15 October 2003

ENGLISH ONLY

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE
Nineteenth session
Milan, 1–9 December 2003
Item 7 of the provisional agenda

RESEARCH AND SYSTEMATIC OBSERVATION

Priorities for actions arising from the second adequacy report, with particular reference to the Global Climate Observing System steering committee report to the Subsidiary Body for Scientific and Technological Advice at its eighteenth session

Submissions from Parties

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its eighteenth session, considered *The Second Report on the Adequacy of the Global Observing Systems for Climate in Support of the UNFCCC*[1] (second adequacy report) and the related GCOS steering committee report.[2]

2. The SBSTA requested Parties to submit to the secretariat, by 15 September 2003, views on the priorities for actions arising from the second adequacy report, with particular reference to the above mentioned GCOS steering committee report.

3. The secretariat has received nine submissions from Parties. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced[*] in the language in which they were received and without formal editing.

---

[1] Available as report no. GCOS-82 at http://www.wmo.ch/web/gcos/gcoshome.html

[2] *Report to SBSTA 18 from the GCOS Steering Committee regarding the Second Report on the Adequacy of the Global Observing Systems for Climate*, available at http://www.wmo.ch/web/gcos/gcoshome.html

[*] These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

CONTENTS

PAPER NO. 1: ARGENTINA

RESEARCH AND SYSTEMATIC OBSERVATION

COMMENTS BY ARGENTINA

General Comment

The comments on Agenda Item 7 (SBSTA-18th), cannot be made neither exclusively on the so called Second Adequacy Report in isolation nor without considering other statements arising from the text of the SBSTA ´s conclusions and without linking it to what was analyzed under Agenda Item 5- Development and Transfer of Technologies.

Specific Comments

1.-On the second Report on Adequacy of the GCOS, in support of UNFCCC

The Second Adequacy Report fails to provide Parties with a reference on the right situation of meteorological and hydrological observation networks, including the GCOS stations. The real situation of the further deteriorating surface meteorological and hydrological observation system, is not fully expressed. This is lack of information is particularly critical in developing regions, where the vulnerabilities of some natural and human systems are at stake and the impacts resulting from increasing GHG concentrations will affect more critically a number of arid and semi-arid and coastal/island developing countries. As it is very well known, many countries do not satisfy the standards, methods and procedures, as stated in the WMO Guide to Meteorological Instruments and Observing Practices and the corresponding ones found in the UNESCO International Hydrological Programme. The existing deficiencies are not fully stated, being suggested that an increasing use of satellite information would palliate the existing remarkable deficiencies.
As a matter of fact, the exacerbation of extreme events calls for daily precipitation data sets to improve information on both ends of the hydrometeorological spectrum (drought and flood). This requirement also calls for the monitoring of critical meteorological and hydrological variables. Temperatures, precipitation rates and frequencies, evaporation and evapotranspiration (either computed or, when possible, measured), solar radiation, infiltration rates, phreatic / underground water levels, lakes / lagoons / reservoir levels, and river floods, need to be measured and monitored. This is a critical requirement for the correct management of many of the hydro-electric dams in operation, particularly in developing regions, where the international funding agencies´ requirements of impact and risk assessment, were not correctly or fully implemented, simply because the existing observations systems were already inefficient or non-existing and the data archived, if any, are not quality controlled.
Furthermore, the WSSD (Johannesburg, 2002), recommended to reduce the number of people having not safe water neither sanitary services, a requirement interlinked with the Parties´ responsibilities emanating from Article 4 of the Convention. This international commitment also calls for the GCOS best possible implementation.

2.- Up-grading of Observation Systems.

The SBSTA´ s conclusions and the 2nd Adequacy Report, mention the adoption of measures towards improving these observations systems, remarking the need for estimating costs. Such a request was initially presented at CoP-4, from which recommendations the Buenos Aires Action Plan was born. Improving means various issues, inter alia a reference is being made to the introduction of automated observation stations. However, no reference is made to the convenience to develop modern observation

networks, both for meteorological and hydrological measurements, providing also information for pre-established rates / time-intervals, relative to changes in the values of selected variables (i.e. precipitation intensity, wind speed, maximum temperature, limnimetric and phreatimetric levels). These automated observation stations should have a real-time transmission capacity to feed data into hydrometeorological, agrometeorological or human health and welfare warning / alert systems, or to a designated operational office, for up-dating forecasts and weather predictions..
The recognized lack of reliability of man-equipped observation stations call for this type of solution, already adopted, though with restrictions, in some developing countries, at least in Latin America.
A decision of this nature will have a net impact on costs, due account taken of the above mentioned requirement to bring into the picture automatic measurements, with the provision of some stations working on warning state conditions, providing real-time data, with direct transmission to warning / alert mono or multipurpose centers. This development will permit triggering the corresponding warning / alert procedures, not only for the sake of human beings, but also for the defense of food production, water availability (quantity and quality) and infrastructure works and sevices..
This type of development is increasingly important, should Parties fully implement Article 4 of the Convention and bring into reality the complementation of mitigation actions with the increasingly necessary adaptation measures. As known, the lack of implementation of the Kyoto Protocol and the fact some of the largest GHG polluters (Annex I and non-Annex I Parties) either by emissions or by cutting-off sinking capacities (deforestation), continue to increase the concentration of GHG in the atmosphere. The GHG concentration levels in the atmosphere would be soon reaching values which bring the urgent need to activate adaptation actions. These must be considered as complements to actions oriented to mitigate GHG emissions.

As per Argentina´s case, the density of the national network of metheorological information on surface and free atmosphere, is not enough to assess all the climate aspects of the territory. Nevertheless, observations are carried out following international standars and regulations on tools and observation methods. Data undergo an adequate quality control which make them reliable and accurate.

The flaws on network density are more obvious in relation to non conventional environmental indicators, which are equally important in the fenomena of global change.

