 of the Convention, and to provide information thereon in their national communications;
- (e) Request the secretariat to cooperate with WMO, IOC and other organizations participating in the Climate Agenda to identify the needs of Parties, in particular developing country Parties, and to promote capacity building mechanisms to assist the full participation of developing countries in systematic observation of climate and relevant research; and
- (f) Invite the Global Environment Facility (GEF), through the Subsidiary Body for Implementation (SBI), to support the efforts of Parties, and particularly the least developed countries, to improve the systematic observation of climate and climate change and related research activities.

## Annex

### **Summary report by WMO, in consultation with other organizations participating in the Climate Agenda, on international co-ordinated research and systematic observations programmes\***

9. This document represents an update of the summary report on research and systematic observations submitted to the third session of SBSTA (FCCC/SBSTA/10/Add1). This update was prepared in response to the request made by the SBSTA to inform it on recent activities to co-ordinate long-term monitoring and research programmes related to the oceans and to the atmosphere in support of Article 5 of the Convention (FCCC/SBSTA/1996/13, para. 62).

#### **A. Research<sup>1</sup>**

10. Coordination of International climate research programmes and activities is being promoted through the Climate Agenda - an integrating framework for international climate related programmes - in which WMO, UNEP, UNESCO and its IOC, FAO, WHO and ICSU are the major partners. Major emphasis has been placed on the co-ordination among these major research programmes - WCRP (WMO, ICSU, IOC), IGBP (ICSU) and IHDP (ICSU, ISSC).

11. The World Climate Research Programme, has, among other projects, the Climate Variability and Predictability Study (CLIVAR) as the main thrust to explore climate variations on time scales of months to a century or more, occurring naturally or as a result of anthropogenic effects. As regards anthropogenic climate change, a key activity in CLIVAR is the development of the detailed pattern-based studies of observed and modelled climate trends, which underpin the attribution of changes to human or other factors. Scientific progress in this area can be illustrated by a far-reaching new conclusion in the IPCC's Second Assessment Report, namely that "the balance of evidence suggests a discernible human influence on global climate". This conclusion was made possible by major research advances in modelling of natural climate variability and of climate forcing by greenhouse gases and aerosols, as well as by new techniques in pattern recognition.

12. At the same time, increasing reliance is being placed on seasonal predictions of climate in order to combat drought and desertification and to improve agricultural production and water management. A major contribution to improved seasonal predictions has been made by the Tropical Ocean Global Atmosphere (TOGA) study, which led to improved predictions of El Nino-Southern Oscillation events influencing weather and climate in many

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\* This paper is reproduced without formal editing.

<sup>1</sup> See list of abbreviations at the end of this annex.

regions. If the observational systems can be maintained, countries will not go unwarned in future of events like El Nino in 1983, with its severe effects in many regions. The WCRP also is beginning to investigate improved assessment of regional changes.

13. The WCRP is being implemented with the active support of major space agencies. In particular, a global climate parameter data set on cloudiness, precipitation and water vapour will be developed by merging space base and in situ data sets within the Global Energy and Water Cycle Experiment (GEWEX).

14. In the area of oceanographic research, major contributions to the studies of the ocean circulation are provided by the WCRP World Ocean Circulation Experiment (WOCE). Further research programmes should, as identified by the IOC, include, as a matter of principle, studies of balance of carbon dioxide and other greenhouse gases, in particular studies of coral reefs as carbon accumulation sinks.

15. Research into variations of the global sea level and projections of its change should continue to receive a priority. Full use should be made of available global sea level data obtained through the IOC Global Sea Level Ocean Services System (GLOSS); further enhancement and upgrading of the GLOSS should be ensured.

16. A Conference on the "World Climate Research Programme: Achievements, Benefits and Challenges" forthcoming in August 1997, will establish strategies for the next 10-15 years, taking into account the IPCC's SAR and the increased interest of policy-makers in the climate change issue.

