**Minutes V1.0**

**295th CEOS SECRETARIAT MEETING**

Thursday 21 July 2022

Chaired by CNES

**Participants**

**CNES:** Olivier Marsal, Aurélien Sacotte, Matt Steventon, Stephen Ward, Libby Rose

**EUMETSAT:** Robert Husband

**ESA SIT Chair Team:** Ivan Petiteville, Stephen Briggs

**GEO SEC:** Laurent Durieux

**GISTDA:** Watanyoo Suksa-ngiam, Nuttavipa Thanthawewut, Sitthisak Moukomla

**JAXA:** Osamu Ochiai, Yukio Haruyama, Koji Akiyama

**NASA:** Christine Bognar

**NOAA:** Charles Wooldridge, Katy Matthews

**SEO:** David Borges   
**SST-VC:** Ed Armstrong, Christo Whittle

**WGCapD:** Jorge Del Rio Vera

**WGClimate:**  Jeff Privette

**WGCV:**  Akihiko Kuze, Philippe Goryl

**WGDisasters:** Laura Frulla

**WGISS:** Makoto Natsuisaka

1. **Welcome and Introductions, Review of Agenda**

Olivier Marsal (CNES, CEOS Chair Team) welcomed and thanked everyone for attending SEC-295.

Olivier reviewed the agenda for SEC-295 and opened the floor for any comments and additions to the agenda. There were no further changes or additions to the agenda.

1. **Action Review**

All open Actions were covered under their respective agenda items below.

1. **CEOS Chair Report**

Olivier Marsal (CNES, CEOS Chair Team) reported:

CEOS Plenary (November 29 - December 1, 2022; Biarritz, France)

* An invitation letter has been sent to the CEOS community along with the registration request. On behalf of the CNES CEOS Chair team, Olivier asked SEC members to register online as soon as possible to assist with planning.
* CEOS WGs, VCs, and ad hoc teams interested in organising a side meeting on November 29 and SEC member agencies with special requests ‘should contact the CNES CEOS Chair Team.
* The CEOS Chair Team will soon send a list of hotels for which special rates have been negotiated.
* The draft agenda is under preparation, and details will be confirmed following the SIT Technical Workshop in September.

Coordination Group for Meteorological Satellites (CGMS) Plenary

* The CGMS Plenary was held in mid-June, during which a proposal was made for a strategic review of CGMS activities.
* The relationship between the CEOS and CGMS forums will be part of this analysis, as agreed by EUMETSAT, and CEOS is invited to participate in this process.

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| **295-01** | CEOS Chair team to contact EUMETSAT to understand how CEOS can be involved in the strategic review of CGMS activities. | **SEC-296** |

Action Updates

* 293-02: *CEOS Chair Team to convene a Troika meeting to discuss the way forward to solve the immediate priority of having a capable individual in the CEO role for the next two years.*

The CEOS Chair sent another request to all CEOS Agencies (Members and Associates) at the end of June to nominate a candidate for role of CEOS Executive Officer (CEO). CNES also asked for feedback on why offering a nomination might be a challenge. Most of the answers received to date noted a lack of resources. So far, no positive response has been received.

The CEOS Chair Team has started preparing a back-up plan and has included SEC permanent member Agencies in this discussion. There has been some progress, some concerns have been identified, and the discussion will resume during the SIT Technical Workshop.

* 293-01: *CEOS Chair Team to draft a concept note for the discussion planned for SIT Technical Workshop on CEOS evolution, resourcing, organisation limits, etc.*

The CEOS Chair Team sent a draft questionnaire and short memo to CEOS SEC yesterday. The CEOS Chair Team would like to gather feedback from SEC Agencies on the proposed approach to carry out this analysis, as well as feedback on a list of questions to be asked of all CEOS Agencies (Members and Associates).

