CGMS

REPORT OF THE 54TH PLENARY SESSION OF

The Coordination Group for Meteorological Satellites

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REPORT OF THE 54TH SESSION OF THE COORDINATION GROUP FOR METEOROLOGICAL SATELLITES

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PLENARY SESSION

1. OPENING SESSION

Welcome and opening remarks: KMA, EUMETSAT

Dr. Miseon Lee, Administrator, KMA

Distinguished delegates from meteorological satellite agencies around the world, and esteemed members of the CGMS Secretariat, welcome. I am Lee Miseon, Administrator of the Korea Meteorological Administration.

It is a great honour for KMA to host the 54th Plenary Session of the CGMS here in Seoul this year. I would like to extend my sincere welcome to everyone joining us today, both in person and online, despite your busy schedules.

Since its establishment in 1972, CGMS members have continuously worked together to build a borderless observing network in the sky. Today, meteorological satellites are far more than observation instruments. In the face of the climate crisis, they have become one of the most precise early warning systems safeguarding lives, as well as a shared asset for humanity.

In recent years, climate change has intensified extreme weather events, including typhoons and heavy rainfall, while increasing uncertainties in weather prediction. At this critical time, I hope this Plenary Session will serve as a milestone for advancing practical cooperation on satellite-based future technologies, built on the spirit of mutual understanding and collaboration among members.

In particular, the rapid sharing of meteorological satellite data and its integration with AI-based analytical technologies are emerging as key drivers for strengthening our capacity to respond to severe weather. Through this Plenary Session, I hope technical cooperation among members will deepen further, supporting the continued advancement of global early warning systems.

Distinguished delegates, thank you once again for being with us in Seoul. On the final day of the Plenary Session, a technical tour has been arranged to offer an opportunity to experience Korean culture. We will visit the National Museum of Korea, where the essence of Korea's 5,000-year history is preserved. Although your stay may be brief, I hope your time in Korea will leave you with lasting memories and that you will experience the warm hospitality of the Republic of Korea.

In closing, I would once again like to welcome all experts from Korea and around the world joining us for this Plenary Session. I would also like to convey my deepest gratitude to the CGMS Secretarial and the staff of the National Meteorological Satellite Center (NMSC) for their dedication and hard work in making this event possible.

Mr. Phil Evans, Head of the CGMS Secretariat and Director-General of EUMETSAT

Good morning, distinguished colleagues, CGMS members, observers, esteemed guests, online participants, ladies and gentlemen. I am delighted to welcome you all to the vibrant city of Seoul for the 54th CGMS plenary session.

Over the coming three days, we have an important opportunity to engage in substantive and forward-looking discussions. Our shared objective: to strengthen collaboration in support of the WIGOS and global WMO user community. This forum allows us to align priorities, exchange expertise and reinforce our collective impact.

In the current global geopolitical context, and considering the growing importance of what we do for economies and societies worldwide, it has never been more important to remain closely coordinated and united in our efforts.

Institutional EO satellites remain the backbone of Numerical Weather Prediction and the daily operations of National Meteorological and Hydrological Services. The reliability and continuity of space-based observations are critical to the accuracy of forecasts and early warning systems.

It is essential to maintain a robust, well-coordinated global space infrastructure; to ensure the quality, consistency and accessibility of data across systems and regions. Frameworks such as WIGOS play a crucial role, but they must be supported by: strong institutional capacity, sustained expertise, adequate and predictable resources, continuous scientific exchange, and the integration of innovation, including AI and machine learning.

Strengthening EO capabilities is also key to closing the capacity gap, particularly in lower-income countries, and we must ensure that all countries can benefit from satellite data and access life-saving weather, water and climate services (EW4ALL). This requires long-term commitments, including sustained funding for initiatives such as the CGMS/WMO Virtual Laboratory for Training and Education in Satellite Meteorology (VLab).

Finally, I would like to emphasise again that CGMS is a uniquely valuable platform, enabling engagement between satellite operators and the user community. I strongly encourage all of you to actively participate, share perspectives and engage with each other constructively.

I wish you all productive discussions and a successful plenary. Thank you.

2. WMO MATTERS FOR COORDINATION WITH CGMS SPACE AGENCIES

WMO matters for coordination with CGMS space agencies

CGMS-54-WMO-WP-18-p Status and plans of WMO key initiatives

Anthony Rea (WMO) outlined WMO priorities relevant to CGMS, including key initiatives, upcoming EC-80 discussions, and updates on WIGOS, satellite data, GCOS, G3W, and INFCOM-4/SERCOM-4.

WMO has recently restructured to become leaner and more agile, merging four departments into two and adopting an integrated Earth-system approach across weather, climate, and water. The reform has delivered cost savings and supports future AI-driven modelling.

Early Warnings for All (EW4All) remains a central initiative, aiming for global coverage by 2027, with strong reliance on satellite data—especially for vulnerable regions—and supported by international partnerships.

On artificial intelligence, WMO recognises the potential of the technology to uplift Members' capabilities as well as its potential for disruption, and the need to move swiftly. Following the WMO AI Conference held in Abu Dhabi in September 2025 and further discussions within SERCOM, WMO has established a Joint Advisory Group on AI (JAG-AI), "joint" because it runs across the technical commissions and the Research Board.

Key EC-80 topics include EW4All, financial planning, strategic priorities, and stakeholder engagement. Updates were also provided on WIGOS Vision 2050, core satellite data policy, GCOS (including funding challenges), G3W integration, and the rollout of WIS 2.0 for modernised data exchange.

Finally, WMO previewed the most relevant inputs for INFCOM-4 (November 2026), including the addition of core satellite data for nowcasting and hydrology to the Manual on WIGOS; attributes specific to the space-weather observing system; the Guide on Access to Radiofrequency Spectrum; guidelines on satellite skills for operational meteorologists and specialists; and guidelines on RGB composite recipes. WMO also noted that, in view of the upcoming World Radiocommunication Conference, a WMO statement on radiofrequency spectrum would be considered at INFCOM-4 and subsequently approved at Congress.

In the discussion, KMA thanked WMO for the update, noting the strategic importance of WIS 2.0 and the WIGOS Vision 2050 to its own agenda, and that the update on AI integration provided a critical foundation for future collaboration; KMA indicated it would reflect these insights in its future strategy and planning.

CGMS-54-WMO-WP-14bis-p Conclusions and actions as a result of CM-16

Natalia Donoho (WMO) presented outcomes from the 16th Consultative Meeting on High-level Policy on Satellite Matters (CM-16) in March 2026. Key topics included AI/ML, WIGOS implementation, data sharing, regional support, and private sector engagement, with strong backing for the WIGOS Vision 2050 and WMO's coordinating role. Detailed information can be found on the CM-16 meeting website.

WMO summarised the principal actions arising from CM-16:

- WMO is requested to facilitate the development of recommendations to space agencies regarding emerging needs and requirements arising from the introduction of AI/ML, and to take further actions, on the basis of AI/ML and other new technologies, to enhance satellite data utilisation capacities and maximise socio-economic benefits;
- Space agencies are requested to work with WMO on the evolution of WIS 2.0 in light of the increase in data volumes;
- Space agencies are strongly encouraged to continue to support multi-hazard early warning systems, including across the four pillars, and to work with the WMO Regional Satellite Data Requirements Groups to address specifically identified gaps through the EW4All gap analysis;
- WMO/INFCOM is requested to consider the strategies for the implementation of the WIGOS Vision 2050;
- WMO is requested to consider using its convening power with the private sector to explore opportunities to enhance the capabilities of the space-based Earth-observing system through partnerships with key industry users;
- Space agencies are encouraged to provide input to the work of the G3W groups to help assess its status and develop plans for the implementation of the operational integrated observing system.

The next meeting (CM-17) is planned for early 2028. Participants welcomed the dialogue and endorsed the resulting CGMS actions. In the discussion, NOAA thanked the WMO team for hosting the core data workshops and expressed appreciation for the dialogue, looking forward to the CM-17 discussion, which it considered would be extremely beneficial, in particular regarding how the private sector would be incorporated into the core satellite data aspect.

The plenary took note of the CGMS actions arising from CM-16, and agreed the following action:

Action #	Actionee	AGN item	Description	Deadline
54.01p	CGMSSEC, WMO	WMO	CGMSSEC and WMO to decide the dates for CM-17 in 2028	End of 2026

CGMS-54-WMO-WP-08-p Status and way forward on the WIGOS Vision 2040 update

Sid Boukabara (NASA) presented the update to the WIGOS Vision 2050, outlining a realistic yet ambitious plan for a future integrated observing system combining Earth- and space-based components. The vision anticipates growing user demands for faster, more precise, and more diverse data, driven by AI, new technologies, and broader applications beyond meteorology.

It emphasises a “system of systems” approach, integrating multiple data sources and providers, ensuring quality, resilience, and global coverage. Key elements include coordinated space- and Earth-based networks and strong integration mechanisms.

The team also identified a set of risks and challenges to implementation and a corresponding set of suggested strategic actions, addressed to WMO or to CGMS agencies, of which six were flagged as most relevant to CGMS: developing a strategy for implementation beyond the vision to maintain momentum; embracing the opportunities of technology, AI and IoT; advancing the integration between space- and Earth-based components; assessing and communicating the value of observing systems (building on the WMO impact workshop); expanding global collaboration, including between CGMS and CEOS, and cross-sector partnerships; and pursuing international coordination towards a more holistic Earth-system perspective.

The next steps foreseen are delivery of the document to INFCOM in July 2026, a formal recommendation by INFCOM in November 2026 and, it is hoped, formal endorsement by WMO at Cg-20 in May 2027. WMO noted that CGMS inputs had been an integral part of the drafting of the vision, particularly for the space component.

In the discussion, Paolo Ruti (EUMETSAT) suggested that the WMO impact workshop, leveraging the global NWP centres where AI development is advancing (for example ECMWF, NOAA and CMA), offered the right opportunity to better understand how direct observations are ingested into the training and inference of data-driven prediction systems. WMO agreed, noting that the importance of the impact workshop will increase and that opening it up to AI-based systems and the commercial sector will add to the trust dimension.

CMA suggested that, given the importance of the WIGOS Vision 2050 for the development of Members' observing networks, more training at different levels should be conducted after its official release to ensure that Members fully understand and are able to use it. WMO welcomed the suggestion, agreeing that the vision should be as widely publicised as possible and, if needed, to organize awareness-raising workshops for Members.

Bojan Bojkov (EUMETSAT) noted that, as EUMETSAT had begun planning its fourth-generation geostationary system (MTG follow-on) in the spirit of WIGOS 2050, the issue of disaggregation had become a concern: maintaining continuity and simultaneous measurements across different spectral ranges in the backbone is essential, since losing correlated information could prove risky as the climate and weather systems change. He also cautioned that ground-based measurements have been decreasing globally over the past two decades, with significant gaps already affecting integrated calibration/validation, and urged a conservative approach to the backbone and its integration with ground-based systems.

SWCG (Andrew Monham) pointed out that the WMO Expert Team on Space Weather, under the leadership of Kirsti Kauristie, had made an important contribution to the WIGOS Vision as well as to the WIGOS Guide and Manual, and encouraged continued WMO support, noting that the operational space-weather community shares many of the risks, challenges and strategic actions identified.

WMO further thanked Sid Boukabara for his leadership, and NASA for making him available, both for this activity and in his role as Vice-Chair of the Expert Team on Earth Observation System Design and Evolution.

CGMS-54-CGMS-WP-31-p Concluding the CGMS coordinated response to the update of the WIGOS Vision 2040

Sean Burns (EUMETSAT), representing the CGMS Secretariat, presented the final version of the CGMS coordinated position on the WIGOS Vision 2050 for CGMS Plenary's endorsement. Developed through a collaborative, iterative process, the position reflects the unified views of CGMS members and provides guidance for the space-based component of the Vision, while confirming strong support from space agencies.

The position emphasises meeting evolving user needs (e.g. early warning, Earth-system monitoring, air quality, polar and space-weather coverage) and strengthening a sustainable, resilient GEO/LEO backbone delivering high-priority observations. It supports integrating emerging technologies, commercial capabilities, and AI/ML, while ensuring data quality, continuity, and interoperability.

It also highlights the importance of efficient ground segments, timely data access, and end-to-end systems delivering actionable information. Overall, the position calls for a coordinated, well-funded, and flexible observing system that balances operational reliability with innovation, helping secure future mission continuity and better respond to user needs.

The plenary endorsed the CGMS coordinated position to the update of the WIGOS Vision 2040.

CGMS-54-WMO-WP-15-p Regional activities in support of the EW4All initiative: Summary of regional gap analysis and recommendations to CGMS members

Natalia Donoho (WMO) presented a summary of regional needs and capacity challenges in support of the Early Warnings for All (EW4All) initiative. Globally (according to WMO Monitoring System data, June 2025), 56% of Members use satellite data for at least one priority hazard and 20% for all; about 20% report no forecaster training and 25% require additional capacity development; 40% operate dedicated reception stations and 22% rely only on internet access.

Across the regions, the main gaps relate to the under-utilisation of satellite data for priority hazards (RA I), infrastructure and connectivity constraints (RA II/V), data inadequacies and limited awareness of products such as flood-map and SAR products (RA III/IV, based on a 61-response survey from 29 countries), and a lack of direct access to satellite data in parts of Eastern and South-Eastern Europe (RA VI), with capacity development depending strongly on VLab.

WMO encouraged CGMS members to continue supporting multi-hazard early warning systems, regardless of how the UN initiative evolves beyond 2027, and to continue working with the WMO Regional Satellite Data Requirements Groups, noting that capacity-development activities depend strongly on VLab and the support of a trust fund.

In the discussion, EUMETSAT noted the contribution of the DAWBEE EUMETCast stations for Eastern Europe.

CGMS-54-WMO-WP-20-p Status and way forward of the Task Team on Cryosphere and Polar Observations from Space

Heikki Pohjola (WMO) presented an update on the newly established Task Team on Cryosphere and Polar Observations from Space (TT-CPOS). The background lies in the decisions of the Executive Council: EC-78 (2024) requested INFCOM to work with the Research Board and the satellite community, especially through CGMS, on multi-satellite coordinated cryosphere monitoring products to improve spatial and temporal resolution and coverage, and to organise consultations towards WMO pursuing closer links with the international satellite community on cryosphere monitoring; and EC-79 (2025), in the context of the 5th International Polar Year 2032-2033, called on WMO to support the realisation of benefits from the constellation of polar-orbiting and other satellites monitoring the cryosphere by engaging interested agencies.

TT-CPOS builds on the former Polar Space Task Group (PSTG), which was successful and impactful, and has been endorsed by the INFCOM Management Group as a substructure of the Advisory Group on the Global Cryosphere Watch (AG-GCW), thereby linking research and operations. It works under SC-ON and closely with ET-SSU (the link to the satellite operators) and is supported by the WMO Space Programme and the Cryosphere Monitoring and Prediction sections of the Secretariat.

It comprises members from 13 countries plus EUMETSAT and ESA, co-chaired by Dr Anna Maria Trofaier (ESA) and Dr Stephen Howell (Canada). Its tasks include coordinating satellite observation planning for the cryosphere, contributing to WMO outputs and the Vision, supporting the definition of cryosphere core and recommended data, and responding to AG-GCW requirements. A virtual kick-off was held on 5 May 2026.

In discussion, Bojan Bojkov (EUMETSAT) noted that, unlike the PSTG (largely focused on SAR), the Task Team should consider co-located sites where instrumentation already exists, and other measurements needed in the Arctic and use the 2032 International Polar Year to build towards future observing systems. Heikki Pohjola (WMO) agreed, noting the Task Team's deliberately broader composition.

CGMS-54-CGMS-WP-10-p Proposal for a coordinated CGMS statement to WMO EC-80

As in previous years, Phil Evans (Head of the CGMS Secretariat) informed the plenary that a draft coordinated CGMS statement had been prepared, to be read out on behalf of the CGMS community at the upcoming WMO EC-80. The statement was presented as an important opportunity to convey a unified message and a powerful mechanism that had previously attracted substantial feedback from delegations at WMO. The Secretariat invited delegations to review it and provide any feedback over the following days, with a view to finalising and formally endorsing during the CGMS-54 Plenary.

3. NEW DEVELOPMENTS AND LONG-TERM PLANS BY CGMS SPACE AGENCY MEMBERS SINCE CGMS-53

Main developments since CGMS-53 and an outlook for the future

CGMS-54-KMA-WP-03-p KMA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

KMA operates GEO-KOMPSAT-2A (GK2A) equipped with meteorological payload, Advanced Meteorological Imager (AMI) and space weather payload, Korea Space wEather Monitor (KSEM) since 2019.

GK2A satellite data distribution continues to grow, with access provided via OpenAPI services and the NMSC website request-based service. Furthermore, the GK2A Marine Weather Broadcast Service remains ongoing to provide various digital marine weather information with emergency message of urgent weather to Asia-Pacific region.

KMA leverages AI beyond real-time satellite observation to develop diverse products and 6-hour very short-range forecasts for weather services. It is also pilot-developing technology to simulate and generate observation channels.

KMA's third meteorological satellite GEO-KOMPSAT-5 (GK5) program began in 2025 and is a seven-year development journey. Currently, the program is in the preliminary design phase of its development process.

Simon Elliott (EUMETSAT) noted with appreciation that KMA has been one of the very first agencies to provide satellite products (GK2A Atmospheric Motion Vectors) on WIS 2.0.

CGMS-54-CMA-WP-16-p CMA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

This report presents the latest updates and long-term planning of the FengYun satellite series for CGMS-54. It consists of two main sections: first, the latest LEO/GEO satellites FY-3H and FY-4C; second, CMA's near-term and long-term planning for Fengyun satellites.

FY-3H, launched in September 2025, is equipped with 9 payloads and the new GAS-II sensor to support high-precision greenhouse gas monitoring, while FY-4C was launched in December 2025. It carries six payloads including an imager, a sounder and a lightning mapper. The imager features 19 channels with a maximum spatial resolution of 250 meters.,.

FY-3J is scheduled for launch in 2026 with 12 payloads for refined atmospheric and space environment monitoring, and FY-4M, a new geostationary microwave satellite, will be launched by the end of 2026 to enable three-dimensional observation of clouds, precipitation and wind fields. The FY-5 low Earth orbit constellation is in the pre-approval stage with four orbit types to provide upgraded 3D wind and cloud

detection, and the FY-6 geostationary series is in the requirements analysis phase with higher resolution, and new observation capabilities.

Anne Taube (EUMETSAT) asked when the FY-3H would be declared operational. CMA responded that the commissioning would be completed in June or July 2026.

J.V. Thomas (ISRO) asked about the coverage of the new FY-4 Lightning Imager. CMA responded that the LI would provide full-disk coverage.

CGMS-54-EUMETSAT-WP-10-p EUMETSAT updates since CGMS-53 and report on the medium to long term future plans on Earth observation

EUMETSAT currently operates 10 satellites.

The mandatory GEO programme: Meteosat-9 is located at to 45.5°E, Meteosat-10 at 0°, Meteosat-11 at 9.5°E, and Meteosat-12 (MTG-I1) around 0°. Meteosat-12 was declared operational on 4 December 2024. MTG-S1 was launched on 1 Jul 2025. It hosts Copernicus Sentinel-4 and is now under commissioning.

The mandatory LEO programme currently covers Metop-B and -C in low Earth sun-synchronous orbits. The first EPS-SG, Metop-SG-A1, was launched on 13 Aug 2025 and carries Copernicus Sentinel-5. It is currently under commissioning. The second one, Metop-SG-B1, will follow in summer 2026.

EUMETSAT operates several oceanographic missions, Jason-3, and the Copernicus missions on behalf of the European Commission and international partners (including CNES, ESA, NASA, NOAA), notably Sentinels-3A, -3B, -6-Michael Freilich with the addition of Sentinel 6-B, launched on 17 Nov 2025, and of Sentinel-3C, to be launched in September 2026 (TBC). If approved, EUMETSAT expects to operate Sentinels-3D and -6-MF/-B. Further, EUMETSAT's planned contributions to CO2M, Sentinel-3 and -6 NG, CIMR, and CRISTAL includes ground segment developments and processing activities.

The enhanced EUMETSAT response to the implementation of WIGOS 2040 has seen some updates: EPS-Sterna and continued commercial RO data procurement with a global license have been approved, while EPS-Aeolus is still under consideration.

EUMETSAT is also engaged in Space Weather matters as well as implementing its roadmap on AI/ML.

The presentation also provides information on EUMETSAT's response to the WMO Early Warning for All initiative and its activities in Africa providing upgraded infrastructure/reception stations for MTG and EPS-SG reception to secure continuity. The programme Strengthening Early Warning in Africa (SEWA) part of the Africa-EU Space Partnership Programme.

The overall objective is to strengthen Africa's capacity to access and utilise space-based meteorological data for early warning and disaster risk reduction. The main activities implemented by EUMETSAT are:

- Infrastructure for data access: Enhance Africa local and cloud-based infrastructure to access new meteorological satellites (MTG, EPS-SG);
- Establish the African Meteorological Satellite Application Facility (AMSAF) with an initial focus on Nowcasting space-based products to track severe weather events and enhance early warning systems (now launched); and
- Training: Targeting infrastructure operation and maintenance, and use of space-based products for early warning.

On a question from JMA, EUMETSAT confirmed that the control mechanism problem that affected the FCI calibration on MTG-I1 has been addressed both on MTG-I2 and MTG-S1

CMA inquired about the data policy and data latency for Metop-SG. EUMETSAT confirmed that the data policy would provide free and open access to all data. Regarding data latency, EUMETSAT pointed to the regional services providing very low data latency access to regional data from Metop-SG.

CGMS-54-IMD-WP-02-p IMD updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

INSAT-3DR and INSAT-3DS geostationary satellites are operational, contributing to monitoring of tropical cyclones, monsoon, and severe weather events.

Proposal for INSAT-4th Generation Satellite:

a) Advanced Imager

- 18 bands from 0.5 – 13.5 µm with spatial resolution 500m for VIS and 2 km for IR
- Faster scanning for nowcasting applications

b) Lightning mapper

c) Hyperspectral Infrared Sounder (>1850 bands)

CGMS-54-ISRO-WP-04-p ISRO updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

Salient points:

- INSAT-3DR (launch: Sep-2016) at 74E and INSAT-3DS (launch: Feb-2024) at 82E operational in GEO;

- EOS-06 (Oceansat-3), launched in Nov 2022 operational with Ku-band Scatterometer, and 13-band Ocean Color Monitor (OCM-3). Data available to Global Users through GTS and ISRO web-portal;
- Joint NASA-ISRO NISAR (L & S band SAR) launched in Jun 2025. Spacecraft commissioning and calibration completed by Dec-2025. Payloads currently in Science Cal/Val phase;
- Oceansat-3A with OCM-3, Ku-band Scatterometer, Sea Surface Temperature Monitor (SSTM), and Millimeter-wave Atmospheric Temperature & Humidity Sounder (MATHS) will be launched this year;
- ISRO-CNES joint mission SARAL/AltiKa functioning in mis-pointing mode; mission extension beyond June 2026 will be discussed with CNES considering the health of the satellite;
- Under GSICS, inter-calibration of INSAT-3DS observations carried out: IR channels, w.r.t. MetOp-IASI and VIS/SWIR channels using Ray-matching method, w.r.t. MODIS;
- Work on MoES proposal for INSAT-4th Generation satellite in advance stage with instrument specifications for Advanced Imager, Lightning Imager and Hyperspectral IR Sounder finalised.

SWCG inquired about ISRO plans for space weather instruments. ISRO informed that ministries such as Civil Aviation and Earth Sciences are seeking operational space weather services and related space instrumentation. ISRO is working on a suite of instruments for the microsatellite platforms including space weather instruments as a part of the next generation space infrastructure being planned.

CGMS-54-NASA-WP-04-p NASA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

The NASA presentation during CGMS plenary-54 provided NASA's update on major Earth science accomplishments since CGMS-53, the status of recently launched missions, future Earth System Observatory investments, as they relate to meteorology, and NASA's growing engagement with commercial Earth observation providers. NASA operates a number of individual missions with a goal toward an integrated Earth System architecture that combines government, international, space and airborne, and commercial assets. This is done with a goal to improve Earth system observation, monitoring, understanding and prediction at all scales, including weather forecast, disaster response, and societal resilience.

Successful Recent Deployment of Key International Missions:

NASA highlighted two major missions that entered operational or science phases during the past year:

- The Copernicus Sentinel-6B, launched in November 2025, entered nominal operations in April 2026. The mission continues nearly four decades of global sea-surface height measurements that underpin coastal flood prediction, ocean forecasting, navigation, and climate monitoring. It represents a strong international partnership among NASA, ESA, EUMETSAT, NOAA, CNES, and the European Commission.

- NISAR (NASA-ISRO Synthetic Aperture Radar) began science operations in November 2025 after calibration. NISAR provides global radar observations of Earth's land and ice surfaces every 12 days, supporting disaster monitoring, agriculture, ecosystem management, glacier studies, and surface deformation measurements. It represents another strong international partnership between NASA and ISRO.

These missions are part of NASA's plan for a comprehensive Earth system observatory architecture as a coordinated set of missions being gradually implemented. This observatory is focused on five major science areas: (1) Clouds, convection, and precipitation, (2) Aerosols, (3) Surface biology and geology, (4) Surface deformation and change, and (5) Mass change.

Future NASA Plans Related to Meteorology:

NASA focused its reporting about future missions on those that aim at improving prediction of weather and understanding of atmospheric processes. Both of which are believed to be of high importance to CGMS. These include:

- FALCON (Fleet for the Atmosphere Linking Commercial Observations with NASA), a distributed observing architecture with emphasis on various technologies (lidar, radar, radiometry) combining NASA, international, and commercial measurements to characterize atmospheric profiles, cloud structures, precipitation, and composition.
- STRIVE (Stratosphere Troposphere Response using Infrared Vertically resolved light Explorer) will deliver an unprecedented view of the atmosphere, transforming our understanding and enabling a leap in the accuracy of atmospheric predictions including weather patterns, extreme events, air quality, and the future of the ozone layer
- INCUS (INvestigation of Convective UpdraftS), which will make the first direct measurements of convective mass flux to better understand why severe storms and heavy precipitation occur when and where they do.
- PolSIR (Polarized Submillimeter Ice-cloud Radiometer), using CubeSats to increase understanding of the diurnal cycle of deep convection and study tropical and subtropical ice clouds, and reduce uncertainties in Earth system understanding of how and why ice clouds change throughout the day.

Airborne Observatory (B777):

The report also included information about NASA's modified Boeing 777 airborne observatory. The aircraft has been extensively redesigned to host large scientific payloads and will support the NURTURE (North American Upstream Feature Resolving and Tropopause Uncertainty Reconnaissance Experiment) campaign beginning in 2027.

The platform offers:

- Up to 100,000 pounds of payload capacity
- Up to 19 hours of endurance

- Long-range atmospheric observation capability

NURTURE is a comprehensive airborne weather-observing campaign to date, targeting temperature, moisture, winds, clouds, precipitation, and atmospheric composition.

Expanding Commercial Data Integration

NASA highlighted that while its missions provide the trusted, open foundation for understanding the Earth System, commercial satellite data extends that capability by adding:

- Greater resolution
- Higher-frequency revisits
- Taskable observations
- Flexible, real-time, niche data services
- Unique and innovative instruments
- Cost-effective options to meet specific user needs

The report highlights a rapidly growing commercial ecosystem spanning optical, radar, radio occultation, hyperspectral and multispectral observations. NASA's Commercial Satellite Data Acquisition (CSDA) program now engages dozens of providers. The presentation also demonstrates operational use of commercial data during disaster response, where NASA's Disaster Response Coordination System leveraged commercial imagery to support state agencies during severe winter weather events.

EUMETSAT asked about the orbital configuration for Falcon. NASA informed that the PMM inclined orbit plane was established already providing continuity for precipitation and that for the other missions the orbits would be fixed shortly.

CGMS-54-CNES-WP-02-p CNES updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

Regarding CNES satellite systems in exploitation:

- SWOT: 3 years in orbit. Review for Mission extension conducted and mission extended until 2029. New publications in oceanography and hydrology. SWOT Reprocessing: Low Rate data done, High Rate data in progress. Impressive scientific results for Ocean, Hydro, Coastal and Cryosphere. High scientific impact & large community (400 persons Science Team meeting)
- Microcarb: was launched on 25 July 2025 as a demonstrator for Copernicus's CO2M mission. Ice contamination is impacting components of the instrument and validation activities. Calibration phase 1 is ongoing, to find the optimal operating point => Cal-Val 1 extended.
- CFOSat: The mission has been extended until 2026, and the 5th Science Team meeting was held in Biarritz (18-20 March 2025).

Regarding planning of CNES's satellites systems:

- TRISHNA: Precursor of Copernicus Expansion LSTM mission. Launch 2027 (TBC)

Regarding data and product distribution, CNES is leading the HPC/Cloud Platform and Data Dissemination Poles and the Space4Ocean Alliance. DataTerra, leader of the GenAI4EU project, in the frame of HORIZON Europe Infra-EOSC, has been selected as EOSC national and thematic node.

CGMS-54-ESA-WP-06-p ESA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

CGMS is informed of the status of the European Space Agency's Earth observation missions currently in-orbit. Three of them – MSG, MTG and MetOp – are in cooperation with EUMETSAT, as are the future Aeolus-2 and EPS-Sterna programmes.

Meteosat Third Generation Imager 1 (MTG-I1) was launched successfully in December 2022, marking the advent of a new generation of meteorological satellites that will provide better monitoring and forecasting of severe weather events. ESA has recently reviewed the 2-Year in-orbit incentive report and confirmed the full achievement of this milestone. MTG-I2 is set to launch in mid-2026 on an Ariane 62 rocket with the satellite assembly, integration and test activities progressing as expected. MTG-S1 was launched in July 2025 carrying the Sentinel-4 instrument and in-orbit verification activities are largely on track. MetOp-SG-A1 launched in August 2025 carrying instruments including Sentinel-5 and the satellite In-Orbit Verification (SIOV) phase was successfully completed in December and satellite operations have been handed over from ESA to EUMETSAT for the calibration and validation phase.

Copernicus represents the major continuing initiative of European efforts in Earth Observation. The first Copernicus dedicated satellite ("Sentinel-1A") was launched on 3 April 2014, followed by a series of satellites until Sentinel-6 Michael Freilich in November 2020. Others will follow in the coming years from the next generation of Sentinels and the Copernicus expansion missions. Sentinel missions are developed, launched, and operated in partnership with the European Union and EUMETSAT. 2025 saw the launch of 4 Sentinel missions – Sentinel-1D, Sentinel-4, Sentinel-5, and Sentinel-6B.

The Earth Explorer missions – SMOS, CryoSat-2, Swarm, EarthCARE, and Biomass – currently in orbit are performing extremely well and the related data exploitation is based on continuous data of excellent quality. The five missions all feature strong elements of international collaboration and a growing synergy between them. For Aeolus, End-Of-Life Activities were conducted from 3 April to 5 July 2023, and it was successfully deorbited on 23 July 2023. Aeolus was the first satellite mission to successfully acquire wind profiles at a global scale, and a follow-on Aeolus-2 mission is in the planning, in collaboration with EUMETSAT.

The Proba-V CubeSat Companion (PV-CC) was launched on 9 October 2023 as part of the Small Satellites Mission Service (SSMS) rideshare mission, on board Vega flight VV23. The PV-CC successfully concluded its LEOP activities less than 24 hours after launch and its commissioning activities began straight

afterwards. Proba-V CubeSat hyperspectral companion (IperLite) was launched on 28 November 2025 and is in the commissioning phase.

CGMS is further informed of the status of the European Space Agency's Earth observation f ture missions. While ESA has a wealth of experience under its belt in observing Earth from space, the sector is changing rapidly – becoming increasingly competitive, but also offering new opportunities as Earth Observation data becomes increasingly essential for informed decision-making in the climate crisis, the digital revolution continues at pace, and topics such as resilience and security are at the forefront of global space conversations. Through its backbone research and development Future Earth Observation programme (FutureEO), ESA is committed to remaining ahead of the game, preparing the next generation of Earth Observation technologies, missions, and applications that will help Europe address environmental, social, and economic challenges.

Progress in the preparation of the forthcoming Explorer missions – FLEX, FORUM, and Harmony – is described in this report, as well as progress on WIVERN, the 11th Earth Explorer mission selected by Member States in September after meticulous preparation and rigorous evaluation. A call for ideas was issued for Earth Explorer 12 (EE12) proposals in February 2023, and 4 mission ideas were selected in March 2024 to proceed to Phase A assessment – CyroRad, ECO, Hyrdoterra+ and Keystone. Preparation is intensifying, with the candidates undergoing rigorous Phase 0 studies, culminating in the User Consultation Meeting on 7-8 July in Tallinn, Estonia.

Activities related to Aeolus-2, Arctic Weather Satellite (AWS), and EPS-Sterna in cooperation with EUMETSAT, as well as SCOUTs and ALTIUS are ongoing. Each of these missions are planned to contribute routine, operational monitoring data to improve our understanding of the Earth system and climate change. In 2025, ESA made the difficult decision to discontinue the TRUTHS programme.

Six Copernicus Expansion Missions – CHIME, CIMR, CO2M, CRISTAL, LSTM, and ROSE-L – are being studied to address EU policy and gaps in Copernicus user needs, and to expand the current capabilities of the Copernicus space component. The System Requirements Reviews for all 6 missions have been completed.

CGMS is also informed of the status of the Earth Watch Programme element, Global Monitoring of Essential Climate Variables (also known as the 'ESA Climate Change Initiative' or CCI). The CCI focuses on the exploitation of data records primarily, but not exclusively, from past ESA satellite missions, for the benefit of climate monitoring and climate research. Specifically, the CCI supports the study and monitoring of 27 essential climate variables (ECV) derived from satellite data, thereby helping to fulfil the objectives of the WMO Global Climate Observing System (GCOS).

CGMS-54-JMA-WP-09-p JMA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

The Japan Meteorological Agency (JMA) operates two geostationary meteorological satellites, Himawari-8 and -9, equipped with the Advanced Himawari Imager (AHI). JMA conducted the operational satellite

switchover from Himawari-8 (in operation since July 2015) to Himawari-9 in December 2022 for scheduled operation until FY 2030.

JMA contracted manufacturing of the follow-on satellite Himawari-10 in March 2023, with initiation of operation scheduled for FY 2030. Himawari-10 is scheduled to carry a visible/infrared imager as well as an infrared sounder and a high energy electron sensor, and high and very high energy proton sensor. JMA is considering Himawari-10 imager and sounder data formats and a plan for transition from Himawari-9 to Himawari-10.

CGMS-54-JAXA-WP-03-p JAXA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

JAXA operates various kind of satellite sensors and opens the products to the public. We keep developing and improving the products to address the climate issues.

The major updates since CGMS-53 is the launch of Global Observing SATellite for Greenhouse gases and Water cycle (GOSAT-GW) carrying Advanced Microwave Scanning Radiometer 3 (AMSR3) and Total Anthropogenic and Natural emissions mapping SpectrOmeter-3 (TANSO-3) in June 2025. JAXA also released the products of the EarthCARE and ALOS-4 which were launched in 2024.

