CEOS

Committee on Earth Observations Satellites

December 9-11, 1992

London, United Kingdom

Minutes of the Sixth CEOS Plenary Meeting

FINAL
25 MAR 1993

CEOS-6

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THE SIXTH MEETING OF THE COMMITTEE ON EARTH OBSERVATIONS SATELLITES (CEOS) WAS HELD IN LONDON, UNITED KINGDOM, DECEMBER 9-11, 1992, HOSTED BY THE BRITISH NATIONAL SPACE CENTRE (BNSC). IN ADDITION TO THE HOST, THE FOLLOWING ORGANIZATIONS ATTENDED:

- **Members**
  - Canadian Space Agency (CSA)
  - Centre National d'Etudes Spatiales (CNES)
  - European Space Agency (ESA)
  - Indian Space Research Organization (ISRO)
  - Science and Technology Agency of Japan (STA)
  - National Aeronautics and Space Administration (NASA)
  - National Oceanic and Atmospheric Administration (NOAA)
  - Agenzia Spaziale Italiano (ASI)
  - Deutsche Agentur fur Raumfahrtangelegenheiten (DARA)
  - Commonwealth Scientific and Industrial Research Organization (CSIRO)
  - European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
  - Swedish National Space Board (SNSB)

- **Observers**
  - Canada Centre for Remote Sensing (CCRS)
  - Commission of the European Communities (CEC)
  - Norwegian Space Center (NSC)

- **Affiliates**
  - International Council of Scientific Unions (ICSU)
  - International Geosphere-Biosphere Program (IGBP)
  - Intergovernmental Oceanographic Commission (IOC)
  - World Climate Research Program (WCRP)
  - World Meteorological Organization (WMO)
  - United Nations Environment Program (UNEP)
  - Global Climate Observing System (GCOS)
  - Global Ocean Observing System (GOOS).

In written communiqués, the Brazilian member Instituto Nacional de Pesquisas Espaciais (INPE) and the New Zealand observer Crown Research Institute (CRI) apologized for their inability to attend the Plenary session.

Serving as Chairman, Mr. A. Pryor/BNSC opened the meeting and greeted all the delegates. He welcomed representatives from GCOS and GOOS, who were attending as affiliates for the first time. He greeted the UNEP delegate as well, noting UNEP's first appearance at a Plenary meeting as a CEOS affiliate. Attending as prospective members were representatives from the Russian Space Agency (RSA), the Committee for Hydrometeorology and Environment Monitoring of the Ministry for Ecology and Natural Resources of the Russian Federation (ROSCOMGIDROMET), the Chinese

Academy of Space Technology (CAST), and the National Remote Sensing Center of China (NRSCC). The Belgian Science Policy Office (SPO) attended as a prospective observer (see Document 6-1, Participants List).

ADOPTION OF THE AGENDA

The agenda was adopted as in paper (CEOS, p. 92.1, rev.2). Mr. Pryor noted that two agenda items for the sixth Plenary - the Dossier and affiliate workshop - extend from the interim CEOS Plenary meeting held in April 1992. The data policy discussions extend from the fifth CEOS Plenary held in December 1991. Mr. Gibson/CEC drew the members' attention to the CEC paper, "Issues in Earth Observation Data Policy for Europe," as an important European document relating to the CEOS data policy discussions. It was agreed that the papers would be taken in the following order: items 1, 2, 3, 6, 9, 8, 10, 4, 5, 7, 11, 12.

RECORD OF THE FIFTH PLENARY AND REVIEW OF ACTIONS

The minutes of the fifth Plenary meeting were approved. Dr. Williams/Secretariat noted that all actions from the fifth Plenary have been closed. Dr. B. Smith/NOAA requested that members who have not responded to Action 5-2 need to provide points-of-contact for the Working Group on Data (WGD) Catalog Subgroup.

MEMBERSHIP ISSUES

BNSC had distributed the letters of application from RSA and ROSCOMGIDROMET to all members with the original papers. Late membership applications were also received from CAST and NRSCC (see Document 6-3, Package of Late Papers). All four applicant agencies affirmed in their membership requests their commitment to the CEOS Terms of Reference, including the requirement to make data available on a nondiscriminatory basis to the international community. At Mr. Pryor's invitation, the Chinese and Russian representatives provided summary descriptions of their agencies' roles, responsibilities, and programs. The Plenary approved the membership requests from RSA and ROSCOMGIDROMET. Since the requests from the Chinese agencies had been received late and the organizations were less well-known to CEOS members, these requests were conditionally accepted, pending written confirmation by CEOS members, by February 20, 1993.

> **ACTION 6-1.** New Secretariat to confirm members' approval of the CAST and NRSCC applications for membership.

The Plenary approved the late application for observer status from the Belgian Science Policy Office (SPO), pending written confirmation by members by February 28, 1992.

> **ACTION 6-2.** Secretariat to confirm members' approval of the SPO application for observer status.

A late application was received from the United Nations Office of Outer Space Affairs (UNOOSA) for affiliate status. It was agreed that action on this request be deferred so that members could consider it in light of the requirements for affiliate status.

ACTION 6-3. Secretariat to poll members regarding their position on the UNOOSA's application for affiliate status.

CEOS PROPOSALS

CEOS Secretariat Proposal

Dr. Pfeiffer/ESA summarized the report of the Secretariat task force which considered alternatives for organizing a permanent CEOS Secretariat (see Document 6-3). The task force recommended a Secretariat composed of agency representatives from ESA, NASA/NOAA, and STA/NASDA, who would provide liaison with other CEOS members in their geographic area. The Plenary endorsed the recommendations of the task force, and adopted changes in the CEOS Terms of Reference and the Terms of Reference of the Secretariat. A full description of the task force's recommendations and the new Terms of Reference for CEOS and the Secretariat are contained in the task force report in Document 6-3. The revised CEOS Terms of Reference are attached as Document 6-25.

CEOS Newsletter Proposal

Japan offered to develop a CEOS newsletter, as part of the revised Secretariat duties, to facilitate increased global awareness of space programs. The Plenary endorsed the idea of initiating the CEOS newsletter on a pilot basis, and accepted Japan's offer to assume responsibility for the newsletter.

ACTION 6-4. STA/NASDA to present its plans for the CEOS newsletter before or at the next Plenary meeting.

CEOS Yearbook Proposal

The Plenary adopted the proposal to continue publication of a CEOS yearbook, similar to the document prepared by BNSC last year for the United Nations Conference on Environment and Development (UNCED).

ACTION 6-5. ESA to present for consideration before the next Plenary meeting suggestions as to the form, content, circulation, and pricing requirements for the CEOS yearbook.

1992 CEOS CONSOLIDATED REPORT

The Plenary accepted NASA's submission of the CEOS Consolidated Report.

ACTION 6-6. CEOS members to provide comments and corrections to the CEOS Consolidated Report to Ms. Shaffer/NASA by January 31, 1993.

DATA POLICY

CEOS Data Exchange Principles

Dr. Revah/CNES presented the results of the October 1992 meeting in Paris on data exchange principles, which extended from the 1991 Abingdon meeting. The *ad hoc* meeting on data policy recommended to the CEOS Plenary two primary actions: 1) approval of amendments to the data exchange principles approved at the last CEOS Plenary, and 2) procedures to implement those principles (see Document 6-23). After some discussion, the following revisions to the previously agreed CEOS principles were approved (changes since the last Plenary in capital letters):

Resolution on Satellite Data Exchange Principles in Support of Global Change Research

Recognizing that the members of CEOS are actively involved in supporting global change/climate and environmental research and monitoring efforts of the international scientific community, as well as pursuing other uses of Earth observations data such as local/regional research, operational environmental monitoring, and commercial;

RECOGNIZING THE INVESTMENTS MADE BY GOVERNMENTS AND INTERNATIONAL AGENCIES IN SUPPORT OF GLOBAL CHANGE/CLIMATE RESEARCH AND ENVIRONMENTAL RESEARCH AND MONITORING AND THE VALUE OF NON-SATELLITE DATA TO THESE PROGRAMS;

TAKING INTO ACCOUNT THAT THE ACQUISITION, PROCESSING, AND SUPPLY OF DATA, ESPECIALLY SPACE DATA, INVOLVE MAJOR INVESTMENTS, AND THAT DATA HAVE VALUE;

