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## CEOS Strategic Implementation Team (SIT)

Ms. Mary Kicza, NOAA/NESDIS (USA), SIT Chair

SIT-21 was held on April 23 and 24, 2008, and was hosted by the National Oceanic and Atmospheric Administration (NOAA) and the Woods Hole Oceanographic Institution (WHOI). Fifty-nine participants representing twenty CEOS Agencies converged on the quaint Cape Cod, Massachusetts village of Woods Hole for two days of engaging and lively discussions. Our stated objectives were to:

- Identify a set of “actionable” Category 1 actions for CEOS Agencies to accomplish in advance of the November CEOS and GEO Plenaries.
- Complete a Tour de Table during which CEOS Principals commit their support to implement Category 1 actions in support of key GEO Tasks.
- Encourage development of partnerships in which CEOS Agencies combine efforts to address GEO Tasks and in support of CEOS Constellations.
- Assess progress of existing CEOS Constellations and address their requests for SIT and CEOS Agency support.
- Finalize the CEOS Constellations for GEO White Paper.
- Determine if there is sufficient support to initiate Ocean Colour Radiometry (OCR) and Ocean Surface Vector Winds (OSVW) Constellations.
- Encourage CEOS Agency support in stepping up to Global Climate Observing System (GCOS)-related Climate Actions.

Although we did not come to closure on all of our stated objectives, we did accomplish a great deal. Among the many highlights of SIT-21 were the following:

- CSIR’s update on the Data Democracy Initiative. Many CEOS Agencies have proposed to support the Initiative by assuring access to existing and future datasets.
- The Tour de Table, where all CEOS Space

Agencies present at SIT-21 (and two by proxy) confirmed commitment to accomplishing CEOS-GEO Category 1 actions. The success of the Tour de Table was directly related to the engagement of CEOS Agency Principals in teleconferences held prior to SIT-21. I hope to touch base again with Principals in early September prior to SIT-22 to make sure we do not lose momentum and to discuss further contributions and commitments for Category 2 actions.

- Achieved closer CEOS and GEO convergence through the remapping exercise with the identification of CEOS priorities related to GEO Tasks. As of SIT-21, 148 actions in four Categories were identified with Category 1 actions being the highest CEOS priority.
- The Norwegian Space Centre (NSC) volunteered to take the lead to coordinate relevant CEOS activities contributing to the forest degradation and deforestation monitoring initiative that GEO is considering in connection with its 2009-2011 Work Plan.
- The four Virtual Constellations Co-leads reported on their progress since the 21<sup>st</sup> CEOS Plenary. The Atmospheric Composition, Land Surface Imaging, Ocean Surface Topography, and Precipitation Constellations all welcome additional Constellation members, including data users.
- It was agreed that full proposals should be developed for two new Constellations - OCR and OSVW.

- The Working Groups on Information Systems and Services (WGISS), Calibration and Validation (WGCV), and Education, Training, and Capacity Building (WGEdu) reported on SIT and GEO-related activities.



SIT-21 Group at Woods Hole in Massachusetts

- The Systems Engineering Office (SEO), together with the CEO, provided a demonstration of the proposed CEOS Information System, a web-based tool for documenting and tracking CEOS actions. I am happy to report that the SEO will provide the CEOS community with a prototype system before SIT-22.
- Although we did not finalize the CEOS Constellations White Paper, we did have an engaging discussion on the process and we are currently in dialogue on how best to proceed. I expect to have a draft out for comment later this summer.

Thank you to all who participated in SIT-21. The engagement and support of the CEOS Space Agencies was outstanding as was the support extended by WHOI. I would also like to thank CEOS Executive Officer Ivan Petiteville for his unwavering commitment to CEOS and the considerable effort he undertook in preparation for SIT-21. I encourage you to please visit the CEOS SIT-21 website ([www.ceos-sit21.com](http://www.ceos-sit21.com)) for further information, including all presentations as well as a collection of pictures taken during the SIT-21 goings-on.

I wish everyone a happy and healthy summer season and I look forward to seeing you September 17 and 18, 2008 at SIT-22 in Tokyo, Japan. Please join me in extending a sincere thanks to JAXA for hosting this event.



## Moving forward with the implementation of GEOSS



**Dr. Michael Rast**, Group on Earth Observations (GEO) Secretariat (Switzerland)

**I**n the first half of 2008 the interaction between GEO and CEOS further increased with the CEOS actions in support of the GEO Work Plan 2007-2009, the activities of the CEOS Working Groups, and the Virtual Constellations being the central elements.