Argentina continues to strive to establish an adequate complementary network of automated observation stations – 15 functioning since aproximately 3 years -. This project faces difficulties inherent to the high cost of this type of stations and communications, the higher the more complete are in their performance. Nontheless, we do not consider they are the solution to obtain data from remote sites because they need to be installed in locations where exists the necessary infraestructure for their work, maintenance and protection. Therefore, We do not consider convenient to replace conventional observation stations by automated ones, although current networks should be completed by them.

3.- Types of observations. Data reliability

The Plan for the Second Adequacy Report (approx. November 2001) included reference to the IPCC ´s need for accurate and reliable data sets for quantifying uncertainty and for projection purposes. At CoP-8 (New Delhi) the IPCC Secretariat presented a report on the needs for data. Reference was then made to the need of certain phenological and phenometric observations which, years ago, were routinely made by meteorological observation stations. Such was the degree of development of such observational routine that the First RAIII (South American Region), held in Rio de Janeiro, in 1953, had adopted a set plants species to refer the phenological observations. It is quite evident that the addition of such observations, at least in GCOS ´ s observation stations would provide a valuable information to study the effects (vulnerability and impacts) of climate change.
Regarding data reliability, the inception of the WWW, by the WMO Fourth World Meteorological Congress (Geneva, April 1963), provided, to the weather and climate communities, a number of methods and procedures to take care of the accuracy and reliability of observation data. The developments in the

Observation, Telecommunication and Data Processing Systems, complemented with the material developed by the UNESCO International Hydrological Programme and the WMO Hydrological Operational Programme are, no doubt, important sources of sound information to reactivate and modernize both the surface and the spatial observation systems, in developing regions.
At this stage, the Argentina ´s Government wishes to bring the attention of the authorities and specialists associated to bring the GCOS to the required level of efficiency and reliability, to the SBSTA ´s conclusions regarding the treatment of Agenda item 5 (18^{th} SBSTA), when the report of the Expert Group on Technology Transfer (EGTT) was considered and approved.
The issue of technology transfer involves, no doubt, the urgency to complement every action oriented to provide financial support to up-grade climatological stations with the badly needed action to improve developing countries managing capabilities, for the sake of the above mentioned Observing, Telecommunication and Data-Processing Systems.
The IPCC is also fully involved in this effort to such an extent that, in addition to the publication of its Special Report on Methodological and Technological Issues in Technology Transfer, its 20^{th} Session (Paris, 19-21 February 2003) suggested the inclusion of a Cross-Cutting Theme (CCT) on Technology, involving its three Working Groups.. This CCT would be finally approved at the 21^{st} IPCC Session, scheduled to take place in Vienna (November 2003), so the IPCC Fourth Assessment Report would take care of this important transversal issue, with its many implications in the future actions to fulfill the goal of the UNFCCC.
It goes without saying that the Argentina ´s Government would like to see a fully coordinated action, involving GCOS in every aspect of the standards, methods, procedures and practices to install, operate, inspect and maintain observation meteorological and climatological systems

4.- Additional Comments.

4.1.- The detection and attribution of impacts of climate change, as initially presented in the contribution of IPCC Working Group II to TAR, calls for some additional information.
A vulnerability study performed in Argentina, in association to its First National Communication to the UNFCCC, has shown that “proxy” data, for a period of a hundred years, permitted to explain the effects of the ENSO processes in the frequency and intensity of snowfall on the high Andes, between 29º S and 36º S, with the consequential availability of snowmelt, in late spring and summer, to feed the oases at the piedmont of the cordillera.
Proxy data should provide an additional source of information when properly validated; therefore, in view of the poor observational standards and the lack of sufficiently dense networks, as observed in developing regions, would suggest to sponsor the use of media information to complement data series.
4.2.- This comment aims to bring to the GCOS ´s arena the critical issue also presented in the above mentioned IPCC report on information needs (CoP-8, New Delhi). The study of vulnerabilities and impacts, as well as the following efforts to adapt to climate change, need more than geophysical information, as required in GCOS. Biological, social and economic information is badly necessary to evaluate the impacts and provide the necessary support for decision making. This is an important issue to valuate the impacts of climate change and analyze the pro and cons of adaptation efforts.
Therefore, Argentina leaves the door open to consider the development of appropriate rules and procedures to perform, compile, archive and retrieve this type of information for the sake of the main UNFCCC objective as set in Article 2 of the Convention.

PAPER NO. 2: AUSTRALIA

SUBMISSION BY AUSTRALIA TO SBSTA ON THE SECOND REPORT ON THE ADEQUACY OF GLOBAL OBSERVATIONS FOR CLIMATE (2AR)

Purpose

Recalling the conclusions of SBSTA-18, this submission is directed at addressing Australia's views on the priorities for actions arising from the 2AR, with particular reference to the Report of the GCOS Steering Committee.

General Comment

2 We would like to commend the GCOS Steering Committee for bringing together this comprehensive report on the adequacy of global observing systems for climate in the context of the requirements of the UNFCCC. Clearly, a considerable effort has gone into its preparation and we ask the GCOS Director to pass on our thanks to the many scientists who were involved in the process, from the scoping of the report to its final drafting. We particularly welcome the interaction between GCOS and the IPCC that contributed to scoping the report in the context of the outcomes of the IPCC Third Assessment Report and the complex information requirements of the UNFCCC.

3 We note the three key elements of the report (Full Report, Executive Summary, GCOS Steering Committee Report to SBSTA) and the different approaches taken to identifying the types of actions required by Parties. The SC report aims to put the 2AR into a context that SBSTA can best relate to and that makes best use of the SBSTA as a consensus body – the SC report reminds Parties of the efforts already made through SBSTA to address the issues and focuses on how SBSTA may now respond most effectively to catalyse the response by Parties to the findings and conclusions of the 2AR, in particular through the four overarching recommendations.