*Discussion*

* Following the reference CNES made to the CEOS Self-Study, Osamu Ochiai (JAXA) noted that while this type of review of the CEOS organisation should be done regularly, now may not be the right time, given the various other priorities competing for resources.
* Olivier Marsal (CNES, CEOS Chair Team) acknowledged the point made by JAXA and noted that the topic was raised today to judge whether CEOS SEC agrees on the approach. Ensuring continuity of a qualified individual in the CEOS Executive Officer role is the top priority, and parallel discussions on organisational matters could lead to some confusion.
* Christine Bognar (NASA) supported the focus on the urgent matters at hand. CEOS is a best-effort organisation, and resources will always be a challenge. When the two-year CEOS Self-Study delivered the governing documents, it was understood that, over time, they would need to be reviewed and possibly updated. However, they contain foundational elements that remain intrinsic to CEOS. It is important to not create the impression across CEOS that an overhaul of the governing documents is needed because the organisation finds itself facing challenges that were well understood and stated in the CEOS Strategic Guidance document. In recent years, the changes have been minor updates. The CEOS Governance and Processes document was updated to make the listing of CEOS Agencies current, and some of the text related to *ad hoc* teams was revised. The Terms of Reference for the CEOS Executive Officer were also updated in recent years to allow for a qualified contractor to serve in the role. In all cases, these proposed changes were vetted with the CEOS SEC, the CEOS community, and endorsed at a CEOS Plenary.
* Olivier proposed to wait until after further discussion at the SIT Technical Workshop to confirm how that action should be fulfilled.
* ESA, JAXA, NOAA and NASA all showed their support for postponing the discussion until after the SIT Technical Workshop.

1. **SIT Chair Report**

Ivan Petiteville (ESA, SIT Chair Team) reported:

SIT Technical Workshop (September 13-15, 2022; Frascati, Italy)

* The draft agenda has been sent to the CEOS community for review and comments. All are encouraged to provide feedback.
* Registration is open on the [CEOS meeting website](https://ceos.org/meetings/2022-sit-technical-workshop/).
* Participants should be aware there is a large event scheduled in the Frascati area at the same time as the Workshop and securing a hotel room will be challenging. ESA has secured several hotel room blocks for a limited time. Please see Ivan’s email for details and book early to avoid disappointment.
* Requests for side meetings on Monday, September 12, and Tuesday, September 13 are also open. To request a side meeting, please contact the SIT Chair Team ([Ivan.Petiteville@esa.int](mailto:Ivan.Petiteville@esa.int) or [george@symbioscomms.com](mailto:george@symbioscomms.com)) with the following information: Group and Point of Contact; Meeting Name / topic; Approximate number of Participants; Duration; Time of Day Preference.

Carbon & Biomass

* Several calls have been held between the SIT Chair Team, the GHG and AFOLU Roadmap teams and counterparts at the International Methane Emissions Observatory (IMEO). IMEO are aiming for a large COP27 announcement, and it will feature the role of Earth observations (EO) in their MARS (Methane Alert and Response System). The SIT Chair is preparing a letter to send to selected agencies whose data IMEO would welcome utilising in MARS. ASI, CRESDA, CSA, DLR, EC, ESA, JAXA, NASA, NRSCC and USGS will be receiving the letter. IMEO has been invited to make a presentation to CEOS at the SIT Technical Workshop.
* The AFOLU Roadmap team plans to meet at ESA ESRIN in Frascati, Italy, on September 12, (just ahead of SIT Technical Workshop) for a workshop in cooperation with the GCOS Terrestrial Observation Panel for Climate (TOPC). The workshop will focus on the 2035 timeframe to define AFOLU observation requirements that will help CEOS Agencies in their planning processes. The agenda and description can be found [here](https://docs.google.com/document/d/1eZoSFta49ywoZ0Lf-ryIy5KfUyaS5-dVUHTRpTkimJ0/edit).

WMO Study Group on Greenhouse Gas Monitoring

* As discussed during the GHG Monitoring Workshop hosted by WMO in May of this year, WMO will proceed with the development of a WMO-coordinated Global Greenhouse Gas Monitoring Infrastructure. The WMO Executive Council decided to establish a Joint Study Group. On July 12, 2022, Ken Holmlund (WMO) wrote to the SIT Chair team to request a CEOS team representative for that Joint Study Group. After internal discussion at ESA, ESA’s management has agreed to nominate Yasjka Meijer (Copernicus CO2M Mission Scientist at ESA, and WGClimate GHG Task Team member) to represent CEOS, if agreed by CEOS SEC.

