Minutes of the
Committee on Earth Observation Satellites
Eighth Plenary Meeting

September 26-28, 1994

Berlin, Germany

Contact the CEOS Secretariat (below) for copies of these minutes and the accompanying documents.

NASA/NOAA
300 E Street, SW
Washington, DC 20546
USA
202.358.0793 (voice)
202.358.2798 (fax)

ESA
8-10, rue Mario-Nikis
75738 Paris Cedex 15
France
(+33).1.42.73.71.31 (voice)
(+33).1.42.73.76.74 (fax)

STA/NASDA
10F Hamamatsu-cho Central Building
1-29-6, Hamamatsu-cho
Minato-ku, Tokyo 105
Japan
(+81).3.5401.8698 (voice)
(+81).3.5401.8702 (fax)

Table of Contents

Minutes of the
Committee on Earth Observation Satellites
Eighth Plenary Meeting
September 26-28, 1994
Berlin, Germany

1. INTRODUCTION

The eighth Plenary meeting of the Committee on Earth Observation Satellites (CEOS) was held at Berlin, Germany on September 26-28, 1994. The meeting was hosted by the Deutsche Agentur für Raumfahrtangelegenheiten (DARA), the 1994 CEOS Chair. The following organizations attended:

- Members
  - Agenzia Spaziale Italiana (ASI)
  - British National Space Centre (BNSC)
  - Chinese Academy of Space Technology (CAST)
  - Canadian Space Agency (CSA)
  - Centre National d'Etudes Spatiales (CNES)
  - Commonwealth Scientific and Industrial Research Organisation (CSIRO)
  - Deutsche Agentur für Raumfahrtangelegenheiten (DARA)
  - European Commission (EC)
  - European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
  - European Space Agency (ESA)
  - Indian Space Research Organization (ISRO)
  - Instituto Nacional de Pesquisas Espaciais (INPE)
  - National Aeronautics and Space Administration (NASA)
  - National Oceanic and Atmospheric Administration (NOAA)
  - National Remote Sensing Center of China (NRSCC)
  - National Space Agency of Ukraine (NSAU)
  - Russian Federal Service for Hydrometeorology and Environment Monitoring (ROSHYDROMET)
  - Russian Space Agency (RSA)
  - Science and Technology Agency of Japan (STA)
  - Swedish National Space Board (SNSB)

- Observers
  - Canada Centre for Remote Sensing (CCRS)
  - Federal Office for Scientific, Technical and Cultural Affairs - Belgium (OSTC)
  - Norwegian Space Centre (NSC)

- Affiliates
  - Food and Agriculture Organization (FAO)
  - Global Climate Observing System (GCOS)
  - Global Ocean Observing System (GOOS)
  - Intergovernmental Oceanographic Commission (IOC)
  - International Council of Scientific Unions (ICSU)
  - International Geosphere-Biosphere Programme (IGBP)
  - United Nations Environment Programme (UNEP)
  - United Nations Office of Outer Space Affairs (UNOOSA)
  - World Climate Research Programme (WCRP)
  - World Meteorological Organization (WMO)

The Japanese Ministry of International Trade and Industry (MITI), the Japan Meteorological Agency (JMA), and the National Space Development Agency of Japan (NASDA) attended as part of the Japanese delegation. The Atmospheric Environment

4. RECORD OF THE SEVENTH CEOS PLENARY MEETING

Mr. Ueta of STA summarized the outcomes of the seventh CEOS Plenary held at Tsukuba Space Center on November 16-18, 1993 (Doc. 8-4). He noted the reports of the Working Groups on Data (WGD) and Calibration/Validation (WGCV), the future CEOS strategy, data user requirements, and the CEOS Dossier. He recalled the Plenary's acceptance of the formation of an Ad Hoc Working Group on Networks (AHWGN). He noted that the Plenary accepted INPE's proposal to hold a workshop to address the potential role of CEOS in developing country activities and NOAA and NASA's proposal to host an ad hoc data policy meeting to discuss data exchange principles. He also noted that NRSSC and NSAU were admitted as CEOS Members and FAO was admitted as an Affiliate.

The Plenary adopted the minutes of the seventh CEOS Plenary meeting.

5. MEMBERSHIP ISSUES

Dr. Liebig noted the EC's application to change its status from Observer to Member and the invitation to UNOOSA to become an Affiliate, which was a recommendation stemming from the Workshop on Developing Countries (Doc. 8-5). He explained that the Chair polled CEOS Members with respect to the UNOOSA invitation for Affiliate status and only positive responses were received. He noted that the Chair circulated the EC's request for Member status and supports the request as a result of its involvement in space-based Earth observation and research and development.

It was the consensus of the Members that the EC's request for Member status and the invitation to UNOOSA to become an Affiliate be approved.

Dr. Mennicken welcomed the EC as a full Member and the UNOOSA as an Affiliate and noted that their participation in CEOS would enhance international cooperation in Earth observation. Mr. Jasentuliyana expressed pleasure at UNOOSA's inclusion in CEOS. Mr. Abiodun said he looks forward to working with the CEOS Members to help accomplish CEOS objectives. Dr. Contzen of the EC thanked the CEOS Members for their trust and confidence in the EC in granting full Member status and said the EC will contribute as much as possible to the work of CEOS. He added that the EC applied for Member status because it is convinced that CEOS is the right forum to address a number of Earth observation issues. He said that the informal CEOS mechanism is based on good will and the EC looks forward to helping developed and developing countries to realize the benefits of Earth observation.

6. CEOS SECRETARIAT REPORT ON 1994 ACTIVITIES

Dr. Liebig summarized the activities of the CEOS Secretariat during 1994 (Doc. 8-6). He stated that the data policy meeting, the user requirements workshop, the workshop on developing country activities, and the plans for the CEOS tenth anniversary celebration were major activities for the Secretariat this year. He said that ESA will deliver the updated Dossier and had placed the Dossier on the Internet as part of its intensive effort to develop the CEOS InfoSys. He noted that NASA provided an updated CEOS Consolidated Report and NASDA published two issues of the CEOS Newsletter.

Dr. Liebig added that, as part of the CEOS tenth anniversary activities, a political resolution was approved by the governments of CEOS Member agencies. This Joint Resolution recognizes the achievements of CEOS, confirms its objectives and terms of reference, and calls on all parties involved to support the work of CEOS. The following is the text of that Joint Resolution.

Agreement was reached on a CEOS Strategy toward Developing Countries (see paragraph E. below).

R. Report from the SAF Developing Countries Focus Group

Dr. Bizzarri of ASI presented the results of the SAF Focus Group on the Spread of Benefits of Mission to Planet Earth Towards Developing Countries, held in Italy in December 1993 (Doc. 8-8). A second Focus Group meeting was held in Brazil at the time of the CEOS Workshop on Developing Country Activities in May 1994. Dr. Bizzarri stated that the findings contained in the Focus Group's draft report were incorporated into the reports from the CEOS Workshop on Developing Country Activities. Copies of the Focus Group's draft report are available from Dr. Bizzarri on request.

Dr. Bizzarri presented the five primary conclusions of the Focus Group:

- existing and planned Earth observation systems accommodate many developing country user requirements;
- applications of satellite data in developing countries have been demonstrated (e.g., in food production and preservation, and climate and environmental characterization);
- a number of space agencies are already substantially involved in aid to development;
- development assistance agencies should increase resources for use of satellite data for development applications, and space agencies should enhance efforts to increase the awareness of development assistance agencies of the potential for use of satellite data;
- development assistance agencies already understand developing country requirements and capabilities, but space agencies need to understand them better.

Dr. Bizzarri described the following nine major areas suggested by the Focus Group for active CEOS involvement in developing country activities:

- user requirements
- use of satellite data
- pilot projects
- developing local talent
- user interfaces
- data and service access
- limitations in the overall system
- education and training
- satellite data infrastructures

He emphasized that space agencies can benefit from developing country activities. He specifically noted that space agencies may gain access to local facilities for calibration and validation purposes and access to data and information on local ecosystems for inclusion in the global change data base. In addition, space agencies may help to educate new generations of scientists in developing countries, thereby furthering scientific progress and helping to close the gap between developing and developed nations. Further, public and political interest in space agency programs may be enhanced through developing country activities and by illustrating how policy statements are converted into real technical implementations.

Dr. Bizzarri stated that CEOS is the best forum within which to discuss these issues and the Focus Group will recommend to the SAF Plenary that CEOS be asked to pick up these activities as a next step within the limits of its mandate. He concluded that CEOS already has addressed each of the nine areas in its activities -- in the Affiliates' user

individual CEOS organizations, and others to the Secretariat. He clarified that all participation in the proposed activities would be voluntary and no entity would be asked to accept tasks that it does not possess the resources to accomplish.

Mr. Seipel noted that the Chair's recommendations suggest that CEOS activities should focus on those nations with little or no access to space technology or those unaware of space activities in their own countries and elsewhere. He discussed the Chair's recommendations, which included informal CEOS representation at workshops organized by the UN Committee for the Peaceful Use of Outer Space (COPUOS); communication with United Nations entities including UNOOSA; and the need for an international information system on Earth observation resources, data access, training capabilities, and expertise. He noted that such a system must be designed to be efficient and low in cost, and should include an assessment of the possible role for the regional Centres for Space Science and Technology Education. He noted that DARA would be willing to work in conjunction with UNOOSA, other UN organizations, and with any Member, Observer, or Affiliate wishing to contribute to a study to examine the feasibility of such an international information system. Mr. Seipel concluded that CEOS should use its influence to ensure that CEOS efforts to support developing countries are sustained, and where practical, increased.

Following Mr. Seipel's presentation, Dr. Mennicken drew attention to the CNES position paper on the CEOS role in developing country activities (Doc. 8-11) which supported the recommendations contained in the report of the Developing Country Workshop. He noted that it seemed to be generally accepted by the participants that CEOS needs to do something to support developing country activities. He then opened the floor for discussion of the possible role of CEOS in developing country activities. The following points were raised during that discussion.

- Several CEOS participants endorsed the plan of action developed at the Developing Country Workshop and recognized the need for CEOS to actively support the transfer of the benefits of space-based Earth observation data to developing nations.

- Mr. Jasentuliyana commented on the UN's extensive involvement with developing countries and referred CEOS participants to the UN documents describing the regional centers for education and training and UN activities for development of space capabilities in developing countries (Doc. 8-12 and 8-13). Mr. Abiodun also drew attention to a document submitted for the Plenary's information concerning prerequisites for space technology applications in developing countries (Doc. 8-14). Mr. Jasentuliyana welcomed CEOS participation in COPUOS activities, especially in providing technical information. He noted that such interaction does not have to be on a formal basis and COPUOS could invite CEOS participation on an as-needed basis. He stated that it had been suggested at a recent UN workshop that CEOS consider developing country representation at its Working Group meetings.