The highlights of this period include the launch of the Initial Operating Capability assessment period for the GEOSS Common Infrastructure (GCI), the completion of the first draft of the 2009-2011 Work Plan, an agreement amongst key participants on how to implement the GEO Biodiversity Observation Network (GEO BON), the second GEOSS Asia-Pacific Symposium, and major progress on advancing GEO's work on forest monitoring and Carbon tracking.

As announced at GEO-IV, the main achievement of this period has been the launching of the **Initial Operating Capability (IOC)** of the **GEOSS Common Infrastructure (GCI)** on 2 June 2008. The year-long IOC phase will allow the GEO community to populate, test, assess, and provide feedback on the elements that comprise the GCI, including the GEO Portals, Clearinghouses and the GEOSS registries for components and standards.

Another major step towards the building of GEOSS has been the initiation of GEO BON. On 30 May the 190 member governments of the Convention on Biological Diversity (CBD) adopted a decision recognizing the importance of GEO's **Biodiversity Observation Network**. With support from the GEO Secretariat, the GEO BON community is currently developing the implementation plan for GEO BON with the aim of presenting the Network to the GEO-V Plenary in November.

GEO's work on the protection of radio frequencies has continuously focused on a large number of advocacy initiatives aimed at convincing national and international bodies responsible for managing radio frequencies of the importance of preserving certain frequencies for Earth observations. The World Radiofrequency Conference 2007 issued a Summit Declaration demonstrating great synergies between its work and GEO's.

The **GEOSS Data Quality Assurance Strategy** Task held its second Workshop at the US National Institute of Standards and Technology (NIST) in Gaithersburg, Virginia. The Task, under the leadership of the **CEOS Working Group on Calibration and Validation**, has advanced well and as an outcome of the Workshop a Quality Assurance Framework for Earth Observation (QA4EO) is being developed in the context of GEOSS. This QA4EO set of "key guidelines" is currently being finalized for presentation to CEOS Plenary in November and subsequent recommendation for use throughout the GEO community.

During the CEOS SIT 21 meeting in Woods

Hole, the progress of the **Virtual Constellations** was presented. A process has been initiated to add other constellations to the four that are currently being developed by CEOS. Two additional constellation candidates were presented on Ocean Colour and Ocean Surface Vector Wind observation; proposals for including them are under preparation.

The GEO Secretariat has started to prepare a **new three-year Work Plan** for GEOSS implementation. This 2009-2011 Work Plan will provide a one-year overlap with the 2007-2009 Work Plan, ensuring the continuity of existing actions and offering an appropriate timeframe for preparing the 2010 GEO Ministerial Summit.

As part of the new Work Plan the Secretariat facilitated the development of a GEO Task and related activities on **forest monitoring and carbon tracking**. Together with Brazil's National Institute of Space Research (INPE), the Secretariat launched early preparations for a major Symposium on Forest Monitoring to be held in Iguacu, Brazil, on 4-7 November. The approach to collaborative forest carbon monitoring agreed at a meeting in June in Geneva is to focus on coordinating the needed observations and securing their continuity. GEO will define, develop and validate robust tools and methodologies for evaluating carbon storage in forests; identifying capabilities and gaps; and ensuring that all countries have access to, and the capacity to use, forest carbon data and analyses.

The IGOS-Partnership was dissolved at its final IGOS P-15 meeting at UNESCO in Paris in May. The Partnership expressed satisfaction with the way the **Transition of the IGOS Themes into GEO** had been handled. The GEO Secretariat continues to support the further integration of the Themes into GEO and, where appropriate, their migration into Communities of Practice. One of the main future thrusts for the Themes will be to widen their scope from scientific requirements for observations to broader applications, with the aim of supporting GEOSS implementation. A large Symposium in conjunction with GEO-VI in 2009 is currently being organised to mark the achievements of the IGOS Themes and to highlight their current and planned activities under the GEO umbrella.

From 14 to 16 April, the Government of Japan welcomed some 300 scientists and experts from across the Asia-Pacific region to a three-day symposium on new technologies and strategies for monitoring and predicting climate change, assessing and adapting to its expected impacts on biodiversity and water resources, and tracking the carbon cycle. The goal of the 2nd Asia-Pacific Symposium on the Global Earth Observation System of Systems (GEOSS) was to coordinate the regional implementation of GEOSS in the fields of climate change mitigation, deforestation, biodiversity loss, and threats to water resources.

On 8 July, the G8 leaders meeting in Hokkaido, Japan, recognized the importance of GEOSS in their Declaration on Environment and Climate Change. The text is worth citing in full: "To respond to the growing demand for Earth observation data, we will accelerate efforts within the Global Earth Observation System of Systems (GEOSS), which builds on the work of UN specialized agencies and programs, in priority areas, inter alia, climate change and water resources management, by strengthening observation, prediction and data sharing. We also support capacity building for developing countries in earth observations and promote interoperability and linkage with other partners."