RECOGNIZING THAT THESE INVESTMENTS AND VALUES SHOULD BE RESPECTED BY DATA SUPPLIERS AND USERS;

RECOGNIZING THE EXISTENCE OF VARIOUS POLICY AIMS SUCH AS MAXIMIZING THE USE OF THE DATA FROM ALL SOURCES AND SHIFTING THE FUNDING RESPONSIBILITY FOR CERTAIN REMOTE SENSING SYSTEMS TO USERS OR OTHER SOURCES;

Aware that success in global change/climate and environmental research and monitoring requires a continuing commitment to the establishment, maintenance, validation, description, accessibility, and distribution of high-quality long-term data sets, many of which rely on space borne observations;

Anticipating the potential benefits of compatible policies and mechanisms for data exchange in obtaining access to global data;

REAFFIRMING THE COMMITMENT OF CEOS MEMBERS TO THE GENERAL PRINCIPLE OF NONDISCRIMINATORY ACCESS TO DATA;

RECOGNIZING THE IMPORTANCE OF APPROPRIATE LEGAL REGIMES FOR THE EXCHANGE OF REMOTELY SENSED DATA;

RECOGNIZING THE COMMON GOAL OF PROVIDING DATA TO GLOBAL CHANGE RESEARCHERS FROM ALL MISSIONS ON A CONSISTENT BASIS REFLECTING PRIMARILY THE COST OF FILLING THE USER REQUEST; RECOGNIZING ALSO THAT THE CONSTRAINTS OF THE MISSION OPERATIONS AND OF AVAILABLE RESOURCES MAY REQUIRE DIFFERENT MECHANISMS FOR DATA EXCHANGE/SHARING TO BE FOUND FOR DIFFERENT PROGRAMS;

CEOS members endorse the following principles relating to SATELLITE data exchange in support of global change/climate and environmental research and monitoring and agree to work toward implementing them to the fullest extent possible. Principles for data exchange in support of other data uses beyond global change/climate and environmental research and monitoring will be developed for CEOS endorsement as a next step.

1. Preservation of all data needed for long-term global change/climate and environmental research and monitoring is required.

2. Data archives should include easily accessible information about the data holdings, including quality assessments, supporting ancillary information, and guidance and aids for locating and obtaining the data.

3. International standards, including those generated by the CEOS Working Group on Data, should be used to the greatest extent possible for recording/storage media and for processing and communication of data sets.

4. Maximizing the use of satellite data is a fundamental objective. An exchange/sharing mechanism among CEOS members is an essential first step to maximize use.

5. NONDISCRIMINATORY ACCESS TO SATELLITE DATA BY ALL USERS FOR GLOBAL CHANGE/CLIMATE AND ENVIRONMENTAL RESEARCH AND MONITORING IS ESSENTIAL. THIS SHOULD BE ACHIEVED WITHIN THE FRAMEWORK OF THE EXCHANGE AND SHARING MECHANISMS SET UP BY CEOS MEMBERS.

6. Programs should have no exclusive period of data use. Where the need to provide validated data is recognized, any initial period of exclusive data use should be limited and explicitly defined. The goal should be release of data in some preliminary form within 3 months after the start of routine data acquisition.

7. Criteria and priorities for data acquisition, archiving, and purging should be harmonized.

Dr. Revah then reviewed three general mechanisms for implementing the CEOS data exchange principles recommended by the delegates to the Paris *ad hoc* data policy meeting. The Plenary endorsed the general mechanisms and, in so doing, agreed that the WGD should accomplish the tasks identified therein. In his report, Dr. Revah presented the proposed approach to implementing Principle 4 that called for: 1) Data providers to submit standard product catalogs to the CEOS International Directory Network (IDN); 2) data requirements to be identified by ad hoc committees of the relevant International Research Programs; 3) selection of global change researchers chosen through peer review or similar process within the context of the research priorities of relevant global change programs; 4) written agreements including protection of data rights and requirements for publication to be signed by selected researchers and their sponsoring institutions; and 5) sharing of data among selected users. The Paris meeting participants also recommended that pilot projects be identified to begin testing the effectiveness of the data exchange principles and procedures to implement them, in particular funding schemes for the purchase of commercial data and provision to selected global change researchers at the cost of filling the request. It was recommended that such a pilot project be initiated, among proposals to be sought from the IGBP/DIS and be managed by a task force led by the CEOS Secretariat. To be representative, this pilot project should involve high resolution as well as other types of data and combine data from space programs managed by Europe, Japan, and North America. The Plenary approved the full set of recommendations for the satellite data exchange principles in support of global change research and introduced minor changes in the general mechanisms for the execution of these principles. These general mechanisms are attached to the present minutes.

> ACTION 6-7. WGD to accomplish the tasks contained in the report of the October 1992 *ad hoc* data policy meeting, and inform the Plenary of the status of those activities at the next Plenary meeting.

The delegates considered whether there were further data policy issues that CEOS should consider next. Several members supported the idea of exchanging information about commercial data distribution mechanisms and plans, but noted that it would not be appropriate for CEOS to create data exchange principles for commercial distribution, as there are other forums for such work. The discussion in Paris included preliminary consideration of environmental monitoring and other operational data use, but delegates recommended that this issue be deferred until more agencies are prepared to address it. It was agreed that Japan, as the next CEOS Chair, consider the progress to date in planning the next *ad hoc* data policy meeting for April-May 1993. This meeting would address discussion of implementation mechanisms for the CEOS global change research data policy, including the definition and start of work on a pilot project. Regarding the pilot project, it was suggested that IGBP Data and Information System (IGBP-DIS) efforts to identify high-resolution land data sets with the help of WGD may provide useful experience in implementing the data exchange principles.

> ACTION 6-8. STA and the National Space Development Agency of Japan (NASDA) to host a follow-on *ad hoc* meeting on data policy to continue discussion of implementation mechanisms, including the definition and start of work on a pilot project. The proposed schedule is to convene the meeting in April-May 1993, and to report on status at the next CEOS Plenary meeting.

WORKING GROUP REPORTS

Report of the CEOS Working Group on Calibration/Validation

Dr. Susan Till/CCRS summarized the accomplishments of the Working Group on Calibration and Validation (WGCV) (see Document 6-18). A detailed report on WGCV activities in 1992 and plans for 1993 was distributed before the Plenary meeting. The Plenary endorsed the following key recommendations of WGCV:

- Members, affiliates, and observers to support resource requirements to cover attendance and maintain continuity of participation in WGCV and its subgroups. This includes covering the costs of travel and electronic mail communications of WGCV participants.

- Members to consider supporting activities similar to the NOAA and NASA pathfinder data set activities.

- A calibration and validation section to the CEOS Dossier on ground infrastructure should be added. The section could contain an overview of calibration and validation procedures for primary sensors in use, a list of major facilities in use, current and planned calibration and validation campaigns, current and future needs in calibration and validation, and other appropriate points.

- Members, affiliates, and observers to consider establishing a set of permanent ground test sites for multiagency use in long-term sensor calibration and data validation. There is also a need to set up a database on selected test sites once they are established.

- Members, affiliates, and observers to encourage use of CEOS data formats.

Dr. Till will convey other particular recommendations of WGCV to the appropriate agencies.

> **ACTION 6-9.** WGCV to proceed with the task of defining the content of the new calibration/validation section to volume 3 of the Dossier, and to provide a detailed outline through the Secretariat.
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> **ACTION 6-10.** WGCV to provide specifications and costs on proposed ground test sites for calibration/validation through the Secretariat.

Report of the CEOS Working Group on Data

Mr. Levin Lauritson/NOAA reported on the accomplishments of the Working Group on Data (WGD) (see Document 6-19). A detailed report on WGD activities in 1992 and plans for 1993 was distributed at the meeting (see Document 6-20). The Plenary endorsed the following key recommendations of WGD for its 1993 program:

- Prepare Directory Interchange Format (DIF) generation plans according to the outline provided; WGD will prepare a consolidated DIF generation plan for CEOS.

- Support by members, affiliates, and observers of travel funding for representatives participating in the CEOS IDN effort, including those from non-CEOS agencies in developing countries where possible.

- Support for the implementation of the Global Land 1-km Base Elevation (GLOBE) Project Plan.

- Encourage members to enter non satellite data into IDN.

ACTION 6-11. WGD attendees of CEOS member agencies to provide DIF Generation Plans to the WGD Chairman by April 15, 1993. WGD to prepare a Consolidated DIF Generation Plan and report progress on this activity at the next CEOS Plenary.