  Regarding the Chair's proposal to study an information system, Mr. Jasentuliyana stated he feels it is clear that there is a need in this area, that more coordination and distribution of information is required, and that existing structures are not adequate. He expressed gratitude to DARA for offering to support a feasibility study of an international information system in support of developing countries. He stressed that the study should focus on identifying whether there is a need for an information system and, if so, identifying the system requirements. He asked that the Plenary support such a study, with assessment of progress in one year to determine whether to establish an information system.

- Mr. Lauritson of NOAA, Chair of the WGD, presented the WGD's recommendations concerning developing countries for inclusion in the discussion. Those recommendations are summarized in the WGD's progress report which is addressed in section 9 below.

- Mr. Murthi of ISRO affirmed ISRO's commitment to support CEOS initiatives for developing nations, including the recommendations from the Developing Country Workshop and the Chair's proposal to study an information system. He suggested that a CEOS information system initiative should strive to coordinate information from multiple sources, engage a variety of organizations involved in related activities, and engage developing country users. Mr. Murthi also noted that developing countries' immediate needs for data are not limited to global data; there are regional data requirements as well. Dr. Kirchhoff added that an information system effort should support local policy makers.

- Dr. Shaffer stated that NASA welcomes DARA's proposal to study an international information system. She questioned CEOS' role in the proposed activity, as it appeared to be a bilateral UN-German activity. In addition, she expressed concern that if such an information system required long term CEOS involvement, it should be addressed in terms of the future CEOS strategy.

- Dr. Lindberg of CSA stressed the need to focus on what CEOS should do for developing nations, what CEOS should urge member countries to do, and what issues need to be addressed through other organizations. He suggested that CEOS could study the feasibility of an international information system supporting developing countries and the WGD could define requirements or formats; but creation and maintenance of such a system goes beyond what CEOS can do.

- Dr. Yang stated that CAST fully supports the action plan from the Developing Country Workshop and the Chair's recommendations with respect to CEOS support to developing countries. He drew attention to a document describing CAST's position on this important issue (Doc. 8-15).

- Mr. Zonov of RSA expressed support for DARA's proposal for a study to create a less sophisticated information system for use by the United Nations and other entities. He stated that he is aware of a gap or missing link between the existing information systems for space information and the requirements arising from policy managers and natural resource managers in developing countries. He stated that highly developed countries may find there is a need to use such an information system as well. He noted that RSA would like to take part in the proposed effort, whether it is a CEOS or other activity.

- Mr. Morgan of EUMETSAT supported the Chair's proposal, noting that an information system could address a gap between existing data and the data required to support policy-makers in developing nations.

- Dr. Smith of NOAA encouraged DARA in pursuing its study to refer to previous and ongoing studies (e.g., the GCOS Data Management Plan). With respect to CEOS participation in external meetings, Dr. Smith noted that in the past the Plenary has handled specific invitations to attend outside meetings on a case-by-case basis.

- Dr. Liebig clarified that the proposed information system study supports the objective of CEOS to serve as a forum for exchange of Earth observation information. He noted that the CEOS IDN is an example of another information

Abiodun proposed developing a demonstration package for decision-makers. Dr. Mennicken suggested Mr. Abiodun discuss the proposal further with Dr. Embleton.

- Mr. Brachet requested clarification on the concept of a global inventory for high-resolution data. Dr. Rasool commented that NASA had offered to collaborate with IGBP on a global inventory of high-resolution data coverage and asked if CNES was prepared to cooperate. Mr. Brachet responded that CNES would be willing to cooperate on providing information to aid in an analysis of global geographic coverage.

The Plenary accepted the CEOS Strategy Toward Developing Countries as revised; the following is the final text of that document.

CEOS Strategy Toward Developing Countries

The fundamental aim of CEOS, in this respect, is to encourage the creation and maintenance of indigenous capability which is integrated into the local decision-making process thereby enabling developing countries to obtain the maximum benefit from Earth observation.

CEOS members are urged to use their influence, both within the framework of CEOS and in their own individual activities, to ensure that efforts are maintained in support of developing countries, and indeed increased wherever practicable.

CEOS welcomes the information reports received in Plenary on significant recent activities relating to the use of Earth observation in support of developing countries, in particular the report of the SAF Focus Group on Developing Countries; the ESCAP Ministerial Conference on Space Applications for Development in Asia and the Pacific, Beijing, September 1994; and the CEOS Workshop on Developing Country Activities hosted by INPE in Sao José dos Campos in May 1994, all of which have provided valuable inputs to CEOS.

The major points relevant to CEOS from the SAF report have been incorporated in the recommendations from the INPE Workshop. CEOS would be prepared, if so invited, to make a short report to SAF on its work connected with developing countries.

The INPE Workshop report is particularly useful and relevant, and the following specific recommendations are endorsed:

A) Links should be established between CEOS and developing countries, both directly and through non-CEOS organisations.

- *CEOS participants are to forward names and addresses of non-CEOS organisations to NASDA on behalf of the Secretariat so that NASDA can develop a mailing list of non-CEOS organisations, on the basis of which the Secretariat can distribute CEOS material.*

- *CEOS participants are encouraged to develop articles for the CEOS Newsletter to communicate information on significant activities of interest to developing countries.*

B) Communication should be facilitated among CEOS participants regarding developing country activities.

- *CEOS participants will investigate possible future identification with CEOS in their sponsorship of UN/IAF workshops.*

I) *Identification of and support for global change research test sites.*

- *CEOS participants conducting in situ data collection and airborne campaigns should ensure that useful data sets are, to the extent possible, provided to appropriate local organisations for use in development activities.*

- *CEOS members will structure use of test sites in developing countries so as to be of mutual benefit.*

- *EC confirms its offer to develop and maintain a calendar of planned airborne campaigns to facilitate coordination of individual agency plans.*

J) *CEOS Secretariat and Chair will ensure that time is devoted at each Plenary session to developing country issues.*

- *The importance which CEOS attaches to supporting developing countries is illustrated by the recommendations from the CEOS Working Groups which have been approved by Plenary under the agenda items dealing with such matters. Within their fields of activity, Working Groups are urged to give particular attention to the special requirements of developing countries.*

K) *Finally, there is support in Plenary for the offer from DARA for it to fund a study on a possible space information system, with a report in time for consideration of the subject at the 9th Plenary. This information system would be intended to provide reliable and updated information to developing countries, as well as to those organisations which are examining projects involving Earth observation techniques in developing countries, on what is being undertaken and planned elsewhere and what relevant resources already exist - particularly in-country. Several participants expressed interest in helping with this study, and they will be consulted in due course by DARA, with a view to finalising the specifications for the study. The opportunity of the presence of members at the Plenary will be used to gather suggestions and information on ongoing initiatives with which it would be sensible to coordinate.*

It is stressed that this study is in the nature of a feasibility study, and that the 9th Plenary session will have ample opportunity to consider whether or not the outcome warrants further action.

Action 8-1: Members, Observers, and Affiliates to forward names and addresses of non-CEOS organizations to the Secretariat-STA/NASDA for the developing countries mailing list.

Action 8-2: IGBP, supported by NASA with input from other CEOS satellite operators, to prepare an analysis of geographic coverage by high-resolution satellites.

Dr. Rasool mentioned that the variation in data exchange mechanisms followed by the data providers was particularly challenging. He noted that, in one part of the world, data are available at reduced price; while in other parts of the world, data availability is "to be negotiated." He explained that some data providers simply make data available at "reduced" price to all non-commercial users. Other data providers require that the agencies buy the requested scenes at full commercial prices to populate the data pool for the IGBP core projects. IGBP's ability to acquire the data under this mechanism depends on the availability of funds, identification of partners to share costs, and national priorities. Other mechanisms followed by data providers require that, once the data pool is populated, the data may be made available at reduced cost to all scientific users; other data providers restrict availability to those scientific users with accepted proposals.

Dr. Rasool concluded by outlining the schedule for the Pilot Project for the next two years. He noted that scenes should be distributed to investigators by December 1994 and that results of scientific analyses should begin to flow in mid-1995. A workshop on science results and inter-use of different high-resolution sensors is slated for early 1996.

Action 8-8: IGBP to report the status of the High-Resolution Data Exchange Pilot Project at the ninth Plenary.

B. Data Exchange Mechanism for SPOT Data

Dr. Esterle of CNES summarized the data exchange mechanism for provision of SPOT data to IGBP investigators involved in the CEOS High-Resolution Data Exchange Pilot Project (Doc. 8-18). Dr. Esterle recalled that the pilot project is limited in terms of scientific objectives (which are specified by IGBP-DIS and approved by the Plenary), volume of data to be provided (data needs are well defined), investigator teams (which are selected by IGBP), and time frame (1993-1995). He stated that it is crucial to evaluate the current procedures and actions before proposing more ambitious project plans.

Dr. Esterle explained that CNES has set up the following sponsoring mechanism for SPOT data for the pilot project. A preferential price is offered by SPOT-Image and its partners. The investigators or ther sponsors purchase specific data at the preferential price. The purchased data become part of the SPOT/CEOS pilot project data pool. The data are then available to all selected investigators at the cost of fulfilling the request and can be exchanged within the team of selected investigators.

He explained further that five European countries (Sweden, Belgium, Germany, United Kingdom, and France), the EC, and Australia participate, or intend to participate, in the sponsoring mechanism to support the eight scientific objectives of the pilot project. With respect to data from 1993 and before, analysis of the metadata provided by SPOT-Image indicates that the scientific requirements are completely met for five scientific objectives; metadata for the other three objectives are being checked. More than 183 images are sponsored and this covers the needs. For 1994, a total of more than 88 images are sponsored, which meet the requirements of five scientific objectives; metadata for the other three objectives are being checked as well. For 1995, the anticipated situation is similar and a lack of not more than nine images are presently identified.