The dialogue initiated between GEO and the International Charter on Space and Major Disasters has been further advanced. After an initial exchange of letters between the GEO Secretariat and the Charter, the Secretariat ask the Charter Board at its meeting in Montreal, Canada in April to consider establishing the necessary mechanisms for authorizing GEO Members to access the Charter during emergencies and to view its archive of previous interventions. Efforts are underway to facilitate.

A new version of the GEOSS Data Sharing Principles and Implementation Guidelines was sent to GEO Principals to obtain expert feedback from GEO Members and Participating Organisations. Over the coming two years the Task Team will aim to have the guidelines furthered and ready for implementation to be adopted by the time of the GEO Ministerial in 2010. As the next milestone, it is foreseen to present the White Paper to the 5th GEO Plenary meeting this November for discussion. Simultaneously, with the formal consideration of the Data Sharing Implementation Guidelines, it is important that ongoing GEOSS activities, such as for instance GEONETCast and GEO BON, begin to develop working data-sharing policies and procedures consistent with the GEOSS Data Sharing Principles.

In addition to the above there is involvement of CEOS in several other Tasks and GEO-related activities. It should be emphasized that the "Space Arm" of GEO has gained a great deal of strength over the past 18 months, ever since CEOS Plenary 20 in Buenos Aires.

On a more personal note I would like to inform all my CEOS colleagues that I am leaving the GEO Secretariat after 2 years of secondment from ESA. I must say that serving as the GEO Secretariat's focal point with CEOS has been an extremely rewarding experience, and I am particularly proud of the excellent collaboration I have had with CEOS colleagues over that time. This role will now be taken over by Michael Tanner seconded to the GEO Secretariat by the United States of America (NOAA), who will undoubtedly also enjoy the excellent spirit with which CEOS is supporting the implementation of GEOSS.



## Report from IGOS-P-15

**Dr. Walter Erdelen**, Co-Chair IGOS-P, UNESCO

**Ms. Barbara Ryan**, 2007 Co-Chair IGOS-P, U.S. Geological Survey

The IGOS Partnership held its final meeting at UNESCO Headquarters in Paris on 28 May, 2008. The meeting was the anticipated culmination of a process initiated 18 months ago to transition the IGOS-P Themes to GEO, and it marked the end of a unique, innovative, and effective partnership of international organizations and agencies that share common interests in global observation of the Earth. Yet, the meeting should really be viewed as a new beginning, for the firm intention is that the activities and interests embodied by IGOS-P and its Themes will flourish and be more effectively pursued within the GEO framework.

At IGOS-P-14bis held last November in Cape Town, the IGOS Partners adopted a Resolution that formalized the transition of their Themes to GEO and pledged their continued support of Theme activities in the GEO context. It also called for one final meeting of the Partnership to allow confirmation of satisfactory progress in the transition of the Themes to GEO, and it

called for closure of the Partnership at the conclusion of IGOS-P-15 if such progress was confirmed.

Stuart Marsh, Chair of the IGOS Theme Leaders Group, reported the progress of Themes transition since November, 2007, based on the updated Themes Transition Process Paper prepared by him and Mike Rast of the GEO Secretariat. From the information provided, the Partners confidently concluded that all Themes either have successfully completed their transition into GEO, or are well on their way to doing so.

Partner confidence in their decision to transition the IGOS-P Themes to GEO was strengthened further by the welcoming comments from GEO Secretariat Director, José Achache. He noted that Theme identity will be preserved within GEO and that the science embodied by the Themes must not be lost in the transition. He also said that it is his goal that the legacy of the IGOS Partnership be carried on within GEO.

Partners expressed their satisfaction with the transition and with the accommodating spirit presented by the GEO Secretariat. They see the Themes transition as an opportunity to position the positive accomplishments of the past in a more constructive matrix for the future. They expressed their hope that the transition of the Themes to GEO will allow society to receive the benefits of the investments made by the IGOS Partnership over the past decade.

Before adjourning, the Partners endorsed a proposal to schedule and sponsor a Symposium marking the end of the IGOS Partnership and the transition of its Themes into GEO. The Symposium will feature past accomplishments of the IGOS-P Themes, highlight the current state of the art in global earth observations for the science topics covered by the Themes, and look forward to the scientific and observational challenges ahead in building GEOSS. The Symposium is expected to be held in conjunction with GEO VI in November 2009.