4 The full 2AR report contains an enormous number of findings, summarised into a number of broader conclusions in the Executive Summary, that address deficiencies, gaps and recommended improvements across the breadth of global observing systems for climate. Many of these are very specific, to particular systems, regions or activities, and there has, quite rightly in our view, been no attempt in the main report to prioritise these findings. They are all important, some to only limited constituencies, and action to address any of them will contribute to improvement of the global systems. Realistically, to address all of them would be an enormous challenge. The order or priority of implementation will depend to a considerable extent on the immediate needs, resources and opportunities of Parties.

5 We encourage Parties to review the findings and conclusions of the 2AR and to consider what actions they can take, individually, multilaterally and/or through internationally coordinated programs, to respond as they can to specific findings, against the broader context of the overarching recommendations.

6 As requested this submission focuses on the SC Report as a basis for consideration by SBSTA of the priorities for actions arising from the 2AR.

Priorities for actions arising from the 2AR

7 In the time that has elapsed since the first GCOS adequacy report was considered by SBSTA-9 in Buenos Aires and since Decision 14/CP.4 laid down a number of imperatives for action by Parties, the global observing systems for climate have experienced improvements in some areas, notably in the

growth of satellite systems and the specification of ocean systems, and continued or accelerating deficiencies in others, such as terrestrial observations and surface and upper air meteorological observations in developing countries. Successive SBSTA conclusions and COP decisions have lead to, inter alia:

- the instigation of a series of regional workshops to assist developing countries in preparing national monitoring reports and identifying their priority monitoring needs within the context of global observing systems for climate; and
- development of reporting guidelines for detailed national reports on systematic observations as an adjunct to National Communications.

8 Other conclusions have highlighted other priority actions for Parties and intergovernmental agencies, including:

- full implementation of designated baseline observing systems;
- free and unrestricted exchange of data;
- provision of data to international data centres;
- adherence to the UNFCCC Climate Monitoring Principles;
- rescue of historical data and metadata;
- use of climate data as input to decision-making processes;
- development of regional action plans; and
- special needs of developing countries and some countries with economies in transition, particularly the least developed countries and the small island developing states.

9 While some actions have been taken to address these priority needs, **it would be timely for SBSTA to recall many of these needs explicitly and to remind Parties of the need to act on them to the best of their individual and collective abilities and capacities, to assist others to respond as appropriate, and to report on any barriers to their implementation.**

10 Australia strongly endorses the four overarching (and equally high priority) recommendations proposed in the Steering Committee report, and offers the following comments on the priorities for actions required to address them.

Recommendation 1: (in precis) That the intergovernmental mechanisms for climate data and products be strengthened, that a mechanism be established to prepare guidance materials and develop agreements, standards and regulations for terrestrial observing systems, data and products, and that free and unrestricted exchange of data be strongly encouraged.

- The international focus on integrated Earth observing systems has been raised to a high level during 2003, both by the completion of the 2AR and by the actions of the US in hosting the Earth Observation Summit. Many countries have expressed a desire to work with the US to develop a forward strategy to improve global environmental monitoring systems. From a SBSTA perspective, there needs to be a clear recognition of the critical importance of climate as a global monitoring issue and of the need for Parties, especially in addressing this particular recommendation, to work closely with the established intergovernmental agencies, such as the World Meteorological Organization (WMO) and Intergovernmental Oceanographic Commission (IOC) of UNESCO, whose existing systems and coordination infrastructure are devoted to meeting needs both from a global perspective and in terms of the priorities, capabilities and capacities of their member countries.

- Of the three principal climate domains, terrestrial observations (perhaps excepting hydrological networks) have benefited the least, to date, from the existence of a coordination mechanism to guide the development and application of monitoring standards and regulations. The Joint WMO-IOC Commission for Oceanographic and Marine Meteorology (JCOMM) provides a model that

the relevant intergovernmental agencies, principally the FAO (Food and Agriculture Organization) and WMO, could usefully adopt or mould to the needs of the various terrestrial monitoring communities.

- Other elements of the guidelines, standards and regulations established and maintained by the WMO and IOC for atmospheric and oceanic observing systems could also provide useful building blocks. Satellite observations are increasingly critical in terrestrial observations, especially from the perspective of attaining broad spatial coverage in a timely manner and in developing a diversity of measurements. The satellite and in situ communities have established close and collaborative working relationships in respect of atmospheric and oceanographic observations, such as within the WMO World Weather Watch. Similar relationships will also be critical in establishing an effective intergovernmental terrestrial mechanism.

- The nature and scale of terrestrial observations and the sheer variety of terrestrial variables, makes coordination a challenge, but agreement on standards of observations and the implementation of standards and regulations for the observing systems, data and products, will assist in development of a coherent global system. Such agreements will also better facilitate the integration of terrestrial data and products with data from climate observing systems, including atmospheric and oceanographic components, and contribute to development of fully integrated and coupled climate models.

- The principles of free and unrestricted exchange of data are critical to the development of integrated, and hence more fully effective, global observation systems for climate. The 2AR has identified a set of designated Essential Climate Variables and SBSTA should reinforce the requirements on Parties for the free and unrestricted exchange of the ESV set at the very least.

- The barriers to free and unrestricted exchange of data need to be understood, and strategies developed and implemented to remove these barriers. To this end, SBSTA should request Parties to report on their achievement of this requirement and on the barriers that prohibit or limit free and unrestricted exchange. The information gathered should be used, collaboratively with the various Parties, agencies and institutions involved, in developing strategies for removal of the barriers.

Recommendations 2: (in precis) That Parties institutionalise appropriate processes for generating and making available a range of integrated climate-quality products relevant to the needs of the Convention.

- Given that the development and sustained operational production of such products will often be undertaken by individual Parties or institutions, it is important that the utility and applications of climate-quality products are understood at a national government level. This can be assisted by linking the need for such products, and for the underlying systematic climate observations, to a range of national needs, such as monitoring, climate alert systems, vulnerability assessment, climate risk management, adaptation strategies and disaster management.