It was noted that CEC began a study on a European Centre for Earth Observations, which will be completed in July 1993; CEC will coordinate these activities with WGD.

AFFILIATE WORKSHOP

CEOS affiliates, representing international and intergovernmental scientific research groups and programs, presented their requirements for global change data and, in some cases, assigned priorities to their requirements. The following is a summary of those requirements.

United Nations Environment Programme

Mr. Gwynne summarized UNEP's most important data requirements. All UNEP activities that involve Earth observation satellite systems are carried out within the United Nations' Earth Watch Program, which is engaged in environmental monitoring and assessment. UNEP's requirements hinge on the Global Environmental Monitoring System (GEMS), a United Nations program to collect information on the environment and natural resources. High-priority data requirements include global coverage, high-quality global change data sets to be used to validate global change models, long time series data, manageable data volumes, reliable sensors, low cost data, and the ability to compare observations from different systems. High spatial resolution is not as important as are other requirements. In the next year, UNEP will be analyzing its requirements further, particularly in the area of terrestrial ecosystems research, and will provide more information to CEOS later. It was noted that UNEP's Global Resource Information Database (GRID) data can be used with other global change research data and can be used to improve user access to data.

International Council of Scientific Unions

Dr. Woods summarized ICSU's data requirements (see Document 6-6). ICSU has its own research programs, including IGBP and the World Data Centers, and is co-sponsoring scientific research programs, such as the World Climate Research Programme (WCRP), and observing system development programs, such as GCOS and GOOS. Over time, the research focus of ICSU programs has evolved from a discipline-specific orientation to a multidisciplinary one, and this was accompanied by requirements for increasing resolution and accuracy. WCRP is looking at atmospheric physics, ocean dynamics, and land physics. Likewise, IGBP is multidisciplinary in that it involves studies of atmospheric chemistry and ocean and land physics, chemistry,

and biology. Requirements for spatial resolution have increased in scale from 1,000 to 100 to 10 km, and requirements for accuracy have increased from 100 to 10 to 1 W/m2. These more stringent requirements should be analyzed in terms of the capabilities of remote-sensing systems. The requirement for improved accuracy, in particular, presents technical challenges for space and ground segments.

Global Climate Observing System

Sir John Houghton, chairman of the GCOS Joint Scientific and Technical Committee, described the requirements of GCOS (see Document 6-7). GCOS is concerned with the whole climate system - oceans, atmosphere, land, and the interactions among them - and with improving climate modeling. The key objective of GCOS is to define and specify an operational climate observation system. The CEOS Dossier is a good starting point for identifying GCOS requirements; climate is extensively covered in the current and planned space programs of CEOS members. GCOS relies heavily on sea surface temperature data, such as that provided by instruments on the Earth Remote-Sensing Satellite-1 (ERS-1). Other important measurements are ocean surface parameters, temperature, wind surface stress, and color. There is a need for data to be openly available and provided in a form that enables assimilation of data into climate models. There is also a need to fill the gap between collecting data and feeding it into an operational climate observing system. Other specific needs not addressed in current plans are improved temperature and water vapor profile accuracy and resolution, better precipitation measurements, and enhanced surface wind velocity accuracy and coverage. In addition, current operational programs do not provide tropospheric wind profiles, better tropospheric aerosol data, or global precipitation.

Dr. Houghton invited CEOS participation in GCOS working groups being set up to define and establish GCOS. CEOS is already represented on the GCOS steering committee, and no decision on formal Working Group membership was made. GCOS should request membership where particular skills are required to complete their work.

World Climate Research Program

Dr. Morel provided a two-page chart enumerating WCRP satellite data requirements (see Document 6-8). The success of WCRP depends upon good meteorological observations, especially from the World Weather Watch Program. WCRP needs, in priority order, an upgraded global meteorological observing system; improved data on cloud-radiation feedback; satellite data to complement the surface based network for determining global precipitation and soil wetness; a Global Energy and Water Cycle Experiment (GEWEX) dedicated rain radar; and a set of sensors to provide data necessary for research in ocean dynamics and chemistry, including active microwave scatterometers, multispectral/multidirectional imaging radiometers, and an Ocean Topography Experiment (TOPEX)/Poseidon follow-on altimeter.

World Meteorological Organization

Mr. Hinsman provided a prioritized list of 20 surface parameters and 10 upper air parameters required for maintaining the WMO's global observing system (see Document 6-9). These requirements are to be presented to the next session of the Executive Council in June 1993 for approval. Concerning surface parameters, Mr. Hinsman noted that multi-purpose imagery is most important for many applications; however, many hydrological parameters cannot be determined from space. For upper

air parameters, WMO needs advanced sounders; lack of wind profiling capability in the tropics and over oceans are critical deficiencies. *In situ* measurements are also important for calibration and validation. Sea surface pressure, which cannot be determined through satellite data, is the second most important surface measurement. Wind profiles, the highest priority upper air parameter, are not obtainable from satellite data. To upgrade the global observing system, WMO would need wind profile measurements requiring new lidar sounding techniques, an advanced vertical sounder, and new technology to measure atmospheric pressure. Mr. Hinsman also prepared a list of instrument types that would satisfy the WMO requirements and emphasized that there are many types of instruments required by both WMO and WCRP.

Global Ocean Observing System

Mr. Fleming presented a preliminary summary of requirements for GOOS (see Document 6-10). The GOOS Program proposes to develop an operational ocean observing system. Though still in the planning stage, the first scientific and technical meeting of experts is scheduled for March 1993. Many scientists are participating now in program definition and design. Ocean precipitation and ocean surface salinity are critical measurements, the technical feasibility of which are under study at present. GOOS is particularly concerned with developing and improving data flow and user access to data. TOPEX/Poseidon and Applications and Research Involving Space Technologies Observing the Earth's Field from Low Earth Orbiting Satellite (ARISTOTELES) are key missions for GOOS. Mr. Fleming could not commit to making a list of residual requirements similar to the WCRP/WMO list, as he needs to wait until after the scientific committees meet to gain a better understanding of user requirements.

Intergovernmental Oceanographic Commission

Mr. Withrow summarized IOC's requirements (see Document 6-11), which include needs for atmospheric sounders and a tropical rainfall sensor; improved scatterometers, particularly to derive wind direction; altimeters; ocean color data; and improved passive microwave sensors. There may be data gaps after 1997 because the scatterometer and altimeter were not approved for flight on the 1997 polar platform. Altimeters are required to follow flight of TOPEX/Poseidon and Geosat; ARISTOTELES-type data is needed as well. It also was noted there may be many overlaps among WCRP, WMO, and IOC requirements.

International Geosphere-Biosphere Program

Dr. Rasool described the IGBP program and requirements (see Document 6-12). The IGBP's core projects include a data and information system and research programs in atmospheric chemistry and biology of the land surface and oceans, with global modeling activities that integrate the projects. IGBP priorities center on development of new instrumentation for studying the chemistry of the lower atmosphere, and measuring the physics, chemistry, and biology of the oceans and land. The scale is small and the accuracy requirements are high. The time scale of the measurements must be long term, on the order of decades. For oceans, ocean biology is the highest priority, with sea surface temperature and surface wind field being second and third priorities. For land measurements, vegetation type, structure, and function are the most important; land surface temperature, surface albedo, and surface topography measurements are also needed. Requirements for lower atmosphere data include trace gases and tropospheric aerosols.

Report of the User Meeting in Bonn, November 1992

Mr. von Gadow/German Ministry of the Environment summarized the results of the European Conference on the Use of Satellite Data for Environmental Purposes held November 16-17, 1992, in Bonn, Germany (see Document 6-13). The European Conference was a follow-on to the April 1992 meeting among senior environmental officials and CEOS members. The key product of the conference was a declaration calling for improved coordination with the international community through the CEOS affiliate process and increased involvement of the European Commission in coordinating the requirements of environmental monitoring users whom they represent. A working group will prepare a requirements document comparable to the CEOS Dossier, and a report of the requirements analysis it conducts. The report is expected to identify priorities and potential gaps and complementarity in data to be provided by approved and planned satellite missions. The report is expected to be finished in the autumn of 1993, and a follow-up conference is planned thereafter.

