Committee on Earth Observation Satellites

CEOS

'95

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NEWSLETTER

No. 5

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# CEOS Task Force on Planning and Analysis Reports to CEOS User Requirements Workshop

***Lisa R. Shaffer***
*Director, Mission to Planet Earth Division, Office of External Relations, NASA HQ*

The Task Force on Planning and Analysis was formed at the eighth CEOS Plenary meeting, in September 1994, to evaluate the extent to which existing and planned satellite systeme address defined user requirements of the CEOS Affiliate organizations

The Task Force, co-chaired by Dr. B. Bizzarri (ASI) and Dr. I. Rasool (IGBP) has met three times since the Plenary. On May 8-9, 1995, NASA hosted a Workshop so that the Task Force could present its preliminary findings to CEOS members, and receive further guidance and feedback prior to the 1995 Plenary.

The Task Force is developing a preliminary assessment of where there are gaps and where there is overlap in satellite systems, based on nine groupings of geophysical parameters and interpretation of particular sensor capabilities. This information is the basis for assessing the extent to which particular requirements of CEOS Affiliate organizations are being or can be met. The groups of parameters are:

- temperature and humidity sounding
- wind sounding
- clouds and precipitation
- atmospheric energetics
- ozone and other trace gases
- ocean surface
- ice and snow
- land surface
- solid earth

One immediate outcome of the Task Force's work was the realization that the information on sensors/satellites and the format for documentation of user requirements were not easily integrated. Therefore, the Task Force developed a new format and recommended that both CEOS member agencies as data providers, and Affiliate organizations, as users, use a consistent set of definitions and elements in defining their capabilities and needs. This format was discussed and agreed by the Workshop, and will be presented to the Plenary with a recommended action for all participants to update their inputs in this manner.

(to be continued on Page 2)

## *Coordination for the next decade*
## The 1995 CEOS Yearbook

The CEOS UNCED document launched at the June 1992 Rio Conference proved very successful in publicising the activities of CEOS and the capabilities of current and future EO satellites in relation to requirements of global environment (notably climate change) programmes. This document has become known as the first CEOS 'Yearbook'. Given the success of the Yearbook, the Plenary agreed that further editions should be published by CEOS. To bridge the gap between the biennial publication of the CEOS Dossier, the European Space Agency (ESA) undertook to produce a second CEOS Yearbook in 1995. As with the first edition, the aims of the 1995 Yearbook are to:

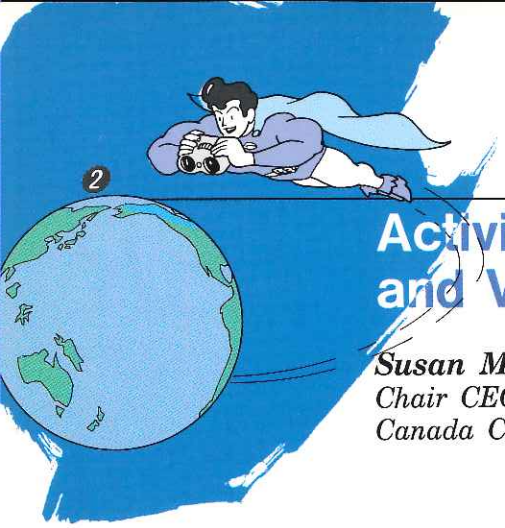
- widely publicise the activities of CEOS;
- inform and educate on the capabilities of EO satellites;
- advertise plans of the CEOS agencies for future missions and instruments;
- provide a valuable, definitive reference source to a wide audience (of laymen, policy-makers, data users).

The report details the current status and plans for future Earth observation satellite missions and describes how the data and information which they supply relate to worldwide needs for information on Earth System processes-in support of a range of significant objectives of national and international concern.

The document includes:

- an overview of the increasing need for observations of the Earth;
- a summary of the structure and activities of CEOS:
- a tutorial on the capabilities of EO satellite in strumentation;
- an analysis of the provision of data from EO satellites for a range of key geophysical parameters;
- updated mission and instrument catalogues;
- brief descriptions of CEOS Affiliate programmes;
- information on how to access the CEOS IDN and CEOS Infosys.

CEOS should strive to maximise the publicity benefit from the 1995 Yearbook. Copies have already been distributed at IGARRS'95 in Florence and a special mailing is planned to G-7 participants. ESA will make a number of copies available to each CEOS agency, and hope that members will seek to achieve maximum impact from their local distribution. Some copies will also be available for Plenary attendees in October.





