

MINUTES OF THE 28th CEOS SIT MEETING

12th-14th March 2012
NASA Langley Research Center
Hampton, Virginia, USA

Main SIT-28 Discussion Points, Outcomes and Actions

The main discussion points, outcomes and actions from the SIT-28 meeting are as follows:

1. **Provide specific input to the Post-2015 GEO Working Group** relating to overall organisation structure for GEO (28-1), and prepare for CEOS inputs to the 2014 GEO Plenary and Ministerial Summit (28-3).
2. Endorsement of the **SDCG Global Baseline Strategy (Element 1)**, and agreement to follow-up with key implementing agencies. (28-4, 28-5, and 28-6)
3. Endorsement of the **SDCG's proposed development of the Element 2 (National Services)** strategy for presentation at SIT-29 (28-7).
4. Endorsement of **WGCapD's capacity building inventory**, and agreement of a series of actions (28-9, 28-10) to engage CEOS agencies in populating the inventory.
5. Endorsement (during a mini-CEOS Plenary session) of **JAXA and CSIRO as CEOS Chair for 2015 and 2016** respectively (28-10).
6. **Harmonise VC terms of reference** and the description of expected **2015 accomplishments** for the VCs and WGs (28-11, 28-12, 28-19) including **information on 'Consistent Access' to data**.
7. Develop **CEOS support to the GEO Blue Planet Task**, and a proposal for the **operational oceanography activity** (28-14, 28-15).
8. WGISS will **focus CEOS's data access and discovery for GEO on the IDN** (28-16, 28-17, 28-18).
9. A study group to **recommend the CEOS approach to land surface imaging** (28-20).
10. Concurrence on responses to the **Essential Questions**, and reports from the Topical Teams on **Major Meetings, Roles and Responsibilities**, and **Decision Making** (28-21).
11. Agreement to **work with CGMS on a proposal for a joint CEOS-CGMS Climate Working Group** (28-23, 28-24).
12. Support the CTF to **conclude the CEOS Carbon Strategy** (28-26, 28-27, 28-28).
13. Progress to continue towards a **DRM observation strategy**, and towards **coordination CEOS disaster-related activities** (28-29, 28-30).
14. To write expressing support of the **Geodetic Observing Network** (28-32, 28-33).
15. Agreement that the **ad hoc team on GEOGLAM continue its work**, and report to Plenary (28-34).

1 Welcome and Opening Remarks

David Bowles (NASA Langley Research Center Deputy Director) welcomed participants to NASA Langley Research Center, noting that Langley has been involved in atmospheric research for over 95 years.

Mike Freilich (SIT Chair) welcomed all participants attending in person and via web-conferencing to SIT-28. He gave an overview of the agenda, noting that one of the outcomes of the CEOS Self-Study (CSS) was a recommendation to allow more time for substantive discussion of key issues during SIT meetings. The meeting was accordingly divided into six sessions.

SESSIONS 1 and 5: Welcome and Essential Business covering the essential business of the SIT, including several key reports and issues requiring decisions and direction. The essential business topics are divided into three broad categories – agenda topics for information, agenda topics for which CEOS guidance is requested, and agenda topics for which a decision is requested.

SESSION 2: CEOS Virtual Constellations (VC) and Working Groups (WG) continuing to expand the two-way dialogue between CEOS leadership and the VCs and WGs as recommended in the CSS, and with discussion on refocusing the CEOS VCs and WGs around common and consolidated CEOS priorities, specifically looking at support to physical outputs (*e.g.* ECV support).

SESSIONS 3 and 4: CEOS Self-Study Implementation discussion sessions on CEOS membership and participation, essential strategic questions that scope and define the CEOS mission, structure and governance. The sessions are not seeking immediate decisions on changes, but rather strategic discussion of options amongst participants as inputs to the development of the CEOS guiding documents.

SESSION 6: A Sustainable CEOS to engage in a top level discussion on three elements that affect the organization's ability to meet its near-term commitments and collective priorities with stakeholders: Continuity, Complementarity, and Capacity.

Mike recognised a productive year, with successful launches by CNES, JAXA, and KARI, and a number of others approaching. He noted that with the current budgetary situation of the U.S. Government, U.S. agency travel is curtailed, and as a result, a number of people who had planned to attend are participating in SIT-28 via GoToMeeting. He thanked them and said it should be seen as a sign of commitment to participation in CEOS.

2 Review of Open Action Items

Stephen Ward (SIT Chair Team) referred SIT participants to his written report on the status of open actions from SIT-27, the SIT Workshop 2012, and the 26th CEOS Plenary. *This report can be found as an appendix of these minutes.*

3 CEOS Priorities for 2013

Kerry Sawyer (CEOS Executive Officer, CEO) reported on the 2013 CEOS Work Plan, reviewing the objectives of CEOS:

- To optimize benefits of spaceborne Earth observations (EO) through cooperation of its Members in mission planning and in development of compatible data products, formats, services, applications and policies;

- To serve as a focal point for international coordination of space-related EO activities; and
- To exchange policy and technical information to encourage complementarity and compatibility of observation and data exchange systems.

Kerry noted that the CEOS priorities for 2013 have been derived from the Bangalore statement – these are also the key driver for the 2013 CEOS Work Plan.

CEOS Agencies will continue and enhance their cooperation to support more effective societal decision-making in the areas of climate change, forest monitoring, sustainable development, food and water security, and disaster risk management.

Kerry reviewed the eight elements in the 2013 CEOS Work Plan:

1. Climate Monitoring and Research;
2. Carbon Observations, including Observations to Support the Effective Monitoring and Management of the World's Forested Regions;
3. Food Security;
4. Disaster Risk Management;
5. Capacity Building and Data Availability and Access;
6. CEOS Support to Further Key Stakeholder Initiatives;
7. Continued and Enhanced CEOS Outreach to Key Stakeholders: GEO, UNFCCC, UN ISDR, UN CBD, G8/G20, and Others; and
8. Adoption of Recommendations from the 2011 CEOS Self-Study.

Kerry noted that based on a CSS recommendation, in 2013 CEOS will transition from a one-year Work Plan to a three-year Work Plan.

4 GEO 2012-2015 Work Plan Revision and GEO 2013 Priorities

Espen Volden (GEO Secretariat) reviewed the background and objectives of GEO, noting its organisation around the development of observations-derived decision support products in support of nine Societal Benefit Areas. He pointed out the success of Landsat's open data policy as a successful realisation of GEOSS's open data sharing principles – noting that, since the revised data policy was implemented, the average scenes accessed daily has jumped from 53 to approximately 5,700.

Espen reported on the upcoming GEO Work Plan Symposium (4th-6th June, Geneva), noting that its objectives are to:

- Advance the *Sprint to Summit* initiative;
- Develop cross-cutting demonstrators for Ministerial Summit & GEO-X Plenary;
- Strengthen synergies across Tasks and accelerate GEOSS implementation;
- Inform the Work Plan community of recent progress (outputs and activities);
- Develop practical recommendations for the annual Work Plan update (Task descriptions and contents);
- Collectively address issues and gaps; and
- Improve Component Sheet contents.

He noted that GEO Implementation Board meetings will be held 3rd, and 6th-7th June.

The next GEO Ministerial Summit will be held 17th January 2014, and CEOS support is being provided to Post-2015 Working Group, the Ministerial Working Group, and the *Sprint*

to Summit. The *Sprint to Summit* aims to accelerate improvement of the GEOSS user experience, showcase the added value of GEOSS and GEO, and demonstrate search, discovery and access to priority Earth Observation (EO) data.

GEO priorities for 2013 include:

- Coordinated data acquisitions, data access and R&D support for GFOI, GEOGLAM, and Disasters and Supersites;
- Architecture for Climate Monitoring from Space and Implementation of response to GCOS IP;
- Increasing the societal benefits for developing countries from GEOSS, in line with AfriGEOSS; and
- Increased coordination of *in situ* networks and access to *in situ* data.

There was a brief discussion on Espen’s presentation:

- Kerry Sawyer (CEO) asked what might be highlighted in the *Sprint to Summit*, and Espen noted that the list of topics is currently under discussion.
- Mike Freilich (SIT Chair) asked who is taking the lead in finding the common objectives across user communities with respect to the *in situ* observations, and Espen noted that the European Environment Agency (EEA) is leading a Task Component.
- Brent Smith (NOAA) asked if there are any specific updates on AfriGEOSS, and whether SANSA (South Africa) will continue to be involved in leading this initiative. Espen noted that the focus for this activity is on building regional capacity, and they are awaiting the nomination of a new secondment from South Africa to lead.
- Mark Dowell (EC-JRC) asked about the interface with the *in situ* community, noting recent WG Climate discussions to extend the ECV Inventory to include *in situ* data sets. In the context of the GCOS IP, there is a Task calling for closer collaboration with the *in situ* community on combined data record creation.
- The topic of engaging the private sector in GEOSS was raised. Espen noted that the OGC is leading one of the Infrastructure Tasks, including the AIP-6 activity, and this is one way of progressing the private sector involvement. Barbara Ryan (GEO Secretariat Director) has also been discussing with a number of private sector actors regarding GEOSS engagement.

5 CEOS Participation in GEO WP Management Structure

Kerry Sawyer (CEO) reported on the GEO Work Plan (GEO WP) following the 2012 revision, noting there are still three Thematic Parts, 26 Tasks, and now 58 Components. CEOS is a Point of Contact (PoC) for four Components, a Lead for 18, a Contributor for 10, a Task Coordinator for three tasks, and represented on the Infrastructure Implementation (IIB) and Societal Benefits (SB) Boards.

Kerry reported on the successful *Virtual* CEOS-GEO Actions Workshop (23rd-24th January 2013), noting that there were approximately 45 participants over the two-day meeting, addressing nearly all 2012 CEOS-GEO Actions. A number of the Actions were either closed or remapped into 2013 Actions. There were proposals for 17 new Actions, and CEOS will entertain proposals for additional Actions throughout the 2013 implementation year.

Kerry noted that the Deputy CEOS Executive Officer position is open. A brief discussion followed.

- Ruth Neilan (NASA/JPL) asked if there are other CEOS actions that are not related to GEO. Kerry noted that there are a number of other non-GEO actions in the CEOS Work Plan, but these are not tracked in the online CEOS-GEO actions tracker.
- Guy Seguin (CSA) asked about the process for approval of new actions. Kerry noted that there are specific guidelines. For example, an action should involve two or more parties, and it has to be actionable.
- Espen Volden (GEO Secretariat) stressed that GEO is very appreciative of the CEOS efforts in maintaining the CEOS-GEO action item tracking system, and noted that the CEOS Work Plan is well aligned with GEO objectives.

6 Report from GEO Post-2015 Working Group and GEO Ministerial Working Group

GEO Post-2015 Working Group (WG)

Brent Smith (NOAA) shared a few general observations regarding CEOS and the GEO Post-2015 WG:

- It was clear from Member statements at the 2012 GEO Plenary that CEOS contributions are recognized and highly valued;
- CEOS “space arm” contributions have been much more prominent than comparable *in situ* contributions within GEO/GEOSS, and thus there will need to be increased emphasis on the integration of space-based and *in situ* observations into products of use to decision-makers and end users in Post-2015 GEOSS;
- It would be good for CEOS to learn from the incomplete handoff of IGOS to GEO; of the resulting Communities of Practice, some are working well, others are not; and
- It has been a major challenge for the GEOSS infrastructure to assimilate and pass on CEOS-contributed data/products to users; this situation is being addressed head-on in the context of the 2013 Sprint to Summit initiative, with support from WGISS.

Brent reviewed the Post-2015 WG recommendations, noting that there was significant discussion on the continuation of GEO as a unique organisation, and the continuing implementation of GEOSS beyond 2015. The Group agreed that GEO and GEOSS implementation should continue beyond 2015. Other recommendations covered:

- GEO strategic objectives: active collaboration, complementary mandates, data for services;
- GEO core functions: strengthen space-based, airborne, and *in situ* observations;
- Societal Benefit Areas: identify complementary roles with other global EO organizations;
- Governance: retain present structure, but explore strengthened role for Participating Organizations;
- Engagement with developing countries: strengthen capacity;
- Engagement with the private and not-for-profit sectors;
- Resources for GEO and GEOSS post-2015; and
- Development of a new framework for GEOSS 2015-2025.

A discussion on the GEO Post-2015 WG followed:

- Stephen Briggs (ESA) raised the issue of whether GEO is connected explicitly to the Global Framework for Climate Services (GFCS) as GEO is mentioned in GFCS and WMO has asked that GEO contribute to the Earth observation activities of GFCS. Brent

noted that much of the GFCS-related discussion within the WG has been led by Sue Barrell of Australia.

- Stefano Bruzzi (ASI) noted that it appears that the dominant position of the Post-2015 WG is business as usual. He noted it is not clear that anyone has created a blue print for Post-2015 GEO. Without a blue print, GEO may struggle for direction, and as a key stakeholder in GEO, this should concern CEOS.
- Mike Freilich (SIT Chair) suggested that in the absence of a blue print from GEO, CEOS could present what we want it to look like from a uniquely CEOS perspective. The product would likely be CEOS-focused, but may also generate useful reactions from the community. Mary Kicza (NOAA) agreed that CEOS should step forward and offer appropriate suggestions. Stefano agreed, noting that the development of a blue print by CEOS would be useful, but that CEOS should be mindful of the risk that this is an instance of the space agencies proposing how the user community organises itself.

SIT 28-1	Stefano Bruzzi, Stephen Briggs, (and others, as interested), work with Brent Smith (in his role as CEOS rep to GEO post-2015 WG), to draft formal CEOS comments on the post-2015 GEO structure and way forward for submission (following quick turnaround review by CEOS Agencies) by CEOS Chair/SIT Chair to GEO in connection with GEO Ex Com’s request for comments	May-June 2013, consistent with GEO requested submission date for Member/Participating Organization comments
SIT 28-2	<i>DELETED – SUBSUMED INTO 28-1</i>	

- Mark Dowell (EC-JRC) noted that GEO did review the GFCS Implementation Plan, and provided some inputs as to what GEO might be able to do in support via user services and elements like the Communities of Practice. It was noted that the first meeting of the intergovernmental board of GFCS will take place in July, 2013.
- Stephen stressed that there seems to be a danger of GEO narrowing its focus to observations, which would leave CEOS *and* GEO to identify another bridge to user communities. He expressed concern that the process could end up adding to the length of the data chain, when the preferable outcome is to see it shortened. Mike agreed, and suggested that Brent consider these points in discussion at the GEO Post-2015 WG.
- Brent noted that he is happy to accept the inputs from the SIT, but he stressed that others in the CEOS community will also need to speak up as a part of a comprehensive effort by the community to provide inputs through as many forums and channels as possible.

GEO Ministerial WG

Brent presented a summary of discussions on the GEO Ministerial WG, noting that CEOS is involved as a GEO Participating Organization. CEOS should consider past inputs, including: a CEOS Chair statement and an exhibit, publication or one-pager (as at previous GEO Ministerials). CEOS should also work through its members and their governments to shape and refocus a viable post-2015 GEO/GEOSS.

Stephen stressed the importance of confirming the substantive nature of GEO at the Ministerial. Mike asked what form this confirmation might take. Stephen recalled that when GEO was formed in 2003, there was considerable momentum behind it with the engagement of high profile figures. There is a need to re-capture that momentum by emphasizing the strategic benefits of GEO, rather than the mechanics of the organisation. He suggested leveraging CEOS participation in the Post-2015 and Ministerial WGs to ensure good coordination.

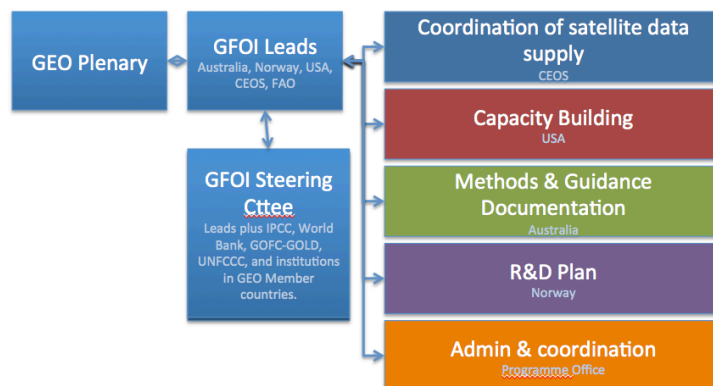
SIT 28-3	SIT Chair & CEOS Chair, in cooperation with CEOS SEC, to work with incoming CEOS Chair, CEOS SIT Chair, and CEOS representatives to the Post-2015 and Ministerial Working Groups of GEO to develop CEOS inputs, positions and outreach materials for the 2014 GEO Plenary and Ministerial Summit	28 th CEOS Plenary
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7 GFOI & Endorsement of the SDCG Global Baseline Strategy

Mike Freilich (SIT Chair) noted that this topic is presented for strategic endorsement.

Stephen Briggs (ESA, CEOS rep. to GFOI) presented an update on GFOI, noting that recently the first GFOI Plenary took place in Australia. All the GFOI leads (Australia, Norway, USA, CEOS, UN-FAO) were present. A number of other important groups were represented including the World Bank, UNFCCC Secretariat, and IPCC.

He stressed that the involvement of participants like Jim Penman, who has direct experience negotiating with IPCC on behalf of the UK and Europe, was essential. Meetings included the 4th Space Data Summit (SDS-4), a two-day meeting of the Methods and Guidance development team, and the 3rd CEOS Space Data Coordination Group (SDCG-3) for the GFOI meeting. Discussion at these meetings covered the four pillars of GFOI. The GFOI Co-Leads, as well as the GFOI Steering Committee also met.



In 2013, GFOI will provide the following deliverables for GEO Member governments:

- Methods & Guidance for countries to apply;
- A first draft of an R&D Plan to address common challenges like data interoperability and degradation;
- Baseline Global Satellite Data Acquisition Strategy, representing a critical statement of capacity and intent to support policy process; and
- Capacity building workshops led by the USA.

GFOI is going well. It has the correct membership, organisational structure, and considerable enthusiasm and momentum. CEOS support has been critical in getting it this far and will continue to be critical. The work of the SDCG has been highly regarded by all in the community that have come in contact.

Stephen Ward (DCCEE) presented the Baseline Global Data Acquisition Strategy for endorsement on behalf of the SDCG Co-Chairs. He noted that the coordination of satellite data acquisition and supply is fundamental to GFOI objectives. In 2011, CEOS Plenary endorsed the *CEOS Strategy for Space Data Coverage and Continuity in Support of the GEO Global Forest Observations Initiative (GFOI) and Forest Carbon Tracking (FCT)*

Task, and in doing that established the *ad hoc* Space Data Coordination Group for GFOI. The *CEOS Strategy* has three elements:

- **Element 1:** A baseline, coordinated global data acquisition strategy involving a number of ‘Core data streams’ that can be used free-of-charge and openly for GFOI purposes. This will involve global, systematic and sustained wall-to-wall acquisitions of forested areas;
- **Element 2:** Coordinated strategies for national data acquisitions; and
- **Element 3:** Data supply in support of the GFOI R&D activities, including in support of the science studies assisting the development and evolution of the Methods and Guidance document for GFOI.

Element 1 was presented for approval. Stephen Ward said the expectation is that the plan will be updated annually. It is also expected that, eventually, SDCG will be devolved into the GFOI Office. However the key coordination activity will remain amongst CEOS agency missions.

The *CEOS Strategy* included the idea of Core and Contributing data streams, where Core data streams:

- Provide data, at medium resolutions or finer, free-of-charge and openly shareable for GFOI purposes, consistent with being available in support of any country’s information requirements; and
- Provide sustained and long-term capacity in coverage, processing and distribution which is consistent with the large (global) scale data requirements of the GFOI.

Based on present mission status and plans, this means that Landsat-7, Landsat-8, Sentinel-1A/B, Sentinel-2A/B, CBERS-3, CBERS-4, RCM, and potentially the SAOCOM-1 series will be key data contributors.