The members welcomed the presentations by the affiliates which provided a useful survey of the activities, data needs, and priority data requirements of global environmental research programs. They also welcomed the intention of the European environmental users to develop their own Dossier of European regional data needs and invited representatives of other regions to do likewise.

CEOS DOSSIER

Dr. Williams summarized the content and status of the three volumes of the CEOS Dossier. The essential purpose of the Dossier is to serve as a basic point of reference for the CEOS Plenary, to help members understand each others' space and ground programs, and to facilitate discussion with user affiliates as to their requirements. The Dossier was prepared with the needs of the user and scientific community in mind, and CEOS will benefit from comments on the Dossier from those groups. Dr. Williams noted that CEOS is collecting the requirements of affiliate users at present; analysis of these requirements is the next step.

Mr. Pryor invited comments on the Dossier, particularly volumes 1 and 2, and whether the structure of volume 3 is a useful one. Many members expressed appreciation for the fine work of BNSC in preparing the Dossier. The members recognized the value of the three-volume Dossier as an operational tool for CEOS members, observers, and affiliates.

Mr. Withrow/IOC suggested that the Dossier be produced on another, less bulky media, perhaps CD-ROM. Dr. Tilford repeated Dr. Revah's point that the science user is the endpoint of the process, and noted that it would be helpful to these users to add descriptions of integrated, long-term data sets, available from CEOS members, to the Dossier. He encouraged the new CEOS members, observers, and affiliates to contribute information on their programs to the Dossier. It was also noted that all parts of the ground segment of CEOS members should be included. It would be impracticable to add the affiliates at this stage.

> **ACTION 6-12.** New members, affiliates, and observers are invited to submit contributions to the Dossier, giving details of their missions and ground infrastructure, by January 31, 1993.

ACTION 6-13. Members, affiliates, and observers to submit factual corrections to the Dossier, particularly amendments to volume 3, by January 31, 1993.

ACTION 6-14. Secretariat to distribute a final version of the first edition of the Dossier by early 1993, and to initiate procedures for its systematic update.

Dr. Duchossois/ESA informed the Plenary of the status of the ESA long-term Earth observation program (see Document 6-14). He noted the November 1992 ESA Ministerial's endorsement of the ESA polar platform program, and described the objectives and payloads of the POEM-ENVISAT and -METOP platforms and the Meteosat Second Generation (MSG) Program, as well as plans for increasing ground segment capabilities. Mr. Morgan clarified that EUMETSAT and ESA have agreed that EUMETSAT will take over long-term continuity of the MSG and METOP polar platform programs.

Mr. Haruyama/NASDA presented the content and status of Japan's long-term Earth observation program (see Document 6-15). One study undertaken by Japan is based on the CEOS Dossier; it involves balancing user requirements with space measurements and space and ground segment plans. Japan's future strategy is based on establishing an ideal international Earth observation system through coordination with appropriate organizations, including CEOS, improvement of the Japanese ground system, tracking local environmental phenomena, and disaster monitoring in the Asia-Pacific region.

Dr. Tilford outlined changes that occurred at NASA since the last CEOS meeting (see document 6-16), including rescoping of the Earth Observing System (EOS) Program, organizational changes, and addition of Landsat to the overall mission. The EOS rescoping reduced the program's budget to 8 billion U.S. dollars through the year 2000 and maintained the June 1998 launch for the EOS-AM1 spacecraft. There will be a common spacecraft bus after the EOS-AM1 platform (i.e., for the EOS-AM2/3, -PM, and -CHEM series). Some science was gained in the rescoping through use of multiple platforms, but the number of instruments decreased. The biggest loss is the High-Resolution Imaging Spectrometer (HIRIS) instrument; however, the addition of Landsat maintains the data rate at about the same level. Regarding the EOS Data and Information System (EOSDIS), a contract will be issued in January 1993 for the EOSDIS Core System. Version 0 is scheduled for completion in mid-1994, and Version 1 by the end of 1996. Dr. Tilford also summarized the impact of the EOS Program rescoping on science and applications requirements.

Dr. Bizzarri/ASI described the Laser Geodynamics Satellite II (LAGEOS II) mission and noted that the next LAGEOS mission has been canceled. He also drew members' attention to a letter to CEOS from Professor Guerriero/ASI. The letter describes the recommendations of the International Workshop on Application of Space Technologies to Disaster Management (see Document 6-17).

DISCUSSION OF AFFILIATE PRESENTATIONS, CEOS DOSSIER, AND ASSESSMENT OF NEEDS AND PRIORITIES

Dr. Williams summarized the process underway to obtain and analyze user requirements in terms of the space and ground segments to be provided by the CEOS system operators (see Document 6-21). The context for the requirements process is the

affiliates' needs for space data. System operators provide satellites, data reception and processing, and data products which flow to the research programs as data input. Research programs process the data, model and assimilate it, and provide information as output. There seems in some instances to be a barrier between transfer of data products by system operators and receipt as data input by the science community.

Extensive discussion ensued on how to balance space and ground segment planning, development, and operations with user requirements. It was generally agreed that user requirements evolve over time, and that CEOS needs to make requirements analysis an ongoing task. Dr. Tilford noted that, in the U.S. and other countries, programs are justified and funded, in part, based on the stated requirements of science users. He felt that CEOS needs to assess integrated user requirements against space and ground assets on an annual basis; this is also one way to maximize the benefits of Earth observations systems. It was noted that the affiliates' requirements up to now have been stated in terms of data and sensors required; it may be more helpful if requirements were stated in terms of measurement needs to accomplish basic scientific objectives. The members could then translate this to sensor and/or new data products as appropriate. It was also noted that the ground segment Dossier begins to provide information about data products and the quality of those products, but the Dossier may need to be refined to specify requirements within specific parameters. In addition, more information is needed about the possible interrelationships among data sets. As a first step, it was decided that the affiliates should assess the adequacy of the data products described in the Dossier and provide comments back to CEOS members.

Mr. Pryor noted that affiliates were not being asked to develop a formal statement of prioritized requirements hammered out at the expense of one science discipline over another; rather, the affiliates were being asked to derive broad concepts and identify areas of overlap in the requirements. Space agencies can improve their programs by taking global user requirements into account, and by addressing data networking and distribution needs across established infrastructures. Dr. Williams agreed and noted that members are trying to identify requirements common to all programs of the affiliates, and those unique to individual programs. Dr. Morel agreed that affiliates should be able to settle on informal guidance concerning user requirements. Dr. Revah suggested that, since the ground segment Dossier describes identified data products based on known user requirements, attention should be focused on future requirements and data products to satisfy them. It was recognized that it is important for the space agencies to evaluate affiliates' requirements against planned systems and provide feedback on deficiencies and overlaps.

> **ACTION 6-15.** Affiliates and observers to consider the definition of data products in volume 3 of the CEOS Dossier and to submit comments to the Secretariat by May 30, 1993. Comments should indicate the extent to which the products meet, or fail to meet, currently identified requirements.

> **ACTION 6-16.** Affiliates and observers to pursue the possibility of greater coordination among themselves in the identification and formulation of their needs in relation to satellite instruments and data flows with a view to presenting a common view at the next CEOS Plenary meeting.

ACTION 6-17. Affiliates and observers to join members in a user requirements workshop to be organized by STA/NASDA, as the incoming CEOS Chair, in mid-1993. The workshop would address future mission priorities and data needs beyond the currently projected generation of missions.

ACTION 6-18. Members to consider the need for further volumes of the CEOS Dossier which might include, for example, research programs other than those related to global environment and applications such as resources management.

ACTION 6-19. Canada to suggest an additional volume of the Dossier for consideration at the next Plenary meeting.

SAFISY PROPOSAL

Mr. Pryor, the Chairman, noted that Minister Hubert Curien, Chairman of the Space Agency Forum on International Space Year (SAFISY), had requested in writing that CEOS take on oversight of ongoing SAFISY Earth science projects from the SAFISY Panel of Experts on Earth Science and Technology, as recommended by the Panel in its final report (see Document 6-3). The IGBP and WCRP representatives noted the scientific desirability of continuing some of the projects.

It was noted by several members and agreed by the Plenary that project funding and decisions on continuing projects remained the responsibility of each CEOS member agency who has undertaken the sponsorship of a specific project. The Plenary agreed that CEOS oversight was appropriate and desirable for continuing projects. This would maintain the link between the projects and space agencies, and would permit CEOS members to coordinate their individual support of such projects as necessary.