# Activities of the Working Group on Calibration and Validation, (WGCV)

*Susan M. Till*
*Chair CEOS Working Group on Calibration and Validation*
*Canada Centre for Remote Sensing (CCRS)*

**The 9th Meeting of WGCV was held in Canberra, Australia on December 6-9, 1994. WGCV-9 was attended by 21 members or their alternates and several local participants - and was memorable for a field trip to tour NASA's Tidbinbilla Deep Space Tracking Station, a game reserve, and Aussie BBQ.**

The working group business included review of the September 1994 draft of the WGCV Strategic Plan, which led to a few revisions in the text. Lengthy discussions of the terminology in Appendix A resulted in the formation of a small task group to submit a revised list at the next meeting, based on other standard references and communication with other CEOS working groups.

The implementation of the Dossier on Calibration and Validation was discussed. The scope is to cover a 10-year period, of five years before and after January 1, 1996. It is proposed to be a stand-alone document and access will be primarily, although not only, via WWW or CEOS Infosys. On WWW a forum box will exist with search by key word. Contractual arrangements are being pursued to implement the draft Dossier.

The four subgroups are active. Two subgroups (IVOS and Terrain Mapping) held meetings coincident with WGCV-9 in Canberra. IVOS subgroup discussed SOLSPEC results, input to the Strategic Plan, Dossier, and new initiatives on ocean colour and atmospheric corrections. Terrain Mapping looked at the Strategic Plan, first draft of the Evaluation Guide, and Test Sites. The updated dossier includes 12 sites, with two sites available for general distribution: Aix-Marseilles, France, and Drum Mountain, USA. The Microwave Sensors Subgroup met in August 1[illegible] in Los Angeles. The subgroup mandate was re[illegible]mulated, terminology was reviewed, the need for test sites was discussed, and a concern brought forward about radio frequency interference. The SAR CAL subgroup met at Ann Arbor in September 1994. A workshop addressed issues such as RADARSAT ScanSAR, spaceborne SAR, polarimetry, radiometric calibration, calibration devices, and interferometry. Members produced a five-year plan and decided the future direction of the subgroup.

The WGCV Newsletter Issue 4 is now available and Issue 5 is being compiled. The next meeting, WGCV-10, was in Moscow, hosted by the Russian Academy of Sciences, during June 27-30, 1995. Planning is underway for WGCV-11 at CNES, Toulouse, France, February 26-March 1, 1996.

## *CEOS Task Force on Planning and Analysis Reports to CEOS User Requirements Workshop* (continued from Page 1)

The reformatted and updated information will enable the Task Force to refine their analysis and will help in updating the CEOS Dossier. However, even with existing information, the Task Force will be able to present to the Plenary a rough assessment of gaps and overlaps in October 1995.

Among the other issues arising from the Task Force's work is how to expand the understanding of user requirements. It was noted not that all CEOS Affiliates have documented their data needs, and those that have not should be encouraged to work with WMO, which serves as the coordinator of Affiliate requirements, to do so. There was also discussion of national/regional requirements, which may play an important role in influencing space agency programmatic decisions. The Plenary may wish to encourage Members to document their national/regional user requirements in the same format as the Affiliates requirements and to share this information among CEOS agencies. In addition, there was a recommendation that all the updated information on both capabilities and requirements be made available and maintained on-line in a database format for easy analysis by any interested user or provider, in addition to the biennial publication of the CEOS Dossier.

The next steps for this process include:

11-12 July 1995: Planning and Analysis Task Force meeting in Paris to revise draft report; includes incorporating feedback from the Workshop 1-7 September 1995: Revised Task Force report issued to CEOS participants for review prior to the Plenary meeting; includes preliminary user requirements and instrument performance information and highlights of gaps and overlaps

11-13 October 1995: Ninth CEOS Plenary meeting in Montreal - Plenary provides feedback on Task Force report; Affiliates report on user requirements activities; status of Dossier reviewed

March 1996: Affiliates and space agencies formally submit updated and restructured information for 1996 Dossier update

For further information, please contaet the CEOS Secretariat and/or the co-chairs of the Task Force.