In terms of the WMO project for monitoring extremes, JAXA contributes to the WMO Space-based Weather and Climate Extremes Monitoring (SWCEM) Project by providing more than 25-yr GSMaP rainfall product with climate normal. JAXA also contributes to the World Data Centre for Greenhouse Gases (WDCGG) and the Global Greenhouse Gas Watch (G3W) by defining the role of satellite products.

Starting in April 2025, JAXA embarked on a new Mid- to Long-term plan for seven years. Within this plan, the Earth observation program is guided by the vision "Envision the Future." Under this vision, JAXA aims to observe our planet wider, faster, deeper, and smarter than before. And we will act together with partner organizations for the safe and resilient world.

Based on these visions, JAXA has identified four thematic priorities as its focus areas. Efforts will accelerate to achieve tangible outcomes within each theme. The thematic priorities are: "Global Water Disaster Risk and Water Resource Management," "Carbon Stocks," "Maritime Observation," and "Infrastructure and Disaster Management."

CGMS-54-NOAA-WP-09-p NOAA updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

The document summarises the status of NOAA current and future LEO, GEO, and Space Weather satellite systems. The reporting period for the current satellite operations is from 1 June 2025 to 1 June 2026. For future satellites, progress to date at the time of writing is included.

Current GEO missions discussed include GOES-15, -16, -17 (all backup satellites) and GEOS-18 and -19 (both operational). As of June 12, 2025, GOES-14 has been designated as a residual GEO asset and is no longer considered a backup satellite.

Current LEO missions discussed include COSMIC-2, Jason-3, Suomi-NPP, NOAA-20, NOAA-21, and plans for JPSS-3, and -4, which are part of the current JPSS-mission series, but have not yet launched. The POES satellites (NOAA-15, -18, and -19) were all decommissioned in August 2025.

Current Space Weather missions discussed include DSCOVR and SOLAR-1, which launched in September 2025.

For the future missions, the document discusses the development of NOAA's GeoXO constellation, JPSS -3 and -4 (the final two missions in the JPSS series), and the SOLAR-A and SOLAR-B space weather missions.

Responding to ISRO, NOAA confirmed that the Lightning Mapper has been demanifested for GeoXO. NOAA also informed that the µwave instrument for Quicksounder is a refurbished ATMS engineering model, also providing some of the capabilities of the SMBA instrument to be flown on NEON.

WMO asked about the status of data delivery from the DMSP follow-on satellite of DoD. NOAA confirmed that it was able to secure data availability and continuity from DMSP.

CGMS-54-ROSHYDROMET-WP-03-p ROSHYDROMET updates since CGMS-53 and report on the medium to long-term future plans on Earth observation

This document addresses the current status of the Russian satellite systems for hydrometeorology and heliogeophysics.

Since CGMS-53, the Russian hydrometeorological satellite constellation has been increased by two polar-orbiting heliogeophysical satellites Ionosphere-M N3 and Ionosphere-M N4 launched on 25 July 2025 by group launch and one geostationary satellite Electro-L N5 launched on 12 February 2026.

Arctica-M N1 and N2 are current HEO missions which main purposes are meteorology and oceanography, including ice cover monitoring and disaster monitoring in the Arctic region, through 24-hour operational monitoring.

CGMS-54-GUEST-WP-01-p ECCC/CSA update on current and proposed Canadian satellite initiatives

Canada continues to advance national satellite EO initiatives to address key environmental monitoring gaps over its vast lands, waters and atmosphere, including the Arctic, in alignment with its National Satellite Earth Observation Strategy.

This presentation delivers an update on key Canadian satellite systems including funded missions - RADARSAT+, WildFireSat, High-altitude Aerosols Water vapour and Clouds (HAWC), as well as missions

under consideration – the Arctic Observing Mission (AOM) and the Terrestrial Snow Mass Mission (TSMM). These missions are being advanced with leadership from Environment and Climate Change Canada (ECCC), the Canadian Space Agency (CSA), Natural Resources Canada (NRCan) as well as stakeholder partnerships to leverage expertise across the EO value chain and maximize benefits.

Outcomes of these proposed missions will advance operational services and research programs to support the health and safety of Canadians, with the potential of positive impacts for international partners.

ISRO asked for more information on WildFireSat. CSA confirmed that WildFireSat was planned to be launched in 2028/29 and to be operational in time for the 2029 fire season. It will be a 3-7 satellite constellation.

4. CLIMATE AND GREENHOUSE GAS MONITORING

Greenhouse gas monitoring

CGMS-54-JWGCLIM-WP-03-p Outcomes and recommendations of the operationalisation of GHG observations in the framework of CGMS meeting of 2 June

Yasjka Meijer (ESA) presented on behalf of Ruediger Lang (EUMETSAT). Responding to HLPP item 5.4 and action A53.01, the paper proposes product requirements for operational GHG products (CO_2, CH_4) from space-based global mappers, in support of WMO G3W, UNEP IMEO and future GHG Monitoring and Verification Support (MVS) systems. The requirements follow the threshold / breakthrough / goal structure (breakthrough being the engineering target) and were agreed with WMO at a dedicated CGMS WG side meeting in Darmstadt in April 2026.

Table 1 – Product performance (threshold T, breakthrough B, goal G).

Product	Spatial res.	Precision			Bias		
		T	B	G	T	B	G
XCO_2	8–2 km	1 ppm	0.7 ppm	0.2 ppm	1 ppm	0.5 ppm	0.2 ppm
XCH_4	8–2 km	20 ppb	10 ppb	5 ppb	15 ppb	5 ppb	2 ppb

Table 2 – Product provision (threshold, breakthrough, goal).

Product attribute	Threshold	Breakthrough	Goal
Revisit time	< 14 days	< 4 days	< 3 days
Timeliness / latency	< 1 week	< 24 h	< 5 h
Availability	> 85%	> 95%	> 99%
Operator-driven anomaly response	< 1 week	< 24 h	< 12 h

In discussion, Bojan Bojkov (EUMETSAT) underlined the importance of low latency (also relevant to NWP, given the radiative impact of greenhouse gases) and the fragility of long-term funding for the surface networks needed for validation; validating products against surface observations was identified as the next challenge.

It was also highlighted that, while briefly stated in the presentation, the explicit identification of the breakthrough requirements as the engineering values to be used represents a substantial result of the work: because a system cannot be built to meet several requirement levels simultaneously, a single set of

values must drive the design, and the breakthrough requirements provide that reference for design and implementation.

Responding, Mr. Meijer noted that a key next challenge will be to validate these product-quality requirements using surface-based observations – not only for use in modelling but specifically for validation. As the proposed values approach the level of what surface-based observations can themselves achieve, validation becomes difficult, since a reference of substantially higher quality is normally required to validate the space-based products.

The Chair invited the Plenary to endorse the product performance and product provision requirements for operational GHG products as proposed in the document. There being no objection, the requirements were officially endorsed.

CGMS-54-KMA-WP-04-p Korea's Integrated GHG Observing Network and its role in WMO G3W

Sumin Kim (KMA/NIMS) presented Korea's multi-platform observing network (three GAW stations, an FTS site, two tall towers, aircraft and a research vessel) and the WMO-endorsed INVERSE-KOREA top-down flux system (9 km resolution, WRF-Chem-VPRM/DART), which is being aligned stepwise with G3W to support national emission estimation and Korea's carbon-neutrality policies.

KMA contributes its observations to G3W and uses G3W products within INVERSE-KOREA to provide more timely emission estimates, supporting Korea's carbon-neutrality policies through a transparent and traceable information-flow framework; G3W is expected to provide monthly CO_2, CH_4 (and N_2O) products on a 1°×1° global grid from 2028.

Discussion

Paolo Ruti (EUMETSAT) asked whether KMA had considered comparing or integrating low-cost sensors, or ground sensors of differing quality, into its ground-based observations and evaluation. Ms. Kim replied that KMA is not yet operating low-cost or local sensors but is in the process of developing them, and that a comparison against the highly precise and accurate in-situ measurements is foreseen in the future.

The Chair recognised the importance of the INVERSE-KOREA project and its role within the WMO G3W framework, and expressed appreciation for the presentation, noting that the Plenary looked forward to furthering advances in the collaborative effort.

Climate monitoring

CGMS-54-JWGCLIM-WP-05-p WGClimate status, next steps and key recommendations for CGMS plenary

Vincent-Henri Peuch (ECMWF), Vice-Chair of WGClimate, presented a status report highlighting the group's goal to improve the availability of Climate Data Records (CDRs) through coordinated satellite-based climate monitoring. The work focuses on four areas: improving access to CDRs, encouraging new

and multi-mission records, guiding future mission planning, and coordinating greenhouse gas observations with international partners.

A key development is the upgraded Climate Data Record Inventory, now offering improved navigation, continuous updates, and links to related databases. Analysis shows that CDRs exist for 35 of 37 Essential Climate Variables (ECV), though long-term continuity remains a concern, with gaps such as future risks in water-vapour measurements.

WGClimate is also refining definitions, enhancing the usability of the inventory, and developing stability requirements for climate data. Increasing attention is being given to climate adaptation, including aligning satellite data with UNFCCC adaptation indicators and strengthening engagement with UN processes.

Finally, the group continues active collaboration on greenhouse gas monitoring, supporting international initiatives and improving coordination between scientific research and operational systems.

Following a call for candidates (ESA and ISRO, the latter opting to support the ESA candidacy), WGClimate unanimously recommended Dr. Susanne Mecklenburg (ESA).

Following the call for candidates for Vice-Chair of WGClimate issued at the beginning of the year expressions of interest were received from ESA and ISRO. Following discussions, ISRO chose to support the ESA candidacy on this occasion. At its “Exec” online meeting on 29 May, WGClimate reached a unanimous recommendation to support the application of Dr. Susanne Mecklenburg (ESA), Head of the Division on Climate and Long-Term Action and a member of WGClimate since 2019, who brings more than 20 years of experience in Earth observation and the management of major missions including SMOS, Sentinel-3 and FLEX, together with regular engagement with the UNFCCC and IPCC. The proposed appointment is as Vice-Chair from November 2026 for a two-year term, after which Dr. Mecklenburg would succeed Mr. Peuch as Chair when his mandate concludes in November 2028.

Discussion

Paul Counet (EUMETSAT) expressed full support for the proposed Vice-Chair nomination and strongly encouraged continued engagement with ISRO, suggesting that arrangements be found to allow the incoming Vice-Chair to begin shadowing in preparation for assuming responsibility within the joint Working Group. EUMETSAT also wished to acknowledge the European Commission and the Copernicus Programme, which fund the work underpinning the CDR Inventory delivered through the agencies.

The Plenary endorsed Dr. Susanne Mecklenburg (ESA) as WGClimate Vice-Chair from November 2026 for a two-year term (succeeding to Chair in November 2028), noting that CEOS is expected to endorse correspondingly at its autumn 2026 Plenary. The Plenary took note of the status update and recommendations.

In further discussion, Paolo Ruti (EUMETSAT) drew a link between the climate-finance dimension raised by Mr. Peuch and the discussions held under Working Group III on socio-economic benefits, suggesting that Working Group III connect with WGClimate to draw on relevant economic-sector expertise. Mr. Peuch welcomed the proposal, noting that climate finance is a fast-developing area in which the

community has much to offer; he cited European experience under Copernicus, including work with the European Investment Bank and a recent Copernicus workshop in Brussels on the investment and insurance sectors, while acknowledging that barriers to uptake remain and are being addressed.

The Plenary also took note of the WGClimate status update and recommendations.

5. COORDINATION ON AI/ML MATTERS

The survey outcomes were broadly welcomed by Members, who acknowledged both the quality of the analysis and the growing strategic importance of Artificial Intelligence (AI) and Machine Learning (ML) for the CGMS community. There was a clear consensus that AI/ML has become a cross-cutting topic affecting virtually all aspects of satellite meteorology, from data processing and product generation to numerical weather prediction, nowcasting, climate applications and future space system architectures. Members agreed that the survey provides a valuable foundation for identifying common priorities and establishing a coordinated approach within CGMS.

Several Members highlighted the importance of strengthening collaboration with existing international initiatives. NASA drew attention to the CEOS AI Readiness Group, noting that it could represent a valuable partner for future cooperation and coordination between the Earth observation and meteorological satellite communities. WMO similarly welcomed closer engagement on AI matters and expressed its willingness to involve its dedicated expert teams while also facilitating broader collaboration across the international community, including CEOS. Members recognised that many AI-related challenges, particularly those concerning satellite data, metadata, interoperability and technological infrastructures, are common across organisations and would benefit from coordinated discussion. In this context, the proposal to organise a joint WMO/CGMS AI workshop was widely supported as an effective mechanism to bring together experts from operational agencies, research institutions and international organisations to identify common challenges, exchange experiences and develop shared guidance.

The discussion also recognised the need for CGMS to establish a clear internal coordination mechanism. NOAA noted the relevance of the survey findings and suggested that CGMS should identify an appropriate Task Group to provide leadership on AI-related activities. Building on this proposal, Members agreed that a dedicated AI Task Team would provide the necessary structure to coordinate activities across the various CGMS Working Groups and Member organisations, while also serving as the focal point for cooperation with external partners.

The development of best practices emerged as one of the principal themes of the discussion. CMA confirmed its strong interest in contributing to the development of guidance and best practices for ML applications within the operational meteorological satellite community. It was noted that such guidance could initially focus on well-established application areas, including satellite-based Nowcasting and Numerical Weather Prediction, while remaining sufficiently flexible to accommodate the rapid expansion of more general AI and ML applications. However, it was recognised that any guidance developed should promote openness and innovation, enabling the community to adopt emerging technologies without creating unnecessary constraints.

CMA also informed Members that it would host a dedicated session on AI applications in meteorology during the World AI Conference to be held in Shanghai in July. An invitation was extended to all CGMS Members to participate in the event, recognising it as an opportunity to strengthen international collaboration and exchange experiences with the wider AI community.

The importance of communication and community engagement was also emphasised. JMA encouraged the wider dissemination of the survey outcomes across the relevant expert communities, noting that different user communities, including satellite operators, Numerical Weather Prediction centres and research organisations, have distinct perspectives and requirements. Members agreed that the survey findings should be shared with appropriate expert groups, notably WMO's Joint Advisory Group on Artificial Intelligence (JAG-AI), to maximise their impact and encourage broader participation in future activities.

ISRO highlighted the importance of translating the survey outcomes into practical and publicly accessible documentation. It was suggested that CGMS could develop guidance outlining recommended practices, including aspects such as training datasets, validation methodologies and documentation standards for AI developments. Such material could be reviewed by relevant expert groups and made publicly available through CGMS, thereby providing valuable reference material for AI developers and operational users alike. ISRO also introduced an additional topic of growing importance: the application of AI for on-board satellite processing. Members recognised that this emerging area represents a significant future direction for Earth observation systems and should be considered within the broader scope of AI activities. At the same time, it was acknowledged that AI technologies continue to evolve at an exceptional pace, requiring any guidance or best-practice documentation to remain sufficiently flexible and regularly updated in order to avoid becoming rapidly outdated.

EUMETSAT reiterated its strong support for the initiative and emphasised the importance of involving the appropriate technical expertise from across the CGMS community. It highlighted the rapidly increasing volume of satellite data and the corresponding need to ensure that these datasets remain easily accessible and usable by the broad user community. Members recognised that AI has the potential to significantly enhance the discoverability, accessibility and exploitation of satellite data, making it imperative for CGMS to develop a coherent and coordinated approach. EUMETSAT stressed that such coordination is essential to avoid the emergence of fragmented methodologies, duplicated efforts or incompatible practices across the community. By anticipating these challenges and establishing common principles at an early stage, CGMS can help ensure a consistent and interoperable approach to AI adoption. It was therefore proposed that the survey outcomes should serve as the primary basis for defining the objectives, scope and expected outcomes of the proposed WMO/CGMS AI workshop, ensuring that future activities are driven by clearly identified operational needs and common priorities. Moreover, Members expressed the need for a shared AI/ML catalogue for Earth observation application to avoid duplication, accelerate uptake, improve benchmarking and strengthen collaboration.

Following the discussion, Members agreed that a coordinated approach is required to position CGMS effectively in the rapidly evolving AI landscape. To this end, Plenary endorsed the establishment of an AI Task Team composed of experts nominated by CGMS Members and relevant CGMS Working Groups. The Task Team will be responsible for identifying the strategic direction for CGMS activities on AI, coordinating collaboration with partner organisations and preparing the future joint WMO/CGMS AI workshop, as well as promoting a collaborative framework to share a CGMS catalogue for discovering and reusing AI/ML applications, expertise and AI-ready data formats.

A new action was recorded.

Action #	Actionee	AGN item	Description	Deadline
54.05p	CGMS Members	AI/ML	Establish a list of experts from CGMS Members and CGMS Working Groups to form an AI Task Team, identifying the way forward for CGMS to address AI matters and prepare the future WMO/CGMS AI workshop	End of 2026

6. WORKING GROUP REPORTS

WGI - Satellite systems & operations

Report and recommendations from WGI

The CGMS WGI Co-Chairs presented an overview report and recommendations from WGI to CGMS Plenary. The CGMS-54 WGI meeting took place on 13 April 2026. All Task Groups presented the progress of their respective activities since CGMS-53.

The following key WGI recommendations to CGMS plenary were presented for endorsement:

- Recommendation to endorse the RFI best practices in the area of Data Collection Services (DCS). An overview of the best practices was presented by Beau Backus, the WGI Task Group on RFI Chair.
- Recommendation to endorse working with WMO to prepare the updates to the Manual on the WIGOS for endorsement at INFCOM-4

Both proposals were endorsed by CGMS-54 Plenary.

Additionally, the following key WGI outcomes were highlighted to CGMS Plenary, for information:

- A dedicated Frequency management report was presented by Markus Dreis;
- Progress on all Task Group activities was presented, including:
    - Status of format standards for compatibility with AI and ML;
    - Progress of Space Environment Sustainability (SES) Best Practices preparation;
    - Progress on Enhanced Data Collection Platform (EDCP) standard implementation.

Task Group Chair changes

The chairs also presented an overview of the key WGI Task Group activities planned in the lead up to CGMS-55.

Report on radio frequency matters

Markus Dreis presented a report on radio frequency matters. The report provided an overview of frequency-related challenges and opportunities, both related and unrelated to the World Radiocommunication Conference (WRC) 2027. Among the frequency challenges and opportunities related to WRC-27, the key issues are:

- Mega constellations: Potential RFI to passive microwave sensors from unwanted emissions of commercial satellite mega constellations (e.g. Starlink, Amazon LEO, SES O3B and others) adjacent to the passive bands at 50/52 GHz and 89 GHz (WRC-27 agenda items, 1.1, 1.3, 1.18);
- Radiolocation devices above 231.5 GHz: Potential RFI to passive microwave sensors from radar-type radiolocation systems for detection purposes (WRC-27 agenda item 1.8);

- International Mobile Telecommunication (IMT) (5G): Identification of the range 7125-8400 MHz (or parts thereof) for future use by IMT and possible impact on data reception from MetSat and/or EO satellites in the frequency bands 7450-7550 MHz, 7750-7900 MHz and 8025-8400 MHz, used for the downlink from MetSat and EO satellites (WRC-27 agenda item 1.7);
- Possible new primary frequency allocations to EESS (passive) in the bands 4200-4400 MHz and 8400-8500 MHz for Sea Surface Temperature (SST) measurements (on a non-protection basis) to complement the SST measurements in the 6/7 GHz range (WRC-27 agenda item 1.19).

Possible future WRC-related topics were also highlighted.

It was noted that the WMO position paper stipulates to facilitate an effective preparation of national and ITU-R regional groups' positions for the WRC 2027 favourable for CGMS-related issues. The corresponding HLPP and SFCG preliminary objectives from SFCG-44, 10-18 June 2025 are in line with the preliminary WMO positions.

Finally, further RFI challenges unrelated to WRC were presented, including:

- Growing number of instances of RFI to GEONETCast reception in C-Band;
- Potential auctioning / repurposing of portions of the MetSat L-Band, 1675-1680 MHz, 1680-1695 MHz and 1695- 1710 MHz to commercial mobile satellite systems in individual countries.

Several comments were made during the Q&A:

Misako Kachi (JAXA) noted the importance of the presented information on possible new primary frequency allocations to EESS (passive) bands and highlighted that this topic is very important for development of new missions. Markus thanked JAXA for their support in demonstrating the criticality of this item with real use cases, particularly with regard to RFI into Sea Surface Temperature (STT) measurements and passive sensing in general.

Irene Parker (NOAA) also noted concern for the passive bands and the importance of this concern being represented in WRC-27 with the help of WMO.

Markus highlighted the important role of WMO in WRC, explaining that the WMO Position paper acts as a reliable source of information.

Irene Parker (NOAA) also informed that NOAA is in exchange with Starlink to assess the RFI potential of their planned mega constellation to passive sensing in the 50/52 GHz range.

Markus informed that EUMETSAT is also in exchange with Starlink in the framework of WRC-27 preparations for the establishment of mutually acceptable unwanted emission limits in the Radio Regulations in the concerned frequency bands.

Anthony Rea (WMO) noted that one of the challenges is in the innate difficulty of RFI issues as well as the lack of sufficient resources (expertise and capacity) in this area among WMO members. WMO is therefore very reliant on satellite operators for this expertise. WMO made a plea for CGMS Agencies to provide

experts to the work of the WMO Expert Team on Radio Frequency Coordination (ET-RFC). Anthony also noted there is an ITU/WMO joint global seminar, 28-30 September 2026 in Geneva, on “Spectrum use for meteorology: challenges, opportunities and evolving requirements”. At this occasion, the Secretary Generals of WMO and ITU will sign the updated ITU-R/WMO handbook on "Use of Radio Spectrum for Meteorology: Weather, Water and Climate Monitoring and Prediction".

New actions to WGI were recorded.

Action #	Actionee	AGN item	Description	Deadline
WGI/54.01p	CGMSSEC, WMO	WGI	Work together to prepare a paper for INFCOM-4 addressing the proposed update of the Manual on the WIGOS	CGMS-55 End of July 2026 (INFCOM-4)
WGI/54.02p	CGMS Agencies	WGI	CGMS space agencies to provide experts to the work of the WMO Expert Team on Radio Frequency Coordination (ET-RFC)	30 Sep 2026
WGI/54.03p	CGMS Agencies	WGI	CGMS satellite operators to contribute operational expertise and inputs to WGI Space Environment Sustainability (SES) Task Group activities through expanded membership from further organisations	End of 2026

WGII - Data and products

Appointments and nominations

JAXA proposed the nomination of Takuji Kubota to the International Precipitation Working Group (IPWG).

Hyperspectral sounding

ISRO raised a question regarding the recommended or optimal geographical coverage area for hyperspectral sounding observations. Further clarification may be needed on the specific recommendation under discussion.

Radio occultation data and low-inclination orbits

A possible risk assessment for radio occultation (RO) observations was discussed.

NOAA referred to the work of the International Radio Occultation Working Group (IROWG) on equatorial and low-inclination orbit observations, including the use of data from commercial providers and the related calibration requirements. NOAA scientific support may be available for calibration activities.

CMA highlighted the potential value of private-sector RO data for numerical weather prediction (NWP). However, there is currently no firm commitment to provide operational support for data from low-inclination orbits.

CMA is carrying out an assessment of low-inclination orbit observations and their potential impact on NWP. The results could be shared with IROWG.

WGIII requested an assessment of the impact of the decline in COSMIC data availability, possibly distinguishing between the respective contributions of low- and medium-inclination orbits.

Three-dimensional winds

EUMETSAT raised the topic of three-dimensional wind observations and their assimilation in NWP systems. A possible WMO-coordinated impact assessment was mentioned, leveraging on WMO impact assessment workshop in 2027, potentially in collaboration with the Working Group on Numerical Experimentation (WGNE).

Lightning observations and GeoRing

CMA stressed the importance of GeoRing coordination for lightning observations and the value of geostationary lightning mappers. CMA reported that Fengyun geostationary satellites provide lightning observations. CMA would be willing to share the data once the testing phase has been completed.

Wildfire detection task force

GSICS proposed the establishment of a task force on wildfire detection, covering relevant satellite channels and derived products.

KMA highlighted the importance of wildfire monitoring for South Korea and expressed support for the creation of the task force.

NOAA also supported the proposal for a WGII wildfire task force.

JAXA noted that it already provides fire-related products and expressed interest in participating in the task force.

A new action was recorded (see table below).

Final Nominations

International Precipitation WG: Takuji Kubota to the International Precipitation Working Group (IPWG).

International Winds WG: Iliana, currently co-chair, will move to the rapporteur role.

Global Satellite Intercalibration System - GSICS

CGMS-54-GSICS-WP-02-p GSICS Executive Panel report to CGMS plenary

Dr. Bojkov (EP Chair, EUMETSAT) presented the outcomes of the 2026 annual GSICS and Executive Panel meetings which were hosted by EUMETSAT and the National Research Council of Canada in Ottawa (Canada) on 16-20 March 2026.

The Global Space-based Inter-Calibration System (GSICS) is an international collaborative effort initiated in 2005 by the World Meteorological Organization (WMO) and the Coordination Group for Meteorological Satellites (CGMS) to 1-monitor, 2-improve and 3-harmonize the quality of observations from operational weather and environmental satellites of the Global Observing System (GOS).

The shift of the GSICS end-product from inter-calibration coefficient products to the methodologies and tools in support of the operational monitoring of the radiometric performances was endorsed in 2025. The GSICS collaborative framework allows to efficiently advance the calibration monitoring and improvement of the operational missions of the participating agencies. The new GSICS Dashboard displaying in a common fashion the calibration monitoring of the various agencies on their sensors was presented.

The constructive scientific cooperation on the lunar calibration models was described, along with the resulting remarkable improvements of their absolute calibration performance. The agencies are encouraged to share lunar measurement data and to contribute to the GSICS collaborative efforts. The Fifth GSICS / CEOS WGCV Lunar Calibration Workshop will take place at EUMETSAT HQ, 16-20 November 2026.

Commercial meteorological satellite data providers have actively participated in the 2026 annual meeting.

Finally, agencies are encouraged to nominate technical/scientific leads for GSICS WG and sub-groups, to ensure continued fair and balanced global representation.

New actions to WGII were recorded.

Action #	Actionee	AGN item	Description	Deadline
WGII/54.01p	WGII	WGII	Discuss the coordination for lightning imager validation methodologies and for extending the GEO-ring concept to lightning at the next intersessional meetings	End of 2026
WGII/54.02p	WGII	WGII	Encourage the NWP community to assess the quality and impact of different satellite products, such as derived 3D wind products from IR sounders, as soon as possible after the data come online. (Explore this through NWP agencies and via WMO operational and research groups)	CGMS-55
WGII/54.03p	WGII	WGII	Establish a new Operational fire detection Task Force to investigate fire channels intercalibration, fire products and harmonisation	End of 2026

WGIII - Operational continuity and contingency planning

CGMS-54-JMA-WP-10-p Update and proposed way forward on CGMS Socio Economic Benefit Activities

Kazuki Yasui (JMA) presented the status of socio-economic benefit (SEB) studies in demonstrating the value of satellite observation programs to policymakers and stakeholders. These studies support decisions on funding, maintaining, and expanding satellite systems by showing their real-world benefits.

The Japan Meteorological Agency (JMA) conducted a survey among CGMS members to gather information on existing SEB activities, case studies, and views on future directions. Responses have been received from EUMETSAT, NOAA, NASA, JAXA and JMA itself. EUMETSAT has conducted SEB studies on EPS-MetOp Second Generation and EPS-Aeolus/Sterna. NOAA has conducted SEB studies on GeoXO, EPS-STERNA, Space Weather Service and Ocean Colour Data. The survey results indicated that all five respondents expressed an expectation and interest for future SEB analyses of meteorological satellites around the world by CGMS Members. The survey results will be published online for the benefit of CGMS members. Based on the outcomes achieved through the SEB activities, JMA proposed concluding the SEB activities of the Future Direction.

CGMS-54-WGIII-WP-16-p Report and outcomes of the 8th risk assessment

Melissa Johnson (NOAA) introduced the risk assessment preparation and explained the process of how data for flyout charts were collected. NOAA is annually requesting the updates from the space agencies just before the annual CGMS WGIII Risk Assessment Workshop to ensure that data reflects the most up-to-date situation related to the missions of the space agencies. The risk assessment is conducted against CGMS Baseline. Its key principles are the following:

- Commitment: The CGMS Members are providing, or have firm plans to provide, the observations, measurements, and services
- Sustained: The observations, measurements, and services are provided on a sustained basis
- Available: The observations, measurements, and services are available on a free and open basis
- Operational: The data and products can be utilized in operational applications

The top-level risk assessment reflects the following high-risk areas:

- Continuity risk from RO observations in low inclination orbits in the later part of the decade as there is no commitment for a follow-on to COSMIC-2.
    - SWCG provided recommendations to WGIII on how to separate RO and Ionospheric Electron Density profiles.
    - Action on IROWG to analyse optimal mix (number of profiles) on low, mid, high inclination orbits for RO data in short-term

In addition, the top-level risk assessment reflects the following moderate risk areas:

- Continuity risk for the UV Limb Spectrometer in the 2030s.
    - WGII reviewing other capabilities for UV limb sounding to complement JPSS
- Slight long-term continuity risk for the SWIR Imaging Spectrometer in the late 2030s.
    - WGIII reviewing WGII recommendations for SWIR missions for CH_4 and CO_2 to be added to the baseline.
- Slight long-term continuity risk for the Precipitation Radar in the late 2030s.
- Continuity risk for Scatterometry in the early to mid-2030s.
- Slight continuity risk for Magnetometer in GEO in 2030.
- Continuity risk for Energetic Particle Sensor in LEO in the early to mid-2030s.

It was noted that the most significant risk identified remains the potential loss of low-inclination radio occultation observations, particularly due to the eventual end-of-life of the COSMIC-2 mission, which remains highly valuable for numerical weather prediction and tropical forecasting, and any degradation in coverage would affect forecast quality. A specific action on IROWG was set to assess the impact of the decline in COSMIC data availability, possibly distinguishing between the respective contributions of low- and medium-inclination orbits, and analysing the number of RO required to mitigate the risk. A new action was recorded.

Action #	Actionee	AGN item	Description	Action feedback/closing document	Deadline
WGIII/54.01p	IROWG	WGIII	IROWG to assess the impact of the decline in COSMIC data availability, possibly distinguishing between the respective contributions of low- and medium-inclination orbit, and analysing the number of RO required to mitigate the risk	4 June 2026 - A follow-up call will be arranged to better understand how the action item supports agency priorities - IROWG can help coordinate an assessment - The timeline for completing the assessment depends on the detailed plan for conducting the assessment	End of 2026 (9th WGIII RAWS: 24-26 Feb 2027)

CGMS-54-WGIII-WP-17-p Proposed updates to the CGMS Baseline document

Anne Taube (CGMS Sec) presented the proposed edits to the CGMS Baseline (mainly in Section 2 Observations and Orbits) related to Ionospheric Electron Density profiles (separated from Radio Occultation for Ionospheric Electron Density Profiles, Total Electron Content (TEC), Scintillation Indices (amplitude and phase) observations), and to energetic electron measurements where electric currency thresholds for low, high and very high categories were added.

CGMS-54-WGIII-WP-18-p Report on the outcome and recommendations from WGIII to plenary on contingency and continuity matters to CGMS

Irene Parker (NOAA) presented the work and key recommendations of CGMS Working Group III (WGIII) for the CGMS-54 Plenary. WGIII focuses on maintaining and improving the global meteorological satellite observing system, including:

- Defining and monitoring the CGMS baseline of satellite capabilities
- Conducting annual risk assessments and addressing service continuity issues
- Supporting contingency planning and system optimization
- Integrating R&D missions into the baseline
- Assessing socio-economic benefits of CGMS satellite missions (SEB)

During the CGMS-54 intersessional period WGIII reviewed progress on the baseline, risk assessments, HLPP and future planning. The 8th Risk Assessment concluded that a critical risk exists concerning the potential loss of low-inclination radio occultation data due to the end-of-life of the COSMIC-2 mission.

WGIII agreed to recommend sunsetting the CGMS Futures 2022+ SEB theme following successful conclusion of initial activities, noting that it is fully integrated on the WGIII agenda and will continuously be addressed in the framework of WGIII. SEB theme activities included survey results for SEB case studies, future activity opinions, and establishing a standing WGIII agenda item for member updates.

WGIII recommended to the plenary:

- To approve the CGMS baseline and accept the latest risk assessment;
- Note no changes to the contingency plan;
- Endorse completion of the CGMS Futures 2022+ initiative;
- Encourage Members to participate in the WGIII standing agenda item Socioeconomic Benefits and Relationship with the Private Sector, and engage in WMO Open Consultative Platform efforts and discussions when appropriate.;
- Endorse a new WGIII Co-Chair: Tim Walsh, Deputy Assistant Administrator for Systems, NOAA/NESDIS.

Plenary endorsed the CGMS Baseline, CGMS WGIII Risk Assessment, and the completion of the CGMS Futures 2022+ initiative. Irene Parker stepped down from her role as a co-chair and CGMS Plenary endorsed her replacement, Tim Walsh, from NOAA/NESDIS.

Paul Counet (EUMETSAT) introduced the letter from the World Climate Research Programme (WCPR) and Global Energy and Water Exchange (GEWEX) project on behalf of the Earth science community to express our concerns about the future of satellite Earth radiation budget (ERB) measurements. The Plenary decided that WGIII should discuss highlighting the Earth radiation budget application area in CGMS Risk Assessment and WMO Gap Analysis in 2027.

Action #	Actionee	AGN item	Description	Deadline
WGIII/54.02p	WGIII	WGIII	Address the long-term continuity issue of Global Earth Radiation Balance (GERB) satellite measurements in response to the request from GEWEX	9th WGIII RAWS: 24-26 Feb 2027

WGIV - Data access and end user support

CGMS-54-WGIV-WP-12-p WGIV key recommendations to CGMS plenary

The main outcomes of the Working Group meeting were summarised by co-chair Kotaro Bessho-san (JMA) as below.

- Several activities relating to the UN Early Warnings for All (EW4All) initiative were discussed. These included work on regional gap analysis, disaster support, and support for developing countries.

- Discussions about CMA's proposal to establish Meteorological Satellite Application Facilities, and the way forward with this for CGMS
- EUMETSAT and RAIDEG described ongoing work related to the support of users in RA-I and RA-VI.
- Promotion of data access with the ocean user community, Arctic observation community, and hyperspectral data providers
- Status and plans for VLab were updated.

In addition, Bessho-san recalled the main actions coming from the working group:

- CGMS members to contribute to the WMO VLab Trust Fund to ensure continued technical support (via the VLab Technical Support Officer)
- CGMS Members active in VLab to advertise their training events via the VLab Training Calendar
- CGMS Members active in VLab are invited to a representative for the 12th VLab Management Group (VLMG-12) meeting

CGMS-54-VLab-WP-02-p VLab - Status report and progress since 2025 & **CGMS-54-VLab-WP-03-p For information: Draft VLab Strategy 2027–2030**

XIAN Di (CMA) gave a status report on VLab (as co-chair) and presented efforts on drafting an updated VLab strategy. He highlighted the precarious nature of the VLab funding and recalled the WGIV actions relating to the support of EW4All.