ACTION 6-20. Secretariat to develop and circulate an implementation plan for CEOS oversight of SAFISY projects identified for continuation. The plan is to be circulated among CEOS members prior to the next Plenary.

FUTURE MEETINGS

Mr. Maruyama/STA confirmed STA/NASDA's plans to host the *ad hoc* data policy meeting in April-May 1993, and the CEOS Plenary November 15-17, 1993. Professor Stoewer confirmed DARA's interest in hosting the CEOS Plenary in 1994. Dr. Lindberg expressed CSA's interest in hosting the CEOS Plenary in 1995. Dr. Harris expressed CSIRO's interest in hosting the CEOS Plenary in 1996.

LIST OF DOCUMENTS

6-1 Participants List

6-2 Agenda (CEOS - P. 92.1 rev. 2)

6-3 Package of Late Papers

6-4 NASA - Land Remote Sensing Policy Act of 1992, Overview and Implementation Status (Tilford)

6-5 CEC - Issues in Earth observation data policy for Europe, Report of a working group, December 1992 (Gibson)

6-6 ICSU - IGBP Discipline, scale and accuracy (Woods)

6-7 GCOS - The Contribution of Satellite Observations to GCOS (report and presentation), and The Global Climate Observing System (brochure) (Houghton)

6-8 WCRP - Upgrading the Global Meteorological Observing System (Morel)

6-9 WMO - Historical Perspective for WMO Satellite Data Requirements (Hinsman)

6-10 GOOS - Global Framework - GOOS (viewgraph) (Fleming)

6-11 IOC - IOC Satellite Requirements (Withrow)

6-12 IGBP - Global Scale Satellite Data Requirements for the IGBP (Rasool)

6-13 European Conference on the Use of Satellite Data for Environmental Purposes on 16 and 17 November 1992 in Bonn (von Gadow)

6-14 ESA - ESA Earth Observations Long Term Programme (Duchossois)

6-15 NASDA - A Long-term Scenario on Japan's Earth Observation Plan, Report of Committee on Remote Sensing, October 5, 1992 (report and viewgraphs) (Haruyama)

6-16 NASA - EOS Program Overview (Tilford)

6-17 ASI - Recommendations from the International Workshop on the Application of Space Technologies to Disaster Management and IRIS - LAGEOS II (Bizzari)

6-18 CCRS - Report of the CEOS Working Group on Calibration and Validation (Till)

6-19 NOAA - Report of the CEOS Working Group on Data to the CEOS Plenary (presentation) (Lauritson)

6-20 NOAA - Report of the CEOS Working Group on Data to the CEOS Plenary (report) (Lauritson)

FINAL
25 MAR 1993

PARTICIPANTS LIST
Document 6-1

Name	Organization
Dr. B. Bizzarri	Agenzia Spaziale Italiano
Dr. A. Apling	British National Space Centre, DOE
Mr. M. Blackwell	British National Space Centre
Dr. C. Boalch	British National Space Centre
Dr. P. Curtis	British National Space Centre, Met O
Dr. G. Findlay	British National Space Centre
Prof. J. Harries	British National Space Centre, RAL
Ms. C. Losty	British National Space Centre, FCO
Mr. B. Plummer	British National Space Centre, MOD
Mr. A. Pryor	British National Space Centre
Mr. B. Purcell	British National Space Centre, NERC
Mrs. H. Shotter	British National Space Centre
Dr. G. Thomas	British National Space Centre
Mrs. L. Toora	British National Space Centre
Dr. D. Williams	British National Space Centre
Mr. L. Bronstein	Canada Centre for Remote Sensing
Dr. S. Till	Canada Centre for Remote Sensing
Dr. G. Lindberg	Canadian Space Agency
Dr. H. Teunissen	Canadian Space Agency, AES
Mrs. M. Chevrel	Centre National d'Etudes Spatiales
Dr. I Revah	Centre National d'Etudes Spatiales
Prof. P. Houren	Chinese Academy of Sciences
Mr. Y. Weiyuan	Chinese Academy of Space Technology
Mr. P. Churchill	Commission of the European Community/JRC
Mr. R. Gibson	Commission of the European Community/EEA
Dr. R. Klersy	Commission of the European Community/JRC
Mr. C. Nicholas	Commission of the European Community
Mr. M. Paillon	Commission of the European Community
Mr. A. Bedritsky	Committee for Hydrometeorology and Environment Monitoring. Russia
Mr. A. Karpov	Committee for Hydrometeorology and Environment Monitoring, Russia
Dr. G. Harris	Commonwealth Scientific and Industrial Research Organization
Mr. A. Langner	Deutsche Agentur fuer Raumfahrtangelegenheiten
Dr. W. Mett	Deutsche Agentur fuer Raumfahrtangelegenheiten
Mr. M. Otterbein	Deutsche Agentur fuer Raumfahrtangelegenheiten
Prof. H. Stoewer	Deutsche Agentur fuer Raumfahrtangelegenheiten
Dr. von Gadow	Deutsche Agentur fuer Raumfahrtangelegenheiten

Mr. M. Dillon	ESYS
Dr. S. Howells	ESYS
Dr. A. S. Whitelaw	ESYS
Ms. S. Garcia-Castaner	European Organisation for the Exploitation of Meteorological Satellites
Mr. G. Lafeuille	European Organisation for the Exploitation of Meteorological Satellites
Mr. M. J. Lafeville	European Organisation for the Exploitation of Meteorological Satellites
Mr. J. Morgan	European Organisation for the Exploitation of Meteorological Satellites
Mr. J. Arets	European Space Agency
Mr. G. Duchossois	European Space Agency
Mr. P. Goldsmith	European Space Agency
Mr. H. Hopkins	European Space Agency
Mr. L. Marelli	European Space Agency
Mr. B. Pfeiffer	European Space Agency
Dr. D. Croom	Global Climate Observing System
Sir J. Houghton	Global Climate Observing System
Dr. N. Flemming	Global Ocean Observing System
Mr. K. Sridhara Murthi	Indian Space Research Organization
Mr. J. Withrow	Intergovernmental Oceanographic Commission
Dr. J. D. Woods	International Council of Scientific Unions
Dr. S. I. Rasool	International Geosphere-Biosphere Program
Dr. P. Williamson	International Geosphere-Biosphere Program
Dr. Y. Miyazaki	Ministry of International Trade and Industry
Dr. V. Saito	Ministry of International Trade and Industry
Mr. M. Yokota	Ministry of International Trade and Industry
Mr. P. Backlund	National Aeronautics and Space Administration/Y
Ms. M Blazek	National Aeronautics and Space Administration/ ESSO
Mr. G. Lutz	National Aeronautics and Space Administration
Ms. L. Shaffer	National Aeronautics and Space Administration/Y
Dr. S. Tilford	National Aeronautics and Space Administration/Y
Mr. W. Turner	National Aeronautics and Space Administration/IRD
Mr. J. V. Zimmerman	National Aeronautics and Space Administration
Dr. J. Hussey	National Oceanic and Atmospheric Administration
Mr. L. Lauritson	National Oceanic and Atmospheric Administration
Dr. J. Neilon	National Oceanic and Atmospheric Administration
Dr. B. Smith	National Oceanic and Atmospheric Administration
Mr. Z. Xintie	National Remote Sensing Centre, China

FINAL
25 MAR 1993

Mr. Y. Haruyama	National Space Development Agency of Japan
Mr. S. Yoshitomi	National Space Development Agency of Japan
Mr. G. Rosenberg	Norwegian Space Centre
Mrs. G. D. Strom	Norwegian Space Centre
Mr. Z. Haiping	Office of State Space Leading Group of China
Mr. Y. Milov	Russian Space Agency
Mr. Y. Zonov	Russian Space Agency
Mr. T. Maruyama	Science and Technology Agency of Japan
Mr. M. Verbauwhede	Science Policy Office, Belgium
Mrs. M. Wagner	Science Policy Office, Belgium
Mr. D. Mitchell	Smith Systems Engineering
Dr. Z. Stott	Smith Systems Engineering
Mr. R. Sweet	Smith Systems Engineering
Mr. S. Ward	Smith Systems Engineering
Prof. L. Quan	State Science and Technology Commission, China
Mr. C. G. Borg	Swedish National Space Board
Mr. M. D. Gwynne	United Nations Environment Program
Dr. P. Morel	World Climate Research Program
Dr. D. Hinsman	World Meteorological Organization

