

# CEOS NEWSLETTER

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## SIT Chair Report and summary of SIT-29

*Pascale Ultré-Guéraud, CNES, SIT-Chair*

The first few months of 2014 have been a busy period indeed for CEOS! The GEO Ministerial, finalizing the CEOS 3-year workplan in addition to Working Group and New initiative process papers, the traditional interactions with the GEO Secretariat, and ongoing exchanges with the Virtual constellations and Working Groups ... continuing activity in the CEOS priority areas of Carbon, Climate, Disasters, GFOI, GEOGlam, not to mention a Strategic Implementation Team meeting! Plenty to keep us all on our toes ...

The 29<sup>th</sup> meeting of the Strategic Implementation Team took place at CNES's Toulouse Space Centre on the 9<sup>th</sup> and 10<sup>th</sup> April 2014. As the first meeting of CNES's chairmanship of the SIT, there were many challenges for the incoming SIT team, not least of which making sure all the participants could get to the meeting rooms! Thanks to the meticulous preparation by the logistics team everything ran smoothly around the meeting and so allowed the participants to concentrate on the issues at hand.

This meeting was a first opportunity for CEOS to take stock of the decisions made at the tenth GEO Plenary and Ministerial Summit which took place in Geneva in January 2014 and to examine how CEOS involvement in GEO might evolve as a result. The GEO Ministerial declaration recognizes the progress made and renews GEO's mandate for a second ten-year period. The "unique role" of Participating Organisations in particular having been highlighted in the declaration, CEOS SIT discussed the opportunity of proposing to GEO that CEOS contribute more in guiding the GEO process. It was decided that in addition to this proposal to GEO, the CEOS view on the future of GEO and confirmation of our continuing support across a wide range of subjects should be communicated to GEO by letter.

Following the completion of the CEOS Self-Study Implementation Initiative, marked by the adoption of a series of updated governing documents at the last CEOS Plenary, some work remained on three remaining documents: the CEOS 3-year Workplan, the Working Group Process Paper and the CEOS New

Initiatives Process Paper. During the Plenary session held during CEOS SIT these remaining documents were reviewed and adopted with minor modifications. CEOS now has a full set of governing documents including a refocused 3-year Workplan which will be the central document for monitoring CEOS activity over the mid-term.

CEOS SIT chair's role as the primary interface to the CEOS Virtual Constellations and an important facilitator with respect to CEOS Working Groups remains a high priority. A number of common issues having been identified during the initial round of teleconference tag-ups organized by the SIT team with the VC's and WG's during January and February, these were discussed in detail during a long session at SIT. A separate article on this session is included in this newsletter. This work will continue at the SIT Technical Workshop to be held in September with a full day of exchanges prior to the main meeting organized around the activity and interactions between the Virtual Constellations and the Working Groups.

While detailed articles can also be found in this newsletter on the main CEOS priority activities, it is worth summarizing here some of the major outcomes of the SIT meeting. It was a particularly busy meeting on the theme of Disasters and Carbon, while important decisions were also taken on the Global Forest Observing Initiative. Much work is currently underway in preparation of the upcoming World Conference on Disaster Risk Reduction to be held in Sendai, Japan in March 2015. These preparations and especially the CEOS Disaster pilots work on demonstrating the utility of Earth Observation data in addressing all parts of the Disaster management cycle have been greatly facilitated by CEOS having recently refocused its activities within a single

working group. The data acquisition strategies endorsed at SIT for these pilots will allow work to progress in advance of the WCDRR. In addition, SIT endorsed the Recovery Observatory proposal which aims at establishing a populated data infrastructure to support the Recovery phase following one catastrophic event over the next 3 years. In another key priority area, the report from the Carbon Task Force describing a CEOS strategy for carbon observations from space was discussed. It was agreed that a single point of coordination within CEOS should be identified for stewardship of this strategy and that a study group be established to make proposals on the implementation. The GFOI initiative continues to develop and two important documents were endorsed. One defines the Global Baseline Acquisition Strategy for 2014, while the second sets out the strategy for services based on the space data acquired. These documents will guide the Space Data Coordination Group's interaction with involved countries over the mid-term.

Finally the CNES SIT team would like to remind you of the upcoming SIT Technical Workshop which will take place in Montpellier, France on 17<sup>th</sup> and 18<sup>th</sup> September. In addition to the main two day meeting, on 16<sup>th</sup> side meetings can be scheduled and, as mentioned above, a "VC and WG day" will be organised which will provide the opportunity for productive exchanges on common activities and reinforced future interaction.

We look forward to welcoming you to Montpellier in September.



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## Summary record of CEOS WGs and VCs activities from SIT-29

*Jean-Louis Fellous,  
CNES, SIT Chair Team*

The SIT-29 meeting devoted a large fraction of its agenda to a review of the activities, achievements and issues of the CEOS Working Groups (WGs) and Virtual Constellations (VCs). The VC/WG session was prepared by eleven tag up teleconferences held in late January-early February 2014, involving participation of SIT Chair and her team (plus the CEO and a representative of CEOS Chair) and of the leaders of the five WGs and six VCs. These teleconferences pursued three objectives, namely (1) Introduce and review the status and issues and potential resolutions that may require SIT Chair support ; (2) Continue the discussion on issues raised in side-meetings or previous teleconferences; and, (3) Prepare SIT-29 discussions and subsequent action. The outcomes of the teleconferences were very useful in preparing the SIT-29 VC/WG session.