- The need to address deficiencies in underlying data and observing systems is implicit and has often been repeated in SBSTA conclusions. However, the importance of addressing the deficiencies cannot be overstated - it is critical, not just in the developing countries where most of the gaps occur, and not just in making the measurements, but in ALL countries and in ALL stages of monitoring, data management and manipulation, and data exchange and access.

Parties should be encouraged to ensure that the maintenance and operation of regional and national networks are not degraded in the drive to improve GCOS networks.

Recommendation 3: (in precis) That SBSTA review the guidelines for national communications in relation to research and systematic observations, to include reporting on the exchange of Essential

Climate Variables and other products required to meet the needs of the Convention, and on submission of data and metadata to international centres.

- Development of the reporting guidelines, as recorded in Decision 4/CP.5, was a significant step forward in starting to make available, to SBSTA and GCOS, coherent information on the state of global observing systems at a national level. However, a number of countries felt that the guidelines did not go far enough and these countries worked together to develop additional complementary guidelines (Supplementary Reporting Format – available through the GCOS website) which provided considerably more detail and more useful information. It is proposed that when the guidelines are reviewed and extended as per the recommendation, the Supplementary Reporting Format, modified as necessary to remain compatible, be institutionalised within the revised guidelines, as an optional but highly advisable approach to reporting.

- The reporting guidelines should also include a requirement for Parties to report against commitments made earlier in terms of sustained or enhanced monitoring systems.

- Parties should also be urged to report on measures aimed at adhering to climate monitoring principles, and data rescue and preservation, particularly in areas where records are vulnerable.

- The UNFCCC Climate Monitoring Principles should be revised and/or extended to address the application of the principles, and development of new principles, to satellite observing systems. A critical feature of satellite observing systems from a climate perspective is sustained operation of systems together with stability of instrumentation, calibration, measured variables and derived products. Aspects identified under Recommendations 1 and 2 above are also highly relevant (eg development of integrated climate-quality products, and free and unrestricted exchange of data) and may also benefit through capture in the principles.

- The recommendation stresses the need for ALL Parties to provide national reports on research and systematic observation. The global nature of the climate system and the increasing synergies and extended understanding that can be achieved through integration of data across all climate regimes, all geographic regions and between data systems and climate models, reinforce the need for ALL Parties to submit the information as part of their national communications.

Recommendation 4: (in precis) That Parties commit to the full implementation of integrated global observing systems for climate, and those Parties able to, contribute to a voluntary funding mechanism to support the high priority needs of developing countries.

- The 2AR has provided a comprehensive review of the adequacy of existing global systems for monitoring climate and, through its findings, conclusions and recommendations, has identified strategies for addressing them. It is proposed that SBSTA requests GCOS to take the 2AR to the next step and develop a comprehensive 5 to 10-year implementation plan that will mobilise Parties, within the framework of the responsible intergovernmental agencies, to ensure that the global observing systems for climate do adequately meet the needs of the Convention. The synergies between this plan and the efforts of the Group on Earth Observations (GEO), which has broader global environmental monitoring objectives, should be fully exploited through coordination and collaboration at a Party and agency level.

- The 5 to 10-year implementation plan for global observing systems for climate should recognise the extent of the resource requirements, particularly in respect of the developing countries, associated with all aspects of the sustained operation of an integrated global climate monitoring system, which includes funding for infrastructure establishment and maintenance; ongoing operational needs; and capacity building.

- A proposal for the establishment of a GCOS Donor Fund to support the high priority needs relating to global observing systems for climate in developing countries, is currently being explored by the GCOS Steering Committee and has attracted interest from many countries. It is proposed that, if/once this fund can be established under the management of a Donor Board which would operate under the scientific guidance of the GCOS Steering Committee, Parties consider contributing to such a Donor Fund on a voluntary basis or through any other appropriate bilateral or multilateral mechanism.

- The modalities for the operation of the proposed Donor Fund are still under development but it is envisaged that it would be modelled on existing mechanisms, such as the WMO Voluntary Cooperation Programme, that it would develop flexible options for methods of contribution, that it would work with other relevant funding and implementation mechanisms, and that it would address the breadth of funding needs, including those relating to infrastructure, ongoing operations and capacity building. Priorities for donor funding would be to those areas that are currently deficient in observations (eg. Africa, South America, the tropics for atmospheric observations) and that consideration be given to areas where data are urgently required for impacts assessment or adaptation purposes, or where climate models suggest significant climate change may occur.

- It is proposed that all bilateral and multilateral funding support in respect of global observing systems for climate include an explicit commitment to adhere to the UNFCCC Climate Monitoring Principles and to the principles of data exchange (including metadata and historical data).

PAPER NO. 3: CHINA

THE VIEWS ON THE SECOND REPORT ON ADEQUACY OF GCOS BY CHINA

China welcomes the opportunity to submit a submission on The Second Report on Adequacy of GCOS. China appreciates the findings and recommendations in the Report prepared jointly by the GCOS Steering Committee and GCOS Secretariat and believes it will benefit the establishment and improvement of GCOS at global and national level and promote the process of UNFCCC. China is of the view that the following focus should be given in further improvement and development of Global Climate Observing System.

Identify Prioritized Functions for GCOS Development in the Short Term

According to the UNFCCC and the relevant documents, the ultimate objective of GCOS should be supporting sustainable development through its activities, in particular, monitoring, observing, data collection and analysis, and scientific suggestion. Therefore the prioritized functions for GCOS development in the short term should be the following:

(1) to integrate the activities of GCOS into the program and projects of sustainable development at international, regional and national level;

(2) to reduce crucially scientific uncertainties stated in IPCC TAR;

(3) to distinguish natural and anthropogenic climate change;

(4) to enhance the development, test and projection of climate models;

(5) to estimate and/or assess the effectiveness of mitigation actions, in particular, the implementation of the KP;

(6) to access possible impacts of extreme climate events and burst-out events.