# CEOS Inventory Interoperability Experiment

*Richard Göbel*
*Scientific Officer*
*DFD/DLR*
*(German Aerospace Research Establishment)*

*George Saxton*
*Catalog Subgroup Chair*
*NOAA/NESDIS*

**The multi-agency CEOS Inventory Interoperability Experiment has been initiated by the CEOS Working Group on Data/Catalog Subgroup. The goal of this experiment is to investigate how different catalogs can be accessed from a single user interface. Current members of this experiment are NASA GSFC, ESA ESRIN, NASDA, DARA, CCRS and DLR.**

The key concept of an interoperable catalog system is a standardized interface specification (protocol) for all involved catalog systems. The interface specification has to define the possible messages between the client and the catalog systems and the method how they are exchanged (network, transport mechanism etc.). At the beginning of the experiment in 1992 NASA and ESA suggested two different protocols for this purpose. The protocol for the NASA Information Management System (IMS) was defined for the version 0 of the NASA Earth Observation System Data and Information System (EOSDIS). This protocol allowed to access the catalogs of nine archive centers (Distributed Active Archive Centers) in the U.S.A. from a single IMS-client. In a similar way, the ESA UIT protocol was designed to interconnect European catalogs.

During a first phase of the experiment a prototype was implemented to investigate these two protocols. This prototype includes IMS and UIT servers for every European catalog. The servers have to translate UIT and IMS requests into requests to the local catalogs and to transform the system response into the appropriate form. The prototype also includes a UIT to IMS protocol converter (UIT Bridge) to allow the access to the American catalogs from the European user interfaces. With this prototype the feasibility of both protocols and their compatibility was demonstrated. The experience gained from this implementation has been summarized in a lessons learned document.

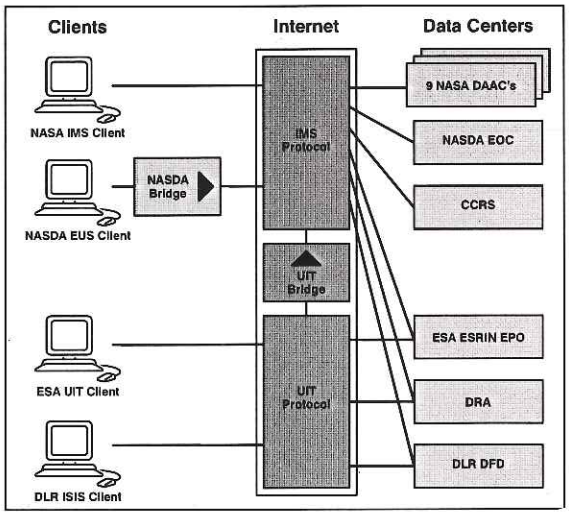
Meanwhile the prototype has been extended by new IMS servers for catalogs of CCRS and NASDA. Also a NASDA client has been added to the prototype; this client is connected via a NASDA bridge to the IMS protocol world. The following diagram shows the current structure of the implemented prototype.

After successfully finishing the first phase, the second phase of CINTEX began in spring 1994. The major goals for this second phase are:

- The preparation of the implemented prototype for a preoperational phase
- The operation of the prototype during the preoperational phase in cooperation with some pilot users (user validation phase)
- The modification and extension of the existing protocols to overcome identified weaknesses from the first phase and to extend the functionality of the protocols.

The preparations for the user validation phase are almost finished. The validation phase will start in June 95 and last 6 months. The results of the user validation phase will be summarized in an updated lessons learned document.

The task team prepares a functional model document as the basis for the extension of the protocols describing a network of interoperable catalog systems. A first version of this document will be available at the end of July '95. After finalizing this document the task team will decide on the next steps for the protocol extensions.



# The Global Climate Observing System (GCOS): Plan for Space-Based Observations

*Thomas W. Spence*
*Joint Planning Office*
*GCOS*

**The Global Climate Observing System (GCOS) was established after the Second World Climate Conference to provide the observations needed to meet the scientific requirements for monitoring the climate, detecting climate change, and for predicting climate variations and change. It was initiated in 1992 via an MOU among WMO, IOC of UNESCO, UNEP, and ICSU which set up a Joint Scientific and Technical Committee (JSTC) and a Joint Planning Office (JPO) to develop the plans and strategy for implementation of the system.**

In the early planning for GCOS, the JSTC recognized that an integrated view of the requirements for all the climate system components -- the global atmosphere, the world oceans, land surface, cryosphere, biosphere -- must be taken. .Such an approach requires both *in situ* and space-based observations, as well as a system for data and information management. To be cost effective, GCOS will be based on existing systems, to the degree possible, with its observational and data system activities provided by participating countries through their agencies and programmes.