In this 5-hr session, VC and WG Co-Leads briefly reviewed the status and issues for SIT decision/action of their respective VC/WG. For the OSVW-VC (Ocean Surface Vector Winds) status and issues Paul Counet (speaking on behalf of Paul Chang and Julia Figa) highlighted training activities and needs for enhanced international engagement. Juliette Lambin talked about recent results and continuity issues for the OST-VC (Ocean Surface Topography), and (speaking on behalf of Paula Bontempi, Paul DiGiacomo and Peter Regner), she discussed the OCR-VC (Ocean Color Radiometry) status, its relationship with IOCCG, and relevant issues about data access. Riko Oki reported on the P-VC (Precipitation) activities, following the successful launch of GPM, and on issues pertaining to continuity and international engagement. Richard Eckman presented the status of the ACC-VC (Atmospheric Composition Constellation), and stressed the need for continuity of limb sounding. The case for the LSI-VC (Land Surface Imaging) was discussed separately, following the resignation of its leaders, and the SIT-29 was informed of the recommendation to temporarily suspend the LSI-VC, until after new perspectives and leadership are identified.

Richard Moreno (WGISS), Satish Srivastava (WGCV) and Jane Olwoch (WGCapD) successively presented their WG respective issues for SIT decision/action. WGClimat and WGDIsasters were dealt with during dedicated sessions, in view of their different status – joint WG with CGMS for the former – and recent establishment for the latter.

A lively discussion, moderated by Jean-Louis Fellous on behalf of the SIT Chair Team, concluded the VC/WG session, involving the SIT-29

participants and the various speakers. Four main topics were extensively discussed and led to the adoption of a number of action items.

- **Training activities**

The OSVW-VC training activities, initiated several years ago by Dr W. Stanley Wilson (NOAA), were considered exemplary. All VCs were encouraged to develop similar activities in their respective field. A close interaction with WGCapD is desirable, as well as with their corresponding scientific groups. Collaboration with other partners (e.g. COSPAR Capacity Building program, GCOS, WCRP) is also recommended.

- **Land Surface Imaging Constellation**

It was noted that “other VCs have relatively specific single issue, which are amenable to the VC approach”. A large part of the LSI role has been taken away by the operational initiatives (e.g. GFOI, GEOGLAM) and data access issues are dealt with by the SDCG. However the SIT Chair team suggested that there might be a potential for “regionally-based” enhanced collaboration through a reshaped LSI, and put forward the idea of establishing regional “nodes” (to be understood as fora), for example in Africa, South America and South-East Asia, from which a bottom-up expression of needs could emerge. This discussion resulted in an action item for SIT Chair and volunteer agencies. SANSa, USGS, NOAA, GeoSciences Australia and CSA expressed interest in participating to the elaboration of a position paper to be presented to the SIT Technical Workshop in Montpellier in September 2014.



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Jean-Louis Fellous (left) , Pascale Ulte-Guerard (right)

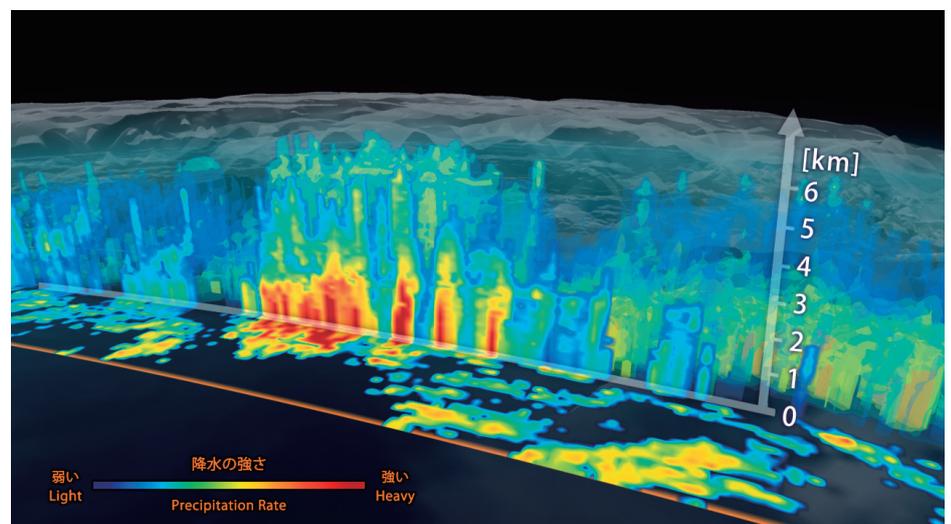
- **Linkages between VCs, WGs and Scientific groups**

The discussion addressed the relationship between VCs and WGs with some pre-existing science groups (e.g. GHRSSST, IOCCG, etc.), with the goal of advancing mutual recognition and dialogue. This requires on the one hand a careful identification of gaps and hurdles, and an exchange among VCs on their specific experience. An action item for VCs/WGs was adopted accordingly, and the topic will again be discussed at the SIT Technical workshop.

- **Broadening CEOS agency engagement**

There is a clear and permanent need to involve more agencies and give more responsibility within CEOS, beyond the main CEOS players. This has implications on VCs and WGs Membership and Leadership, and is seen as a permanent action item for SIT Chair and for VCs and WGs.

As a conclusion, the SIT chair team would like to thank the VCs and WGs for their active participation in this session and more generally for their good cooperation and interaction with SIT Chair.



3D view inside an extra-tropical cyclone observed off the coast of Japan, March 10, 2014, by GPM's Dual-frequency Precipitation Radar. The vertical cross-section approx. 4.4 mi (7 km) high show rain rates: red areas indicate heavy rainfall while yellow and blue indicate less intense rainfall.