Identify the Priorities for Action

On the basis of deficiency presented by the Second Adequacy Report and for carrying out the functions mentioned above, China suggests the following priorities for action of GCOS:

(1) to elaborate standards and regulations necessary for coordinating the operation of GCOS at both global and national level ;

(2) to establish a financial mechanism to support developing countries to carry out their national COS programs and participation in relevant global arrangements;

(3) to assist developing countries in establishing and maintaining their national Climate Observing System;

(4) to mobilize resources from relevant international organizations, especially, WMO, FAO, and IOC, to support GCOS in implementation or in exercise of it functions

PAPER NO. 4: CROATIA

SUBMISSION OF REPUBLIC OF CROATIA, ACCORDING DOCUMENT FCCC/SBSTA/2003/L.4, PARA 9

1. Views on the priorities for actions from second adequacy report

- *Long term needs of the Convention*
  Climate system is consisting from diferent domains: atmospheric, oceanic and terrestrial. Actual aproache in climate science and research on global and national level is based on an integrated analyses which include data from all domains. The main long term need of Convention is: to have data from all climate system domains. This depends from willingnes of world community, and how to find way that all participants in this issue (international organizations, intergovernmental programmes, scientific organizations e.t.c) have all data, never mind which priority they have: atmosphere, ocean or terestrial.
  Croatia suport view that only uncertains in climate science may show long term needs on Global Climate Observing System and consequently, way how work together on the international level.

- *Short term priorities*
  It is evident that financial resources of Parties will not allow fulfilment at once, all scientific needs in all domains of the Global Climate Observing System. There are many short - term priorities. SBSTA may request for further analyses and discussion with including scientific goals identified in the Second adequacy report and also other alternate short term needs.
  It can be good direction in make decisions for countries, but it is evident that countries can have diferent short term priorities, depends of diferent factors, like history of observations, observations organization on national level, geographycal position, national aproache in GCOS observations implementation and others. Croatia suports SBSTA-GCOS aproach about short term priorities with fact that in planing and implementation short term priorities every country can taking in account its own situation.
  Croatia suports work on GCOS Donor Fund.

- *Special needs in Croatia regarding the improvement of the Global Observing System for climate on global and national level*
  In Croatian UNFCCC First national Communication Report in chapter 8 Research , Systematic Observations and Monitoring, under point 8.2 Systematic Monitoring within GCOS, Croatia stated about situation in this area.
  Systematic meteorological and hydrological observations in Croatia started in midlle of 19th century. Diferent institutions performed measurements independently, without co-ordination and methodological guidance, so that many observed data was incopatible and lost.
  From this experience, it became obvious that suplemental informations is needed for the rewiew and assessment of data quality: length of data records, homogenity of series, continuity of observations, changes in methods, replacement of instruments which were used, possibility of electronic access to data, data rescue and recovering tools. We have to reconstruct all meta-data.
  Now, systematic observations and data collection in Croatia are carried out by different uncoordinated organizations and institutes. Do not exist any official coordination in data collecting and using beetwen observations in diferent domains of climate system.
  To meet GCOS requirements the Croatian national plan for capacity building and strenghtening of the observational system and programmes comprises of nine points:

  1. Active and continious participation in GCOS
  2. Making analyse and plan to establish and forward cooperation and later coordination between diferent observation networks at national level
  3. Planing activities related capacity building

4. Strenghtening maintenance within existing climate related network
5. Modernization of networks
6. Modernization existing data bank
7. Continuation of efforts to recover past climate data records, processing and entry for electronic use
8. Development and strategy plans for space based observing programmes improvement.
9. Development and implementation of methods for homogenity inspection in data series, and development of the system for meta data collection

What is priority related improvement of of the Global observing system for climate on national level? We detected not existing of any official coordination between observation in diferent parts of climate system, and first level of priority is to colect and assess (who, where, how) exactly data about existing climate observations (networks). Second level of priority is to know way of processing data and where data are stored and way of data managed. Third level is make national plan for systematic observations, which have to content way of cooperation and some kind of coordination between cariers of diferent networks on the level of data. Fourth level of priority is reconstruction of historic data series.
Remark: It is very hard process to make coordination between diferent authority on national level and start on the level of data is good aproache.

2. View on Report to SBSTA-18 from GCOS Steering Committee regarding the Second Report on the Adequacy of the Global Observing Systems for Climate

Croatia have not aditional remarks on exelent GCOS Steering Committee Report to SBSTA-18. High priority recommendations include all needs for further implementations GCOS.
Funding mechanism is very important for suport high-priority needs in developing countries and some countries with economy in transition, which intend improve national climate observing system.

PAPER NO. 5: ITALY ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES

THE SUBMISSION IS SUPPORTED BY THE FOLLOWING ACCEDING STATES: ESTONIA, CZECH REPUBLIC, HUNGARY, POLAND AND SLOVENIA

SBSTA-19 Agenda Item 7: Research and systematic observation

The priorities for actions arising from the GCOS second adequacy report, with particular reference to the GCOS steering committee report to the SBSTA-18, as a further step towards the development by the GCOS secretariat of an implementation plan for integrated global observations for climate

The EU welcomes the Second Adequacy Report (2AR) presented by the Global Climate Observing System (GCOS). The EU also recognizes the relevance of the report submitted from the GCOS Steering Committee to SBSTA-18, including four high priority recommendations, which if addressed could significantly improve the global observing systems for climate.

The 2AR remarked that there have been improvements and progress in implementing global observing systems for climate, but it concluded that serious deficiencies remain in the ability of global observing systems for climate to meet the identified needs of the UNFCCC.

The EU recalls the recent WMO Congress which strongly endorsed the conclusions of the report and urged all Members to support the implementation of its recommendations as a matter of urgency.