Discussion

CMA recalled their ongoing efforts to establish the concept of Meteorological Satellite Application Centres. Taking into account the complexity of this activity and the wish to find consensus regionally, with CGMS and with WMO, CMA informed Plenary that they would continue to work on refining their proposal before seeking endorsement through CGMS and WMO.

EUMETSAT noted the various mechanisms implemented by CGMS Members to provide easy access to satellite products via internet facing portals and based on this intervention WGIV was requested to address Data Access from Web Platforms, looking for commonalities and the possible development of Good Practices. It was agreed that this activity is to be included in the work of the WGIV Task Group on Data Access and Exchange. A new action was recorded.

Action #	Actionee	AGN item	Description	Deadline
WGIV/54.01p	WGIV Task Group on Data Access and Exchange	WGIV	WGIV to address Data Access from Web Platforms, looking for commonalities and the possible development of Good Practices. This activity is to be included in the work of the WGIV Task Group on Data Access and Exchange	End of 2026

Space Weather Coordination Group - SWCG

CGMS-54-SWCG-WP-10-p SWCG key recommendations to CGMS plenary

Dr. James Spann (SWCG Co-Chair, NOAA) introduced the SWCG report and highlighted the changes in the SWCG organisation, in particular:

- Dr. Tsutomu Nagatsuma (NICT) has resigned all space weather roles after holding the Co-Chair position since 2017.
- Dr. ZONG Weigou (CMA) is recommended by SWCG to take over the co-chair role, and SWCG requests endorsement from CGMS Plenary
- Co-rapporteur Jesse Andries (formerly WMO) also resigned his position. No replacement is currently sought.
- Nominations for the GSICS GRWG space weather subgroup are also invited following the resignation of Tsutomu Nagatsuma.
- The Terms of Reference have been reviewed and updated (no change to high-level objectives).

Dr. ZONG Weigou (CMA) presented the body of the report which covered space weather aspects of:

- CGMS Risk Assessment
- CGMS Baseline updates
- Coordination with the WMO
- Coordination with the International Space Environment Service (ISES)
- Unique opportunity of a suite of L1 missions
- Data requirements for Aviation services
- GSICS activities
- Review and updating of the High-Level Priority Plan (HLPP)
- Spacecraft Anomaly Database
- Data Access
- Support to WGI Space Environment Sustainability
- AI Readiness

Dr. James Spann concluded the presentation with the recommendations to Plenary:

Plenary endorsed Dr. ZONG Weiguo as co-chair of SWCG, following departure of Dr. Tsutomu Nagatsuma (NICT)

Plenary requested to encourage each CGMS member operating satellites to suggest measures which would enable them to supply satellite anomaly data.

Plenary noted:

- The updated SWCG Terms of Reference
- The proposed update to the HLPP
- The new definitions in the CGMS Baseline to be taken into account in the 2027 Risk Assessment Workshop
- The efforts to establish coordination of thermospheric density modelling to improve space traffic coordination.
- The planned survey, workshops and report on Space Weather AI readiness

Discussion

Paolo Ruti (EUMETSAT, WGII rapporteur) noted that while space weather monitoring and forecasting is at an early stage compared to terrestrial meteorology, use of AI has the potential to accelerate the transition from pre-operational to operational. The planned coordination between WGII and SWCG in the AI workshops is expected to provide useful feedback on data needs and experience which should help promote this transition.

Simon Elliot highlighted the positive outcomes of space weather data latency testing using the WIS 2.0 system.

Daehyeon Oh (KMA) noted the cooperation with ESA on the SOSMAG magnetometer Cal/Val flying on GK-2A.

Regarding sharing of spacecraft anomaly data, Sean Burns (EUMETSAT) suggested that clarifying the use-cases may be helpful for those considering supplying the data.

Decisions

Plenary endorsed Dr. ZONG Weiguo as co-chair of SWCG

A new action was raised.

Action #	Actionee	AGN item	Description	Deadline
SWCG/A54.04	SWCG Anomaly TG	Joint	CGMS Members operating satellites to suggest measures to enable satellite anomaly data supply	SWCG-IS#1

International Cloud Working Group – ICWG

CGMS-54-ICWG-WP-01-p Report on progress and recommendations from the ICWG to CGMS

The presentation summarized the activities of the International Cloud Working Group (ICWG) since CGMS-53 and outlined priorities for the coming year. Preparations for ICWG-4, to be held in Seoul, Republic of Korea, in October 2026, continued to progress. The call for abstracts closed on June 15, 2026.

ICWG continued to coordinate international cloud product development and intercomparison. A major focus was the Geo-Ring cloud product assessment, which adopted the emerging ISCCP-NG Level-1G dataset as a common input to improve the consistency and quality of cloud retrievals from geostationary and polar-orbiting satellites. The group also continued its support of cloud climatology activities, cloud height retrieval coordination, and preparations for next-generation satellite systems.

The report recommended updating several High-Level Priority Plans (HLPPs) to better reflect current priorities. Specifically, ICWG recommended refocusing AI/ML activities on the development of community standards and EarthCARE-based training resources, while recommending retirement of the HLPP on validation error propagation because its objectives had been incorporated into the ongoing Geo-Ring intercomparison activities. The group also identified geostationary hyperspectral sounders as an important emerging area for future international collaboration.

ICWG requested continued support from CGMS member agencies for the GEO-Ring initiative, participation in international cloud product intercomparisons, and the development of community AI/ML tools and standards. These activities were expected to strengthen the consistency, quality, and future evolution of global satellite cloud products from the participating agencies.

During the discussion period, Andrew Heidinger was announced to be stepping down as the ICWG Rapporteur and Kerry Meyer (NASA) was nominated and confirmed as his replacement. CMA also indicated its strong desire to be part of GEO-Ring. It was also mentioned that a data policy for the GEO-Ring is being formulated and progress will be reported next year.

International Earth Surface Working Group - IESWG

CGMS-54-IESWG-WP-03-p Progress by the IESWG and items for coordination with the CGMS

Plenary was informed of the progress achieved by the International Environmental Satellite Working Group (IESWG) since the previous CGMS session. In response to CGMS-53 Plenary action 53.06, the IESWG completed the requested follow-up actions by sharing the report of its sixth meeting, held in June 2025, with the CGMS Secretariat for distribution to Members. In addition, the Terms of Reference of the Working Group were updated and published on the CGMS IESWG webpage.

Members noted the group's continued engagement with the broader scientific and operational communities. The IESWG-6 meeting was successfully hosted by DWD in June 2025, providing a forum to review ongoing activities and future priorities. In November 2025, IESWG contributed to discussions on

terrestrial land surface observation requirements, further strengthening its interaction with the land observation community. Subsequently, in March 2026, the IESWG Co-Chairs met with WMO expert groups responsible for Global and Regional Numerical Weather Prediction (NWP), as well as Agricultural Meteorology, to discuss a coordinated process for providing input to the next revision of the WMO Rolling Review of Requirements (RRR).

Looking ahead, Members were informed that IESWG will continue its engagement with key international initiatives. Planned activities include participation in the 12th International Symposium on Data Assimilation (ISDA) and the 8th WMO Data Assimilation and Observing Systems (DAOS) meeting in August 2026, followed by the ESA International Land Modeling Forum in September 2026. These engagements will provide further opportunities to strengthen collaboration between the satellite, numerical weather prediction and land modelling communities while ensuring that evolving user requirements continue to be reflected in future satellite system developments.

CGMS-54-IESWG-WP-02-p Continuity of the IESWG as a CGMS ISWG

WGII informed Plenary that, at its meeting in April, it had unanimously recommended that the IESWG continue as a CGMS International Science Working Group (ISWG). Clara Draper (NOAA), currently serving as co-chair and CGMS rapporteur, will step down and a replacement will therefore need to be identified. Members were invited to submit nominations.

EUMETSAT noted that this ISWG provides an opportunity to strengthen engagement with the modelling community, particularly in areas requiring closer interaction between observations and modelling activities.

Following interventions from WMO and CMA regarding commonalities and related activities within CEOS, the IESWG explained that it had interacted with CEOS. However, CEOS has a broader remit, including activities related to the use of high-resolution Earth observation data. The IESWG noted that its primary objective is specifically to advance applications supporting land Numerical Weather Prediction.

EUMETSAT further noted the importance of maintaining an appropriate balance between Numerical Weather Prediction applications and broader forecasting needs. It highlighted that the key challenges relate to understanding and characterising radiance behaviour and that addressing these challenges requires a consistent approach across the modelling, observational measurement, and radiative transfer communities.

In view of the need for an IESWG rapporteur, EUMETSAT agreed to nominate a candidate, Andrea Meraner, to be formally communicated to the IESWG.

Concluding the item, the CGMS-54 plenary endorsed the continuation of the IESWG as a CGMS ISWG and looked forward to future reports on its findings. The proposal received the endorsement of Plenary, with the nomination to be confirmed at a later stage.

CGMS-54-IESWG-WP-04-p Information document, presented to CGMS-54 WGII: IESWG 6th meeting report (June 2025)

Working paper available on the website.

CGMS-54-IESWG-WP-05-p Information document, presented to CGMS-54 WGII: IESWG Terms of Reference

Working paper available at the website.

7. OUTSTANDING MATTERS FOR ENDORSEMENT AND REVIEW OF ACTIONS

Outstanding items for endorsement or review

CGMS-54-CGMS-WP-10bis-p CGMS coordinated statement to WMO EC-80

Plenary endorsed the CGMS coordinated statement for presentation to the 80th session of the WMO Executive Council (EC-80). Following the endorsement, minor editorial revisions were made to shorten the text while preserving its substance. The version published on the agenda is the statement as delivered during the meeting.

Review of actions from CGMS-53 and new actions from CGMS-54

CGMS-54-CGMS-WP-01-p Status of CGMS-53 plenary actions

The status of CGMS-53 plenary actions was presented by the CGMS Secretariat (see Annex for list of actions).

CGMS-54-CGMS-WP-02-p Summary of new actions from CGMS-54 plenary

The new actions identified throughout the CGMS-54 plenary session were presented by the CGMS Secretariat (see Annex for list of actions).

CGMS-54-CGMS-WP-26-p Status of implementation of CGMS HLPP (2025-2029)

The plenary session took note of the status of implementation of the HLPP (2025-2029).

CGMS-54-CGMS-WP-27-p Proposed revision of the CGMS HLPP 2026-2030 (including comments and track changes)

The Plenary endorsed the proposal for a revised HLPP covering the period 2026-2030, as contained in CGMS-54-CGMS-WP-27-p, noting that amendments proposed JWGClimate and the endorsement of the key GHG system requirements will be reflected in the document.

CGMS Members were invited to provide final comments on the HLPP by 19 June, to be reflected in the document before publication.

CGMS-54-CGMS-WP-05-p Review of CGMS governing documentation - Objectives and roadmap

The CGMS-54 plenary endorsed the initiation of a critical review of the CGMS governing documentation defining targets: the CGMS WG Terms of Reference and the High-Level Priority Plan.

The plenary noted that the CGMS members focal Points of Contact will be contributing to the review; and that at the 55th CGMS round, the following will be presented for review and eventually at plenary for approval:

- Terms of Reference of the CGMS Working Groups (WGI, WGII, WGIII, WGIV and SWCG)
- High-Level Priority Plan covering the period 2027-2031

A new action was recorded.

Action #	Actionee	AGN item	Description	Deadline
54.06p	CGMS Members	HLPP	CGMS members to provide final comments on the HLPP for a revised version covering the period 2026-2030	19 June

CGMS-54-CGMS-WP-33-p Future direction 2022+ way forward

The document was included for information, presenting that all themes of the Future direction 2022+ initiative are fully embedded in the various Working Group structures, and therefore closed. Endorsement was made by the respective Working Group reports.

CGMS-54-CGMS-WP-24-p Status of CGMS representatives and nominations (CGMS WGs, ISWGs, GSICS, VLAB, WMO and other initiatives)

The document was included for information, presenting the status of CGMS representatives and nominations that was addressed through the Working Group reports.

8. CONFERENCE ANNOUNCEMENTS

CGMS-54-EUMETSAT-WP-14-p EUMETSAT Meteorological Satellite Conference, Sep 2026

At the occasion of EUMETSAT's 40-year anniversary, the conference will be held 21-25 September 2026 at Darmstadtium Congress Centre, Darmstadt, Germany.

Conference session topics:

1. Preparing for the Utilisation of New Generation GEO and LEO Satellite Data: Algorithms to Validation
2. From Climate Science to Services: Exploitation of Satellite Data for New Products and Services
3. Enabling Seamless Prediction: From Minutes to Seasons
4. Preparing for the Future: Evolution of Needs and Technology Trends guiding the Design of Satellite Measurements
5. Satellite Observations and Products for the Ocean-Atmosphere-Land-Ice Interfaces
6. European and International Coordination of Satellite Operational Initiatives

For further information: https://www.eumetsat.int/eumetsat-meteorological-satellite-conference-2026

9. ANY OTHER BUSINESS

Engagement with industry and commercial partners

The CGMS Secretariat informed Plenary that it had received requests from industry and the private sector regarding possible engagement with CGMS. In response, Members discussed whether such engagement should be pursued and, if so, through which mechanisms.

The discussion recognised the importance of first assessing the existing frameworks available for dialogue with external stakeholders before establishing any new arrangements. In particular, Members noted that the WMO Open Consultative Platform (OCP) already provides a recognised mechanism for engagement with industry and could serve as an appropriate model or channel for future interactions involving CGMS.

It was emphasised that such engagement should not be limited to commercial satellite data providers but should also encompass the broader meteorological enterprise, including commercial weather service and forecast providers, as well as other relevant industry partners.

Members agreed that existing mechanisms should be carefully evaluated to determine whether they adequately meet CGMS requirements and could facilitate future collaboration while preserving the established governance and coordination processes.

10. FUTURE CGMS PLENARY SESSIONS

Future CGMS plenary sessions

CGMS-54-CGMS-WP-23-p Tentative schedule of future CGMS plenary sessions and announcement of CGMS-55 plenary and working group meetings

The CGMS Secretariat presented the tentative plan for CGMS plenary sessions in the 2027-2035 period.

CGMS plenary #	Year	Location
CGMS-55 WGs	2027 (19-23 April)	Europe
CGMS-55	2027 (15-17 June)	India
CGMS-56	2028	China
CGMS-57	2029	WMO
CGMS-58	2030	Japan
CGMS-59	2031	USA
CGMS-60	2032	Europe
CGMS-61	2033	Republic of Korea
CGMS-62	2034	India
CGMS-63	2035	Russian Federation

The plenary endorsed that the CGMS-55 Working Group sessions be held on 19-23 April 2027 at EUMETSAT, Darmstadt, Germany and that the CGMS-55 plenary session be held on 15-17 June 2027 in India (confirmed after plenary).

11. CLOSING SESSION

Handover of CGMS flag

The CGMS flag was handed over from the Korea Meteorological Administration to the India Meteorological Department, host of CGMS-55.

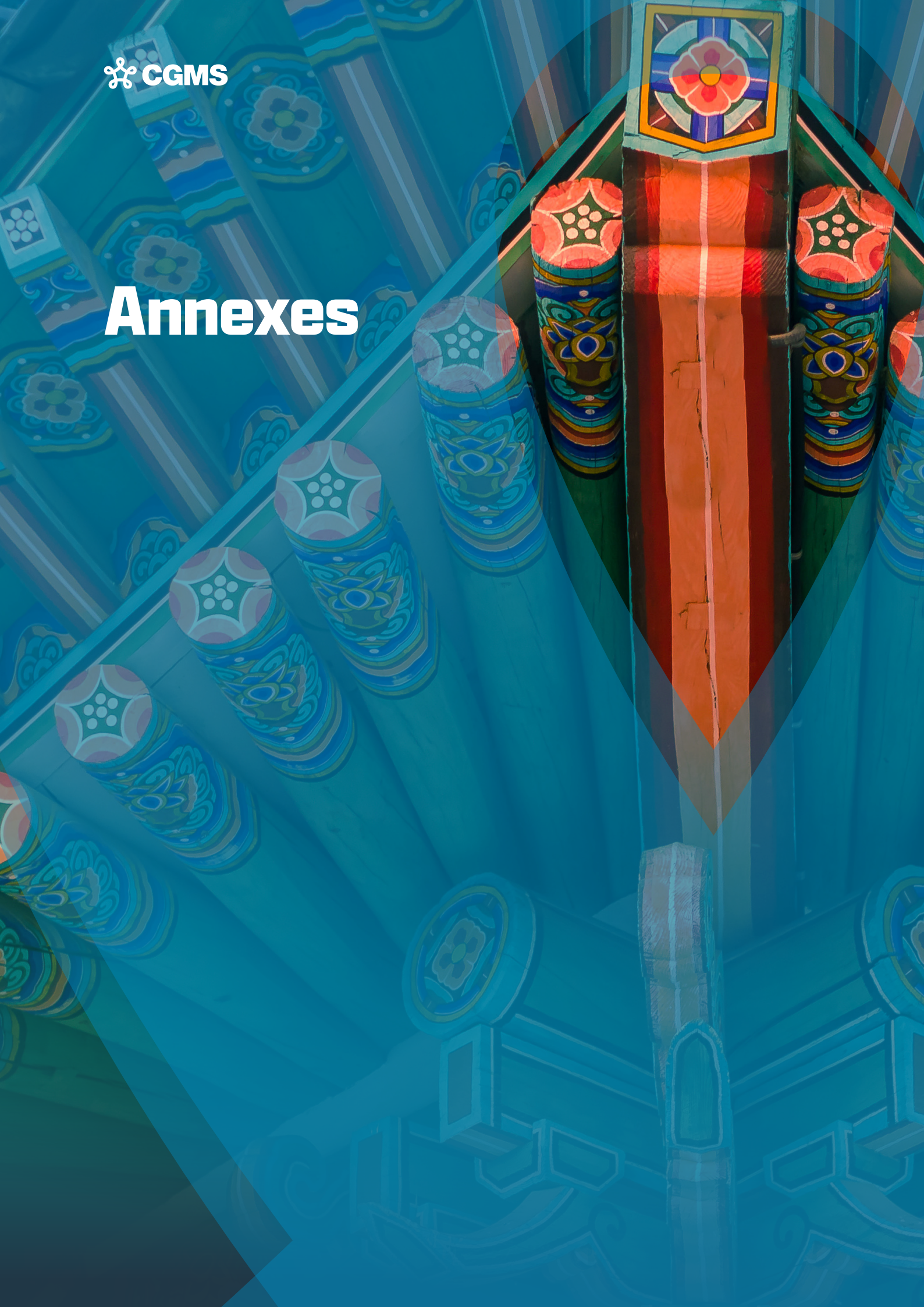
Closing remarks

The Head of the CGMS Secretariat, Phil Evans, thanked all participants for a very productive and pleasant meeting, expressed his appreciation to the staff from the CGMS Secretariat for the excellent organisation of the session and wished everybody a safe return to their home.

The Chair of the Plenary session, Dohyeong Kim (KMA), formally closed the meeting, thanking all participants for their valuable contributions and constructive engagement, and expressing his appreciation to the organising committee and all those who contributed to the successful conduct of the session.

CGMS

Annexes



ANNEXES

STATUS OF PLENARY-53 ACTIONS AND RECOMMENDATIONS FOLLOWING CGMS-54 PLENARY

STATUS OF CGMS-53 PLENARY ACTIONS RESULTING FROM CGMS-54 PLENARY DISCUSSIONS

Action #	Actionee	AGN item	Description	Action feedback/closing document	Deadline	Status
A53.01	WMO, WGClimate GHG TT	4	WMO and the WGClimate GHG Task Team to work on baseline requirements for operational GHG monitoring (considering requirements for revisiting time (mapping capabilities), product timeliness, and product availability and completeness) that ensures a common understanding of the requirements and can function as a guideline for the utilisation of current and the establishment of future missions including from the commercial sector.	Jun 4, 2026 Presentation provided to plenary https://www.cgms-info.org/Agendas/PPT/CGMS-54-JWGCLIM-WP-05-p 13 Apr 2026 Side meeting held at CGMS-54 WGs. A proposal will be made to plenary. 14 Jan 2026 Side meeting scheduled on the occasion of the CGMS-54 WG meetings on 13 April.	CGMS-54	**CLOSED**
A53.02	WMO, WGClimate GHG TT	4	WMO and the GHG Task Team capture the requirements of IMEO and other interested applications for methane observations from geostationary orbit. These are necessary to enable an operational implementation by CGMS agencies.	Jun 4, 2026 Presentation provided to plenary https://www.cgms-info.org/Agendas/PPT/CGMS-54-JWGCLIM-WP-03-p 19 May 2026 A proposal will be made to plenary. 13 Apr 2026 Side meeting scheduled on the occasion of the CGMS-54 WG 14 Jan 2026 Side meeting scheduled on 13 April afternoon (CEST) on occasion of the CGMS-54 WG meetings.	CGMS-54	**CLOSED**

A53.03	CGMS members	4	CGMS members to provide feedback on the draft common practice document for remote sensing-based estimates of facility-scale emissions to Paul Green (paul.green@npl.co.uk) and John Worden (john.r.worden@jpl.nasa.gov) copy to CGMSSEC@eumetsat.int link	11 Aug 2025 No further feedback received. Action closed. 16 Jun 2025 NASA will provide its input via the WGClimate Chair (from NASA) and to Paul Green/John Worden.	30 June 2025	**CLOSED**
A53.04	Paul Green, CGMS members	4	Paul Green to submit the final version of the common practice document for remote sensing-based estimates of facility-scale emissions to CGMSSEC@eumetsat.int for further circulation to and confirmation by CGMS members.	11 Aug 2025 Deadline for full endorsement moved forward by GHG TT. E-mail circulated with final version of the document by CGMSSEC on 11 Aug 2025.	18 Aug 2025 ~~1 Oct 2025, 30 Nov 2025~~	**CLOSED**
A53.05	CGMS members	4	The Chairperson of the 2 June side meeting (joerg.schulz@eumetsat.int) proposed to provide the outline of the updated Global Stock Take (GST) strategy to the CGMS Secretariat by end June. CGMS members will be requested to provide feedback to CGMSSEC by September 2025, confirming if CGMS in principle should join the strategy by formally endorsing it at Plenary level by correspondence by end 2025 (i.e. on the understanding that CEOS SIT concurs to a joint document).	12 Aug 2025 CEOS has informed CGMS that this document will remain a CEOS document rather than a joint CGMS-CEOS document. Action closed. 16 Jun 2025 NASA will respond once the outline is provided.	30 June 2025, 30 Sep 2025	**CLOSED**

A53.06	IESWG leading entity	5	On IESWG: IESWG to share with CGMSSEC (for redistribution to CGMS members) the outcome of its June 2025 meeting, incl. updated ToRs, and for further reporting to CGMS-54	June 4, 2026 Presentations provided to plenary: https://www.cgms-info.org/Agendas/PPT/CGMS-54-IESWG-WP-03-p; 6th IESWG meeting report: https://www.cgms-info.org/Agendas/WP/CGMS-54-IESWG-WP-04-p; IESWG ToR https://www.cgms-info.org/Agendas/WP/CGMS-54-IESWG-WP-05-p Plenary endorsed: a) continuity of IESWG as a CGMS ISWG endorsed b) IESWG CGMS rapporteur - Andrea Meraner, EUMETSAT, will be communicated to the co-chairs 14 Apr 2026 CGMS-54 WGII. WGII unanimously recommended the IESWG to continue as a CGMS ISWG, and encouraged the IESWG to further highlight the link to the CGMS. 02 Feb 2026 ToR and meeting report circulated to CGMS members through the list servers. 14 Jan 2026 TORs prepared, minor update needed before circulation in CGMS. Q3 2025 Reminder sent to the IESWG leading entity.	CGMS-54 (14 April 2026, 15 Aug 2025)	**CLOSED**

A53.07	CGMSEC, CGMS members, WGII, WGIV	6	For reference only! See detailed action breakdown further below. On AI/ML: CGMS Secretariat to survey CGMS contributing agencies. WGII and WGIV to propose initial standards to be presented at CGMS-54 (To facilitate the use of AI/ML by CGMS contributing agencies and meteorological data users, CGMS shall identify standards for using and converting meteorological EO data into a suitable form for Machine Learning applications. The key elements to be addressed are: + Data standards and formats, such as for example the Zarr usage best + practices Most relevant data transformation/representation per measurement type, i.e., remapping, standard vertical grids, etc. + Adoption of standard metadata per measurement type, preferably using CF metadata conventions, i.e., source of the information, AI fused or original data, error characterisation of original and fused data.)	Jun 4, 2026 Response to action presented in https://www.cgms-info.org/Agendas/PPT/CGMS-54-CGMS-WP-30-p Information document, presented to WGII in April on undertaken survey: https://www.cgms-info.org/Agendas/PPT/CGMS-54-WGII-WP-09-p Detailed survey outcome: https://www.cgms-info.org/Agendas/WP/CGMS-54-CGMS-WP-32-p Sub-actions on AI/ML applications catalogue, space weather AI readiness and AI error propagation framework for precipitation products closed following plenary deliberations, with the creation of a Task Team to address the next steps. 15 Apr 2026 CGMSSEC / EUMETSAT will elaborate on the response to these actions and raise new or revised actions as necessary 14 Apr 2026 CGMSSEC presented the preliminary outcome of the survey on AI/ML. https://www.cgms-info.org/Agendas/PPT/CGMS-54-WGII-WP-07, https://www.cgms-info.org/Agendas/WP/CGMS-54-WGII-WP-07 (12 Aug 2025 WGII and WGIV leading entities requested to provide the questions for the survey to CGMSSEC for September.)	Autumn 2025, CGMS-54	**CLOSED**
A53.08	IWWG	5	IWWG to consider holding a 5th AMV Global Intercomparison Study	14 Apr 2026 IWWG reported they will do this in the course of 2027	CGMS-54	**CLOSED**

A53.09	CGMS members	0	CGMS members to review the revised HLPP 2025-2029 (https://www.cgms-info.org/Agendas/WP/CGMS-53-CGMS-WP-27) and provide feedback if/as necessary to cgmssec@eumetsat.int	12 Aug 2025 No further inputs received. Action closed. 16 Jun 2025 NASA has no further inputs on the HLPP.	23 Jun 2025	**CLOSED**

STATUS OF CGMS-53 PLENARY RECOMMENDATIONS RESULTING FROM CGMS-54 PLENARY DISCUSSIONS TO BE CARRIED OVER TO CGMS-55

CGMS-53 List of plenary recommendations					
Rec #	**Leading entity**	**AGN item**	**Description**	**Recommendation feedback/closing document**	**Status**
R51.01	CGMS members	WMO matters for coordination with CGMS space agencies	WMO initiatives Plenary recommended that CGMS members actively support and respond to the WMO strategic initiatives and resolutions, such as EW4ALL, G3W, and Unified Data Policy implementation. (Original recommendation: Plenary recommended that CGMS members actively support and respond to the WMO strategic initiatives and resolutions, such as EW4ALL, G3W, and Unified Data Policy implementation; and asks CGMS space agency members to participate in the upcoming Core Satellite Data Workshop (4-7 December 2023) and WMO Consultative Meetings on High-level Policy on Satellite Matters (Feb 2024).)	Jun 2, 2026 WMO recalled at CGMS-54 plenary the need for continued support by CGMS space agencies to WMO's major themes. It was agreed to close this recommendation since this is what CGMS seeks to do as a principle. https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-18-p; https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-14bis-p; https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-15-p Jun 12, 2025 Recalled on the occasion of the CGMS-53 plenary 3-5 June 202 27 Mar 2025 CGMS-53 WGIII, recommendation remains valid. WMO recalls CM-16 on 3-4 March 2026 and the participation of CGMS space agency heads. 04 Jun 2024 https://www.cgms-info.org/Agendas/PPT/CGMS-52-WMO-WP-03p, https://www.cgms-info.org/Agendas/PPT/CGMS-52-WMO-WP-02p Recommendation carried over to CGMS-52 actions and recommendations	**CLOSED**

R51.02	CGMS members	WMO matters for coordination with CGMS space agencies	Contributions to the VLab Trust Fund (Action to be monitored by WGIV) CGMS members are invited to contact WMO to provide contributions to the WMO VLab Trust Fund to ensure the continuation of technical support to the VLab through the VLab Technical Support Officer as well as to the implementation of VLab projects.	Jun 2, 2026 WMO recalled at CGMS-54 plenary the need for continued support by CGMS space agencies to the funding of the VLab activities. A new recommendation/action was raised accordingly. https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-18-p; https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-14bis-p Apr 17, 2026 CMA has indicated they expect to contributed to the trust fund. Jun 12, 2025 Recalled on the occasion of the CGMS-53 plenary 3-5 June 2025 27 Mar 2025 CGMS-53 WGIII. This recommendation remains valid, and also valid for the WMO space programme trust fund. 04 Jun 2024 https://www.cgms-info.org/Agendas/PPT/CGMS-52-VLab-WP-01p, https://www.cgms-info.org/Agendas/PPT/CGMS-52-GUEST-WP-03 Recommendation carried over to CGMS-52 actions and recommendations 23 Apr 2024 Addressed at CGMS-52 WGIV meeting. WMO expected to address this in detail at CGMS-52 plenary, 2023 11 July: Noted as a recommendation by the CGMS Secretariat 2023 28 June: Plenary endorsed the recommendation in the report by the VLab to plenary. The "action" still remains valid. 2023 19 June: CGMS members are kindly requested to contribute to the VLab to secure the continuity of this valuable activity. 2023 2 June: Topic to be raised in the report of the WGIV and VLab to plenary.	**CLOSED (new action raised accordingly)**

R53.01	CGMS space agency members	5	On ITWG - instrument disaggregation As part of future architecture analysis, due attention must be given to ensure that the disaggregation of instruments does not degrade the time/space coincident measurements in different spectral ranges currently found in the backbone missions. Any disaggregation could impede the effectiveness of various meteorological and environmental applications such as for example severe weather nowcasting or large-scale aerosol/ash plume monitoring.	Jun 3, 2026 CGMS-54 plenary, closed, to be addressed in the framework of the ITWG	**CLOSED**

PLENARY-54 ACTIONS AND RECOMMENDATIONS FOLLOWING CGMS-54 PLENARY SESSION

CGMS-54 List of new plenary actions					
Action #	**Actionee**	**AGN item**	**Description**	**Deadline**	**Status**
54.01p	CGMSSEC, WMO	WMO	CGMSSEC and WMO to decide the dates for CM-17 in 2028	End of 2026	**OPEN**
54.02p	CGMS Agencies	WGIV	CGMS space agencies to consider contributing to the WMO VLab Trust Fund to support the continuation of VLab technical coordination activities and training delivery, including travel support for WMO Members with limited resources	CGMS-55	**OPEN**
54.03p	CGMS Agencies	WGIV	CGMS space agencies to consider reviewing the draft revised VLab Strategy for Education and Training in Satellite Meteorology (2027–2030) and take note of the planned endorsement process prior to its submission to INFCOM-4	End of July 2026 (INFCOM-4)	**OPEN**
54.04p	CGMS Agencies	SWCG	CGMS satellite operators to suggest measures to enable satellite anomaly data supply	SWCG IS#1 (24 September 2026)	**OPEN**
54.05p	CGMS Members	AI/ML	Establish a list of experts from CGMS Members and CGMS Working Groups to form an AI Task Team, identifying the way forward for CGMS to address AI matters and prepare the future WMO/CGMS AI workshop	End of 2026	**OPEN**
54.06p	CGMS Members	HLPP	CGMS members to provide final comments on the HLPP for a revised version covering the period 2026-2030	19 June	**OPEN**
54.07p	CGMS Secretariat	Review of actions	CGMS and CEOS Secretariats to explore opportunities to develop mechanisms to approach common topics of interest and, if any, to report to plenary	End of 2026	**OPEN**

CGMS-54 List of new plenary actions to WGI					
Action #	**Actionee**	**AGN item**	**Description**	**Deadline**	**Status**
WGI/54.01p	CGMSSEC, WMO	WGI	Work together to prepare a paper for INFCOM-4 addressing the proposed update of the Manual on the WIGOS	End of July 2026 (INFCOM-4)	**OPEN**
WGI/54.02p	CGMS Agencies	WGI	CGMS space agencies to provide experts to the work of the WMO Expert Team on Radio Frequency Coordination (ET-RFC)	30 Sep 2026	**OPEN**
WGI/54.03p	CGMS Agencies	WGI	CGMS satellite operators to contribute operational expertise and inputs to WGI Space Environment Sustainability (SES) Task Group activities through expanded membership from further organisations	End of 2026	**OPEN**

CGMS-54 List of new plenary actions to WGII					
Action #	**Actionee**	**AGN item**	**Description**	**Deadline**	**Status**
WGII/54.01p	WGII	WGII	Discuss the coordination for lightning imager validation methodologies and for extending the GEO-ring concept to lightning at the next intersessional meetings	End of 2026	**OPEN**
WGII/54.02p	WGII	WGII	Encourage the NWP community to assess the quality and impact of different satellite products, such as derived 3D wind products from IR sounders, as soon as possible after the data come online. (Explore this through NWP agencies and via WMO operational and research groups)	CGMS-55	**OPEN**
WGII/54.03p	WGII	WGII	Establish a new Operational fire detection Task Force to investigate fire channels intercalibration, fire products and harmonisation	End of 2026	**OPEN**

CGMS-54 List of new plenary actions to WGIII					
Action #	**Actionee**	**AGN item**	**Description**	**Deadline**	**Status**
WGIII/54.01p	IROWG	WGIII	IROWG to assess the impact of the decline in COSMIC data availability, possibly distinguishing between the respective contributions of low- and medium-inclination orbit, and analysing the number of RO required to mitigate the risk	End of 2026 (9th WGIII RAWS: 24-26 Feb 2027)	**OPEN**
WGIII/54.02p	WGIII	WGIII	Address the long-term continuity issue of Global Earth Radiation Balance (GERB) satellite measurements in response to the request from GEWEX	9th WGIII RAWS: 24-26 Feb 2027	**OPEN**

CGMS-54 List of new plenary actions to WGIV					
Action #	**Actionee**	**AGN item**	**Description**	**Deadline**	**Status**
WGIV/54.01p	WGIV Task Group on Data Access and Exchange	WGIV	WGIV to address Data Access from Web Platforms, looking for commonalities and the possible development of Good Practices. This activity is to be included in the work of the WGIV Task Group on Data Access and Exchange	End of 2026	**OPEN**

LIST OF PLENARY PARTICIPANTS

CGMS-54 - List of plenary participants		
First name	**Last name**	**Organisation**
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Sunmi	Na	KMA
Han-cheol	Im	KMA
Donghyun	Kim	KMA
Kwangdeuk	Ahn	KMA
Namchul	Woo	KMA
Byung-il	Lee	KMA
Daehyeon	Oh	KMA
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Heikki	Pohjola	WMO
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Natalia	Donoho	WMO

CGMS

Working groups

WGI	Satellite systems and operations
WGII	Satellite data and products
WGIII	Operational continuity and contingency planning
WGIV	Data access and end user support
SWCG	Space weather coordination group
	Joint WGI-WGIV-SWCG

CGMS

WORKING GROUP I

Satellite systems and operations



PARALLEL WORKING GROUPS

WGI REPORT

Co-Chairs: *James Donnellon, NOAA / Sean Burns, EUMETSAT*
Rapporteur: *Karolina Nikolova, EUMETSAT*

1. WGI meeting introduction and expected outcomes

CGMS-54-WGI-WP-01 - 1.1 WGI meeting introduction by Co-Chairs/Co-Rapporteurs (incl. welcome, meeting agenda, current and future WGI scope within CGMS, latest WGI ToR, overview of Task Groups) (Co-Chairs / Rapporteur).