## CEOS Precipitation Constellation Recent Activity -The Second Workshop-

**Dr. Riko Oki**, JAXA (Japan), CEOS PC Co-lead

**Dr. Steven Neeck**, NASA (USA), CEOS PC Co-lead

The CEOS Precipitation Constellation (PC) held its 2<sup>nd</sup> International Workshop at the Bellesalle Kudan in Tokyo, Japan, on June 5-6, 2008. Hosted by JAXA, one of PC co-lead agencies, this workshop was attended by nearly 30 participants, including various CEOS Space agency and user community representatives. NASA, the other PC co-lead agency, hosted the 1st International PC Workshop in Washington, DC, USA on June 14-15, 2007.

At the 2008 workshop in Tokyo, CEOS PC related activities completed in 2007 and planned for 2008 by participating agencies/missions were reported and discussed. The workshop focused with success on completing the 2008 Work Plan and 10-Year Implementation Plan. These documents will be submitted to the SIT-22 Meeting in September 2008 in Tokyo.

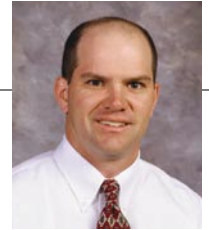
CEOS established the concept of Virtual Constellations for GEO at the 19<sup>th</sup> CEOS Plenary in 2005. Four prototype Constellations,

Precipitation, Landsurface, Atmospheric Composition, and Ocean Surface Topography, were designated to address significant implementation challenges, with each of the four addressing key GEOSS observations. The CEOS PC is unique in having (1) an existing constellation of precipitation sensors using the Tropical Rainfall Measuring Mission (TRMM) as a reference for providing multiple merged multi-satellite global precipitation products for research and applications, and (2) an existing international constellation satellite mission, the Global Precipitation Measurement (GPM) Mission.

The goal of the CEOS PC is to establish an international framework to guide, facilitate, and coordinate the continued advancements of multi-satellite global precipitation products. Plans are already underway for a 3<sup>rd</sup> International PC Workshop to be held in 2009. For more details on the PC and the 2<sup>nd</sup> International Workshop see <http://ceospc.gsfc.nasa.gov>.



## An Introduction to the CEOS Systems Engineering Office (SEO)



**Dr. Brian D. Killough,**  
NASA (USA), SEO Director

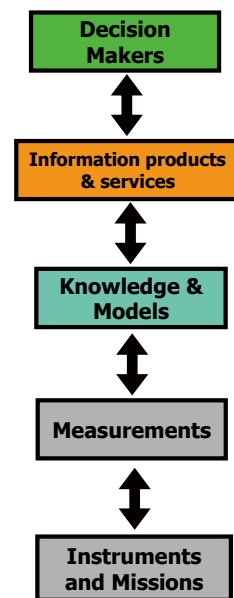
The Committee on Earth Observation Satellites (CEOS) Systems Engineering Office (SEO) was established in April 2007 to facilitate the development of CEOS space constellation plans. The SEO provides systems engineering leadership, provides a framework for a coherent science and engineering plan, and provides decision support tools for trade studies and the assessment of execution options to maximize the probability of their implementation. To date, the SEO technical efforts include requirements definition, constellation assessment, gap analyses, and future architecture development. In addition, the SEO fosters communications among CEOS partners by coordinating and participating in CEOS Constellation Workshops and Working Group meetings, developing tools for file sharing and action item tracking, developing visualization products for educating the global Earth Observation community about CEOS, and supporting the content development and management of the CEOS website.

The Group on Earth Observations (GEO) is leading an international effort to utilize Earth observations and the information derived from these observations to help solve complex global problems, such as population growth and climate change. The Global Earth Observing System of Systems (GEOSS) is the focus of the GEO effort and includes Earth observations, Earth system models and information products and services. The GEO plan envisions major advances in the GEOSS over the next ten years accomplished by

collaboration and coordination of investments by nations around the world. CEOS is responsible for coordinating the development of the space segment of the GEOSS and the SEO plans to provide systems level guidance and recommendations for how to effectively and efficiently proceed.

To provide a systems approach, the SEO proposes a framework (see figure) that captures the new thinking of the GEO, is understandable to all contributors to the GEOSS, is comprehensive in scope, and will facilitate communications and actions toward implementation. This framework allows the definition and traceability of requirements and the assessment of gaps or impacts at every level to enable CEOS member organizations, CEOS Constellation Teams, and CEOS Working Groups to increase coordination and collaboration toward the realization of a GEOSS. The proposed framework links the key decisions in each GEO Societal Benefit Area (SBA) to their required informational products, science models, space missions, instruments and measurements. Since there is significant overlap in the measurement needs of the SBAs, the total minimum set of measurements is much smaller than might be expected. To date, the SEO has initiated the development of a web-based requirements database that supports the four existing CEOS Constellations. Its content includes all of the CEOS missions, instruments and measurements (consistent with the draft 2008 Earth Observations Handbook) along with limited data in the other categories including Decision Support Tools.