CEOS Analysis Ready Data (ARD)

* The Night-time Lights Surface Radiance PFS is expected to be endorsed by LSI-VC soon. The assessment of the NASA Black Marble dataset will follow shortly thereafter.
* An Ocean Radar Backscatter PFS is nearing completion and endorsement is targeted for LSI-VC-12, to be held in September 2022.
* The ARD team is increasing their engagement with the private sector, in particular, with new space on CEOS ARD (currently engaging with the companies Satellogic, Capella and Sinergise).
* There has been a substantial update to the datasets listed on the CEOS-ARD webpage: <https://ceos.org/ard/index.html#datasets>. Over 20 product assessments are underway.
* The PROBA-V Collection 2 self-assessment has just been submitted for review by WGCV and LSI-VC, with ALOS-2 PALSAR-2 self-assessments expected soon.
* LSI-VC is considering a CEOS Interoperability Framework and will plan an in-depth discussion at LSI-VC-12, which is being held on September 8-9, 2022, at ESA-ESRIN.
* There is a new [CEOS-ARD Twitter](http://twitter.com/ceosard) page. Please follow and share as appropriate.

New Space

* Several agencies have agreed to provide inputs to the New Space session at SIT TW (ESA, USGS, and GISTDA, with NASA as TBC for now).
* There is also provision for ‘elevator pitches’ from different CEOS groups on how they see their work benefiting the new geometries between public and private space. There are early indications from WGCV on how space agency cal/val expertise and facilities could help improve the utility of smallsats, and from LSI-VC with WGISS on how their data standardisation efforts such as ARD will be important in a future where data mixing and interoperability will be commonplace.
* Other pitches are welcomed. CEOS SEC members are encouraged to contact their agency leads for the Working Groups or Virtual Constellations to make suggestions.

SDG Coordination

* The group met on Tuesday, July 12. A running set of call notes is available [here](https://docs.google.com/document/d/1iA0TAbxXVjzojBycOHxUsLsLuwBya8fqz6WFNYWAcTM/edit).
* The SDG team will hold a side meeting at SIT Technical Workshop on Tuesday, September 13, 2022, from 14:00-17:00 Rome time.

Upcoming Meetings

* This SIT Technical Workshop will be the first in-person major CEOS meeting in more than 2.5 years. Currently, the meeting is being planned for that outcome (September 13 - 15) and will allow for online participation. However, the meetings will run from 09:00-18:00 Rome time on each day, and this will be challenging for participants in some time zones.
* The SIT-38 meeting will be held at ESA-ESRIN in Frascati, Italy, on the week of March 27, 2023. Tuesday, March 28, will be assigned to side meetings and March 29 - 30 will be the formal agenda days. Meeting room bookings at ESRIN are still being confirmed. SEC agencies are invited to raise any known conflicts in the meantime.
* In August, there will be a meeting for the CEOS Oceans Coordination Group. A survey of CEOS contributions to oceans related activities is currently open for agency contributions until July 31, 2022.

*Discussion*

* There were no objections to Yasjka Meijer (Copernicus CO2M Mission Scientist at ESA, and WGClimate GHG task team member) representing CEOS in the WMO Study Group on Greenhouse Gas Monitoring.

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| **Decision**  **295-01** | CEOS SEC agreed that Yasjka Meijer (ESA) will represent CEOS at the Joint Study Group of the WMO-coordinated Global Greenhouse Gas Monitoring Infrastructure. |

* Christine Bognar (NASA) noted that NASA is in the process of identifying someone to participate and present during the SIT Technical Workshop session on New Space.

**SST-VC Report**

Christo Whittle (SANSA; SST-VC Co-lead) and Ed Armstrong (NASA; SST-VC Co-lead) reported:

* The SST-VC has broad agency representation, with new members from ESA and Korea (KMA) joining recently.
* SST-VC hosted the annual CEOS SST-VC meeting virtually on July 1, 2022.
* SST-VC is supporting CEOS-ARD and the development of non-land products. SST-VC is looking specifically at SST CEOS-ARD products and considering the dynamic with the Group for High-Resolution Sea Surface Temperature (GHRSST). Ed is representing the SST-VC in the CEOS-ARD Oversight Group.
* Christo is representing SST-VC in the CEOS Oceans Coordination Group and contributing to the CEOS COVERAGE and COAST initiatives.
* Ed will step down in Q3/Q4 2022 as a Co-lead, and SST-VC is expecting new nominations for leadership from among its current member agencies.
* CGMS has requested SST-VC expertise to define requirements for future SST missions. The existing SST-VC whitepaper provides some guidance. SST-VC welcomes guidance from CEOS SEC on how to respond to this request from CGMS. Specifically, SST-VC would like to know whether there are protocols and reporting mechanisms regarding such coordination and collaboration with other groups. Any advice from CEOS leadership on how best to proceed would be helpful.