The WGI Co-Chairs opened the meeting with a welcome address and short introductions of new members.

A presentation re-calling the role of WGI within CGMS, the objectives of WGI, its current structure, and status of the WGI Co-Chairs, WGI Co-Rapporteurs and Task Group chairs was provided for reference.

WGI included representatives of the satellite operators from CGMS Secretariat, CMA, ESA, EUMETSAT, IMD, ISRO, JAXA, JMA, KMA, NOAA, ROSHYDROMET, and WMO (see CGMS report for full list of participants).

The WGI meeting was hybrid, with in-person participation in Darmstadt and also virtual attendance via Webex.

CGMS-52-CGMS-WP-01 - 1.2 WGI expected outcomes (Co-Chairs / Rapporteur)

A presentation of the expected outcomes from each of the agenda topics was provided for reference.

2. Frequency management

CGMS-54-CGMS-WP-02 **-** 2.1 Report on frequency management related topics (incl. SFCG, WMO, ITU, etc) (Markus Dreis)

The report provided an overview on the outcome of the following meeting/conferences on issues of interest to CGMS:

- 44th annual meeting of the Space Frequency Coordination Group (SFCG), 10 –18 June 2025;
- 7th meeting of the WMO Expert Team on Radio Frequency Coordination (ET-RFC), 4 – 6 February 2026.

SFCG and WMO updated and refined their objectives/positions for WRC-27 agenda items of interest/concern. Those objectives/positions, as outlined in CGMS-54-CGMS-WP-02, are in line with CGMS

interests, in particular but not exclusively with regard to WRC-27 agenda items 1.1, 1.3, 1.7, 1.8, 1.18 (resolves 1) and 1.19 (see HLPP section 2.2.1).

The companion presentation to CGMS-54-CGMS-WP-02 provided additional background information on the status of preparations on those WRC-27 agenda items.

Additionally, information was provided on preliminary agenda items WRC-31 of potential interest to CGMS.

Concerning the OSCAR Database updates and changes, all proposals from SFCG were implemented. Key changes include a new structure for separating responsible and cooperating agencies (in the meantime already implemented) and a refined approach to the visibility of frequency data as proposed by SFCG and agreed with WMO:

- Telemetry, Tracking, and Command RF Spectrum information will be hidden from public view but retained for logged-in users,
- data downlink frequency information will be restricted to allocated frequency bands, with exact frequencies hidden,
- Data Collection Platform (DCP) frequency information remains publicly visible.

The integration of an RFI reporting module into OSCAR/Space, designed to provide WMO Members (National Meteorological and Hydrological Services) with the possibility to report about their cases of RFI, although the scope of what can be reported, RFI only or also other anomalies/instances leading to loss of data, is not yet fully clear and will be further defined once experience is gathered with the reports on RFI received by WMO. In this context, care must be taken in order not to overlap completely with reporting tools/databases in the framework of SFCG, ITU, and the CGMS Space Weather Coordination Group.

During discussions, the issue of RFI into ground-based passive sensors was mentioned. Unfortunately, this community is underrepresented in regulatory considerations and corresponding fora, such as the ITU and the lack of interaction with national authorities. The idea was expressed to give a presentation at the WMO Technical Conference on Instruments and Methods of Observation (TECO-2026), 5-8 October 2026.

WGI agreed the following new actions:

Actionee	AGN item	Action #	Description	Deadline	Status
SFCG Liaison	**2.1**	WGI/54.06	The SFCG Liaison to present a report on frequency management related topics to CGMS-54 Plenary, and invite CGMS to note this report and provide feedback and information on its activities via the CGMS/SFCG Liaison Officer to SFCG-45 (June 2026) on any frequency related matter.	CGMS-54 Plenary	**OPEN**
Markus Dreis / RFI TG Chair / DCS TG Chair	**3.1**	WGI/54.07	Coordinate an RFI presentation for WMO Technical Conference (TECO)	CGMS-55 WGI	**OPEN**

CGMS-54-NOAA-WP-19 2.2 NOAA Spectrum Management Report (Beau Backus (virtually))

NOAA NESDIS is currently navigating a period of profound architectural transformation, transitioning from legacy polar systems to agile, disaggregated constellations such as NEON and GeoXO. This shift occurs within a hyper-congested radiometric environment in 2026, where the explosive growth of 5G mmWave, satellite Direct-to-Device (D2D) services, and NGSO mega-constellations—highlighted by SpaceX's million-satellite proposal—presents a critical challenge to environmental intelligence. The interference landscape has evolved from discrete sources into a persistent "aggregate noise floor" problem that risks blinding sensitive passive radiometers globally. Empirical evidence, including the 2026 Denver ATMS study, confirms that this interference corrupts the atmospheric moisture profiles essential for local precipitation forecasts and public safety.

NOAA emphasises advanced RFI detection and robustness through the Data Management and Integration Performance Study (DMiPS) project and potential transition to cloud-based ground segments via the NESDIS Common Cloud Framework (NCCF). The strategic efforts at WRC-27 and within the CGMS are vital, as the accuracy of weather forecasts remains the primary priority for protecting millions of lives.

The key issues of relevance to CGMS are:

- **Global Baseline Harmonization and RFI Mapping:** Weather is a global phenomenon; NOAA emphasizes that spectrum management cannot be achieved in domestic isolation.
- **The Transition to Cloud-Based Ground Segments:** NOAA is moving toward the NESDIS Common Cloud Framework (NCCF) to decouple data generation from specific RF downlink locations.

- **Aggregate Interference from Mega-Constellations:** The shift from "discrete source" interference to an "aggregate noise floor" problem is a critical concern for global sensing. The scale of new proposals—such as SpaceX's million-satellite filing—threatens to globally blind sensitive radiometers through cumulative RF leakage, requiring a unified international response to update aging regulatory limits (like EPFD).

WGI agreed the following new action:

Actionee	AGN item	Action #	Description	Deadline	Status
Beau Backus/NOAA	**2.2**	WGI/54.08	Provide a report / presentation on the results of the DMiPS project study results in CGMS-55 WGI.	CGMS-55 WGI	**OPEN**

In the discussion, the challenges related to administrations faced with licensing requests for mega-constellations were noted. The administrations need guidance from the satellite operators operating passive sensors needing protection.

The challenges of regulations of ground-based systems, e.g. ground-based telescopes, were also discussed. In this case, global regulations may not be appropriate, but rather local regulations instead.

3. RFI detection, monitoring and mapping

CGMS-54-WGI-WP-07 3.1 Report from the CGMS WGI Task Group on RFI detection, monitoring and mapping (incl. latest ToR, status on current & proposed/planned activities, and use of AI)
(Beau Backus (virtually))

The Task Group on RFI Detection, Monitoring and Mapping (TGRFI) has made significant progress since its 2022 inception in harmonizing international efforts to detect and mitigate radio frequency interference (RFI). A primary milestone for this cycle is the completion of a draft set of "Best Practices for Data Collection Systems (DCS) RFI," which is recommended for endorsement by CGMS-54 to provide a standardized framework for minimizing data loss. These practices emphasize proactive design phases, informal engagement strategies for RFI resolution, and the establishment of robust communication channels between users and operators.

A critical strategic shift identified by the group is the operational necessity of integrating Artificial Intelligence (AI) and Machine Learning (ML) to counter "insidious" spectral contamination from sources like 5G, which often evades legacy statistical detectors by mimicking natural Gaussian noise. Looking ahead, the TGRFI proposes prioritizing the emerging interference challenges posed by the rapid proliferation of Low Earth Orbit (LEO) mega-constellations and the development of rigorous data integrity standards for commercial data buys. Through continued intersessional collaboration, the group aims to

ensure the long-term resilience of global meteorological satellite infrastructure in an increasingly crowded electromagnetic environment.

The key issues of relevance to CGMS are:

- **The Mega-Constellation Crunch:** The rapid deployment of large-scale LEO satellite constellations (like Starlink) presents an unprecedented risk of aggregate interference and out-of-band emissions. CGMS should develop proactive strategies to protect the vital passive sensing bands these constellations threaten.

- **Standardizing Commercial Data Buys:** As agencies move toward purchasing third-party observations, there is a critical need to ensure these commercial datasets meet the same rigorous spectral protection and RFI-flagging standards as member-owned assets. Harmonizing these protocols should maintain the integrity of the global observing system.

- **The "Invisible" AI/ML Shift:** Traditional RFI detection methods are effectively being "blinded" by modern 5G signals that mimic natural Gaussian noise. Transitioning to AI/ML is no longer a research experiment but an operational necessity to limit insidious spectral contamination from corrupting weather and other earth-centric data.

Heikki Pohjola was nominated as a new RFI Task Group member representing WMO.

Based on the discussion, WGI agreed the following new actions:

Actionee	AGN item	Action #	Description	Deadline	Status
RFI TG	**3.1**	WGI/54.09	Evaluate Mega-Constellations: Develop a report for CGMS-55 WGI on strategies to mitigate RFI risks from large-scale LEO deployments.	CGMS-55 WGI	**OPEN**
RFI TG	**3.1**	WGI/54.10	Develop a report for CGMS-55 WGI on standardise Commercial Data Buys with respect to RF spectrum. As part of this, analyse RFI considerations in commercial data buys to ensure these commercial datasets meet the same rigorous spectral protection and RFI-flagging standards as member-owned assets. Harmonizing these protocols should maintain the	CGMS-55 WGI	**OPEN**

			integrity of the global observing system. Share report with WGIII.		

CGMS-54-WGI-WP-20 3.2 Report on status of RFI best practices in the area of DCS - for review/consideration (Beau Backus (virtually))

This document outlined a comprehensive, lifecycle-based framework for managing Radio Frequency Interference (RFI) within satellite-based Data Collection Systems (DCS). It establishes that ensuring operational resilience is a strategic imperative that must be integrated from initial system design through ongoing operations, as a proactive design posture is the most effective and cost-efficient strategy for managing interference. The scope encompasses the end-to-end movement of data , organized into five key stages: planning, monitoring, characterization, mitigation, and removal. Central to these best practices are requirements for flexible hardware, such as reprogrammable transmitters and transparent transponders, alongside the utilization of AI/ML for advanced performance monitoring. Ultimately, the successful removal of RFI depends on both technical signal characterization and the cultivation of strong organizational relationships to influence change in RFI source operations.

Key issues of relevance to CGMS are:

- **Proactive Lifecycle Design and Spectrum Management:** Satellite hardware and spectrum architectures must be finalized early in the acquisition process because modifications post-launch are generally impossible.
- **Advanced Monitoring and AI Integration:** Fundamental system resilience requires the ability to distinguish between nominal and degraded performance through dedicated spectrum monitoring and the analysis of signal metadata.
- **Regulatory Engagement and Collaborative Relationships:** Technical characterization is only one part of the solution; successful RFI removal relies heavily on formal reporting to regulators and maintaining organizational relationships.

The RFI Best Practices in the area of DCS were presented in WGI. WGI noted the excellent work by the Task Group and agreed to propose this for endorsement to CGMS-54 Plenary. It was noted that some of the points in the best practice might be difficult to report against, so possible updates to resolve this are to be identified when the CGMS Agencies operating DCS start reporting against this best practice for the CGMS-55 cycle. If the best practice is endorsed at CGMS-54 Plenary, then regular reporting per agency against the best practice will be expected to start in the CGMS-55 cycle.

WGI/A53.15 is to remain open until the endorsement by CGMS-54 Plenary.

4. Satellite Data and Codes

CGMS-54-WGI-WP-05 4.1 Report from the CGMS WGI Task Group on Satellite Data and Codes (incl. latest ToR, status on current & proposed/planned activities) (Simon Elliott)

The CGMS Task Group on Satellite Data and Codes has been actively supporting the coordination of work on satellite product format issues within the CGMS community and providing support to the work of WMO's expert teams since its first meeting in 2008. The current status of Task Group membership was provided and includes members from CGMS, CMA, EUMETSAT, JMA, KMA, NOAA, SRC Planeta, SSEC, UK Met Office, and WMO. An additional member from ISRO would complement the current composition well.

The paper reviewed the status of the Task Group and its forthcoming activities, including the creation of draft standards for Earth observation data, including formats like Zarr, to ensure compatibility with AI and ML.

The Task Group has worked with the WMO Secretariat and the WMO Expert Team on Data Standards (ET-Data) and its Task Team on Table Driven Code Forms (TTTDCF) on the development of a number of new BUFR encoding sequences and Common Code Table entries. In each case, the Task Group acts as a reference group of experts who are invited to consider and endorse relevant proposals going through WMO's approval process.

During the period since CGMS-53, the entries have been defined in Common Code Table C-5 for satellite identifiers for MicroCarb and WSF-M1.

Also during the period since CGMS-53, the entries have been defined in Common Code Table C-8 for instrument identifiers for TGNOS-M, MicroCarb and the MicroWave Imager on WSF-M (MWI).

The Group welcomed WMO's efforts to ensure that OSCAR/Space includes references to the Common Code Table entries used for satellite identifiers (table C-5). This has been included as the last field of the WMO Integrated Global Observing System (WIGOS) Station Identifier, now shown in OSCAR/Space for many satellites. Heikki Pohjola also noted that the WIGOS station identifier is automatically assigned. The Group will continue to encourage the inclusion of instrument identifiers from C-8.

A WMO Information System 2.0 (WIS 2.0) status was provided There is a variety of satellite data being made available in NRT via WIS 2.0. EUMETSAT is providing all satellite data currently distributed on the GTS via its WIS 2.0 node. Other data available includes INSAT-3DR and -3DS winds from IMD, FY-3E GNOS data from CMA, DBNet data from NOAA/CIMSS, DBNet data from Météo-France, DBNet data from HKO, GEO-KOMPSAT-2A L2 products from KMA. work will continue to support the integration of satellite data onto WIS 2.0 in collaboration with the community.

The topic of format standards for compatibility with AI and ML was also covered. At the last CGMS Plenary discussions, the potential response of CGMS to the AI challenges was discussed, which resulted in the endorsement of four key AI/ML areas to enhance meteorological and space weather data utilisation. The

first one of these topics was "*Data curation standards"*. The purpose of this initiative is to standardise Earth observation data, including formats like Zarr and metadata per CF conventions, to ensure compatibility with AI and ML. As part of the deliverables, the CGMS Secretariat will lead a survey of agencies within the CGMS. Additionally, Working Groups II and IV will collaboratively draft standards that will be reviewed at CGMS-54.

As part of this CGMS WGI (and so this Task Group) was implicitly tasked with creating draft standards for Earth observation data, including formats like Zarr, to ensure compatibility with AI and ML. These should be reviewed at CGMS 54. Efforts to secure expert input on this topic failed to solicit the requisite level of response. The Task Group will again be invited to address this important topic prior to the plenary session; due attention will be given to the presentation given by the co-chairs of WMO's Study Group on Future Data Infrastructure (SG-FIT) under agenda item 4.3.1 at the recent INFCOM Management Group meeting.

CGMS-54-WGI-WP-101 4.2 Proposed update to the WMO Manual on WIGOS
(Simon Elliott)

The existing WMO regulatory framework requires that "core" satellite data must be exchanged using the WIS in a format specified by the WMO Manual on Codes.

Satellite operators commonly make use of community standard formats such as netCDF for data representation. It is proposed to work with WMO to update the Manual on the WIGOS such that "core" satellite data can be exchanged using the WIS in either the standard formats specified by the WMO Manual on Codes or in other standard formats endorsed by CGMS for satellite data.

WGI agreed to the proposed update to the Manual on the WIGOS and agreed to seek the endorsement of CGMS Plenary.

Given the endorsement of CGMS Plenary, the CGMS Secretariat and the WMO Secretariat are requested to work together to prepare a paper for INFCOM-4 addressing the proposed update of the Manual on the WIGOS.

5. Space environment sustainability

CGMS-54-WGI-WP-04 5.1 Report from CGMS WGI Task Group on Space Environment Sustainability
(Andrew Monham & Juha-Pekka Luntama)

This document reported on the background, content of the Terms of Reference and progress achieved for the CGMS WGI Task Group on Space Environment Sustainability (SES), relevant to CGMS member current and planned missions.

The members of the CGMS rely on the sustainability of the space environment to ensure their satellite missions remain able to deliver meteorological and space weather data to global forecasting services. In

this regard, safety on Earth is very much intertwined with safety in space. CGMS has therefore established a Task Group on Space Environment Sustainability which shall address all aspects of operations in the space environment where CGMS member coordination can help improve the safety and sustainability of space operations for all space actors. The objectives include establishing best practices covering Space traffic coordination, lifetime extensions, end-of-life disposal and space weather mitigation of risks and effects. It is foreseen that a proposal on acceptable space traffic coordination practices can be submitted for consideration by UN COPUOS.

Only minor updates to the Terms of Reference were made over the last year, including the development of practical approaches for pre-launch conjunction assessment as required by the UN Long-Term Sustainability Guidelines.

Membership of the Task Group has been sufficient to allow a meaningful exchange to take place, but would still benefit from the participation of currently unrepresented agencies (particularly in the domain of space safety and situational awareness). Identification of experts from member organisations who can support offline analyses of the Task Group is key to progressing on the objectives of the Task Group and active participation of experts from ESA, EUMETSAT and NOAA has allowed progress to be made in discussions of conjunction analyses and other space safety aspects. A broader participation of agencies remains critical to achieving the goals of this Task Group. The Task Group would benefit from members from further organisations, including CNES, IMD, ISRO, JMA, ROSCOSMOS, ROSHYDROMET.

The top priority of the Task Group is to produce best / acceptable practices for Space Traffic Coordination (collision avoidance, active on active satellite coordination practices). The second priority are the tasks/actions related to space weather observation requirements for improved STC services and space sustainability and reviewing current usage of space weather data for spacecraft operations and goals for improvement.

The progress of all actions was presented.

The Best practices preparation (WGI/A50.07) are progressing well. The Task Group has been able to gather sufficient information from a subset of CGMS members to allow meaningful comparisons and analyses towads a best practices definition. Inputs have been received from CMA, ESA, EUMETSAT, JAXA, NASA and NOAA. Further inputs welcome. It is recommended to keep the action open until CGMS-55, noting that UN LTS Guideline mapping shall also be included in the deliverable document. A draft Best Practice document still to be presented, with mapping to UN Long-Term Sustainability Guidelines. Presenting the draft Best Practice (BP) document at CGMS-55, with mapping to UN Long-Term Sustainability Guidelines, should be achievable, but requires:

- Further offline analysis with the support of member agency experts;
- Additional CGMS member inputs to ensure the BPs are representative and feasible for the wider membership.

The discussion confirmed that assessing the commercial operators landscape is also something that will be included in the future work.

WGI agreed to close the action on defining the requirement for supplying owner/operator orbit and manoeuvre information to TraCCS and identifying steps for implementation (WGI/A53.04). NOAA has provided detailed information based upon their own experience, using publicly available TraCSS document links and example files from the NOAA GOES mission (a TraCSS pilot user). This should help other CGMS operators with example OCM and CDM formats before the service enters the production/public phase.

The action on producing a report on modelling of thermospheric density impacts (WGI/A53.05) remains open and is progressing. The Task Group is working on building a table of thermospheric density models and related studies to facilitate intercomparison. ESA first inputs provided and CCMS experts inputs are expected via NASA. Inputs from other agencies are requested.

WGI agreed to close the action on presenting the overall landscape on SES in TG intersessionals (WGI/A53.06). It has been identified that a significant review of the overall landscape of SES topics is presented in the September 2024 European Space Policy Institute report: "*A Party for Everyone? Analysing international efforts in space debris mitigation" (https://www.espi.eu/reports/a-party-for-everyone-analysing-international-efforts-in-space-debris-mitigation/).* This report offers a comparative analysis of key international instruments aimed at mitigating space debris, enhanced by detailed insights on their evolution. It is noted that "the report highlights a lack of broad international alignment on concrete implementation pathways and a fragmented landscape of a multitude of frameworks with heterogeneous involvement."

Indeed, the CGMS SES Task Group could be considered as belonging to that fragmented landscape, but is considered valuable as experienced operators with global scope have a direct forum to discuss and improve the implementation pathways to meet ever stricter debris mitigation standards and regulations. The SES TG is one of many groups focussing on space safety and traffic management. However, most are aimed at defining requirements rather than exchanging experience in implementation of those requirements and aligning implementation methods. The closest body in terms of scope and objectives would appear to be the Space Safety Coalition (SSC). An invitation has been made for the SSC to present their work at an upcoming SES TG meeting. Scope for further cooperation will be examined.
The action on developing a paper on CGMS work on SES for presentation at IAC in 5-9 October 2026 (Antalya, Turkey) remains open, but is progressing well. The Abstract: "Coordination of Space Environment Sustainability Approaches in the Coordinated Group for Meteorological Satellites (CGMS)" has been accepted for presentation at the 77th IAC in the Space Debris Symposium. Action to remain open until paper developed / presented at the IAC and feedback provided to the SES TG for reporting at CGMS-55.

The action on reviewing current usage of space weather data for spacecraft operations and goals for improvement (WGI/A53.08) remains open. Space weather information is split on two tables separating the Space Traffic Coordination needs from the "safety of space operation" related information. Only ESA inputs have been provided so far, no further inputs made since CGMS-53. ESA will provide more details

to facilitate comparison with other agencies' approaches and achieved accuracy. Inputs from other agencies are expected soon.

The action on producing a report of space weather observation requirements for improved STC services and space sustainability (WGI/A53.09) remains open. A report is to be produced following delivery and analysis of inputs from WGI/A53.08.

The proposed intersessional dates up to CGMS-55 were presented. Opportunities for face-to-face discussions as side meetings in other conferences shall also be considered.

The Metop-A/Metop-B deorbiting approaches were discussed.

A question was raised noting previous expectations of two best practices – one on Space Traffic Coordination and one on Space Environment Sustainability. It was clarified that Space Traffic Coordination is one of the components of SES, so there is one Best Practice on SES being prepared, which includes this in its matrix.

Mikael Rattenborg asked about the Zero Debris policies being referred to in the HLPP. This is taken into consideration in existing actions, but not driven by CGMS.

WGI agreed the following new actions:

Actionee	AGN item	Action #	Description	Deadline	Status
TG on Space Environment Sustainability	**5.1**	**WGI/54.01**	Assess overlap and scope for coordination with the Space Safety Coalition and the ESA Zero Debris Working Group. As part of this, SSC and ESA Zero Debris WG will present their work at an upcoming SES TG meeting.	CGMS-55 WGI	**OPEN**

6. Low latency data access

CGMS-54-WGI-WP-03 6.1 Report from the CGMS WGI Task Group on Low Latency Data Access (incl. latest ToR, status on current & proposed/planned activities, and global data low latency acquisition)
(Antoine Jeanjean & Andrew Monham)

The Low Latency Data Access Task Group was formed from the merger of the former Direct Broadcast Task Group and the Coordination of LEO Orbits Task Group.

The LLDA Task Group provides a forum for CGMS agencies to address improving LEO satellite systems low latency data access from both a global and regional perspective, harnessing common emerging

technologies and taking account of the evolution of the commercial and agency space systems. It is foreseen that historical boundaries between global and regional mission requirements and architectures may be substantially eliminated.

The Terms of Reference presented at CGMS-53 has been updated to include the document Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis of Low Latency Data Access from LEO Meteorological Satellites" [CGMS-52-EUMETSAT-WP-13] as a living document for yearly presentation.
The SWOT analysis is presented separately with a proposal to close the ACTION WGI/A52.02 and raise a new action (see details in Agenda Point 6.5).

It has been concluded that it is premature to establish a low latency data access BP for the global mission (in response to the action A53.02). The Task Group shall follow the technological innovations identified in the SWOT analysis, and specific actions are recommended to further analyse potential for additional partnerships on ground segment acquisition as well as the potential for orbit coordination on future missions.

The LLDA TG Co-chairs are Andrew Monham and Antoine Jeanjean. Following CGMS-54, it is proposed that Andrew steps down and Nick Coyne will co-chair with Antoine. WGI endorsed Nick Coyne as the new TG Co-Chair.

The progress of actions was presented.

WGI agreed to close the action on identifying concrete CGMS actions based on the LLDA SWOT (WGI/A52.02). The Task Group work has concluded that no further actions required on the commercial sector, data relay constellations and cloud services (refer to slide 8 of CGMS-54-EUMETSAT-WP-03). Instead, a new action is proposed to enhance the SWOT analysis for CGMS-55, including report on feasibility and applications of phased array and identification of AI applications opportunities withing the scope of the LLDA TG, in coordination with WGII.

The action on arranging a DBNet presentation in CMGS-54 WGI (WGI/A53.01) was closed by the respective gues presentation by Liam Gumley.

WGI agreed to close the action on reporting on the status of the global data low latency acquisition best practices in favour of new actions (WGI/A53.02). Whereas direct broadcast technologies and operational partnerships are very mature and have been operational for many years, the same is not true for (very) low latency global data acquisition. Technologies such as inter-satellite data relay, phased array ground antennas, cloud data processing and dissemination services are being investigated, but not yet operational in CGMS agencies. Operational partnerships allowing coordination of phased orbits and sharing of additional ground infrastructure in support of global data acquisition is only done to a limited extent. Conclusion is that it is premature to establish a low latency data access BP for the global mission. New actions to be opened instead on assessing the value obtained from existing global data acquisition partnerships (such as between EUMETSAT and NOAA in the sharing of Svalbard and McMurdo data acquisitions) and estimate the projected value of wider cooperations (additional agencies, additional

stations). As well as a new action on identify future opportunities for coordination of LEO orbits with a view to synchronised phasing (taking into account the work of the Coordination of LEO Orbits TG: CGMS-49-EUMETSAT-WP-05) and estimate potential value compared to uncoordinated systems. Furthurmore, the LLDA TG to keep abreast of technology developments and adoption by CGMS agencies, which will be achieved through the ongoing work on the SWOT analysis.

Actionee	AGN item	Action #	Description	Deadline	Status
LLDA TG	**6.1/6.5**	**WGI/54.02**	Assess the value obtained from existing global data acquisition partnerships (such as between EUMETSAT and NOAA in the sharing of Svalbard and McMurdo data acquisitions) and estimate the projected value of wider cooperations (additional agencies, additional stations). Present a report and proposals to CGMS-55 WGI.	CGMS-55 WGI	**OPEN**
LLDA TG	**6.1/6.5**	**WGI/54.03**	Identify future satellite programme opportunities for coordination of LEO orbits with a view to synchronised phasing (taking into account the work of the Coordination of LEO Orbits TG: CGMS-49-EUMETSAT-WP-05) and estimate potential value compared to uncoordinated systems. Present a report and proposals to CGMS-55 WGI.	CGMS-55 WGI	**OPEN**

CGMS-54-CMA-WP-01 6.2 Operational Direct Broadcast Systems Status Report & Status of Implementation of Best Practices at CMA (YANG Lei (virtually))

This paper presented the status of operational direct broadcast systems and implementation of the CGMS Agency Best Practices at CMA in support of Local and Regional Processing of LEO Direct Broadcast data (CGMS/DOC/18/1008274). NSMC/CMA (National Satellite Meteorological Center, China Meteorological Administration) has consistently supported DBnet operations. Currently, five polar orbiting meteorological satellites are in orbit: FY-3D, E, F, G, and H. Among them, D, E, F, and G are already operational, and DB (Direct Broadcast) software is available. FY-3H is scheduled to start operational service in July 2026. According to the plan, the DB software package, satellite-ground interface documents, Two-Line Element (TLE) files, hyperspectral channel selection principles, auxiliary files, and satellite-ground link calculations will be provided one month after the operational service. All those technical support can be downloaded through the official website.

CGMS-54-EUMETSAT-WP-01 6.3 Operational Direct Broadcast Systems Status Report & Status of Implementation of Best Practices at EUMETSAT (Antoine Jeanjean & Andrew Monham)

This paper presented the status of operational direct broadcast systems and implementation of the CGMS Agency Best Practices at EUMETSAT in support of Local and Regional Processing of LEO Direct Broadcast data (CGMS/DOC/18/1008274) for each of the METOP and EPS-SG LEO satellite missions. This paper also introduced available direct broadcast information about the EPS Sterna constellation. The EPS-Sterna information present in this document may evolve depending on the development of the programme.

CGMS-54-NOAA-WP-01 6.4 Operational Direct Broadcast Systems Status Report & Status of Implementation of Best Practices at NOAA (Toby Hutchings (virtually))

This paper presented the status of operational direct broadcast systems and implementation of the CGMS Agency Best Practices at NOAA in support of Local and Regional Processing of LEO Direct Broadcast data (CGMS/DOC/18/1008274) for each of the S-NPP, NOAA-20 and NOAA-21.

CGMS-54-EUMETSAT-WP-03 6.5 Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of Low Latency Data Access from LEO meteorological satellites (incl. associated CGMS future direction themes) (Antoine Jeanjean & Andrew Monham)

The core meteorological satellite systems in LEO orbits, and other operational satellite systems where applicable, should ensure low latency data access of imagery, sounding, and other real-time data of interest to users. Application areas where low latency and availability is suitable include Severe Weather Monitoring, Nowcasting and Short and Medium-Range Numerical Weather Prediction. Other application areas could also benefit from very low latency products, e.g. ionospheric monitoring. Today, LEO meteorological satellites have two distinct services for providing low latency data to users:

- Global service: where the full orbit data is stored onboard and served at the pole(s);
- Regional or local service: real time dissemination of instruments data to a network of direct broadcasts stations.

This CGMS paper analysed the Strengths, Weaknesses, Opportunities, and Threats (SWOT) of current LEO weather satellites systems to identify how low.

In response to WGI/A52.04, the Task Group's SWOT analysis identified 4 priorities areas which are:

1. Commercial LEO weather data: Commercial radio occultation data from LEO satellites (Spire, PlanetiQ). Plan for commercial microwave sounding by 2030.
2. Satellite data relay services: GEO and LEO relay services.
3. Ground stations services: Ground stations as a service, which may offer phased array technology.
4. Cloud services

These themes have been already covered in previous CGMS documents, which are referenced in this paper [CGMS-54-EUMETSAT-WP-03].

Based on this, WGI agreed to close WGI/52.04. No further actions required on the commercial sector, data relay constellations and cloud services (refer to slide 8 of the presentation).

The WGI Co-chair asked that the Task Groups also note the developments of commercial constellations, e.g. in China.

WGI agreed the following new action:

Actionee	AGN item	Action #	Description	Deadline	Status
LLDA TG	**6.1/6.5**	**WGI/54.04**	Enhance SWOT analysis for CGMS-55. Report on feasibility and applications of phased array. Identify AI applications opportunities within scope of LLDA task group, in coordination with WGII.	CGMS-55 WGI	**OPEN**

CGMS-54-GUEST-WP-05 6.6 Direct Broadcast Network (DBNet) Presentation
(Liam Gumley (virtually))

Liam Gumley, Chair of the WMO DBNet Coordination Group, CIMSS/SSEC/UW-Madison, gave a virtual presentation on the Status of the Direct Broadcast Network (DBNet) for global real-time acquisition, processing, and delivery of satellite direct readout data, coordinated by WMO.

The DBNet concept and objectives were highlighted. DBNet ensures the global availability of near real-time LEO data received by a collection of Direct Broadcast stations distributed around the world. Global consistency is ensured by common software (i.e. AAPP, CSPP, FY3PP) consistent with global processors, standardized coding and file naming, and quality monitoring. The data are disseminated by the WMO Information System (primarily GTS/WIS 2.0). DBNet is coordinated by WMO Space Programme and supported by CGMS.

DBNet is composed of networks coordinated by regional and the DBNet Coordination Group (https://community.wmo.int/direct-broadcast-network-dbnet). Global monitoring of product consistency is performed by EUMETSAT NWP-SAF (http://nwpsaf.eu/site/monitoring/dbnet/).

The presentation gave an overview of the current DBNet services, the DBNet coverage, the DBNet processing scheme and the NWP-SAF monitoring.

The status of transition from GTS to WIS 2.0 was provided. Full channel sets of IASI and CrIS data from NOAA-20, NOAA-21, Metop-B, and Metop-C, disseminated by NOAA DBRTN, are already available today via WIS 2.0.

The high priority DBNet activities in the coming years were also presented.

WGI agreed that an important takeaway message is to encourage all satellite operators to continue to develop and maintain valuable software packages such as AAPP, CSPP, FY3PP. It was noted that a review of the CGMS website DB webpages should be carried out on a regular basis.

The following new action was agreed:

Actionee	AGN item	Action #	Description	Deadline	Status
LLDA TG	**6.6**	**WGI/54.05**	Present CGMS direct broadcast BP in DBNet meeting	CGMS-55 WGI	**OPEN**

7. Data Collection Services

CGMS-54-WGI-WP-06 7.1 Report from the CGMS WGI Task Group on Data Collection Services (incl. latest ToR, status on current & proposed/planned activities) (Nicholas Coyne)

This paper presented the report from the WGI Task Group on Data Collection Services (DCS). The creation of the group was endorsed at CGMS-46. This report covered the group's activities since CGMS-53.

The Task Group on DCS, consisting of DCS Managers from each of the satellite operators, have met regularly as part of the virtual WGI Intersessional meetings. In addition to the regular intersessional meetings the Task Group plans to convene a DCS workshop every 2 years. The goal of this workshop is to facilitate interactions between the operators, users and manufacturers.

The Task Group has continued its work on the EDCP implementation (WGI/A52.03). To date, NOAA has incorporated the EDCP standard into ongoing communication protocol efforts. This is significant because it highlights the value of the CGMS Task Group's collaboration in that even without resources, sharing information can assist in standardizing activities that may benefit other groups. In a free and open exchange of information with all DCP manufacturers and DCP operators, NOAA has been able to incorporate feedback into current efforts for developing and testing the EDCP standard. Microcom has updated software for GOES DCS-based ground infrastructure and demonstrated its capabilities with successful in-ground tests. Additionally, EDCP transmitters have been built by Microcom to be launched in future Small Sat missions.