The SEO looks forward to working with CEOS to realize the potential of a global Earth Observing System and welcomes feedback from the community. While the CEOS constellations and Working Groups are diverse and have multiple goals, selected commonality and a consistent systems analysis approach will strengthen plans, aid communications and improve the likelihood of success for all of the endeavors under the CEOS umbrella. The core SEO team includes Dr. Brian D. Killough (NASA), Dr. DeWayne Cecil (USGS), Shelley Stover (SSAI - Science Systems and Applications, Inc.), and Kim Keith (SSAI).



## Jason-2, a cornerstone of the CEOS Ocean Surface Topography Constellation

The Jason-2 ocean altimetry satellite was successfully launched by NASA from Vandenberg Air Force Base in California on June 20<sup>th</sup>. Separation from the launcher occurred 55 minutes after launch, followed by the deployment of the solar array. Control of the satellite was then taken over by the Centre National d'Etudes Spatiales (CNES).

Less than 48 hrs after the launch, all instruments were powered on and the first data received over the earth terminal network provided by NOAA and EUMETSAT. This allows the processing of the first operational products whose quality appears to be very promising. The comparison with Jason-1 data is excellent and first indications show that the behaviour of the altimeter close to the coast is good; this is an expected area of improvement from Jason-1 to Jason-2.

Jason-2's Ocean Surface Topography Mission will provide a vital contribution to the monitoring of climate change, ocean circulation and weather. Jason-2 will also be a cornerstone of the CEOS Ocean Surface Topography Constellation.

Welcoming the news of the successful launch, Dr. Lars Prahm, Director-General of EUMETSAT, said it "ensures the much-needed data continuity which is vital when measuring the sea level trend, one of the key indicators of climate change. Of equal importance is the contribution Jason-2 will provide for meteorology and oceanography, in the area of long-term and seasonal predictions."

Jason-2 is the continuation of the existing successful cooperation between the United States and Europe. It is a global endeavour with responsibilities for satellite development and launch shared between CNES and the US National Aeronautics and Space Administration (NASA). CNES and the US National Oceanic and Atmospheric Administration (NOAA) are responsible for satellite operations. Data processing will be carried out by CNES, EUMETSAT and NOAA, depending on the type of product.

Discussions are on going in Europe and in the United States to ensure continuity of the data set after Jason-2 and secure the provision of these essential products over the long term. presented by EUMETSAT, CEOS Secretariat

## Working Group on Calibration and Validation (WGCV)

**Dr. Changyong Cao**, NOAA/NESDIS (USA), WGCV Chair, **Mr. Pascal Lecomte**, ESA/ESRIN (Italy), WGCV Vice Chair, **Dr. Petya Campbell**, NASA/GSFC (USA), WGCV Secretariat

The 28<sup>th</sup> WGCV Plenary meeting was held February 26–29, 2008 in Sanya, China, in conjunction with the 25<sup>th</sup> WGISS meeting, and the CEOS Land Surface Imaging Constellation meeting. The meeting was co-sponsored by China's National Satellite Oceanic Applications and Services (NSOAS), and National Microwave Remote Sensing Laboratory (NMRSL), Chinese Academy of Sciences. WGCV highly commends our hosts Profs. Junwu Tang, Xiaolong Dong and their colleagues for the hospitality, hard work and dedication, which greatly contributed to the success of this meeting.

A specific objective of the meeting was the detailed review of the CEOS 2008 actions to support key GEO Tasks. Action items and deliverables were identified, and specific milestones were established. This meeting facilitated a number of CEOS Category 1 actions for 2008 in the areas of data quality assurance, climate actions, global DEM (Digital Elevation Model) interoperability, and other areas.

A major WGCV 2008 milestone was reached with the completion of the GEO/CEOS Workshop on Quality Assurance of Cal/Val processes, held at the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland, May 6–8, 2008. Organized by ESA and sponsored by NIST/NOAA/NASA, the workshop (see figure) has led to the draft data quality assurance strategy document with 15 key guidelines. The guidelines encompass three theme areas – Data Quality, Data Policy and Communication & Education. It was agreed that the Data Quality should be built upon the guiding principle that ‘All data and derived products must have associated with them a Quality Indicator based on documented quantitative assessment of its traceability to community agreed reference standards.’

To facilitate the cross calibration between satellites, establish consistency and radiometric reference standards, WGCV

has identified eight CEOS endorsed cal/val sites, a.k.a., the “Landnet” sites, including: three sites in the US (Railroad Valley, Ivanpah Playa, Lspec Frenchman Flat); La Crau, France; Dunhuang, China; Negev, Southern Israel; Tuz Golu, Turkey; and Dome C, Antarctica.