He concluded that the sponsoring mechanism proved to be efficient and capable of meeting the scientific requirements; however, a number of possible improvements have been identified. For example, to improve liaison within investigator teams and between investigator and sponsor levels, it was proposed to establish data purchase plans indicating the type and priority of images needed by the different investigators and the corresponding status of sponsorship. IGBP-DIS could then collect potential

RECOGNIZING that, in various national and international contexts, the sustainability of the observing systems and the end-to-end services to the users is a pre-requisite to full operational environmental use for the public benefit;

RECOGNIZING that data provision should take into account the benefits of expanded data use, as well as investments and costs;

RECOGNIZING that Earth observation data, especially satellite data, are essential to governments and public authorities and relevant international organizations in fulfilling certain mandates, such as the protection and preservation of human life, the Earth, and property from the effects of natural disasters, severe weather, and environmental emergencies, and support for improved environmental management;

RECOGNIZING more than 100 years of cooperation within the international meteorological community in the free and unrestricted exchange of basic meteorological data;

ANTICIPATING the emerging operational requirements from global observing systems, such as the Global Climate Observing System, the Global Ocean Observing System, and the Global Terrestrial Observing System;

RECOGNIZING the value of user feedback to improve responsiveness of data suppliers;

RECOGNIZING the existence of various legal regimes for data provision and different policies for pricing and data ownership;

ANTICIPATING the potential benefits of compatible policies and mechanisms for data provision in obtaining access to data for operational environmental use for the public benefit;

REAFFIRMING the commitment of CEOS members to the general principle of non-discriminatory access to data;

RECOGNIZING the common goal of providing data for operational environmental use for the public benefit from all appropriate missions;

RECOGNIZING also that the constraints of mission operations and of available resources may require different mechanisms for data provision for different programs;

CEOS members endorse the following principles relating to data provision in support of operational environmental use for the public benefit and agree to work toward implementing them to the fullest extent possible within available resources:

1) *Criteria and priorities for data acquisition, processing, distribution, preservation, archiving, and purging should be harmonized to take into account the needs of users of data for operational environmental use for the public benefit.*

2) *Real-time and/or archived data for operational environmental use for the public benefit should be made available on time scales compatible with user requirements and within agency capabilities.*

Prof. Stoewer asked that all the CEOS members try to implement the principles in their day-to-day programs and work.

9. REPORTS OF THE WORKING GROUPS

Prof. Stoewer noted that the Plenary had asked the Working Groups to report back on two primary areas -- annual progress and five-year strategic plans for inclusion in discussion of the CEOS future strategy.

A. Working Group on Data

Mr. Lauritson, Chair of the WGD, reported on the activities of the WGD during 1994 (Doc. 8-20). He indicated that the most notable progress was in developing the WGD's long-term implementation plan and enhancing the CEOS InfoSys and organizing the demonstrations of it at the Plenary. He presented a draft version of the WGD long-term implementation plan. He referred to the new outreach element of the WGD plan and stressed the benefits of technology demonstrations for CEOS InfoSys. He further called attention to an error in the Internet address of the CEOS InfoSys as reported in the 1994 Consolidated Report. He also noted that the WGD supports the proposed Interim Working Group on International Network Services (WGINS) and reported that the Networks Subgroup had extensive interaction with the Ad Hoc Working Group on Networks (AHWGN) during the year.

Mr. Lauritson reported that WGD had completed Plenary Action Item 7-2 regarding the time and resources required to prepare Directory Interchange Formats (DIFs). He also recognized NASA's participation in facilitating the DIF writing process. He noted that the Catalogue Subgroup was tasked to develop priorities for developing country participation in the CEOS IDN. The Subgroup found it was not comfortable with establishing these priorities, but was able to make general statements about setting priorities and estimating the time required for developing DIFs. In addition, he reported that the Secretariat asked the WGD to respond to an action to establish ties to the International Standards Organization. The WGD recommended liaison with TC 20 SD 13.

The Plenary accepted the WGD's progress report and long-term implementation plan.

The Plenary endorsed the following WGD recommendations with respect to CEOS developing country activities:

> ***The CEOS WGD recommends that CEOS members and observers should:***
>
> - ***Continue to encourage the generation and distribution of generic global and regional data and data products in media suitable for wide distribution, through pilot projects such as the Global Land 1-km AVHRR Data Set Project, Global Land One-km Base Elevation Project, and the (high-resolution) Data Exchange Pilot Project;***
>
> - ***Finalize, document and stabilize base-level software tools and formats to facilitate universal minimum standards in data management and utilization;***
>
> - ***Recognize the difficulties faced by many countries willing to make Earth science data and metadata available to the world Earth observing community, and endeavor to facilitate provision of information, communications infrastructure, equipment, and data, on the model of international organizations such as the WMO and IOC, and, where possible, to make maximum effective use of new and existing infrastructure through user community development;***

Action 8-9: WGCV chair to facilitate creation of the WGCV Subgroup on Atmospheric Chemistry and, working with the CEOS Chair/Secretariat, prepare revised WGCV terms of reference to incorporate the Subgroup.

C. Ad Hoc Working Group on Networks

Mr. Kikuchi, co-chair of the AHWGN, presented the accomplishments of the Group during 1994 (Doc. 8-22). He reported that the AHWGN held four meetings during 1994. He recalled that the AHWGN was assigned four tasks by the Plenary:

- review overall high level requirements for global networks;
- examine existing and emerging network capabilities;
- prepare guidelines for the future development of members' network services; and
- develop an implementation plan for the coordination of the CEOS approach to global networks.

Mr. Kikuchi noted that all of the assigned tasks were accomplished and details were provided in the AHWGN's report to the Plenary and progress report which were distributed prior to the Plenary meeting. He noted that those documents are available over the Internet as well.

The Plenary accepted the AHWGN's summary report to the Plenary and its progress report.

The Plenary endorsed the following AHWGN recommendations, which were revised after discussion:

Decision of the Eighth CEOS Plenary
With Respect to the Report of the Ad Hoc WGN

1. *The significance of the past and continuing contributions of the WGD to the network-related activities is recognized.*

2. *The guiding principles developed by the Ad Hoc WGN for the development of future global networks for Earth Observation are endorsed.*

3. *Activities related to international network services will merit the establishment of a Working Group on International Network Services (WGINS). As a first step, the existing Ad Hoc WGN will be converted into an Interim WGINS for a period of one year with membership open to all CEOS participants committed to actively contributing to its objectives. A decision on the future of the Working Group will be taken at the ninth Plenary.*

4. *The Interim WGINS shall:*

   a) *develop a strategy that will provide a framework within which the interoperable user services and data systems of CEOS participants would be harmonised;*

   b) *complete the work started by the Ad Hoc WGN;*

Mr. Emiliani proposed that Mr. Livio Marelli of ESA serve as the European co-chair of the Interim WGINS The Plenary accepted the proposal and Mr. Marelli was appointed co-chair of the Interim WGINS. Mr. Kikuchi was affirmed as the Japanese co-chair as well.

Action 8-10: Interim WGINS co-chairs to present final recommendations on the status of and five-year plan for the Interim WGINS at the ninth Plenary.

Action 8-11: Interim WGINS co-chairs, WGD chair, and WGCU chair to prepare, working with the CEOS Chair/Secretariat, terms of reference for the Interim WGINS and its Subgroups, as well as any necessary modifications to terms of reference of other WGs and their Subgroups.

10. USER REQUIREMENTS WORKSHOP

Mr. Seipel summarized the outcomes of the User Requirements Workshop held in Germany in May 1994 (Doc. 8-23).

The Plenary accepted the following results of the discussion from the User Requirements Workshop concerning global applications:

- *There should be a limited update of the CEOS Dossier in 1994, based on new inputs resulting from a questionnaire transmitted to the CEOS participants. The next major update to the Dossier is planned for 1996.*
- *An analysis should be conducted to correlate the Dossier Volumes A, B, and C to ensure consistency among the space segment, ground segment, and user requirements.*
- *Requirements must be prioritized in terms of needs and feasibility at the individual program level.*
- *Required precision of measurements should be explained and the minimum meaningful precision indicated.*
- *Requirements on frequencies (observation, sensor downlink) should be added.*
- *The gap between theoretic sensor capabilities and committed products must be identified.*
- *The Dossier must be updated to close gaps and avoid ambiguities between all parties involved.*
- *The Dossier should be updated bi-yearly.*

The Plenary accepted the following results of the discussion from the User Requirements Workshop concerning regional applications:

1. *It was agreed that the use of Earth observation satellite data for regional applications may lead to user requirements not yet adequately covered by the existing CEOS documents but potentially relevant for CEOS activities.*
2. *For identifying such requirements CEOS should establish and maintain effective channels of communication with regional user groups.*

Requirements Workshop and explained that it has not been determined whether or how to proceed to address the requirements of regional users within CEOS.

Dr. Hinsman recalled that he had been asked to serve as the focal point for the Affiliates' requirements and suggested that, if regional requirements are identified by an Affiliate, he would incorporate them into the Affiliates Dossier.

Action 8-12: CEOS Chair/Secretariat to coordinate attendance of a representative of the Space Frequency Coordination Group at the next User Requirements Workshop.

Action 8-13: CEOS Chair/Secretariat to consider potential alternatives for addressing regional user requirements.

Action 8-14: NASA to organize and host the Third User Requirements Workshop in May-June 1995 in Washington, DC; the Workshop is to include discussion ofthe draft report of the Task Force on CEOS Planning and Analysis.

11. FUTURE CEOS STRATEGY

Mr. Seipel summarized the draft Future CEOS Strategy which was circulated prior to the meeting; it was based on the strategy document prepared at the last Plenary meeting. The participants reviewed the document and agreed to textual changes which were incorporated into the revised Future CEOS Strategy (Doc. 8-25). The following points were made during the deliberations to revise the strategy document:

- Dr. Bizzarri expressed concern that the CEOS Primary Focus (paragraph 3) may be too restrictive, in the sense that, because CEOS is a forum for discussion, initiatives related to Earth observation are sometimes advanced that do not necessarily meet the criteria but are of interest to some CEOS Members. Under the criteria listed in the CEOS Primary Focus (paragraph 3), those initiatives may not be eligible for CEOS consideration. Dr. Williams stated that he thinks the purpose of the statement is to restrict CEOS to attend to activities it should properly undertake. Dr. Embleton stated that the language in the CEOS Primary Focus incorporates sufficient flexibility for CEOS to discuss the kind of initiatives Dr. Bizzarri would like to see considered in CEOS.

- Dr. Rasool noted that the CEOS Planning and Analysis statement (paragraphs 11 through 13) refers to interactions with users and concern to identify gaps in data. He asked whether there is a mechanism for the space agencies to communicate with other partners and the user community to resolve gaps in data. He noted that IGBP has encountered several data gaps and he suggested that CEOS set up a user hotline to facilitate consultation among space agencies and their partners and the user community. Dr. Mennicken stated that he understands such matters are resolved by the projects; however, he noted Dr. Rasool's comments may be a point of interest to some CEOS Members.

- The participants agreed that the restriction on expansion of the Dossier (paragraph 8) did not apply to the calibration/validation volume of the Dossier. It was agreed that the restriction generally means that there will be no additional volumes of the Dossier, but that the internal structure of the Dossier may change over time.

- Mr. Verbauwhede noted that there may be an inconsistency in the CEOS Future Strategy regarding the community of users CEOS should address (paragraphs 4 and 10). He was reassured that it is a CEOS long-term goal to have covered the entire community of Earth observation users.

participants will be asked to review the task force's draft analysis and provide feedback on it. The purpose of that activity would be to have the larger CEOS membership review and interact with the analysis document before it is sent on to the Plenary for approval. He added that, once the task force has been established, the Secretariat would provide as much information as possible to CEOS participants.