While initial analysis suggested a potential need to reduce rates to 350/750 bauds, the group has confirmed that the standard will move forward at 400 and 800 bps. Analysis by Microcom determined that transmitting a full data header with every transmission added 0.13 seconds of overhead. While considered "acceptable," the Task Group has opted for a rotating field approach, as proposed by Signal Engineering. Instead of transmitting all metadata in every transmission, the system will cycle through various fields across different transmissions. These fields include: GPS Coordinates (latitude/longitude), radio health, firmware version, battery voltage and power status.

EUMESAT is now investigating how they may incorporate similar updates to their system for the same purpose. This ongoing effort will be subject to the associated risk of relying on individual agency resources, but the Task Group remains optimistic that the DCP Standard represents a transformational capability to improve and expand the capabilities of DCS operations within the timeline established by the group.

The previous proposal for a multi-phase rollout (where headers were added only in late-stage Phase D) has been dismissed. The standard will now be defined in a single release:

- **Phase A (Definition):** Introduction of BPSK (400 bps) and QPSK (800 bps) modulation, Forward Error Correction (FEC) elements, and the new rotating DCP header for metadata
- **Phase B (Certification):** Formal certification as defined in Phase A
- **Phase C (Operations):** Full operational deployment of the new standard

The current revised schedule for the EDCP looks as follows:

- **2026:**
    - Confirm the project funding plan – addressed with this document
    - Produce and test a prototype transmitter
    - Modify one of the receive sites to enable the reception of the EDCP
    - Microcom receivers are compliant. EUMETSAT TBC
    - Test the system and verify the performance of the prototype and ensure it covers the different modes
    - Certify the EDCP transmitters from the manufacturers
    - Modify the reception systems of all agencies
    - Test the reception for all agencies and satellites
- **2027:**
    - Declare EDCP operational

The Task Group continues to follow the progress of the Smallsat project. NOAA and EUMETSAT, with JMA observing, demonstrated the operational use of the Data Collection System (DCS) by a LEO satellite, identifying its operational purpose and potential benefits. The successful launch and testing have determined that DCS can support satellites equipped with a DCS transmitter and thus provides an alternate approach for small sats to use the UHF band in a shared manner with other DCS users. Since its successful launch on 4 July 2024, TechEdSat-11 has successfully transmitted DCS messages from a LEO platform, demonstrating interoperability with various DCPRs, specifically on GOES-E, GOES-W, Meteosat-10 and Meteosat-12. The satellite completed validation testing and achieved its project goals, including reliable message transmission and coordination with GOES and Meteosat DCPRs. Testing at various power

and data rates, including specific tests at 1W and 1200bps, demonstrated that lower power level than originally thought could be used with acceptable error rates. Based on that success, the project is deemed to be operationally viable. TES-11 achieved full success criteria by transmitting messages to multiple DCPRs, with performance meeting, and in some instances exceeding, mission goals. The satellite demonstrated long-duration error-free message transmission and reception, showing the ability to receive well at low power. An unusual effect of “ghosting” and “smearing” of received transmissions has been observed, likely due to Doppler differences between the spacecraft and the Earth. This effect was not observed in ground receptions and is believed to be caused by signal reflections from the Earth's atmosphere or water. Overall, Satellite use of DCS has been successfully validated both conceptually and operationally. Future missions (TES-16 and TES-23) are being planned. TES-16 is a 12U satellite expected to be launched in summer 2026 or December 2026. TES-23 will be placed into a GEO transfer orbit to further demonstrate DCS capabilities from different altitudes. Both missions will use EDCP format and carry a transmitter capable of both EDCP and legacy modes, ensuring compatibility with EUMETSAT reception even ground necessary changes are delayed. Next steps also include determining the policy and regulations for satellite use of DCS by respective organizations and the Coordination Group of Meteorological Satellites (WGI/A52.06).

The Task Group also presented an overview of the topic of scintillation and its relevance to DCS (WGI/A53.10). The interest in the space weather effect Ionospheric Scintillation remains relevant to CGMS DCS organizations. There is also academic interest in studying these phenomena. To that end, NOAA has coordinated with researches at Boston College and Florida State University to develop an “S” measurement that samples signal strength during a DCP transmission and produces an S_{DCS} metric to accompany other DCS statistics. This S_{DCS} metric has been deployed to the development system at the NOAA GS at Wallops Island, VA. GNSS RO data is traditionally used for this purpose, so employing a DCS to investigate this phenomenon is a novel approach. Preliminary analysis of datasets containing the S_{DCS} metric are revealing interesting opportunities. For example, measurement differences between the NOAA site and a ground station operated by Microcom indicate that it may be possible to investigate Scintillation in both the DCP UHF uplink and the Geostationary Downlink by comparing data between ground stations. Furthermore, S_{DCS} measurement coincided with recent solar flare events. Previously, the focus of S_{DCS} was on Coronal Mass Ejections (CMEs) due to the longer lasting effects of the resulting geomagnetic storms. Using the S_{DCS} to analyse the shorter duration acute effects of solar flares in new from a DCS perspective. Use, validity, and final application of this metric are still in very early stages but the S_{DCS} metric offers the potential to provide data outage root cause information to DCS operators as well as supporting space weather organizations seeking free data from thousands of platforms transmitting through the ionosphere. WGI endorsed the proposal to further investigate the Ionospheric Scintillation and its potential use with DCS transmissions. WGI agreed that a more detailed presentation on scintillation should be presented at one of the SWCG TG meetings.

The Task Group has also worked extensively on the topic of RFI in relation to DCS. Existing electromagnetic radio, increased use of the spectrum, and spectrum sharing are the sources of current and potential RFI. One of the dilemmas facing DCS operators is that sources of interference may originate from various terrestrial or space-based locations and in different frequency bands. Traditionally, the burden of identifying the impact of RFI, the location of RFI, the mitigation of RFI and removal of RFI, if possible, is

the responsibility of the operator. In many cases, locating RFI on a hemispheric level is extraordinarily challenging due to available resources. Furthermore, reporting RFI to a regulatory agency requires that the report specifies the location. Thus, without a location the RFI cannot be reported and may not be considered for purposes of broader RFI awareness. The Task Group on DCS has collaborated with the Task Group on RFI to discuss this issue and have determined that an RFI Register would be an appropriate method to document existing RFI issues being experienced by CGMS DCS operators. The first current DSC RFI Register is enclosed (CGMS-54-WGI-WP-102). NOAA was able to coordinate removal of two interference sources since CGMS Workgroup 53. The Task Group on DCS has also drafted a CGMS Agency Best Practices in Planning, Monitoring, Mitigating, and Removing Radio Frequency Interference in Data Collection Systems (DCSs) for the Task Group on RFI.

With respect to the topic of WIS 2.0, discussions have taken place on the implementation on WIS 2.0 for DCS and also making and attempt to have a consolidated interagency report (WGI/A52.04). Nothing concrete has been decided yet. EUMETSAT has not migrated to WIS 2.0. This is expected in summer 2026 by entering a parallel operations phase of at least 6 months to transition data flows from GTS to WIS 2.0. It will be necessary to categorize DCP messages into one of seven Earth system disciplines and adopt an MQTT-based retrieval process where, during a transition phase, base64-encoded DCP data is embedded directly in the notification messages. NOAA has not migrated to WIS 2.0. NOAA DCS representatives have been notified that the NOAA National Weather Service (NWS) has been tasked to migrated to WIS 2.0 by 2030. NOAA DCS will continue to collaborate with EUMETSAT and will coordinate with the NOAA NWS on their implementation plans for WIS 2.0.

WGI agreed that a DCS Workshop should be planned in accordance with WGI/A53.10.

The existing WGI DCS actions were updated accordingly.

Reference was also made to the best practices on DCP TX certification process and DCP data access (CGMS website publications).

CGMS-54-EUMETSAT-WP-04 7.2 Operational DCS status report incl. EDCP implementation plans + status of implementation of best practices (EUMETSAT), (Nicholas Coyne)

This presentation provided the status of the EUMETSAT Data Collection Services (DCS) (GMS-54-EUMETSAT-WP-03). These are currently supported Meteosat-12 (MTG) at 0° and Meteosat-9 at 45.5°E (MSG). MTGI1 took over the 0° DCS service on 25 January 2025.

The paper includes details of channel utilisation, DCP allocation, geographical distribution and DCP data dissemination mechanisms. The DCS is one of the core services operated by EUMETSAT in support of meteorology and weather prediction.

The EUMETSAT DCS currently supports both standard-rate (100bps) and high-rate (1200bps) DCPs. The prime IODC application is for the Indian Ocean Tsunami Warning Network (IOTWS). As of 15 March 2026, there are a total of 1861 DCPs allocated, with 600 actively transmitting. Out of those DCPs allocated, 800

are HRDCPs transmitting at 1200 bps (771 supported by Meteosat-10 at 0° and 29 by Meteosat-9 at 45.5°E). The remaining 1061 are Standard Rate DCPs (928 supported by Meteosat-12 (MTG) at 0° and 133 by Meteosat-9 (MSG) at 45.5°E). The EUMETSAT DCS had a reliability greater than 99% during the reporting period (from 1 January 2025 to 31 December 2025).

CGMS-54-ISRO-WP-01 7.3 Operational DCS status report incl. EDCP implementation plans + status of implementation of best practices (ISRO), (Himanshu Kumar (virtually))

ISRO has an effective meteorological data collection system based on INSAT & GSAT series of satellites and through associated ground infrastructure. Currently three satellites INSAT-3DR, INSAT-3DS, and GSAT-17 carry data relay transponders that help in collecting real-time data for meteorological, hydrological, and oceanographic applications. The India Meteorological Department (IMD) has established necessary ground infrastructure as well as dissemination mechanisms to provide the necessary service to the users. Various operational products are generated and disseminated using the IMD platforms.

In 2025, 15 cyclones were monitored and real-time alerts were generated including 3 land falling cyclones (Montha, Senyar and Ditwah).

CGMS-54-JMA-WP-02 7.4 Operational DCS status report incl. status of implementation of best practices (JMA), (Kazuki Yasui)

The Japan Meteorological Agency (JMA) has operated the Data Collection System (DCS) since its first Geostationary Meteorological Satellite (GMS) went into operation in 1978. The system plays important roles in collecting meteorological information as well as seismic intensity and tidal/tsunami data collaborating with the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS). Himawari-8's DCS has been operational since July 2015, and Himawari-9 took over the DCS service in 2022 and will continue in this role until 2029.

Recently, a number of DCPs have stopped using Himawari-DCS and started using commercial communication satellites instead (11 tidal DCPs in 2025).

As of March 2026, the following DCPs are supported:

- 154 for surface meteorological observation
- 44 for tidal/tsunami (UNESCO/IOC)
- 370 for seismic intensity in Japan
- 8 for mobile surface meteorological observation in Japan

JMA has decided that the planned Himawari-10 program set to replace Himawari-8/9 will assume the same DCS. Related discussions at CGMS WGI are expected to be helpful for future Himawari-DCS.

The paper included the JMA status of implementation of the CGMS Best Practices in support to DCP data access. JMA is compliant with most of the best practices.
Regarding The Best Practices in Support to DCP TX Certification Process, JMA does not require certification for DCP transmitter manufacturers.

CGMS-54-NOAA-WP-02 7.5 Operational DCS status report incl. EDCP implementation plans + status of implementation of best practices (NOAA), (William (Skip) Dronen (virtually))

The GOES DCS is an environmental data relay system that supports the collection of over one million messages per day from over 33,000 active DCPs throughout the Western Hemisphere. The GOES DCS Program has 721 user agency agreements representing 50 countries.

Use of GOES DCS continues to expand.

Collaborations with CGMS have resulted in progress exploring more robust communication protocols and an Enhanced Data Collection Platform (EDCP) Standard that may benefit all DCS operators. The EDCP Standard and other initiatives in progress at NOAA offer potential to improve system performance and mitigate external factors impacting GOES DCS such as RFI.

The GOES DCS has implemented all applicable Best Practices that can be employed on the current system. Any minor differences in Best Practices are related to the existing concept of operations for GOES DCS and NOAA's data delivery model.

CGMS-54-ROSHYDROMET-WP-01 7.6 Operational DCS status report incl. EDCP implementation plans + status of implementation of best practices (ROSHYDROMET), (TBC)

This paper addressed the current status and technical specifications of the Russian data collection system and related future plans. The DCS is established to provide collection and distribution of meteorological data from the remote areas and to support natural hazards warning systems. Roshydromet has developed and deployed the national DCS based on geostationary meteorological satellites Electro-L No.2, No.3, and No.4 (14.5W, 76E, 165.8E) with a backup option via Luch- 5 series communication satellite and highly elliptical orbit satellites Arctica-M No.1 and No.2. There are 698 DCPs currently deployed. DCPs are distributed all over the Russian territory, including 141 DCPs in hard-to-reach areas. The composition of the spacecraft constellation will be further revised with the end of geostationary Electro-L No.5 satellite testing.

8. WGI coordination Items

8.1 International cooperation

CGMS-54-ISRO-WP-11 - Highlights of the outcome of the International Conference on Spacecraft Mission Operations (SMOPS-2026) (TBC - Govind (virtually))

The presentation of this topic was agreed to be covered in the Joint WGI-WGIV-SWCG instead.

8.2 Outcome of the latest CGMS Risk Assessment Workshop and any implementation aspects for WGI

CGMS-54-WGIII-WP-12wgi Status and outcome of the 8th CGMS risk assessment, (Melissa Johnson (NOAA))

CGMS conducts an annual risk assessment against the CGMS baseline to track how well CGMS is meeting its commitments.
The outcomes of the 8th CGMS Risk Assessment were presented. Highlights of this year's risk assessment:

- **Radio Occultation (Atmospheric Temperature, Humidity, and Ionospheric Electron Density)**: A high risk of not meeting the CGMS Baseline commitment in low-inclination RO observations after COSMIC-2 at the end of this decade. The SWCG made a recommendation to WGIII how to separate RO and Ionospheric Electron Density profiles in the CGMS Baseline and Risk Assessment, and the IROWG to articulate and present the risk level and potential impacts associated with a gap of low inclination RO.
- **UV Limb Spectrometer (Aerosol, Atmospheric Composition: O_3):** Risk of not meeting the CGMS Baseline commitment in the mid-morning orbit in the mid-2030s. WGII is investigating other capabilities for UV limb sounding to complement JPSS.
- **SWIR Imaging Spectrometer (Atmospheric Composition: CO_2, CH_4):** Slight risk of not meeting CGMS Baseline commitment in the mid 2030s in the afternoon orbit. GHG TT via WGII has action to indicate if SWIR missions for CH_4 and CO_2 be added to the baseline.
- **Precipitation Radar (Precipitation):** Slight risk of not meeting the GGMS Baseline commitment in the early 2030s.
- **Scatterometry (Ocean Surface Winds):** Risk of not meeting the CGMS Baseline commitment in the afternoon orbit in the early 2030s.
- **Energetic Particle Sensor LEO (Magnetospheric):** Risk of not meeting the CGMS Baseline commitment in the afternoon orbit in the early 2030s.

CGMS-54-CGMS-WP-16wgi CGMS baseline document updates proposed from the 8th risk assessment workshop, For information (for discussion in WGIII)

The CGMS baseline document updates proposed from the 8th risk assessment workshop were provided for information.

8.3 Future direction 2022+ initiative

CGMS-54-CGMS-WP-3wgi Future direction: Proposal on the way forward (Antoine Berment)

The CGMS-51 Plenary endorsed the CGMS future direction 2022+ strategic themes.

Since then, the strategic themes have been integrated into the working structure of the CGMS Working Groups and progress has been made in several areas. From the perspective of the CGMS Secretariat, the initiation phase has been concluded.

This working paper provided an overview and proposed a way forward for each of the themes.

It was discussed that there will also be a presentation in WGIV and WGIII on the way forward.

Overall, themes are not being closed. They are covered in CGMS via the Task Groups.

8.4 CGMS High Level Priority Plan (incl. review, status of implementation, proposed updates)

CGMS-54-CGMS-WP-36wgi Status of implementation of CGMS High Level Priority Plan (2025-2029) (Mikael Rattenborg)

This working paper provided the status of implementation of CGMS High Level Priority Plan (2025-2029). It also listed proposals for changes to the HLPP targets. WGI reviewed and provided inputs to the current status of the HLPP.

CGMS-54-WGI-WP-100 Identification of top priorities for WGI, (Discussion)

The top priorities for WGI were discussed as part of the review of the HLPP and reflected in the HLPP accordingly.

8.5 WGI action items and recommendations (incl. review/updates of existing and proposed new action items and recommendations)

CGMS-54-WGI-WP-10 Status review of CGMS-53 actions and recommendations, and any CGMS-53 plenary actions relevant to WGI (Co-chairs / Rapporteur)

WGI discussed the actions and recommendations from previous CGMS plenary sessions (CGMS-53 and earlier). The status of the open actions on and recommendations for WGI were reviewed and updated.

CGMS-54-WGI-WP-11 Review of any new WGI actions resulting from CGMS-54 (Co-chairs / Rapporteur)

WGI reviewed the new actions resulting from CGMS-54 WGI's discussions and the inputs from participants were considered to update the actions as needed.

8.6 Future WGI sessions (incl. dates for future plenary and intersessional meetings, proposals for new agenda items)

CGMS-54-WGI-WP-12 Decision on dates on WGI intersessional activities in 2026-2027 (CGMS-54 to CGMS-55), (Co-chairs / Rapporteur), (for discussion)

The paper guided the discussion on planning the dates and formats of the WGI activities between CGMS-54 and up to and including CGMS-55.

WGI agreed on the WGI and Task Group intersessional meeting dates up to CGMS-55.

The proposed dates for CGMS-55 WGs and Plenary were presented.

9. Any other business

None.

10. Meeting Conclusions

CGMS-54-WGI-WP-13 Agreement on outcomes, conclusions & preparations of WGI report for plenary (Co-chairs / Rapporteurs)

The WGI Co-Chairs and Co-Rapporteur thanked the WGI meeting participants for their valuable contributions to a successful meeting.

End of WGI meeting

LIST OF WGI ACTIONS FOLLOWING CGMS-54 PLENARY DISCUSSIONS

Action #	Actionee	AGN item	Description	Action feedback/closing document	Deadline	Status
WGIV/A49.02	TG SDC, WMO	WGIV/5	The CGMS Task Group on Satellite Data and Codes to work closely with WMO on addressing the following points: i. Linking between OSCAR/Space and the WSI and/or CCT C-5 identifiers (WMO internal) ii. Potential extension of the use of the Issue Number in the WSI for satellites in order to explicitly indicate metadata which are otherwise only implicitly embedded in the Local Identifier (CGMS-50) iii. Identification of when and how the WSI should be included in the satellite products exchanges in the context of the WIGOS (CGMS-50) (ref CGMS-49-WMO-WP-08)	13 Apr 2026 (WGI): In many cases the WIGOS Station Identifier is visible on OSCAR database. Keep open until Instrument identifier is also added. 25 March 2025 (WGI): Action not reviewed 2024 Nov 26: Visible progress on WMO OSCAR. WIGOS station identifiers have been included for satellites on WMO OSCAR (not for all satellites, but for some). …	CGMS-53 WGI	**OPEN**
WGI/A50.07	TG SES	5.1	Deliver a Best Practice document on Space Environment Sustainability, with supporting presentation to CGMS WGI, for recommendation for endorsement in CGMS-52.	2 Jun 2026: BP document presented and endorsed at CGMS-54 plenary. 13 Apr 2026: Work ongoing. The Task Group has been able to gather sufficient information from a subset of CGMS members to allow meaningful comparisons and analyses towards a best practices definition. Inputs have been received from CMA, ESA, EUMETSAT, JAXA, NASA and NOAA. Further inputs welcome. It is recommended to keep the action open until CGMS-55, noting that UN LTS Guideline mapping shall also be	CGMS-55 WGI	**CLOSED**

				included in the deliverable document. A draft Best Practice document still to be presented, with mapping to UN Long-Term Sustainability Guidelines. 17 Feb 2026: Plan is to present BP in CGMS-54 WGI. …		
WGI/A51.04	TGRFI	3.1	Analyse the inputs provided by CMA, EUMETSAT, KMA and NOAA on spectrum concerns and activities on RFI detection, monitoring and mapping, and pursue the establishment of a draft set of best practices, based on the common aspects of the approaches already adopted by members.	2025 Mar 25 (WGI): WGI agreed to present to CGMS-53 Plenary as a "Guidance report on RFI Detection, Monitoring, and Mapping for Remote Passive Sensors" for information / analysis 2025 Feb 11: Best practice will be presented in WGI meeting. 2024 Nov 26: Best Practices for RFI. The group has determined that 2 BPs are needed - passive sensor RFI (which will be addressed in BP being worked on at the moment) + active sensors (which will be addressed in a future BP) …	CGMS-53 Plenary	**CLOSED**
WGI/A51.05	TGRFI	3.1	Explore the potential / existing uses of AI/ML and pattern recognition in the area of RFI detection	2025 Mar 25 (WGI): WGI agreed to present to plenary "Agency existing and future uses of AI, ML for pattern recognition in RFI detection and mitigation in remote sensors" for information / analysis 2025 Feb 11: Progress will be presented in WGI meeting. 2024 Nov 26: AI/ML use in RF interference, detection and mitigation. A draft document has been started. It would be beneficial here to explore what each agency is already working on, that can tie	CGMS-53 Plenary	**CLOSED**

				into this topic. E.g. Scott Leonard is working on related topics. 2024 Apr 22 (WGI): The group will place more focus on this action in the lead up to CGMS-53. Markus highlighted that uses of AI/ML may be relevant for RFI management in view of large constellations. 2024 Jan 24: To be discussed in more detail in next intersessional. 2023 Sep 26: Action on this will be taken following first TG on RFI intersessional, expected in October 2023.		
WGI/A52.02	LLDA TG	5.6	Identify concrete CGMS actions based on the LLDA SWOT, including priority areas and demonstration cases in agencies. E.g. cloud, TT&C, relation with private sector, etc.	13 Apr 2026 (WGI): WGI agreed to close action. TG work has concluded that no further actions required on commercial sector, data relay constellations and cloud services (refer to slide 8 of CGMS-54-EUMETSAT-WP-03). Instead, a new action is proposed to enhance the SWOT analysis for CGMS-55, including report on feasibility and applications of phased array and identification of AI applications opportunities withing the scope of the LLDA TG, in coordination with WGII. 2026 Feb 17: SWOT has been progressed and to be presented in WGI in April. A new action to then be opened reflecting latest proposals. 2025 Dec 12: TG looking into emerging protocols for intersatellite link. Phased array collection of information – preliminary results are that not part of OPS baseline for agencies, but test studies exist; industry is using or looking into	CGMS-54	**CLOSED**

				phase array, more info to be collected. …		
WGI/A52.03	DCS TG	7.2	Work on the five proposals for DCS improvements based on the SWOT analysis, including work with RFI Task Group and DCS RFI register, DCS promotional materials presenting global view of DCS, improved DCS outreach via DCS introduction video, further work on EDCP standard, improvements to DCS user information across agencies.	13 Apr 2026 (WGI): The EDCP implantation has progressed well. On RFI - current RFI register was enclosed. NOAA was able to coordinate removal of two interference sources since CGMS Workgroup 53. The TG has also draft Best Practice on RFI related to DCS together with the TG on RFI. No progress on other items yet, as EDCP and RGI have been the focus. 17 Feb 2026: RFI + EDCPR progress will be reported in CGMS-54 WGI. No reply from SEBA on promotional items for Tanzanian project. 12 Dec 2025: RFI + EDCP in progress. DCS promotional items – EUM identified a Tanzanian project and approach company for promotional purposes. …	CGMS-55	**OPEN**
WGI/A52.04	DCS TG	7.2	Propose an interagency approach for DCS data access via WIS 2.0. Review also related changes to the Data Access Best Practice document.	13 Apr 2026 (WGI): Discussions have taken place on the implementation on WIS 2.0 for DCS and also making and attempt to have a consolidated interagency report. Nothing concrete has been decided yet. - EUMETSAT has not migrated to WIS 2.0. This is expected in summer 2026 by entering a parallel operations phase of at least 6 months to transition data flows from GTS to WIS 2.0. It will be necessary to categorize DCP messages into one of seven Earth system disciplines and adopt an MQTT-based retrieval process where, during a transition phase, base64-	CGMS-55	**OPEN**

				encoded DCP data is embedded directly in the notification messages - NOAA has not migrated to WIS 2.0. NOAA DCS representatives have been notified that the NOAA National Weather Service (NWS) has been tasked to migrated to WIS 2.0 by 2030. NOAA DCS will continue to collaborate with EUMETSAT and will coordinate with the NOAA NWS on their implementation plans for WIS 2.0. 17 Feb 2026: Still a big challenge. EUMETSAT DCS data not yet on WIS 2.0, implementation being worked. Discussion on EUM, NOAA and JMA's plans on putting DCS data on WIS 2.0 in a common way to be discussed. Progress of discussions in TG report. 12 Dec 2025: Some obstacles along the way, in progress (technical challenge + question with WMO on how data is presented). …		
WGI/A52.05	DCS TG	7.2	Present an overview of the various applications of DCS known across CGMS Operators.	13 Apr 2026 (WGI): Some progress, but not a high priority action for the TG at the moment. NOAA has compiled a web with "success stories". Simultaneously, EUMETSAT has initiated contact with several operators. 17 Feb 2026: Same status. 12 Dec 2025: Same status. 25 Mar 2025: Same status as 26 Nov 2024. 11 Feb 2025: Same status as 26 Nov 2024. 26 Nov 2024: Has not been started yet. Attempt will be made to include	CGMS-54	**OPEN**

				something in DCS TG report, but EDCP is focus.		
WGI/A52.06	DCS TG	7.11	The Task Group on DCS Satellite Operators to report on how their policies affect the usage of Smallsat.	13 Apr 2026 (WGI): Future missions (TES-16 and TES-23) are being planned. TES-16 is a 12U satellite expected to be launched in summer 2026 or December 2026. TES-23 is scheduled for launch on 29 March and it will be placed into a GEO transfer orbit to further demonstrate DCS capabilities from different altitudes. Both missions will use EDCP format and carry a transmitter capable of both EDCP and legacy modes, ensuring compatibility with EUMETSAT reception even ground necessary changes are delayed. As part of this, next steps include determining the policy and regulations for satellite use of DCS by respective organizations and the Coordination Group of Meteorological Satellites. At that point, the TG / WGI to also consider what the end goal is for smallsat and a concrete input to HLPP proposed. 17 Feb 2026: 400 baud EDCP to be test on Tes-16 smallsat in Mar-Apr 2026. TBC if 800 baud could be tested. 12 Dec 2025: Launch planned for Dec 2025 + mid-2026. 400 baud EDCP could be tested using those satellites. Policy aspects looked as part of ConOps doc. …	CGMS-55	**OPEN**
WGI/A52.07	DCS TG	7.11	The Task Group on DCS to work on DCS Handbook updates related to Smallsat, EDCP, international DCP capability, scintillation.	13 Apr 2026 (WGI): On hold until EDCP Standard is approved and WIS2 plan for DCS is clear, so that it can include details on these.	CGMS-54	**OPEN**

				17 Feb 2026: Not to be updated until EDCP standard final. 12 Dec 2025: No update yet. 26 Mar 2025 (WGI): Same status as 26 Nov 2024 and 11 Feb 2025. 11 Feb 2025: The IDCS guide update would need to go hand in hand with DCS Handbook update. 26 Nov 2024: Still too early to include something on Smallsat in the DCS Handbook, as Smallsat is not operational yet and more work to be done on defining possible use cases. Another Smallsat launch planned in 2025 and actions on clarifying policies. DCS Handbook updates can be made for CGMS-54 earliest.		
WGI/A53.01	Mikael Rattenborg	2.1	Arrange a DBNet presentation in CGMS-54 WGI.	13 Apr 2026: DBNet presentation was presented at CGMS-54 WGI. Action closed 17 Feb 2026: Arranged, will be presented in CGMS-54 WGI and can then be closed. 12 Dec 2025: DBNet meeting was held and touched on Regional Services (not detailed though). Antoine, with Nick/Simon in copy, will contact Liam about potential presentation from DBNet. …	CGMS-54 WGI	**CLOSED**
WGI/A53.02	LLDA TG	2.1	Report on the status of the global data low latency acquisition best practices at the CGMS-54.	13 Apr 2026: WGI agreed to close, in favour of new actions. Whereas DB technologies and operational partnerships are very mature and have been operational for many years, the same is not true for (very) low latency global data acquisition. Technologies such as inter-satellite data relay, phased array ground	CGMS-54 WGI	**CLOSED**

				antennas, cloud data processing and dissemination services are being investigated, but not yet operational in CGMS agencies. Operational partnerships allowing coordination of phased orbits and sharing of additional ground infrastructure in support of global data acquisition is only done to a limited extent. Conclusion is that it is premature to establish a low latency data access BP for the global mission. New actions to be opened instead on assessing the value obtained from existing global data acquisition partnerships (such as between EUMETSAT and NOAA in the sharing of Svalbard and McMurdo data acquisitions) and estimate the projected value of wider cooperations (additional agencies, additional stations). As well as a new action on identify future opportunities for coordination of LEO orbits with a view to synchronised phasing (taking into account the work of the Coordination of LEO Orbits TG: CGMS-49-EUMETSAT-WP-05 , PPT) and estimate potential value compared to uncoordinated systems. Furthermore, the LLDA TG to keep abreast of technology developments and adoption by CGMS agencies, which will be achieved through the ongoing work on the SWOT analysis. 17 Feb 2026: Proposed way forward covered in the TG report to CGMS-54 WGI in April. 12 Dec 2025: TG discussed that a best		

				practice may not be the most appropriate way, since global data cooperation is more on sharing ground infrastructure, rather than direct broadcast type of cooperation. So proposal is to have a report on the common infrastructure / collaboration on global data latency. Additionally, the WGI Chairs proposed discussing opportunities on collaboration for reduced global data latency. E.g. could the agencies cooperate further? …		
WGI/A53.03	LLDA TG	2.1	Review the contents of the Direct Broadcast information on the CGMS website and update as needed (Direct Broadcast – CGMS – Website).	12 Dec 2025: Contents updated. New FY3F satellite was added. Decommissioned N18/N19 satellites were removed. Closed. 17 Sep 2025: To be progressed. 25 Mar 2025 (WGI): Action opened.	CGMS-54 WGI	**CLOSED**
WGI/A53.04	SES TG	3.1	Define the requirement for supplying owner/operator orbit and manoeuvre information to TraCCS and identify steps for implementation	13 Apr 2026: WGI agreed to close. NOAA have provided detailed information based upon their own experience, using publicly available TraCSS document links and example files from the NOAA GOES mission (a TraCSS pilot user). This should help other CGMS operators with example OCM and CDM formats before the service enters the production/public phase at a TBD date. 17 Feb 2026: Nothing to report yet, to be progressed. 12 Dec 2025: Nothing to report yet, to be progressed.	CGMS-54 WGI	**CLOSED**

				…		
WGI/A53.05	SES TG	3.1	Produce a report on modelling of thermospheric density impacts, including intercomparison of model results, analysis and recommendations	13 Apr 2026 (WGI): The Task Group is working on building a table of thermospheric density models and related studies to facilitate intercomparison. ESA first inputs provided, CCMS experts inputs expected via NASA. Inputs from other agencies are requested. Keep open, pending a report which presents an overview of the different models used, analysis, intercomparison and recommendations. 17 Feb 2026: First steps taken – table created and to be populated by agencies. 12 Dec 2025: Early discussions only, looked at with lower priority. 17 Sep 2025: To be progressed, related to WGI.A53.04 25 Mar 2025 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/A53.06	SES TG	3.1	Discuss in intersessionals and prepare highlight presentations in next year's Task Group intersessionals and CGMS-54 WGs on: · The overall landscape of work on SES topics and where the CGMS TG on SES fits in it. · Agencies experience and practices on collision avoidance · Agencies experience and practice on Debris removal	13 Apr 2026: WGI agreed to close. The SES TG is one of many groups focussing on space safety and traffic management. However, most are aimed at defining requirements rather than exchanging experience in implementation of those requirements and aligning implementation methods. The closest body in terms of scope and objectives would appear to be the Space Safety Coalition (SSC). An invitation has been made for the SSC to present their work at an upcoming SES TG meeting. Scope for further cooperation will be examined. New action opened on	CGMS-55 WGI	**CLOSED**

				assessing overlap and scope for coordination with the Space Safety Coalition. 17 Feb 2026: This information is being covered in intersessionals via exchange of information and discussions on the BP. Additionally, presentation planned for IAC. Action closed. 12 Dec 2025: TG already discussing some of these topics as part of the BPs action, but no dedicated highlight presentations. Debris removal not discussed yet. 17 Sep 2025: To be progressed. 25 Mar 2025 (WGI): Action opened.		
WGI/A53.07	EUMETSAT (Andrew Monham)	3.1	Develop a paper on CGMS work on SES for presentation at IAC in 5-9 October 2026 and report feedback to CGMS	13 Apr 2026 (WGI): The Abstract: "Coordination of Space Environment Sustainability Approaches in the Coordinated Group for Meteorological Satellites (CGMS)" has been accepted for presentation at the 77th IAC in the Space Debris Symposium. Action to remain open until paper developed / presented at the IAC (Antalya, Türkiye, 5-9 October) and feedback provided to the SES TG for reporting at CGMS-55. 17 Feb 2026: Paper for IAC planned and Andy preparing a draft. 17 Sep 2025: To be progressed. 25 Mar 2025 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/A53.08	SES TG	3.1	Review current usage of space weather data for spacecraft operations and goals for improvement. This action has been	13 Apr 2026 (WGI): Action remains open. Space weather information is split on two tables separating the Space Traffic Coordination needs from the "safety of	CGMS-55 WGI	**OPEN**

			transferred from CGMS-52 to WGI (previously SWCG/A51.02).	space operation" related information. Only ESA inputs, no further inputs made since CGMS-53. ESA will provide more details to facilitate comparison with other agencies' approaches and achieved accuracies. Inputs from other agencies are expected soon. 17 Feb 2026: No specific progress to report. 12 Dec 2025: Secondary target of the TG. Consolidate space observation requirements for space traffic coordination. Only ESA and NASA inputs so far, so further collaboration needed on this. …		
WGI/A53.09	SES TG	3.1	Produce a report of space weather observation requirements for improved STC services and space Sustainability. This action has been transferred from CGMS-52 to WGI (previously SWCG/A51.11).	13 Apr 2026 (WGI): Report to be produced following delivery and analysis of inputs from WGI/A53.08 12 Dec 2025: Closely linked to A53.08 – follows from it. 17 Sep 2025: To be progressed, next main target after best practices. 25 Mar 2025 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/A53.10	DCS TG	5.1	Further investigate the Ionospheric Scintillation and its potential use with DCS transmissions	13 Apr 2026 (WGI): Interest in the space weather effect Ionospheric Scintillation remains relevant to CGMS DCS organizations. There is also academic interest in studying these phenomena. This SDCS metric has been deployed to the development system at the NOAA GS at Wallops Island, VA. GNSS RO data is traditionally used for this purpose, so	CGMS-55 WGI	**OPEN**

				employing a DCS to investigate this phenomenon is a novel approach. Use, validity, and final application of this metric are still in very early stages but the SDCS metric offers the potential to provide data outage root cause information to DCS operators as well as supporting space weather organizations seeking free data from thousands of platforms transmitting through the ionosphere. As a next step, interact with the SWCG and present at one of the SWCG TG intersessional meetings. 17 Feb 2026: Any further information in TG report. 12 Dec 2025: No further investigation yet. 25 Mar 2025 (WGI): Action opened.		
WGI/A53.11	DCS TG	5.1	Share the information/paper on scintillation with WGII and SWCG.	12 Dec 2025: Done. 25 Mar 2025 (WGI): Action opened.	CGMS-54 WGI	**CLOSED**
WGI/A53.12	DCS TG	5.1	Plan a DCS Workshop. Identify best opportunity to hold a DCS workshop (consider e.g. MTI Expo, NOAA conference, EUMETSAT conference)	13 Apr 2026 (WGI): WGI agreed a DCS workshop should be planned, with specific agenda items. To include DCS Handbook, PR materials, etc. Location is to be looked at as part of this, possibly at Met Expo or NOAA conference or EUMETSAT Conference. The workshop will be no earlier than Q3/4 2027. Present plans at CGMS-55 WGI 17 Feb 2026: Satcom Forum chair still needed – ideas and proposals encouraged. Alternatively, other options for holding DCS workshop to be discussed between WGI Co-Chairs as well.	CGMS-55 WGI	**OPEN**