GLOBAL COVERAGE	REGIONAL FOCUS AND GAP FILLING
Landsat-7/-8 [2012+] Sentinel-1A/-1B [2014+]	CBERS-3/-4 [2013+] (South America, South- and Southeast Asia, Africa)
Sentinel-2A/-2B [2014+] RCM [2018+]	SAOCOM-1A/-1B [2016+] (Pan-tropical)


The strategy assumes that for most countries, most of the time an optical satellite dataset will be the easiest and preferred option, and therefore, a combination of Landsat-7, Landsat-8 and Sentinel-2 will be the dominant solution. Complementarity with C-band SAR datasets is sought, and a priority should be to achieve multiple annual coverage of those countries where no optical data are available due to cloud cover. (The 4x global coverage expected from Sentinel-1 is not sufficient on its own – and so it was agreed with ESA to focus on selected countries wall-to-wall at higher frequency.)

The annual tropical L-band dataset from SAOCOM-1A would be a game changer and might become preferred option and avoid cloud persistence problems and excessive repeat acquisitions. CBERS-3 and CBERS-4 are expected to play a significant regional role with

stations in Brazil, China and Africa in support of global coverage and gap fill through lean years.

In addition, Contributing data streams such as RapidEye, SPOT, RADARSAT-2, ALOS-2, and TerraSAR-X/TanDEM-X all have important capabilities which should be leveraged to the extent possible. In particular, these will come into focus for the coordination of national-level coverage to be covered by Element 2 of the strategy. For example, via France's SPOT Congo Basin Initiative.

Stephen Ward noted that the Element 1 strategy calls for a phased approach to global coverage. There are currently no policy deadlines, though the GFOI Implementation Plan calls for a 2015 operational date. The phased approach is conservative, and balances the availability of core data streams and the need to build GFOI capacity – priorities are set by relevance and readiness.



Year	Coverage Added	No. Countries	Area (Mkm ²)	Total Area (Mkm ²)
2013	GEO-FCT National Demonstrator Countries and GFOI Participating Countries	15	20.5	20.5
2014	UN-REDD National Programme Countries WB-FCPF Participating Countries CD-REDD Project Countries (BMU)	36	18.5	39.0
2015	UN-REDD Partner Countries WB-FCPF Partner Countries Other Pan-Tropical Countries	17	9.0	48.0
2016	Global	127	84.8	132.8

Brian Killough (CEOS Systems Engineering Officer) presented a brief summary of analysis performed by the Systems Engineering Office (SEO). He noted that this is truly a systems engineering problem, requiring coordination to optimise asset utilization. He noted the importance of cloud counter measures like pixel mining and SAR.

Stephen Ward noted that the full Element 1 report is available, and that the SDCG Co-Leads are seeking endorsement. A discussion followed:

- John Faundeen (USGS, SDCG Co-Lead) underscored that in all his years of CEOS participation, has not seen stronger engagement from CEOS agencies as has been the case with SDCG. He noted the Element 1 strategy is the culmination of 15 months of effort, and welcomed questions and comments.
- Luc Brûlé (CEOS Chair) noted that coming into the presentation, he was wondering if there is strong support from the user community, and that was confirmed. He asked if any work has been done on potential conflicts with GEOGLAM requirements. Stephen Ward noted that SDCG restricted its analysis to GFOI, but there are lessons to be learned for other initiatives. Stephen also noted it is likely that CEOS and SDCG will have to consider how to harmonise with other activities like GEOGLAM, but this has not been done yet.
- Stephen Briggs noted that this experience demonstrates why GEO should not stop at observations. He agreed that CEOS will need to consider this same coordination for other user communities like GEOGLAM, polar, etc. He also noted that SAR opens up possibilities that optical does not, and that there are some differential roles for SAR.

- Paul Counet (EUMETSAT) noted that the strategy addresses observations, but data dissemination also needs to be addressed. He noted that EUMETSAT has just completed its first demonstration of data dissemination to Africa via GEONETCast.
- Mike noted that INPE, ESA, USGS, and NASA are implicated by the Element 1 strategy in the near term, and he asked if anyone opposes endorsement of the plan.
- Tom Cecere (USGS) stressed that USGS endorses the Element 1 strategy. He noted that Landsat-8 is still going through on-orbit testing, and this will be followed by a process of balancing priorities and assessing capabilities to collect the number of scenes requested against system life cycle issues. He also noted that USGS will respond to the strategy in a more formal manner. Sarah Ryker (USGS) supported Tom’s comments, and also noted that pixel mining research is currently being pursued.
- Einar-Arne Herland (NSC) also confirmed their support as a lead of the initiative.

Based on the comments and discussion, Mike Freilich (SIT Chair) asked that the record reflect unanimous support for the endorsement of the Element 1 strategy.

SIT 28-4	Stephen Briggs to inform GFOI of the CEOS endorsement of the Global Baseline Satellite Data Acquisition Strategy	May 2013
SIT 28-5	Core data stream providers (USGS, ESA, INPE/CRESDA, CSA, CONAE) to work with SDCG to realise the global baseline acquisition strategy for GFOI	Ongoing
SIT 28-6	SDCG to work with USGS, and INPE/CRESDA to implement the 2013 plan for the global baseline acquisition strategy for GFOI	Through to SIT-29

Stephen Ward continued with a brief summary of the Element 2 of the CEOS Data Strategy for GFOI, which focuses on the development of coordinated strategies for national data acquisitions. In 2013, SDCG plans to develop the Element 2 strategy, scoping and scaling it to determine how many countries can be supported based on capacity. Element 2 will involve the needs of individual national governments to be explored, and coverage to be ensured in detail. This may be driven by a number of factors, including existing activities, data heritage, engagement of relevant national institutions, and the identification of roles for Contributing data streams and the engagement of suppliers. The potential services provided by Element 2 of the strategy are summarised in the table below.

Element 1
* Baseline acquisition programming
Element 2
* Ensured coverage service
- coverage tracker
- cloud detection
- dynamic acquisitions
* Pixel mining service for cloud-affected countries
* Archive characterisation
- for selected year / reference level
* Data delivery
- discovery, assembly, pre-processing, delivery (requires donor support in each case)

SIT 28-7	SDCG to develop Element 2 of the CEOS Data Strategy for GFOI and to work drafts with relevant data stream providers to support future endorsement by SIT for implementation	SIT-29
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Stephen Ward also briefly summarised pilot pre-operational data delivery activities, noting that key GFOI donors are supporting data delivery programmes for selected priority countries - Indonesia and Tanzania to date. He noted that CEOS agency data features heavily in these data pilots, and this was a significant opportunity for recognition of GFOI and CEOS contributions. He also noted that LSI and the LSI Explorer (<http://LSIExplorer.cr.usgs.gov>) are engaged.

Stephen Ward gave a brief summary of the future for the *ad hoc* SDCG:

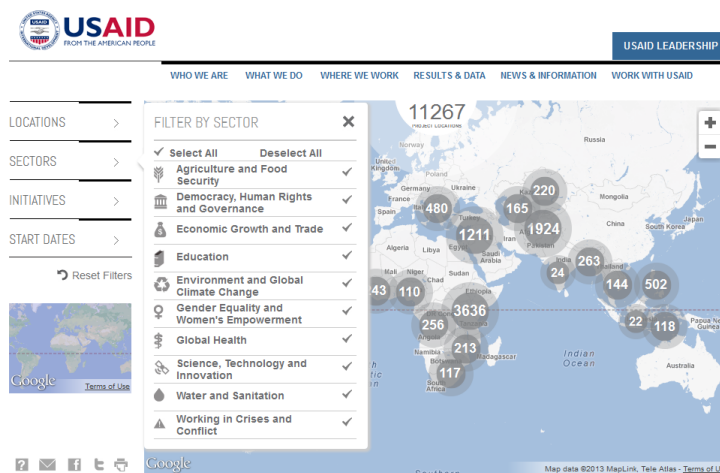
- 2012 CEOS Plenary agreed to continue operation of *ad hoc* SDCG for GFOI;
- SDCG has been extremely busy with the strategy;
- Takes CEOS and GEO a step closer to delivering to governments;
- GEOGLAM and other initiatives have recognised the value of this step and the tools being developed; and
- The overall acquisition strategy needs to be optimised – CEOS needs a view and a plan, reflecting available capacity.

8 WGCapD Inventory Proposal for CEOS Consideration

Hilcéa Ferreira (WGCapD, INPE) reported briefly on the recent WGCapD meeting, noting that the e-learning course is moving forward, that they are finalising planning for a workshop on Digital Elevation Models (DEM), and that SANSa has confirmed its interest in becoming the Vice Chair next November. She also noted that ISRO has offered to host the next WGCapD meeting next year in India.

Jacob Sutherlun (WGCapD, NOAA) summarized a Capacity Building (CB) Inventory being proposed by WGCapD. The objectives of the inventory would be to support coordination of on-going activities, and also support planning of individual agency activities by making them aware of the activities of other agencies. He noted that CB is linked to a number of other CEOS activities, for example the GEO Water Strategy Report references capacity building. Barbara Ryan has suggested that the CB Inventory could be showcased at the GEO Ministerial, and so the timeline for completion is targeted for January 2014.

The final product envisioned is a map-based product, getting away from the typical report format. An example, based on USAID, was shown.



Collecting the information on CEOS agency activities is key, and this is why this topic is being presented today. Questionnaire design is ongoing, and is expected to be completed by

the end of March. It will be circulated to CEOS agency contacts, with a deadline for population by August. The information will be analysed and consolidated by November, and the product is planned to go live in January 2014. In support of this timeline, CEOS agencies are asked to identify points of contact for the inventory, and respond to the questionnaire when it is circulated.

There was a brief discussion on the proposal:

- Brian Killough (NASA/SEO) noted that based on past experience with CEOS questionnaires, it is very important that you communicate the benefit to end users during the survey process. He asked if there is any idea of the scale of the response, and Jacob suggested that there will be “10’s of activities” per agency.
- Mary Kicza (NOAA) supported the proposal, and urged CEOS agencies to support it, noting that this could be an opportunity to showcase CEOS activities.
- Brent Smith (NOAA) noted that there is a link to AfriGEOSS.
- Kerry Sawyer (CEO) asked about the connections to GEONetCab, noting that there is potential overlap. Hilcéa noted that the team discussed this last week, and Jacob confirmed that they are planning to meet with the GEONetCab team.
- Julio D’alge (INPE) noted that INPE endorses this activity, and is working to develop activities like the e-learning course.

SIT 28-8	CEOS agencies to identify points of contact in support of the WGCapD capacity building inventory	May 2013
SIT 28-9	CEOS agency contacts to respond to the capacity building inventory questionnaire	July 2013

9 Mini-Plenary CEOS Leadership Matters

Mike Freilich (SIT Chair) gave the floor to Luc Brûlé (CEOS Chair) to conduct a mini-Plenary session.

Luc noted that EUMETSAT will be the CEOS Chair for the 2014 one-year term, and that the purpose of this session is to confirm the CEOS Chair for 2015 and 2016. At Plenary in Bangalore, there were two CEOS agencies expressed interest in becoming CEOS Chair in 2015: JAXA and CSIRO. Through consultation with the agencies involved and the CEOS SEC, it has been agreed that JAXA will be nominated as CEOS Chair for 2015, and CSIRO will be nominated as CEOS Chair for 2016. Luc invited representatives for each of these two agencies to make a brief statement.

2015 CEOS Chair election – JAXA

Shizuo Yamamoto (JAXA) noted that one of the activities that JAXA’s 2015 CEOS Chair term would be to work with CSIRO to determine how to recognize the 30th anniversary of CEOS in 2016. He noted that this will be amongst the issues discussed between JAXA and CSIRO in a planned meeting on CEOS in May. He noted that JAXA will also propose new initiatives in 2015 to expand CEOS activities within Asia, and hopefully other regions.

Yamamoto-san stressed that JAXA is happy to accept the 2015 Chair role, and looks forward to the challenge.

2016 CEOS Chair election – CSIRO

Stephen Ward (designee of Alex Held/CSIRO) noted that CSIRO hosted the 10th CEOS Plenary, and will host the 30th. He noted that Alex Held has been keeping the CEOS flame alive in Australia, and is looking forward to discussing two-year continuity of topics with JAXA in 2015-2016. CSIRO confirms they are ready to serve in 2016.

Luc recommended that JAXA be named as CEOS Chair 2015, and that CSIRO be named as CEOS Chair in 2016. He opened the floor for discussion; no concerns were raised, and the unanimous consent was agreed.

Yamamoto-san thanked Plenary for their endorsement, and with that, Luc closed the mini-Plenary session.

SIT 28-10	(CEOS Plenary action). CEOS Chair to write to JAXA and CSIRO confirming acceptance of their offers to serve as CEOS Chair for 2015 and 2016 respectively	COMPLETE By ISRO during their CEOS Chair term.
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10 Virtual Constellations and Working Group Deliverables for 2015 GEOSS

Stephen Ward (SIT Chair Team) introduced the CEOS Virtual Constellations (VCs) and Working Groups (WGs) Session, noting that the purpose of this session is to provide time for the VCs and WGs to raise issues of concern. He noted that a VC and WG Workshop took place on the Monday before SIT-28 to discuss a number of issues with the VCs and WGs at length, and that two topics were brought forward from that Workshop for today’s agenda – more on the 2015 GEOSS deliverables, and a discussion on the Blue Planet activity.

Stephen noted that the 10-year implementation plan for the GEOSS ends in 2015, and that it is critical for GEO to show tangible benefits for member governments. And given CEOS’s leading role, it is important for CEOS to engage. The CSS study of VCs focused on their capacity and intentions to provide outputs, and the SIT Chair team dialogue with VCs/WGs in 2012 and 2013 has continued this discussion. The VCs and WGs are the delivery teams of CEOS, and this session takes a look at the combined output.

Each of the VCs and WGs was given the chance to highlight their main contributions and accomplishments in support of 2015 GEOSS.

ACC (Rich Eckman) <i>ECVs: Total Ozone</i>	LSI (Julio D’alge) <i>ECVs: Terrestrial</i>
<ul style="list-style-type: none"> – Multi Sensor Volcanic Eruption Alert System – Geostationary AQ Constellation Coordination Activities – Total Ozone ECV support – Greenhouse Gas Constellation – potential for ACC to coordinate – Limb scattering ozone profile measurement coordination 	<ul style="list-style-type: none"> – LSI Explorer (Cross-Catalog, Data Discovery, Data Delivery System) – Terrestrial ECVs discoverable and downloadable – SAR Collections Data Delivery Flow Incorporated – LSI Web Site – Support Extended to all GEO Initiatives Endorsed by CEOS
OCR (Paula Bontempi) <i>ECVs: Ocean Color</i>	OST (Eric Lindstrom) <i>ECVs: Sea Level</i>
<ul style="list-style-type: none"> – Implementation of INSITU-OCR – establishment of a task force on calibration 	<ul style="list-style-type: none"> – Preserve sea-level measurement continuity by ensuring launch of Jason-3 in March 2015 latest

<ul style="list-style-type: none"> - Ocean Color ECV support - Operational Oceanography (VC Coordination) Paper 	<ul style="list-style-type: none"> - Timely program approval of Jason-CS - Fulfill user requirements of two (preferably three) operational missions through provision and dissemination of SARAL, Cryosat 2 and HY2A altimetry products, including assimilation into the multi mission DUACS product - Maintain focus on new technology (SWOT) and ensure its continuity with the Jason-series
<p>OSVW (Stephen on behalf of Paul Chang) <i>ECVs: -</i></p>	<p>PC (Steven Neeck) <i>ECVs: Precipitation</i></p>
<ul style="list-style-type: none"> - Consistently reprocessed ASCAT-A mission dataset - Consistently processed OSCAT mission dataset - Define standard calibration/validation methodology in coordination with IOVWST - Consolidate/formalize the periodically given course on the use of scatterometer winds for marine forecasting - To identify and start addressing additional scatterometer wind training needs within the scientific community 	<ul style="list-style-type: none"> - PC Data Portal with links to CEOS Water Portal - Precipitation ECV support, ensuring continuity of satellite precipitation products - Deployment of GPM phase constellation satellites and maintaining continuity with TRMM - Advocacy of post-GPM phase PC
<p>SST (Ivan Petiteville (ESA) on behalf of Co-Leads) <i>ECVs: Sea-surface temperature</i></p>	<p>WGCapD (Hilcea Ferreira)</p>
<ul style="list-style-type: none"> - Continue to interface GHRSSST activities with CEOS and enhance cooperation with CEOS Ocean VC’s - Increase CEOS SST-VC membership (Targets: KARI, NRSCC, NSMC/CMA, ISRO, CONAE, Roskosmos, SANSA) 	<ul style="list-style-type: none"> - Integrate GEONetCab project website with the GEO web portal and WGCapD website - Development of an International Online Certificate Program in Remote Sensing - Develop and carryout an inventory of capacity building activities focused on space-derived data - Execute a Digital Elevation Models workshop with high resolution DEM data
<p>WGClimate (Mark Dowell)</p>	<p>WGISS (Satoko Miura)</p>
<ul style="list-style-type: none"> - Define and implement a consistent Climate Monitoring Architecture for space-based observations 	<ul style="list-style-type: none"> - IDN: Directory Service and Collection Metadata - CWIC: Catalog service and Data Access

- Review and assess, on behalf of CEOS, the generation of Fundamental Climate Data Records (FCDRs) and derived Essential Climate Variable (ECV) climate products supported by Member space agencies
- FedEO: Catalog service and Data Access
- Portal systems: LSI Portal, ACC Portal and CEOS Water Portal

WGCV (Satish Srivastava)

- Support to GEO Work Plan component IN-02: Earth Data Sets
- Develop a GEO strategy for data quality assurance through developing a CEOS Quality Assurance Framework for Earth Observation (QA4EO) and implementing processes and structure for CEOS data and information
- QA4EO Implementation Pilots and Showcases for key GEO data/information/SBA efforts
- Enabling Data and Information Interoperability and Harmonization in CEOS and GEO
- Full list of CEOS test sites; establish operational collection of calibration data over these sites by agencies

Stephen presented a summary of the proposed VC and WG 2015 GEOSS accomplishments, breaking them into three categories – space segment, ground segment, and products and services.