The Plenary endorsed the following plan for implementation of the CEOS strategic goals for analysis and planning, which was revised based on discussions:

Plan for the Implementation of the Strategic Goals Set for Analysis and Planning within the Future CEOS Strategy

As a first step for implementing the tasks defined in the paragraphs "Analysis and Planning" within the Future CEOS Strategy, the Chair will form a task force of limited size (approximately eight), with members committed to provide the time and resources required, ensuring a proper balance of research and operations. The task force will be co-chaired by a representative from the research side and the operations side.

The starting point of the work of the task force shall be a cross-correlation of the most recent CEOS Dossiers. Based on the findings of such an analysis, the task force shall propose an action plan and a related time schedule for the next steps to be taken in order to achieve the strategic goals outlined in paragraphs 11, 12, and 13 of the Future CEOS Strategy.

Targets for the work of the task force are as follows:

End October 1994:	***Identify task force members and propose them to the 1995 CEOS Chair***
Mid November 1994:	***Finalize dates and location of the 1995 CEOS User Requirements Workshop***
March 1995:	***Draft results of first analysis sent out for comment to all CEOS Members, Observers, and Affiliates***
May 1995:	***Based on comments received, the revised analysis mailed to participants of the User Requirements Workshop to be hosted by NASA in Washington, DC (in conjunction with a GCOS meeting)***
May-June 1995:	***Draft analysis of the task force discussed during the User Requirements Workshop***
August 1995:	***Final analysis of the task force, including results of discussion during the User Requirements Workshop, distributed to participants of the ninth Plenary***
October 1995:	***Ninth Plenary discussion of the analysis and decision on how to proceed***

Stoewer stated that ESA's proposal to produce a CEOS Yearbook is greatly appreciated. He suggested that distribution of the CEOS Yearbook should be timed to coincide with a significant event during 1995.

Dr. Hinsman thanked the Secretariat-ESA and the CEOS Members for converting the Dossier to electronic form and making it available over the Internet. He stated that this enhanced availability of the Dossier was of great help to WMO and the Affiliates.

Action 8-18: Secretariat/ESA to prepare the 1995 CEOS Yearbook and report status to the ninth CEOS Plenary.

14. SATELLITE DATA APPLICATIONS

Mr. Ishida of STA/NASDA summarized the progress of the CEOS Special Report on Successful Applications of Earth Observation Satellite Data (Doc. 8-29). He reported that, over the past year, NASDA obtained information from CEOS Members, Observers and Affiliates to prepare a draft document on satellite data applications. A subset of 19 projects, covering seven application areas, were included in the report. Mr. Ishida noted that the report intentionally did not include meteorological or global change applications, as these applications have been addressed in other documents.

Mr. Ishida stated that NASDA proposes producing a full edition of the Special Report with emphasis on the benefits and lessons learned from each project. Mr. Ishida invited comments on the document structure and contents. He noted that non-CEOS organizations would be asked for inputs to the Special Report as well.

Three contributions related to the Special Report were offered. Mr. Murthi offered results from ISRO multidisciplinary projects, such as soils and water resources. Prof. Lin offered to conduct a joint study with STA/NASDA in the areas of flood monitoring and/or earthquake prediction in conjunction with Earth Week. Mr. Sorenson of NSC offered to provide results from ocean monitoring studies and stated that training activities should be included.

The Plenary accepted NASDA's proposal to produce a final CEOS Special Report on Successful Applications of Earth Observation Satellite Data.

The Chair congratulated NASDA on its excellent efforts on the Special Report and expressed gratitude for the valuable enhancement to CEOS external awareness.

Action 8-19: CEOS Members, Observers, and Affiliates are invited to provide results inputs to STA/NASDA for the Special Report on Successful Applications of Earth Observation Satellite Data, by March 1995.

Action 8-20: STA/NASDA to produce the final version of the Special Report on Successful Applications of Earth Observation Satellite Data and report progress back to the ninth Plenary.

15. REPORTS OF RELATED MEETINGS

A. International Group of Funding Agencies for Global Change (IGFA)

Mr. Ishida reported on the fifth IGFA meeting held in Taipei, Taiwan, January 25-27, 1994 (Doc. 8-30). He stated that IGFA's main objective is to improve communications among funding agencies and to support international global change research. He reported that the participants agreed to establish a Task Group on Interaction between Research Agencies and Funding Agencies. He also noted that the IGFA 1993 Resource Assessment Survey was presented and the IGFA members agreed that global change research was not underfunded. In addition, IGFA endorsed GCOS and CEOS

other DARA and DLR colleagues for their efforts in helping to realize a successful and productive chairmanship and Plenary. He gave special mention to Mr. Roy Gibson for his efforts on CEOS developing country activities.

Doc. 8-26g	Japan's New Long-Term Vision - Toward Creation of Space Age in the New Century (STA-Ueta)
Doc. 8-27a	Report of the German Space Agency (DARA) to CEOS Plenary Meeting, Berlin, September 26-28,1994
Doc. 8-27b	NASA Office of Mission to Planet Earth Flight Systems Status (NASA-Luther)
Doc. 8-27c	IRS-1C Mission (ISRO-Murthi)
Doc. 8-27d	Current Status of NASDA Earth Observation Program
Doc. 8-27e	Report to the 8th CEOS Plenary Meeting - CAST
Doc. 8-27f	National Space Agency of Ukraine, The "SICH" Space System for Remote Sensing and Earth Observation
Doc. 8-27g	National Space Agency of Ukraine, The «CIY» Space System of the Monitoring and Environment Ecological Control, Draft Design
Doc. 8-27h	1993/94 Norwegian National Report for the CEOS Plenary Meeting in Berlin, Germany, September 26-28, 1994
Doc. 8-27i	The Swedish National Space Board Report for the CEOS Plenary Meeting in Berlin, German, September 26-28, 1994
Doc. 8-28	The 1994 CEOS Dossier (ESA-Hopkins)
Doc. 8-29	CEOS Special Report on Successful Applications of EO Satellite Data (NASDA-Ishida)
Doc. 8-30	Report on the Fifth meeting (of the) International Group (of) Funding Agencies for Global Change Research (NASDA-Ishida)
Doc. 8-31	The Co-ordination Group for Meteorological Satellites (EUMETSAT-Lafeuille)
Doc. 8-32	Letter to H. Stoewer from G. Brachet, R. Gibson, and A. Silvestrini dated August 22, 1994
Doc. 8-33	Letter to G. Brachet, R. Gibson, and A. Silvestrini from H. Stoewer dated September 15, 1994
Doc. 8-34	Acronyms

Mr. Chen Junyong National Bureau of Surveying and Mapping of China C/O National Remote Sensing Center 15B, Fuxing Road 100862 Beijing CHINA Fax: +86-1-851-2881 or 4097	Mr. Jean-Pierre Contzen Director General European Commission DG XII 200 Rue de la Loi 1049 Brussels BELGIUM Phone: +32-2-295-3689 Fax: +32-2-295-8146
Mr. David L. Croom Global Climate Observing System OX110QX Chilton OIDCOT, Oxon UNITED KINGDOM Phone: 44-235-446428 Fax: 44-235-445848 E-mail: dlc1@ib.ri.ac.uk (Internet)	Mr. Alan Cross European Commission DG XII-D-4 200 Rue de la Loi 1049 Brussels BELGIUM Phone: +32-2-29-64961 Fax: +32-2-296-8588
Dr. Walter F. Davidson Canadian Embassy Science and Technology Division Friedrich-Wilhelm-Str. 18 53113 Bonn GERMANY Phone: +49-228-968-3367 Fax: +49-228-968-3988	Dr. Arwyn Davies Department of the Environment Room A319 Romney House 43 Marsham Street SW1P 3PY London UNITED KINGDOM Phone: 44-71-276-8365 Fax: 44-71-276-8355
Mr. Derek Davis Director General British National Space Centre Bridge Place 88/89 Eccleston Square SW1V 1PT London UNITED KINGDOM Phone: +44-71-276-2314 Fax: +44-71-821-9587	Dr. Brian J. J. Embleton Head Commonwealth Scientific and Industrial Research Organization Office of Space Science and Application Cnr North & Daley Roads GPO Box 3023 Canberra ACT 2601 AUSTRALIA Phone: +61-6-279-8888 Fax: +61-6-279-8812 E-mail: bjje@cbr.cossa.csiro.au (Internet)
Mr. Lanfranco [illegible] Director European Space Agency 8-10 rue Mario Nikis 75738 Paris Cedex 15 FRANCE Phone: +33-1-4273-7131 Fax: +33-1-4273-7560	Mr. Alain Esterle Centre National d'Etudes Spatiales International Affaires Department 2 Place Maurice Quentin 75039 Paris Cedex 01 FRANCE Phone: +33-1-44-76-7586 Fax: +33-1-44-76-7836
Mr. Roy Gibson Residence les Hesperides 51 Allie Jean de Beins 34000 Montpellier FRANCE Phone: : +33-67-64-8181 Fax: +33-67-22-3402	Mr. Yukio Haruyama Senior Engineer National Space Development Agency Earth Observation Planning Department 10 F Hamamatsu Central Building 1-29-6 Hamamatsu-cho Minato-ku 105 Tokyo JAPAN Phone: +81-3-5401-8687 Fax: +81-3-5401-8702 E-mail: ceos.sec.japan (OMNET)