The EU appreciates the opportunity to comment on the recommendations identified in the Report, and in particular the EU wishes to provide comments on the following issues.

Data Exchange and Standards

The EU recognizes that the coordination of multiple data sources from different data providers to generate accurate, long-term and consistent information will require special attention to the important issues of data quality, data archiving and information exchange systems.

There is the need to agree on standardized observing methods and compatible formats for data exchange and to have appropriate access to infrastructures for exchange of data and information.

Also there is a strong need for the definition for terrestrial observing systems of standards for observing methods and for exchange of data and products. The current practise within the WMO is a good example on how to address the issue of data management.

We would like to encourage Parties to take measures that ensure the sustainable operation of sites with long climatological time series according to the GCOS Climate Monitoring Principles laid down in Resolution 3.2.3 of WMO Cg-XIV. Furthermore there is the need to rescue historical data by digitizing them. This will, in some cases, significantly extend data sets back in time and also make such data available for further research. These data should be regarded as a valuable part of the national heritage.

Finally the EU encourages all Parties to adhere to the principles of free and unrestricted exchange of, and access to, data in relation to the designated Essential Climate Variables, including satellite observations.

Integrated Global Climate Products

The EU supports the generation of integrated products, and recognises reanalysis as a tool to provide integrated products such as ERA 40 (ECMWF Re-Analysis 40), and stresses the need for additional international and coordinated efforts for such analysis, especially in the oceanic and terrestrial domains.

Furthermore the EU highlights the relevance of the GMES programme (Global Monitoring for Environment and Security), with the aim of improving the capacity for global monitoring including climate.

Integrated climate products are required on regional levels. In this context, the EU also highlights the roles of the Eumetsat Satellite Application Facility on climate monitoring being currently established and the Eumetnet ECSN (European Climate Support Network).

National Reporting to the UNFCCC

The EU encourages all Parties to provide their next reports on Systematic Observations together with their national communications according to the supplementary format, presented to SBSTA-13 by Australia. These reports should also include information on the Essential Climate Variables listed in GCOS-2AR.

Capacity-Building

The EU recognises the importance of education and training as a key to successful extension of networks, which can enable an increased uptake and acceptance of climate data by key institutional users and international research programmes. The EU recognises the need to address gaps and deficiencies in the current observing systems for climate, especially in developing countries.

The Parties need to commit to the full implementation and operation of stations and associated infrastructures that are essential to achieve global coverage.

The EU would welcome additional information on the progress of the initiative to establish a voluntary GCOS donor fund to address high priority deficiencies in the global observing systems for climate.

System Improvements

The EU notes that most of the current observing networks were established for purposes other than climate studies, and wishes to emphasise the need for Parties to appoint GCOS co-ordinators to ensure that data are collected, archived and disseminated with due consideration of quality and homogeneity required for climate observation.

We endorse the need for enhancement of the atmospheric observing systems, in particular:

- full and sustainable implementation of the GSN (GCOS Surface Network);
- full and sustainable implementation of the GUAN (GCOS Upper Air Network).

The GAW (Global Atmosphere Watch) network which monitors both natural and anthropogenic species implicated in forcing the climate system requires continued support and development, in particular:

- enhancement of greenhouse gas measurements in selected regions;
- improved distribution of ozone monitoring sites;
- further development of a strategy for obtaining continuous homogenous measurements of aerosols.

We also emphasise the need for a strategy for the measurements of clouds and water vapour to be produced.

The EU highlights its participation in EUROGOOS (European Global Ocean Observing System) and would welcome the future enhancements of the ocean observing systems, in particular:

- an enlarged Voluntary Observing Ship (VOS) system developed with innovative technology in a cost-effective, multidisciplinary and environmentally safe manner;
- a moored buoy system for validation also of ocean models and calibration of the ecosystem modelling components;
- a fully established and maintained high space-time resolution network of autonomous subsurface profiling floats (ARGO – Array for Real-Time Geostrophic Oceanography)
- a fully implemented network of surface drifting buoys.

The EU emphasises the need for improved monitoring of essential climate variables relevant to the terrestrial domain.

Integrated satellite and in situ observations, as proposed in the GMES strategy, are essential to understand the climate system. In this context the EU encourages the space agencies to support the long term operation of Earth observation satellites.

The EU wants to stress that the observations need to be global, homogeneous and continual in nature not only for understanding the climate system, but also for the implementation and verification of the objectives of the relevant international environmental conventions (UNFCCC, UNCCD and UNCBD).

Finally the EU recognises that remedying the main deficiencies in the global climate observing systems is the highest priority to be addressed.

PAPER NO. 6: JAPAN

JAPAN'S VIEWS ON THE PRIORITIES FOR ACTIONS ARISING FROM THE GCOS SECOND ADEQUACY REPORT

Japan welcomes the opportunity to submit its views on the priorities for actions arising from the GCOS Second Adequacy Report, as invited by the SBSTA at its eighteenth session.

General Comments

Japan highly appreciates the GCOS Second Adequacy Report in improving the global observing systems for climate, and expects its contribution to the discussions in UNFCCC.

Japan has supported the formulation of the GCOS Second Adequacy Report from the very beginning through participation in the GCOS Steering Committee, and will continue to strengthen collaboration with GCOS activities.

Japan believes that priority should be given to observation of greenhouse gases and the global water cycle. We also expect that international research programmes play a central role in the coordination between observation and research.

Japan also suggests that in developing its implementation plan for integrated global observations for climate, GCOS cooperate with activities related to the G8 Action Plan for Science and Technology for Sustainable Development adopted at the G8 Summit in Evian, and preparation of 10-year Implementation Plan for earth observation decided at the Earth Observation Summit on July 31, 2003. We also suggest that GCOS receive comments from various researchers and user communities to establish the implementation plan.