Space Segment	
ACC	* Geostationary AQ Constellation Coordination (Sentinel-4, TEMPO, GEMS) * Greenhouse Gas Constellation * Limb scattering ozone profile measurement coordination
LSI	-
OCR	-
OST	* Ensure launch of Jason-3 in March 2015 latest, so as to preserve continuity of the reference measurement * Timely program approval of Jason-CS in Europe and in the US to ensure long-term availability of the reference measurement * Maintain focus on new technology as in SWOT and ensure its continuity with the Jason-series by including a Jason-class nadir altimeter in the SWOT payload
OSVW	* In 2013 ASCAT-B becomes the primary operational mission and ASCAT-A remains in operations as a hot stand-by. Tandem operations beyond 2014 under discussion. Planning: absolute calibration of ASCAT-B and cross-calibration with ASCAT-A; potential revisit of phasing of METOP-A/METOP-B options. * OSCAT F/O (Oceansat-3) and ASCAT F/O (EPS-SG) mission advocacy and coordination).
PC	* GPM Constellation phase satellites - continuity for TRMM
SST	* Sentinel-3 launch and advocacy (ESA) * Commissioning of METOP-B AVHRR/IASI (EUMETSAT) * Development of an SST- constellation requirements paper (work in progress) * Addressing the Gap in dual-view SST measurements since the loss of ENVISAT AATSR (ESA) * Inclusion of HY-2B into the Constellation (SOA) (Advocacy of: NPP/VIIRS (NOAA); COMS (KARI); continuity of passive microwave measurements (GCOM-W, JAXA); MTG (EUMETSAT); GCOM-C (JAXA); Oceansat-3 (ISRO))
WGCapD	-
WGISS	-
WGClimat	(Once initial rendition of Physical Architecture is complete, first concrete recommendations on climate observation priorities for space segment will be provided. Undertaken in collaboration with CGMS, expected within 2015.)
WGCV	-

Gnd Segment/Info Systems	
ACC	-
LSI	* LSI Explorer (Cross-Catalog, Data Discovery, Data Delivery System) * LSI Web Site
OCR	-
OST	-
OSVW	-
PC	* PC Data Portal
SST	* GHRSSST framework for data discovery and access inc NRT data * Development of Sentinel-3 Mission Performance Centre and Ground Segment * Implementation of CWIC for SST holdings * Development of Global AVHRR HRPT rescue activity * Common format for SST products (implemented already for all GHRSSST data streams and as part of the Sentinel-3 G/S from conception) <i>(Cooperation with International validation teams (e.g Sentinel-3), Coordination of in situ SST radiometer validation activities with ISSI and WGCV (radiometer inter-comparison))</i>
WGCapD	* WGCapD web/GEONetCab/GEO portal - capacity building resources
WGISS	* CEOS IDN: 14,000+ data collections – also via GEO Portal * CWIC: 1,700+ data collections – also via GEO Portal * FedEO: CEOS agency data collections discoverable via GEOSS * Portal systems: LSI, ACC & CEOS Water
WGClimate	* Essential Climate Variable Inventory, First version and analysis available by Q1 2014.
WGCV	-

Products/Services	
ACC	* Multi Sensor Volcanic Eruption Alert System * Total Ozone ECV support
LSI	* Terrestrial ECVs
OCR	* Ocean Colour ECV support: basin to global scale ECV/CDR. IOCCG ECV WG will prepare report on objectives by 2014
OST	* Provision and dissemination of SARAL, Cryosat 2 and HY2A altimetry products (and also assimilation into the multi mission DUACS product) * Training programmes
OSVW	* Consistently reprocessed ASCAT-A mission dataset * Consistently processed OSCAT mission dataset * Standard calibration/validation methodology in coordination with IOVWST * Course on the use of scatterometer winds for marine forecasting – based on needs assessment
PC	* Precipitation ECV support
SST	* Improved SST products (L2, L3 and L4) * Improved Multi-Product Ensemble SST L4 diagnostic system (GMPE) * Metrics for SST services, products and users * Development of SST CDR via ESA CCI and GHRSSST * Improved CDR from MSG SEVIRI * Improved use of GSICS * Inclusion of QA4EO guidelines in GHRSSST data sets (Formal link to WGCV) * Implementation and operation of Diagnostic Data Set (e.g., via the ESA Felix project) to pilot Ocean SuperSite development. <i>(Advocacy for Ocean SuperSites with Agency cooperation, Coordinate user requirements and feedback for SST Products and Services Advocate for better access to CEOS Member data sets)</i>
WGCapD	* International Online Certificate Program in Remote Sensing * Inventory of capacity building activities focused on space-derived data * Digital Elevation Models workshops with high resolution DEM data
WGISS	-
WGClimate	* Consensus system metrics for assessing ECV maturity end 2014. * In depth Data assessment procedure and pilots Q2 2014. (Both undertaken with SST and OCR VCs (and their associated scientific bodies - GHRSSST, IOCCG) and in collaboration with WCRP-DAC)
WGCV	* GEO strategy for data quality assurance through a CEOS Quality Assurance Framework for Earth Observation (QA4EO) * QA4EO Implementation Pilots and Showcases for key GEO data/information/SBA efforts * Fit for purpose documentation related to system, data and product capability and accuracy * Quality parameter measurement and process guidelines for each quality definition * CEOS Test Sites for operational system of Data and Information Interoperability and Harmonization in CEOS and GEO * Operational collection of calibration data over these sites by agencies * Prototype pre-operational satellite to satellite (optical domain) bias correction

A discussion on the accomplishments for 2015 GEOSS followed:

- It was noted that on the products and services side, a number of VCs have indicated they will be involved in the generation of ECV data sets.
- Julio D’alge (INPE) noted that LSI should be considered the perfect environment for discussion and coordination of space segment activities.
- Mark Dowell (EC-JRC) noted that there are other customers for CEOS products and efforts, for example UNFCCC. Stephen agreed, noting that 2015 GEOSS was chosen as a near-term focus.
- Mark also noted that the VCs had mandates before the creation of WGClimate, and he is pleased to see that they are interested in pursuing ECV generation. He asked about a greenhouse gas monitoring, and whether this would be implemented under ACC, or as its own VC. He also noted that SCOPE-CM was hoping for a precipitation proposal, but did not receive one.
- Mark also noted that linkages need to be made with some CEOS *ad hoc* activities, and that SBSTA asked that next CEOS report not only be focused on ECVs, but also on carbon and climate-related activities like GFOI and CTF.

- Stephen noted that the assessment of accomplishments for 2015 GEOSS was just a first attempt, and that there was a suggestion at yesterday’s VC/WG Workshop to further develop and refine the assessment. He noted, for example, that activities like GFOI and GEOGLAM were not reflected in this assessment.
- Satish Srivastava (CSA) noted that WGCV is prepared to deliver outcomes for 2015, but that in some cases there may be a need for resources. He noted that SIT endorsement of WGCV activities may help support efforts to find these resources.
- Mike Freilich (SIT Chair) noted that there was discussion at the VC/WG Workshop about presenting a coherent list of issues to CEOS agencies.
- Ivan Petiteville (ESA) noted that he was a bit surprised to see the inclusion of the launches by agencies in the accomplishments. Stephen noted that this raises the issue of the scope of the assessment – which addresses what is being done to facilitate VC activities, and to make the most of the opportunity to create a coherent picture of support activities.
- Mike added that in most cases launches should be “claimed” as VC activities, in particular in cases where orbits and other joint operations are harmonised, sampling increased, etc. In cases where a VC only “notes” that two similar missions are being launched, then they should not be “claimed”.
- Kerry Sawyer (CEO) noted that the 15-Years of Satellite Altimetry report released a couple of years ago could be an example that the VCs could follow, though not all VCs will have the resources to create this kind of report.
- Stephen Briggs (ESA) noted the VCs and WGs have generated a lot of activities, but are now struggling with how to make them coherent – and that he was not sure if it would be possible to make them coherent. CEOS may have grown past the point where it supports a small number of coherent activities that can be compared, and now supports a much more diverse set of activities.
- Mike noted that the challenge for SIT is not to try to standardise reporting of accomplishments, but to extract the information that makes them coherent, and then to take the others that are heterogeneous and explain why there is societal benefit to humanity from these CEOS activities. It is important to draw connections that are not necessarily obvious on the working level.
- Stephen Ward noted that part of the purpose of the exercise is to demonstrate the value added by CEOS to the global community.
- Espen Volden (GEO Secretariat) noted that GEO appreciates the review of the deliverables as it helps GEO. They have tried to do an assessment of what has been accomplished, and ran into challenges with consistency of reporting.
- Mary Kicza (NOAA) suggested that maybe we are making it too difficult on ourselves, and that we do not have to force every contribution into a standard reporting framework. She suggested that a small group develop a draft summary that the VCs could then provide feedback on.
- Brent Smith (NOAA) noted that CEOS has been contributing data to GEO for many years, but this data is not always finding its way to end users. He noted that this was in part due to infrastructure issues that are on their way to being resolved, and that there are

also capacity building issues that need to be addressed – and that there are roles for the VCs and WGs here. In particular, the VCs may be able to help address data gaps.

- It was noted that the VCs (and Communities of Practice) could be made a little more visible in the context of Post-2015 GEO.
- Paula Bontempi (NASA) noted that the VCs are engaged because they want to succeed. They want to succeed in identifying gaps and bringing them up for discussion and resolution. She noted that OCR has defined requirements, and there is no more debate about these now – the only way this is going to work is if we can not only present the information, but also implement based on that information.

SIT 28-11	SIT Chair Team, in consultation with CEOS SEC, to work with all VCs to agree an update to their TORs, including common elements and informed by a draft template - and to update the VCs Process Paper to ensure application of the new format to all future VCs	28th CEOS Plenary
SIT 28-12	SIT Chair Team, in cooperation with the VCs and WGs, to further develop the harmonised statement of 2015 accomplishments of VCs and WGs (using the updated VC TORs) – defining scope and value-added of the groups in achieving the deliverables	28th CEOS Plenary
SIT 28-13	SIT Chair Team to work with VCs and WGs to identify outputs (such as key reports) that the groups feel did not receive adequate attention from SIT/Principals to be raised at the SIT Workshop	SIT Workshop

11 VC Membership, Composition & Sustainability

George Dyke (SIT Chair Team) presented an update on the VC membership status and gaps following-up from the discussion at SIT-27. Since SIT-27, there has been some progress in addressing VC membership gaps, but in general, gaps still exist – in particular with participation from Chinese and Russian agencies. He noted the trend towards VCs engaging related science teams, and suggested that SIT should discuss whether there are lessons for all VCs, and whether a more systematic approach to engagement might be appropriate.

VC	Science Team(s)	VC-ST Interface	Formal Coordination Status
SST	GHRSSST	All SST-VC members are in GHRSSST.	GHRSSST established SST-VC.
OSVW	IOVWST	Paul Chang/NOAA	Dialog initiated at 2012 IOVWST meeting in Utrecht.
OCR	IOCCG <i>CEOS Associate</i>	Mark Dowell/JRC Paula Bontempi/NASA	OCR-VC members frequently presented at IOCCG. Coordination potential on ECV generation in support of GCOS
OST	OST-ST	Pascal Bonnefond/France Joshua Willis NASA JPL	OST-ST is part of the formal 4-party agreement covering up to Jason-3. OST-ST has expressed some desire to expand beyond current 4 parties.
PC	NASA and JAXA PMM-STs, M-T IST, CGMS-IPWG, GEWEX	NASA, JAXA, U. of Nagoya, CNES, LEGOS-OMP/CNRS, UCAR, CSU	STs have participated PC-VC since its inception in 2007, contributing to the PC-VC IP, work plans and reporting, and CEOS GCOS IP response. PC-VC workshops held on the sidelines of the NASA PMM ST meetings to facilitate participation.
ACC	SPARC, IOC, mission science teams, GCOS, European Carbonsat MAG	Ongoing collaborative efforts with SPARC, IOC and others	
LSI	Land cover mission STs, land-derived ECV groups, GOF-C-GOLD	Informal	Formative

This same topic was discussed at Monday’s VC/WG Workshop, and two key points were raised for consideration:

- If we are looking for the VCs to focus on delivery/expanded contributions, more capacity and expertise is needed, and in some cases the science teams may have this.
- CEOS agency resources support science teams (not exclusively, but substantially) and agencies could try and ensure these activities are connected to the VCs to a greater extent.

A discussion on VC membership and sustainability followed:

- Eric Lindstrom (NASA) noted that the character of the science teams is highly variable, as is the character of the VCs. He noted that the motivations for science team engagement are much the same across VCs – to have a pool of technical knowledge to draw on in support of VC objectives. He also noted that science is often a good way to engage some of the larger partners in discussion, where more formal approaches are not always received.
- Stephen Ward (SIT Chair Team) said the VC/WG Workshop noted that science teams are in part supported by CEOS agency resources, and this should be tracked and characterised to the extent they are engaged with the CEOS VCs.
- Mike Freilich (SIT Chair) noted that science teams are resourced in part by CEOS agencies, and agencies provide real money to those teams to do tasks. We view this as being wholly consistent with the view that science teams also produce. This is why there is value in aligning Virtual Constellations to science teams that have resources to implement these tasks.
- Pascale Ultré-Guérard (SIT Vice-Chair) agreed with Mike on science team resources, noting that it is good to leverage those resources where possible. She also noted that agency support to science teams does not cover all VC activities: ensuring access to VC data through appropriate interoperability arrangements is an example of a non scientific activity that must be covered if VCs are to be successful.
- Stephen Briggs (ESA) noted that the context of science projects is important, and cited the Future Earth initiative as an important opportunity for CEOS to connect to science communities. He noted that in the science community, there are developments that present opportunities for CEOS.
- Mary Kicza (NOAA) suggested stating as an expectation that the VCs will pull in the relevant scientific teams and/or operational user groups if they add value to the VC, noting that this is not mandatory.

12 VC-WG Selected Topics from Pre-Meeting: 2015 and Blue Planet

Stephen Ward (SIT Chair Team) noted that the VCs and WGs were invited to nominate a couple of topics from Monday's VC/WG Workshop. The two topics selected were the 2015 deliverables, and the Blue Planet activity. The 2015 deliverables were discussed, and resulted in actions 28-11 and 28-12.

Kerry Sawyer (CEO) presented a summary of the Blue Planet task:

- Blue Planet was one of the two key issues highlighted at the GEO Plenary in November;
- It aims to provide new platforms to demonstrate the importance of sustained *in situ* and satellite observations of marine and freshwater environments, and the value of integrating these observations with models; and
- Blue Planet is identified as a priority in the CEOS 2013 Work Plan.

A discussion on Blue Planet followed:

- Eric Lindstrom (NASA) noted that he is engaged in Blue Planet with a number of hats on, through involvement in CEOS, GOOS, and GODAE. He noted that he would like CEOS to sponsor an organisational activity along the lines of what GCOS has done with

the ECVs, working to define a set of Essential Ocean Variables. He noted he is willing to take this on, and that GOOS has all the applications area represented.

- Mark Dowell (EC-JRC) noted that it is not urgent that he be replaced as the CEOS lead on the GEO SB-01_C1 Task, and that in the interim he can continue to report back to CEOS. He also noted that several of the original OCR activities have been subsumed by the Blue Planet activity, and that the only action CEOS has now is to contribute to the Implementation Plan, and this in combination with Eric’s proposal for an operational oceanography activity would cover most of the assessment of what’s required for CEOS.

SIT 28-14	SIT Chair and CEO to identify CEOS leads of the components of the GEO Blue Planet Task	May 2013
SIT 28-15	Eric Lindstrom to further develop the proposal for an operational oceanography activity involving the 4 ocean-related VCs within the Blue Planet framework	SIT Workshop

13 CEOS Deliverables for GEOSS Data Discovery and Access

Satoko Mirua (JAXA) noted that the goal of data discovery and access is to ensure that all open CEOS Agency data can be discovered and accessed from external clients (*e.g.* CEOS and GEO Portals). This capability should be independent of the technical implementation/standards and without any discrimination. She noted that a recent series of meetings and telecons had arrived at three broad recommendations to improve data discovery and access –

1. **Datasets Registration** CEOS agencies are strongly urged to register their datasets to IDN. (*Target date – next CEOS Plenary*)
2. **IDN Data Maintenance** In order to keep datasets accurate and timely, each agency should check their records in IDN periodically.
3. **Navigation for Users** CEOS agencies should take the appropriate measures for easily leading users to products after data discovery.

Satoko reviewed the response to Plenary Action 26-22, which called for an investigation into the opportunities and obstacles for the interoperability of HMA and CWIC:

1. FedEO (based on HMA-science) team and CWIC team agreed to specify and implement one common external interface, “CEOS OpenSearch”.
 - Details need to be discussed by the team from FedEO and CWIC, but here are tentative milestones.
 - Specify the standard using current implementations of the specifications: After SIT-28 ~ September, 2014
 - FedEO and CWIC teams implement the CEOS OpenSearch standard for external client access: ~February, 2015
2. CEOS and other Community Portals will need to implement only one access standard to search and access data from CWIC and FedEO.

A brief discussion followed a detailed review of the recommendations:

- Pascale Ultré-Guérard (SIT Vice Chair) thanked WGISS for their coordination efforts, and noted that the solution proposed addresses the action well.

- Stephen Briggs (ESA) expressed his thanks to the CWIC and HMA teams for pulling this response together, and for making the necessary compromises.
- Ivan Petiteville (ESA) noted that in some cases, information in the IDN is obsolete due to changes in data sharing and storage arrangements. He noted that every year the MIM information is reviewed and updated via a survey process, and suggested that the same kind of proactive review of the IDN information be considered.
- Richard Moreno (WGISS Vice Chair, CNES) noted the recommendations implied the evolution of the role of the IDN from a data discovery tool, to include data access.
- Shelley Stover (NASA/SEO) asked if they plan to track progress so that we will know how many data sets will be added between now and Plenary. She also noted that improved search capability would also be very helpful.
- Brian Killough (NASA/SEO) noted that dataset registration and maintenance are a significant challenge. He noted that the MIM database is organised along the lines of instruments, missions and measurements, and that the SEO’s recent data policy research may help to expose the targeted open data sets. For example, the IDN could tag data sets, and they could be linked to instrument-mission combinations – but this would require an inventory of IDN contents along lines that we understand. Then, we could do a targeted update of open data sets that are not in the IDN. He noted that the achievement of recommendation number 1 would be a major accomplishment.
- Andrew Mitchell (NASA) noted that there was an action at the last WGISS meeting calling for a mapped of IDN key words to MIM key words. He also noted that the IDN team may reach out periodically to the CEOS agencies for updates. He also noted that the IDN is building some machine-to-machine protocols which may be of use.
- Stefano Bruzzi (ASI) asked if the GEO Portal is the right way to give visibility to CEOS data sets, noting that it does not necessarily provide a way to access data. Satoko noted that the GEO Portal is one appropriate point of access, but there are others.
- Steven Hosford (CNES) noted that it may well be possible to move forward more quickly than the schedule that has been proposed and he encouraged WGISS to endeavour to do this. The role of IDN as a repository of metadata describing data collections remains important.

The three recommendations presented by WGISS Chair, JAXA/Satoko Miura were adopted.

SIT 28-16	WGISS Chair, in coordination with CEOS SEC, to encourage improved dataset registration and maintenance within the IDN by all CEOS agencies, and report the status at the SIT Workshop	SIT Workshop
SIT 28-17	WGISS to work with GEO Secretariat to ensure that the IDN becomes an official GEO resource	SIT Workshop
SIT 28-18	WGISS Chair to report to CEOS Plenary on progress towards specification and implementation of CEOS OpenSearch, raising any issues that CEOS Principals need to consider	28th CEOS Plenary

Steven Hosford presented on the SIT Vice Chair initiative related to consistent access to CEOS Virtual Constellation (VC) data. He noted that CEOS agencies are major contributors to, and one of the driving forces in, the implementation of the GEOSS, and have been since its inception. Many space data collections have been registered in the GEOSS Component

and Services Registry via the IDN, and CEOS “strongly encourages” agencies to register and maintain up-to-date the CEOS catalogue of data collections there.

Steven noted however, that download of space data through GEOSS remains difficult. He noted that CEOS assumes the role of coordinator of the space component of GEOSS, but asked whether CEOS should consider a different approach to facilitate access through GEOSS to space data. This question will be the focus of the VC data access study being conducted by CNES.

The next steps for the study include:

- Establishment of a contact with each VC to: validate primary data collections listing; validate specific requirements (NRT, processing level); and, define priority data collections; and
- To evaluate and test: data discovery and online access methods (machine to machine discovery and access); define data flows scenarios (discover collection to access products); and, demonstrate workflow scenarios (to access and process data).

Initial results will be presented during the WGISS meeting in May. A discussion on the proposed study followed:

- Eric Lindstrom (NASA) noted that just having data sets discoverable does not make them useful. He noted that a lot of effort is required to curate, and that this might fall to the diligence of the IDN team.
- Ivan noted that there is a need to ensure that agencies are reviewing the quality of their data sets.
- Stephen Ward (SIT Chair Team) noted that the MIM team is quite willing to make the connection from the MIM through to the relevant instruments within the IDN.
- Ruth Neilan (NASA/JPL, GGOS) asked what was meant by “validating” the data in the study proposal, and Steven noted this meant validating the list of data, rather than the data itself.
- Satoko noted that initial efforts on data curation have been simplified, but this will be further discussed and developed at the next WGISS meeting.
- Eric noted that it is a good thing to have as many data sets registered and discoverable as possible, but the VCs may be able to advise on their “10 most popular” data sets with a statement of their fitness for service. This would require combined efforts between subject matter experts and data scientists. Steven confirmed that this is exactly the sort of domain specific knowledge that VCs could be providing to improve the relevance of results returned by data discovery tools such as the GEO portal.
- Stefano noted that the question of whether huge, all-encompassing catalogues are the solution to the problems we are trying to tackle still needs to be addressed.

SIT 28-19	CNES to harvest feedback from the VCs on their ‘Consistent Access’ initiative in order to refine and optimise the approach – and to report progress to SIT Workshop	SIT Workshop
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14 LSI Terms of Reference

Julio D'alge (INPE) presented a summary of the current LSI Terms of Reference, noting that the reason this issue was being raised was because of a perceived and real overlap between of LSI and the SDCG. He noted that had he been present during the creation of the SDCG (25th Plenary, November 2011), he would have proposed that it be included under LSI.