				12 Dec 2025: Satcom Chair needed first. Potential Satcom Forum chair identified. Next opportunity would be MTI in Sep 2026. 25 Mar 2025 (WGI): Action opened.		
WGI/A53.13	DCS TG	5.1	EUMETSAT and JMA to analyse the use of monitoring NOAA has put in place on RFI.	13 Apr 2026 (WGI): Analysis will be done by each agency as part of next year's CGMS-55 reporting against the new best practice on RFI related to DCS. 17 Feb 2026: In progress, any latest information in TG report. 12 Dec 2025: In progress. 25 Mar 2025 (WGI): Action opened.	CGMS-54 WGI	**CLOSED**
WGI/A53.14	RFI TG	7.2	Prep a "Guidance report on RFI Detection, Monitoring, and Mapping for Remote Passive Sensors" for CGMS-53 Plenary. Include clear blocks relevant to different actors to ease further distribution. Include concrete information on support/decisions needed by CGMS-53 Plenary.		CGMS-Plenary	**CLOSED**
WGI/A53.15	RFI TG		Prepare a draft set of best practices for data collection system (DCS) RFI for the next cycle, based on the common aspects of the approaches already or planned for adoption by members for endorsement by CGMS-54.	2 Jun 2026: RFI Best Practices in the area of Data Collection Services were presented and endorsed at plenary. 13 Apr 2026: WGI noted the excellent work on the Best Practice draft and agree it is mature enough to propose for endorsement at CGMS-54 Plenary, noting that some of the points in the best practice might be difficult to report against, so possible updates to resolve this are to be identified when the CGMS Agencies operating DCS start reporting	CGMS-54 plenary	**CLOSED**

				against this best practice for the CGMS-55 cycle. If the best practice is endorsed at CGMS-54 Plenary, then regular reporting per agency against the best practice will be expected to start in the CGMS-55 cycle. 17 Feb 2026: Progressing and will be presented for consideration.		
WGI/A53.16 (from WGIV)	WGI, WGII, WGIV	6	On data curation standards: WGI, WGII and WGIV to jointly draft standards that will be reviewed at CGMS-54 WGI/WGII/WGIV. WGI on the standardization of formats through its Task Group on Satellite Data and Codes. WGIV on the metadata aspects through its Task Group on Metadata (once a new chair has been found).	13 Apr 2026 (WGI): The TG on SDC is implicitly tasked with creating draft standards for Earth observation data, including formats like Zarr, to ensure compatibility with AI and ML. These should be reviewed at CGMS 54. Efforts to secure expert input on this topic failed to solicit the requisite level of response. The Task Group will again be invited to address this important topic prior to the plenary session; due attention will be given to the presentation given by the co-chairs of WMO's Study Group on Future Data Infrastructure (SG-FIT) under agenda item 4.3.1 at the recent INFCOM Management Group meeting. Was 53.07 but transferred to A53.16	Feb 2026, Apr 2026	**OPEN**
WGI/54.01	SES TG	5.1	Assess overlap and scope for coordination with the Space Safety Coalition and the ESA Zero Debris Working Group. As part of this, SSC and ESA Zero Debris WG will present their work at an upcoming SES TG meeting.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.02	LLDA TG	6.1/6.5	Assess the value obtained from existing global data acquisition partnerships (such as between EUMETSAT and NOAA in the	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**

			sharing of Svalbard and McMurdo data acquisitions) and estimate the projected value of wider cooperations (additional agencies, additional stations). Present a report and proposals to CGMS-55 WGI.			
WGI/54.03	LLDA TG	6.1/6.5	Identify future satellite programme opportunities for coordination of LEO orbits with a view to synchronised phasing (taking into account the work of the Coordination of LEO Orbits TG: CGMS-49- EUMETSAT-WP-05) and estimate potential value compared to uncoordinated systems. Present a report and proposals to CGMS-55 WGI.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.04	LLDA TG	6.1/6.5	Enhance SWOT analysis for CGMS-55. Report on feasibility and applications of phased array. Identify AI applications opportunities within scope of LLDA task group, in coordination with WGII.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.05	LLDA TG	6.6	Present CGMS direct broadcast BP in DBNet meeting.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.06	SFCG Liaison	2.1	The SFCG Liaison to present a report on frequency management related topics to CGMS-54 Plenary, and invite CGMS to note this report and provide feedback and information on its activities via the CGMS/SFCG Liaison Officer to SFCG-45 (June 2026) on any frequency related matter.	2 June 2026: Report presented at CGMS-54 plenary. 13 Apr 2026 (WGI): Action opened.	CGMS-54 Plenary	**PROPOSED FOR CLOSURE**
WGI/54.07	Markus Dreis (RFI TG Chair / DCS TG Chair)	3.1	Coordinate an RFI presentation for WMO Technical Conference (TECO)	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.08	Beau Backus (NOAA)	2.2	Provide a report / presentation on the results of the DMiPS project study results in CGMS-55 WGI.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**

WGI/54.09	RFI TG	3.1	Evaluate Mega-Constellations: Develop a report for CGMS-55 WGI on strategies to mitigate RFI risks from large-scale LEO deployments.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.10	RFI TG	3.1	Develop a report for CGMS-55 WGI on standardise Commercial Data Buys with respect to RF spectrum. As part of this, analyse RFI considerations in commercial data buys to ensure these commercial datasets meet the same rigorous spectral protection and RFI-flagging standards as member-owned assets. Harmonizing these protocols should maintain the integrity of the global observing system. Share report with WGIII.	13 Apr 2026 (WGI): Action opened.	CGMS-55 WGI	**OPEN**
WGI/54.01p	CGMSSEC, WMO	WGI	Work together to prepare a paper for INFCOM-4 addressing the proposed update of the Manual on the WIGOS		End of July 2026 (INFCOM-4)	**OPEN**
WGI/54.02p	CGMS Agencies	WGI	CGMS space agencies to provide experts to the work of the WMO Expert Team on Radio Frequency Coordination (ET-RFC)		30 Sep 2026	**OPEN**
WGI/54.03p	CGMS Agencies	WGI	CGMS satellite operators to contribute operational expertise and inputs to WGI Space Environment Sustainability (SES) Task Group activities through expanded membership from further organisations		End of 2026	**OPEN**

LIST OF WGI PARTICIPANTS

CGMS-54 - WGI List of Participants		
First name	**Last name**	**Organisation**
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Melissa	Johnson	NOAA
Rishi	Ramsooksingh	NOAA
Andrew	Heidinger	NOAA and ICWG
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Natalia	Donoho	WMO

CGMS

WORKING GROUP II

Satellite data and products



WGII REPORT

Co-Chairs: XU Na, CMA / Takuya Sakashita, JMA
Rapporteurs: Paolo Ruti, EUMETSAT / Andrew Heidinger, NOAA

1. Opening
1.1 Meeting objectives and expected outcomes

CGMS-54-WGII-WP-01 Meeting objectives and expected outcomes (verbal) (Co-chairs)

Rapporteur Paolo Ruti explained following major topics in the objectives of WG meeting: quality of satellite data and interoperability across the different value chains, synergies of cross calibration, historical evolution towards our earth system services and the AI/ML application. Rapporteur Andrew Heidinger added GEO-Ring is a major theme to be discussed.

1. Improve Satellite Data Quality and Interoperability

A primary objective is to facilitate seamless collaboration among observations conducted by various agencies. Key areas of focus include: Consistency in calibration and validation processes; Adoption of common data formats and metadata standards; Harmonisation across satellite platforms.
Anticipated benefits include improved integration of multi-agency data into Numerical Weather Prediction (NWP) systems, Earth System applications and climate records.
2. Enhance Operational Weather Products

WG II usually focuses on derived products from satellites, such as: Cloud properties, Atmospheric motion vectors (winds), Rainfall estimates, SST / ocean monitoring, Volcanic ash / aerosols, Lightning and severe weather nowcasting products. Potential outcome: Faster and more accurate products for several operational applications.

3. Support AI / Machine Learning Readiness
CGMS-54 explicitly mentions the role of satellite data in AI/ML models. For operational agencies, this is becoming strategic. Likely agenda themes: AI-ready datasets; Training archives; Benchmarking AI forecasts vs physics-based systems; Labelled severe weather datasets; Data access for foundation models.

4. Climate Monitoring and Long-Term Records

Operational agencies increasingly support climate services. WG II likely covers: Fundamental Climate Data Records (FCDRs); Essential Climate Variables (ECVs); Greenhouse gas monitoring; Continuity between generations of satellites. Critical value of the GEO-Ring.

5. User-Driven Evolution of Future Missions

WG II prepares also for future observing system development and design.

1.2 Status of WGII co-chairs and rapporteurs

CGMS-54-CGMS-WP-14wgii Status of co-chairs, rapporteurs, and representatives at meetings (CGMS, ISWGs, VLAB…)

CGMSsec introduced the status of CGMS WG chairs and ISWG co-chairs and rapporteurs. Nomination from each CGMS agency for ISWG was welcomed.

CGMS-54-CGMS-WP-14wgii Request for nomination for WGII rapporteur & CGMS rapporteurs (IWWG, IPWG, IESWG, ICWG)

- International Cloud WG: Andrew Heidinger will step down in September, so a new rapporteur is needed.
- International Precipitation WG: Pleased to hear that JAXA has nominated a candidate.
- International Winds WG: Ilana, currently co-chair, will move to the rapporteur role.
- International Surface/ Earth WG: Looking for a rapporteur; at this stage, a NOAA interim position is envisaged.
- WG Climate Vice-Chair rotation: ESA has put forward a candidate.

2. CGMS agency reports on highlights and issues in dataset and product generation since mid-2025 (block 1)

2.1 CGMS agency reports on highlights and issues in dataset and product generation since mid-2025 (block 1) [40']

CGMS-54-CMA-WP-02 CMA agency report on highlights and issues in dataset and products since mid-2025 (XU Na)

Recent Satellite Launches & Status: Two new satellites have recently joined the operational fleet. The FY-3H, launched on September 27, 2025, is currently in the first phase of its in-orbit testing, which lasts six months. In mid-April, it will transition to the second three-month testing phase, coinciding with the expected release of its first batch of Level 1 data and a preprocessing software package for international direct-receiving stations. Meanwhile, the FY-4C was successfully launched in December 2025 and has been positioned at 133°E. It is now undergoing its own initial in-orbit testing, with its first data releases anticipated in October.

Upcoming Launch Plan & Operational Improvements: Looking ahead, two additional launches are scheduled for late 2026. The FY-4M is planned for December 2026, and it is the first Microwave Sounder (MWS) on geostationary orbit (operating in the range of 23-425 GHz) delivering 24-hour continuous microwave observation capabilities over China and adjacent maritime areas. Shortly before that, the FY-3J will launch to continue the operational observation capabilities of the FY-3E in the dawn/dusk orbit. In terms of ongoing operations, recent technical corrections have been applied to the FY-3F MWTS scanning bias, alongside improvements to HIRAS positioning accuracy. An updated data preprocessing software package for FY-3F international direct-receiving stations—featuring enhanced fault tolerance—has also been released, and the FY-4B/GHI now includes additional crosstalk correction to mitigate abrupt brightness temperature jumps at low cloud tops.

New Product Development: Finally, significant progress has been made in product development. Leveraging both active and passive satellite payloads, new sea ice products have been created. These include critical datasets such as sea ice thickness, drift velocity, and snow depth, substantially enhancing monitoring capabilities in polar and cold-region environments.

CGMS-54-JMA-WP-01 JMA report on highlights and issues in dataset and product generation since mid-2025 (Takuya Sakashita)

Observation data quality for JMA's Himawari-9 geostationary satellite is comparable to that of Himawari-8, remaining high and stable even during a period of Himawari-8 operation from October to November 2025 due to a Himawari-9 system anomaly. Details of radiometric calibration and image navigation performance for Himawari-9 (which started operation on 13 December 2022) are provided on the JMA/MSC website.

The monitoring pages show image navigation errors are within 600 m at the sub-satellite point, while radiometric calibration biases are up to around 5% (bands 1 to 5) and 5-8% (band 6) in reflectivity for visible and near-infrared bands and less than 0.3 K in brightness temperature for infrared bands (bands 7 to 16). JMA/MSC is currently developing Principal Component Analysis for the Geostationary Hyperspectral Infrared Sounder (GHMS) on board Himawari-10.

CGMS-54-ISRO-WP-02 ISRO report on highlights and issues in dataset and product generation since mid-2025 (Randhir Singh)

Operational GEO Satellites & Intercalibration
Two Indian GEO satellites remain operational: INSAT-3DR at 74°E and INSAT-3DS at 82°E. Launched in February 2024, INSAT-3DS incorporates specific fixes to address the calibration and midnight sun intrusion issues previously observed in the 3D and 3DR series. Meanwhile, Oceansat-3 is operational and providing data from its Ku-band Scatterometer and OCM-3 instrument, all of which are accessible via the Bhuvan geoportal. In the area of calibration, the INSAT-3DS infrared channels are being intercalibrated with the IASI-B and IASI-C instruments, with plans to extend this effort to CrIS. For the visible and shortwave infrared bands, intercalibration is performed using MODIS via ray-matching, and this work is being extended to include VIIRS on the NPP satellite.

Products, Upcoming Launches & Future Missions
Atmospheric Motion Vectors (AMVs) are now being generated in BUFR format and disseminated globally via the GTS. Full-disk AMVs are also under production, with quality evaluation currently ongoing. Looking ahead to launch schedules, Oceansat-3A—equipped with a scatterometer, OCM-3, MATHS, and SSTM instruments—is planned for the third quarter of 2026. Two additional satellites are slated for 2028: TRISHNA, which will provide high-spatial-resolution imaging in the thermal infrared, visible/near-infrared, and shortwave infrared bands, and G20, an environmental and climate change monitoring satellite.

CGMS-54-CNES-WP-01 Status report on the current and future satellite systems by CNES
(Murielle Lafaye)

IASI Instruments & Intercalibration
The IASI-B and IASI-C instruments are currently in nominal operation. A key intercalibration campaign between IASI-C and the next-generation IASI-NG is scheduled from mid-April to mid-June, utilizing a tandem flight configuration of the Metop-C and EPS-SG-A1 satellites. The IASI Sounder Scientific Working

Group, which last convened on December 8–9, 2025, is set to hold its next meeting on July 2–3, 2026. Meanwhile, the first phase of calibration is ongoing as the team works to identify the instrument's optimal operating point. Challenges persist with ice contamination, which continues to impact instrument components and validation activities; nevertheless, the satellite remains stable and operational despite some GPS jamming.

SMOS & Future Plans
For the SMOS-Ocean and FRESH missions, the annual scientific meeting is scheduled for March 30 to April 1, 2026, followed by a Quality Working Group meeting on May 19–21. A formal review has confirmed the mission's extension, which is now approved to continue through 2029. The mission has also yielded new publications in the fields of oceanography and hydrology. In terms of data reprocessing, low-resolution (LR) data have been completed, while high-resolution (HR) data processing remains in progress.

Additionally, C2OMODO (French contribution to the NASA « Atmosphere Observing System) was also presented.

CGMS-54-ESA-WP-02 ESA report on the current status of the Arctic Weather Satellite (AWS) [5'] (Armin Loescher)

As of April 2026 the Arctic Wheater Satellite (AWS) is operating nominal. The expected lifetime is until end of 2029. In March 2026 the implementation contract of EUMETSAT's EPS-Sterna was signed with OHB-Sweden. The full contract encompassed a total of 20 satellites to provide a continuous service into the 2040s. The first batch of satellites will be launched in 2029 allowing a cross calibration with AWS to maximise the available uninterrupted, high-quality, long-term data record. This marks a major step toward better monitoring rapidly evolving weather, improving forecasts of severe events in vulnerable regions such as the Mediterranean, and closing critical data gaps over the Arctic – the fastest-warming region on Earth and a key driver of Europe's weather systems. ESA will manage the procurement of the Sterna satellites following the established cooperation model with EUMETSAT applied to Europe's other meteorological missions, namely the geostationary Meteosat and the polar-orbiting MetOp missions. The Sterna constellation will comprise six satellites in orbit at any given time – and these satellites will be replenished twice during the lifetime of the mission to ensure the continued delivery of data until at least 2042. In addition, to these 18 satellites, OHB Sweden will build an extra two satellites as spares. Like the prototype mission each satellite will carry a cross-track scanning microwave radiometer to provide detailed profiles of atmospheric humidity and temperature.

2.2 Roundtable/Discussion (block 1)

The GEO-ring was identified as a pivotal domain for international cooperation. Effective collaboration within this framework can drive enhancements in data collection, sharing, and utilisation across agencies. There is significant interest in advancing and harmonising GEO observations. A key objective is to achieve synchronised imaging and sounding, (e.g., coordination on orbit design and timing to maximize simultaneous observations and harmonize scanning directions (e.g., north-to-south vs. south-to-north scans)) which would contribute to improved global coverage and data consistency. Ongoing developments in GEO sounder technology, along with forthcoming satellite launches, underscore the benefits of exchanging experiences and lessons learnt among agencies. The Numerical Weather Prediction (NWP) community stands to gain considerably from the implementation of more regularly synchronised geostationary (GEO) imager observations

Lightning observation and validation continue to be critical priorities, especially for applications requiring high resolution and those focused on tropical regions. In these areas, the availability of suitable proxies is limited, making direct lightning measurements even more essential for improving the accuracy of meteorological analyses. There is a recognised need to elevate coordination on lightning observations to the international agenda. This includes the pursuit of better alignment between GEO and ground-based monitoring systems. Enhanced collaboration across these platforms would help ensure comprehensive coverage and more robust validation processes. Improved validation strategies and guidance within the GEO-ring framework are recommended to facilitate more effective integration and utilisation of lightning data, ultimately better understanding the physical representation of the different types of lightning products.
Ensuring accuracy remains a major challenge for EO products, underscoring the need for sustained ground-based observations and a deeper understanding of the physical processes represented in satellite measurements. In this context, upcoming field campaigns could be more impactful if clustered around larger coordinated scientific programmes, where dedicated in situ observations, process studies, and multi-platform measurements simultaneously strengthen product validation, improve retrieval algorithms, and maximize scientific and operational return.
Geostationary sounders were highlighted as one of the most promising next-step capabilities for operational Earth observation, with new developments and upcoming launches creating renewed momentum across agencies. Participants emphasized the importance of sharing technical experience, calibration approaches, retrieval methods, and lessons learned internationally, as GEO sounding is inherently an area where cooperation can accelerate maturity and interoperability.

Their strongest operational value lies in providing frequent temperature and humidity profiles, potentially on hourly or in the future sub-hourly cycles, enabling a much better characterization of atmospheric evolution of fast developing phenomena. Emphasis was placed on boundary layer applications, where improved monitoring of moisture, temperature inversions, and instability could substantially enhance fog forecasting, convective initiation detection, air-quality services, and urban weather applications. GEO sounders also offer major potential for faster and more continuous data assimilation into numerical weather prediction systems, helping to improve short-range forecasts, nowcasting, and high-impact weather warnings. AI-weather system can further use satellite data for both training and inference phases. The use of the full-scale spectral resolution by AI systems can be an interesting evolution for the next generation.

Regarding the GEO-Ring coordination, differences of observation capability and mechanism for imager and lightning mapper were recognized. Coordination for lightning imager validation will be discussed at the next intersessional meetings. The importance of long-term surface observation for satellite observation validation was emphasized.

3 CGMS International Science Working Groups and need for coordination (block 1) [110']

3.1 IWWG specific topics for coordination with CGMS

CGMS-54-IWWG-WP-01 IWWG activity updates and recommendations for coordination with the CGMS [15']
(Jaime Daniels (virtually))

Work continues internationally to strengthen commonality in the derivation of Atmospheric Motion Vector (AMV) products for global users, while preserving appropriate backward compatibility as

algorithms evolve. A key element of this effort is the periodic AMV product survey, conducted since 2023, which gathers detailed technical information on processing approaches across agencies, including satellites and instruments used, selected channels, algorithm configurations, dependencies, and output formats. A new survey is currently in progress, following publication of previous results through the CGMS / IWWG website and mailing list in December 2025. In parallel, planning has started for the 5th AMV Intercomparison Study, coordinated with the ICWG, while a dedicated working subgroup within the International Winds Workshops continues to focus on AMV retrieval methodologies and algorithm development.

At the same time, growing attention is being given to the value of winds derived from geostationary and low Earth orbit hyperspectral infrared observations. Several agencies are actively developing Optical Flow and related approaches to retrieve three-dimensional winds from current and future hyperspectral sounders. EUMETSAT is preparing version 2 of its 3D winds software for MTG IRS and evaluating operational IASI 3D winds. CMA plans to tune its Optical Flow retrievals for FY-4C GIIRS, while JMA is developing variational Optical Flow techniques for the future hyperspectral sounder on Himawari-10. NOAA is assessing both variational and AI/ML-based Optical Flow approaches to support its future GXS instrument. Together, these activities point toward a new generation of vertically resolved wind products with strong potential benefits for data assimilation and short-range forecasting.

Work is progressing to better coordinate and enhance the use of cloud properties in high-impact applications, particularly Atmospheric Motion Vectors (AMVs) and All-Sky Radiance products. A notable current trend is the increasing use of dedicated cloud-height products, generated through advanced cloud retrieval algorithms developed by specialist cloud communities, to improve height assignment for AMVs. This is being pursued notably by EUMETSAT and NOAA. Beyond cloud-top height, however, the broader use of retrieved cloud properties remains limited, with only selective application such as quality control. Parameters including optical depth, ice water path, and cloud particle characteristics could offer further benefits for AMV quality, representativeness, and radiance interpretation. In this context, the IWWG and ICWG are discussing inclusion of this topic in the 5th AMV Intercomparison Study.

At the same time, AI and machine learning are increasingly being explored for both product generation and data-processing infrastructure. A major focus is the development of methods to derive three-dimensional wind fields from geostationary imagers and hyperspectral sounders, with active work involving NASA, NOAA, EUMETSAT, ESA, JMA, CMA, and industry partners. Additional efforts are examining how machine learning can infer horizontal motion from derived geophysical variables such as moisture, temperature, and ozone. These developments suggest that AI/ML could significantly expand the exploitation of multispectral and hyperspectral observations, while also improving the scalability and efficiency of future operational processing systems.

Recommendation for consideration by CGMS: Encourage the NWP community to assess the quality and impact of derived 3D wind products from IR sounders as soon as possible after the data comes online.

Jaime Daniels (NOAA) will step down as CGMS rapporteur. Iliana Genkova (NOAA) is nominated as the new CGMS rapporteur for plenary endorsement, and will remain co-chair until the next IWWG meeting, IWWG-18 (TBC). EUMETSAT is considering hosting IWWG-18.

3.2 ITWG specific topics for coordination with CGMS

CGMS-54-ITWG-WP-01 ITWG specific topics for coordination with the CGMS (Fiona Smith, co-chair (virtual))

The next TOVS Conference 2027 will take place in Tsukuba and was noted as an important milestone for the sounding and retrieval community. At the same time, significant challenges were highlighted in organizing international working-group conferences more broadly. Participation from CGMS member agencies is often limited, with meetings tending to attract more numerical weather prediction scientists than satellite programme staff, although strong engagement continues from EUMETSAT, NOAA and CNES. Practical constraints also remain substantial, as potential hosts frequently operate with limited budgets and may struggle to cover venue costs, while administrative capacity for managing bank accounts, registrations, and contractual arrangements can also be insufficient. These issues suggest a need for more sustainable conference support models if international technical coordination is to remain effective.

Regarding the High-Level Priority Plan (HLPP), several work areas were viewed as having largely reached maturity, including common principal component score representation and hyperspectral sounder trade-off studies, as current missions appear to be converging on similar design choices. In contrast, strong progress was recognized in areas such as hyperspectral Level-2 intercomparison, observation error characterization, and radiative transfer modelling, which continue to deliver direct operational value. Looking forward, future priorities may need to focus more explicitly on observing system resilience, particularly the risk that numerical weather prediction systems and downstream applications become overly tuned to existing observing characteristics, making future instrument changes disruptive. The integration of commercial satellite data was also identified as an emerging strategic topic. Finally, the HLPP item on AI/ML technologies for product processing and data-management infrastructure was seen as increasingly important, with open questions remaining on how such developments should be captured, coordinated, and reflected within existing survey and reporting mechanisms.

3.3 ICWG specific topics for coordination with CGMS

CGMS-54-ICWG-WP-01 ICWG specific topics for coordination with CGMS (Andrew Heidinger)

The ICWG GEO-Ring Cloud Product Intercomparison is progressing as a major collaborative initiative to compare and harmonize cloud products from global geostationary imagers. With support from NESDIS, UW-CIMSS developed a one-year prototype GEO-Ring dataset, while EUMETSAT is preparing a five-year dataset projected onto a HEALPix grid (**Hierarchical Equal Area isoLatitude Pixelization**. It is a grid system designed to partition a sphere into equal-area pixels) and will host the next GEO-Ring meeting in June 2026. The activity is coordinated among agencies including NOAA, CM SAF, Bureau of Meteorology, JMA, EUMETSAT, RAL Space and SAFNWC. The framework allows flexible product submissions in different naming conventions and formats, supports both global gridded and native satellite geometries, and includes a defined list of cloud properties together with uncertainty estimates. A common benchmark “golden day” has been selected for 1 October 2021 using four reference time slots.

Discussion on near-real-time cloud data for the GEO ring highlighted strong user interest in faster and more operationally responsive services, especially in the AI weather system contest. While increasing the full-disk observation frequency from 30 minutes to 15 minutes was considered, the current 30-minute interval remains the agreed baseline, reflecting existing nowcasting user requirements and operational

commitments. Participants noted that future needs, particularly for air-quality applications, storm tracking and rapidly evolving extreme events, may strengthen the case for higher refresh rates. More broadly, there was clear support for making GEO-ring data available in near real time, with timely delivery seen as a key priority. The dissemination of this GEO-Ring data ultimately requires the permission from each contributing agency and this permission is currently being negotiated. Although there was optimism that progress can be achieved, it was recognized that building robust and reliable operational capability will require sustained effort over time, together with stronger long-term coordination arrangements, including the nomination of new rapporteurs from member organizations.

Andrew Heidinger will be stepping down as CGMS rapporteur once a replacement is found.

3.4 Q&A/Discussion (block 1) [20']

A key cross-cutting issue identified was the need for stronger and more sustained support to the International Working Groups (IWGs), particularly for maintaining web pages, communication platforms, and organizing technical conferences that remain essential for coordination and knowledge exchange. It was also suggested that impact studies proposed by the IWGs should have a better uptake from WMO, so that scientific studies and numerical experiments can be coordinated at the international level. In this context, the idea of an international impact workshop was raised as a possible mechanism to accelerate coordination between IWGs and operational weather agencies.

Finally, there was growing recognition that the hyperspectral sounder products can become relevant to the nowcasting community, as high-frequency vertical profiling of temperature and humidity could increasingly support very short-range forecasting, convective monitoring, fog prediction, and rapidly evolving high-impact weather services.

3.5 IESWG specific topics for coordination with CGMS [40']

CGMS-54-IESWG-WP-03 Progress of the IESWG and items for coordination with the CGMS (Christoph Rüdiger (ECMWF))

The progress update from the IESWG highlighted snow and ice observations as a continuing priority area where current operational performance and product maturity remain constrained, indicating scope for further improvement in retrieval capability, coverage, and validation. Growing private-sector interest in this domain was also noted, suggesting that stronger coordination across public and commercial actors may become increasingly important. In response, a possible action item was proposed to enhance collaboration and align related activities within the CGMS framework, with specific link to IPWG.

CGMS-54-IESWG-WP-01 Way forward of the IESWG (Christoph Rüdiger (ECMWF))

In response to A53.06 and discussions at CGMS-53 plenary, and for recommendation to CGMS-54 plenary

Progress in radiative transfer modelling was highlighted as an area requiring continued follow-up and stronger engagement, given its foundational importance for satellite data exploitation. Participants noted that future work should explicitly address land applications in addition to traditional atmospheric retrievals, reflecting the growing range of missions and operational use cases that depend on accurate radiative transfer representation.

In parallel, it was seen as necessary regarding long-term support for the IESWG. Multiple organizations expressed support for maintaining it as a sustained international scientific coordination structure, with broad consensus that a long-term approach is both justified and strongly supported across the community.

In conclusion, CGMS WGII unanimously recommended the continuity of the IESWG as a CGMS International Science Working Group to plenary for endorsement.

Clara Draper (NOAA) may step down as co-chair and some point, and will continue to act as an interim CGMS rapporteur until a replacement has been found.

4 Climate and greenhouse gas observation matters for coordination with CGMS [60'] (incl. discussion)

4.1 Working papers on climate and greenhouse gases for coordination with CGMS

CGMS-54-JWGCLIM-WP-01 Joint CEOS-CGMS Working Group on Climate - update and recommendations to CGMS space agencies (Vincent-Henri Peuch, vice-chair)

On Climate Data Records (CDRs), stronger integration between International Working Group experts and CGMS/CEOS climate WG was encouraged. A central issue raised was the long-term stability of the 35 Essential Climate Variables, including the need to stress-test observing-system resilience against future disruptions, continuity breaks, or mission delays. It was noted that no comprehensive analytical framework yet appears to exist for such disruption scenario testing. Existing inventories and databases, including use of the WMO OSCAR system, already provide useful links to major international observation databases and support current gap-analysis activities. Among identified gaps, limb sounding was highlighted as particularly significant, while participants also stressed that gap analysis should extend beyond a 10-year horizon to support longer-term climate planning and continuity strategies.

Vincent Henry Peuch will become the new WGClimate Chair in autumn 2026 when Wenying Su will conclude her Chairing of the group. ESA plans to provide a nomination for the new vice Chair position.

CGMS-54-JWGCLIM-WP-02 WGClimate GHG Task Team - updates and recommendations to CGMS space agencies (Yasjka Meijer, TT lead)

The Greenhouse Gas Roadmap, endorsed by CGMS and CEOS in 2024, is focused on delivering fit-for-purpose data and moving toward operational greenhouse-gas monitoring, supported by an Action Annex with 30 near-term actions across eight thematic areas. Key priorities include tracking sensor developments and mission timelines, identifying measurement gaps, improving constellation coordination, strengthening calibration and Level-1 products through common calibration sites and portals, and advancing Level-2 product intercomparison and validation networks, including ocean coverage and remote regions such as sub-Antarctic islands. Further themes include flux inversion modelling, system development, and capacity building, reflecting the move from research missions toward sustained operational GHG services.

A second major emphasis is methane monitoring and stakeholder engagement. The Task Team reported completion of a first “Methane Common Practices” document, intended to support cooperation with New Space. Outreach to inventory agencies is progressing through “Bring Your Own Inventory Compiler”

initiatives. CEOS SIT Chair and GHG TT engaged with ASI and DLR to facilitate access for IMEO to PRISMA and EnMAP. Coordination with WMO initiatives such as IG3IS and G3W was highlighted as strategically important, with recognition that sustaining momentum in coming years may remain challenging despite strong recent support, notably from JAXA during its SIT chairmanship.

CGMS-54-WMO-WP-02 Update and status of the WMO Global Greenhouse Gas Watch (G3W) initiative (Oksana Tarasova (virtually))

The WMO update outlines continued progress in implementing the Global Greenhouse Gas Watch (G3W), currently in its pre-operational phase. Following technical workshops in 2025, the initiative is advancing through integration with existing WMO programmes such as the World Weather Watch and Global Atmosphere Watch. Major workstreams include greenhouse-gas modelling as new activity under the WIPPS framework, where standardized evaluation metrics and quality assurance procedures are being developed, as well as data management efforts to map current greenhouse-gas data flows and establish exchange procedures through WIS2.0. Pilot demonstrations of data exchange are planned, alongside broader architecture development for observations, model outputs, and verification systems.

A third pillar concerns network design and operational readiness. WMO is preparing an initial observational network design under the WIGOS framework, covering application specific observational needs, observing requirements, tiered monitoring approaches, and results from global OSSE studies. Challenges include adapting the global concept to national circumstances, while ensuring long-term sustainability, governance, scalability, and data policy coherence. Priorities for 2026–2027 include demonstration pilots, development of a sustainability strategy, improved data workflows, and operational protocols for model intercomparison. For CGMS, specific requested contributions include low-latency satellite products, mapping greenhouse-gas data flows and architectures, and identifying gaps in current and planned GHG observing missions.

CGMS-54-EUMETSAT-WP-05 GEO-Ring project – Progress and plans (Jörg Schulz)

Climate Data Records (CDRs) were highlighted as increasingly relevant not only for climate applications but also for machine-learning training and inference, which is bringing near-real-time access requirements onto the agenda. It was noted that documenting lessons learned from past CDR activities has been challenging, as progress has often depended on individual expertise, sustained personal engagement, and close hands-on collaboration rather than fully institutionalized processes. Participants stressed that long-term commitment remains essential, particularly for the demanding work of sensor recalibration and cross-calibration against reference instruments, including the consistent adjustment of historical spacecraft records. These enhanced long-term datasets are expected to provide substantial value for future reanalyses and next-generation AI-enabled Earth-system services, even when not immediately used in the current production cycle.

Lightning observations were also raised as an important emerging topic, particularly regarding their status within the Essential Climate Variables framework. At present, this appears to remain largely an EUMETSAT-driven activity, suggesting further international discussion may be needed on broader recognition and coordination. Reprocessing of lightning datasets is planned, which could improve long-term consistency and climate relevance. More broadly, continued progress on the GEO-ring was noted, including an existing publication in the BAMS, with additional collaborative work still underway.

5 AI/ML

CGMS-54-WGII-WP-07 Response to action on AI, survey outcome (Elody Fluck)
In response to actions 53.07-53.07iv

Key elements from the discussion on the survey outcome.