17. The Conference will provide for interaction between those concerned with climate policy and scientists actively involved in climate system research to chart a productive course for the remaining years of the 20th century and the first decade of the 21st. A particular focus of the Conference will be on the role of the WCRP, as the research thrust of the "Climate Agenda". "New Frontiers in Climate Science and Prediction". Policy makers' views on the interactions with other components of related climate programmes will be sought. This will include consideration of coordination needed with the applications, impacts and data components of the overall World Climate Programme, the Global Climate, Ocean and Terrestrial Observing Systems (GCOS, GOOS, GTOS), the International Geosphere Biosphere Programme (IGBP), and the International Human Dimensions of Global Environmental Change Programme (IHDP). The results required from the WCRP to enable other thrusts of the "Climate Agenda" and other components of the WCP (e.g. the Climate Information and Prediction Services (CLIPS)) to achieve their objectives will also be identified. The outcome of the Conference will be made available to a future session of the SBSTA.

18. Among capacity building initiatives in the area of climate research, an important role belongs to the network called START (the global change System for Analysis, Research and Training) being developed by WCRP, IGBP and IHDP. START is developing a system of

regional networks and centres to conduct training and research on global environmental change and its human causes and effects. The fundamental purpose of this system is to promote research on the regional origins and impacts of global environmental changes such as global warming, and through training and fellowship programmes, to enhance indigenous scientific capacity to engage in focused research on critical regional environmental issues of global importance.

19. WCRP, IGBP and IHDP have jointly initiated a START project on climate variability predictions for agriculture, which is taken up in several START regions (South Asia, South-east Asia, West and Central Africa) and which needs the co-operation of IGBP core projects and WCRP projects. Preparing agriculture for adaptation to climate variability is a prerequisite to reduce vulnerability to climate and thus helps to approach sustainability.

### **B. Climate Change Assessment**

20. At its Twelfth Session (Mexico City, 11-13 September 1996), the IPCC elected Dr R.T. Watson of the USA to succeed Prof. Bolin as chairman. Prof. Bolin will serve until the end of the Thirteenth Session (tentatively scheduled for 27-31 October 1997 in the Maldives) when Dr Watson will assume the office.

21. Since the last session of the Bureau, the IPCC has published the 1995 Reports of its three Working Groups in English and its Report (containing the IPCC Synthesis and the Summaries for Policy makers of the Working Groups) in the six official UN languages. (The Working Groups' Reports and the IPCC Report constitute the Second Assessment Report). It has completed and published a Technical Paper on Technologies, Policies and Measures for Mitigating Climate Change in English, French and Spanish.

22. The IPCC will be electing a new Bureau at the Thirteenth Session and will agree on the subject matter and schedule of its Third Assessment Report. During 1997-1998, it will:

- complete three Technical Papers on stabilization of greenhouse gas concentrations in the atmosphere, climate models and the climate implications of available proposals to limit greenhouse gas emissions;
- prepare four Special Reports on Regional Climate Change Impacts, Emission Scenarios, Aviation and the Global Atmosphere and the Methodological and Technological Aspects of Technology Transfer;
- hold three workshops on adaptation, economic impacts of the actions of Annex I Parties to the UN FCCC on all countries and integrated assessment modelling;
- continue its programme of work on National Greenhouse Gas Inventories;
- initiate work on the Third Assessment.

### **C. Impact and adaptation strategies**

23. A major role in research and capacity building in this area belongs to the World Climate Impact Assessment and Response Strategies Programme (WCIRP). Participation in the United Nations' Framework Convention on Climate Change (UNFCCC) has heightened interest in climate matters including climate impact study while employment of resources generated through the Global Environmental Facility has increased research programmes, methodology development and identification of climate change mitigation and adaptation options. Unfortunately, lesser attention is devoted to the impacts of climate variability including prediction of and preparation for the impacts of severe weather events including drought, storms and floods. UNEP as the international organization responsible for the WCIRP, has initiated several programmes on these important issues, which are considered as an indispensable part of any study and/or methodology development increasing impact of, and adaptation to climate change.

24. The current WCIRP programme has been aligned with the proposed plan for the Climate Agenda and concentrates on studies of climate impact assessments and response strategies and capacity building activities following priority items:

#### **(a) Climate related Country Studies**

Some 25 national studies have been completed or are on-going in order to improve the IPCC guidelines for identifying impacts of climate change and of the range of response options that might be considered in adapting to climate change as well as for making inventories of the sources and sinks of greenhouse gases and for analysing and comparing costs of greenhouse gas abatement costing strategies.