Dr. Volker Kirchhoff Deputy Director Instituto Nacional de Pesquisas Espacials Av. dos Astronautas 1758 Caixa Postal 515 12201-970 Sao Jose dos Campos SP BRAZIL Phone: +55-123-41-8977 Fax: +55-123-218743/229285	Mr. Edward Kuznetsov Main Adviser National Space Agency of Ukraine Bojenca Street 11 252022 Kiev UKRAINE Phone: +7-044-226-25-55 Fax: +7-044-212-50-58 E-mail: NSAU@NSAU.KIEV.UA (Internet)
Mr. Jerome Lafeuille EUMETSAT Am Elfengrund 45 64297 Darmstadt-Eberstadt GERMANY Phone: +49-6151-958188 Fax: +49-6151-958125 E-mail: J.Lafeuille (OMNET)	Mr. Arndt Langner Head of Earth Observation Programme Division German Space Agency PO Box 300364 53183 Bonn GERMANY Phone: 49-228-447-597 Fax: 49-228-447-708 E-mail: A. Langner (OMNET)
Mr. Levin Lauritson NOAA/NESDIS National Climatic Data Center (NCDC) Satellite Data Services Div. (SDSD) Princeton Executive Square, Room 100 5627 Allentown Road Camp Springs, Maryland 20746 USA Phone: +1-301-763-8402 FAX: +1-301-763-8443 E-mail: L.Lauritson (OMNET)	Prof. Li Zengyuan Department of Techniques and Application of Remote Sensing to Environment Research Institute of Resources Information Chinese Academy of Forestry Wan Shou Shan 100091 Beijing CHINA Phone: +86-1-2582211-863 Fax: +86-1-2582317
Dr. Volker Liebig Head of Earth Observation Utilization Division German Space Agency PO Box 300364 53183 Bonn GERMANY Phone: +49-228-447-633 Fax: +49-228-447-708 E-mail: U.Liebig (OMNET)	Prof. Lin Quan Director National Remote Sensing Center 15B, Fuxing Road 100862 Beijing CHINA Phone: +86-1-851-2081 or 5544 Fax: +86-1-851-2081 or 4097
Dr. Garry M. Lindberg Vice President Research and Applications Canadian Space Agency 6767 Route de l'Aeroport St. Hubert, Quebec, J3Y 8Y9 CANADA Phone: +1-514-926-4372/4273 Fax: +1-514-926-4377	Mr. Michael A. Luther Director Office of Mission to Planet Earth Flight Systems Division (Code YF) National Aeronautics and Space Administration 300 E St. SW 20546 Washington, D.C. USA Phone: +1-202-358-0261 Fax: +1-202-358-2769
Ms. Davinder Manak Officer Canadian Space Agency Earth Observation Program Office 6767 Route de l'Aeroport St. Hubert, Quebec, J3Y 8Y9 CANADA Phone: +1-514-926-4604 Fax: +1-514-926-4613 E-mail: MANAKD@SP-AGENCY.CA (Internet)	Mr. Francois Manneville Embassy of France An der Marienkapelle 3 53179 Bonn GERMANY Phone: +49-228-362831 Fax: +49-228-35-4994

Dr. Burkhard Pfeiffer Head of ENVISAT Program Department European Space Agency ESTEC Keplerlaan 1 2201 AZ Noordwijk 7 H THE NETHERLANDS Phone: +31-1719-86555 Fax: +31-1719-17488	Dr. S. Ichtiaque Rasool Director International Geosphere-Biosphere Program Universite de Paris tour 26, 4 etage, alle 2616 4 Place Jussieu 75230 Paris Cedex 05 FRANCE Phone: +33-144276168 Fax: +33-1-4427-6171 E-mail: I.Rasool (OMNET)
Dr. Erich Rathske Bundesministerium fuer Forschung und Technologie Referat 521 Heinemannstrasse 2 53170 Bonn GERMANY Phone: 49-228-59-3318 Fax: 49-228-59-3681	Mr. Alain Ratier Centre National d'Etudes Spatiales Earth Observation Department 2 Place Maurice Quentin 75039 Paris Cedex 01 FRANCE Phone: 33-1-4476-7810 Fax: 33-1-4476-7868
Mr. P. Reichert Remote Sensing Officer (Forestry) Remote Sensing Center Research and Technology Development Division Food and Agriculture Organization Via delle Terme di Caracalla 00100 Rome ITALY Phone: +39-6-522-54513 Fax: +39-6-522-55731 E-mail: Paul.Reichert@fao.org	Dr. Klaus-Dieter Rockwitz Head of Global Applications Data Utilization Section German Space Agency PO Box 300364 53183 Bonn GERMANY Phone: 49-228-447-580 Fax: 49-228-447-788
Mr. Georg Rosenberg Director, Strategy and Coordination Deputy Managing Director Norwegian Space Centre PO Box 85 Smestad 0309 Oslo NORWAY Phone: +47-22-52-3800 Fax: +47-22-52-2397	Dr. Leo Sayn-Wittgenstein Director General Canada Centre for Remote Sensing 588 Booth Street Ottawa, Ontario, K1A 0Y7 CANADA Phone: +1-613-947-1222 Fax: +1-613-947-1382
Mr. Gunter Schreier DLR German Remote Sensing Data Center PO Box 1116 82230 Wessling GERMANY Phone: 49-8153-28-1375 Fax: 49-8153-28-1446 E-mail: Schreier@dfd.dlr.de (Internet); G.Schreier (OMNET)	Dr. Kai-Uwe Schrogl German Space Agency International and National Cooperation Division PO Box 300364 53183 Bonn GERMANY Phone: +49-228-447-586 Fax: +49-228-447-788
Mr. Heinz-Georg Seipel Head of Earth Observation and Telecommunication Department German Space Agency PO Box 300364 53183 Bonn GERMANY Phone: 49-228-447-365 Fax: 49-228-447-788	Dr. Lisa R. Shaffer Director of Mission to Planet Earth Division Office of External Relations (Code IY) National Aeronautics and Space Administration 300 E St. SW 20546 Washington, D.C. USA Phone: +1-202-358-0793 Fax: +1-202-358-2798 E-mail: L.SHAFFER (OMNET), lshaffer@codei.hq.nasa.gov (Internet)

Ms. Pamela Whitney Rapporteur 17 Palmer Street Arlington, MA 02174 USA Phone: +1-617-646-4245	Dr. David Williams Assistant Director for Earth Observation British National Space Centre Bridge Place 88/89 Eccleston Square SW1V 1PT London UNITED KINGDOM Phone: +44-71-215-0702 Fax: +44-71-821-5387 E-mail: DAVID_WILLIAMS@BNSC-HQ.CCMAIL.COMPUSERVE.COM
Mr. John Withrow Senior Assistant Secretary Intergovernmental Oceanographic Commission 1 rue Miollis 75015 Paris Cedex 15 FRANCE Phone: +33-1-4568-4008 Fax: +33-1-4056-9316 E-mail: J.Withrow (OMNET)	Mr. Yang Changfeng Director Satellite Application Division Bureau of Space Technology Commission of Science Technology & Industry for National Defences (COSTIND) No. 1 Ai Ming Street Xi Cheng District 100034 Beijing CHINA Phone: +86-1-6024863
Prof. Yang Cun Xin Director Remote Sensing Technology Application Center Ministry of Water Resources Baiguang Road P.O. Box 2905 100761 Beijing CHINA Phone: +86-1-3202221	Prof. Yang Weiyuan Chinese Academy of Space Technology PO Box 2417 100081 Beijing P.R. CHINA Phone: +86-1-837-9419 Fax: +86-1-837-8237
Mr. James U. Zimmerman National Aeronautics and Space Administration American Embassy 2 Avenue Gabriel 75382 Paris Cedex 08 FRANCE Phone: +33-1-4296-1202-2641 Fax: +33-1-4296-658768	Dr. Yuri U. Zonov Chief International Affairs Office Russian Space Agency Shepkin Street 42 129857 Moscow RUSSIA Phone: +7-095-971-8633 Fax: +7-095-88-356-22/251-8702
Mr. Victor P. Zubko Chief of Remote Sensing Department National Space Agency of Ukraine Bojenca Street 11 252022 Kiev UKRAINE Phone: +7-044-261-5514 Fax: +7-044-212-50-58 E-mail: NSAU@NSAU.KIEV.UA (Internet)	

Action 8-15: CEOS Chair/Secretariat to coordinate update of the Future CEOS Strategy document, in light of developments occurring between Plenary meetings, and present it for review at the ninth Plenary.

Action 8-16: Co-chairs of the Task Force on CEOS Planning and Analysis to distribute the draft analysis to Members, Observers, and Affiliates by March 1995; the final analysis to be distributed by August 1995.

Action 8-17: Co-chairs of the Task Force on CEOS Planning and Analysis to present to the ninth Plenary a proposed action plan and schedule to accomplish CEOS analysis and planning strategies.

Action 8-18: Secretariat/ESA to prepare the 1995 CEOS Yearbook and report status to the ninth CEOS Plenary.

Action 8-19: CEOS Members, Observers, and Affiliates are invited to provide results inputs to STA/NASDA for the Special Report on Successful Applications of Earth Observation Satellite Data, by March 1995.

Action 8-20: STA/NASDA to produce the final version of the Special Report on Successful Applications of Earth Observation Satellite Data and report progress back to the ninth Plenary.

Action 8-21: EUMETSAT to report outcomes of the 1995 CGMS Plenary meeting at the ninth Plenary.

NASDA	National Space Development Agency of Japan
NOAA	National Oceanic and Atmospheric Administration
NRSCC	National Remote Sensing Centre of China
NSAU	National Space Agency of Ukraine
NSC	Norwegian Space Centre
OSTC	Federal Office for Scientific, Technical and Cultural Affairs - Belgium
ROSHYDROMET	Russian Federal Service for Hydrometeorology and Environment Monitoring
RSA	Russian Space Agency
SAF	Space Agency Forum
SIR-C	Spaceborne Imaging Radar-C
SNSB	Swedish National Space Board
SPOT	Systeme pour l'Observation de la Terre
STA	Science and Technology Agency of Japan
START	System for Analysis, Research and Training
UARS	Upper Atmosphere Research Satellite
UK-DOE	United Kingdom Department of Environment
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNOOSA	United Nations Office of Outer Space Affairs
WCRP	World Climate Research Programme
WGCV	Working Group on Calibration/Validation
WGD	Working Group on Data
WGINS	Interim Working Group on International Network Services
WMO	World Meteorological Organization
X-SAR	X-band Synthetic Aperture Radar

Highlights of the 8th CEOS Plenary

The 8th Plenary meeting of the Committee on Earth Observation Satellites (CEOS) was held September 26-28, 1994 in Berlin, Germany. Over 90 participants, including all 20 CEOS member agencies, attended. NOAA was represented by John Hussey, Brent Smith, Linda Moodie, and Levin Lauritson (in his capacity as Chairman of the CEOS Working Group on Data). Smith, Moodie, and Lauritson serve on the CEOS Secretariat, which met prior to and following the Plenary. Charles Kennel, Lisa Shaffer, Michael Luther, James Zimmerman, and Leslie Charles represented NASA. Highlights of the Plenary meeting follow:

- Previously an observer, the European Commission became a full member of CEOS, based on its funding of two space instruments for Earth observation. The U.N. Office of Outer Space Affairs (UNOOSA) became an affiliate.

- CEOS amended its "Future CEOS Strategy", first adopted at the 1993 Plenary. The CEOS Strategy document now includes a section on Analysis and Planning, which specifies that CEOS will undertake an analysis of all satellites, sensors, and data products, currently available through the next 10-15 years (as provided in the CEOS Dossier), and the requirements of the major international scientific and intergovernmental user organizations (i.e., CEOS affiliates), to identify gaps and overlaps, establish priorities, and provide an opportunity for CEOS members to voluntarily fill gaps and reduce overlaps. A task force was established to undertake this analysis, and the first draft will be reviewed at a CEOS workshop to be hosted by NASA in May 1995.