The discussion on the AI survey outcomes showed that CGMS agencies have moved beyond general interest in artificial intelligence and are now focused on practical implementation. A key message was that **tools and usable workflows matter more than debating formats alone**. While standards remain important, participants emphasized that agencies need working solutions for discovery, access, preprocessing, annotation, benchmarking, and deployment. Regular agency status reports were seen as valuable for maintaining visibility on progress, sharing lessons learned, and helping the community track rapidly evolving capabilities across members.

Survey results indicate strong demand to improve the AI readiness of Earth Observation data and services, although maturity levels differ significantly between agencies. Common priorities include better data discoverability, more consistent metadata, cloud-native access, and direct support for machine-learning workflows. Overall, the community appears ready to move from isolated experimentation toward coordinated implementation of AI-ready EO data practices.

There was also clear support for a shared AI/ML catalog, but with the strong caveat that it must operate as a living operational resource rather than a static inventory. Such a catalog should contain structured and quality-controlled datasets, models, documentation, standards, code examples, and practical usage guidance. On governance, agencies favored a joint CGMS–WMO model with peer-reviewed contributions, ensuring both technical credibility and broad international ownership.

CGMSSEC has been invited to present the survey outcomes to the plenary and to propose actionable way forward.

6 CGMS WGIII risk assessment

The 8th Risk Assessment Report of the CGMS primarily presents the results of the risk assessment for the CGMS baseline, including the risk status of Earth observation and solar/space observation sensors, key risk areas, related action recommendations, and an update on mission data for 2026.

High-risk area: The continuity of radio occultation observations in low-inclination orbits is at risk by the end of this decade, as there are no commitments for follow-up missions after COSMIC-2. The SWCG should recommend to WGIII how to separate radio occultation and ionospheric electron density profiles in the CGMS baseline and risk assessment, and the IROWG should clarify the risk level and potential impacts of the gap in low-inclination radio occultation.

Moderate-risk areas: There is a continuity risk for ultraviolet limb spectrometers in the 2030s; WGII needs to investigate other ultraviolet limb detection capabilities to supplement JPSS. There is a slight long-term continuity risk for short-wave infrared imaging spectrometers in the mid-to-late 2030s; the GHG TT needs to indicate through WGII whether to add short-wave infrared missions for CH_4 and CO_2 to the baseline. There is a minor long-term continuity risk for precipitation radar in the late 2030s. There is a continuity risk for scatterometers from the early to mid-2030s. There is a minor continuity risk for the 2030 GEO

magnetometer at 128°E. There is also a continuity risk for LEO high-energy particle sensors from the early to mid-2030s.

The WMO, in collaboration with the IPWG and GHG-TT, investigated how to present microwave (MW) and short-wave infrared (SWIR) sensor types in greater detail within the CGMS baseline (observation and orbit components) and the CGMS risk assessment to better reflect their observational capabilities and applications, and proposed corresponding updates.

In response to WGIII/A52.03, there is a need to clarify MW missions at different frequencies and their visualization in flight charts within the CGMS baseline and risk assessment. WMO conducted a study on MW frequencies and their applications, providing a document covering MW frequency applications and currently operational (or planned) instruments; the IPWG reviewed and confirmed the requirements. It is proposed to subdivide MW imagers in the CGMS baseline according to frequency ranges and applications, specifically into four ranges: <2 GHz, 2–19 GHz, 19–200 GHz, and >200 GHz, and to update CGMS agency commitments (attribute column).

In response to WGIII/52.04, the GHG-TT needs to review the representation of SWIR missions for CH_4 and CO_2 in the CGMS baseline and risk assessment. WMO and the GHG-TT jointly provided a study on SWIR frequencies relevant to CH_4 and CO_2 measurements. It is recommended to subdivide the Near-Infrared/Short-Wave Infrared (NIR/SWIR) imaging spectrometer category to better characterize instruments measuring CO_2 or CH_4, and to update CGMS agency commitments (attribute column). Specifically, subcategories should be established for CO_2 observations at 1590–1675 nm and 1990–2095 nm, and for CH_4 observations at 1660–1672 nm and 2100–2500 nm. It is also noted that the CH_4 band falls within a CO_2 band; therefore, instruments measuring in this band may simultaneously retrieve both gases and, if necessary, could be extended to other wavelength ranges for additional gases such as N_2O and CO

CGMS-54-WGIII-WP-12wgii Status and outcome of the 8th CGMS WGIII risk assessment (Melissa Johnson (NOAA))

WMO proposed responses to the following actions:

- WGIII/52.03:WGII to articulate how MW missions with different frequencies should be addressed and visualized in the CGMS Baseline and Risk Assessment.
- WGIII/52.04:GHG TT (via WGII) to indicate if SWIR missions for CH_4 and CO_2 missions should be added to the CGMS baseline and the risk assessment.

To be further addressed in the framework of WGII:

- WGIII/7RAWS-12: WGII to investigate other capabilities for UV limb sounding to complement JPSS
- WGIII/7RAWS-13: WGII to study and report back to WGIII the need of top of the atmosphere and spectral solar irradiance capabilities to be recorded in CGMS Risk Assessment and Baseline.
- WGIII/7RAWS-14: WGII to consider whether observations from geostationary orbit should be added to the CGMS baseline requirements for the broadband short/long wave radiometer.

Please see WGIII report for further details and the outcome of discussions.

7 Future direction 2022+ initiative

CGMS-54-CGMS-WP-3wgii Future direction: Proposal on the way forward

The CGMS-51 Plenary had endorsed the CGMS future direction strategic themes 2022+. Since then, these themes have been integrated into the working structure of the CGMS Working Groups, and progress has been achieved in several areas. In light of this progress, the CGMS Secretariat proposed concluding the initiation phase as the way forward, a proposal to which no objections were raised.

8 Reviewing and updating of the HLPP (excl. priorities related to the CGMS International Science Working Groups)

CGMS-54-CGMS-WP-36WGii Status of implementation of CGMS High Level Priority Plan (2025-2029) (Mikael Rattenborg)

(4.2.3) Establish a coherent development of volcanic ash products and applications with close user community coordination;

- WG II will deliberate on strategies for Ash Product development, review ongoing intercomparisons, and establish appropriate parameters for end user applications in collaboration with SCOPE-NWC, IAW, and ICAO. Action pertaining to WMO will be addressed during the intersessional period.

(4.5.1) Report on the progress within the Nowcasting community toward the use of hyperspectral sounders and work toward common products to serve the requirements of the global community.

- To revisit in two years' time
- Engaging the WMO Tropical Cyclone community

(4.8.1) Foster the coordinated development of novel products and applications of the new generation of imagers, initially for the areas of fire, aerosols, flood-mapping and river ice break-up

- To be removed

(4.8.2) Provide support to users in the WMO application areas, including for agricultural, hydrology, cryosphere, marine/ocean and other applications, with a focus on the WMO co-led UN Early Warnings for All (EW4ALL) identified priority hazards (heat, drought, flood, and tropical cyclones); and, where appropriate, identify and follow-up on opportunities by other entities (e.g. CEOS led activities);

- WMO has initiated surveys on observational gaps in different areas.

9 CGMS agency reports on highlights and issues in dataset and product generation since mid-2025 (block 2)

CGMS-54-EUMETSAT-WP-06 EUMETSAT report on highlights and issues in dataset and product generation since mid-2025 (Mounir)

Several highlights illustrated the growing value of multi-sensor integration and advanced exploitation techniques across operational Earth observation systems. Continuous progress in resampling Sentinel-2 and Sentinel-3 Level-1C data is improving the combined use of OLCI and SLSTR observations, with MICMICS identified as an important enabling framework, particularly for fire-detection applications. More broadly, combining multiple instruments was seen as increasingly important for environmental monitoring—for example, using MTG FCI together with MTG LI to better understand convection and

potential downstream fire ignition linked to transported particles. Flood mapping was also highlighted as a promising application, building on experience from ABI to exploit FCI data in future services.

Additional discussion focused on emerging atmospheric and AI-enabled applications. The variable sensitivity of MTG IRS to the boundary layer was noted, with performance depending strongly on local thermal contrast and changing through the diurnal cycle, meaning observations may not always be equally usable. Machine-learning applications for radar reproduction were also highlighted, reflecting the growing role of AI in deriving proxy products and enhancing observational coverage. Finally, a notable international cooperation example is the NOAA JPSS CrIS 3D winds demonstration, which uses the EUMETSAT IASI 3D winds algorithm based on three-dimensional optical-flow methods adapted from Heas and Memin (2008). This algorithm retrieves wind fields from temperature, humidity, and ozone profiles, and the operational IASI 3D wind product has been available since the end of 2025.

CGMS-54-JAXA-WP-01 JAXA Earth Observation Program and Data Product since mid-2025 (Moeka Yamaji)

Recent developments highlighted the scale of new Earth observation capabilities emerging from JAXA and partners. EarthCARE observations are expected to significantly improve understanding of cloud internal structure and the evolution of particles into precipitation, with potential benefits for forecasting heavy rainfall, although the extent to which these gains are already demonstrated versus still anticipated remains to be clarified. ALOS-4 (Advanced Land Observing Satellite 4) provides enhanced land-monitoring capability through the PALSAR-3 radar instrument, delivering a wide 200 km swath at 3 m spatial resolution. In parallel, JAXA's future PMM builds on the heritage of TRMM and GPM, with a preliminary design review completed in January 2026 and planned advanced Doppler velocity and high-sensitivity precipitation observations for launch after 2028.

CGMS-54-KMA-WP-02 KMA Report on Highlights and Issues in GK2A Products and Its Application (In-chul Shin)

Key highlights focused on the growing use of AI and high-resolution data exploitation within GK2A applications. Progress was reported on enhancements to the forest fire danger index algorithm through integration of dense automatic weather station (AWS) observations with GK2A AI-derived products such as soil moisture and potential evaporation, with encouraging qualitative results for wildfire risk assessment. Additional developments included a GK2A AI proxy-radar capability, demonstrating the use of satellite data and machine learning to emulate radar-like information where direct radar coverage is limited. Machine-learning super-resolution models were also highlighted as an important area of interest for improving spatial detail from GEO observations. Looking ahead, discussion also touched on channel selection for the future GK5, indicating continued focus on next-generation GEO sensor optimization.

CGMS-54-NOAA-WP-08 NOAA report on highlights and issues in dataset and product generation since mid-2025 (Andrew Heidinger)

GOES 19 became operational as GOES East in January 2025, marking the series' 50th anniversary and its final mission in the GOES-R series of satellites. All Level 1 and 2 products are now operational From GOES-19. GeoXO algorithm developers are using MTG/FCI to assess the benefits of 0.91 micron and higher-resolution IR channels on multiple applications. GeoXO is also looking forward to accessing the MTG IRS data and using it as a proxy for the GeoXO GXS.

NEON: Quicksounder ATMS has been integrated; stratus weather imager transaction authorization is in progress; the sounder supports MW-based applications (Phases B-D); NOAA POES has been decommissioned. The SNPP satellite is considered a tertiary asset, and all users are encouraged to use NOAA-20 and NOAA-21.
The Wildland Fire Data portal now maintains a consistent software development and deployment lifecycle. This portal is meant to serve as a model for future NESDIS data dissemination approaches. All NESDIS products continue to transition to the cloud.
The POES Series, which started in 1979, are officially decommissioned.

CGMS-54-NASA-WP-02 NASA Research and Data Product Highlights since mid-2025 (Maudood Khan)

The Small Ozone Lidar (SMOL) system team continued its focus on critical hardware developments aimed that enhancing system reliability by incorporating the lessons learned from various field operations. The NASA Pandora and European Space Agency (ESA) Pandonia projects continued to collaborate, coordinate, and facilitate global monitoring air quality and changes to atmospheric composition. As of March 2026, the Pandonia Global Network (PGN) of Pandora instruments is comprised of 206 sites in 37 countries. The PACE Validation Science Team (PVST) continued to coordinate a global effort to calibrate and validate observations being acquired by the PACE mission. These efforts use a diverse suite of instruments including radiometers, sunphotometers, spectrophotometers, automatic microscopes and water sample collection systems. Using insitu and remotely sensed data acquired during various NASA airborne science campaigns, researchers developed a new optical-theory-based model that shows that the aerosol size distribution (as parameterized by the effective radius, Reff) is the most important single parameter for relating CCN and High Spectral Resolution Lidar (HSRL) observations for polluted, coastal marine conditions. Such research aims to improve our understanding of the aerosol-cloud interactions, which is a significant contributor to uncertainty associated with estimates of radiative forcing. NASA released version 3 of the Quality Controlled Lightning Imaging Sensor (LIS) data. This version of the dataset represents the culmination of over thirty years of lightning observations acquired first from the LIS instrument onboard the Tropical Rainfall Measuring Mission (TRMM) 1997 to 2015) and then from the International Space Station (ISS) (2017 to 2023).

CGMS-54-ROSHYDROMET-WP-02 ROSHYDROMET report on highlights and issues in dataset and product generation since mid-2025 (TBC)

The Russian satellite constellation consists of two HEO satellites (Arctica), two LEO (Meteor-M) satellites and two GEO (Electro-L) satellites. Electro-L 5 was launched in Feb 2026, is now in the commissioning phase. Meteor-M 3 is working with limitations. The ground segment has 3 ground stations locations in Europe (Moscow), Siberia (Novosibirsk) and Far-Eastern (Khabarovsk).

Global mosaics from VIS and IR from multiple satellites are being generated every 30 minutes. Cloud Heights and maximum wind speeds are being generated over the Arctic from Artica-M and precipitation types are being generated from Electro-L. An AI approach is being used to estimate precipitation intensity from Electro-L. Other examples shown include a neural-network derived approaches for liquid water path and sea-surface temperature from Meteor-M.

CGMS-54-WMO-WP-01 Highlights and issues by WMO for the attention of the CGMS space agencies (Natalia Donoho)

This presentation covered the outcomes of Consultative Meeting (CM)-16, highlighting the continued importance of space-based observations for WMO priorities. It outlined the role of WIGOS Vision 2050 as the guiding framework for coordinated long-term planning and evolution of the global observing system. It emphasized the growing impact of AI/ML on satellite data utilization and future requirements, including implications for data quality, timeliness, formats, and capacity development. It identified persistent gaps in data access, dissemination, and regional capacity, particularly affecting the implementation of EW4All. It highlighted the importance of WIS 2.0 as an enabling infrastructure for improved data discoverability, accessibility, and interoperability. It addressed the need for continued coordination with CGMS and private sector actors, including through WMO Commons and related mechanisms. It noted the status of space weather activities and radio-frequency protection, including ongoing coordination needs and resource considerations. CM-17 is tentatively planned for early 2028 and will be confirmed in consultation with partners.

CGMS-54-IMD-WP-01 IMD report on highlights and issues in dataset and product generation since mid-2025 (TBC: A K Mitra)

IMD demonstrated a plethora of applications of weather satellite data. For geostationary satellites, use OLR and cloudiness for monsoon prediction. Case studies using precipitation, fog, cyclone analysis and winds were shown. The sounder products were also highlighted and the merger of lightning and satellites for thunderstorm detection were demonstrated. Examples were given for applications in the areas of hydrology, agrometeorology and climate.

Future missions include an INSAT-4th Generation with an advanced imager, a hyperspectral sounder and a lightning mapper. For Oceansat 3A, ARGOS will be replaced by a millimeter-wave atmospheric temperature and humidity sounder (MATHS). Other LEO missions include MW sounders in low-inclination orbits, dual frequency scatterometers and hyperspectral IR and MW sounders.

Future innovations include 3D mapping of the atmosphere from wind lidars, 4-D ocean fields and wave hazards from missions like SWOR and GNSS-R. Next generation geostationary lightning mappers will used to support early thunderstorm detection.

The Standard Operating Procedure (SOP) for the Satellite Meteorology Division, India Meteorological Department (IMD) has been successfully prepared. The document comprehensively covers INSAT3DR/3DS operations, products, data flow, and satellite systems. It serves as a structured guideline for operational, technical, activities within the division. and analytical. The SOP ensures standardization, efficiency, and consistency in satellite meteorological processes.

10 CGMS International Science Working Groups and need for coordination (block 2)

10.1 IROWG specific topics for coordination with CGMS

CGMS-54-IROWG-WP-01 IROWG specific topics for coordination with the CGMS (Ulrich Foelsche, co-chair)

The IROWG update emphasized the growing operational importance of radio occultation (RO) observations for numerical weather prediction, climate monitoring, and space weather, while also warning of continuity risks in the later 2020s. Current RO availability has been strengthened through recent NOAA commercial data purchases, but the long-term vulnerability of aging COSMIC-2 satellites remains a concern, particularly for low-inclination coverage essential to tropical and local-time sampling.

IROWG reiterated that the most effective future architecture combines low-inclination constellations with polar sun-synchronous systems, supported by open-data principles and unrestricted access to raw and low-level data, especially where commercial procurement is involved.
The report also highlighted strong results from the ROMEX initiative, which provides evidence-based recommendations on optimal RO observation numbers using real data from public and commercial missions. Multi-centre experiments involving agencies such as ECMWF, Météo-France, Met Office, KMA and NCEP showed overwhelmingly positive forecast impact when increasing RO assimilation up to around 35,000 profiles per day. These findings have already influenced forecasting configurations and CGMS planning. IROWG continues to endorse a sustained long-term target of 20,000 occultations per day with uniform global and local-time coverage, noting that this objective is only fully met when low-inclination components are included. The next joint IROWG-11 and OPAC-8 meeting will review ROMEX follow-on activities and future coordination priorities.

10.2 IPWG specific topics for coordination with CGMS

CGMS-54-IPWG-WP-01 IPWG specific topics for coordination with the CGMS (Giulia Panegrossi, co-chair (virtually))
IPWG shared recent advances in satellite-based precipitation estimation, including increased use of AI/ML techniques, improved passive microwave retrievals (notably for snowfall), and the expansion of active and passive microwave observing systems. It highlighted the rapid growth of new radiometers, CubeSat/smallsat constellations, and private-sector contributions, alongside increasing community engagement (more than 500 members).

IPWG emphasized emerging challenges associated with the post-GPM era, including the potential loss of a core reference system, increasing fragmentation of the observing system, calibration and intercalibration gaps, and the growing dependence of AI-based retrievals on data quality and representativeness. It also noted limitations in global validation datasets and the need to bridge the gap between research and operational applications.

The group reported progress on its Working Groups and alignment with CGMS HLPP activities, including development of a benchmark dataset for AI/ML applications, advancement of an OSSE-like satellite impact assessment framework, and continued efforts to establish the Baseline Surface Precipitation Network (BSPN) for global validation. Ongoing coordination needs with CGMS were highlighted in key areas such as intercalibration, GEO-RING use, and validation.

Key Recommendations to CGMS

IPWG presented several priorities for coordination with CGMS, emphasizing the need to ensure the consistency, quality, and sustainability of global precipitation products in the context of evolving satellite constellations and increasing use of AI/ML techniques. Specifically, IPWG recommended that:

- CGMS promote the consistent use of GEO-RING VIS/IR products, including consideration of real-time implementations, to better align research and operational precipitation products.
- CGMS, in coordination with GSICS, support development of an end-to-end intercalibration framework for microwave sensors, including CubeSats and commercial systems, to ensure traceability and consistency in the post-GPM era.
- CGMS support development of a satellite impact assessment framework (OSSE-like capability) to quantify the value of current and future observing systems for precipitation products.
- CGMS encourage contributions to the Baseline Surface Precipitation Network (BSPN) to improve validation datasets, uncertainty estimation, and AI training capabilities.
- CGMS promote development of AI-ready data quality and error characterization standards, including structured approaches to error propagation and uncertainty estimation.

IPWG also noted the increasing importance of maintaining a core reference capability for intercalibration and validation of precipitation products, and highlighted the need for coordinated international efforts to address fragmentation of the observing system and ensure long-term product consistency. CGMSsec recommended coordination with GCOS GPEX, to have unified requests to CGMS and agencies.

Dr Takuji Kubota (JAXA) was unanimously recommended by WGII to plenary as the new IPWG rapporteur.

10.3 GSICS specific topics for coordination with CGMS

CGMS-54-GSICS-WP-01 Outcomes of the recent GSICS and GSICS EP meetings and recommendations to CGMS space agencies (Mounir Lekouara)

GSICS reported continued progress in its core mission to monitor, improve, and harmonize the radiometric quality of operational weather and environmental satellite observations. Following its 2026 annual meeting in Ottawa, GSICS highlighted development of common methodologies and tools for operational calibration monitoring across agencies, including a new public dashboard to present calibration performance in a standardized format. Significant advances were also reported in lunar calibration, where improved lunar measurement datasets and models now enable some VIS-NIR calibrations with 2–3% absolute accuracy. A new LSICS framework, jointly developed by NOAA, USGS, and EUMETSAT, is helping agencies compare and operationalize state-of-the-art lunar irradiance models.

GSICS also emphasized stronger engagement with commercial data providers to help ensure that emerging private-sector missions adopt robust in-orbit calibration and inter-calibration practices consistent with GSICS standards. Looking ahead, agencies were encouraged to expand data sharing, particularly lunar observations, and to contribute to collaborative developments such as common VIS/NIR vicarious calibration documentation and adoption of tools like NASA's Spectral Band Adjustment Factor (SBAF) under the GSICS umbrella. Further work is still needed to refine uncertainty estimation methods and to consolidate calibration approaches for microwave and UVNS sensors, underlining GSICS's growing importance as a cross-agency quality backbone for increasingly diverse global observing systems.

11 Other topics of relevance to WGII

11.1 Selected topics of high priority to members

CGMS-54-WMO-WP-15 GEO Level 2 Product Baseline (Heikki Pohjola) (Follow-up from CGMS-49)

CGMS-54-CMA-WP-20 GEO MW sounding observation simulation and readiness (DOU Fangli)

CGMS-54-JMA-WP-03 Current Activity for Development of Level-2 Products on the Himawari-10 at JMA/MSC utilizing AI/ML (Kazuki Shimoji (virtually))

CGMS-54-JAXA-WP-02 Status of the Advanced Microwave Scanning Radiometer 3 (AMSR3) (Misako Kachi (online))

WMO submitted a working paper to the CGMS-54 WG IV meeting regarding the baseline for GEO Level-2 products. It aims to advance the development of a common baseline for Level-2 products from geostationary meteorological satellite imagers, building on the outcomes of the CGMS-49 discussions, in order to support the definition of core satellite data under the WIGOS.

IMD outlined progress, methods, and applications utilizing GNSS technology for atmospheric water vapour monitoring, including network development, data processing, key findings, and applications in extreme weather events.
The FY-4M Microwave Sounder is scheduled to be launched this year. It integrates traditional, hyperspectral, and new terahertz channels, and is expected to support hazardous weather monitoring, NWP model development, and improvements in short- and medium-range weather forecasting.

JMA is developing AI/ML-based Level-2 product retrieval algorithms in preparation for the next-generation geostationary satellite Himawari-10, scheduled for operations in FY2030. The retrieved three-dimensional fields will be used for assimilation into NWP systems and as the basis for near-real-time monitoring products.

An overview of the current status of the AMSR3, operated by JAXA, was presented, including its launch as the successor to GCOM-W/AMSR2, new capabilities, operational phases, data release, and cross-calibration. AMSR-3 data will be released in early July 2026, AMSR-2 will stop in Aug 2026 (delayed mode distribution will continue). Following completion of the Initial Functional Verification Operations Phase on 8 October 2025, the satellite and instruments are now in the Initial Calibration and Validation Operations Phase.

11.2 Status reports on the use of hyperspectral sounders

CMA, EUMETSAT, and JMA presented their latest advancements in polar-orbiting and geostationary hyperspectral infrared sounders. CMA's FY-3H and FY-4C satellites are currently being tested, with atmospheric composition retrieval underway. EUMETSAT showcased the impressive capabilities of IASI-NG and GEO IRS, along with new products and application results. JMA gave an overview of the Himawari-10 satellite, detailing its development plan as the successor to Himawari-8/9, onboard instruments, data formats, and service plans. Himawari-10 is expected to begin operations in fiscal year 2030.

CGMS-54-CMA-WP-16 Current Status and Applications of FY Infrared Hyperspectral Payloads (QI Chengli)

CMA reported strong progress on its FengYun hyperspectral infrared programme, highlighting the successful launch and early performance of FY-3H with the HIRAS-II sounder, whose key performance metrics meet operational requirements and show improved noise characteristics relative to earlier FY-3 missions. The instrument is already contributing to numerical weather prediction through assimilation in the CMA system, with demonstrated reductions in analysis errors, although some scan-angle-dependent biases linked to polarization effects remain under correction. FY-4C, launched in December 2025, is also progressing through on-orbit testing with the upgraded GIIRS sounder, offering hourly hyperspectral observations, finer spatial resolution, and enhanced calibration performance.

The presentation also emphasized broad application potential across weather forecasting and atmospheric composition monitoring. GIIRS observations are already supporting retrievals of temperature and water vapour profiles as well as trace gases such as ammonia, ozone, carbon monoxide, formic acid, and dust aerosols. Similarly, HIRAS observations from the polar FengYun series are being used for greenhouse gases, volcanic SO_2, and other composition products. Overall, CMA positioned its hyperspectral constellation as an increasingly important operational capability for NWP, atmospheric chemistry, and future integrated Earth-system monitoring.

CGMS-54-EUMETSAT-WP-14 Current status and applications of EUMETSAT's hyperspectral infrared soundings (Dorothee Coppens)

EUMETSAT presented the current status of its hyperspectral infrared sounding programme, highlighting operational continuity from IASI to the new IASI-NG on Metop-SGA and the first European GEO hyperspectral sounder, IRS. IASI-NG offers improved spectral resolution and lower noise, while IRS adds high-frequency (up to 48 times/day over Europe) and 4 km spatial sampling, creating major new capabilities for regional forecasting, nowcasting, severe storm warning, and 3D wind retrievals. Existing IASI observations remain among the most important data sources for numerical weather prediction, and the new generation is expected to significantly enhance this impact.

Beyond weather forecasting, the programme supports atmospheric composition, air quality, and climate monitoring. IASI-NG improves detection of pollution sources and new trace gases, while IRS offers high-temporal-resolution monitoring of rapidly changing chemistry, though sensitivity to the boundary layer varies with thermal contrast. Long-term IASI records also provide highly stable multi-decadal datasets for greenhouse gases and other climate forcers. Operational dissemination of early Level-1 products for both IASI-NG and IRS began in 2026, with Level-2 products expected in late 2026 to early 2027.

CGMS-54-JMA-WP-10 Considerations regarding hyperspectral infrared sounding in view of the preparation of Himawari-10 (Miki Abe)

JMA outlined preparations for Himawari-10, scheduled for launch and operations in FY2030 as the successor to Himawari-8/9. The mission will carry the upgraded Geostationary Himawari Imager (GHMI), a new hyperspectral infrared sounder (GHMS), a data collection system, and radiation monitors for space weather. GHMI will improve refresh rates, spatial resolution, and spectral coverage, while GHMS will provide hourly to 15-minute atmospheric temperature and humidity sounding over Japan and target regions, supporting better severe-weather forecasting and numerical weather prediction through data assimilation.

JMA also plans to modernize data services by moving Himawari Level-1 products to NetCDF format and distributing principal component analysis (PCA) compressed sounder products rather than full raw radiances, reflecting an operational focus on efficient data delivery. The programme was strongly motivated by growing demand for better prediction of extreme rainfall and stationary mesoscale convective systems in East Asia, where enhanced water-vapour profiling is seen as particularly valuable.

12 WGII actions, status of WGII chairpersons/rapporteurs, ToRs, ISWGs, Dates of WGII activities 2026-2027, preparing for plenary

CGMS-54-WGII-WP-04 Status of CGMS-53 WGII actions and any associated plenary actions (Paolo Ruti)

To be closed:

- A53.01 - To articulate how MW missions with different frequencies should be addressed and visualised in the CGMS baseline and risk assessment – Ongoing – WMO leading
- A53.09 - IWWG to consider holding a 5th AMV Global Intercomparison Study
- A53.07 - Plenary actions on AI

Still open to be closed in 2026:

- A53.02 - To investigate other capabilities for UV limb sounding to complement JPSS to be discussed at intersessional meetings – Requesting WCRP Programme on Stratosphere to organise an intersessional talk-
  - For future intersessional meetings to expand to MW

- A49.10 - Review the baseline dissemination strategy for volcanic ash product
  - **Feb 2025:** WMO - Re-evaluation of volcanic ash product dissemination with WIS 2.0 is needed.

CGMS-54-WGII-WP-05 CGMS-54 WGII action summary, and recommendations to plenary (Paolo Ruti)

- Support to the International Working Groups (ISWGs), particularly for maintaining web pages, communication platforms, and organizing technical conferences

- It was also suggested that impact studies proposed by the ISWGs should have a better uptake from WMO, so that scientific studies and numerical experiments can be coordinated at the international level. In this context, the idea of an international impact workshop was raised as a possible mechanism to accelerate coordination between ISWGs and operational weather agencies.

CGMS-54-WGII-WP-06 Decision on dates on WGII inter-sessional activities in 2025-2026 (CGMS-54 to CGMS-55) (WGII co-chairs)

The following intersessional meeting dates were agreed, all to start at 12 UTC:
15th September 2026
19th November 2026
21st January 2027
11th March 2027

The CGMS-55 working group meetings will be held on 19-23 April 2027 (pending CGMS-54 plenary endorsement) and expected to be hosted by EUMETSAT.

The CGMS-55 plenary session will be scheduled either on 1-3 June or 15-17 June 2027 (pending plenary decision in June 2026), and tentatively hosted by IMD.

13 Actions

WGII agreed the following actions:

CGMS-54 ACTIONS - WGII				
Actionee	**AGN item**	**Action #**	**Description**	**Deadline**
WG II Chairs and Rapporteurs		WGII/54.01p	Coordination for lightning imager validation methodologies and for extending the GEO-ring concept to lightning – presentations and discussion to be organized at the next intersessional meetings.	End of 2026
WG II Chairs and Rapporteurs		WGII/54.02p	Encourage the NWP community to assess the quality and impact of different satellite products—such as derived 3D wind products from IR sounders—as soon as possible after the data come online. Explore this through NWP agencies and via WMO operational and research groups.	CGMS-55
CGMSSEC		WGII/54.01p	Explore website and communication platforms options for ISWGs	CGMS-55

LIST OF WGII ACTIONS FOLLOWING CGMS-54 PLENARY DISCUSSIONS

CGMS-53 WGII high level actions and recommendations

Action #	Actionee	Agenda item	Description	Feedback	Deadline	Status
53.01	WMO		To articulate how MW missions with different frequencies should be addressed and visualized in the CGMS baseline and risk assessment	17 December Heikki: The CGMS baseline or Risk Assessment for passive instruments includes “microwave imagers” as one category but there are several different application areas which they serve depending on the microwave frequency range covered. These instruments are: - Sub-millimetre imager Typically above 200 GHz - Microwave imager [in SSO] Typically 19-183 GHz rang - Microwave imagery for surface temperature Typically 5-10 GHz range - Low frequency microwave imagery Typically below 2 GHz range	CGMS-54	**CLOSED**

53.02	WGII		Ensuring the coordination on GHG supersites with existing capabilities identifying the potential gaps – Raise at CGMS pre meeting in June or Organise a call involving Wgclimate, GHG task team, GSICS, WMO-G3W, WMO-GAW	Coordination going on with interaction with CO2M MAG (Dec 2025)	CGMS-54	**CLOSED**
51.03	IESWG CGMS rapporteur	WGII report	The IESWG to report on progress to plenary CGMS-53		CGMS-53	**CLOSED**
53.07	CGMSSEC, CGMS members, WGII, WGIV	Plenary 6	For reference only! Plenary action: CGMS Secretariat to survey CGMS contributing agencies. WGII and WGIV to propose initial standards to be presented at CGMS-54 (To facilitate the use of AI/ML by CGMS contributing agencies and meteorological data users, CGMS shall identify standards for using and converting meteorological EO data into a suitable form for Machine Learning applications. The key elements to be addressed are: + Data standards and formats, such as for example the Zarr usage best + practices Most relevant data transformation/representation per measurement type, i.e., remapping, standard vertical grids, etc. + Adoption of standard metadata per measurement type, preferably using CF metadata conventions, i.e., source of the information, AI fused or original data, error characterization of original and fused data.)		CGMS-54	**CLOSED**
53.07i	WGI, WGII, WGIV	Plenary 6	On data curation standards: WGI, WGII and WGIV to jointly draft standards that will be reviewed at CGMS-54 WGI/WGII/WGIV. WGI on the standardization of formats through its		Feb 2026, April 2026	**CLOSED**

			Task Group on Satellite Data and Codes. WGIV on the metadata aspects through its Task Group on Metadata (once a new chair has been found).			
53.07ii	WGII, CGMSSEC	Plenary 6	AI/ML applications catalogue: Centralisation of global AI advancements for community reuse, similar to GitHub repositories. CGMSSEC to circulate a survey on model metadata as prepared by WGII		Dec 2025, Jan 2026	**CLOSED**
53.07iii	WGII	Plenary 6	AI/ML applications catalogue: WGII to prepare a first version cataloguing such meta data and present it to CGMS-54.		Feb 2026, April 2026	**CLOSED**
53.07iv	WGII, SWCG	Plenary	Space weather AI readiness: SWCG and WGII to jointly hold 2–3 online meetings in order to address the prediction of solar flares and coronal mass ejections (CMEs), as well as tackling the challenges associated with real-time forecasting.		Q1 2026, April 2026	**CLOSED (MOVED TO SPACE WEATHER)**
53.07v	IPWG	Plenary 6	AI error propagation framework for precipitation products: IPWG to formulate a methodology to measure the uncertainties caused by AI in operational products.		Q1 2026, April 2026	**CLOSED**
53.09	IWWG	Plenary 5	From plenary: IWWG to consider holding a 5th AMV Global Intercomparison Study	To be handled within the framework of WGII	CGMS-54	**CLOSED**
	7th RAWS: Action on WGII	7th risk assessment	WGII to consider whether observations from Geo orbit should be added to the CGMS baseline requirements for the broadband short/long wave radiometer (https://cgms-info.org/wp-		CGMS-53 WGs, March 2025 (if feasible) alternatively for	**CLOSED**

			content/uploads/2021/06/CGMS-Baseline-Sustained-contributions-to-the-observing-of-the-Earth-system-space-environment-and-Sun-v6-1.pdf)		the 8th risk assessment	
WGII/54.01	CGMSSEC		Explore website and communication platforms options for ISWGs		CGMS-55	**OPEN**
WGII/54.01p	WGII	WGII	Discuss the coordination for lightning imager validation methodologies and for extending the GEO-ring concept to lightning at the next intersessional meetings		End of 2026	**OPEN**
WGII/54.02p	WGII	WGII	Encourage the NWP community to assess the quality and impact of different satellite products, such as derived 3D wind products from IR sounders, as soon as possible after the data come online. (Explore this through NWP agencies and via WMO operational and research groups)		CGMS-55	**OPEN**
WGII/54.03p	WGII	WGII	Establish a new Operational fire detection Task Force to investigate fire channels intercalibration, fire products and harmonisation		End of 2026	**OPEN**

CGMS-53 WGII internal actions

Action #	Actionee	Agenda item	Description	Feedback	Deadline	Status
49.1	WMO	2	Review the baseline dissemination strategy for volcanic ash product	23/02/26 Comment from Heikki Pohjola: 'This is going to updated as a part of L2 GEO product baseline (another action from CGMS-49). WMO wants to present this work in CGMS WGII in April.' Feb 2025: WMO - Re-evaluation of volcanic ash product	CGMS-54 WGII April	**ONGOING**

				dissemination with WIS 2.0 is needed.		
53.02	CGMS WGII		To investigate other capabilities for UV limb sounding to complement JPSS to be discussed at intersessional meetings – Requesting WCRP Programme on Stratosphere to organise an intersessional talk-	15 Apr 2026: For future IS meetings to expand to MW.	CGMS-54	**OPEN**
53.03	CGMS WGII		Based on the comment that "The currently achieved accuracy of Outgoing Longwave and Shortwave fluxes (2.5 Wm-2) is insufficient to determine the absolute magnitude of Earth's Energy Imbalance." It would be useful to have an overview presentation during WG II intersessional meeting from GEWEX on how do they see this evolving.	To be discussed in Jan and Mar 2026 - feedback from Joerg later on 2025 Dec Interaction between climate joint team and GEWEX	CGMS-54	**CLOSED**
53.05	WG Climate		WGClimate engaging IPWG and IROWG in the ESMO-CMIP interaction for the exploitation of satellite products – WGclimate send information to Int WGs	ESA is investing into validation tools for CMIP6. Precipitation validation gap covered by HSAF new products. Email to IPWG and IROWG to contact ESA CMIP office (for Valeria)	CGMS-54	**OPEN**

LIST OF WGII PARTICIPANTS

CGMS-54 - WGII List of Participants		
Firstname	**Lastname**	**Organisation**
Chengli	Qi	CMA
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CGMS-54 - WGII List of Participants		
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Kazuki	Shimoji	JMA
Miki	Abe	JMA
Takuya	Sakashita	JMA
Kazuki	Shimoji	JMA
Kotaro	Bessho	JMA
Vincent-Henri	Peuch	JWGClimate/ECMWF
Wenying	Su	JWGClimate/NASA
Byungil	Lee	KMA
Inchul	Shin	KMA
JEONG-MI	Song	KMA
Maudood	Khan	NASA
Giulia	Panegrossi	National Research Council of Italy (CNR)
Jaime	Daniels	NOAA
Melissa	Johnson	NOAA
Rishi	Ramsooksingh	NOAA
Andrew	Heidinger	NOAA and ICWG
Ekaterina	Tverdohlebova	Roscosmos
Konstantin	Litovchenko	ROSHYDROMET
Heikki	Pohjola	WMO
Oksana	Tarasova	WMO
Roger	Saunders	WMO
Anne	Taube	CGMS Secretariat
Antoine	Berment	CGMS Secretariat
Mikael	Rattenborg	CGMS Secretariat

CGMS

WORKING GROUP III

Operational continuity and contingency planning



WGIII REPORT

Co-Chairs: *TANG Shihao, CMA / Irene Parker, NOAA*

Rapporteur: *Heikki Pohjola, WMO, (Anne Taube, EUMETSAT, acting)*

1 Opening and introduction

CGMS-54-WGIII-WP-06 Meeting introduction, objectives and expected outcomes by co-chairs (verbal)

The WGIII co-chairs Irene Parker (NOAA) and Tang Shihao (CMA) opened the meeting by welcoming participants and thanking all delegates for their contributions during the CGMS week. The co-chairs outlined the main objectives of the meeting, which were to review the status of operational and future satellite missions, assess the outcomes of the latest CGMS risk assessment activities, discuss updates to the CGMS baseline document, and review WGIII strategic priorities and inter-sessional activities.
Irene Parker informed the meeting that she needs to step down from the co-chair position due to her new position at NOAA. Therefore, NOAA is proposing Timothy Walsh as incoming co-chair (See agenda item: 13 WGIII organisational matters).
The expected outcomes of the meeting included agreement on recommendations for the CGMS-54 plenary, closure or continuation of open WGIII action items, confirmation of future inter-sessional activities, and discussion of WGIII leadership continuity.