The LSI terms of reference outline a coordination role, that amongst other things calls for “Direct support to key GEO initiatives that CEOS has endorsed including the Forest Carbon Tracking, the Global Forest Observations Initiative, the Joint Experiments on Crop Assessment and Monitoring and, as appropriate, the GEO Global Agricultural Monitoring”. And that this overlaps with the SDCG, which “serves to implement *The CEOS Strategy for Space Data Coverage and Continuity in Support of the GEO Global Forest Observations Initiative (GFOI) and Forest Carbon Tracking (FCT) Task*”.

He noted that the SDCG terms of reference also call for it to at least initially, “limit its coordination to acquisition planning”. He summarised the current and proposed scope of the LSI, noting that the revised scope proposes the coordination *and* distribution of terrestrial data:

Current: The remit of LSI VC is to *coordinate* and focus land EO contributions from CEOS agencies supporting CEOS priorities. This includes considering space-based Remote Sensing from optical (visible and infrared including thermal) and microwave instruments.

Proposed Revision: The remit of LSI VC is to *coordinate the distribution of terrestrial data including terrestrial Essential Climate Variables (ECVs)*, from CEOS agencies supporting CEOS priorities. This includes considering space-based remote sensing from optical (visible and infrared including thermal) and microwave instruments.

Julio noted that the revised LSI could focus on the following services and activities:

- Provide distribution services from the LSI portal for CEOS agency terrestrial data.
- Facilitate the distribution of terrestrial ECVs as recommended by the WGClimate.
- Strive to address the cross-cutting issues that are common and fundamental to all data coordination responses from CEOS (information extraction, cross calibration, interoperability, long-term data records, availability and dissemination, data quality, metadata) in cooperation with the other CEOS Working Groups.
- Provide end users updated information on current CEOS data coverages, gaps and potential discontinuity in data availability.
- Investigate a land data coordination role with CEOS agencies utilizing Public-Private Partnership arrangements with the goal to facilitate data access and usage for CEOS sponsored activities.

A discussion on the proposed revision, including the focus on ECVs, followed:

- John Faundeen (USGS) noted that part of the intention of this revision is to provide direct support to key GEO initiatives.
- Mark Dowell (EC-JRC) noted that WGClimate currently only has one terrestrial ECV point of contact (John Dwyer), and so he was appreciative of the focus on terrestrial ECVs. He hoped that this focus is not at the cost of other activities requiring LSI coordination.

- Stephen Briggs (ESA) queried the logic of support to terrestrial ECVs.
- Mike Freilich (SIT Chair) noted that outside of CEOS, the terms of reference, or whether there is overlap between LSI and SDCG, is not very important to the user community. Users care about products and access to products – he noted that for the case of GFOI, SDCG is doing an excellent job. And, he added, that this is an internal discussion on whether having overlap or ambiguity is a waste of our time. He noted that there are other problems relating to land imaging that could be addressed by LSI benefiting from the lessons we've learned from SDCG – if there are other jobs that should be done, then these should be rationalised with the LSI terms of reference.
- Julio agreed that this is an internal discussion, but noted that LSI is a struggling VC, and that CEOS should have considered the velocity that SDCG could have brought to LSI.
- Stephen Ward (SIT Chair Team) asked about the capacity of the LSI VC, noting that resources impact which jobs LSI could be considered for.
- Yves Crevier (CSA) noted that there is a role for LSI that goes beyond being a portal for data, and this may overlap with SDCG's role.
- Stefano Bruzzi (ASI) noted that the question is not whether SDCG should be replaced by LSI or the other way around – but that this was a question for CEOS as a whole about how to coordinate terrestrial observations.
- To provoke discussion, Mike Freilich (SIT Chair) asked whether LSI should be a VC. Sarah Ryker (USGS) suggested that removing LSI would be a step backwards, and would make it harder to consider USGS participation. She noted that it is hard to believe that there are not terrestrial issues to work, but if there is a lack of energy and resources within the group then it will be hard to work these issues.
- John noted the amount of discussion on the LSI Terms of Reference and suggested that either the proposed Terms be accepted or the topic of land surface imaging be tabled for further discussion within CEOS at a later time.
- Eric Lindstrom (NASA) noted that from a GCOS perspective, the big difference between terrestrial and other spheres is that there are many terrestrial ECVs covering so many areas that it is hard to digest them in larger chunks. He suggested that a more intelligent way forward might be to divide and conquer, and make the coordination more product-focused
- Mark Dowell (EC-JRC) suggested a few thematic combinations (*e.g.* fAPAR/Albedo). He noted that this is an important issue for the community because this coordination work is not being done anywhere else for terrestrial ECVs.

Mike asked if SIT was willing to accept the revised LSI terms of reference as presented, and several people expressed concerns. It was agreed that a small study team should be convened to work on the revised terms of reference, and develop a proposal for CEOS Plenary consideration. A discussion on the study team followed:

- The objective of the study group will be to recommend internal CEOS organizational structures for ensuring sustained coordination of land surface imaging. The full study group terms of reference are included as an appendix to these minutes. The group shall provide a draft report to the SIT Workshop in September 2013, and a final report to CEOS Plenary in November 2013.

- Mike stressed that the goal is to come to an agreement on terms of reference and begin to populate the group to progress its objectives.
- Mike asked for volunteers to serve in the study team, and the following were identified: Julio (with inputs from John Faundeen), John Bates (WGClimate), Eric Lindstrom (GCOS), Brian Killough, and Yves Crevier. It was also suggested that John Faundeen coordinate inputs from John Dwyer.
- Luc Brûlé (CEOS Chair) clarified that Yves’ participation in the study team was as a part of the GEOGLAM *ad hoc* Working Group.
- After the close of SIT-28, it was agreed that Julio D’alge would be the convener of the group.

SIT 28-20	A study group on organizational approaches for ensuring coordination of land surface imaging in CEOS to provide a draft report to SIT workshop and report to CEOS Plenary. Representation should include LSI VC, SDCG for GFOI and WG Climate. SIT Chair will identify a lead for the study group	28th CEOS Plenary
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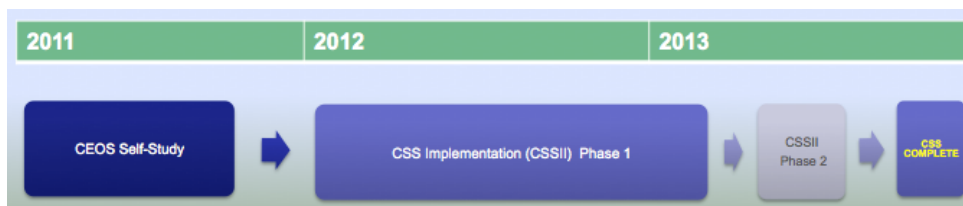
15 CEOS Self Study Implementation Initiative Overview

Mike Freilich (SIT Chair) opened the discussion on the CEOS Self Study Implementation Initiative (CSSII), noting that the success of CSSII depends on engagement of the CEOS community. He noted that we are beginning the final stages of the CSSII, but the approaches being presented are not fully formed, and can still be influenced.

Pat Jacobberger-Jellison (SIT Chair Team) presented an overview of the CSSII, noting that it is structured around a Steering Committee, and three study teams: Executive Functions; Working Groups and SBAs; and, Virtual Constellations (trying to think where these study teams come from in the CSSII). The goal of CSSII over the next three months is the delivery of the three CEOS strategic guidance documents:

- CEOS Strategic Guidance (10-year life);
- CEOS Governance & Processes (5-7 year life); and
- CEOS 3-Year Work Plan (rolling, updated annually, 2013 version released).

The CSSII is targeted for completion in 2013, culminating with CEOS Plenary in November.



16 CEOS Essential Questions

Pat Jacobberger-Jellison (SIT Chair Team) reported on the history of the CEOS Essential Questions (EQs), noting that the first recommendation of the CSS called for a review and re-articulation of CEOS’s strategic objectives. The Essential Questions were one of the attempts of the CSSII to probe those strategic objectives – a tool to help generate inputs into the strategic guidance documents.

Mike Freilich (SIT Chair) noted that the point of the EQs is to take into account the scope and modalities of CEOS in general, so that when we focus on refining the organization, we are not refining it into something that we do not want it to be. If we can agree that the basic scope of the answers to a specific question makes us comfortable, then the details can be refined later.

She reviewed each of the EQs and their responses, and a discussion followed.

Essential Question 1 - What are CEOS's scope and purpose?

- Does CEOS conduct sustained, long-term, routine data provision? *CEOS does both (missing words here?? What are the antecedents of "both?", insofar as is possible within the constraints of available resources*
- Does CEOS develop actual "CEOS Satellites"? *CEOS does not develop actual "CEOS Satellites", but rather coordinates activities and capacity of CEOS agency satellites.*

A number of discussion points on EQ1 were raised:

- Brent Smith (NOAA) noted that WMO talks about having its own satellites, even though these satellites are operated by WMO members. It was agreed that CEOS should not refer to its agency missions as "CEOS satellites".
- Guy Seguin (CSA) raised the possibility of specific hardware or other systems being developed in order to support activities like Virtual Constellations (VCs). Pascale Ultré-Guérard (SIT Vice Chair) noted that while this kind of partnership has not taken place in the past, it should not be ruled out.
- Tom Cecere (USGS) noted that CEOS provides a facilitation role.
- Shizuo Yamamoto (JAXA) noted that the purpose of CEOS is not to produce satellites, though CEOS support can facilitate agencies obtaining funding for their initiatives.
- Paul Counet (EUMETSAT) noted that he does not see CEOS as a driver for requirements of EUMETSAT missions, but that it should ensure coordination and that the benefits of those missions flow to the global community.
- Stephen Briggs (ESA) stressed that CEOS does not develop satellites, but rather leverages the capabilities and assets of individual CEOS member agencies through the mechanism of the VCs.
- Julio D'alge (INPE) noted that LSI believes the VCs should have a role in the coordination of the space segment as well. Márcia Alvarenga (INPE) added that we should identify the relevant data, and then coordinate in order to provide them to the community.
- Mark Dowell (EC-JRC) stressed the importance of the role of satellites as contributing to products, and that this contribution is coordinated.
- Osamu Ochai (JAXA) suggested that the coordination aspect should be stressed in response to the EQ on data provision.

Pat noted that the response to the first question as presented was agreed. And that based on the discussion, the response to the second question should be re-cast in a more positive light – stating what CEOS does do, rather than what it does not do.

Essential Question 2 - What is the value of CEOS to others, and how do others view, support, and engage with CEOS?

- Internally, what benefits, tangible or otherwise, does an organization gain through active CEOS membership? *CEOS provides opportunities for participation in a variety of ways.*
- Externally, what benefits, tangible or otherwise, do governments, society, and users/partners gain through the existence of CEOS? *External partners/users rely upon CEOS to represent and promote interaction among space agencies.*
- In both cases, how does CEOS ensure that those benefits are commensurate with the level of investment (in time, human capital, financial commitments)? *Level of participation in activities is a key measure of whether CEOS is succeeding in keeping an appropriate balance.*

A number of discussion points on EQ2 were raised:

- Rich Eckman (ACC) suggested that internally, CEOS is also a forum for dissemination of information, and potentially identifying partnership opportunities – a multilateral forum for enhancing coordination, providing increased visibility.
- Paul Counet (EUMETSAT) noted he was surprised to see a reference of individual career growth. Mike said the intent of the answer was that CEOS engagement could be used to attract agency resources.
- Mary Kicza (NOAA) thinks that the draft responses address the questions pretty well.
- Stefano Bruzzi (ASI) queried whether the promotion of open data policies is part of CEOS's values. Julio noted that this depends on the agency relationships with government – in Brazilian case, INPE decided on an open data policy, and informed the government.
- Brent Smith noted that CEOS has two sets of data sharing principles that were developed 10-15 years ago –for global science activities, and for public use – and that these were the forerunners to GEO's data sharing principles.
- Mark Dowell noted that the conclusions of last year's UNFCCC COP meeting referred to CEOS's work on data policies. He feels that space agencies should promote open data policies, but that ultimately the decision is taken at the government level.
- Marcia Alvarenga (INPE) stated that promotion of open data policies may attract emerging nations to join CEOS
- Stefano Bruzzi (ASI) stated that the objectives in question two are out of order. Providing high quality sustainable observations is the most important objective and should be first.
- Yamamoto-san (JAXA) noted that a number of CEOS agencies are engaged with commercial partners, and commercial activities may have to be treated differently.

Pat asked if, subject to some changes in ordering of priorities in the response to question two (in particular on open data policies) that we could agree the draft responses presented. There was no objection.

Essential Question 3 - What are CEOS's essential outcomes and relationships?

- What are the most valuable external relationships that CEOS maintains or should maintain? *Key external relationships include those with GEO, GCOS, SBSTA, and UNFCCC.*

- What are the most valuable outcomes that CEOS provides and/or enables for its user communities? *Data democracy and open data access are among the most valuable outcomes that CEOS provides.*
- How would CEOS's mission & goals be affected if key stakeholders or partners were substantially changed, or if they ceased to exist? *The value of CEOS is highly dependent upon strong stakeholder engagement. Likely that other international coordination mechanisms would seek CEOS engagement.*

A number of discussion points on EQ3 were raised:

- Rich asked why the WMO Space Programme is not mentioned under external relationships, and Pat responded because no one had proposed adding it. There were also suggestions to include CGMS and FAO – it was also suggested to include the phrase “such as” in the draft answer.
- Julio stressed that the essential outcome of CEOS is helping to demonstrate and promote satellite remote sensing as making a useful contribution to society.
- Stephen noted that we could give a number of different answers to these questions, and questioned the value of the information content in these draft answers. The answers could be more specific, more generic, etc. – and still be “correct”.
- Mary suggested adding a mention of Calibration/Validation work in the second response.
- Stefano noted that a criteria is needed to assess value of the relationships. CEOS needs to form relationships with organizations that are an important source of requirements.

Pat asked if the group could accept the answers with the changes as noted above, and in general, there were no objections.

Essential Question 4 - How does CEOS define and measure success in meeting its objectives?

- How does CEOS evaluate its own progress? *CEOS evaluates its own progress through such means as the Self-Study, leadership, Troika and Secretariat, and through stakeholder feedback.*
- What are the criteria CEOS uses for deciding that a CEOS activity is successful or unsuccessful? *Participation, commitment levels and the support of key participating agencies, and achievement of anticipated results.*
- How does CEOS decide whether an activity should be continued or ended? *Activities that are productive, that have important outcomes, and that have sufficient financial and human resources from CEOS members are candidates for continuation.*

Several discussion points on EQ4 were raised:

- Eric Lindstrom (NASA) noted that the first answer is very self-referential, and does not seem to mention results.
- Rich Eckman noted that there is no specific reference to the CEOS-GEO actions and their milestones in measuring success. Pat suggested that these should come under governance.

Pat responded that the Essential Questions are at the strategic level; actions are at the tactical level. She asked if there was general agreement that the answers to this question are sufficient, and there was no objection

Essential Question 5 - What situations or conditions pose the greatest risks and opportunities for CEOS?

- How does CEOS ensure that its activities are sustainable? *CEOS must ensure that its activities are commensurate with both financial and human resources.*
- What factors or elements are absolutely essential to ensure that CEOS remains vital? *The continued full engagement of its membership is the single most critical element required to ensure that CEOS remains vital.*
- What internal or external conditions would most severely stress CEOS? *Loss of interest by key members who provide resources to activities, serious loss of continuity in key leadership roles, loss of key external stakeholders.*

Several discussion points on EQ5 were raised:

- Ivan Petiteville (ESA) stressed the need to remain relevant and deliver results to stakeholders.
- Mary stressed the need to have an internal limit to ensure that we're not taking on too much; should not take on activities that we cannot adequately support.
- Mark asked if it is necessary to call out budgetary issues in a document that is designed for the long-term; a recommendation to delete the second clause of the answer to the first question was made and agreed.

Essential Question 6 - Ten years from now, what concrete major goals does CEOS want to have achieved?

- *CEOS should remain the leader for internal coordination of space-based Earth observations.*
- *CEOS should be the place to go for use of space observations for societal needs.*
- *CEOS should have a demonstrated body of work in which coordinated Earth observation satellite data have provided real societal and/or scientific benefit.*
- *CEOS should have closed important observation gaps through partnerships, membership growth and coordination, new launches, and leverage of existing member assets.*
- *CEOS should have reached out to form working partnerships with organizations responsible for in situ observations, resulting in better integration across the full range of Earth observations.*

A number of discussion points on EQ6 were raised:

- Stefano asked if the final answer conflicts with the GEO mandate. Espen Volden (GEO Secretariat) noted that GEO is happy to see CEOS support in this direction (*i.e.* opening the ECV Inventory to *in situ* data sets).
- Mary noted that she would like to hear from the Working Groups on what their goals are over this time frame.

- Eric suggested that for oceans, we could consider removing the last statement. Steven Hosford (CNES) noted that this may be true for oceans, but not for other cases.

Brent asked about the level of response to the EQs, and Pat said it was a “moderate” level of response.

Pat stated that the wording of the last question will be updated to reflect the discussion, and noted that the CSS data and the answers to the Essential Questions are very consistent.

17 CEOS Major Meetings Topical Team

Pat Jacobberger-Jellison (SIT Chair Team) gave an overview of the role and activities of the topical teams, noting that each topical team had generated a set of options for discussion. After this discussion, the agreed option will be provided to the CSS Implementation Initiative (CSSII) Steering Committee as input to the development of the CEOS Strategic Documents.

Ivan Petiteville (ESA) presented a summary of the Major Meetings Topical Team discussion, noting it was created to address the following CSS key recommendations:

Develop coordinated objectives and formats for the CEOS Plenary meeting, SIT meeting(s), and SEC telecons to encourage discussion and decision-making.

Balance reporting with strategic discussions that engage and utilize participation from all CEOS functional groups.”

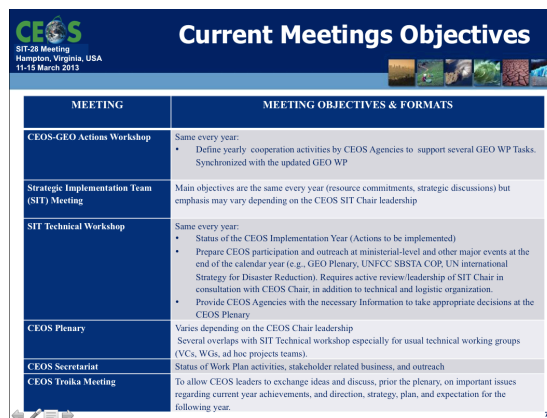
The group started with Findings & Recommendations from the CSS report, and incorporated additional suggestions by Topical Team members, and findings presented at the CEOS Plenary in Bangalore.

	Recommendation	CEOS-GEO Actions W/S	SIT	SIT Tech. W/S	CEOS SEC	Plenary	Troika
1	[General] Some flexibility in the definition of the objectives of those meetings might be needed, to cope with the differences of profile, expertise and resources of both the CEOS Chair and SIT Chair teams.		X			X	
2	[General] Frequency: possibility to have <i>ad hoc</i> meetings on specific matters that cannot bear too long delays. <i>Ad hoc</i> meetings could be held as webex telecons or side meetings to existing major meetings (not necessarily CEOS) to reduce travel costs.						
3	[General] Format: enhance the use of some communication media (e.g. webex) to allow some participants to attend from their premises whenever compatible with the time availability of the remote participants.	X		X			
4	Should serve as an appropriate forum to invite non-CEOS guests to discuss a topic of interest for CEOS OR should focus on issues and matters internal to CEOS only. Options: R4 applicable either to SIT meeting or to CEOS Plenary.		X			X	
5	Needs less redundancy and balance reporting with time for discussion.		X				
6	SIT Chair agency should reach out and work carefully (as is being done through periodic telecons with WG Chairs/VC Co-Leads) to themselves know the issues and be able to effectively design		X				

	Recommendation	CEOS-GEO Actions W/S	SIT	SIT Tech. W/S	CEOS SEC	Plenary	Troika
	meeting agendas and frame issues that require decisions.						
7	If discussion time is exceeded and consensus is not being reached, Chairs should adequately moderate the debate and control the time needed for each discussion, ask the protagonists to work on the issue outside the meeting.		X			X	
8	Should include also discussion on “minor topics” (issue: “minor” still to be defined).				X	X	
9	Should include a day for CEOS VCs and WGs side meeting as in the case of the SIT meetings.					X	
10	Needs more care when setting its agenda to reduce overlap with SIT Technical WS.					X	
11	Should be less technical, focused on issues requiring decisions. Use of template shall help to limit the length and guide the content of presentations. If needed, oral reports could be complemented by detailed written reports, posters & backup slides (not to be displayed during meeting).					X	
12	CEOS Chair agency should reach out and work carefully (as is being done through periodic telecons with WG Chairs/VC Co-Leads) to themselves know the issues and be able to effectively design meeting agendas and frame issues that require decisions.					X	
13	Should continue its frequency and format. It contributes continuity of leadership to CEOS by allowing the current, past, and incoming CEOS Chairs to discuss matters of strategic importance to CEOS.						X

A discussion on the recommendations followed:

- Paul Counet (EUMETSAT) noted some overlap with the Roles and Responsibilities Topical Team, specifically on recommendations 10, 11, and 12.
- Mike Freilich (SIT Chair) noted that (missing words here) the meeting objectives, and asked people to consider whether they are comfortable with the “required actions” listed for each meeting.