To proceed, the JSTC established a planning structure including science design panels for the atmosphere, ocean, and land surface/ecosystem including, where appropriate, the participation of operational programmes (e.g., World Weather Watch, Global Atmosphere Watch, Integrated Global Ocean Services System),the Global Ocean Observing System (GOOS) and the Global Terrestrial Observing System (GTOS) and the international research programmes (e.g., World Climate Research Programme, International Geosphere-Biosphere Programme). As an affiliate of CEOS, GCOS is involved in various CEOS activities as well.

The JSTC initially distributed a draft plan, and based on comments, subsequently published a comprehensive plan[1] outlining the scientific priorities and strategies for the programme. It proposes an Initial Operational System (IOS) consisting of the necessary observational components currently operational and enhancements to them which may be specified and implemented now.

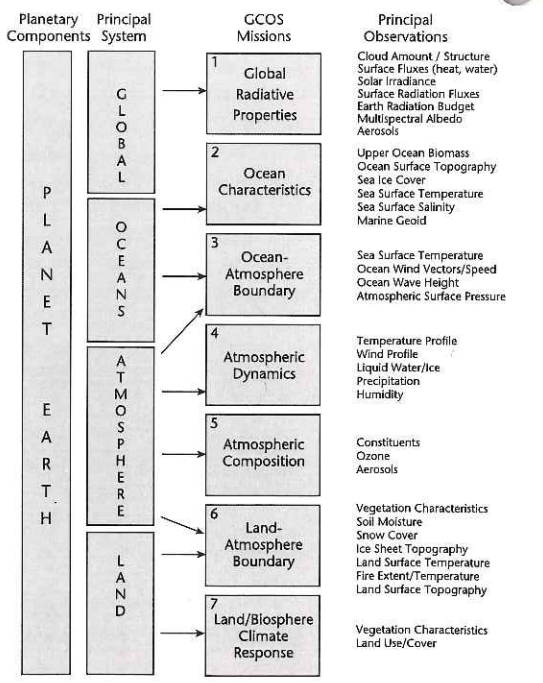
## The GCOS Plan for Space-based Observations

In 1994, the JSTC charged a small *ad hoc* Task Group to develop a draft plan for the space requirements for GCOS. At its initial meeting, the Task Group used the concept of GCOS "missions" [See Figure] to identify the essential elements required for a comprehensive climate programme from space, and prepared an initial draft plan for review. At its fourth session, the JSTC reviewed the plan and established a standing Panel to complete and publish an initial version. It also recommended that the Panel consider workshops and pilot studies (e.g., calibration and validation techniques) to secure continuous information. In response, the Panel held its initial meeting in May 1995 in Washington in conjunction with a CEOS Requirements Analysis Workshop and a NASA sponsored Global Change Calibration/Validation Meeting.

To complete the plan, the Panel considered the technical requirements provided by the various GCOS science panels and from studies of the needs of the user community. It subsequently compared these requirements[2] with the specifications of instruments and missions proposed by the space agencies, selecting those potentially capable of meeting the GCOS requirements. By systematically assessing the capabilities of the proposed instruments in meeting the requirements, the Panel developed tables to indicate those missions which are "fully compliant" with GCOS requirements, and those proposed instruments/missions which would be fully compliant if commitments to continuity were clear. (For an instrument to satisfy GCOS requirements, a commitment to its long-term continuity must be made.) A significant conclusion from the Panel meeting is that instruments/missions now being flown and planned for the near future will make major contributions to the climate requirements. It is hoped that this version of the plan[3] will be of assistance to space agencies, but it is recognized that it is only an initial step. The process must be refined and continually updated.

(to be continued on Page 7)

※1 "Plan for the Global Climate Observing System, Version 1. 0", May 1995.
※2 "Guide to Satellite Instruments for Climate", June 1995.
※3 "Plan for Space-based Observations, Version 1.0", June 1995.



# Analysis of the Great Hanshin Earthquake by Using Satellite Data

***Hiroshi Kikuchi***
*Earth Observation Planning Department*
*NASDA (National Space Development Agency of Japan)*

**Earthquake & Analysis Using Satellite Data**

**The southern part of Hyogo prefecture and the surrounding area suffered from the devastating Great Hanshin Earthquake (Fig. 1) at 5:46 a.m. on January 17, 1995. According to the Meteorological Agency of Japan, the seismic center was located about 20km below the northern portion of Awajishima island, and the magnitude was 7.2 on the Richter scale. The intensities in some affected areas in Kobe city and Awajishima island were evaluated as 7 on the Japanese scale, which was the highest ever recorded in Japan.**

The damage was most serious. A large number of houses were damaged by the quake itself and subsequent fires. Many fires swept over the densely populated areas. Collapsing houses and fires injured many residents, and the death toll exceeded 5,000.