FINAL
25 MAR 1993

CEOS-6

REVISED AGENDA (CEOS P.92.1 rev.1)
Document 6-2

Committee on Earth Observations Satellites
Sixth Plenary
December 9-11, 1992
London, United Kingdom

1.	Adoption of the Agenda	CEOS P.92.1
2.	Record of the 5th Plenary	CEOS P.92.2
3.	Membership Issues	CEOS P.92.3
4.	New Initiatives i. Secretariat Proposal ii. Newsletter iii. Yearbook	CEOS P.92.4
5.	1992 CEOS Consolidated Report	CEOS P.92.5
6.	Data Policy: Report on the Paris Meeting, October 1992 i. Proposed amended Principles ii. Paper on General Mechanisms	CEOS P.92.6
7.	CEOS Working Group Reports i. Working Group on Calibration/Validation ii. Working Group on Data (including subgroups)	 CEOS P.92.7 CEOS P.92.8
8.	Affiliate Workshop i. Presentations from: - UNEP - ICSU - GCOS - WCRP - WMO - IOC - GOOS - IGBP - Report of the "User" Meeting in Bonn, November 16-17 ii. Discussion of Needs and Priorities	
9.	CEOS Dossier: i. Volume I Satellite Mission ii. Volume II Global Environmental Programmes iii. Volume III Ground Infrastructure	 already circulated already circulated
10.	Discussion and proposed revision of Dossier in the light of comments and the Affiliate Workshop	

FINAL
25 MAR 1993

11. Future Meetings

1993	Japan
1994	Germany
1995	?

12. AOB

STATEMENT CONCERNING AFFILIATE WORKSHOP
Document 6-22

CEOS

- recognised the value of the 3 volumes of the dossier as an operational tool for CEOS members and affiliates.

- invited new members, affiliates and observers to submit contributions by January 31, 1993 to the dossiers giving details of their own missions and ground infrastructure arrangements.

- agreed that members, affiliates and observers should send by January 31, 1993 any factual corrections as a matter of urgency to the Secretariat, including in particular amendments to the newly distributed Volume 3.

- invited the Secretariat to distribute a "final" version of the first edition of the Dossier early in 1993 and to initiate procedures allowing the Dossiers to be systematically updated thereafter.

- welcomed the presentations by the affiliates which provided a useful overview of the activities, data needs and priority data requirements of global environmental research programmes.

- invited the affiliates and observers to:

  (i) consider the definition of data products in Volume 3 of the CEOS dossier and to submit by May 30, 1993 comments to the Secretariat on the extent to which the products meet, or fail to meet, their currently identified requirements.

  (ii) pursue the possibility of greater coordination among themselves in the identification and possible formulation of their needs in relation to satellite instruments and data flows with a view to presenting a common view to the next CEOS Plenary meeting.

  (iii) join with CEOS members and observers in a Workshop to be organised in mid-1993 which would address future mission priority and data needs beyond the currently projected generation of missions.

- welcomed the intention of European Environmental users to develop their own dossier of European regional data needs and invited representatives of other regions to do likewise.

FINAL
25 MAR 1993

b. Identification of Data Sets

Data requirements should be identified by ad hoc committees of the various international research programmes related to global change (such as WCRP, IGBP, HDP, etc.) on the basis of their priorities and against criteria of key needs and/or continuing core measurements requirements. These requirements should be coordinated among relevant programmes in forums such as the workshop held during the 1992 CEOS Plenary.

Data sets should be selected from among the standard products as defined by the data providers and within volumes compatible with their capabilities and their available resources. (*However, it was also recognized that standard products in catalogues may not match the science requirements.*)

These data sets may originate from any system or instrument, whether experimental, operational, or commercial.

c. Selection of Global Change Researchers

Global change researchers will be chosen through selection procedures, such as research announcements with a peer review or a similar process. These selections will be made at a national level or under cooperative intergovernmental programmes, within the context and framework of the research priorities of the recognized international or national global change programmes. Review teams should be open to international participation. The selection procedures should be designed in such a way as to be able to integrate new research teams on a short notice. Particular emphasis should be placed on encouraging participation for developing countries and other non-CEOS participants.

d. Written Agreements

Selected global change researchers should, jointly with their institution, formally sign on a written agreement, including prohibition on redistribution and commercial use if required by the data provider, and a requirement for publication of all results and methods in the established scientific literature.

e. Sharing of Data among Selected Users

All data provided through these mechanisms will be available to other selected global change researchers as well as the original recipients.

FINAL
25 MAR 1993

ACTIONS FROM SIXTH CEOS PLENARY
Document 6-24

ACTION 6-1. New Secretariat to confirm members' approval of the CAST and NRSCC applications for membership.

ACTION 6-2. Secretariat to confirm members' approval of the SPO application for observer status.

ACTION 6-3. Secretariat to poll the members regarding their position on the UNOOSA's application for affiliate status.

ACTION 6-4. STA/NASDA to present its plans for the CEOS newsletter before or at the next Plenary meeting.

ACTION 6-5. ESA to present for consideration before the next Plenary meeting suggestions as to the form, content, circulation, and pricing requirements for the CEOS yearbook.

ACTION 6-6. CEOS members to provide comments and corrections to the CEOS Consolidated Report to Ms. Shaffer/NASA by January 31, 1993.

ACTION 6-7. WGD to accomplish the tasks contained in the report of the October 1992 *ad hoc* data policy meeting, and inform the Plenary of the status of those activities at the next Plenary meeting.

ACTION 6-8. STA and the National Space Development Agency of Japan (NASDA) to host a follow-on *ad hoc* meeting on data policy to continue discussion of implementation mechanisms, including the definition and start of work on a pilot project. The proposed schedule is to convene the meeting in April-May 1993, and to report on status at the next CEOS Plenary meeting.

ACTION 6-9. The Plenary directed WGCV to proceed with the task of defining the content of the new calibration/validation section to volume 3 of the Dossier, and to provide a detailed outline through the Secretariat.

ACTION 6-10. The Plenary directed WGCV to provide specifications and costs on proposed ground test sites for calibration/validation through the Secretariat.

ACTION 6-11. WGD attendees of CEOS member agencies to provide DIF Generation Plans to the WGD Chairman by April 15, 1993. WGD to prepare a Consolidated DIF Generation Plan and report progress on this activity at the next CEOS Plenary.

ACTION 6-12. New members, affiliates, and observers are invited to submit contributions to the Dossier, giving details of their missions and ground infrastructure, by January 31, 1993.

ACTION 6-13. Members, affiliates, and observers to submit factual corrections to the Dossier, particularly amendments to volume 3, by January 31, 1993.

BNSC

To:

All Members, Observers
and Affiliates of CEOS

17 January 1993 Ref: OB 6/23/1

Dear Member

CEOS PLENARY DECEMBER 1992

Please find attached two documents relating to the outcome of the CEOS Plenary in December.

The first is a revised text on data policy which resulted from the discussion under Item 6 of the agenda. You will recall that under Paper 92.6, Annex 1, Attachment 1 we agreed the final text of the wording for the data exchange principles in support of global change research. Also under Attachment 2 we agreed on minor amendments to the existing text. Finally, the Plenary agreed to initiate a pilot project and endorsed the approach described in the paper. Thus the text relating to this approach now becomes part of the general mechanism for the execution of CEOS data exchange principles. The new text reflects this.

The second issue is the statement tabled at the meeting as a result of the discussion under Item 10 of the agenda. The new secretariat will be carrying forward the tasks identified in this text during the coming months.

Yours sincerely

Dr D Williams
CEOS Secretariat

EL379.LET

BRITISH NATIONAL SPACE CENTRE
Dean Bradley House
52 Horseferry Road
London SW1P 2AG
Telex 297121 – Ansapack OT FAIR G – Fax 071 821 5387
Telephone (Direct Dialling) 071 276 (Enquiries) 071 276 2688

SATELLITE DATA EXCHANGE PRINCIPLES

IN SUPPORT OF GLOBAL CHANGE RESEARCH

RECOGNIZING that the members of CEOS are actively involved in supporting global change/climate and environmental research and monitoring efforts of the international scientific community, as well as pursuing other uses of Earth observations data such as local/regional research, operational environmental monitoring, and commercial ;

RECOGNIZING the investments made by governments and international agencies in support of global change / climate research and environmental research and monitoring and the value of non satellite data to these programmes.