MEETING	MEETING OBJECTIVES & FORMATS
CEOS-GEO Actions Workshop	Same every year: <ul style="list-style-type: none"> Define yearly cooperation activities by CEOS Agencies to support several GEO WP Tasks. Synchronized with the updated GEO WP.
Strategic Implementation Team (SIT) Meeting	Main objectives are the same every year (resource commitments, strategic discussions) but emphasis may vary depending on the CEOS SIT Chair leadership.
SIT Technical Workshop	Same every year: <ul style="list-style-type: none"> Status of the CEOS Implementation Year (Actions to be implemented) Prepare CEOS participation and outreach at ministerial-level and other major events at the end of the calendar year (e.g., GEO Plenary, UNFCCC SBSTA COE, UN International Strategy for Disaster Reduction). Requires active review/leadership of SIT Chair in consultation with CEOS Chair, in addition to technical and logistic organization. Provide CEOS Agencies with the necessary information to take appropriate decisions at the CEOS Plenary.
CEOS Plenary	Varies depending on the CEOS Chair leadership Several overlaps with SIT Technical workshop especially for usual technical working groups (V.Cs, WGs, ad hoc projects teams).
CEOS Secretariat	Status of Work Plan activities, stakeholder related business, and outreach.
CEOS Troika Meeting	To allow CEOS leaders to exchange ideas and discuss, prior the plenary, on important issues regarding current year achievements, and direction, strategy, plan, and expectation for the following year.

- Brent Smith (NOAA) noted that we are being asked to enshrine this approach, and cited the example that there used to be two SIT meetings a year. He also noted that there is a need to make it clear what needs to be done in addition to, and in connection with the regular meetings. Finally, he stressed the importance of having materials shared ahead of

time to allow for pre-coordination and good preparation. Mike agreed, noting that providing materials ahead of time allowed people to prepare well for the meetings, which allows for a focus on discussion rather than pure information transfer.

- Mike asked if people thought there were additional classes of major meetings required in the future. Stephen Briggs (ESA) noted that having more major meetings is not realistic, and it’s not clear that more frequent high-level/strategic discussions are required.
- It was noted that we could be more structured about how we put together agendas, and more disciplined about how we deal with items on the agenda. Stephen Ward (SIT Chair Team) suggested a more formal, structured approach to papers, agenda, and deadlines.
- Mike noted feedback from some CEOS groups that the gathering of senior agency staff makes major meetings a real opportunity to expose their work – for example, VCs and WGs are asking for time to present at Plenary. He added that information may enable agencies to provide supporting resources.
- Paul noted that in some cases, presentations of information are too generic and/or voluminous, and that the challenge is to boil reports down to the substance.
- Stephen Briggs sympathises with the VCs/WGs, but noted that CEOS can not afford to use Plenary as a communications forum internally within agencies, or even within CEOS.
- Mark Dowell (EC-JRC) noted a suggestion using forums like the VC/WG telecons, we should be able to distil and flag key issues that could be raised to Plenary. Mary Kicza (NOAA) agreed with Mark.
- Luc Brûlé (CEOS Chair) welcomed these recommendations, and noted they will try and apply them to the upcoming CEOS Plenary. He agreed that there needs to be more pre-work done on the agenda, and also suggested that CEOS consider complementarity between Plenary and the SIT Workshop.

Pat thanked the Major Meetings Topical Team for their work and considered recommendations.

18 CEOS Roles and Responsibilities Topical Team

Paul Counet (EUMETSAT) presented a summary of the Roles and Responsibilities Topical Team discussion, noting the main inputs were guidance from the SIT Technical Workshop; conclusions of SIT-27; and, the findings and recommendations of the CSS Synthesis Report. He noted that the top-level responsibilities were defined at SIT-27.

1. Substantive space-borne coordination, scientific, and user-focused activities		2. Top-level strategy development and guidance	
Responsible	Participates	Responsible	Participates
SIT Chair	WGs, VCs, SEO, CEO/DCEO, special teams like CTF, SDCG, and others	CEOS Chair	Troika, SEC, Plenary, SIT Chair, WGs and VCs (to distil messages up to CEOS leadership)
3. Internal CEOS coordination		4. External CEOS coordination	
Responsible	Participates	Responsible	Participates
CEOS Chair	SEC (with support from CEO/DCEO, SEO), Plenary, SIT Chair	CEOS Chair	SEC (with support from CEO/DCEO), Plenary, SIT Chair, VCs and WGs

Pat Jacobberger-Jellison (SIT Chair Team) noted that, ideally, we would emerge with an option to go forward from each of the recommendations to be presented. If that’s not possible, it would be helpful to eliminate options we do not wish to consider.

Recommendation 1: Options to Address Reporting Line Inconsistencies

Option	Option Description	Advantages/Drawbacks
A	Divide substantive space-borne coordination into 2 parts: ➤ thematic space-borne coordination (i.e. within VCs) ➤ generic space-borne coordination (i.e. across VCs) and generally involving WG activities Then apportion responsibility for thematic space-borne coordination to the SIT Chair and generic space-borne coordination to the CEOS Chair	+consistent with current (assumed) reporting lines (i.e. SIT<->VCs and CEOS Chair<->WGs) +maintains a substantive role for CEOS Chair (load-sharing) - possibly complex interface between CEOS and SIT Chairs
B	Move the reporting line of the Working Groups from CEOS Chair to SIT Chair, leaving other arrangements unchanged	+consistent with the conclusions of SIT-27 +simplifies the interface between CEOS and SIT Chairs - less balanced load-sharing (compared to Option A)
C	Make more use of the permanent CEOS Secretariat. For example CEOS SEC could be used to obtain urgent "Plenary level" decisions that need to be taken in advance of the Plenary (this option could be viewed as complementary to the other options - i.e. not exclusive). If this option is pursued consideration should be given to expanding CEOS SEC participation to include a more balanced regional representation.	+CEOS SEC holds monthly telecons and has proved quite successful in facilitating CEOS activities

Discussion on options for recommendation 1:

- Stephen Briggs (ESA) supported option C, but noted that the last sentence should be removed as Secretariat (SEC) membership is representative, and its size is appropriate. It was noted that option C refers to the *permanent* SEC membership (ESA, EUMETSAT, NASA, JAXA, NOAA).
- INPE raised the question and stated their interest in participating in the Secretariat. A discussion followed that resulted in no objection to INPE's continued participation. The broader question of expansion of the Secretariat will be addressed in the CSSII strategic documents to be proposed at Plenary.
- Ivan Petiteville (ESA) noted that we should allow the flexibility to make best use of the SIT and Chair teams, and should permanently fix the lines of reporting.
- Steven Hosford (CNES) noted that if SEC can make decisions on behalf of Plenary, it is not a secretariat but rather an Executive Committee and its name should be changed to reflect this.
- Brent Smith (NOAA) also supported option C (with some cleaning up of the language), noting that SEC is a good place to take care of common issues as SIT Chair, CEOS Chair, and the WGs report there. He also noted that Secretariat, when created in 1992, was deemed to be permanent from the outset because Secretariat agencies agreed to take on certain responsibilities.
- Mark Dowell (EC-JRC) noted that if we choose option C, then option A or B also needs to be chosen. Kerry Sawyer (CEO) suggested opting for option A with the modified option C.
- It was noted that while the VCs report to the SIT, the WGs pre-date SIT, and report to Plenary. The WGs are in principle somewhat more long term and crosscutting. Satoko Miura (JAXA) noted that WGISS does not ask for guidance from SEC meetings, but does ask for guidance from the SIT Chair, and that WGISS is comfortable with current reporting arrangements. Satish Srivastava (CSA) agreed that WGCV was also comfortable with the current arrangements, as did Mark (WGClimate), and Jacob Sutherlun (WGCapD).

Pat noted the group's convergence on options C and A, removing the last sentence of Option C on considering expanding CEOS *permanent* SEC participation.

Recommendations 2 and 3: Terms of Reference

[R2] *It is recommended that the terms of reference of all VCs, WGs and ad hoc initiatives be reviewed to verify that they all respond to an externally validated set of requirements, and that this requirements baseline is identified in their terms of reference. If this is not the case, an action should be initiated to clarify the requirements basis.*

[R3] *In order to promote a more systematic approach across the various VCs, it is recommended that the ToRs of all VCs are updated with a common format and structure that includes a mission statement, vision and objectives, measures of success, overview of externally-validated requirements baseline, organisational structure, harmonised term lengths for chairs/co-chairs, provision of the development of an Implementation Plan that addresses transversal activities. For completeness, it is further recommended that a more exhaustive analysis of VC contributions to transversal activities (e.g. Cal/Val & capacity building) should be undertaken.*

Both these recommendations were agreed by the group.

Recommendation 4: Options for Addressing Role of SBA Coordinators

Option	Option Description	Advantages/Drawbacks
A	Completely suppress the role of SBA Coordinator and re-assign any relevant actions to existing CEOS mechanisms or individual agencies (or groups of agencies).	+simplicity and clarity - may be some (very limited) actions that cannot be appropriately re-assigned
B	Generally suppress the role of SBA Coordinator and only allow retention of the role in carefully justified cases (with the presumption being suppression). When re-allocating SBA Coordinator activities, coherence with the ToRs of the various CEOS mechanisms shall be maintained (e.g. updates arising from the re-allocation of Climate SBA activities to WGClimat).	+simpler and clearer than the status quo - more complex than full suppression
C	Leave "as is"	- overly complex organisational structure that is not justified by the benefits

Discussion on options for recommendation 4:

- There was a clear preference expressed for option B – moving away from SBA Coordinators, but keep them in carefully justified cases.
- Rich Eckman (NASA) asked about cases where a given SBA does not have a clear home within CEOS, for example energy. There is not an obvious VC that would map to energy, and he wants to make sure it does not fall through the cracks. Mike noted that if something was falling through the cracks, then GEO should inform CEOS and it can be addressed.
- Kerry noted that when the SBA Coordinators were created, the intention was to have them manage CEOS-GEO actions. However, now that the number of actions is down to a more manageable level not clear the SBA Coordinators are still required. She also noted that the GEO Post-2015 Working Group is addressing the possibility of modifying the SBA structure.
- Espen Volden (GEO Secretariat) noted that the CEOS SBA Coordinators serve as key points of contact for GEO. Kerry noted that the CEO can serve as the interface in the absence of any specific CEOS SBA Coordinators.

Pat noted that option B was agreed, but that we should be clear that moving away from SBA Coordinators (except in justified cases) does not signal a move away from CEOS support to the GEO SBAs.

Recommendation 5: Options to Rationalise Treatment of Disasters

Option	Option Description	Advantages/Drawbacks
A	Embed all of the existing CEOS Disaster activities within just one of the existing three mechanisms addressing Disasters and suppress the other two activities/mechanisms	+ simplicity and clarity
B	Suppress the CEOS Disaster SBA Coordinator, the <i>ad hoc</i> Working Group on DRM and the Disaster activities within WGISS, and transfer all activities to a new WG on Disasters	+ simplicity and clarity
C	Leave "as is"	- overly complex organisational structure that is not justified by the benefits, and does not respond to the criticisms in the CSS Synthesis Report

Discussion on options for recommendation 5:

- The Topical Team is recommending option B – compressing the three separate disasters activities, and creating a WG on disasters.
- Stephen Briggs noted that there are a lot of implications that flow from B. He also noted he is not sure what WGISS is doing on disasters, and if there is not much to coordinate, then perhaps the Disasters SBA Coordinator is not needed.

Further discussion on recommendation 5 was deferred until the disasters reporting topic later in the SIT-28 meeting.

Recommendation 6:

[R.6] *It is recommended that WGISS and WGCV present annually their proposed main lines of activity to SIT and Plenary for endorsement (partitioned into "Standing" activities and "Project" activities). The activities endorsed by SIT and Plenary shall then be embedded within the relevant Work Plans, to be updated on an annual basis.*

Discussion on recommendation 6:

- Stephen Ward (SIT Chair Team) suggested that this would need to be done in the framework of a more comprehensive documentation process, and stressed that the WG Chairs would be frustrated if this input was not used.
- Pascale Ultré-Guérard (SIT Vice Chair) asked whether this should also apply to WGClimate and WGCapD, and it was agreed that it should be all or none of the WGs. Though Robert Husband (EUMETSAT) commented that there is already good coupling between WGClimate / WGCapD and Plenary.
- Satoko noted that WGISS would be happy to report to Plenary, but that sufficient time needs to be allowed on the agenda – 5-10 minutes is not sufficient.
- Mike noted that boiling down the technical detail in a form that can be efficiently communicated and acted upon is an ongoing challenge that CEOS agencies face.
- Robert noted that the intention was to get away from asking Plenary to endorse a Work Plan, but to include the salient details to be discussed and endorsed.
- Satish noted that the nature of reporting varies between WGs, and that traditionally WGCV has presented recommendations that they want CEOS Chair to be aware of.

Pat noted that the recommendation would be adjusted to reflect reporting by all WGs, and will also emphasise the last sentence – capturing the idea that it is not the Work Plans that should be reported on, but the salient points from those Work Plans.

Recommendation 7:

[R.7] *It is recommended that Plenary exercises stricter discipline on the handling of ad hoc initiatives through better use of standing CEOS mechanisms and adherence to a lifetime of one year.*

Discussion on recommendation 7:

- Brent noted that *ad hoc* activities are defined as everything that is not done by CEOS nominally. Kerry noted that they tried to clearly define these at the Bangalore Plenary (*i.e.* GEOGLAM, Geohazards, CTF, SDCG,).
- Pascale agreed in general, but noted that the one-year limitation may be artificial. Perhaps we could use one year, with the potential to renew, and include annual reaffirmation of each *ad hoc* WG at Plenary.
- It was agreed to replace “lifetime” with “approval cycle”.
- Mike noted that the assertion is that there is a large number or too many *ad hoc* groups, and asked if it would be worthwhile setting a limit. Stephen Briggs noted they had discussed this, but it’s hard to fix a number. Mike also suggested that the tone of the recommendation be revisited in order to not imply that we have too many or too few *ad hoc* activities.

Pat noted that this recommendation was adopted, subject to the revision discussed.

Recommendation 8: Options to address role of SDCG

Option	Option Description	Advantages/Drawbacks
A	Adjust the ToRs of the LSI VC to include the work of the SDCG	+ Makes use of an existing mechanism - Activities broader than current LSI VC mandate
B	Adjust the ToRs of WGISS to include the work of the SDCG	+ Makes use of an existing mechanism - Activities not fully consistent with current WGISS mandate, but it has been suggested that these should anyway be revisited as part of another recommendation
C	Create a new permanent mechanism to carry out the work of the SDCG	+ Tailored mechanism to reflect need - Creation of an additional mechanism
D	Subsume the work of the SDCG within the beneficiary projects (<i>i.e.</i> GEOGLAM and GFOI)	+ Reduces number of mechanisms - May not reflect long-term need
E	Leave "as is"	- May not reflect long-term need

Discussion on recommendation 8:

- The Topical Team recommended option B, to adjust the WGISS terms of reference.
- Stephen Ward noted that it is clear the Topical Team did not understand the work of SDCG. No one from SDCG would be supported to participate in WGISS, and option B is not viable.
- Stephen Briggs noted that the terms of reference for LSI are going to be discussed by the land cover study group. Julio agreed, and it was agreed that option A should be removed.

- Brian Killough (NASA/SEO) noted that SDCG is heading down the path of option D, and eventually anticipates getting absorbed into GFOI. Stephen Briggs noted that in this case, option D should not reference GEOGLAM.
- Mark noted that the impression from last year's Plenary was that SDCG could become broader than GFOI, and in the longer term the feeling was that this was a more generic activity that needs to be integrated into CEOS.

Pat asked for convergence on option D, but there were some objections. It was agreed that the land cover study group would discuss this recommendation further so the recommendation was tabled.

Recommendations 9 was agreed:

[R.9] It is recommended that ToRs for key CEOS leadership roles be developed and updated as appropriate.

Recommendations 10 through 12 were put forward for the consideration of other Topical Teams:

[R.10 – input to Major Meetings Topical Team] It is recommended that the modalities of Plenary be adjusted to ensure that there is a better integration, in terms of guidance and feedback, of CEOS subsidiary bodies. This dialogue needs to be at level that is consistent with engaging the attention of decision-makers (i.e., not asking for feedback on Work Plans/Implementation Plans, but requesting endorsement of headline activities/initiatives that will be subsequently reflected in Work Plans/Implementation Plans) - see also related recommendation [R.6].

[R11 – input to Decision Making Topical Team] To better regulate CEOS ad hoc activities it is recommended that (a) Ad hoc activities should be systematically terminated after one year; (b) Clear criteria should be established for starting and ending ad hoc activities; and, (c) Once agreed, these criteria should be applied to existing CEOS activities to assess if some activities should/could already be closed.

[R.12 – input to Major Meetings Topical Team] It is recommended that the "Meetings" Topical Team assess whether the CEOS Plenary should be moved to the northern hemisphere Spring. When considering a possible change, it should be borne in mind that CGMS has decided, as from 2013, to move its annual plenary to the northern hemisphere spring.

19 CEOS Decision Making Processes Topical Team

Steven Hosford (CNES) presented a summary of the recommendations from the Decision Making Process Topical Team, noting that the Team looked at: **What** decisions; **Who** takes decisions; **When** are decisions taken; and, **How** are decisions taken. The objectives are to define a mechanism for CEOS to properly manage resources in order to meet commitments made, while maintaining the capacity to initiate new activities.

What decisions. It was agreed that the decisions of interest were regarding new activities, recognising that CEOS has processes in place for ongoing activities.

Who takes decisions. Two options for who takes decisions were presented: 1) who according to the type of new activity proposed (*i.e.* CEOS Principals, CEOS WG and VC leadership); or, 2) CEOS Principals decide on all new initiatives within CEOS. Mark Dowell

(EC-JRC) suggested that some kind of decision-making escalation process may be appropriate. It was agreed that option 1 is preferred.

When are decisions taken. Two options for when decisions are taken were presented: 1) at appropriate meetings according to the decision makers and the activity; or, 2) at appropriate meetings according to the decision makers and the activity, plus additional meetings (perhaps telecons) to be arranged. The second option, which provides more flexibility, was accepted.

How are decisions taken. Three basic options for the **decision criteria** were presented: 1) key decision criteria are established for each CEOS entity (Plenary, SIT, each VC, each WG); 2) a single generic set of key decision criteria; or, 3) a combination of generic decision criteria and specific criteria established for each CEOS entity. The group agreed to recommend that a combination of generic and specific decision criteria be defined for each CEOS entity (option 3).