NASDA and the Committee of Earth Environmental Observation organized a project team to evaluate the usefulness of remote sensing techniques for surveying the earthquake damage. The leader of the team was Prof. T. Sakata of Tokai University, who was the chairman of the Committee. About thirty contributors participated on the team, including scientists, researchers, and engineers in the fields of remote sensing, image processing, earthquake, and geology. These persons came from Tokai University, Geographical Survey Institute (GSI), the Geological Survey of Japan, the U.N. Center for Regional Development (UNCRD), some private enterprises, and so on.

It was the first time a disaster project team was established in cooperation with so many organizations. Owing to the establishment of the team, the data distribution and analyses could be carried out faster and more smoothly.

Various analyses were conducted by the contributors. The recognizability of the damage was examined with respect to a spatial resolution. Processed SPOT/HRV images were interpreted. One of the more useful images was a color composite from both XS and PA (Fig. 2) which was released to the press. Image interpretation revealed slope failures, traces of liquidification and burned areas, but it was difficult to identify collapsed houses and expressways.

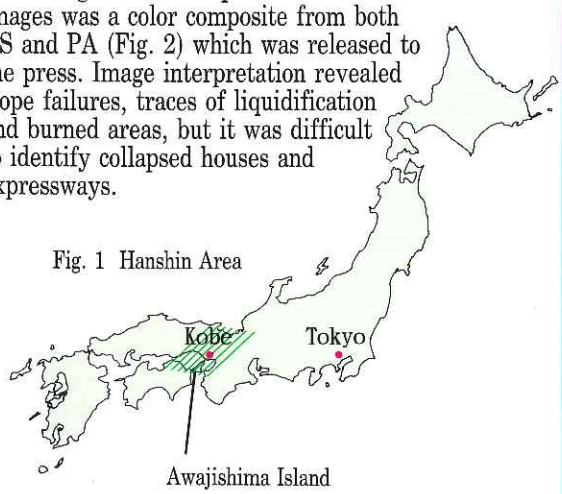



Fig. 1 Hanshin Area

Simulated images of various resolutions using an aerophoto indicated that a resolution of at least 4 meters was necessary to recognize collapsed beams of elevated expressway. The images were interpreted using advanced information about the damage. If the satellite images are interpreted without any information, the recognizability will be less than in these analyses.

The Committee also attempted to evaluate new technology of SAR interferometry. The Kobe area and the northern part of Awajishima island were examined by GSI and NASDA (Figs. 3 and 4). These images were also released to the press. The results of analyses were compiled, and results were presented at conferences.

From this experience, the advanced information network system will be needed to provide the emergent data distribution services.

In conclusion, I would like to express my sincere gratitude to NASA, NOAA, CNES, SPOT IMAGE, EOSAT, and supporting organizations for their understanding and cooperation in the emergency observation of the Hanshin area by satellites, and also to the contributors to the analyses.

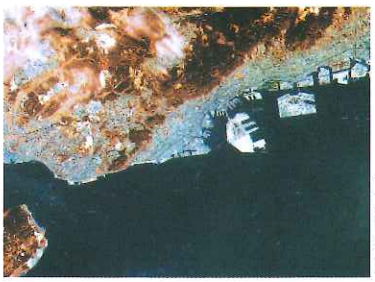


Fig. 2
Color Composite of HRV XS & PA (Jan. 20, 1995)

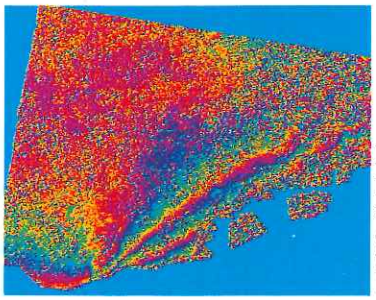


Fig. 3
Interferometric Stripe of JERS-1/SAR --- Kobe Area (Sep. 9, 1992 & Feb. 6, 1995)