TAKING INTO ACCOUNT that the acquisition, processing and supply of data, especially space data, involve major investments, and that data have value.

RECOGNIZING that these investments and values should be respected by data suppliers and users.

RECOGNIZING the existence of various policy aims such as maximising the use of the data from all sources and shifting the funding responsibility for certain remote sensing systems to users or other sources.

AWARE that success in global change/climate and environmental research and monitoring requires a continuing commitment to the establishment, maintenance, validation, description, accessibility, and distribution of high-quality long-term data sets, many of which rely on space-borne observations ;

ANTICIPATING the potential benefits of compatible policies and mechanisms for data exchange in obtaining access to global data ;

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

RECOGNIZING the importance of appropriate legal regimes for the exchange of remotely sensed data.

RECOGNIZING the common goal of providing data to global change researchers from all missions on a consistent basis reflecting primarily the cost of fulfilling the user request ; recognising also that the constraints of the mission operations and of available resources may require different mechanisms for data exchange/sharing to be found for different programmes.

CEOS members endorse the following principles relating to satellite data exchange in support of global change/climate and environmental research and monitoring and agree to work toward implementing them to the fullest extent possible. Principles

for data exchange in support of other data uses beyond global change/climate and environmental research and monitoring will be developed for CEOS endorsement as a next step.

1. Preservation of all data needed for long-term global change/climate and environmental research and monitoring is required.

2. Data archives should include easily accessible information about the data holdings, including quality assessments, supporting ancillary information, and guidance and aids for locating and obtaining the data.

3. International standards, including those generated by the CEOS Working Group on Data, should be used to the greatest extent possible for recording/storage media and for processing and communication of data sets.

4. Maximizing the use of satellite data is a fundamental objective. An exchange/sharing mechanism among CEOS members is an essential first step to maximize use.

5. Non discriminatory access to satellite data by all users for global change/climate and environmental research and monitoring is essential. This should be achieved within the framework of the exchange and sharing mechanisms set up by CEOS members.

6. Programs should have no exclusive period of data use. Where the need to provide validated data is recognized, any initial period of exclusive data use should be limited and explicitly defined. The goal should be release of data in some preliminary form within three months after the start of routine data acquisition.

7. Criteria and priorities for data acquisition, archiving and purging should be harmonized.

GENERAL MECHANISM FOR THE EXECUTION OF CEOS DATA EXCHANGE PRINCIPLES

IN SUPPORT OF GLOBAL CHANGE RESEARCH

Principles 1 and 7. In coordination with ad-hoc committees of the various relevant international programmes (e.g. IGBP, should define and disseminate data management plans addressing where and how long-term global change data are being acquired and preserved, and the procedures and criteria for continued data acquisition, retention, and purging. The objective is to establish an informal "clearinghouse" function through CEOS for satellite-based observations, coordinated with other relevant data management organizations, to optimize the collective development and maintenance of critical data and information. Before a CEOS member purges a data set, he should notify other CEOS members to see if such data set is of interest and could be maintained by another custodian. Through the international directory network (IDN) effort already underway in the CEOS Working Group on Data (WGD), regular updates will be easily accessible concerning data acquisition.

The CEOS Plenary should direct the CEOS WGD to define a process for providing a compilation and integration of data management plans in a broader context through the CEOS WGD.

Principle 2. Through the CEOS WGD catalog subgroup, standards have been proposed for what information needs to be included in a directory. The Directory Interchange Format (DIF) defines the minimum content and format for such information, and the prototype international directory is already in place to permit agencies and users to use and evaluate the system.

The WGD should be encouraged to continue its work and address guide and inventory level standards and interconnectivity as well. The existence of all data sets should be documented on international directory networks.

Principle 3. The Consolidated Report on CEOS will summarize the recommendations to date regarding data product format standards, catalog systems, and other areas. In addition, other organizations, such as the Consultative Committee on Space Data Systems (CCSDS), the International Standards Organization, etc. are conducting work on standards that should be taken into account. In order to facilitate international exchange of data, and integration of data from multiple sources, use of standards will be extremely important.

CEOS members should seek to agree on common standards that meet their programmatic requirements and should commit to offering data and products in agreed CEOS standards where such exist.

Principle 4 :

- a - Catalogue of available standard data

Each data provider (normally a CEOS member) will provide a catalogue of the standard products available for each system and include such information in the CEOS IDN.

- b - Identification of data sets :

Data requirements should be identified by ad hoc committees of the various international research Programmes related to global change (such as WCRP, IGBP, HDP, etc.) on the basis of their priorities and against criteria of key needs and/or continuing core measurements requirements. These requirements should be coordinated among relevant programmes in forums such as the workshop held during the 1992 CEOS Plenary.

Data sets should be selected from among the standard products as defined by the data providers and within volumes compatible with their capabilities and their available resources. *(however it was also recognized that standard products in catalogues may not match the science requirements).*

These data sets may originate from any system or instrument, whether experimental, operational or commercial.

- c - Selection of global change researchers :

Global change researchers will be chosen through selection procedures, such as a research announcements with a peer review or a similar process. These selections will be made at a national level or under cooperative intergovernmental programmes, within the context and framework of the research priorities of the recognized international or national global change programmes. Review teams should be open to international participation. The selection procedures should be designed in such a way as to be able to integrate new research teams on a short notice. Particular emphasis should be placed on encouraging participation for developing countries and other non-CEOS participants.

- d - Written agreements

Selected global change researchers should, jointly with their institution, formally sign on a written agreement, including prohibition on redistribution and commercial use if required by the data provider, and a requirement for publication of all results and methods in the established scientific literature.

- e - Sharing of data among selected users

All data provided through these mechanisms will be available to other selected global change researchers as well as the original recipients.

Statement agreed by CEOS members, affiliates and observers in relation to Item 10 of the December 1992 Plenary

CEOS

- recognised the value of the 3 volumes of the dossier as an operational tool for CEOS members and affiliates.

- invited new members, affiliates and observers to submit contributions by January 31st 1993 to the dossiers giving details of their own missions and ground infrastructure arrangementss.

- agreed that members, affiliates and observers should send by January 31st 1993 any factual corrections as a matter of urgency to the Secretariat, including in particular amendments to the newly-distributed Volume 3.

- invited the Secretariat to distribute a "final" version of the first edition of the Dossier early in 1993 and to initiate procedures allowing the Dossiers to be systematically up-dated thereafter.

- welcomed the presentations by the affiliates which provided a useful overview of the activities, data needs and priority data requirements of global environmental research programmes.

- invited the affiliates and observers to:

  (i) consider the definition of data products in Volume 3 of the CEOS dossier and to submit by May 30th 1993 comments to the Secretariat on the extent to which the products met, or failed to meet, their currently-identified requirements.

  (ii) pursue the possibility of greater coordination among themselves in the identification and possible formulation of their needs in relation to satellite instruments and data flows with a view to presenting a common view to the next CEOS Plenary meeting.

  (iii) join with CEOS members and observers in a Workshop to be organised in mid-1993 which would address future mission priority and data needs beyond the currently-projected generation of missions.

- welcomed the intention of European Environmental users to develop their own Dossier of European regional data needs

and invited representatives of other regions to do likewise.

- agreed to consider the question of further volumes of the CEOS Dossier which might include, for instance, research programmes other than those related to global environment, applications such as resources management etc,, and welcomed the offer by Canada to suggest options for further consideration within CEOS.

Results of CEOS Plenary Meeting, December 9-11, 1992, London, UK

- Agreed on a new tripartite, permanent secretariat (consisting of ESA, NASA/NOAA, and STA/NASDA, in support of the annual Plenary host agency, and in consultation with a steering committee comprised of CEOS member points of contact).

- Approved an updated global change data policy resolution which guarantees global change researchers satellite data at the cost of filling the user request. Commercial satellite data of specific agencies (such as SPOT data) will be included through the implementation of funding mechanisms, possibly involving other organizations.

- Accepted as new CEOS Members, the Russian Space Agency and the Committee of Hydrometeorology and Environment Monitoring of the Russian Federation (ROSKOMGIDROMET). Agreed to examine and provide a timely response to applications for membership from the Chinese Academy of Space Technology and the National Remote Sensing Centre of China, and to an application for Observer status from the Belgian Science Policy Office. Agreed to examine the request of the UN Office for Outer Space Affairs for CEOS Affiate status and to address it at the next Plenary meeting.