Along with these, three basic options for the **decision mechanism** were presented: 1) consensus; 2) majority decision making; or, 3) mixed decision making tailored to the type of decision to be taken. There was a brief discussion on decision making mechanisms:

- Brent noted that in the past where we have not been able to move forward, CEOS and SIT Chairs have been involved to ensure continuity until we're in a place to be able to make a decision.
- Pat Jacobberger-Jellison (SIT Chair Team) observed that CEOS decision-making has been very informal. She also noted that true consensus building is quite a careful and formal process, and that a mixed model is going to take some focused discussion in order to refine.
- Majority decision making was ruled out, with strong support for consensus decision making, and some support for mixed methods.
- Mary Kicza (NOAA) suggested that in the past CEOS has used a mixed decision mechanism.
- Brent noted that we should be sure to reach out to CEOS Principals who are not present to also get their inputs on this important topic.
- Satoko Miura (JAXA) asked for clarification of the scope, and Steven indicated that this applies to the decision makers previously agreed upon (*i.e.* option 1 : CEOS Principals, CEOS WG and VC leadership).
- John Faundeen (USGS) noted that WGISS did try a voting system, but that it was not effective. He has also had informal discussions with a past WGCV chair who tried the same, and also experienced troubles.
- Einar-Arne Herland (NSC) suggested that CEOS is not really making decisions, but more coming to agreements. Pat noted that the context is the consideration of new activities which would consume CEOS resources.

Pat noted that the consensus mechanism (option 1) seemed to have most support, and proposed that this option be used going forward as input to the strategic documents. This was agreed.

20 CSSII: Summary of Decisions and Progress towards CEOS Strategic Documents

Pat Jacobberger-Jellison (SIT Chair Team) provided an update on the plans for CSSII towards the development of the CEOS Strategic Guidance Documents.

Strategic Documents Timeline:	
Milestone	Date (2013)
✓Notional outlines	10 February
✓Brief outlines	1 March
Extended outlines circulated	29 March
Assessment of content gaps	15 April
Rough drafts (for Committee use)	15 May
First circulation drafts out	20 June
Outreach, engagement, comment, and revision	July-August
SIT Tech circulation drafts out	1 September
Presentation at SIT Tech	15 September
Plenary drafts distributed	11 October

Mary Kicza (NOAA) thanked Pat for her efforts on pulling the CSS together.

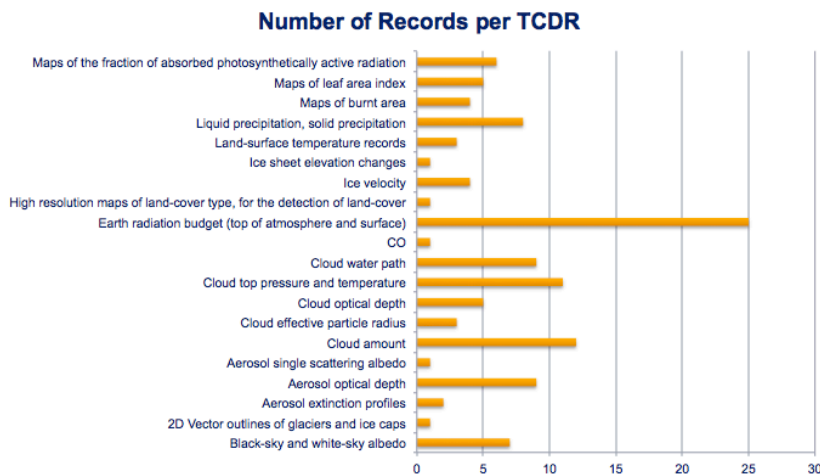
SIT 28-21	SIT Chair to progress the three CEOS Strategic Guidance Documents resulting from the CSSII per the agreed schedule in order for release well ahead of CEOS Plenary	28th CEOS Plenary
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21 Climate ECV Inventory and Report from UNFCCC/COP

Mark Dowell (EC-JRC) presented a summary of CEOS reporting to UNFCCC and SBSTA. He noted that the CEOS response to the GCOS IP was the main substance of the report, and is primarily a response to the actions in the IP, providing more detail on the deliverables, coordination, activities and who will lead the effort, calls out agency activities, calls out international coordination. The feedback from SBSTA was very positive - they applauded CEOS for submitting this response and encouraged CEOS to continue this effort.

Mark noted that for future reports, SBSTA was interested in hearing about other CEOS activities outside the GCOS IP related to the convention (*i.e.* REDD, CTF, carbon-related, etc.). He also noted feedback that the CEOS response was provided 18 months after the publication, and this only leaves 3.5 years until we need to report on progress, and that a tighter turn around would be helpful. Overall, there is recognition from SBSTA that the work CEOS is doing is relevant to the climate conventions.

Mark provided a brief update on the Strategy Report on a Climate Monitoring Architecture and ECV Inventory. He noted that explicitly traceability should be possible from the GCOS requirements, through the logical architecture, and then to the ECV Inventory. He reported that CEOS and CGMS are currently jointly compiling the initiation version of the ECV Inventory. The Inventory is intended to support a gap analysis at the data set level.



Currently, there are approximately 220 entries in the ECV Inventory, with good representation across domains. There are 163 past/current records, and 53 planned/future records. They are satisfied with the response as an acceptable basis for a first analysis. They are looking broadly across the competencies of WGClimate at how the data in the ECV Inventory can be further utilised and leveraged, and there is an agreement that there is an opportunity to consider a central “database” of ECV product metadata.

Mark noted a request that they consider looking at extending the database to include *in situ* datasets. There is an understanding that the space agencies would not be responsible for outreach and quality control on *in situ* data sets (WCRP would be), but that this information is quite complimentary.

Mike Freilich (SIT Chair) asked if there were any objections to incorporating the *in situ* data into the ECV Inventory, and none were raised. Mark stressed that the discussions at this point are preliminary, and that he will advise how those discussions progress.

Ivan Petiteville (ESA) noted that there have been discussions about integrating the ECV information with the MIM database, and there would need to be an assessment about how including *in situ* information would impact that potential integration.

SIT 28-22	WGClimate, MIM team & SEO to explore issues related to integration of <i>in situ</i> datasets into the ECV inventory	SIT Workshop
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22 Long Term Coordination of Global Climate Architecture from Space

Mark Dowell (EC-JRC) introduced the topic of long-term coordination of Global Climate Architecture from Space from the perspective of WGClimate. He noted that the Architecture for Climate Monitoring from Space-based Observations began (almost exactly) in parallel in 2 fora: CEOS WGClimate, and WMO/GCOS workshop in 2011 that resulted in the formation of the “badgeless” *ad hoc* Writing Group.

He noted that one of the strengths of the approach is the common coordination “interface” provided for research, (*e.g.* WCRP), and climate service development (*i.e.* GFCS). This approach largely relies on informal collaboration and cooperation between the WGClimate and the *Ad Hoc* Writing Group, and leverages the current high degree of common participation. The longer-term stewardship and development of the Architecture needs a

more secure framework that captures the collaborative benefits of the current situation within a more formal coordination arrangement.

Mark noted that discussion on possible joint CEOS/CGMS activity at CGMS Plenary lead to CGMS-40 Action on EUMETSAT: *To explore further the possibility to coordinate Climate-related activities with CEOS in line with the work done for the preparation of the Architecture for Climate Monitoring from Space and to report to CGMS-41 in July 2013 in Japan*

Paul Counet (EUMETSAT) reported that the discussion with CGMS lead to a proposal to create a joint CEOS/CGMS Climate Working Group with three main goals:

- Providing a structured, comprehensive and accessible view as to what Climate Data Records are currently available from satellite missions of CEOS and CGMS agencies or their combination;
- Delivering, or creating the conditions for delivering, further Climate Data Records, including multi-mission Climate Date Records, making the best use of available data to fulfill GCOS requirements (*e.g.* by identifying and targeting cross-calibration or re-processing gaps/shortfalls); and
- Optimizing the planning of future satellite missions and constellations to expand existing and planned Climate Data Records, both in terms of coverage and record length, and to address possible gaps with respect to GCOS requirements.

A proposed joint CEOS/CGMS Climate WG would:

- Subsume the activities of the current CEOS WGClimate and the *ad hoc* Writing Group;
- Engage in a coordinated manner with existing groups and initiatives, with the aim of making the best use of existing expertise and experience and covering the maximum range of ECVs;
- Become the “Steward” of the Climate Monitoring Architecture from Space on behalf of space agencies;
- Take benefit from some of the arrangements established for the CEOS Working Group on Climate, but with an expanded scope to cover a broader range of ECVs and communities;
- Have the mandate to respond to evolving requirements stemming from global initiatives, such as those maintained by GCOS; and
- Have a balanced representation from CEOS and CGMS, with a traditional Chair/Co-Chair arrangement.

Paul noted that ideally the new arrangements should be planned during the course of 2013 and put in place in the course of 2014, allowing for a clean transition between the activities of the *Ad Hoc* Writing Group (completion of the initial version of the architecture) and the start of the work of the new joint CEOS/CGMS Climate WG.

Following a successful discussion at SIT-28, the plan would be to develop a more detailed proposal to be submitted for approval at CGMS-41 in July 2013, and then at CEOS Plenary in November. Following approval by both Plenaries, the detailed implementation arrangements will be discussed with the objective to converge on the Terms of Reference during the course of 2014.

A discussion on the proposal followed:

- Mike Freilich (SIT Chair) noted that this was the opportunity to provide initial feedback on the proposal, assuming that if we do not raise significant concerns now, there will be follow-up discussions at Plenary.
- Stefano Bruzzi (ASI) remarked that this is a direction we can endorse, but raised the concern that the lead-up to the submission of the proposal to CGMS Plenary in July is a key for providing CEOS input. He suggested CEOS SEC, and CEOS and SIT Chairs need to be kept informed during this process. We do not want to arrive at CEOS Plenary with a proposal by CGMS that is not acceptable to CEOS.
- Stephen Briggs (ESA) noted that he can only agree with the idea that these climate discussions are related, and can be integrated. There is still some significant thinking to be done on process, and this includes a discussion of Co-Chair arrangements. He suggested that one Co-Chair should always be from an “operational” agency, and one from a “science” agency in order to distinguish between the different perspectives. He also noted that when we talk about climate services (*i.e.* GFCS) we should acknowledge that there are a number of places globally where climate services are being implemented (*i.e.* only target for this activity should not be GFCS). Mike noted there is some ambiguity in the classification of operational and science agencies, and Stephen clarified that this is in reference to providers of core meteorological services.
- Brent Smith (NOAA) noted that Mary Kicza and NOAA support the proposal. It is the logical next step in extending the ongoing CEOS focus with WGClimate, and the climate architecture with CGMS, WMO, and now GEO. He noted that CGMS itself has been restructured, that it does include a number of research agencies, and that there is good complementarity.
- John Bates (NOAA) agreed that this is a logical evolution, and there’s a lot of synergy. He believes we can bring strengths of both more near-term focused agencies (“operations”), along with research assets to provide a continuum from near-term out to decades. He stressed that contributions on all these scales are very important.
- Osamu Ochai (JAXA) echoed the endorsement of the other agencies. He noted that CEOS has responded to the GCOS IP, is in the process of responding the GEO Carbon Strategy, and may consider responding to the GEO Water Strategy in the future.
- Mark noted that the actions in GCOS IP are more at the individual variable level, where the architecture is linked more generally as a framework for addressing the GCOS IP. He also supported Stephen’s suggestion that there be Co-Chairs in the near-term.

Mike noted that no negative concerns were raised, and the guidance from CEOS SIT is to move forward. He noted that CEOS should follow the process closely.

SIT 28-23	SIT & CEOS Chairs, in cooperation with CEOS SEC, to circulate EUMETSAT proposal for a joint CEOS-CGMS Climate Working Group to CEOS Principals for comment	May 2013
SIT 28-24	EUMETSAT to work closely with CEOS SEC to develop detailed proposals around governance, reporting etc for the proposed CEOS-CGMS Working Group on Climate	June 2013

Paul Counet (EUMETSAT) reported that as a part of EUMETSAT’s CEOS Chair term, they would like to have an event focused on climate in October 2014 coordinated with WCRP focused on the IPCC Assessment Resource (AR) 5. This would include a presentation of outcomes of AR5 on where climate monitoring can benefit from CEOS and space agencies.

Paul noted that EUMETSAT would like to see this as broadly led by CEOS, CGMS, GCOS, WCRP etc.

The proposal was positively received by the group, and Mike noted that EUMETSAT should keep this discussion going through CEOS SEC and via email.

SIT 28-25	EUMETSAT to circulate proposals for a joint CEOS-CGMS-GCOS-WCRP event in Q2 2014 in response to IPCC 5AR	COMPLETE
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23 Update from Carbon Task Force

Masakatsu Nakajima (JAXA) presented an update on the activities of the Carbon Task Force (CTF), noting that the CTF was established to coordinate the response from space agencies to the *GEO Carbon Strategy* by producing the *CEOS Strategy for Carbon Observations from Space*. Since SIT-27 each of the three domains (land, atmospheric, and oceans) have had a number of interactions and the chapter drafts have been developed.

Masakatsu reported that a CTF Side Meeting was held prior to SIT-28, and several key discussion points were raised.

- CTF leadership requested a review of the major actions / recommendations to be included in the *CEOS Strategy*, seeking inputs regarding whether recommended action is reasonable, responsible parties for actions, any “missing” actions, and/or concerns about actions.
- There was a request to provide advance notice (at least 2 weeks) to CEOS leadership prior to releasing the report for review so that they can notify CEOS members to plan for a timely review of the *CEOS Strategy*.
- There was a question about the status and value of the gap analysis for each chapter and this was discussed - there is still an open issue of whether the land chapter needs a new gap analysis to support its findings.
- There was a question as to whether the ECV Inventory has been consulted/included in the report. CTF leadership noted that the original ECV requirements have been consulted, but would have to check with the chapter leads regarding the Inventory.

Masakatsu reported the plan is to finish integrating the draft report in March 2013. This draft will be reviewed internally by the CTF, including follow-up with space agencies implicated to ensure their concurrence. Once this review cycle is complete, a review of the final draft by CEOS, the Global Carbon Project leadership, GEO Carbon Community of Practice, and the authors of the *GEO Carbon Strategy* will be requested. These review cycles are expected to take place in April – June 2013, with anticipate release of the *Strategy* by the end of August 2013.

Mike Freilich (SIT Chair) noted that CEOS agencies should be aware that the integrated draft will be coming end March, and CEOS agencies will be requested to send feedback to the CTF by mid-April. He asked that agencies are given two weeks advanced notice before their review deadline. He also noted that significant discussion will be required on how to implement the strategy, and suggested that the CTF work on developing this discussion with the CEOS and SIT Chairs. A number of key questions need to be considered by the CTF membership, including: which CEOS entity or entities should be responsible for coordinating implementation (*i.e.* CTF, a Working Group, Virtual Constellations, or some

other mechanism); and, how CEOS should interact with GEOSS and UNFCCC in implementing and reporting on the report’s recommendations/actions.

SIT 28-26	Carbon Task Force to consult with CEOS agencies, seeking input on the first integrated draft of the CEOS Carbon Strategy (expected end of March 2013)	April 2013
SIT 28-27	Carbon Task Force to circulate the final draft of the Carbon Strategy Report asking for review comments from CEOS, the Global Carbon Project leadership, GEO Carbon Community of Practice, and other stake holders in order to finalise the Strategy for endorsement at CEOS Plenary in November 2013	August 2013
SIT 28-28	Carbon Task Force to work with the CEOS Chair and SIT Chair teams to develop the implementation approach for the CEOS Carbon Strategy	28 th CEOS Plenary

24 Update on Disaster Risk Management Implementation and the CEOS Response to the GEO Disasters Task

CEOS Disaster Risk Management (DRM) Implementation

Ivan Petiteville (ESA) provided an update on the implementation phase of the CEOS Disaster Risk Management (DRM) activity, noting that the top objectives are to:

1. Increase and strengthen the contribution of EO satellite to the various DRM phases through a series of coordinated enlarged actions; and
2. Raise the awareness of politicians, decision-makers and major stakeholders on the benefits of using satellite EO in all phases of DRM.

The aim is to positioning space-based observations for inclusion in the Post-2015 Framework for Disaster Risk Reduction (“Post-Hyogo”). The group has defined five major actions:

- Define a Global Satellite Observation Strategy for DRM;
- Implement the Global Satellite Observation Strategy for DRM;
- Set up a virtual repository for DRM-relevant data / products / information from both space agencies and DRM-Users and make the repository content accessible to all DRM users;
- Set up DRM Data Processing Platform; and
- Ensure the positioning of EO from Space in the 2015 post-Hyogo Framework of Actions.

Ivan noted that a CEOS DRM Implementation Plan for 2013-2015 has been written – the plan calls for a CEOS Observations Strategy to be delivered at CEOS Plenary in November. The Strategy will be structured around three initial thematic pilots, for which co-leads have been identified: flooding (NASA and CSA); seismic hazards (ESA and DLR); and, volcanoes (USGS and ASI).

CEOS Response to the GEO Disasters Task

Guy Séguin (CSA) presented a summary of the CEOS Response to the GEO Disasters Task, noting that the objectives are to guide the CEOS discussion on disasters within the GEO

context, report on all CEOS disaster-related actions, and to position the DRM initiative within the GEO Work Plan.

Guy noted that the strategic target for the GEO Disasters Task is, “Reducing loss of life and property from natural and human-induced disasters”, and reviewed the Task components: C1 Disaster Management Systems (Lead CEOS); C2 Geohazards Monitoring, Alert, and Risk Assessment (Lead EUCENTRE); and, C3 Regional End-to-End Systems (Lead NASA). CEOS is contributing across all three task components.

Guy presented the status of a planned gap analysis on support to flood disasters. He also noted that the Charter on Space and Major Disasters provides data for all disasters, in all regions of the world, during a small temporal window. He presented options to expand temporal coverage to other phases of the disaster cycle (recovery, response, warning, mitigation), as well as spatially (local, regional), and for different types of disasters.

He suggested that the way forward should include:

- Developing text to include the DRM observation strategy in the GEO Work Plan with the appropriate timeline and level of involvement;
- Defining a DRM observation strategy; and
- Tailoring CEOS actions in 2014 to use the new observation strategy.

A discussion on CEOS and GEO disasters-related activities followed:

- Mike Freilich (SIT Chair) recalled recommendation 5 from the CSS Implementation Initiative Roles and Responsibilities Topical Team, noting that the discussion had been leaning towards a revised Option B.

Option	Option Description	Advantages/Drawbacks
A	Embed all of the existing CEOS Disaster activities within just one of the existing three mechanisms addressing Disasters and suppress the other two activities/mechanisms	+ simplicity and clarity
B	Suppress the CEOS Disaster SBA Coordinator, the <i>ad hoc</i> Working Group on DRM and the Disaster activities within WGISS, and transfer all activities to a new WG on Disasters	+ simplicity and clarity
C	Leave "as is"	- overly complex organisational structure that is not justified by the benefits, and does not respond to the criticisms in the CSS Synthesis Report

- Satoko Miura (JAXA) noted that WGISS is not discussing a disasters coordination mechanism, and is focused only on technical topics.
- Stephen Briggs (ESA) noted that the proposal for DRM was to try and develop a coherent observing strategy. He noted that GEO’s goals are now more diffuse and generic, and are no longer a fixed target – but stressed that what is needed is to develop a coherent observing strategy.
- Mark Dowell (EC-JRC) sees a lot of similarities with WGClimate’s thematic focus, and suggested that maybe CEOS should not be looking within GEO, but rather within the UN framework.
- Stefano Bruzzi (ASI) noted CEOS should consider how and if the SBAs are going to evolve within GEO. Mike noted that the approach agreed was that CEOS would not establish SBA Coordinators for a given topic until a specific request was received from GEO.
- Tom Cecere (USGS) asked if the plan was to expand the Charter, or to do something separate from the Charter – Guy noted that the Charter is successful because it is highly

focused, and that we should not disturb this operational system. The plan is to try and expand agency data contributions to cover more broadly than the Charter.