Comments for four overarching recommendations proposed by the GCOS Steering Committee in their report to SBSTA-18

With regard to priorities of actions in four recommendations of the "Report to SBSTA18 from the GCOS Steering Committee regarding the Second Report on the Adequacy of the Global Observing Systems for Climate", we consider that actions related to full implementation of integrated global observing system (referred to in recommendation 2 and 4) and data exchange and access (referred to in recommendation 1) should be highly prioritized. In addition, we believe that activities related to capacity-building referred to in recommendation 4 should be further facilitated.

With regard to full implementation of integrated global observing system, we agree with the deficiency of global climate observing systems, as concluded in the Executive Summary of the Adequacy Report. The Executive Summary also concludes that Parties "should support the long-term operation of Earth observation satellites." With the exception of observations by geostationary meteorological satellites, most of oceanic *in-situ* and satellite observations are operated by research organizations, and thus the lack of sustainability is concerned. Therefore, we strongly suggest GCOS to recommend to Parties that they develop functions for efficient observing systems, which is necessary for long-term observation, and to make the transition from research and development to operational basis.

Regarding data exchange and access, we agree with the exchange of data and products in full and open manner. On the other hand, as described in the Executive Summary, we are very much aware of deficiencies of full exchange and access to data because there are various policies on data exchange for relevant intergovernmental and international organizations. We understand that each organization has its own data policy, but mutual exchange of data and products should be considered at the same time. Therefore, it is important and necessary to examine details of these policies, and to enable exchange of data in full and open manner to the extent possible.

On capacity building, we recognize the necessity of efforts for capacity building. However, in the Adequacy Report, capacity building is referred only to the GCOS Surface Network (GSN) as the "problems with the observation and exchange of GSN data" require the urgent attention of nations, and many developing countries "need assistance and capacity-building

to resolve these problems." We suggest GCOS to conduct a survey on requirements for capacity building, not only in the field of terrestrial observation but also in that of oceanic and satellite observations, and to carry out an operable capacity building project.

PAPER NO. 7: NEW ZEALAND

PRIORITIES FOR ACTIONS ARISING FROM THE GCOS SECOND ADEQUACY REPORT

Overview

New Zealand welcomes this further opportunity to submit its views on priorities for actions arising from the Second Adequacy Report on the Global Climate Observing System (GCOS), as invited by FCCC/SBSTA/2003/L.4 para 9.

New Zealand warmly welcomes the spirit of collaboration shown by Parties towards the development and implementation of GCOS, including the concept of a voluntary donors fund, and appreciates the reports, information and options developed and presented by the GCOS Steering Committee and Secretariat to the Parties. We endorse the four overarching priority recommendations and key findings contained in the Second Adequacy Report and suggest that priorities within an implementation plan should be guided by those four high-level recommendations, which relate to observing standards and data exchange, integrated climate products, capacity building and systems improvements, and reporting by Parties to UNFCCC. Priorities for implementation of GCOS should also be further elaborated in close collaboration with the GCOS sponsoring agencies, other relevant intergovernmental organisations, and global and regional research programmes that could support the objectives of GCOS.

New Zealand would like to draw attention to the following two issues which we consider important in developing the GCOS implementation plan:

Integration of research and operational observations

The Second Adequacy Report notes the need for the development and promulgation of climate observing standards which facilitate the continuity, exchange and intercomparability of data. Many climate data arise out of focused research rather than dedicated operational observing programmes. Nonetheless, research programmes can provide high-quality and long-term datasets relevant to GCOS.

We therefore see it as a high priority that within the development of observing standards and protocols, full recognition is given to the potential role of research programmes as data sources, and that methods and options are considered and described to integrate research data into observing databases at minimal cost to data providers and database hosts which maximising the potential use of those data. Guidance should also be produced on migrating research to operational observations.

Integrated tools that support regional short-term decision-making and encourage wide participation by developing countries

The report by the GCOS Steering Committee to SBSTA noted the need to make available climate quality global products relevant to the needs of the Convention, and the need to build capacity and improve systems in developing countries. New Zealand believes there are strong links and synergies between improving systems, increasing active participation and submission of data by developing countries, building capacity, and developing and supporting climate products and tools that are relevant to the needs of the Convention as a whole as well as regional and short-term decision-making by individual countries. It is important that those synergies be considered and explored in the GCOS implementation plan.

New Zealand believes that integrated products that support short-term decision-making increase the direct benefits to participating countries and hence encourage greater participation in the global observing system, while application of relevant products and tools in the management of climate variability helps building vital capacity in developing countries in dealing with climate information in the context of sustainable development. In turn, this growing capacity to deal with information related to climate variability would also increase the quality of climate data submitted to international data centres.

We therefore regard it as a high priority that tools and products that support regional short-term decision-making are fully integrated into the range of climate quality products that are to be developed and made available under GCOS. Regional GCOS plans, in combination with other sustainable development and environmental monitoring plans, appear to be the most relevant place to identify such synergies between short-term climate-related decision-making and implementation of GCOS including its long-term and global objectives.

PAPER NO. 8: SUDAN

RESEARCH AND SYSTEMATIC OBSERVATION/VIEWS ON THE PARTIES FOR ACTIONS ARISING FROM THE SECOND ADEQUACY REPORT:

- Priority should be given to the assessment of urgent capacity needs in Non-Annex1 countries e.g. assessing of institutional and human capacity needs for the national climate change-related institutions.
- Please refer to the GCOS Regional Action Plan for Eastern and Southern Africa where specific regional capacity needs have been highlighted.