Several WGCV members are participating in the cross calibration experiment using the Dome C, Antarctica site. This site is stable long-term and is less affected by the atmosphere. In addition, Simultaneous Nadir Overpass (SNO) events occur at this site for certain satellite pairs, providing highly accurate radiometric calibration transfers between satellites. NASA and NOAA scientists have coordinated a special acquisition of Hyperion observations over the site for spectral characterization. Analysis using MODIS and AVHRR observations of this site show a linear function between reflectance factor and solar zenith angle, which significantly simplifies the cross-calibration. The results of this study have been presented at the IGARSS in July 2008.

To support the generation of fundamental climate data records, the CCRS (Canada Centre for Remote Sensing) and CSA (Canadian Space Agency) sponsored a workshop in Ottawa, Canada in June in an effort to develop a strategy to ensure the calibration consistency and geo-location accuracy of 1–5 km resolution sensors, such as AVHRR, MODIS, and ATSR. Representatives from NASA, NOAA, USGS, and CCRS evaluated several methods for recalibrating AVHRR to improve the climate quality of historical data. CCRS proposed to lead the effort of reprocessing 1 km AVHRR data for North America, in collaboration with

USGS and NOAA.

To facilitate Global DEM Interoperability (GEO task DA-07-01), BNSC and UCL have drafted guidelines and conducted a technical trade study on the different methods of using ASTER and SRTM DEMs for data fusion. The workshop "Practical steps towards Global DEM inter-operability" was held in Beijing on July 2 2008, sponsored by the Institute of Remote Sensing Applications (IRSA), Chinese Academy of Sciences. Dr. Xingfa Gu, director of IRSA, and his colleagues welcomed the participants and hosted this productive venue.

WGCV initiated a study of using IASI on MetOP for spectrally calibrating HIRS (High Resolution Infrared Radiation Sounder) on NOAA satellites, which has one of the longest satellite observations of the Earth from the surface to the stratosphere. This study will help the science community resolve the long standing issues of spectral induced biases for the 13 different HIRS from NOAA-6 to the current satellite, and will greatly facilitate the generation of fundamental climate data records. Details will be presented at the SPIE conference in August.

The progress toward the CEOS 2008 actions, the GEO data quality assurance strategy and issues of key importance for the WGCV member agencies will be reported and addressed at the forthcoming WGCV-29<sup>th</sup> Plenary meeting from September 30<sup>th</sup> to October 3<sup>th</sup> 2008 in Avignon, France.



Participants of the 28th WGCV Plenary





## Working Group on Information Systems and Services (WGISS)

*Ms. Martha Maiden, NASA (USA), WGISS Chair*

**W**GISS-25 was held jointly with WGCV in Sanya, Hainan Island, China on February 25-29, 2007. WGISS was invited by WGCV Chair Dr. Changyong Cao to join in this second joint endeavor, following a very successful joint WGCV/WGISS meeting hosted by WGISS in Budapest in May 2006. A meeting of the Land Surface Imaging Constellation Study Team meeting, convened by Co-Chairs Bryan Bailey and V. Jayaraman, was also held February 24-25 in this location. As incoming Chair of WGISS, I found myself immersed in the CEOS family.

Throughout the previous year, WGISS had been analyzing LSI requirements, during which time CNES WGISS delegate Jean-Pierre Antikidis had attended LSI meetings, reporting to WGISS on LSI plans and sharing a creative vision for how WGISS might best support LSI near-term and into the future.

At the Sanya meeting, WGISS held an extended session on Land Surface Imaging. Dr. John Townshend of IGOL provided an invited talk on Land Surface Imaging Science Needs. Bryan gave a presentation on the LSI Virtual Constellation and how WGISS might support the Study Team's activities. WGISS delegates and special invitees

from GISTDA, ISRO, NGDC, NASA's Global Land Cover Facility, USGS, CNES, and CRESDA made presentations on their agency LSI assets and possible contributions. During the session discussion, WGISS formed an LSI Interest Group, with an attendant specific LSI Project, which was created with the specific purpose of developing an LSI Portal. USGS WGISS delegate Lyndon Oleson agreed to lead both the Interest Group and Portal Project and work has been underway since the meeting.

WGISS-26 attendees will see a demonstration of a prototype LSI Portal at our upcoming meeting in September. The Portal will subsequently be available for use and comment by the LSI user community. Lyn has communicated that this initial prototype will be the first of several updated versions planned for release to the LSI community over the following 12 to 18 months. The group's hope is that this and subsequent improved prototypes not only enhance the ability of LSI users to locate, understand, and access LSI data, but also serve as an excellent test-bed for new information technologies and architectural approaches aimed at enhancing interoperability among data provider organizations.