Image Credit: JAXA/NASA

## GEO Activity report

Spring 2014 has been a busy time for the Group on Earth Observations (GEO). The GEO Work Plan Symposium 2014 convened about 100 participants from 36 GEO Members and Participating Organizations in Geneva on 28-30 April to highlight progress, exchange information and foster coordination across the entire Work Plan. [http://earthobservations.org/201404\\_Work\\_Plan\\_Symposium/](http://earthobservations.org/201404_Work_Plan_Symposium/) The Symposium focused on accelerating progress toward the 2015 Strategic Targets of the Global Earth Observation System of Systems (GEOSS), and preparing for the post-2015 era. A session on Requirements and Essential Variables recognized the need for better organization within GEO around the identification of requirements for observations and information. The Global Climate Observing System (GCOS) process and the response to its Implementation Plan from CEOS were highlighted as a good example of an existing mechanism which has been working well for the climate domain.

As a Co-Organizer of the Geospatial World Forum held 5-9 May in Geneva, GEO hosted a Pre-Conference Workshop titled, "Forging Ties with GEOSS – A Value-Proposition Dialogue" intended to seek feedback from the private sector on their interest and intent in partnering with GEO. The forum provoked in-depth discussions about the potential value of GEOSS to data providers and value-added companies, and provides an excellent foundation for further, more targeted dialogue and collaboration.

The GEO Appathon 2014 (<http://geoappathon.org>) was launched 7 May at the Geospatial World Forum, inviting non-commercial individuals and teams to use the GEOSS data portal and GEOSS APIs to discover, research and apply Earth observation data to unleash the power of EO data in the form of an App. By mid-July more than 130 participants from close to 40 countries had registered to compete for USD20,000 in prizes provided by the US Agency for International Development (USAID).

The 7th GEOSS Asia-Pacific Symposium, held 26-28 May in Tokyo, Japan, concluded with adoption of the "Tokyo Statement" which, among other items, welcomed the emerging initiative to integrate Earth observations with other data and information in tackling the challenges of monitoring the complexities of the water sector in the Post-2015 Development Agenda. The initiative is led jointly by the WHO, UN-HABITAT and UNEP, with GEO participation.

The Implementation Plan Working Group (IPWG), established by the GEO-X Plenary has begun to prepare a new GEOSS Implementation Plan for 2016-2025. The IPWG concluded Phase 1 of its activities, which included extensive consultation with the GEO Community, in early July by issuing an Interim Report. The Report re-affirms GEO's overarching goals and vision, and provides a number of "considerations for the future" by setting out objectives and outlining main areas of activity foreseen for the coming

**Espen Volden,**  
GEO Secretariat



decade. For more information, see <http://www.earthobservations.org/ipwg.php>. The website will be periodically updated to reflect the progress of the IPWG activities. Phase II will engage GEO's broader Stakeholder community. The draft Implementation Plan will be submitted for approval at the GEO-XII Plenary, and endorsement at the subsequent Ministerial Summit, in November 2015.



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## Working group on Disasters (WGDisasters)

**Ivan Petiteville, ESA, WGDisasters Chair**

Following the establishment of WGDisasters, CSA has hosted the first meeting of the Working Group (March 17-19). Meeting participants have addressed several hot topics aiming at preparing both the CEOS SIT-29 meeting and the 2015 World Conference on Disaster Risk reduction (2015 WCDRR, March 14-18, 2015, Sendai, Japan).

During the six months following the CEOS Plenary, space agencies representatives, members of the Data Coordination team have worked intensively to prepare the agencies' responses to the requirements from the floods, volcanoes and seismic hazards pilots. The intended contributions from ASI, CNES, CSA, ESA, DLR, JAXA, NASA, NOAA and USGS exceed by far the critical mass necessary to move forward with the next phase: the provision of EO data and their exploitation by the non-CEOS actors involved in the three pilots. In parallel, SIT-29 participants have endorsed the concept of Recovery Observatory (RO) including the establishment of one event in the 2014-2016; informal consultations have begun with major stakeholders: Red Cross, UNISDR, UNOSAT and World Bank. The improved procedure

for the designation of the permanent Supersites endorsed at SIT-29 allows a faster designation for the new Supersites. Since SIT-29, three new permanent Supersites (Marmara Region, Mt Etna and Mt Vesuvio) have been added. Furthermore, two DRM projects were rapidly implemented through the event supersite mechanism: Cephalonia earthquakes on January 26<sup>th</sup> 2014 (Greece) and Sinabung volcano pyroclastic flows on February 1<sup>st</sup> 2014 (Indonesia); events that cause economic damage and human fatalities.

The WCDRR Task Team (WTT) was established to coordinate CEOS participation in the WCDRR and inputs for HFA2. The preparations of both 2015 WCDRR and HFA2 follow a long UN process; consultations on HFA2 already started through a series of Regional Platform and Preparatory Committee meetings such as the 6<sup>th</sup> Asian Ministerial Conference on Disaster Risk Reduction in Jun, Bangkok, Thailand, during which CEOS through JAXA will organize a pre-conference event on "Satellite data and information to supplement regional and national DRR systems and to assist local

communities at risk". WTT is also planning a side event and exhibition at the WCDRR. CEOS need to work closely with key actors, governments and international organizations to ensure a stronger role for EO from space at 2015 WCDRR and for the coming decade through HFA2 (2015-2025).