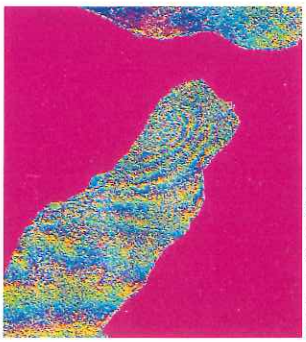


Fig. 4
Interferometric Stripe of JERS-1/SAR --- Northern Part of Awajishima Island (Sep. 9, 1992 & Feb. 6, 1995)


# Feasibility Study for a CEOS Developing Country

*Volker Liebig*
*Head of Division, Earth Observation Utilization*
*Greman Space Agency (DARA)*

**At the last CEOS Plenary meeting in Berlin the member agencies decided to strengthen CEOS support for developing countries (DC). The outcome of a workshop in Brazil, to discuss problems and potential improvements in this sectors, was used to produce a strategy paper which was approved by the Plenary.**

As a further result of this discussion it was agreed that DARA should (action 8-6) arrange for a study on a space information system in support of developing countries and circulate the outcome in time for discussion at the 9th Plenary in October 1995.

One of the problems in applying remote sensing data to DC projects is the existing information and communication gap. In developing countries there is a lack of knowledge about applicable methods, funding mechanisms and necessary points of contact. On the donor countries side there is no means to easily find out about all relevant activities, projects or even available datasets. In fact there is a lot going on, but insufficient knowledge (some would say coordination-but this is beyond the reflections of this article).

This situation was the starting point for the idea to explore the feasibility of a system which could help to improve the information and communication in this area.

From the start of the feasibility study it was clear that a CEOS activity must fulfill certain conditions to be suited to the way CEOS is working and structured as a non-funding activity that builds on contributions and activities of its members:

Accordingly the activity must be consistent with the mandate of the CEOS;
- not duplicate what is already being done,
- allow self-contained contributions from various CEOS members who volunteer to participate; and
- not require the establishment of a new or separate network, or special hardware.

DARA was supported by a team consisting of Prof. Konecny, Roy Gibson and a contractor (Geoscan) with experience in developing countries. The first step in performing the study was the investigation of the status quo. Therefore 11 organisations were visited including different UN organisations, FAO, World Resource Institute and World Bank. In addition, the U.N. Office of Outer Space Affairs had received written contributions from different organisations (e. g. from Pakistan, Malaysia, China, etc.) with experience in this field and had passed them to the study team.

Several CEOS member agencies and affiliate organisations had also delivered contributions in written form after the discussions during the Plenary.

The evaluation of all these inputs showed a picture which confirmed the initial assumption that a great number of projects are running, hundreds or thousands of data sets are produced worldwide with different methods and sensors, but for similar goals. Resulting data sets, maps, or databases are usually not reused. Decision-makers are very often even not aware of their existence.

Many organisations run project databases which are sometimes confidential and usually not connected or, even worse, not connectable. It was expressed in many interviews that it would not be useful to set up a complete new set of project descriptions, but that there is a substantial lack of information on what is actually available in terms of datasets, know how, and expert addresses. What is needed is support to find the relevant information easier and quicker.

Information about information is usually called "metadata" and a system which contains metadata and pointers or links to real datasets could be named an "Information Locator System (ILS)". Therefore the conclusion of the assessment was that we should propose a CEOS ILS.

The second complex of questions in the first phase of the study was directed to existing communication equipment in developing countries. An astonishing result of this round was that e-mail is used by many groups. It is often working more reliable and cheaper than fax. In Africa, for example, a one page e-mail costs about $ 1 to transmit, a one page fax about $ 10, and a five minute phone call up to $ 25. (World Resource Institute, WRI). E-mail is accessible in more than 25 countries on this continent. New connections are constantly occurring through support of programs like "Africa Link" (WRI). Full internet (TCP/IP) access is still the exception (e.g. in South Africa) and expensive (e.g. $ 1500 per month in African countries) but some regional centers will soon be connected.

On the donor countries' side good information infrastructure is available mostly based on internet tools (e. g. WWW, gopher and e-mail).

Having done this basic investigation the following questions concerning a potential CEOS ILS had to be answered:

For whom is it intended?
By what means?
What is the real content?

To the first question if seemed that, as a minimum, an ILS should address decision makers in developing countries and those who are likely to become donors. As a maximum, all who are active in the developing countries in remote sensing, including individual researchers or project workers, education and training sector, universities, relevant industry and space agencies.