- Listened to presentations on requirements from all CEOS Affiliate organizations (UNEP, ICSU, GCOS, WCRP, WMO, IOC, GOOS and IGBP) and to a report on a meeting of European environmental users held in Bonn, November 16-17, 1992. The Plenary charged Affiliates to pursue the possibility of greater coordination among themselves in the identification and possible formulation of their needs in relation to satellite instruments and data flows with a view to presenting a common view to the next Plenary meeting.

- Agreed that a workshop of CEOS Members, Observers and Affiliates be organized in mid-1993 to address future mission and priority data needs beyond the currently-projected generation of missions.

- Accepted recommendations from and provided charges to the CEOS Working Group on Data and the CEOS Working Group on Calibration/Validation.

- Solicited final updates to the 1992 CEOS Space Segment Dossier and updates to the initial draft of the CEOS Ground Infrastructure/Data Products Dossier.

- Agreed to the issuance of an annual yearbook executive summary version of the CEOS Dossier (similar to that provided this year at the UNCED Conference) and to a periodic newsletter.

NASA
National Aeronautics and
Space Administration

Washington, D.C.
20546

Copy please f. Linda
return to OBS

Reply to Attn of:
SED

DEC 21 1992

TO: Distribution

FROM: Deputy Director, Modeling Data and Information System Program Office
Earth Science & Applications Division

SUBJECT: Trip Report: CEOS Plenary meeting, London, Dec. 9-11, 1992

I attended the 6th plenary meeting of the Committee on Earth Observations Satellites (CEOS), hosted by the British National Space Centre (BNSC), in London, December 9-11, 1992. The NASA delegation included Shelby Tilford, Peter Backlund, Jim Zimmerman, Woody Turner, and me, with Geoff Lutz from the American Embassy attending the first day. NOAA was represented by John Hussey, Brent Smith, and Levin Lauritson. All CEOS members except Brazil were represented, although India sent only the ISRO representative from Paris. The full attendance list will be available with the minutes. Representatives from all the affiliates were present: WMO, IOC, WCRP, IGBP, ICSU, IOC, GCOS, GOOS, and UNEP.

Highlights of the meeting included:

-- acceptance of the Russian Space Agency and Hydromet as members of CEOS

-- conditional acceptance of the Chinese Academy of Space Technology and the Chinese National Remote Sensing Agency as members, pending confirmation by existing members

-- approval of revised Data Exchange Principles for Global Change Research including an introductory clause establishing the common goal of providing data from all systems for global change research at the cost of filling the user request (full text attached to this memo). The next step will be definition and implementation of one or more pilot projects to provide a wide range of data in support of specific research activities.

-- acceptance of the third volume of the "CEOS Dossier" on ground segment and data products, as a working document presenting a consolidated listing and description of CEOS member infrastructure and services. This volume will be finalized early in 1993 and will serve as a basis for assessing the adequacy of member services to meet affiliate requirements.

-- lengthy discussion of data and measurement requirements of the affiliates (i.e., the international scientific research programs and operational observing programs), in relation to CEOS member programs and plans. This resulted in an action by affiliates to examine the new Dossier Volume 3 and present a critical analysis at the next meeting based on internal considerations and an Affiliate Workshop to be held in the middle of next year.

-- agreement on the establishment of a permanent secretariat for CEOS, to be provided by NASA/NOAA, ESA, and STA/NASDA in conjunction with the incoming Host agency.

-- reports from the Working Group on Cal/Val and the Working Group on Data. The Cal/Val group will work to establish a data base of test sites as part of a concerted effort to ensure the long-term maintenance and accessibility of such sites for intercalibration. The Cal/Val group will also collect relevant information on calibration and validation activities for inclusion in the CEOS Dossier, Volume 3, with assistance from the Secretariat if necessary. The Working Group on Data encouraged all members to prepare and submit information for the CEOS directory and to encourage contributions from non-CEOS organizations with relevant data holdings.

-- CEOS members agreed that for those SAFISY Earth observations projects that funding agencies want to continue beyond the end of 1992, CEOS could "endorse" their continuation, and encourage the CEOS affiliate organizations to continue their scientific oversight and guidance as appropriate.

The BNSC invested a great deal of effort and resources in its year as CEOS chair. They hosted an extraordinary plenary meeting in April with environment agencies in preparation for the UNCED conference in Rio, and prepared a special CEOS publication for distribution at that time. The three volume CEOS dossier will be maintained by ESA, as part of its secretariat responsibilities,

and a new "yearbook" may be produced next year to follow on in the pattern of the UNCED volume. STA/NASDA agreed to undertake a CEOS newsletter, to be issued perhaps quarterly, to increase awareness of CEOS within and outside the space community. Canada proposed a new Dossier volume addressing satellite data uses for resource management, and will distribute a brief description of the proposed effort in the near future.

STA/NASDA will host the next plenary meeting, and serve as CEOS chair for the next year. Japanese plans include hosting a data policy meeting in the spring to initiate the global change research data exhange pilot project(s) and consider future data policy efforts by CEOS.

Side Meetings

ESA: We met with Guy Duchossois and Bizzarro Bizzarri to discuss MIMR. Duchossois said that ESA would provide a response by the end of January. He explained that the full funding for MIMR was not included in the ENVISAT budget as I had earlier thought, but rather, continued funding for MIMR development will be provided through the preparatory program funding for METOP and some leftover POEM instrument preparatory funds from last year. Full funding will await the 1994 METOP program approval. Italy's position, according to Bizzarri, is that they want to fly MIMR both on METOP and on EOS PM-1. The current budget does not support two instruments, and if this were to happen, additional negotiations among industrial participants and supplemental funding would have to be found. Other ESA member states we talked to expressed doubt in this scenario. Bizzarri's position is that if Italy has to choose, it would choose METOP over EOS because Italy is a member of both ESA and EUMETSAT and feels it has more control over the program. Jim Zimmerman will continue this discussion with Guerriero and provide more feedback.

The new ESA Earth Observations data policy person, Huw (pronounced Hugh) Hopkins, attended the meeting. He comes from the Hermes program, and has worked with NASA in manned spaceflight areas, including astronaut training, but has no experience in Earth Observations or data policy. He is likely to be the CEOS secretariat person for ESA, as well as the data person at ESA HQ. I told Guy it would be useful for Hopkins to attend the IEOS Implementation meeting and EOSDIS quarterly review in early February.

MITI: We had a brief discussion of the ASTER MOU, prior to a meeting in Washington on Dec. 14. We were able to clarify a few points without issue. The major questions involved quicklook data (is it a requirement of NASA or the discretion of MITI) and the same issues of Space Station MOU references and STA.

NASDA: NASDA offered to send us comments on the ADEOS MOU, for which we finally have C-175 authorization, during the week of Dec. 14. We will try to address any issues or questions by fax and telecon as expeditiously as possible, with a meeting tentatively considered for mid-January if Haruyama comes for GCOS, or early February with Chu Ishida coming for the IEOS implementation plan discussions.

EUMETSAT: John Morgan indicated that the recent EUMETSAT Council had approved funding for a preparatory program for the EUMETSAT Polar System (the EUMETSAT view of METOP), consistent with the progress in ESA. EUMETSAT has no strong views on where MIMR flies (i.e., on METOP or on EOS PM), and has not conducted detailed accommodations studies to determine if there are any conflicts with ASCAT and MIMR. Morgan expressed most concern about inclusion of ASCAT, as an active instrument, in addition to the more "traditional" operational package. He said he had been holding the interim letter agreement for MHS, but now that the Council has approved the preparatory program, he has asked Mr. Billany to revise the letter and send it back to NASA quickly. Detailed technical information on instrument specs and interfaces can be provided, although final approval for the procurement of the instrument, and thus signature of a final letter agreement, will have to await approval of the full EPS program in 1994.

MOPITT: Garry Lindberg informed me that the CSA staff wants to have a telecon on our draft MOPITT MOU prior to exchanging written comments, to ensure that we understand the meaning and intent of the text. This telecon will be scheduled for the week of Dec. 14.

Overall, it was a very good CEOS meeting, concluding a very busy and productive year for the organization. 1993 promises many challenges and opportunities for moving forward to formalize and begin implementation of our many international plans.

Lisa

Lisa R. Shaffer