Eventually, staff from Geoscience Australia, SANSa and Chinese Academy of Sciences have recently joined WGDisasters.



Participants in the 1st meeting of WGDisasters, at CSA (St Hubert, Canada)

## Summary of the First Meeting of the Joint CEOS-CGMS Working Group on Climate

*John Bates, Chair and Pascal Lecomte, Vice Chair*

The first meeting of the Joint Working Group on Climate took place at EUMETSAT Headquarters in Darmstadt, Germany on 5-7 March 2014. There were over 30 participants including 15 from CEOS and CGMS space agencies. The complete program and all presentations can be found on the CEOS web site. The major topics discussed included:

- Coordination of CGMS and CEOS
- Working Group on Climate Work Plan 2014-2016
- Climate Monitoring Architecture
- Essential Climate Variable (ECVs) Inventory
- Assessing the Completeness of ECVs
- Coordination with CEOS Carbon Task Force

- Reporting Activities – GEO, GCOS, UNFCCC SBSTA

There was good representation from CGMS members and discussion of the wide range of climate applications. The requirements for the essential climate variables are focused on detection of long-term variations. The more recent emphasis on providing climate services identifies needs across a broad range of scales from intra-seasonal to decadal and so the Working Group will be trying to understand these needs better by capturing existing case studies on applications and decision making using climate data records. These efforts will form the basis of the next report on the climate monitoring architecture.

One session on the ECV Inventory was used to provide a first opportunity to perform an assessment of ECVs to examine the content of the inventory. This exercise provided an opportunity to

identify tools needed for analysis of the inventory, map out how a gap analysis would be conducted on several target ECVs, and what a gap analysis might consist of. These elements provide the basis for an iterative sequence that the Working Group will conduct as part of its work plan.

Another session was devoted to a report from the CEOS Carbon Task Force and how the Working Group could best respond to the recommendations and actions in that report. There were several reports on international activities including an update on the evolution of the Global Climate Observing System (GCOS) and the Global Framework for Climate Services (GFCS). Coordination with both of these activities is a priority for the Working Group on Climate. The meeting closed with a discussion of reporting activities the Working Group will perform over the next year, particularly to the UN Framework Convention on Climate Change at the Committee of the Parties in December 2014.

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

The 37<sup>th</sup> WGISS meeting was hosted by NASA in Florida, close to the Kennedy Space Center on April 14-18 2014. There were 62 participants, (including 35 remotely), from 21 agencies or institutions.

One of the major subjects for discussion during this meeting was the new project "Recovery Observatory Infrastructure": a system to support the coordinated acquisition of Earth Observation data and its easy access for recovery after a disaster of an extreme magnitude.

This new development will be done in support to the Disasters Working Group. The objective of this project is to develop a collaborative tool allowing supporting the recovery (i.e. reconstruction phase in the 3 or 5 years after the disaster) through the usage of Earth Observation data.

WGISS intends to maximize the re-use of existing pieces of software (preferably opensource) available in the CEOS agencies or off-the-shelf.

WGISS is looking for volunteers from CEOS agencies for the definition and design of the Recovery Observatory Infrastructure and for the provision of existing pieces of software that could be re-used.

A first basic version should be available in October 2014 and a complete version in July 2015.

Another important subject for discussion during this meeting was the CEOS Opensearch project which aims to establish a common interoperability

standard to allow access to metadata and data of all CEOS agencies. It has been stated that any new data system shall implement CEOS Opensearch as it is easy to implement and has good performances. A dedicated technical workshop will be organized during the next WGISS meeting in Russia (September 27 – October 03 2014). This workshop, targeted for implementers, will provide guidance to agencies for the development of interfaces compliant to CEOS Opensearch.

During the 37<sup>th</sup> meeting, WGISS received a big number of support request; mainly in the theme of data access and interoperability. WGISS is currently re-organizing in order to better answer to these requests. This will be done through the provision of expertise, documentation and free or opensource software.

Looking toward innovative future technologies that might be applied to the domain of EO data, during our last meeting we had very interesting technical exchanges within the WGISS Technology Exploration group. WGISS agencies

*Richard Moreno,  
CNES, WGISS Chair*



presented their latest experiences about:

- Big data and services
- Cloud computing
- Semantics
- Visualization
- Authentication

A white paper summarizing WGISS discussion on Big Data, Cloud Computing, and Semantics is under preparation and will be presented during WGISS 38<sup>th</sup> meeting.

The 38<sup>th</sup> WGISS meeting will be hosted by ROSCOSMOS, in Moscow, Russia from September 27<sup>th</sup> to October 3<sup>rd</sup> 2014.



## Working Group on Capacity Building and Data Democracy (WGCapD)

*Eric Wood, USGS, Chair*

The 3rd Annual Meeting of the Working Group on Capacity Building and Data Democracy (WGCapD) was hosted by ISRO at their Indian Institute of Remote Sensing (IIRS) Campus in Dehradun, India in April of 2014. There were 25 participants representing 12 institutions. We used the meeting to evaluate the effectiveness of the projects carried out over the previous year and to address issues of direction that are inherent to relatively new WGs.

WGCapD has been collaborating with EOPOWER and other partners in the development of the Global Earth Observations Capacity Building (GEOCAB) Portal, a collection of collections of capacity building resources. This project was first launched by the EU/FP7 GEONetCab. Under NASA's lead, WGCapD has conducted a preliminary inventory of CEOS capacity building activities and is working with EOPOWER to determine how best to maintain that information as a discrete CEOS collection. The new portal, a component of GEO ID-02 (Institutional and Individual Development) will be officially launched during the GEO Plenary in Gabon.