Former CEOS Plenary Chair Barbara



WGISS Group in Sanya

Ryan relates that this LSI Portal has caught the interest of GEO's Jose Achache. It is indeed a real beginning that can lead to exciting developments, with the possibility of very visionary capabilities for the GEO System of Systems.

I'll also highlight just one of the many outstanding joint WGISS/WGCV sessions in Sanya: the Atmospheric Composition Constellation session, led by Dr. Hilsenrath and ending with a joint panel discussion. From this good session, a small founding group of WGISS members embarked on developing ideas with some WGCV and ACC colleagues to atmospheric composition activities. At WGISS-26, a determination will be made on how to move forward in this area.

I am grateful to have the opportunity to work with the dedicated and capable WGISS members, who bring together expertise on information systems and services from around the world. I invite all CEOS agencies to check with your delegates for a WGISS update, to hear about the many possibilities to contribute and benefit from our activities. I especially invite those agencies that haven't been sending delegates to WGISS recently to consider "rejoining" (as I have done) - these are exciting times.



Participants of the WGISS-25 Meeting in Sanya, China

## Working Group on Education, Training and Capacity Building (WGEdu)

**Mr. Gordon Bridge**, EUMETSAT (Germany), WGEdu Chair

The 9<sup>th</sup> Annual Meeting of the CEOS Working Group on Education, Training and Capacity Building (WGEdu), kindly hosted by INPE, took place in Sao Jose des Campos, Brazil, 28–30 April 2008. There were participants from USGS, UNESCO, EUMETSAT (Chair), CEOS SEO, CSIR – University of Fort Hare, CONAE, GISTDA, INPE, ESA and NAROM (Norwegian Space Centre). Inputs to the meeting were also received from CNES, DLR, NASA, NOAA, UNOOSA.

A review of past actions was followed by a series of short presentations on participants' educational and training activities and future plans. All participants are highly involved in many capacity building projects in various parts of the world. In South America, in particular, there is a strong drive to educate secondary and tertiary level students in schools and colleges in the use of remotely sensed data in combination with GIS datasets. This task is primarily focused at training the educator through the use of specialized regional workshops and seminars.

Since most of the activities of WGEdu are now fully aligned with GEO Capacity Building tasks, the contributions of WGEdu members to GEO tasks falling within the 2007 – 2009 Work Plan were reviewed. Potential areas needing more support were identified. It was noted that some members are less well aware of other members activities and there was some discussions on how information exchange could be improved. To this end the Group welcomed an offer from the CEOS SEO to assist with an information gaps analysis.

Another WGEdu task currently being implemented is the establishment of Pilot Projects in support of education and capacity building that test the implementation of the WGEdu Data Access Principles by demonstrating the use of remotely sensed data sets and GIS information for educational and training

purposes from various satellite and other sources, including the commercial sector. Ease of access to such datasets will be a key factor in the success of the Pilot Projects. Currently Pilots Projects supported by INPE, CNES, ESA are under review. Related to the above was the fact that recently, the USGS announced a change in its Landsat data policy whereby users soon will have no-cost access to any Landsat scene held in the USGS-managed national archive of global scenes dating back to Landsat 1, which was launched in 1972. The policy also will apply to Landsat 8 when it is launched in 2011. INPE is providing CBERS and LANDSAT-1, 2, 3 and 5 data free of charge for education, training and research purposes. Free of charge coverage includes around 80% of South America and CBERS data is free of charge for the same purposes in Africa. Great news for CB activities!

The WGEdu Group reviewed the status of its educational and training resources portal, host by EUMETSAT, with a mirror sight at University of Peking (PKU). In view of ongoing developments and trials of the GEO portal, further development of the WGEdu portal is on hold until such time that it can be fully integrated within the GEO portal framework, although the provision of new educational resources for the WGEdu portal library is still possible via EUMETSAT (WGEdu Chair).

The Group then reviewed the status of the CEOS Constellations and how they were a CEOS response to GEO/ GEOSS goals and objectives. It was noted that whilst WGISS and WGCV have been engaged with some of the current Constellation Study Teams, there clearly could be a role for WGEdu in the provision of outreach support, information exchange and how WGEdu/ GEO common goals could be better addressed through interaction with the Constellations. To start this process, CEOS SEO agreed to assess potential support roles that could be played by



Participants at the WGEdu Meeting in Brazil

WGEdu in the context of the Atmospheric Composition Constellation.