To the second question as we went around there was much support for e-mail as the answer for DC, but we might also consider a yearly hardcopy or a CD-ROM. On the donor countries' side WWW is the present choice. Due to the ability to run www clients (e.g. Mosaic or Netscape) locally with data sets from CD-ROM, this might be an efficient and cheap way to produce a yearly CD-ROM version. At the time of

# Space Information System

## The Global Climate Observing System (GCOS): Plan for Space-Based Observations (continued from Page 4)

writing this article the study has not been finished. The Plenary report will contain a more elaborated technical proposal.

The same is true for the answer to question 3. The following preliminary list can be regarded as candidates for the content of the system:

- Links to subject specific databases (if technically feasible) or description of existence, access and costs (e.g. index, sizing, etc.), including project databases and data set descriptions
- Access to the electronic version of the CEOS Dossiers describing the earth observation part of national and international space programs including ground segments
- Access to CEOS IDN, a database and search tool for available remote sensing data
- Funding sources
- Institutions and private sector providers
- Information on education and training opportunities
- Information on EO research and development activities
- Relevant literature, journals, magazines
- Information on electronic discussion groups
- Upcoming conferences, workshops

The final study results and implementation proposal will be presented to the Plenary at Montreal in October.

Even if the exact technical outline is still under discussion, it seems already clear that a CEOS ILS can only be implemented in stages, concerning both content and geographical coverage. Therefore a pilot phase would be the logical next step. To avoid additional investments one could attach the central part of the system to already existing systems (e.g. in one of the established EO data centers). By its design the ILS should need a minimum of maintenance. The necessary minimum additional manpower could be provided by a scholarship scheme.

After a pilot phase the decision should be made whether or not users have accepted the system as a working tool. However any ILS can only "live" if it is supported regularly by donor and developing countries. Only if it contains useful and up to date informations can it become an accepted tool for users who look for a quicker approach to answer their questions.

In summary, the GCOS programme has undertaken the development of a comprehensive climate observing system based on the expressed need of national and international organizations. It will be implemented through the efforts of participating nations. To date, plans have concentrated on establishing the requirements for observations and assessing the contributions being made by existing systems, recommending where appropriate that deficiencies in these systems should be rectified. A particular assessment of the plans for satellite observations of the space agencies has been completed to assist the space agencies and CEOS to provide a comprehensive and effective programme to respond to the climate requirements.

[References noted in the footnotes and additional material on the programme are available from the Joint Planning Office, c/o WMO, CP2300, CH-1211, Geneva 2, Switzerland, or via internet: http://WWW.wmo.ch/web/gcos/gcoshome.html or jpo@gcos.wmo.ch]

### *Japan-U.S. Global Observation Information Network (GOIN)*

Senior officials of the Japanese and U.S. Governments electronically cut the ribbon inaugurating the Global Observation Information Network (GOIN) in Tokyo and Washington on June 6, 1995. In a live televideo conference, Ms. Makiko Tanaka, Minister of the Japanese Science and Technology Agency (STA), and Mr. Noriyuki Sekine, Parliamentary Vice Minister of STA, exchanged remarks and viewed environmental data with Presidential Science Advisor Dr. John Gibbons, NOAA Administrator Dr. James Baker, and NASA Administrator Mr. Daniel Goldin. Technical seminars were held in Tokyo and Washington as well, to provide more detailed presentations and an opportunity for users to obtain and exchange data between centers in the U. S. and Japan. The formal remarks on both sides noted that this system represents the first step in what will and should become a global data and information network supporting environmental research and operational activity internationally.

You may access GOIN WWW server:
[Japan node] http://WWW.goin.nasda.go.jp/
[U.S. node] http://WWW.nnic.noaa.gov/GOIN/GOIN.html

# Ninth CEOS Plenary Meeting, CANADA

The ninth CEOS Plenary Meeting will be held October 11-13, 1995 in Saint-Hubert, Canada at the Canadian Space Agency.
Key issues to be discussed at the upcoming Ninth Plenary Meeting include:

- re-alignment of the CEOS Working Groups, in particular the proposal to merge WGD and the interim WGINS into one consolidated Working Group. Also will look at the revised terms of reference for the WG's;
- report on the CEOS User Workshop held in Washington, May 8-9, 1995 and final report and proposed action plan from the CEOS Task Force on Planning and Analysis;
- annual review of Future CEOS Strategy;
- reports on projects relating to CEOS support for developing countries, including a report from IGBP on their analysis of geographic coverage by high-resolution satellites. Australia will report on the status of the Developing Country training package. Germany will report on their Space Information System feasibility study.