WGCapD conducted a DEM workshop at RCMRD in Nairobi, Kenya, in May 2013. The purpose of the

Workshop was to work with US NGA to make previously unavailable Level 2, 1 arc second (30m) elevation data gathered on the Space Shuttle Radar Topography Mission (SRTM) underserved regions of the world. An initial release by NGA was made through WGCapD to South Sudan and Somalia for the Nairobi workshop. NGA is presently conducting an internal review to determine if the entire SRTM2 dataset will be made available to the general public. WGCapD, led by NOAA, is in discussions with NGA about how to distribute those data, should the release be authorized, and how to promote their use by continuing the WGCapD series of regional DEM workshops.

WGCapD conducted a pilot eLearning course which was completed in July of 2013. Recently it has sent follow-up surveys to all students who participated in the pilot to determine which aspects of the course were successful. The results of those surveys have been evaluated and the final

report is forthcoming.

In the meantime, the WG has begun an effort to revisit our strategy for eLearning as an approach for capacity building. This includes not only long term courses such as the one completed, but also short term courses, webinar series, and "one-off" webinar presentations. The effort to develop the new strategy is being led by INPE and ISRO with assistance from SANSa, USGS, SWF and others.

Finally, we are looking forward to continuing our third year of existence, under the new chairmanship of Eric Wood (USGS) and Vice Chair Jane Olwoch (SANSa).



WGCapD-3, Dehradun, India (April 2014)

## Working Group on Calibration and Validation (WGCV)

*Satish K. Srivastava,*

*Canadian Space Agency, WGCV Chair*



The 37<sup>th</sup> Working Group on Calibration and Validation (WGCV) plenary meeting was hosted by the European Space Agency (ESA) at ESRI in Frascati, Italy from February 17-20, 2014. There were more than 36 delegates representing 24 agencies/institutions, including WMO, EUMETSAT and GEO. Discussions on ongoing and potential collaborations with VCs on cal/val needs were held, especially with VC-SST and VC-AC. WMO and EUMETSAT proposed potential interactions between Global Space-based Inter-Calibration System (GSICS) and WGCV on complimentary and supportive activities. WGCV and its subgroups are discussing these further and will identify specific activities for interaction with GSICS at WGCV-38 plenary. At the CEOS level, an update on the CEOS Carbon Task Force Report was presented, in particular the recommendations/actions pertaining to WGCV. The CEO introduced the new structure of the CEOS 2014-16 work plan and sought input from WGCV. GEO Secretariat provided an update on GEO activities and priorities. Special sessions were held to discuss topics of interest to many subgroups and agencies (cross-cutting themes) in order to identify potential linkages/collaborations on specific themes. The topics discussed included maturity matrices, Sentinel-2 radiometric uncertainty tool, snow retrieval, cloud masking, solar irradiance reference

spectrum, global DEMs and QA4EO among others related to cal/val.

At the CEOS SIT-29 meeting held in Toulouse, France on April 9 and 10, 2014 WGCV presented its activities report. As requested by WGCV, SIT endorsed the project on cal/val sensor comparison campaign in support of SST and LST measurements from space. Thanks are due to ESA for its gracious funding support to this project. The Infrared and Visible Optical Sensors (IVOS) subgroup of WGCV will be actively working with VC-SST on this campaign. WGCV also finalized its tasks for the CEOS 2014-16 work plan at the meeting. The 21st CEOS SAR Calibration and Validation Workshop was held jointly with the 10th European Conference on Synthetic Aperture Radar (EUSAR 2014) from June 02-06, 2014 in Berlin, Germany. The Land Product Validation (LPV) subgroup of WGCV held its meeting from January 30-31, 2014 at ESA/ESRI in Frascati, following the Land Product Validation and Evolution workshop organized by ESA. During LPVE workshop, the first dedicated LPV validation protocol was presented, covering best practices for Leaf Area Index validation. A peer-reviewed publication on 'Online Validation Exercise' (OLIVE), with contributions by LPV

subgroup, is now available online at <http://www.mdpi.com/2072-4292/6/5/4190>.

The 38<sup>th</sup> WGCV plenary meeting will be co-hosted by NASA, NOAA, and USGS from September 30 to October 3, 2014 at the NOAA Center for Weather and Climate Prediction (CWCP) in College Park, Maryland, USA. More information along with the registration form can be found on the WGCV website at <http://ceos.org/wgcv>.



WGCV-37 held at ESA/ESRI in Frascati, Italy (Feb. 17-20, 2014)

## GFOI Space Data Component Coordination

The CEOS Space Data Coordination Group (SDCG) is leading the implementation of the Space Data Component of the Global Forest Observations Initiative (GFOI), with the overall objective of facilitating forest observations in support of national forest monitoring systems.

The SDCG convened at ESA/ESRIN in Frascati, Italy, during the week of February 24<sup>th</sup> for the SDCG-5 meeting, which was held in conjunction with a GFOI Leads meeting. In addition to advancing SDCG activities and preparing for SIT-29, a pilot country consultation event was held at the FAO's Rome offices. Representatives from Democratic Republic of Congo, Kenya, Tanzania, and Uganda were invited to share their Measurement, Reporting, and Verification (MRV) status, space data requirements, and capacity building needs. These discussions provided important input to the formulation of the GFOI Space Data Services.