*Discussion*

* Regarding SST-VC collaboration with CGMS, Olivier Marsal (CNES, CEOS Chair Team) suggested referring this question to Marie-Claire Greening (CEOS Executive Officer) for follow-up.
* Jorge Del Rio Vera (UNOOSA, WGCapD Chair) noted that WGCapD works with CGMS on the EOTEC DevNet pilot project. CGMS is a stakeholder and participates in discussions.
* Jeff Privette (NOAA, WGClimate Vice Chair) added that as of last year, the Joint CEOS-CGMS WGClimate now has a representative from each of the CGMS Working Groups.

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| **295-02** | Marie-Claire Greening (CEO) to provide guidance to SST-VC on how to proceed with coordination between CGMS and SST-VC. | **SEC-296** |

1. **CEOS Executive Officer Report**

Marie-Claire Greening (CEOS Executive Officer) was unable to join the meeting. She informed CEOS leadership in advance and provided the CEO written report.

1. **Working Group Reports**

**WGDisasters**

Laura Frulla (CONAE, WGDisasters Chair) reported:

* A dedicated session on WGDisasters was held at ISPRS in Nice on June 10, 2022, titled “Innovative Applications of Satellite Data for Risk Management and Disasters”. Select WGDisasters activities were highlighted.
* The Recovery Observatory Demonstrator kicked off a sustainability review in preparation for the end of the demonstrator phase, which is due in late 2023. A report on the next steps will be presented during Q4 2022.
* The quota for GSNL Marmara Supersite was assigned to DLR, CNES, COSMO-SkyMed and SAOCOM. Some quotas for the GSNL Kamchatka Supersite remain unfilled.
* WGDisasters is working to finalise cooperation procedures between the International Charter: Space and Major Disasters, and the CEOS WGDisasters.
* The WGDisasters recently welcomed a new member from the Malaysian Space Agency (MYSA).
* The WGDisasters-18 meeting will be held in a hybrid format on October 4-7, 2022 at the Université Côte d’Azur in Nice, France. Preparation is underway.

**WGClimate**

Jeff Privette (NOAA, WGClimate Vice Chair) reported:

* As mentioned in the SIT Chair Team report, WMO is seeking a CEOS representative for the new Joint Study Group on Greenhouse Gas Monitoring. As agreed above, Yasjka Meijer (ESA) will represent CEOS in this group.
* CGMS-50 Plenary approved the nomination of Dr. Wenying Su from NASA as the next WGClimate Vice Chair. Wenying will become Vice Chair upon endorsement of her nomination by CEOS Plenary (November 29-December 1, 2022). Jeff Privette (NOAA) will transition from Vice Chair to Chair, after Albrecht Von Bargen (DLR) ends his term as Chair at the conclusion of the 2022 CEOS Plenary.
* Preliminary results of the ECV Inventory Gap Analysis Workshop conducted on May 18-20, 2022, were submitted to GCOS in support of the new Implementation Plan. Other review inputs were also submitted.
* A unified formal report on the v3 and v4 ECV Inventory gap analyses will be released later this year, likely around October 2022. A draft will be shared ahead of the CEOS SIT Technical Workshop.
* WGClimate is preparing a draft of the space agency statement for submission to UNFCCC/SBSTA for COP27. The draft will be circulated for CEOS and CGMS review around August.
* Nearly 20 Climate Data Record (CDR) use cases are now published online. WGClimate is coordinating expansion with use case teams from ESA/CCI and ECMWF/Copernicus.
* The GCOS Science Conference will be held on location in Darmstadt, Germany on October 17-19, 2022. The Joint CEOS-CGMS WGClimate will coordinate its next meeting around this GCOS conference.
* The WMO GHG/Carbon Initiative: Modelling Workshop will be held July 28, 2022, with the subtitle “Strengthening the support for mitigation action under the Paris Agreement – Part 2”. This is a follow-up to WMO’s GHG Carbon Monitoring Workshop, “The Case for a Coordinated Global Greenhouse Gas Monitoring Infrastructure”, held in May 2022. The current focus is modelling. However, the WGClimate will participate, represented by Jeff.
* The Collective Madison meeting, sponsored by AMS and NOAA, will be held in Madison, Wisconsin, USA on August 8-12, 2022, with the following conferences:
  + 25th Conference on Satellite Meteorology, Oceanography, and Climatology joint with the NOAA satellite meeting.
  + 17th Conference on Polar Meteorology and Oceanography.
  + 16th Conference on Cloud Physics/16th Conference on Atmospheric Radiation.