- The Strategy document also sets the objective that within the next five years all CEOS participants should set in place fully functioning interoperable user services and data systems with common functionalities.

- CEOS adopted by consensus a Resolution on Principles of Satellite Data Provision in Support of Operational Environmental Use for the Public Benefit. Greg Withee co-chaired a meeting in April 1994 that finalized the draft resolution. NOAA and NASA facilitated the passage of this resolution, which had to accommodate the diversity of data policies and practices among CEOS members.

- CEOS agreed to a CEOS Strategy toward Developing Countries, which included most of the recommendations from the CEOS Workshop on Developing Country Activities (hosted by INPE, the Brazilian Space Agency), from the Working Group on Data, and from DARA (the German Space Agency). DARA will also fund a study, in cooperation with the UNOOSA, on a possible space information system to provide information at a less sophisticated level. DARA will report on its feasibility study at the next CEOS Plenary meeting.

- The Plenary continued the work on networks through the establishment of an Interim Working Group on International Network Services, broadened from the previous ad hoc Working Group to now include all CEOS participants. The Working Group will develop a strategy and possible pilot projects through which interoperable user services and data systems of CEOS participants would be harmonized.

- The Working Groups on Data and on Calibration and Validation obtained approval for their respective Long-Term Plans. The Cal/Val Chairwoman thanked Jack Sherman for his extensive work in drafting the Cal/Val Plan. The Cal/Val Working Group was asked to form an additional subgroup to address atmospheric chemistry sensors. NASA will fund the proposed Cal/Val Dossier.

- Several technical demonstrations of CEOS projects took place, most of which are a result of the work of the Working Group on Data. Among the demonstrations were: CEOS Inventory Interoperability Experiment (CINTEX), CEOS Information System (InfoSys), CEOS International Directory Network (IDN), and CEOS Dossier, Volume A (Satellite Missions).

- An updated copy of the CEOS Dossier, Volume A (Satellite Missions), in paper and digital format was distributed by the European Space Agency (ESA). The diskettes (Mac or PC versions available) are reproducible and interactive. ESA also proposes to publish a more concise CEOS Yearbook by Spring 1995.

- Japan presented and agreed to publish a "CEOS Special Report on Successful Applications of Earth Observation Satellite Data." The report gives illustrated examples--many of which are from NOAA--of applications in agriculture, resource management and surveying, hazard monitoring and disaster assessment, civil mapping and planning, ice monitoring, coastal zone management, and oceanographic applications.

- CEOS celebrated the 10th Anniversary of its first meeting through a gala affair, hosted by DARA at the Crown Prince Palace in East Berlin. DARA presented a "Joint Resolution by the Governments of CEOS Members and Observers on the Occasion of the 10th Anniversary of CEOS," which recognizes the progress made by CEOS, confirms the primary objectives of CEOS, and encourages further coordination to promote easier access to data and information. The Joint Resolution was approved by the governments (including the United States) whose agencies participate in CEOS. Speakers at the celebration included Dr. Reinhold Leitterstorf, Director General, Federal Ministry for Research and Technology, Germany, and Mr. Isao Uchida, Commissioner, Space Activities Commission of Japan.

SIDE DISCUSSIONS

- European Commission: NOAA and NASA met twice with Jean-Pierre Contzen, Director General of the Joint Research Centre and Deputy Director General of DG-XII. Kennel and Hussey agreed to a letter to be sent by NASA and NOAA, on behalf of the CENR Task Force on Observations and Data Management, confirming agreement to hold regular consultations between the U.S. and E.C. on scientific and technical cooperation in Earth observation and environmental monitoring. Areas of interest include the combined use of ground-based and space-based data, data system interoperability, links between GCDIS and the European Center for Earth Observation (CEO), the impact of data policy on scientific and applications data use, and global observing system planning efforts. The letter will be presented to the CENR Task Force for approval and then sent to Contzen for confirmation. Contzen will likely visit Washington in December for the first consultative meeting.

  Contzen was very careful not to trespass on ESA's area of responsibility (e.g., the space segment, space data policy) and equally careful to delineate the EC's area of responsibility (e.g., combining space and non-space data, environmental management, representing the user in data policy, requirements definition, and other areas). He wanted the agreement to be put in terms of environmental monitoring and scientific research, rather than data exchange per se. He also wanted to couch data policy within the issue of impacts on data utilization. Contzen was very interested in the possibility of a more formal mechanism (possibly an Intergovernmental Agreement) for coordinating space- and ground-based observations and data, especially an integrated approach by funding/implementing agencies towards GCOS, GOOS, and GTOS. Contzen also noted that, in his view, EUMETSAT would never evolve into a European monitoring agency.

- Japan (STA/NASDA): STA/Ueta reviewed the Japanese proposal for a Global Earth Observing System, as proposed in Japan's 15-Year Space Plan. STA confirmed that Japan was willing to contribute 25 percent of the space assets. NASDA/Kikuchi invited NOAA and NASA scientists to participate in a joint Science Committee to cooperate in the design of instruments, etc. Kennel presented the need for a formal global scheme to be undertaken through a step-by-step approach and the possibility of an Intergovernmental Agreement to formalize this arrangement. NASA confirmed that it did not propose a central authority to buy and launch satellites, that it still opposed WEDOS-type schemes (owned and operated by the commercial sector), and that it would proceed with bilateral cooperation no matter what. Hussey and Kennel later met with Isao Uchida, a member of the high-level Space Activities Commission, who stated that, in his view, the construction of a global system necessitated some sort of government-to-government agreement. He suggested that these

discussions be continued at the EO-ICWG meeting in November. He also stressed the importance of building up Japan's user community and ground systems.

- France (CNES): NOAA and NASA discussed with CNES/Brachet current plans for Landsat, the status of the TOPEX-POSEIDEN Follow-on, and the re-baselining of the NASA EOS program. In response to Kennel's exploratory discussion of an Intergovernmental Agreement for a Global Earth Observing System, Brachet was cautious, expressing the need for more detail and definition of the purpose, organizational structure, and system. He did, however, state that if the focus were global and not local/regional and if the scope were broad enough to address ground-based and space-based observations, there might be some utility in the approach.

- U.K. (BNSC): NOAA and NASA discussed Landsat, the role of commercial activities, and cost recovery in Earth observation with the new Director General of the BNSC, Derek Davis. NOAA emphasized the need for METOP and stated that DMSP data would not be generally available to Europe until a convergence-related agreement was worked out between U.S. agencies and EUMETSAT.

- WMO: WMO/Hinsman suggested that Tillmann Mohr (Germany) was likely to be the next Director of EUMETSAT. The other chief candidate, Peter Ryder of the U.K., was in his opinion not likely to gain support as John Morgan, the current Director, comes from the U.K.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL ENVIRONMENTAL SATELLITE, DATA,
AND INFORMATION SERVICE
Washington, D.C. 20233

October 6, 1994

MEMORANDUM FOR: The Record

FROM: John Hussey
Director, Office of Systems Development

D. Brent Smith
Chief, International and Interagency Affairs

Linda V. Moodie
Senior International Relations Specialist

SUBJECT: Trip Report: Committee on Earth Observation Satellites Plenary Meeting, Berlin, Germany, September 26-28, 1994

The 8th Plenary meeting of the Committee on Earth Observation Satellites (CEOS) was held September 26-28, 1994 in Berlin, Germany. Over 90 participants, including all 20 CEOS member agencies, attended. NOAA was represented by John Hussey, Brent Smith, Linda Moodie, and Levin Lauritson (in his capacity as Chairman of the CEOS Working Group on Data). Smith, Moodie, and Lauritson serve on the CEOS Secretariat, which met prior to and following the Plenary. Charles Kennel, Lisa Shaffer, Michael Luther, James Zimmerman, and Leslie Charles represented NASA. Highlights of the Plenary meeting follow:

- Previously an observer, the European Commission became a full member of CEOS, based on its funding of two space instruments for Earth observation. The U.N. Office of Outer Space Affairs (UNOOSA) became an affiliate.

- CEOS amended its "Future CEOS Strategy", first adopted at the 1993 Plenary. The CEOS Strategy document now includes a section on Analysis and Planning, which specifies that CEOS will undertake an analysis of all satellites, sensors, and data products, currently available through the next 10-15 years (as provided in the CEOS Dossier), and the requirements of the major international scientific and intergovernmental user organizations (i.e., CEOS affiliates), to identify gaps and overlaps, establish priorities, and provide an opportunity for CEOS members to voluntarily fill gaps and reduce overlaps. A task force, chaired by B. Bizzarri of the Italian Space Agency and

I. Rasool of NASA, was established to undertake this analysis. The first draft will be reviewed at a CEOS workshop to be hosted by NASA in May 1995.

- The Strategy document also sets the objective that within the next five years all CEOS participants should establish fully functioning interoperable user services and data systems with common functionalities.

- CEOS adopted by consensus a Resolution on Principles of Satellite Data Provision in Support of Operational Environmental Use for the Public Benefit. Greg Withee co-chaired a meeting in April 1994 that finalized the draft resolution. NOAA and NASA facilitated the passage of this resolution, which had to accommodate the diversity of data policies and practices among CEOS members. EUMETSAT, commenting that its data policy is set by its Council and would be developed without external constraints, abstained from the discussion.

- CEOS agreed to a CEOS Strategy toward Developing Countries, which included most of the recommendations from the CEOS Workshop on Developing Country Activities (hosted by INPE, the Brazilian Space Agency), from the Working Group on Data, and from DARA (the German Space Agency). DARA will also fund a study, in cooperation with the UNOOSA, on a possible space information system to provide information at a less sophisticated level. DARA will report on its feasibility study at the next CEOS Plenary meeting.

- The Plenary continued the work on networks through the establishment of an Interim Working Group on International Network Services, broadened from the previous ad hoc Working Group to now include all CEOS participants. The Working Group, chaired by L. Marelli of the European Space Agency (ESA) and H. Kikuchi of the Japanese Space Agency (STA/NASDA), will develop a strategy and possible pilot projects to harmonize interoperable network services among CEOS participants.

- The Working Groups on Data and on Calibration and Validation obtained approval for their respective Long-Term Plans. The Cal/Val Chairwoman thanked Jack Sherman for his extensive work in drafting the Cal/Val Plan. The Cal/Val Working Group was asked to form an additional subgroup to address atmospheric chemistry sensors. NASA will fund the proposed Cal/Val Dossier.

- Several technical demonstrations of CEOS projects took place, most of which are a result of the work of the Working Group on Data. Among the demonstrations were: CEOS Inventory Interoperability Experiment (CINTEX), CEOS

Information System (InfoSys), CEOS International Directory Network (IDN), and CEOS Dossier, Volume A (Satellite Missions).