A month later at the Strategic Implementation Team (SIT-29) Meeting, CEOS endorsed the 2014 update of the CEOS Global Baseline Data Acquisition Strategy, the Space Data Services Strategy, and to develop a strategy to support priority GFOI R&D activities, to be presented for endorsement at SIT-30.

The CEOS Global Baseline Data Acquisition Strategy involves a number of core data streams available free-of-charge to GFOI, providing sustained wall-to-wall acquisitions of forested areas, globally repeated on timescales consistent with country needs. Core data stream coverage for

2013 was provided by Landsat-7 and Landsat-8 (from April 2013).

In total in 2013, 40,000 scenes were acquired over the 15 GFOI countries. Core data coverage for 2014 and beyond will be greatly boosted as Landsat-8 reaches full capacity, and with the launches of Sentinel-1A, Sentinel-2A, and CBERS-4, as well as ALOS-2, which is foreseen to provide annual global mosaics at 25m resolution on free and open terms.

The GFOI Space Data Services comprise six services that provide a case-by-case response to a country's satellite data needs. These nationally tailored services serve as a complement to the baseline strategy, taking into account existing/planned capacities and relationships.

The CEOS Systems Engineering Office (SEO) is supporting the SDCG, engaging Kenya in piloting the Space Data Services, including an archive analysis and the development of prototype services. This includes deployment of a prototype instance of the Space Data Management System (SDMS), which will help facilitate access to space data and processing tools using a cloud-storage infrastructure. The SEO will also investigate approaches for tools to develop cloud-free mosaics and will work with the CEOS Working Group on

**Stephen Briggs.**

*CEOS Lead for GFOI, Space Data Coordination Group EXEC*



Information Systems and Services (WGISS) to improve search, discovery and access to satellite datasets.

Although there are already ongoing actions that will result in the delivery of some space data services, further opportunities with different partnerships among ongoing work of CEOS agencies, REDD+ countries, governments, research programmes, service delivery agencies or funding agencies could be explored. There is flexibility in the GFOI design to allow variable geometry partnerships to be able to provide services to different REDD+ countries. CEOS Agencies might consider how best to investigate such possible partnerships.

SDCG-6 will be hosted by NSC in Oslo, Norway, and will commence on the 22<sup>nd</sup> of October jointly with a SilvaCarbon Workshop, and will run to the 24<sup>th</sup>. The focus will be on confirming progress in implementing the GFOI Space Data Services, progressing the R&D data support strategy, and confirming the role of The World Bank, UN FAO, and SilvaCarbon in promoting the GFOI Space Data Services. A GFOI Leads meeting, as well as a briefing to the Norwegian government will be held the two days prior to SDCG-6.

For more information on GFOI and the SDCG, please visit <http://www.gfoi.org/> and <http://www.ceos.org/sdcg>.

## CEOS Ad-hoc Working Group on GEOGLAM

The Group on Earth Observations (GEO) Global Agricultural Monitoring (GEOGLAM) initiative aims to support agricultural production estimates through the use of satellite and in situ Earth observations, as well as agrometeorological information. In support, CEOS created an ad hoc Working Group on GEOGLAM to coordinate its efforts.

The Group developed the CEOS Acquisition Strategy for GEOGLAM Phase 1, which was endorsed at the 27<sup>th</sup> CEOS Plenary. The Strategy defines target products and related satellite data requirements, and defines roles and an acquisition strategy for data streams from a number of CEOS Agencies.

CEOS support to JECAM, the R&D component of GEOGLAM, has been in place since 2011, and has underpinned the strong growth of the community. The JECAM annual report (linked below) outlines the wide variety of CEOS agency data streams being employed for R&D and applications development.

A JECAM Science Meeting is planned for the 21<sup>st</sup> to the 23<sup>rd</sup> of July in Ottawa, Canada. Around 45 people

**Matthew Steventon, George Dyke, Shin-ichi Sobue,**

*CEOS ad hoc Working on GEOGLAM*

are expected to attend, with representatives from JAXA, NASA, CNES, DLR, and CSA confirmed. CEOS agencies are encouraged to attend, and to take the opportunity to engage with the JECAM network.

The objectives of the meeting include comparing results and in situ data collection standards from JECAM test sites, and to discuss linkages with programs like the EC's SIGMA and ESA's Sentinel-2 for Agriculture initiatives. Members of the JECAM community also hope to coordinate with CEOS agencies and commercial data providers. One of the key topics for discussion will be making satellite data available openly across JECAM test sites, and ensuring access across the many science teams involved.

The provision of RADARSAT-2 data to Phase 1 Asia-RiCE Technical Demonstrator Sites (10) by CSA/MDA provides a good example of the collaboration between CEOS agencies and GEOGLAM. Early results of Phase 1A (Indonesia, Thailand, and Vietnam) are currently being

compiled, and will be shared later this year at various meetings and in an Asia-RiCE Implementation Report. The figure below shows some early results for the Indonesian Technical Demonstrator Site.

The CEOS Ad-hoc Working Group on GEOGLAM is now working to produce an update to the *CEOS Acquisition Strategy for GEOGLAM*, which will be presented for endorsement at the 28<sup>th</sup> CEOS Plenary in October. This strategy is being developed in parallel with the new GEOGLAM Implementation Plan, which is expected to be published in late 2014.