The 1995 CEOS Yearbook has been completed and copies will be distributed at the Plenary. Also, copies of the NASDA Special Report on Successful Applications of EO Satellite Data should be available at the Plenary.

# Inter-American Institute Announces Selection of Director

The Inter-American Institute for Global Change Research (IAI), the Directorate of which is located at the Brazilian National Space Research Institute (INPE), one of the original CEOS Members, is part of an initiative that resulted from a "Workshop for the Development of a Western Hemisphere Institute for Global Change Research" from July 16-19, 1991 in San Juan, Puerto Rico. The Workshop participants recognized that global change has regional implications and thus should be understood and addressed regionally. On May 13, 1992 in Montevideo, Uruguay, eleven countries signed the Agreement to Establish the IAI, a regional network of research centers dedicated to the study of global change and its impact on human society. As of December 1994, sixteen countries of the Americas had signed the IAI Agreement.

The IAI is a partnership to advance the sustainable development of the region through the generation of environmental data, scientific research and policy-relevant information derived in and by the countries of the Americas.

The initiative is designed to build scientific and technological capacity through a focused education and training program for the region and provide a forum for the analysis of environmental information in the context of pressing socio-economic needs.

Dr. Armando Rabuffetti has been elected as the first Director General of the IAI.

Dr. Rabuffetti. is Director General of the National Agriculture Research Institute (INIA) of Uruguay. He was educated at the Universidad de la Republica, Uruguay, Iowa State University, and holds a Ph.D. in Soil Science from North Carolina State University. His research has focused on NPK fertilization and soil fertility and management. The IAI Directorate should be operational and the IAI Director will assume his position by August 1995.

# News Highlight

CEOS is pleased to be a co-sponsor of the first International Space University Symposium, "Space of Service to Humanity (SOS Humanity): preserving Earth and improving life".

The symposium will be held in Strasbourg, France, from 5 to 7 February 1996. Both international and contributed papers will be presented.

This international symposium closely relates to the 1995-96 Design Project of the ISU Master of Space Studies program. For further information, please contact:

ISU (att: Emma Moyen)
Parc d'Innovation, Boulevard Gonthier d'Andernach
67400 Illkirch, France
Tel: (+33) 88 65 54 46
Fax: (+33) 88 65 54 47
e-mail: moyen@isu. isunet.edu

# CEOS Meeting Calendar

As of Aug.9

| Activities | 1995 | | | | | 1996 | | |
|---|---|---|---|---|---|---|---|---|
| | August | September | October | November | December | January | February | March |
| **CEOS Plenary level** | | | ▲**9th Plenary** 10/11-13, CSA. Montreal. Canada | | | | | |
| **CEOS WGD** (Working Group on Data) | | ▲9/7-9 CINTEX Workshop<br>▲9/13-15 ADS-10<br>9/11-13 CS-15<br>9/11-13 FS-11<br>9/13-15 NS-9<br>NASA, San Francisco, USA | | △**WGD-19** 11/13-16, Roshydromet, Moscow | | | | |
| **CEOS WGCV** (Working Group on Calibration and Validation) | | | | | | | | △2/28-3/1<br>**WGCV11**<br>CNES, Toulouse |
| **CEOS WGINS** (Interim WG on International Network Services) | | | | △<br>**WGINS-4** 11/13-16<br>Roshydromet Moscow | | | | |
| **CEOS Task Force on Planning and Analysis** | | | | | | | | |

▲ : determined △ : to be determined
(Date, Host organization/Location)

Meetings are open only to CEOS designated participants.

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Hamamatsu-cho Central Bldg., 10F
1-29-6, Hamamatsu-cho, Minato-ku,
Tokyo 105, JAPAN

For further information contact in each area allocated:

[Asia, Pacific]
Mr. T. Kuramochi STA
TEL:+81-3 3581 1679
FAX:+81-3 3501 3683
EMAIL:CEOSJ@IPX.TKSC.NASDA.GO.JP

[North & South America]
Dr. L. Shaffer, NASA
TEL : +1-202 358 0793
FAX : +1-202 358 2798
EMAIL:LSHAFFER@CODEI.HQ.NASA.GOV

[Europe, Africa]
Dr. H. Hopkins, ESA
TEL : +33-1 5369 7131
FAX : +33-1 5369 7560
EMAIL:HHOPKINS%ESA.BITNET@VM.GMD.DE