**WGCapD**

Jorge Del Rio Vera (UNOOSA, WGCapD Chair) reported:

* WGCapD gave various presentations at ESA’s Living Planet Symposium.
* The Regional Communities of Practice meeting of EOTEC DevNet took place on July 15-16. While the membership in the communities of practice in the Americas, Africa and Europe is progressing, there are difficulties in creating engagement in the Asia-Oceania region.
* UN-SPIDER is taking place in Asia (please see the written reports for the presentation). Participation of other WGCapD members is welcomed. This could help with engagement in the Asia-Oceania region.
* WGCapD is discussing the formation of a task team to analyse the possibility of creating a repository of learning objects. The initial work would be to select a metadata standard for learning objects.
* A new deliverable has been proposed and will likely be included in the work plan of WGCapD: Indigenous Mapping Workshop has been planned to be held in Alberta, Canada on November 21-23, 2022, covering Earth Observation optical and radar training, and initiating a dialogue involving traditional knowledge.

**WGISS**

Makoto Natsuisaka (JAXA, WGISS Chair) reported:

* WGISS-54 will be held in October 2022 as an in-person meeting in Tokyo, and preparations are almost completed. Registration is open, with further information available on the [meeting website](https://ceos.org/meetings/wgiss-54/).
* A Connected Data Assets System Level Team teleconference was held on June 28, 2022. The status on the elements of the connected data assets, CWIC, FedEO, and IDN & dMMT were reported, noting that the CWIC Metrics Access holding page will be ready in the next few months. The review on Machine Learning and Training Data Keywords for IDN & dMMT is still ongoing, and the document on service discovery, “Service Discovery Best Practices”, has been circulated throughout CEOS. Any reviews and comments will be welcomed by mid-September 2022.
* The TechExpo Interest Group held its monthly meeting, discussing the agenda for WGISS-54, and two other major topics, i.e., Jupyter Notebooks and ML/DL/AI.
* WGISS participated in the CEOS-ARD Oversight Group meeting on June 22, 2022. Having consistent terminology across CEOS was identified as a priority, both in general as well as in relation to ARD interoperability. This will be discussed further at the WGISS-WGCV joint symposium in October 2022.
* WGISS also participated in the CEOS Ocean Coordination Group meeting on July 5, 2022. WGISS Ocean related activities and stakeholders provided input.
* WGISS-54 will be held on location on October 4-6, 2022 in Tokyo. A joint workshop with WGCV is planned for October 5, 2022.
* A Jupyter Notebook hands-on training day will be held in September.

**WGCV**

Akihiko Kuze (JAXA, WGCV Chair) reported:

* The 14th joint vicarious calibration campaign in Railroad Valley, Nevada, USA for GOSAT, GOSAT-2, OCO-2, OCO-3 and TROPOMI was held June 8 -13, 2022, with three clear-sky days. All five instruments acquired cal/val data over the site, resulting in a very successful campaign.
* A call was held with the WGCV leads on June 13, 2022; the WGCV-50 actions were reviewed and plans for WGCV-51 were discussed.
* WGCV responded to the “Ocean Activities Survey” distributed by the CEOS Oceans Coordination Group.
* The Infrared and Visible Optical Sensors Subgroup (IVOS) will hold a face-to-face meeting after a three-year interval in Reston, Virginia, USA, from August 29 - September 2, 2022.
* WGCV-51 will be held in Tokyo on October 3-6, 2022, concurrently with WGISS. Requests for registration and an invitation letter have been sent, and the visa application processes have begun.