In addition to some minor changes to the target product specifications, the update will focus on new requirements related to the increased scope of GEOGLAM. As GEOGLAM moves into its next phase, more projects are receiving funding, more countries are becoming involved, and some existing GEOGLAM projects are considering

(to be continued on page 7)

# Carbon Task Force (CTF)

In June 2010, the “GEO Carbon Strategy” report describing the building blocks and coordinated implementation for an integrated global carbon observation system was published by the GEO Carbon Community of Practice. Thereafter CEOS decided to coordinate a response from the space agencies, and established the Carbon Task Force (CTF) under the leadership of NASA and JAXA to develop the report –“The CEOS Strategy for Carbon Observations from Space”.

The CTF began by identifying domain leads to prepare major sections of the report: the atmospheric, terrestrial (land), and oceanic and inland waters chapters. Chapter co-authors were selected from the international earth observation scientific communities based on recommendations made by CTF members and the domain leads. Initially, it was decided to follow the model of the CEOS response to the GCOS implementation plan with actions identified for each domain and for integration. However, it was recognized that the GEO Carbon

Strategy focused primarily on scientific requirements for observations of carbon and didn't cover the full spectrum of societal needs. The CTF and chapter authors therefore decided to also address the information requirements for policy and carbon management, including those of the UNFCCC and IPCC.

The report consists of an executive summary, six chapters (introduction, land, oceans and inland waters, atmosphere, integration, and the way forward), references and appendices. Its primary purpose is to guide future CEOS actions, priorities, and planning and provide the basis for systematic monitoring and reporting of progress toward satisfying science and society's carbon information needs -- specifically with regard to the establishment, sharing, and coordination of space-based Earth observations of carbon and the next generation of missions.

Regular teleconference calls and face-to-face meetings held in conjunction with scientific conferences and CEOS meetings were used to coordinate the preparation of the report. Report outlines, chapter drafts, and a complete draft were all reviewed at CEOS SIT meetings and technical workshops and revised based on feedback received. On September 30, 2013, the report was released for open review. CEOS agencies also nominated reviewers. The review period closed on December 2, 2013. The report was then revised in response to comments and feedback received during the open review period and submitted to CEOS in March 2014. The report was endorsed by CEOS following the SIT



**Masakatsu Nakajima,**  
JAXA, CTF Chair

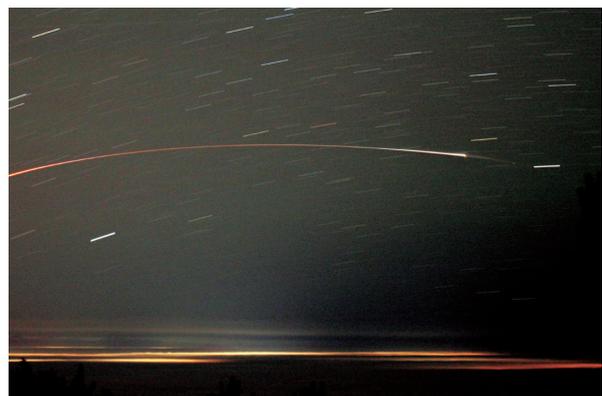


**Diane Wickland,**  
NASA, CTF Chair

meeting in April 2014. CEOS then called for an Ad Hoc Carbon Strategy Implementation Study Team (CSIST) to develop a set of implementation options, including an assessment of compatibility with CEOS resource availability and oversight arrangements. The CSIST has been working since May, met in Washington, DC in July, and is on schedule to deliver their analysis of options to the CEOS SIT in mid-August for consideration at the September 2014 SIT Workshop.



Successful launch of OCO-2



Trajectory of OCO-2 to the A-train

(continued from page 6)

the production of national and regional products, such as cropland extent maps and calendars. The update of the *CEOS Acquisition Strategy for GEOGLAM* will seek to evolve CEOS support commensurate with the development and implementation of GEOGLAM.

Links

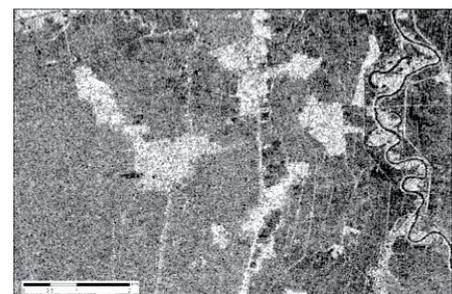
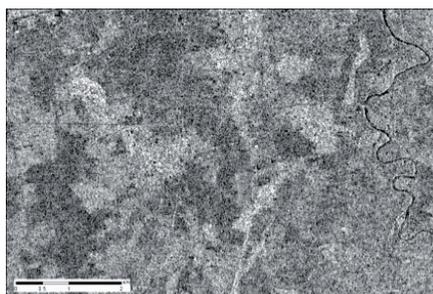
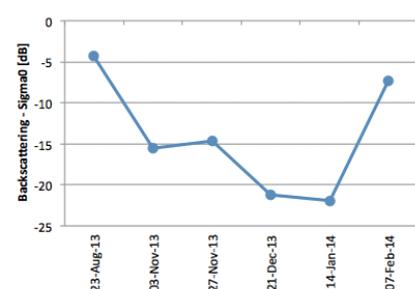
GEOGLAM  
<http://www.earthobservations.org/geoglam.php>

JECAM Annual Report  
<http://www.ceos.org/images/SIT29/JECAM%20Progress%20Report%202014%20v0%2021.pdf>

JECAM Science Meeting Agenda  
[https://www.earthobservations.org/documents/meetings/20140721\\_jecam/20140721\\_jecam\\_draft\\_agenda.pdf](https://www.earthobservations.org/documents/meetings/20140721_jecam/20140721_jecam_draft_agenda.pdf)

JECAM Science Meeting Registration Page  
<https://doubleg.wufoo.com/forms/jecam-science-meeting-july-2125-2014/>

Asia-RICE  
<http://asia-rice.org/>



Top-left: Phase 1A Asia-RiCE Technical Demonstrator Site in Subang, West Java Island, Indonesia (observation area). Top-right: Variation of SAR backscatter throughout the rice crop growth cycle. Bottom: Two RADARSAT-2 images demonstrate the variation in SAR backscatter (brightness) between the planting phase (left) and harvesting phase (right). RADARSAT-2 images © CSA/MDA. Analysis by LAPAN/MOA with JAXA/RESTEC.