Another important WGEdu activity is the Remote Sensing Workshop, sponsored annually by the WGEdu in memory of Jay Feuquay (USGS). The workshops target diverse audiences, including educators and practitioners from government agencies and NGOs. In 2006, the first such workshop was held in Argentina, hosted by CONAE, the second took place in Cape Town in November 2007, hosted by CSIR, and the third will be held in Thailand, hosted by GISTDA in December 2008. The objective of the third Workshop will be to provide attending practitioners and educators with new knowledge and information about important techniques and technologies for applying remotely sensed data in preparation for and in response to natural disasters in SE Asia. The Workshop will include a significant “hands-on” component, where attendees will access remotely sensed data and products and then apply those data and products to specific research or practical problems using provided computer hardware and analysis software packages.

Finally the WGEdu looked at ways to strengthen interaction with WGISS and WGCV. It was agreed that this may best be achieved in the context of the Constellations, and the Chairman plans to explore this further with WGISS at its forthcoming meeting in the USA in September 2008.

In conclusion, the next Annual Meeting will be hosted in Norway, at the kind invitation of NAROM.



## A Message from the CEOS Chair

**Ms. Pontsho Maruping,**  
CSIR (South Africa), 2008 CEOS Chair

During CSIR's preparation phase towards identifying a project as a special theme during my tenure as CEOS Chair 2008, I could not have foreseen the extent of opportunities and challenges as I have experienced in the last few months. I have been encouraged by the overwhelming level of support expressed by various CEOS agency members.

Data Democracy for Developing Countries is an essential component of human capital development (HCD), specifically in terms of satellite based data. In attaining the HCD objectives, developed countries within CEOS, with mature space infrastructure and advanced technological capabilities, have an opportunity to play a vital role in the sharing of datasets, image processing systems and software, assist with dissemination models and facilitate collaborative projects.

In advancing this initiative, and in light of favourable support expressed by CEOS agency members, I am also encouraging regional coordination through specific projects aimed at enabling the sharing of EO resources for deriving relevant generic products as part of the outcomes of the initiative. The detail of these projects will be shared with CEOS agency members during the process of closer interaction.

With the benefit of hindsight, I was inspired to learn that the Data Democracy initiative would appear to complement in more than one way, internationally established efforts such as the CEOS Data Exchange Principle, the International Charter on Space and Disasters, the GEOSS Data Sharing Principles and the UNOSAT Programme. This informs me that underlying opportunities or possibilities exist for

further pursuance of this initiative beyond my term as CEOS Chair.

I hope that CEOS will take pride in having contributed in one form or another to Data Democracy for Developing Countries. While on the one hand political boundaries may serve as geographic borders and economic diversity may classify countries into developed and undeveloped, satellite sensors, on the other hand by virtue of their unique vantage point, have the ability to bridge these barriers to the benefit of planet Earth in terms of associated data and software tools. It is within this context that the CSIR is privileged to partner directly with CEOS agency members in implementing the initiative. Your support is greatly appreciated and on behalf of the CSIR, we look forward to a fruitful CEOS plenary in November 2008 in George, South Africa.

Contributions for future issues of the CEOS Newsletter from the CEOS Members and Associates, and subscriptions to the CEOS Newsletter, please contact CEOS Japan Secretariat : [misawa@restec.or.jp](mailto:misawa@restec.or.jp) <http://www.ceos.org/pages/pub.html#newsletter>

## Meeting Calendar

As of August 2008

Activities	2008						2009					
	July	August	September	October	November	December	January	February	March	April	May	June
<b>CEOS Plenary</b>					▲10-13 22nd CEOS Plenary CSIR/George, SA							
<b>CEOS SIT</b> (Strategic Implementation Team)			▲17-18 SIT-22 JAXA/Tokyo, Japan						△SIT-23			
<b>CEOS WGISS</b> (Working Group on Information Systems & Services)			▲22-26 WGISS-26 NOAA/Boulder, USA									▲11-15 WGISS-27 CNES/France
<b>CEOS WGCV</b> (Working Group on Calibration and Validation)				▲29-3 Oct. WGCV-29 Avignon, France								
<b>CEOS WGEdu</b> (Working Group on Education, Training, and Capacity Building)					△Jay Feuguay Memorial Workshop							
<b>GEO related Activities</b> (Group on Earth Observations)	▲15 13th GEO Ex.Com		▲10-12 GEO Performance Indicator W/S Paris/France		▲19-20 GEO Plenary Bucharest/Romania			△3rd GEOSS-AP Symposium GEO/Asia				
			▲21,24 ADC Co-Chairs Boulder, USA		△6 AWCI/ICG ▲3-5 APHW-4 Beijing			△ADC Tokyo				
<b>Others</b>	▲7-9 G8 Summit Japan				▲1-12 Dec. UNFCCC COP-14 Poland							▲4-8 ISRSE 33 Stressa/Italy

▲: determined    △: to be determined (Date, Host organization/Location)    CEOS-related meetings are open only to designated participants.

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