1. **GEO SEC Report**

Laurent Durieux (GEO SEC) reported:

* GEO SEC has engaged with the organisers of this year’s COP27 in Egypt. Use cases related to agriculture and wetlands are being investigated. GEO SEC is continuing to develop technical guidance documents on integrating observations into the national adaptation plan.
* On Disaster Risk Reduction, GEO SEC has developed a strategic relationship with UNDRR. The EO Risk Toolkit was launched as a 2020 global platform.
* Regarding the SDGs, the hope is to work toward a more integrated, disciplinary, inclusive, and collaborative approach for the SDGs, rather than considering each SDG separately. GEO SEC is testing a crosscutting approach with GEO Wetlands that is included in their proposed work plan for the next three years.
* GEO SEC is looking to fill the position of coordinator for its Sustainable Urban Development focus area.
* GEO SEC is working on a crosscutting mapping of the GEO work program to determine how various priorities can be addressed most effectively.
* GEO support for the Pacific Island Advisory Group has been extended.
* A presentation was given at ExCom-58 on the Expert Advisory Groups, discussing the future of GEOSS, as well as access to data and tools. There was discussion on what could be the reason for low user numbers of GEOSS, given that it provides access to many datasets. There was also discussion on what the evolution of GEOSS could involve. Country representatives had different positions on the evolution of GEOSS.
* The new communications officer is working on how to better communicate GEO’s position and relation to its stakeholders. Laurent invited the CEOS communications team to get in contact to create cohesive communications across both organisations.
* The Post-2025 Working Group is considering a proposal to create more integrated, trans-disciplinary, collaborative activities, and to look at how new activities could be connected to existing activities. The idea of working around ‘Nexus rails’ was also well accepted; however, it would not work for all activities.

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| **295-03** | SEO CEOS Communications Team to reach out to the new GEO Communications Officer regarding coordination of communications activities. | **SEC-297** |

1. **SEO Report**

Dave Borges (SEO, NASA) reported:

* The SEO submitted a request to the GEO Secretariat for a CEOS exhibition booth at the GEO Plenary in Ghana on October 31- November 4, 2022. The SEO will plan and manage this booth on behalf of CEOS. If CEOS Agencies, WGs or VCs wish to display material at the booth, please contact either Brian Killough or David Borges.
* The SEO presented a paper virtually at the recent IGARSS Conference on July 18, 2022. The hybrid meeting was held in Kuala Lumpur, Malaysia. The title of the paper was "The Open Data Cube Sandbox: A Tool to Support Flood Disaster Response and Recovery", co-authored by Brian Killough (NASA, SEO), George Dyke (Symbios, SEO), Ake Rosenqvist (soloEO, SEO), and Drew Lubawy (AMA, SEO).
* Brian Killough (NASA, SEO) is supporting the 2022 Better Working World Data Challenge. This competition uses climate datasets to develop machine learning species distribution models for frogs in Australia, Costa Rica, and Africa. The challenge competition will announce the final winners on July 20, 2022. The SEO supported the inclusion of CEOS satellite data products (Sentinel-2, Copernicus DEM, climate data) from the Microsoft Planetary Computer, and also participated in the final review panel. Past support was provided by GEO, CSIRO, and GA. This project is a great example of CEOS data supporting the topic of biodiversity, inspiring young professionals to code, and using satellite data for machine learning models.

1. **AOB**

Olivier Marsal (CNES, CEOS Chair Team) reminded everyone to check the CEOS calendar (attached to the agenda, and available online on the [CEOS meetings page](https://ceos.org/meetings/)) and to contact Marie-Claire Greening ([marie-claire@greeningconsulting.co.uk](mailto:marie-claire@greeningconsulting.co.uk)) and Matt Steventon ([matthew@symbioscomms.com](mailto:matthew@symbioscomms.com)) if meetings need to be added or anything needs updating.

1. **Next Meeting and Adjournment**

Olivier Marsal (CNES, CEOS Chair Team) thanked everyone for participating. SEC-296 will be held following the northern-hemisphere summer break, on September 1, 2022, at the usual time of 7 AM US East.

The plan for CEOS SEC teleconferences/meetings leading up to the 2022 Plenary is as follows (typically Thursday):

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| SEC-296: September 1, 2022  SEC-297: Mid-September (pre-SIT-TW meeting)  SEC-298: October 13, 2022 | SEC-299: November 10, 2022  SEC-300: Pre-CEOS-36 Plenary meeting |

The start time for all teleconferences will be 7 AM US East. If there are face-to-face meetings, the times will be advised closer to the dates.