## CEOS Chair Input

EUMETSAT is now over halfway through its CEOS Chairmanship and at this stage, I am pleased to report on a number of achievements involving the CEOS leadership and community.

The first CEOS three-year work plan has now been released as the last element of the new governance agreed in November 2013 by the Montreal Plenary, based on the outcome of the CEOS Self Study led by NASA. This was achieved as a result of a team effort, and I would like to express my appreciation to all the Working Groups, Virtual Constellations and Ad Hoc Teams and to the Strategy Implementation Team for their substantial contributions and commitments, with special thanks to our CEOS Executive Officer, Kerry Sawyer, who led the effort.

One of the key features of the plan is its focus on objectives and deliverables associated with timescales and assigned responsibilities. This will provide a sound and shared basis for measuring our progress in a multiannual perspective thus facilitating the dialogue between the CEOS leadership and all its working structures on our areas of engagement and priorities, starting at the forthcoming Plenary.

Another key element of our governance is the continuity of the function of CEOS

Executive Officer (CEO), and I believe our efforts to overcome the difficulties encountered in the recent past will soon bear fruit. Thanks to very constructive discussions with GeoScience Australia, the Canadian Space Agency and NOAA, I am now in a position to propose a way forward for setting up the strong team - composed of a CEO and a Deputy CEO – which is required to reinforce the vital CEO function and to support the CEOS leadership until the CEOS Plenary of 2017.

The new Disasters Working Group established at the Montreal Plenary has also made rapid progress, with substantive preparations already underway for substantial CEOS contributions to the 3<sup>rd</sup> World Conference on Disaster Risk Reduction to be held in Japan in 2015, during JAXA's CEOS Chairmanship.

Following the endorsement of the "CEOS Strategy for Carbon Observations from Space" at SIT-29 in March of this year, work is well underway to assess the possible implementation of this strategy, with draft recommendations on the way forward expected in time for discussion the SIT workshop organised by CNES in Montpellier, France, in September. Work is also proceeding as planned for the GFOL, after the approval of the Global Baseline Data Acquisition

**Alain Ratier,**  
EUMETSAT,  
CEOS Chair



Strategy and Space Data Services Strategy at SIT-29.

In March, EUMETSAT was pleased to host in Darmstadt the first meeting of the Joint CEOS - CGMS Working Group on Climate, which focused on the further development of the Inventory of Climate Data Records and also discussed the preparations for COP-20 and COP-21. Likewise, the preparation of the Climate Symposium on Climate Research and Earth Observations from Space has significantly progressed after the meeting of the Science Programme Committee in May: the final programme is now available on the Symposium website (<http://www.theclimatesymposium.com>) and I invite you to register for this key event, to have a chance to be one of the 600 participants.

Last but certainly not least, I have pleasure to invite the CEOS community to our 2014 Plenary, which EUMETSAT will host in Tromsø, Norway, on 28 - 30 October, in cooperation with the Norwegian Space Centre and the Norwegian Meteorological Institute.

## Meeting Calendar

As of August 2014

Activities	2014						2015		
	July	August	September	October	November	December	January	February	March
<b>CEOS Plenary</b>					▲28-30 29th Plenary and Side Meetings Tromsø, Norway				
<b>CEOS SIT</b> (Strategic Implementation Team)			▲16-18 SIT-29 Side Meetings Montpellier, France						30-4/2 ▲ SIT-30 and Side Meetings Paris, France
<b>CEOS VCs and CEOS TFs</b> (Virtual Constellations and Task Forces)				△20-23 SDCG-6 Oslo, Norway					
<b>CEOS WGs</b>			▲10-12 WGDisasters-2 Paris, France	△29-3 WGISS-38 Moscow, Russia	▲30-3 WGCV-37 College Park, Maryland, USA				
<b>GEO related Activities</b> (Group on Earth Observations)						△12-14 GEO-XI Plenary, ExCom & Associated Side Meetings Libreville, Gabon			
<b>Others</b>	▲14-15 Prep. Committee Mtg. for UN World Conference on Disaster Risk Reduction Geneva, Switzerland	▲13-18 IGARSS 2014 Quebec, Canada	▲30-31 Blue Planet Steering Committee Meeting Geneva, Switzerland	▲2-10 40th Scientific Assembly of the COSPAR Moscow, Russia	▲29-1 PSTG & SAR CWG Meeting Goddard, Maryland, USA	▲13-17 Climate Symposium 2014 Darmstadt, Germany	▲1-12 UNFCCC COP-20 & SABSTA-41-RSO Lima, Peru	▲4-8 95th American Meteorological Society Meeting (AMS) Phoenix, Arizona, USA	
	▲21-23 JECAM Science Meeting 2014 Ottawa, Canada	▲16-21 World Weather Open Science Conference Montreal, Canada	▲29-3 65th International Astronautical Congress (IAC) Toronto, CANADA	▲27-31 SPIE Asia-Pacific Remote Sensing Symposium Beijing, China					

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

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