- An updated copy of the CEOS Dossier, Volume A (Satellite Missions), in paper and digital format was distributed by ESA. The diskettes (Mac or PC versions available) are reproducible and interactive. ESA also proposes to publish a more concise CEOS Yearbook by Spring 1995.

- Japan presented and agreed to publish a "CEOS Special Report on Successful Applications of Earth Observation Satellite Data." The report gives illustrated examples--many of which are from NOAA--of applications in agriculture, resource management and surveying, hazard monitoring and disaster assessment, civil mapping and planning, ice monitoring, coastal zone management, and oceanography.

- CEOS celebrated the 10th Anniversary of its first meeting through a gala affair, hosted by DARA at the Crown Prince Palace in East Berlin. DARA presented a "Joint Resolution by the Governments of CEOS Members and Observers on the Occasion of the 10th Anniversary of CEOS," which recognizes the progress made by CEOS, confirms the primary objectives of CEOS, and encourages further coordination to promote easier access to data and information. The Joint Resolution was approved by the governments (including the United States) whose agencies participate in CEOS. Speakers at the celebration included Dr. Reinhold Leitterstorf, Director General, Federal Ministry for Research and Technology, Germany, and Mr. Isao Uchida, Commissioner, Space Activities Commission of Japan.

- The next CEOS Plenary meeting is scheduled for Montreal, Canada, October 11-13, 1995.

SIDE DISCUSSIONS

- European Commission: NOAA and NASA met twice with Jean-Pierre Contzen, Director General of the Joint Research Centre and Deputy Director General of DG-XII. Kennel and Hussey agreed to a letter to be sent by NASA and NOAA, on behalf of the CENR Task Force on Observations and Data Management, confirming agreement to hold regular consultations between the U.S. and E.C. on scientific and technical cooperation in Earth observation and environmental monitoring. Areas of interest include the combined use of ground-based and space-based data, data system interoperability, links between GCDIS and the European Center for Earth Observation (CEO), the impact of data policy on scientific and applications data use, and global observing system planning efforts. The letter will be presented to the CENR Task Force for approval and then sent to Contzen for confirmation. Contzen will likely visit Washington in December for the first consultative meeting.

  Contzen was very careful not to trespass on ESA's area of responsibility (e.g., the space segment, space data policy) and equally careful to delineate the EC's area of responsibility (e.g., combining space and non-space data, environmental management, representing the user in data policy, requirements definition, and other areas). He wanted the agreement to be put in terms of environmental monitoring and scientific research, rather than data exchange per se. He also wanted to couch data policy within the issue of impacts on data utilization. Contzen was very interested in the possibility of a more formal mechanism (possibly an Intergovernmental Agreement) for coordinating space- and ground-based observations and data, especially an integrated approach by funding/implementing agencies towards GCOS, GOOS, and GTOS. Contzen also noted that, in his view, EUMETSAT would never evolve into a European monitoring agency.

- Japan (STA/NASDA): STA/Ueta reviewed the Japanese proposal for a Global Earth Observing System, as proposed in Japan's 15-Year Space Plan. STA confirmed that Japan was willing to contribute 25 percent of the space assets. NASDA/Kikuchi invited NOAA and NASA scientists to participate in a joint Science Committee to cooperate in the design of instruments, etc. Kennel presented the need for a global scheme to be undertaken through a step-by-step approach and the possibility of an Intergovernmental Agreement to formalize this arrangement. NASA confirmed that it did not propose a central authority to buy and launch satellites, that it still opposed WEDOS-type schemes (owned and operated by the commercial sector), and that it would proceed with bilateral

cooperation no matter what. Hussey and Kennel later met with Isao Uchida, a member of the high-level Space Activities Commission, who stated that, in his view, the construction of a global system necessitated some sort of government-to-government agreement. He suggested that these discussions be continued at the EO-ICWG meeting in November. He also stressed the importance of building up Japan's user community and ground systems.

- France (CNES): NOAA and NASA discussed with CNES/Brachet current plans for Landsat, the status of the TOPEX-POSEIDEN Follow-on, and the re-baselining of the NASA EOS program. In response to Kennel's exploratory discussion of an Intergovernmental Agreement for a Global Earth Observing System, Brachet was cautious, expressing the need for more detail and definition of the purpose, organizational structure, and system. He did, however, state that if the focus were global and not local/regional and if the scope were broad enough to address ground-based and space-based observations, there might be some utility in the approach.

- U.K. (BNSC): NOAA and NASA discussed Landsat, the role of commercial activities, and cost recovery in Earth observation with the new Director General of the BNSC, Derek Davis. NOAA emphasized the need for METOP and stated that DMSP data would not be generally available to Europe until a convergence-related agreement was worked out between U.S. agencies and EUMETSAT.

- WMO: WMO/Hinsman suggested that Tillmann Mohr (Germany) was likely to be the next Director of EUMETSAT. The other chief candidate, Peter Ryder of the U.K., was in his opinion not likely to gain support as John Morgan, the current Director, comes from the U.K.

Distribution:
E - R. Winokur
Ex1 - G. Withee
E - Office and Center Directors
A - J. Baker
DUS - D. Josephson
C. Kennel, NASA
L. Shaffer, NASA
J. Zimmerman, NASA

8th CEOS Plenary, Berlin 1994

List of Participants

26 - 28 September

Members

Dr. Bizzarro Bizzarri	ASI
Mr. Derek Davis	BNSC
Dr. David Williams	BNSC
Dr. Stephen Briggs	BNSC/NERC
Mr. Ken Inglis	BNSC
Dr Arwyn Davies	BNSC/DoE
Prof. Weiyuan Yang	CAST
Mr. Keran Wang	CAST
Mr. Gérard Brachet	CNES
Mr. Alain Esterle	CNES
Mr. Alain Ratier	CNES
Mr. Francois Manneville	CNES
Dr. Garry M. Lindberg	CSA
Ms. Davinder Manak	CSA
Dr. Walter F. Davidson	CSA
Dr. Hans W. Teunissen	CSA/AES
Dr. Brian J. J. Embleton	CSIRO
Mr. Jeff Kingwell	CSIRO
Dr. Jan-Baldem Mennicken	DARA
Prof. Heinz Stoewer	DARA
Mr. Heinz-Georg Seipel	DARA
Prof. Rolf-Peter Oesberg	DARA
Dr. Volker Liebig	DARA
Mr. Arndt Langner	DARA
Dr. Klaus-Dieter Rockwitz	DARA
Dr. Kai-Uwe Schrogl	DARA
Dr. Franz-Peter Spaunhorst	DARA
Mr. Roy Gibson	
Mr. Gunter Schreier	
Dr. Erich Rathske	DARA/BMFT
Mr. Jean-Pierre Contzen	EC
Mr. Michel Paillon	EC
Mr. Jean Meyer-Roux	EC
Mr. Alan Cross	EC
Mr. Lanfranco Emiliani	ESA
Dr. Burkhard Pfeiffer	ESA
Dr. Huw Hopkins	ESA
Mr. Livio Marelli	ESA
Mr. Jean Arets	ESA
Mr. John Morgan	EUMETSAT
Mr. Jerome Lafeuille	EUMETSAT
Mr. K. R. Sridhara Murthi	ISRO
Dr. Volker Kirchhoff	INPE
Dr. Charles F. Kennel	NASA
Dr. Lisa R. Shaffer	NASA

Mr. James V. Zimmerman	NASA
Mr. Michael R. Luther	NASA
Ms. Leslie Charles	NASA
Mr. W. John Hussey	NOAA
Dr. D. Brent Smith	NOAA
Mr. Levin Lauritson	NOAA
Ms. Linda V. Moodie	NOAA
Prof. Quan Lin	NRSCC
Mr. Xuejun Cao	NRSCC
Mr. Junyong Chen	NRSCC
Mr. Changfeng Yang	NRSCC/COSTIND
Mr. Cunxin Yang	NRSCC/MWR
Prof. Zengyuan Li	NRSCC/CAF
Mr. Edward Kuznetsov	NSAU
Dr. Oleg S. Urusky	NSAU
Mr. Victor P. Zubko	NSAU
Prof. Sergej I. Avdiushin	ROSHYDROMET
Dr. Alexander V. Karpov	ROSHYDROMET
Dr. Yuri V. Zonov	RSA
Dr. Marianne von Glehn	SNSB
Mr. Claes-Gören Borg	SNSB
Mr. Sushi Ueta	STA
Mr. Hitoshi Nara	STA/NASDA
Mr. Chu Ishida	NASDA
Mr. Yukio Haruyama	NASDA
Mr. Hiroshi Kikuchi	NASDA
Ms. Kazuko Misawa	NASDA
Mr. Koji Terada	NASDA
Dr. Tetsu Hiraki	STA/JMA
Mr. Michio Hashimoto	STA/MITI
Dr. Yoshinori Miyazaki	STA/MITI

Observers

Dr. Leo Sayn-Wittgenstein	CCRS
Dr. Susan M. Till	CCRS
Mr. Leon Bronstein	CCRS
Mr. Michel Verbauwhede	OSTC
Mr. Paul Sorensen	NSC
Mr. Georg Rosenberg	NSC

Affiliates

Dr. S. Ichtiaque Rasool	IGBP
Mr. John Withrow	IOC & GOOS
Mr. Naoto Matsuura	GCOS
Mr. David L. Croom	GCOS
Mr. P. Reichert	FAO
Dr. Donald Hinsman	WMO
Mr. N. Jasentulijana	UNOOSA
Mr. Adigun Ade Abiodun	UNOOSA
Mr. Ray J. Arnold	UNEP

Joint Resolution by the Governments of CEOS Members and Observers on the Occasion of the 10th Anniversary of CEOS

Spaceborne Earth observation is of growing importance for understanding and monitoring global climate and environmental changes and supporting the economic development of nations. Applications include assessment of land cover changes, disaster monitoring and mitigation, and weather forecasting as well as agricultural planning and many other regional aspects meeting, amongst others, the specific needs of developing countries.

The magnitude of financial and other resources needed to develop, build and operate advanced Earth observation satellite systems calls for worldwide cooperation leading to an effective utilization of existing systems and data, and ensuring coordination in developing additional instruments and systems needed by users. The 1992 UNCED Conference in Rio de Janeiro strongly endorsed the establishment of a global earth observing system.

In this regard we recognize the substantial progress made by the Committee on Earth Observation Satellites (CEOS) together with affiliated user organisations in coordinating space programmes for the monitoring of the global environment and in establishing principles for the provision of data. In the 10 years since its formation in 1984, CEOS has steadily grown; its members, observers, and affiliates now comprise agencies from most parts of the world and the most important international scientific and intergovernmental user organisations.