#### **(b) Climate Impacts and Response Strategies Networks (CIRSNet)**

The main objectives of this essentially capacity building network is to catalyse, facilitate and assist in the development and implementation of national and regional activities on climate and climate change impacts. CIRSNet/Africa is operating with 21 government designated national focal points and an inter-agency advisory group.

25. Plans for the further implementation of the WCIRP until the year 2000 and beyond address five priority areas: vulnerable regions and sectors, methodologies for vulnerability assessment, adaptations to reduce vulnerabilities, mitigation response options and public awareness and communication.

### **D. Systematic observations of the atmosphere and ocean**

26. Several years ago, WMO, IOC, UNEP, and ICSU established the Global Climate Observing System (GCOS) to meet the needs for a comprehensive climate observing system.

In concept, the GCOS programme was charged to provide comprehensive information on the total climate system to meet the needs for:

- climate system monitoring, climate change detection and monitoring of the impacts of and the response to climate change;
- data for application to national economic development;
- research toward improved understanding, modelling and prediction of the climate system.

GCOS was identified and endorsed as the mechanism to provide essential climate observations in support of the Climate Agenda. As a result, GCOS constitutes the programme to develop comprehensive plans and strategies for gathering, analysing, and disseminating essential climate information in the context of Article 5 of the Climate Convention.

27. Planning and implementation of GCOS is being pursued through the work of a number of expert panels charged to develop comprehensive plans for review and approval by the GCOS Joint Scientific and Technical Committee and the international sponsoring organizations. Recently, plans have been published for the overall programme, for the ocean and the land surface components, for space-based observations, and for data and information management. These plans delineate the specific variables needed, the spatial and temporal sampling required, the most appropriate techniques and methodologies, and the products that should result from the analysis of the observations. In this way, GCOS provides an observational base for climate research, services, and impacts.

28. As a fundamental principle of its implementation, GCOS was to be built to the degree possible on existing operational and scientific observing, data management and information distribution systems by proposing enhancements to these systems so they better satisfy climate requirements. Among these systems, WWW and GAW of the WMO, the Integrated Global Ocean Services System (IGOSS) coordinated by IOC and WMO and the IOC Global Sea Level Observing System (GLOSS) should be mentioned. To date, networks for GCOS have been established for upper-air and surface meteorology, for tropical and southern hemisphere ocean observations, and for ecological variables.

29. Many other components are currently being developed as part of the overall implementation strategy in collaboration with the Global Ocean Observing System (GOOS) and the Global Terrestrial Observing System (GTOS), both sponsored by organizations - partners in the Climate Agenda. GTOS will address the terrestrial variables needed to describe ecological, hydrological and cryospheric processes which influence climate change and characterize climate impacts. GOOS is a major source of comprehensive information on the state of the global ocean in a wide range of time and space scales. These three systems working in concert, should be able to ensure the necessary data for climate research impact assessments and provision of climate services for negotiations by the Parties of their future

efforts to implement the UN/FCCC. These and future cooperative efforts with international and national organizations should enable the Parties of the Convention to take full advantage of the GCOS programme to fulfil aspects of the Climate Convention.

### Appendix

#### LIST OF ABBREVIATIONS

CIRNet	Climate Impact and Response Strategies Network
CLIPS	Climate Information and Prediction Services
CLIVAR	Climate Variability and Predictability
FAO	Food and Agriculture Organisation of the United Nations
GAW	Global Atmosphere Watch
GCOS	Global Climate Observing System
GEWE	Global Energy and Water Cycle Experiment
GLOSS	Global Sea Level Observing System
GOOS	Global Ocean Observing System
GTOS	Global Terrestrial Observing System
ICSU	International Council of Scientific Unions
IGBP	International Geosphere Biosphere Programme
IGOSS	Integrated Global Ocean Services System
IHDP	International Human Dimensions of Global Environmental Change Programme
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
ISSC	International Social Science Council
START	System for Analysis, Research and Training
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCIRP	World Climate Impact Assessment and Response Strategies Programme
WCP	World Climate Programme
WCRP	World Climate Research Programme
WDC	World Data Centre
WHO	World Health Organization
WMO	World Meteorological Organization
WWW	World Weather Watch

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