PAPER NO. 9: UNITED STATES OF AMERICA

U.S. SUBMISSION ON RESEARCH AND SYSTEMATIC OBSERVATIONS: PRIORITIES FOR ACTIONS ARISING FROM THE SECOND ADEQUACY REPORT

The United States commends the Global Climate Observing System (GCOS) Steering Committee, as well as the three GCOS Science Panels and GCOS Secretariat, for their efforts in preparing the Second Adequacy Report (2AR) and presenting the conclusions from the Report as requested by the Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC). We appreciate the considerable effort that has gone into assessing progress in specific areas since the First Adequacy Report and the additional work that is still needed. These findings are consistent with those of the Intergovernmental Panel on Climate Change (IPCC). Filling these gaps is essential to meeting the identified needs of the UNFCCC. In our view, the four overarching recommendations for action proposed by the Steering Committee including, observing standards and data exchange, integrated global climate products, capacity building and system improvements, and reporting to the UNFCCC, are important recommendations. We believe that parties acting individually, collectively and/or in conjunction with intergovernmental and international agencies should consider these recommendations to meet the needs identified by the UNFCCC.

Observing Standards and Data Exchange: We support the 2AR conclusion that "Without urgent action to address these findings, Parties will lack the information necessary to effectively plan for and manage their response to climate change." The fundamental requirement identified by the 2AR is "global coverage." The Essential Climate Variables and the technologies for global implementation of ocean and atmosphere networks are clearly specified. Although the terrestrial system may require some additional focused implementation planning, there is little reason to delay implementation of the ocean and atmosphere systems while the terrestrial system planning proceeds. Particularly for the oceanographic realm, nations can respond immediately through the intergovernmental implementation infrastructure already in place within the Joint World Meteorological Organization (WMO)/IOC Technical Commission for Oceanography and Marine Meteorology. To this end, we are prepared to move forward immediately toward implementing global coverage and we will work through existing mechanisms to coordinate and cooperate with our partners.

We also agree that there is a need for improved standards for climate observing systems, data and products. Specifically, there is an urgent need, as previously recognized by the UNFCCC and in the GCOS Report to the Secretariat, to adhere to the principles of full and unrestricted exchange of data, particularly in relation to the designated essential climate variables cited in the Second Adequacy Report. For example, the provision of historical data and metadata for all the GCOS Surface Network (GSN) sites to the GSN Archive Center located at the National Climatic Data Center, as requested by the WMO in 1999, is critical to move GCOS ahead in this key area. Moreover, the exchange of observations on climate variables is critical to improving the predictive capability of global circulation models in particular and would improve the overall effectiveness of the global observing systems for climate. The U.S. encourages GCOS to be more of an activist in the pursuit of data for the GCOS networks.

Lastly, adherence to the Climate Monitoring Principles, adopted by COP-5, is critical to improvements in all areas of observations.

Integrated Global Climate Products: The United States also believes that making integrated, climate-quality, global products available, including those from satellite observations and those based on re-analysis of historical data, would considerably advance collaborative efforts in addressing deficiencies in domain-based observing networks. The rescue of historical data and metadata is equally important as those data could be lost if not rescued soon, and reanalysis is not possible without these data. As the GCOS 2AR accurately states, there is a need to remedy deficiencies within the key domain-based networks.

To address the adequacy of the current GCOS program, it is important to consider the separate component groups. With a few exceptions, the observational programs were not originally designed to record data so that these data could be used for long-term trend analysis. The 2AR provides a roadmap and solid requirements for improvements in the various in-situ atmospheric, oceanographic, and terrestrial observing systems. In particular the identified need for high quality water vapor and upper-air temperature measurements from GCOS Upper Air Network sites is one that we support.

Capacity Building and System Improvements: The United States believes that capacity building, system upgrades, and data rescue are necessary for sustained improvements in the climate observations sphere. In this regard, we recognize the need for global coverage and identification of areas most in need, and urge submission of information relevant to research and systematic observations as part of the national communications and through other relevant channels so that these needs are highlighted. Additionally, through the Climate Change Research Initiative, we have begun providing support for in-situ GCOS observing sites and encourage other developed nations to continue their support. We have also supported regional climate change workshops that have contributed to capacity building as well as to global climate analyses. In addition, we support a Climate Reference Network (CRN) within the U.S. and would welcome a GCOS-led effort to use the existing CRN station configuration as a catalyst for improving surface climate observing systems in under-observed parts of the world.

Reporting to the UNFCCC: The United States takes reporting to the UNFCCC, including GCOS reporting, seriously and continues to encourage it. We also believe strongly in the importance of high quality national communications from all Parties to the UNFCCC and have made significant contributions in that regard, both financial and technical. Accurate and credible data and information, consistently produced, are essential to improve understanding of climate change and to implement the UNFCCC effectively. In this regard, the U.S. would like to reiterate the importance of timely exchanges of observations on climate variables that are essential to improving predictive capabilities of climate models.

Links to the Earth Observation Summit: The United States was pleased that GCOS was able to participate in the Earth Observation Summit, July 31, and the first meeting of the Group on Earth Observations, August 1-2, 2003. The Summit marked an extraordinary milestone in the development of a comprehensive, coordinated, and sustained Earth observation system that is intended to complement GCOS and benefit the climate community as well as other communities. Thirty-three nations and the European Commission adopted a declaration that signifies their commitment to move toward development of a comprehensive system. This system would empower decision-makers to monitor continuously the state of the Earth, increase understanding of dynamic Earth processes, enhance prediction of the Earth system, and further implement international environmental treaty obligations. Ministers from developed and developing countries agreed to increase timely, quality, long-term, global information, which can serve as a basis for sound decision making for the benefit of society.

The Earth Observation Summit established the *ad hoc* Group on Earth Observations (GEO) to prepare a 10-year Implementation Plan for a comprehensive, coordinated, and sustained Earth observation system or systems. All countries are encouraged and invited to participate. The Framework for the plan will be available by the Tokyo ministerial conference to be held in second quarter of 2004, and the Plan will be available by the Brussels ministerial conference in the fourth quarter of 2004. International organizations will play a key role since those organizations have been instrumental in the development and maintenance of existing systems that will serve as the backbone for a future global network.

In the development of the GCOS implementation plan, it is critical that there be close cooperation between GCOS and the GEO so that climate systems are strengthened, linkages maximized, and resources used most productively and efficiently.

- - - - -