We wish to confirm that the primary objectives as set forth in the Terms of Reference of CEOS continue to be of vital importance and should continue to guide its future work. We want to encourage CEOS to further develop its coordination efforts in order to enhance the ability to observe our planet and to promote easier and continuous access to Earth observations data and information in a readily understandable form for the benefit of the global community including the needs of developing countries.

We call on all parties involved to support the work of CEOS by all appropriate means, as well as to make efforts for further development of their respective Earth observation satellite programmes.

28.09.94

Decison of the 8th CEOS Plenary
with respect to the report of the ad-hoc WGN

1. The significance of the past and continuing contributions of the WGD to the network-related acitvities of CEOS is recognized.

2. The guiding principles developed by the ad-hoc WGN for the development of future global networks for Earth Observation are endorsed.

3. Activities related to international ~~network~~ services will merit ~~the establishment~~ of a Working Group (WGINS). ~~This~~ decision will be taken at the 9th Plenary.

   As a first step, the existing ad-hoc Working Group ~~will be converting into an~~ Interim WGINS for a period of one year with membership open to all CEOS ~~agencies prepared~~ participants committed to actively contribute to its objectives.

4. The Interim WGINS shall:

   a) develop a strategy that will provide a framework within which the interoperable user services and data systems of CEOS participants would be harmonised.

   b) complete the work started by ad-hoc WGN;

   c) review, under the guidance of the CEOS Chairman, and jointly with the Chairs of the existing Working Groups and Subgroups, the terms of reference of the different Working Groups and Subgroups, and work with them towards the definition of rationalised terms of reference for submission to the next CEOS Plenary, and

   d) present to the 9th CEOS Plenary an analysis of the relevant current and planned activities of CEOS participants; in particular, to evaluate current and planned pilot demonstration projects in order to understand better the users requirements for network services, and to provide guidance for future priorities.

CEOS - The First Ten Years

We did it! We took an idea and made it into a reality.

What was the idea? That the world would benefit from satellite operators working together in the planning and execution of Earth observation missions. The idea was based on a vision shared by people like John McElroy and Shelby Tilford, both of whom would like to have been here tonight.

The vision recognized the inherent interdisciplinary nature of satellite remote sensing. There is no such thing as a uniquely ocean satellite or land satellite or weather satellite. The Earth operates as a system and specific techniques for observing the Earth can provide useful information about many aspects of the complex system of our planet. Thus, rather than perpetuate discipline-specific groups, CEOS brought all Earth observation satellite operators together.

The idea was to serve the worldwide user community in the best possible way. Instead of building independently planned and operated satellites, each with its unique characteristics, user interfaces, data formats, calibration standards, etc., space agencies should meet and talk and share information about their plans and experiences. While we each make our own decisions in the end, we can make better decisions if we work together and learn from each other and use common approaches where they make

sense. Where they make sense means from a user perspective, not just from optimizing a particular mission's requirements. The Earth is too important to isolate a particular set of observations. We need to share the collective knowledge we are accumulating through our combined investment of financial and intellectual resources.

In addressing the first 10 years, I am here as one who participated in drafting the original terms of reference, one who has attended every CEOS plenary meeting except the April 1992 special session, and as a past chairman of one of the CEOS Working Groups. Thus, I feel obligated to recount a bit of history. In 1984, the G-7 Summit endorsed a report of its Working Group on Growth, Technology, and Employment, calling for coordination among remote sensing programs. John McElroy and Jennifer Clapp were instrumental in developing that language and working to have it included in the Summit declaration at Williamsburg.

A meeting was called by NOAA, chaired by John McElroy, then Assistant Administrator of NESDIS, to organize what was originally called the International Earth Observation Satellite Committee (IEOSC), merging and expanding the existing Coordination of Land Observing Satellites and Coordination of Ocean Remote Sensing Satellites groups. One of the major accomplishments of the first meeting was to change the name of the group to one that is pronounceable - CEOS. The terms of

reference were adopted and two ad hoc working groups were created.

1984 was my first year at NOAA. I didn't have nearly as much gray hair. As you can see from the picture from the first plenary, some of you had more hair. I had the job Brent Smith has now, and he worked at NASA in the office where I now report. All our agencies had smaller budgets and fewer programs. Our principal notion of compatibility and complementarity was to use the same downlink frequency for Landsat and SPOT so that ground station operators could use the same dishes to receive data from both spacecraft. We also began working on common data formats and common calibration standards for intercomparison of data. Those steps were relatively small, but very important. Even in 1984, we envisioned enormous intercalibration challenges that would come from the polar platforms, both within a given platform's payload and between US and European and Japanese platforms. We were optimistic about the growth of Earth observing satellites and understood the severe criticism we would deserve if we didn't consider international cooperation to optimize the value of the investments to come.

We haven't escaped criticism by any means. Indeed, we are asked often by Congress and others why we don't do more internationally. But CEOS has made an important contribution in the right direction. We have tried some things in CEOS that haven't worked, and learned from our mistakes. And we have tried

some things in CEOS that are working marvelously well. Some are being demonstrated in the hotel lobby - the International Directory Network and InfoServer, the cal/val coordination or test sites and airborne campaigns, the Dossier, the Newsletter.

There are some people who deserve credit for the original creation of CEOS and its accomplishments over the last ten years. John McElroy was the father of CEOS, leading the remote sensing discussions within the G-7 context and chairing the original meeting. Jennifer Clapp and Ken Hodgkins worked with me at NOAA in setting up that first meeting. The second plenary was hosted by ESA, and Bob Pfeiffer was instrumental in securing ESA's commitment to CEOS. Several years later, Bob was also key in defining the concept for the CEOS secretariat and working with the US and Japan to develop the secretariat terms of reference which were adopted in London.

The Canadian Space Agency hosted the 3rd CEOS meeting in Ottawa, led by Ed Langham. INPE, led by Marcio Barbosa, hosted a seminal CEOS plenary at which we decided to establish a role for Affiliates. The origin of this idea was a harsh reaction by a representative of one of the international programs who was invited to give a brief presentation to the CEOS meeting and said it was not worth a trip to Brazil to have five minutes on the agenda. That got our attention, and we realized that we needed these international organizations to be more than just occasional presenters, but to be integrally part of all CEOS activities.

Arthur Pryor and Dave Williams gave CEOS a big boost in 1992, linking it to the UNCED conference in Rio. Building on other European initiatives to bring environmental agencies together with space agencies, the UK hosted an interim meeting in addition to the Plenary, and produced a splendid CEOS "Handbook" that was distributed at UNCED. BNSC deserves credit for starting the CEOS Dossier, an invaluable tool that we all recognize as an important CEOS product. In the secretariat, Yukio Haruyama, Chu Ishida, and Miss Misawa and ESA's Huw Hopkins joined NASA and NOAA representatives in forming a strong team to support CEOS. Last year STA and NASDA worked tirelessly to support several CEOS meetings and to develop both the CEOS newsletter and the applications dossier. Volker Liebig and Heinz Seipel and their staff devoted great time and effort preparing this year's Plenary and User Requirements Workshop as well. And on the U.S. side, I must recognize Brent Smith and Linda Moodie of NOAA and Peter Backlund of NASA, all of whom have been invaluable colleagues of mine in all aspects of CEOS development.

Besides the Plenary activities, the Working Groups have demanded a lot of effort and dedication over the last ten years. At NOAA, the Working Group on Data has had several chairpeople, starting with Bruce Needham, me, Greg Hunolt, Mike Mignogno, and now Levin Lauritson. Betty Howard provided the secretariat support to the WGD for most of that time, although Jeff Maclure started in that role and Jean Schiro-Zavela provides that function now. ESA was the original host for the Working Group on

Cal/Val, with Guy Duchossois as chairman. CCRS took over a few years ago, with Dr. Susan Till, the current chairperson.

Without the dedication and hard work of all these people and their respective organizations, CEOS would not have much to reflect on. But fortunately, agency managers and individuals have believed in the idea that two heads are better than one, and only occasionally fallen prey to the counterargument that too many cooks spoil the broth. Indeed, here we are with quite a proud history, in my opinion.

Although my assigned topic is the first ten years, I would like to look ahead a bit as well. We have only just begun. We have created an organization, filled it with many hardworking and dedicated people, and developed relationships among us. This is perhaps the most significant accomplishment. Aside from the formal meetings of the Plenary or Working Groups, we have all developed a much deeper awareness of what other agencies are doing and we have created networks of contacts among us to share information, to ask questions, and discuss ideas. Not everything takes place in formal sessions or among all members.

As an example of our acceptance, NASA initially was rather lukewarm to the idea of CEOS in 1984. By 1993 when Dr. Tilford was leaving NASA and briefing Dr. Kennel, he told Charlie that if you only do one thing internationally in your first year, you must go to CEOS. We are now recognized as the place to be, the

forum for addressing cross-cutting Earth observation issues, the opportunity for dialogue and exchange. In planning future Plenaries, in fact, we should deliberately leave some extra time for the multiple side meetings that inevitably need to occur and are squeezed into quick lunch hours or late evenings.

We know some of the issues ahead. We do not know exactly what we will be doing 10 years from now. It seems inevitable, and indeed desirable, that there be some more formalization of the commitments of various nations to long-term observation of the Earth. We are in an exciting period of research and development, demonstrating techniques and investigating basic processes of the Earth to know what can be observed, with what accuracy, and how to use the results in analytical and predictive models. Some weather monitoring capabilities are clearly operational and at the point of being taken for granted by the worldwide community. Many new systems for ocean, land, and atmospheric remote sensing are at various stages of development and acceptance. As these systems mature and are evaluated, some will be candidates for operational implementation as well. Governments, in a period of tight budgets need to show societal benefits from large investments. They are defining their strategies in both research and development, and in environmental monitoring with this need in mind. The international nature of future long-term observing capabilities is inevitable. How long-term capabilities will be defined, implemented, and managed is a key question for the coming decade. How do we learn from what we

have done, both individually and collectively, and make sure that the limited resources each of our nations has to contribute gives the most benefit to our citizens and the rest of the world.

CEOS clearly has a role to play in this debate. It is up to us to decide what that role will be, and it surely will evolve over time. CEOS is so large, and has such a variety of members and Affiliates, that collective action in this forum must be voluntary, based on the particular considerations each agency must make. CEOS could serve as the preparatory forum for a more formal institutional arrangement with legally binding relationships, once the way forward is more clearly articulated. CEOS itself could evolve into that more formal institution, or we may never go beyond best efforts, voluntary terms.

However we proceed, we should take pride in the fact that the first ten years of CEOS have cleared a path and established a strong foundation on which we can build with confidence, friendship, and success.

Thank you.

(Lisa Shaffer)