- Stephen referred to Guy’s options for temporal, spatial, and disaster-type coverage, noting that the point of developing an observation strategy would be to optimise coverage across these dimensions – recognising that providing comprehensive coverage across all the dimensions is a significant challenge. While he expressed concern about the proliferation of CEOS Working Groups, he noted that an *ad hoc* Working Group might be the best approach, and that in the process CEOS may also need to seek more clarity from GEO.
- Brent Smith (NOAA) noted that how CEOS handles this case (disasters) is a test of what we are going to be able to do in trying to re-focus CEOS. He questioned the approach of establishing Working Groups for every initiative, in particular because this will likely exasperate resource limitations.
- Mike noted that he does not see the discussion converging, and asked for a small team to perform a rapid study (5-6 weeks) on how CEOS should move forward to be presented at SEC-176 (9 May) and then distributed to CEOS membership. A further reporting milestone should be set for the SIT technical workshop. The study group should be led by Ivan, with a membership of Guy Seguin, Frank Lindsay, Steven Hosford, and Kerry Sawyer.

SIT 28-29	Ivan Petiteville to work with the DRM team to develop a description of the DRM observation strategy to include in the GEO Work Plan. The description should specify the appropriate timeline and level of involvement	June 2013
SIT 28-30	Ivan Petiteville to coordinate the creation of the study group in charge of proposing organisational approaches to ensuring coordination of CEOS disaster-related activities, to be presented at SEC-176 (9 May).	May 2013

25 GEO Water Strategy Report

Osamu Ochai (JAXA) presented a summary of the GEO Water Strategy report, noting that the purpose of the report is:

- To update and synthesize the available information about the status of water cycle observations and information systems on the basis of the IGWCO report of 2004;
- To describe a strategy for water cycle observations and information that will enable the short-term GEO objectives and the long-term community goals to be achieved;
- To provide CEOS, GEO, WMO and other agencies with guidance about strategies for water cycle observations, information systems, interoperability, capacity building, etc.; and
- To propose major initiatives that will advance this overall concept.

Osamu gave an overview of each of the chapters of the report, and then explained the planned schedule for the rest of 2013:

- April 11, 2013: EGU Town Hall on the GEO Water Strategy;
- April 17, 18, 2013: European GEO Water Strategy Workshop – Barcelona, Spain;

- May 15 – Revised draft document circulated to CEOS and GEO members for comment;
- July 1 – Document revised;
- August 31 – Final thorough technical edit of the report completed;
- September 1 - Interaction with the agency printing the report would begin; and
- November 15 – copies of the report would be available.

The plan is to have copies of the report distributed at the GEO Summit in January 2014.

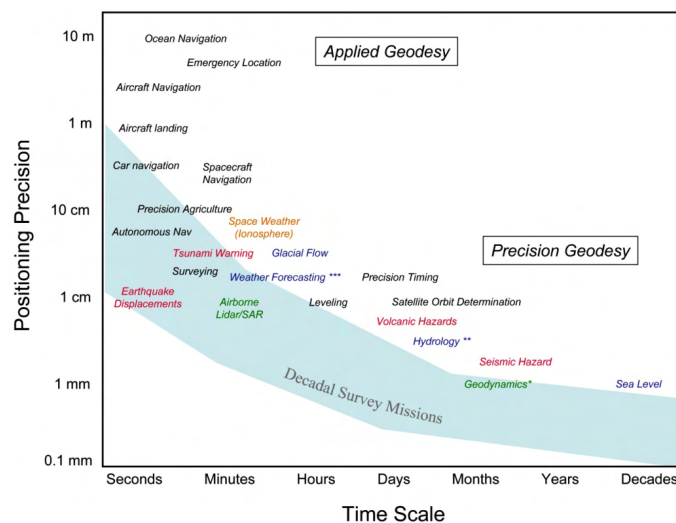
Osamu asked CEOS members to provide feedback and comments on the approach, chapter content, and guidance on the formulation of the recommendations. He noted that this will be followed by a request for full review in May, and that CEOS could consider formulating a response similar to those for the GCOS IP and the GEO Carbon Strategy Report.

Brent Smith (NOAA) welcomed this initiative by JAXA, and noted that CEOS shepherded this as an IGOS Theme. He suggested that this is one of the areas where an SBA Coordinator could be warranted, and suggested identifying Osamu’s role as a liaison with the GEO water activity as such.

SIT 28-31	CEOS agencies to provide feedback and comments on the GEO Water Strategy Report draft, specifically in relation to approach, chapter content, and guidance on the formulation of the recommendations	May 2013
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26 GGOS Proposal for CEOS Consideration

Ruth Neilan (NASA/JPL) presented a proposal for CEOS participation in a decade long initiative for the development of the global geodetic observing network for a global geodetic reference frame. She noted that the Global Geodetic Observing System (GGOS) recently joined CEOS, and leads a component of the CEOS/GEO Work Plan element IN-01__C3, working to promote geodetic reference frames and the monitoring of global change signals. She noted that these reference frames underpin a large number of applications including all those that require precise positioning and a long term reference. Without such a reference it would, for example, be impossible to estimate sea level rise so precisely over the lifetime of several satellites.



She noted that the existing Global Geodetic Network does not meet current accuracy requirements, nor future requirements, and based on an assessment of the GGOS Next Generation Network Initiative issued in August 2011 is an, “infrastructure in danger of collapse”.

A letter was sent by GGOS to the CEOS Chair in October 2012 proposing that, “CEOS join with the GEO and the GGOS in the formulation of a decade long initiative for the development of a renewed global geodetic observing network.” Ruth noted that several CEOS agencies have already pledged substantial support to GGOS, but that these contributions are not highlighted.

GGOS is requesting a letter from the CEOS Executive leadership responding to the October letter from the GGOS:

- Acknowledging the importance of the ITRF and the GGOS Services to the space activities of the CEOS membership;
- Pledging CEOS support for the GEO Work Plan element IN-01__C3; and
- Encouraging the CEOS agencies to support the combined efforts of GEO, CEOS, and GGOS to ensure the success of *The Decade Long Initiative for the Geodetic Observing Network*.

Ruth noted that the targets for improvement are an order of magnitude better than current capabilities, and will require commitment to achieve. Ruth also noted that there are direct links to disasters within GGOS, and that the GGOS approach for the next 10 years is to define an architecture along the lines of the approach being taken by WGClimate.

There was a brief discussion on the proposal:

- Pascale Ultré-Guérard (SIT Vice Chair) asked if there were any objections to the request, and none were raised.
- Brian Killough (NASA/SEO) noted that he is a coordinator of IN-01, that the C3 Component of this Task is led by CEOS, and that he would like to ask for GGOS support on this Component.
- Julio D’alge (INPE) noted that when working with high resolution imagery, this job has to be done, that it's a very important topic, and that INPE has a long-standing agreement with NASA on this topic.

SIT 28-32	CEOS Chair to write to GGOS acknowledging the importance of the ITRF and the GGOS Services to the space activities of the CEOS membership, and endorse the decade long initiative for the global geodetic observing proposed by GGOS	May 2013
SIT 28-33	CEOS agencies are encouraged to endorse, support and contribute to the Decade Long initiative for the Geodetic Observing Network	Ongoing

27 GEOGLAM Report and *ad hoc* Working Group on GEOGLAM Way Forward

Chris Justice (UMD) presented the background for GEOGLAM, noting that it is emerging as one of the more important initiatives that GEO has developed over the last few years. As a result of broader concern about food security, GEO was approached by the French Ministry

of Agriculture to put together a crop monitoring and information proposal for the G-20. From this, GEOGLAM was born with the goal:

To strengthen the international community's capacity to produce and disseminate relevant, timely and accurate forecasts of agricultural production at national, regional and global scales through the use of EO.

A GEOGLAM Work Plan was developed, and a great deal of work has been done on defining information and satellite observational requirements to support a phased implementation. Key participants have included the CEOS *ad hoc* group, as well as the GEO Agriculture Community of Practice. The implementation should leverage improved satellite data and information tools, as well as leveraging existing tools and activities such as AMIS.

The work on developing data requirements was done as a part of a collection of foundational activities carried out in Phase 0 – this also includes JECAM. The four phases are defined as follows:

Phase 0: Foundation Activities (2011-2013) (Completed)

Phase 1: Demonstration & Early Feasibility Phase (2013 - 2015)

- Focused on 7 countries (4 large producer, 3 small producers) +1 Region; and
- Focus on available Optical and SWIR + Regional SAR (Asia Rice).

Phase 2: Assessment & Expansion (2014 –2016)

- Pilot global sampling strategy for the main producers; and
- New countries (~ 5).

Phase 3: Pre-Operational (2015-2017)

- Expand to all large producer countries (global producer sampling); and
- 3-5 small producers (TBD).

Yves Crevier (CSA) outlined the proposed way forward for CEOS and GEOGLAM, starting with an update of the action status from SIT-27.

***SIT Action 27-11:** An Ad Hoc CEOS Working Group to take responsibility for working with GEOGLAM to further develop the space-based observations component suggested by the draft Work Plan. (Due: On going, report back at 2013 CEOS Plenary)*

- The *Ad Hoc* Working Group has been leading collaborative activities between CEOS and GEOGLAM since SIT-27. This has included a User Requirements meeting at CSA in June 2012, a CEOS-GEOGLAM community meeting at NASA Langley in November 2012, and participation of CEOS in the GEOGLAM Strategy meeting at the USDA in February 2013.
- Through this process, a phased implementation approach was developed which is harmonised with the GEOGLAM implementation strategy. Phase 1 will primarily focus on freely available mid- and low-resolution datasets in 2013 and is planned to expand over time. There is also a need for SAR mission coordination in support of rice crop monitoring – these data requirements have been developed by the Asia-RiCE team, lead by JAXA. Additional updates and definition of this plan will be presented to CEOS at the 2013 Plenary.

SIT Action 27-12: *SIT Chair will explore with SDCG the possibility of tasking/augmenting the SDCG group to undertake a preliminary global acquisition strategy in support of GEOGLAM needs. SDCG tasking would begin following approval at Plenary.*

- The composition, skill sets and expertise of the *ad hoc* group on GEOGLAM allowed the development of an initial coordination framework to address the needs of GEOGLAM.
- Understanding the complexity of the task, the *ad hoc* group engaged with SDCG to learn how it is supporting GFOI, and how a similar group may be needed to support GEOGLAM in the future.
- A proposal to better encapsulate CEOS participation in the development of an observation strategy will be submitted to CEOS plenary (November 2013).

SIT Action 27-13: *Building upon the outcomes of the user requirements and space data coordination activities, responsible CEOS Working Group will provide their analysis and recommendations to CEOS leadership on further steps vis-à-vis the GEOGLAM initiative – including a plan for the pre-2015 outcomes. (Due: SIT-28)*

- A high-level observation strategy based user requirements was developed during the last year, along with a related high level volumetric analysis was conducted by the SEO.
- A report on initial coordination between CEOS and GEOGLAM was developed, proposing a corresponding a phased implementation response.

GEOGLAM is included in the CEOS 2013 Work Plan, calling for a, “Decision on whether and how CEOS Agencies may provide coordinated data acquisition support to the GEO Global Agricultural Monitoring (GEOGLAM) initiative.”

Yves gave a summary of the immediate actions, related to data requirements, coordination, continued CEOS support to JECAM, working with GEOGLAM on the generation of information products, improved liaison with CEOS groups such as the WGs and VCs, and further meetings – in particular joint between the CEOS and GEOGLAM communities, and on the development of SAR data requirements.

Yves summarised, noting that significant investments by space agencies in support of application development has underpinned the progress of GEOGLAM, and that *ad hoc* group has made some significant progress on nurturing the relationship with GEOGLAM, understanding the requirements, developing a response phased-implementation strategy.

He closed with two key points:

- The CEOS *Ad hoc* Advisory Working Group for GEOGLAM requests that they continue their efforts towards a better understanding of the resources required to support GEOGLAM requirements and report on CEOS SIT Actions 27-11 at the 2013 CEOS Plenary Meeting; and
- The CEOS *Ad hoc* Advisory Working Group for GEOGLAM plans to seek the endorsement of the CEOS Strategy for Space Data Coverage and Continuity in support of GEOGLAM and recommend the creation of a data coordination working group that will build on the process, results and successes of the SDCG for GFOI. (CEOS Plenary, 2013).

A discussion followed:

- Brian Killough (NASA/SEO) suggested that what is being sought by the *ad hoc* group is acknowledgment of the effort to date, and guidance moving forward. He recommended that SIT support the continuation of the *ad hoc* group, but noted it is not clear that we can have a strategy by CEOS Plenary. He noted the good work being done by GEOGLAM looking at sampling techniques, products, and what data sets would be used.
- Yves clarified that the *ad hoc* group is not planning to bring an observation strategy to Plenary, but a strategy for space data coverage and continuity. Though part of the strategy for space data coverage and continuity will eventually be the development of an observation strategy.
- Tom Cecere (USGS) noted that USGS would be prepared to support with the Landsat assets, but there is a need to clarify what is required and what is the most effective strategy to deploy assets.
- Chris stressed that they need data now, and so waiting would stall GEOGLAM progress. He noted that next year’s southern hemisphere growing season would be a good objective, and reminded that GEOGLAM has commitment from Australia and Argentina to start using the data.
- Stephen Ward (SIT Chair Team) noted that there may be some lessons for GEOGLAM to learn from GFOI, but the same path is not necessarily the way to go for GEOGLAM. GFOI played a long game, building in other “systems of systems” elements like World Bank and FAO. Establishing these relationships, and coming to a true understanding of capacity took quite a bit of time. This investment supported CEOS agency confidence that the user community and implementation partners were engaged.
- Stephen stressed that GFOI has moved the CEOS “tent” a little further towards delivery, which may help GEOGLAM. He stressed the importance of GEOGLAM representation in the land cover coordination discussion. And that GEOGLAM can demonstrate that it will still be in existence in 10 years.
- Chris noted they do not want to take 2-3 years before starting, and he feels they are in good shape to start implementing.

SIT 28-34	The <i>ad hoc</i> team on GEOGLAM to continue their efforts towards a better understanding of the resources required to support GEOGLAM requirements, and report to CEOS Plenary, including any proposed next steps	28th CEOS Plenary
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28 The Polar Ice Sheet Monitoring Project – A Coordinated Response from Space Agencies

Yves Crevier (CSA) reported on the Polar Space Task Group (PTSG), noting that it was established in 2011, building on the legacy of the successful WMO-ICSU International Polar Year (IPY) Space Task Group. Members of the PTSG were in most cases nominated by heads of space agencies in response to an invitation by the WMO Secretary General. The objective of the group is to contribute to and support the development of specific derived products required for cryospheric scientific research and applications by coordinating and prioritising observational requirements from Polar thematic communities. The success of the IPY has created demand and expectation for coordinated polar satellite data.

Yves reviewed the motivation and background behind ice sheet monitoring, noting that ice sheets are one of the GCOS Essential Climate Variables (ECV). He noted that significant progress is required to support the generation of continuous global datasets of cryosphere ECVs to assess their sensitivity to climate change and impact on sea level.

Of particular interest, is ice sheet surface velocity, which is a crucial dynamical control of mass balance, and can only be measured using spaceborne interferometric SAR. Since IPY, three key SAR missions (ERS-2, Envisat, ALOS) have ceased operations, raising the prospect of a critical data gap. Yves noted that the PSTG is coordinating a response to this gap utilizing RADARSAT-1 and -2, TerraSAR-X, Cosmo-SkyMED, and ALOS-2 and Sentinel-1 when they are available.

Plenary action 26-13 called for feedback from CEOS agencies on the nature and structure of CEOS engagement in PSTG, including appropriate roles and responsibilities. Responses stressed: understanding the importance of PSTG as an interface with thematic and sectoral authorities; developing an “accountable interface” responsible for the coordination of space-based earth observation assets in response to PSTG; and, reporting progress on these matters to SIT Chair and to CEOS Plenaries as appropriate.

The PSTG is seeking guidance from CEOS, and a discussion followed:

- Stefano Bruzzi (ASI) noted that the PSTG membership should consist of appropriate technical representatives, but that CEOS should only have one official representative to the group. He noted that a group like PSTG is charged with generating requirements, and so it should remain separate from CEOS.
- Yves noted that the current PSTG members have a mandate to make contributions via their agency’s assets.
- Stefano noted that WMO has established this group, and is currently asking CEOS to support it. Mike Freilich (SIT Chair) noted that if the sense of the group is that we’re not interested, then we should probably continue the way we are.
- Osamu Ochai (JAXA) expressed concern about how JAXA can participate in CEOS as well as PSTG.
- Yves noted that CEOS agencies are doing this already individually in support of their own science programs, including through NASA and ESA CCI. He is seeking to ensure that the utilization of agency resources is being optimised.
- Mike noted that he understood, but what CEOS is hearing is that the benefits of optimization through CEOS are not large enough to counterbalance the resources being used by the WMO PSTG.
- Stefano noted that if CEOS agencies go to the WMO group, then they will coordinate their own resource utilisation.
- Luc Brûlé (CEOS Chair) noted that the discussion at Plenary was looking at PSTG as a part of CEOS, but that now it appears as though PSTG is going on its own, and so there is no need for coordination. He noted that at the end of the day, the coordination work is being done, and that Yves is responding to the Plenary action (26-13) in order to clear the air.

29 A Sustainable CEOS: A Session on Continuity, Complementarity, and Capacity

Mike Freilich (SIT Chair) introduced the session on CEOS continuity, complementarity and capacity, noting that so far SIT-28 has discussed strategic issues and tactical issues. The final session of the SIT-28, he said, will be devoted to these three elements that are needed for CEOS in the near-term and in the future. The idea is not to focus on tactical issues, but instead, to discuss these broad-sweeping elements in the context of the sustained accomplishment of CEOS goals in ways that will further optimize its work and impact on societal benefit with its stakeholders and partner organizations. These elements will not be enshrined in the CEOS strategic guidance documents, but deserve close attention.

Mike cited the tangible example of having trouble identifying candidates to fill CEOS leadership positions, and how we should deal with that in the next couple of years. He noted that each of the three elements will be introduced by a speaker, a panel will offer its perspectives, and an open discussion will follow.

Continuity: Brent Smith (NOAA) noted that in the past CEOS internally focused, on member agencies and working groups more. However, over the last decade, it has decidedly moved towards dealing with external requests from external entities like GCOS and GEO.

He noted that while CEOS has recently had issues in attracting leadership, CEOS has in its 26 Plenaries had 18 of its members step up to take their turns in serving as Chair - NOAA, CSA, ESA, JAXA, ISRO, BNSC/UKSA have served twice, and INPE has served three times. He also noted that we now have confirmed CEOS Chairs for 2015 and 2016, and a new SIT Chair for 2014 – 2016. The situation with WGs has been a little more challenging. He complimented SANSA for volunteering to be the incoming Vice Chair/future Chair of WGCapD.

Complementarity: Kerry Sawyer (CEO) introduced complementarity, suggesting that for CEOS, this means the harmonization of internal and external activities and groups to support CEOS objectives. Important questions to consider include:

- How should Virtual Constellations interact with International Science Teams?
- How does CEOS interact with groups requesting support?
- Should the SDCG for GFOI transition into a SDCG for CEOS?
- Should there be an overarching mechanism for ocean-related activities within CEOS?

Capacity: Brian Killough (NASA/SEO) noted that capacity refers to the ability to perform or produce. Whether CEOS has the necessary resources (people and funding) to sustain its purpose and perform and produce effectively in the future should be considered. He noted some challenges which inhibit capacity: that CEOS is a best efforts organization; reduced agency funding; travel restrictions; competition for resources among many relevant global initiatives; and, managing expectations.

After these brief introductions, Mike called on a panel of past, present, and future CEOS leaders to comment:

- Luc Brûlé (CEOS Chair) stressed that the notion of allowing agencies to take turns in leadership is key to CEOS success. For smaller agencies like CSA, the investment in CEOS leadership is quite an effective way to see how things are done internationally, enlarging their sphere of activities, and identifying other small agencies to engage.

- Stefano Bruzzi (ASI, CEOS Chair 2011) noted that smaller agencies need help from the larger agencies, for example, by making substantial leadership support resources available (*i.e.* CEO/DCEO, SEO, etc.). He stressed that it should be made clear to smaller agencies that if they step forward into CEOS leadership positions, they will be supported.
- Mary Kicza (NOAA, SIT Chair 2008-2009) noted that in the past CEOS has tried to thoughtfully pair SIT and CEOS Chairs to ensure complementarity. In the past, the SIT Chair agency has been the agency with more resources to dedicate.
- Pascale Ultré-Guérard (SIT Vice Chair) suggested the possibility of SIT Co-Chairs to double the resources available. Mike expanded on that, suggesting that their two year terms could overlap by one year in the middle.

Following the panel's comments, a general discussion followed:

- Ivan Petiteville (ESA) noted that attracting new agencies into leadership roles, increases and improves CEOS's ability to take on new activities. It also allows smaller agencies to learn from larger agencies, and helps to address the need to bring other participants into CEOS.
- Mark Dowell (EC-JRC) noted that there was discussion at the WGClimate about creating a small agencies lobby group where they would coordinate a unified position amongst themselves on key issues.
- Brian noted that to entice smaller agencies to engage, they need to be aware that they can be supported by CEOS leadership functions. For example, while awareness is good at SIT, two-thirds of CEOS agencies are not present.
- Mary noted that an agency's investment in CEOS must provide a return on investment, and this needs to be balanced against the fact that many CEOS activities are focused on long-term outcomes.
- Paul Counet (EUMETSAT) noted that partner organisations should be aware of what they will get by joining CEOS. In the case of EUMETSAT, they have to get the agreement of EU member states to support engagement, and so they have to demonstrate the added value to a group like EUMETSAT.
- Mike added that it might be quite useful for new CEOS leaders to state what near-term benefits they expect to get from CEOS when they start, and the articulation of this might make their motives more transparent.
- Stephen Ward (SIT Chair Team) noted that in the 1980's and 1990's CEOS focussed mainly on standards and pre-internet data access. Now we're talking about providing high level products like ECVs, and in GEO, we might be close to having a funnel that users can use to come to CEOS and formulate data requests that underpin services for the global society. He also noted that the current phase is one characterised by limited capacity, and so expectation management is vitally important for the governments that are waiting on CEOS to deliver.
- John Faundeen (USGS) agreed that managing expectations is key. WGISS ran into challenges identifying meeting host sites, and had to lower the bar in order to attract hosts.
- Julio D'alge (INPE) noted that when you allow small agencies to engage, you also may realise that these agencies can contribute in unique ways.

- Márcia Alvarenga (INPE) supported the notion of SIT Co-Chairs, noting that leading CEOS can be very costly.
- Brent noted that there are external signs that CEOS is maturing, sharing a message from the IGBP Chair stating that while they are not actively engaged in CEOS, when asked they only have strong and encouraging things to say – from the outside, CEOS is viewed as effective.
- Mark suggested trying to quantify the benefits of CEOS. Mike noted that CEOS is in the coordination business, and so it is very difficult to assess what costs would be, not to mention cost avoidance. Mark suggested that focusing on products may be one way to quantify the benefits.
- Pascale noted that the evolution of CEOS to being an organisation able to answer to needs gives more visibility, and is also more demanding. She also stressed that it is important not to scale up the number of Working Groups without justification because they represent a long-term investment by CEOS.
- Stefano noted the evolution of CEOS has been stressed, and that it could become a victim of its own success. He also noted that CEOS does have some unlimited resources, with perhaps 100 people actively involved.
- Shizuo Yamamoto (JAXA) feels the same discussion is going on in Asia within the Asia-Pacific Regional Space Agency Forum (APRSAP) on the need to have common projects and stories to demonstrate the way forward.
- Brian stressed that the real power and value of CEOS is that no one agency can tackle problems of global scale such as those CEOS is being asked to address.
- Mike asked if we should identify a better process for finding new leaders – are we going about recruiting new leaders in the most effective way possible?
- Brent noted the vitality demonstrated in the fact that we had a dying WGEdu, but that this group has been reconfigured with over ten agencies and external partners participating in a very active WGCapD.
- Eric Lindstrom (NASA) noted that, in his experience, it is getting more difficult to engage people to step forward. It is also becoming more difficult to break through from the working to the leadership level. There is reporting up, but the feedback down seems to have decreased.
- Ruth Neilan (NASA/JPL) asked if CEOS has considered a “CEOS youth forum”.
- Ivan noted that the WGs participants are not always CEOS agency staff. For example, in the Disaster Risk Management group, there are 13 members of which five are not from CEOS agencies.
- Rich Eckman (NASA) noted that a large part of the ACC membership is not from CEOS agencies, but instead from the wider academic community.
- Mike turned the discussion back to complementarity, asking if CEOS is spending unreasonable amounts of time engaging in few external interactions relative to the return on these efforts. And if so, would it be more beneficial to disentangle from those engagements and dedicate time and resources elsewhere.
- Stefano noted that he did not think that CEOS spends an inordinate amount of time engaging stakeholders. He did note that the difference between CEOS actions and the

actions of individual agencies needs to be clear, and that CEOS should not take up tasks which individual agencies are carrying out.

- Ivan noted that there should be better cross support between WGs, and that the current links may be somewhat artificial.
- Eric underscored the need for a more permanent, standing consideration of ocean related work within CEOS.

30 SIT Chair Closing Remarks

Mike Freilich (SIT Chair) called on Pascale Ultré-Guéraud (SIT Vice Chair) to make an announcement that proposals are now open for the next SIT Vice Chair or Vice Co-Chairs. She invited agencies to respond by sending CNES a letter by the end of June.

SIT 28-35	CEOS agencies invited to nominate as SIT Vice Chair or Vice Co-Chairs by sending a letter outline their interest to SIT Vice Chair/CNES	June 2013
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Stephen Ward (SIT Chair Team) reviewed the draft table of actions agreed at SIT-28.

Mike thanked everyone for coming to the meeting well prepared, noting that this level of engagement leads substantive discussion and the accomplishment of meeting objectives. He noted that he looks forward to the SIT Workshop as the next major opportunity for the SIT community to come together, and that the Workshop is planned for the week of 9th September in Pasadena, CA, USA.

He reaffirmed one of the consensus points made during the course of SIT-28, namely that CEOS needs to better articulate to policy makers its contributions to humanity. As a best efforts organization, CEOS recognizes the need for policy makers of the world to know more about “what” CEOS delivers for global societal benefit than “how” CEOS does it. He noted that while CEOS must remained focussed on delivery of products as part of its internal efficiency, it should remain mindful that articulating its relevance and contributions to external stakeholders at the global and ministerial levels is also essential.

He thanked Pat and the CEOS Self-Study Implementation Initiative (CSSII) Topical Teams for moving the CSSII forward in preparation for resolution at Plenary; the CEOS Principals who participated in person and remotely; Kerry Sawyer for her work as CEOS Executive Officer in support of all CEOS activities; and the NASA Langley team of Brian Killough, Kim Keith, and Shelley Stover, for their high quality meeting preparation and hosting. Ivan added his thanks to the SIT Chair Team, and in particular, to Mike for having chaired the meeting.

Mike noted that he welcomes comments that CEOS colleagues may wish to offer on this meeting in particular, and to improve future meetings in general.

SIT-28 Participants

Organisation	Participant	Organisation	Participant
ASI	Cristina Ananasso	NASA	Eric Lindstrom
ASI	Stefano Bruzzi	NASA	Richard Eckman
CNES	Pascale Ultré-Guérard	NASA	Yonsook Enloe
CNES	Steven Hosford	NASA	Stuart Frye
CNES	Pedro Goncalves	NASA	Pat Jacobberger-Jellison
CNES	Richard Moreno	NASA	Jack Kaye
CONAE	Laura Frulla (GTM)	NASA	Frank Lindsay
CSA	Luc Brûlé	NASA	Nancy Searby
CSA	Yves Crevier	NASA	Diane Wickland
CSA	Marie-Josée Bourrassa	NASA	Steven Neeck
CSA	Guy Séguin	NASA	Andrew Mitchell
CSA	Satish Srivastava	NASA	Lena Braatz
CSA	Christine Giguère (GTM)	NASA	Christine Bognar
EC-JRC	Mark Dowell	NASA	Justin Tilman
ESA	Stephen Briggs	NASA	Lawrence Friedl
ESA	Ivan Petiteville	NASA (SEO)	Brian Killough
EUMETSAT	Robert Husband	NASA (SEO)	Shelley Stover
EUMETSAT	Paul Counet	NASA (SEO)	Kim Keith
GEO	Espen Volden	NASA (SEO)	Paul Kessler
GEO	Joao Soares (GTM)	NASA (SEO)	Sean D?
GEO	Francesco Gaetani (GTM)	NASA	Stephen Ward
GEO	Georgios Sarantakos (GTM)	NASA	George Dyke
GEO	Douglas Cripe (GTM)	NOAA	Mary Kicza (GTM)
GGOS	Ruth Neilan	NOAA	Brent Smith
INPE	Julio D'alge	NOAA	John Bates (GTM)
INPE	Márcia Alvarenga	NOAA	Jacob Sutherlun (GTM)
INPE	Hilcéa Ferreira (GTM)	NOAA (CEO)	Kerry Sawyer
JAXA	Shizuo Yamamoto	NOAA	Martin Yapur (GTM)
JAXA	Osamu Ochiai	NSC	Einar-Arne Herland
JAXA	Satoko Miura	USGS	Sarah Ryker
JAXA	Masakatsu Nakajima	USGS	Tom Cecere
NASA	Michael Freilich	USGS	John Faundeen (GTM)
NASA	Paula Bontempi		

(GTM) indicates remote participation via GoToMeeting.

CEOS SIT & Plenary Action Status

@ SIT-28

SIT-27 Action Items

No.	Action	Due date
SIT 27-5	CEOS Chair will issue a call for nominations for CEOS agency candidates to serve as CEO and DCEO from late 2012 (nominations due by end May with a view to a decision in July 2012).	April 2012
SIT 27-17	CEOS Troika, under the leadership of the CEOS Chair, to formulate an approach to Chinese and Russian agency engagement in CEOS. CEOS SEC will be kept apprised of progress.	CEOS Plenary
SIT 27-18	CNES to advise the Troika on the potential for CEOS engagement with SOA based on their ongoing bi-lateral joint activities.	April 2012
SIT 27-21	SIT Chair Team will work with Virtual Constellations and Working Groups to further define opportunities and approach to implementation targets discussed at SIT-27. And will ensure engagement of Virtual Constellations and Working Groups in the development of the new planning documents.	September 2012

SIT WS Action Items

No.	Action	Due date
SITWS-2012-5	The authors to circulate the Operational Oceans paper. The VC leads, and in particular the four Oceans VCs, to review the paper on a potential Operational interaction between these groups, and provide comments to the authors.	Draft Paper Posted on SIT Workshop Website Comments: 28 September 2012
SITWS-2012-7	The OCR data gap to be added to the agenda for the next OCR-VC – SIT Chair Team telecon. Discussions should include how relevant CEOS Principals should be engaged in support of addressing this issue.	Next OCR-VC SIT Chair Team Telecon
SITWS-2012-16	SDCG and CEOS <i>Ad Hoc</i> Team on GEOGLAM to coordinate closely and report back on agreement on role of SDCG in continuing support for GEOGLAM.	COMPLETE at SDCG-2 <i>Ad Hoc</i> team to perform a GEOGLAM acquisitions volumetric analysis for discussion at SDCG-3.

26th CEOS Plenary Action Items

No.	Action	Due Date
26-5	CEO to lead an update and expansion of the CEOS presentation set and to provide a broad distribution of the information for CEOS agencies and stakeholders.	January 2013 UPDATED/UPLOADED
26-10	CEOS agencies to nominate a point of contact to the CEOS Supersites Coordination Team	December 2012 NO NEW INPUT
26-18	The MIM Team to work with WGClimate to ensure the latest contact details for the ECV Inventory are available and shared	November 2012
26-20	WGClimate Chair, in cooperation with CEOS SEC, to propose a way forward for engagement in the GFCS process	Discussed on SEC telcon
26-22	Agencies interested in providing the next WGCapD Vice-Chair (from 2014, to subsequently serve as Chair from 2016) should forward nominations to WGCapD Chair	SANSa confirmed
26-23	CEOS Chair will work with WGCV Chair to advertise the need for WGCV Subgroup leadership roles to be staffed	December 2012

TERMS OF REFERENCE FOR A STUDY GROUP ON ORGANIZATIONAL APPROACHES FOR ENSURING COORDINATION OF LAND SURFACE IMAGING IN CEOS

Overall Objective: The study group will recommend internal CEOS organizational structures for ensuring sustained coordination of Land Surface Imaging.

The Group shall:

1. Review and list current and future likely needs for significant land surface imagery in CEOS activities.
2. Review activities to date of the LSI VC, SDCG for GFOI and other groups, if any, who have performed similar tasks.
3. Review the relevant functions of WGISS and how they are best considered in this context.
4. Review the major requirements for land surface datasets, including those arising from the agreed and emerging CEOS priorities in relation to climate (via WGClimate and GCOS), forest monitoring (GFOI), food security (JECAM, and in future GEOGLAM) amongst others.
5. Consider and report on requirements for all aspects of land surface imaging data acquisition, archive, access and transfer in relation to the above activities in the future.
6. Consider the implementation which will best satisfy all the above needs in future, including recommendations as to the future of relevant current bodies.
7. Make recommendations on the way forward to CEOS Plenary

The group shall include representatives of the LSI VC, SDCG for GFOI and WG Climate.

It shall consider the needs for land surface imagery at all compatible spatial scales with the requirements set out above.

It shall provide a draft report to the SIT Workshop in Sept 2013, and a final report to CEOS Plenary in November 2013.

CEOS SIT-28 Actions
V1.0

No.	Action	Due date
SIT 28-1	Stefano Bruzzi, Stephen Briggs, (and others, as interested), work with Brent Smith (in his role as CEOS rep to GEO post-2015 WG), to draft formal CEOS comments on the post-2015 GEO structure and way forward for submission (following quick turnaround review by CEOS Agencies) by CEOS Chair/SIT Chair to GEO in connection with GEO Ex Com’s request for comments	May-June 2013, consistent with GEO requested submission date for Member/Participating Organization comments

SIT 28-2	DELETED – SUBSUMED INTO 28-1	
SIT 28-3	SIT Chair & CEOS Chair, in cooperation with CEOS SEC, to work with incoming CEOS Chair, CEOS SIT Chair, and CEOS representatives to the Post-2015 and Ministerial Working Groups of GEO to develop CEOS inputs, positions and outreach materials for the 2014 GEO Plenary and Ministerial Summit	28 th CEOS Plenary
SIT 28-4	Stephen Briggs to inform GFOI of the CEOS endorsement of the Global Baseline Satellite Data Acquisition Strategy	May 2013
SIT 28-5	Core data stream providers (USGS, ESA, INPE/CRESDA, CSA, CONAE) to work with SDCG to realise the global baseline acquisition strategy for GFOI	Ongoing
SIT 28-6	SDCG to work with USGS, and INPE/CRESDA to implement the 2013 plan for the global baseline acquisition strategy for GFOI	Through to SIT-29
SIT 28-7	SDCG to develop Element 2 of the CEOS Data Strategy for GFOI and to work drafts with relevant data stream providers to support future endorsement by SIT for implementation	SIT-29
SIT 28-8	CEOS agencies to identify points of contact in support of the WGCapD capacity building inventory	May 2013
SIT 28-9	CEOS agency contacts to respond to the capacity building inventory questionnaire	July 2013
SIT 28-10	(CEOS Plenary action). CEOS Chair to write to JAXA and CSIRO confirming acceptance of their offers to serve as CEOS Chair for 2015 and 2016 respectively	COMPLETE By ISRO during their CEOS Chair term.
SIT 28-11	SIT Chair Team, in consultation with CEOS SEC, to work with all VCs to agree an update to their TORs, including common elements and informed by a draft template - and to update the VCs Process Paper to ensure application of the new format to all future VCs	28 th CEOS Plenary
SIT 28-12	SIT Chair Team, in cooperation with the VCs and WGs, to further develop the harmonised statement of 2015 accomplishments of VCs and WGs (using the updated VC TORs) – defining scope and value-added of the groups in achieving the deliverables	28 th CEOS Plenary
SIT 28-13	SIT Chair Team to work with VCs and WGs to identify outputs (such as key reports) that the groups feel did not receive adequate attention from SIT/Principals to be raised at the SIT Workshop	SIT Workshop
SIT 28-14	SIT Chair and CEO to identify CEOS leads of the components of the GEO Blue Planet Task	May 2013
SIT 28-15	Eric Lindstrom to further develop the proposal for an operational oceanography activity involving the 4 ocean-related VCs within the Blue Planet framework	SIT Workshop
SIT 28-16	WGISS Chair, in coordination with CEOS SEC, to encourage improved dataset registration and maintenance within the IDN by all CEOS agencies, and report the status at the SIT Workshop	SIT Workshop
SIT 28-17	WGISS to work with GEO Secretariat to ensure that the IDN becomes an official GEO resource	SIT Workshop

SIT 28-18	WGISS Chair to report to CEOS Plenary on progress towards specification and implementation of CEOS OpenSearch, raising any issues that CEOS Principals need to consider	28 th CEOS Plenary
SIT 28-19	CNES to harvest feedback from the VCs on their 'Consistent Access' initiative in order to refine and optimise the approach – and to report progress to SIT Workshop	SIT Workshop
SIT 28-20	A study group on organizational approaches for ensuring coordination of land surface imaging in CEOS to provide a draft report to SIT workshop and report to CEOS Plenary. Representation should include LSI VC, SDCG for GFOI and WG Climate. SIT Chair will identify a lead for the study group	28 th CEOS Plenary
SIT 28-21	SIT Chair to progress the three CEOS Strategic Documents resulting from the CSSII per the agreed schedule in order for release well ahead of CEOS Plenary	28 th CEOS Plenary
SIT 28-22	WGClimate, MIM team & SEO to explore issues related to integration of in-situ datasets into the ECV inventory	SIT Workshop
SIT 28-23	SIT & CEOS Chairs, in cooperation with CEOS SEC, to circulate EUMETSAT proposal for a joint CEOS-CGMS Climate Working Group to CEOS Principals for comment	May 2013
SIT 28-24	EUMETSAT to work closely with CEOS SEC to develop detailed proposals around governance, reporting etc for the proposed CEOS-CGMS Working Group on Climate	June 2013
SIT 28-25	EUMETSAT to circulate proposals for a joint CEOS-CGMS-GCOS-WCRP event in Q2 2014 in response to IPCC 5AR	COMPLETE
SIT 28-26	Carbon Task Force to consult with CEOS agencies, seeking input on the first integrated draft of the CEOS Carbon Strategy (expected end of March 2013)	April 2013
SIT 28-27	Carbon Task Force to circulate the final draft of the Carbon Strategy Report asking for review comments from CEOS, the Global Carbon Project leadership, GEO Carbon Community of Practice, and other stake holders in order to finalise the Strategy for endorsement at CEOS Plenary in November 2013	August 2013
SIT 28-28	Carbon Task Force to work with the CEOS Chair and SIT Chair teams to develop the implementation approach for the CEOS Carbon Strategy	28 th CEOS Plenary
SIT 28-29	Ivan Petiteville to work with the DRM team to develop a description of the DRM observation strategy to include in the GEO Work Plan. The description should specify the appropriate timeline and level of involvement	June 2013
SIT 28-30	Ivan Petiteville to coordinate the creation of the study group in charge of proposing organisational approaches to ensuring coordination of CEOS disaster-related activities, to be presented at SEC-176 (9 May).	May 2013
SIT 28-31	CEOS agencies to provide feedback and comments on the GEO Water Strategy Report draft, specifically in relation to approach, chapter content, and guidance on the formulation of the recommendations	May 2013

SIT 28-32	CEOS Chair to write to GGOS acknowledging the importance of the ITRF and the GGOS Services to the space activities of the CEOS membership, and endorse the decade long initiative for the global geodetic observing proposed by GGOS	May 2013
SIT 28-33	CEOS agencies are encouraged to endorse, support and contribute to the Decade Long initiative for the Geodetic Observing Network	Ongoing
SIT 28-34	The <i>ad hoc</i> team on GEOGLAM to continue their efforts towards a better understanding of the resources required to support GEOGLAM requirements – and report to CEOS Plenary, including any proposed next steps	28th CEOS Plenary
SIT 28-35	CEOS agencies invited to nominate as SIT Vice Chair or Vice Co-Chairs by sending a letter outline their interest to SIT Vice Chair/CNES	June 2013