2 Updates on significant observational missions (in response to/from a CGMS baseline/risk assessment point of view) [45']

Operational missions

CGMS-54-CMA-WP-07 Updates and Long-term Planning of FengYun Satellites by CMA (TANG Shihao)

CMA provided an update on the status of the FengYun satellite programme and its long-term strategic planning. The presentation covered both operational and planned missions across geostationary and polar orbiting systems to support operational weather forecasting, climate monitoring, and environmental applications. FY-3H is under commissioning having GAS-2 instrument payload contributing to greenhouse gas measurements. FY-4C is also under commissioning providing full disc imagery with 5 min (Fastest, regular:10 mins) and 250 m temporal and spatial resolution respectively.
Future plans beyond 2030 include FY-5 and FY-6 satellite programmes strengthening atmospheric sounding capabilities, enhancing greenhouse gas observations, and improving precipitation and ocean monitoring. The long-term roadmap also includes increased resilience through overlapping missions and technology upgrades to improve temporal resolution, spectral capability, and calibration accuracy.
WGIII noted the importance of FengYun continuity as part of the global meteorological satellite observing system.

CGMS-54-JAXA-WP-03 Update on JAXA Precipitation Radar Mission — Precipitation Measuring Mission (PMM) (Moeka Yamaji) 7RAWS-4

Moeka Yamaji (JAXA) presented an update on the development of its next-generation precipitation radar mission, referred to as the Precipitation Measuring Mission (PMM). The mission is intended to build on the success of the Global Precipitation Measurement mission and ensure continuity of global precipitation observations. JAXA reported that the Preliminary Design Review had been completed earlier in the year and that the programme had now entered the critical design phase. Technical development is progressing according to schedule targeting to launch in 2028.
The mission will provide improved radar sensitivity and retrieval performance, which will enhance global precipitation monitoring, support severe weather forecasting, and improve hydrological applications.
WGIII recognized the strategic importance of precipitation radar continuity and the contribution of PMM to maintaining this capability.

CGMS-54-NOAA-WP-21 NOAA Operational Mission Updates (Irene Parker)

Irene Parker (NOAA) presented updates on the status of its operational satellite systems, including both geostationary and polar satellite programmes. The presentation covered the operational status of NOAA's LEO, GEO and space weather missions, as well as future mission planning under GOES follow-on and polar orbit continuity programmes.
NOAA reported stable operational performance across its current systems and noted ongoing work to prepare future missions. The future Quick Sounder mission is delayed to 2027 due to issues with launch vehicle availability. The migration of SNPP and JPSS products was reported.
GeoXO program with pending approval includes two satellite constellation (East and West) providing full disk imagery and sounding through 2055. The first launch in planned for 2032.
SWFO-L1 was launched in September 2025 and transitioned to Space Weather Observations at L1 to Advance Readiness – 1 (SOLAR-1) upon entering its final orbital position at Lagrange Point 1 (L1) in January 2026. NOAA continued development of the SOLAR-A and SOLAR-B observatories to follow SWFO-L1 (SOLAR-1).

NOAA also provided an update on its commercial data activities, noting that commercial datasets are increasingly being evaluated as supplementary operational inputs.

Heikki Pohjola (WMO) was asking about the USSF WSF-M satellite data availability with NOAA. Irene Parker confirmed that the agreement between NOAA and USSF is under preparation and data is expected to be available via NOAA in the future.

TANG Shihao was asking about the NOAA data availability in cloud services and if there are any costs for users. Irene Parker confirmed that it is free of charge for the users, but there are costs to NOAA.

Research missions

3 CGMS baseline and risk assessment [90']

CGMS baseline and risk assessment

CGMS-54-WMO-WP-07 WMO Gap Analysis (Heikki Pohjola)

Heikki Pohjola presented the WMO Gap Analysis covering Earth observation and space weather observation gaps against WMO WIGOS Vision 2040. The basic inputs for this analysis were from the WMO OSCAR/Space database, which is continuously updated with the latest satellite status provided by the space agencies. The results are dependent on the lifetime of the satellites being accurate, which is often not the case as dates can be extended subject to the payload's technical functionality and funding being available. The summary charts were presented together with the more detailed analysis of the recognized gaps related to the instrument types in the WIGOS sub-components 1 and 2 for the next decade. The gap analysis summarizes 18 gaps for Earth observation and 5 gaps for space weather (not presented).
The timeline of the WMO Gap Analysis was discussed. It was concluded that it could be useful to extend the timeline to 15 years instead of the current coverage of 10 years.
The most critical gaps for Earth observation are related to:

- Only 2 orbits with scatterometers 2032-2035
  - Sea surface winds (Weather forecasting, NWP, Tropical cyclones)
- Radio occultation sounding in tropics
  - NWP, Climate
- UV/VIS/NIR Sounders on GEO
  - Atmospheric chemistry
- Doppler Wind Lidar on LEO/Drift
  - Weather forecasting, NWP
- Backscatter and DIAL lidars
  - Aereosols, GHG, atmospheric chemistry
- Altimeters and wide swath radars
  - Sea-ice thickness
- Microwave Limb sounders in IR and MW on LEO/Drift
  - Atmospheric chemistry, ozone
- Precipitation radar and cloud radar
  - Weather forecasting, hydrology
- No SW occultation limb sounder in next decade
  - Stratospheric chemistry measurements
- Low frequency MW imagers after SMOS/SMAP
  - Soil moisture, salinity

The most critical gaps for space weather observation are related to:

- Only one coronograph at L1, and only one in GEO orbit from 2031 onwards
- Only one satellite measuring solar wind and magnetic field at L1 from 2034
- No solar magnetograph at L1 from 2029
- No radio waves measured at L1 from 2031
- No EUV spectrometer or imager measurements at L1 from 2030

Actionee	AGN item	Action #	Description	Deadline	Status
WMO		***WGIII/54.02***	To consider timeline of the WMO gap analysis going beyond a decade to support better application like climate monitoring.	CGMS-55	**OPEN**
SWCG/CMA		***WGIII/54.03***	To clarify the applications of the different kinds of EUV imagers.	CGMS-55	**OPEN**

CGMS-54-WGIII-WP-12wgiii Status and outcome of the 8th CGMS Risk Assessment (Melissa Johnson)

Melissa Johnson (NOAA) introduced the risk assessment preparation and explained the process of how data for flyout charts were collected. NOAA requests annual updates from the space agencies just before the annual CGMS WGIII Risk Assessment Workshop to ensure that data reflects the most up-to-date situation related to the missions of the space agencies. Melissa thanked all participants for the 100% response rate. She presented the risk assessment slide set, which was coordinated between NOAA, satellite operators and WMO. She also presented how to visually display the baseline attributes for the imagers related to a day-night visible channel capability and the IR dual-angle view imagery for high-accuracy SST.

The top-level risk assessment reflects the following high-risk areas:

- Continuity risk from RO observations in low inclination orbits in the later part of the decade as there is no commitment for a follow-on to COSMIC-2.
    - Ongoing action on SWCG to make a recommendation to WGIII how to separate RO and Ionospheric Electron Density profiles.

In addition, the top-level risk assessment reflects the following moderate risk areas:

- Continuity risk for the UV Limb Spectrometer in the 2030s.
    - WGII to investigate other capabilities for UV limb sounding to complement JPSS
- Slight long-term continuity risk for the SWIR Imaging Spectrometer in the late 2030s.
    - GHG TT via WGII has action to indicate if SWIR missions for CH_4 and CO_2 be added to the baseline.
- Slight long-term continuity risk for the Precipitation Radar in the late 2030s.
- Continuity risk for Scatterometry in the early to mid-2030s.
- Slight continuity risk for Magnetometer in GEO in 2030.
- Continuity risk for Energetic Particle Sensor in LEO in the early to mid-2030s.

It was noted that the most significant risk identified remains the potential loss of low-inclination radio occultation observations, particularly due to the eventual end-of-life of the COSMIC-2 mission, which remains highly valuable for numerical weather prediction and tropical forecasting, and any degradation in coverage would affect forecast quality.

CGMS-54-IROWG-WP-02 Continuity risk level and potential impacts associated with a gap of low inclination RO (Christian Marquardt)

Christian Marquardt (IROWG/EUMETSAT) presented the situation of the radio occultation (RO) observations now and in the future. He referred to the presentation by NOAA at the American Meteorological Meeting in Houston (January 2026) with the NOAA/NESDIS goal for RO is a hybrid architecture consisting of commercial data and international partnerships. This is the “best value” to meet all weather and space weather constraints is by combining low inclination orbits (below 40°) with polar sun-synchronous orbit components. He emphasized the importance of scientific considerations on data buys for documentation of L0 data, pre-data sets before operational delivery, and long term archival.

Irene Parker wanted to highlight the NOAA RFP requesting 10 000 – 26 000 RO soundings for 2-year contract covering also low inclination.

Hui Sao commented that ROMEX results are covering the impact of losing low inclination data.

Tang Shihao explained that CMA has no investment in private institutions, and it is taking steps to sign RO data procurement contracts with private players, yet no progress has been made so far.

Actionee	AGN item	Action #	Description	Deadline	Status
IROWG			To analyse optimal mix (number of profiles) on low, mid, high inclination orbits for RO data in short-term covering the gap after COSMIQ 2 EoL.	Jun 2026	**OPEN**

CGMS-54-WMO-WP-03 Update on defining MW and SWIR frequencies for CGMS Risk Assessment and CGMS Baseline (Heikki Pohjola)

Heikki Pohjola presented the current work on refining microwave (MW) and shortwave infrared (SWIR) frequency definitions within the CGMS baseline and risk assessment framework (CGMS actions WGIII/52.03 and WGIII/52.04).
WMO together with IPWG and GHG-TT have studied how to present microwave (MW) and shortwave infrared (SWIR) sensor types in CGMS Baseline (Observations and Orbits Section) and in the CGMS Risk Assessment to be more detailed related to their observing capabilities and applications. Proposal was made to update MW sensor type class in the CGMS Baseline into the following frequency ranges: < 2 GHz, 2-19 GHz, 19-200 GHz and >200 GHz.

In addition, the CGMS Baseline covers instruments measuring greenhouse gases (GHG), which includes SWIR imaging spectrometers and hyperspectral Infrared sounders in sun-synchronous and drifting orbits. It is recommended that the SWIR imaging spectrometers sensor type class will be split into sub-categories 1590-1675 nm and 1990-2095 nm for CO_2 observation and into sub-categories 1660-1672 nm and 2100-2500 nm for CH_4 observation.

It was noted that more work is needed to improve consistency across mission assessments in the CGMS Baseline. The discussion concluded that additional technical coordination would be required before finalizing updates. Thus, ongoing actions were noted to be kept open and to continue the work during next intersessional period.

CGMS-54-CMA-WP-22 Proposal for adding GEO rapid/quick scanning capability in the CGMS Baseline

Min Guan presented a recommendation to the CGMS Baseline update to explicitly distinguish the quick scanning capability of GEO imagers. Currently, the CGMS Baseline merges LEO and GEO imagers into a single category, obscuring the fundamental difference in temporal resolution and underrepresenting GEO's unique contribution to high-frequency regional monitoring. In response to the WMO "Early Warning for All" (EW4All) initiative, which demands minute-level observations for nowcasting and disaster response, the proposal separates LEO and GEO imagers into distinct rows. The revised baseline would define GEO imagers with clear requirements (temporal resolution <30 in, VIS <1 m, IR <4 m) and acknowledge existing minute-level rapid scanning capabilities of all next-generation GEO. This change enhances baseline clarity, supports EW4All initiative, and aligns CGMS with international priorities.

It was concluded that proposal is good, but more work is needed to redefine the proposal not to change the scope of the original CGMS Baseline definition for LEO and GEO imagers.

CGMS-54-CGMS-WP-40 CGMS baseline document updates proposed from the 8th risk assessment workshop (Melissa Johnson/Anne Taube) Recommendation to plenary

Anne Taube (CGMS Sec) presented the proposed edits to the CGMS Baseline (mainly in Section 2 Observations and Orbits) related to Ionospheric Electron Density profiles, Multi-purpose meteorological imagers, MW imager and SWIR imaging spectrometer.

The proposal to add detailed definition for Ionospheric Density Electron Density profiles with the details in Section 2 was approved. Other proposals related to Multi-purpose meteorological imagers, MW imager and SWIR imaging spectrometer were postponed to CGMS-55 as they need additional clarifications and more work.

WGIII recalled the following actions:

Actionee	AGN item	Action #	Description	Deadline
WGIII & WGII		52.03	WGIII to recommend to WGII the need for articulating MW missions with different frequencies in the CGMS baseline and risk assessment in the future and how to visualise it in the flyout charts.	CGMS-55
WGIII for WGII/GHG TT	7.1	52.04	WGIII for WGII: GHG TT to review representation of SWIR missions for CH4, and CO2 in the CGMS baseline and the risk assessment	CGMS-55
CGMSSEC, WGIII, WMO		8RAWS-6	Consider in what way GEO rapid scanner capability could/should be covered in the baseline.	CGMS-55

CGMS-54-WGIII-WP-11 CGMS contingency plan - final review (Anne Taube) TBD For confirmation by plenary

Anne Taube (CGMS Sec) presented the current contingency plan, which does not include modifications since CGMS-53.

4 WMO core satellite data (WMO Res 1) [10']

Establishment of core satellite data

CGMS-54-WMO-WP-04 Update on WMO efforts to establish core data (Heikki Pohjola)

Heikki Pohjola presented progress on establishing core data related to WMO Unified Data Policy to support free and unrestricted international data exchange for operational use.
He presented recent updates on defining Core and Recommended satellite data for nowcasting and hydrology applications. He explained the background of defining core and recommended data sets and how they linked to WMO data policy. A workshop with satellite operators, nowcasting user community and WMO was organized 15-16 October 2025 and agreed Core and Recommended satellite data for nowcasting were finalised with a workshop statement for INFCOM-4. The definition Core and Recommended data for hydrology is also in the final phase. A workshop was organized 24-25 Feb 2026. The goal is to have a proposal for additional datasets approved in INFCOM-4 in November in 2026.

5 WMO OSCAR/Space database status update [15']

WMO OSCAR/Space database

CGMS-54-WMO-WP-06 Status and plans of WMO OSCAR/Space database (Heikki Pohjola)

Heikki Pohjola presented the status of OSCAR/Space database and WMO future plans for its development. WMO Space Programme Office continued the successful development framework with the contractor for the OSCAR/Space technical maintenance. The preparation of the contract for the future service is under WMO tendering process.

The recent development plan in 2025 resulted software release including finalization of the Microsoft Azure transition, automatic update of EOL and launch dates at year end and implementation of Essential Climate Variable filter in gap analysis.

The major miles stones in 2026-2027 are the retender the framework contract for the development, implementation of the reporting tool for Radio Frequency Interferences, restructure frequency information including TT&C data and implement OSCAR/Space interface to real time monitoring of WIGOS Vision satellite instrument data in WIS 2.

The main mechanism for the WMO Space Programme Office to collect the relevant information for the database content updating is through online templates submitted to the OSCAR/Space Support Team (O/SST) members, usually two times per year. In addition, the similar request was sent to some non-CGMS members having their satellites in OSCAR/Space.

6 Socio economic benefits (SEB)

SEB activities and studies

CGMS-54-CMA-WP-21 Research on Socioeconomic Benefit Evaluation of Fengyun meteorological satellites. A Case Study of Typhoon Services by Fengyun-4 Satellites (GUAN Min)

Min Guan presented the study on the socioeconomic benefit evaluation of Fengyun meteorological satellites, taking Fengyun-4 satellite typhoon services as a case. Based on the information value chain theory and integrated evaluation methods, it constructs a full-chain evaluation model. The results verify that Fengyun-4 satellites deliver remarkable socioeconomic benefits in typhoon monitoring and

forecasting, with high input–output returns. It concluded 135 billion yuan benefit for entire FY-3 lifetime. This research provides quantitative support for satellite project planning, scientific investment decision-making, and optimal resource allocation for China's meteorological satellite development.

CGMS-54-JMA-WP-11 Update and proposal on the way forward of the CGMS socio economic benefit activities (future direction 2022+) (Hiroshi Ono (virtually))

Related to the CGMS Future Direction 2022+ project Hiroshi Ono (JMA) presented an update on CGMS's socio economic benefit (SEB) studies, which have recently played an important role in convincing stakeholders of the value of the satellite programs. These studies offer policymakers/decision-makers a more comprehensive understanding of the implementation of satellite activities (new satellite programs and sustainment of current satellites).

To collect and support the sharing of information on SEB activities implemented by CGMS members, JMA has conducted a survey for consideration of SEB case studies and opinions on future activities. Responses have been received from EUMETSAT, NOAA, NASA, JAXA and JMA itself. The results of these activities will be shared online to help inform potential future directions in CGMS work. EUMETSAT has conducted SEB studies on EPS-MetOp and EPS-Aeolus/Sterna. NOAA has
conducted SEB studies on GeoXO, future LEO constellation and Space Weather Service.

The discussion focused on integrating these activities more directly into regular WG work rather than maintaining them as a standalone activity

WIGOS Vision

WIGOS Vision update

CGMS-54-WMO-WP-05 WIGOS Vision 2050 - status update and way forward (Heikki Pohjola, WMO)

Heikki Pohjola (WMO) presented an update of the WMO Integrated Global Observing System Vision 2050 initiative. The vision aims to define the future integrated observing system needed to meet evolving weather, climate, and environmental requirements. Satellite observations remain a foundational component of the future observing architecture. It is of strategic importance for CGMS agencies, as it supports the securing of long-term commitment, funding, and continuity of operational Earth and space weather observing missions. It also strengthens all space agencies' ability to respond effectively to evolving user needs and to advance observational capabilities in support of early warning systems, the protection of lives and infrastructure, and disaster risk reduction. Formal review process of the WIGOS 2050 document is in progress and expected to continue for a few weeks before the submission to INFCOM-4.

CGMS-54-CGMS-WP-13 CGMS coordinated response to the WIGOS Vision update (Sean Burns) For recommendation to plenary

Sean Burns (EUMETSAT/CGMS Sec) gave a presentation on the status of the CGMS's coordinated response to the WIGOS Vision update. It underlines that the WIGOS Vision 2050 should support CGMS members

by 1) defining a common set of high-priority, core observations, aligned to global product needs, 2) facilitating global coordination and optimising resources across public and commercial capabilities, and 3) emphasising the need for fit-for-purpose data delivery, ensuring the observing system is tightly linked to downstream product requirements.

CGMS WGIII recommends Plenary to approve the CGMS coordinated response to the WIGOS Vision update.

8 Private sector engagement

Private sector engagement

CGMS-54-WMO-WP-14 WMO updates on private sector engagement and considerations related to the CGMS space agency community (Daniel Kull (virtually))

Deniel Kull (WMO) provided an update on increasing private sector involvement in the satellite data ecosystem.
The discussion covered opportunities and challenges related to commercial data procurement, quality assurance, and integration into operational systems.
WGIII acknowledged that private sector capabilities are growing rapidly and can provide valuable supplementary observations.
However, members emphasized that governance, quality standards, and continuity remain critical considerations.

CGMS-54-CMA-WP-06 CMA updates on private sector engagement (TANG Shihao)

TANG Shihao (CMA) presented the updates of CMA's progress in engaging the private meteorological satellite sector. CMA has evaluated the impact of commercial radio occultation data (Tianmu, Yunyao) assimilated into CMA's NWP system, showing overall positive impacts on forecasting performance.

In addition, CMA has started developing guidance, formulated data standards, and promoted a collaborative observation architecture led by Fengyun satellites and supplemented by commercial small satellites.

To advance global governance, CMA recommends establishing a dedicated task team with Working Group III to 1) focus on small satellite constellation planning, standards, etc., 2) work together to make small satellite constellation planning to guide the healthy and sustainable development of the commercial meteorological satellite industry, and 3) develop international standards for commercial meteorological satellite data, ensuring interoperability and global usability.

WGIII noted that private sector engagement models vary between agencies but that shared lessons are valuable.

CGMS-54-NOAA-WP-05 Relationship with the private sector: Update on NOAA commercial data program (Irene Parker)

Irene Parker (NOAA) presented NOAA's update on the commercial data program. The presentation provides a brief update on both ongoing and near-term planned efforts at NESDIS CDP, including data purchases to support operations and data pilots to evaluate and assess different commercial technologies. NOAA highlights progress in the Radio Occultation Data Buy (RODB) and ongoing pilots evaluating GNSS Reflectometry (GNSS-R) for ocean surface winds (OSW), microwave sounder (MWS) for atmospheric vertical temperature and moisture profile measurements, microwave imagery for tropical cyclone forecasts, and hyperspectral microwave (HyMS) sounder higher-vertical-resolution of atmospheric state. NOAA is developing a long-term umbrella contract to streamline future acquisitions for various types of space-based environmental monitoring (SBEM) data. Near-term priorities include transitioning microwave sounder technology to operations and launching a wildfire imagery pilot to evaluate the use of high-resolution multi-spectral imagery for improved fire detection, mapping, and intensity monitoring. The NOAA NESDIS strategy is to buy and partner where they can and build what they must. The mission of NESDIS Commercial Data Program (CDP) is to acquire commercial space-based environmental observation data to support NOAA's operations.

WGIII discussed the implications of increasing commercial contributions for future baseline definitions. Christian Marquardt (EUMETSAT) was pointing out that for example GNSS-R at risk to ramp down if there are no customers, and then how to make assessment for the data if commercial capability is not there. Irene Parker responded that NOAA cooperates with universities for impact studies.

CGMS-54-EUMETSAT-WP-24 EUMETSAT updates on commercial data developments and plans (Anne Taube)

Anne Taube (EUMETSAT) presented EUMETSAT's commercial RO trial service from February 2022 to August 2026, and their plans to continue it for the next 5-6 years. EUMETSAT Member States are exploring a cost-effective approach for the procurement of commercial data, with the objective of complementing and enhancing the quality of existing core EUMETSAT data services. This means that EUMETSAT's policy continues to prioritise flying RO instruments on public platforms complemented by targeted commercial procurement. EUMETSAT is preparing a new procurement action for the next commercial RO data acquisition, following best-value-for -money principles, use of European technology and strong European presence as key considerations. A range of data types (e.g. MWS, IRS) will be considered as they become available, supported by data validation conducted by participating NMHSs and by EUMETSAT's ongoing market analysis, and then EUMETSAT is committed to develop a portfolio of collaboration with satellite operators in order to meet its Member States' increasing demand of space-based data.

WGII concluded the following action:

Actionee	AGN item	Action #	Description	Deadline	Status
WGIII		WGIII/54.01	Review the relevant CGMS Best Practice document on commercial data buys.	CGMS-55	

9 Future direction 2022+ initiative

CGMS-54-CGMS-WP-3wgiii Future direction: Proposal on the way forward (Anne Taube)

Anne Taube (CGMS Sec) presented the status of the CGMS Future Direction 2022+ project. The CGMS-51 Plenary endorsed the CGMS future direction 2022+ strategic themes. Since then, the strategic themes have been integrated into the working structure of the CGMS Working Groups and progress has been made in several areas. From the perspective of the CGMS Secretariat, the initiation phase has been concluded. Thus, CGMS members are requested to consider the closure of the initiation phase for the CGMS future direction themes, and to recommend the closure to plenary for endorsement.

WGIII proposes that CGMS-54 Plenary will close the initiation phase of CGMS Future Direction 2022+ project, related activities are continuing in the CGMS working groups.

10 Review of actions

Review of CGMS-53 and CGMS-54 actions

CGMS-54-WGIII-WP-05 CGMS-53 WGIII list of actions and any relevant CGMS-53 plenary actions (Anne Taube)

Anne Taube (CGMS Sec) presented the status of the WGIII actions. Please see list of actions and their status below.

CGMS-54-WGIII-WP-10 CGMS-54 WGIII actions (Heikki Pohjola)

Heikki Pohjola as a WGIII rapporteur presented the actions collected during the WGIII meeting. Please see the list of new actions below.

11 CGMS High Level Priority Plan (HLPP)

Review and updating of the HLPP

CGMS-54-WGIII-WP-13 Identification of top priorities for WGIII
Irene Parker as a co-chair of WGIII presented CGMS-53 HLPP priorities and what could be the top priorities of WGIII in the HLPP document.
It was agreed that WGIII members have two weeks to review the HLPP targets and provide their comments to CGMS Sec.

CGMS-54-CGMS-WP-36wgiii Recap of summary of WGIII status of implementation of CGMS HLPP (2025-2029) (Mikael Rattenborg)

Mikael Rattenborg (CGMS Sec) presented the status of implementation of the CGMS High-Level Priority Plan, as agreed by CGMS at its 53rd Plenary Session June 2025 hosted by EUMETSAT in Evian, France. Inputs have also been provided by International Science Working Groups (through WGII) and the joint CEOS-

CGMS Working Group on Climate. Please see the implementation status in the CGMS-54-CGMS-WP-36wgiii.

WGIII concluded the following action:

Actionee	AGN item	Action #	Description	Deadline
WGIII			Review the top priorities of HLPP related to WGIII presented under CGMS High Level Priority Plan (HLPP) agenda item in CGMS-54 WGIII and provide feedback to CGMS Sec.	**30 Apr 2026**
WGIII			CGMS WGIII to review existing HLPP and agree with three top WGIII priorities in HLPP, and provide agreed list to CGMS Sec.	**CGMS-55**

12 Future CGMS WGIII meetings

Future CGMS WGIII meetings

CGMS-54-WGIII-WP-08 Confirmation of selected for WGIII inter-sessional activities/meetings in 2025-2026 (CGMS-54 to CGMS-55) and dates of the CGMS-54 WGIII plenary session (Anne Taube)

Antoine Berment presented a proposal for CGMS-55 intersessional events and meetings. WGIII decided CGMS-55 intersessional sessions will be organized 16 Sep 2026, 12 Nov 2026, 12 Feb 2027 and 31 Mar 2027 (12 UTC). The 9th WGIII RAWS will be organized 24-26 Feb 2027 and CGMS-55 WG meetings 19-23 Apr 2027. Plenary session will be organized 1-3 Jun or 15-17 Jun 2027.

13 WGIII organisational matters

CGMS-54-WGIII-WP-14 Election of new WGIII co-chair

Irene Parker informed the meeting that she needs to step down from the co-chair position due to her new position at NOAA. Therefore, NOAA is proposing Timothy Walsh from NOAA as incoming co-chair. WGIII expressed appreciation for the outgoing co-chair's leadership and endorsed the nomination of Timothy Walsh for the confirmation of the CGMS-54 Plenary.

14 Any other business

There was not any other business.

15 Conclusions, preparation of the WGIII report for plenary

Co-chairs thanked all the participants for their active contributions to the meeting, and they welcomed everyone to CGMS-54 Plenary in the Republic of Korea.

LIST OF WGIII ACTIONS FOLLOWING CGMS-54 PLENARY DISCUSSIONS

CGMS WGIII actions

Action #	Actionee	Agenda item	Description	Feedback	Deadline	Status
52.03	WGIII & WGII	7.1	WGIII to recommend to WGII the need for articulating MW missions with different frequencies in the CGMS baseline and risk assessment in the future and how to visualise it in the flyout charts	Apr 17, 2026 It was agreed this needs more discussion and a dedicated WGIII intersessional will be held to address the Baseline document https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-03 https://www.cgms-info.org/Agendas/WP/CGMS-54-WMO-WP-03 Apr 14, 2026 Proposal presented to WGII Apr 9, 2026 Proposal https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-23 will be addressed in WGII in April. Mar 11, 2026 Proposal provided by WMO/Heikki Pohjola on how to reflect this in the baseline. Proposal to be shared with members for feedback prior to WGIII. Feb 3, 2026 8RAWS: Proposal made, to be reviewed at the WGIII IS in March and confirmed at WGIII session in April. ….	Mar 30, 2026, Apr 17, 2026 (CGMS-54 WGIII) (2026 3-5 Feb: 8th risk assessment)	**ONGOING**

52.04	WGIII for WGII/GHG TT	7.1	WGIII for WGII: GHG TT to review representation of SWIR missions for CH_4, and CO_2 in the CGMS baseline and the risk assessment	Apr 17, 2026 Requires further discussion in WGIII for the next round https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-03 https://www.cgms-info.org/Agendas/WP/CGMS-54-WMO-WP-03 Mar 11, 2026 Proposal provided by WMO/Heikki Pohjola on how to reflect this in the baseline. Proposal to be shared with members for feedback prior to WGIII. Feb 3, 2026 8RAWS: Progress expected for the next WGIII IS on 11 March. …	Mar 30, 2026 Apr 17, 2026 (2026 3-5 Feb: 8th risk assessment)	**ONGOING**
53.01	CMA	3.2	CMA to present in CGMS-54 WGIII meeting RO impact studies of commercial RO data assimilated in their NWP model	Apr 17, 2026 CMA presentation to WGIII https://www.cgms-info.org/Agendas/PPT/CGMS-54-CMA-WP-06. Mar 11, 2026 EUMETSAT will make a presentation on behalf of IROWG to WGIII in April responding to the action. Feb 3, 2026 8RAWS: CMA confirmed. Nov 12, 2025 WGIII IS#2 expected to be available for CGMS-54 WG meetings in April 2026.	Apr 17, 2026 CGMS-54	**CLOSED**

53.02	CGMS Members	4	CGMS members to review focus areas of the CGMS position paper on WIGOS Vision 2050 update	2 Jun 2026: coordinated position endorsed at plenary Apr 17, 2026 Papers presented in WGIII https://www.cgms-info.org/Agendas/PPT/CGMS-54-WMO-WP-05 ; https://www.cgms-info.org/Agendas/PPT/CGMS-54-CGMS-WP-13 ; https://www.cgms-info.org/Agendas/WP/CGMS-54-CGMS-WP-13 Apr 9, 2026 https://www.cgms-info.org/Agendas/WP/CGMS-54-CGMS-WP-13; https://www.cgms-info.org/Agendas/PPT/CGMS-54-CGMS-WP-13 Mar 11, 2026 CGMSSEC will slightly update the consolidated CGMS statement following CM-16 and provide it to members for review, and then present it to WGIII for recommendation to plenary. Feb 3, 2026 8RAWS: Sharing of latest version. To be presented to WGIII for recommendation to plenary. …	CGMS-54 plenary Mar 30, 2026 Apr 17, 2026 (Apr 15, 2025)	**CLOSED**
53.03	CMA	7	CMA to present Best practices for regional EW4ALL for the benefit of the local government in CGMS-54 WGIV meeting.	Aug 21, 2025 Action closed in the framework of WGIII, transferred to the WGIV LOA.	CGMS-54	**CLOSED (action transferred to WGIV LOA)**
WGIII/54.01	WGIII	WGIII IS	Review and update of CGMS best practices on relationship	Jun 4, 2026 Following discussions at CGMS-54 on commercial data, best	CGMS-55	**ONGOING**

			with the private sector on commercial data purchases	practices to be updated in the next round. Apr 17, 2026 Presentation by IROWG https://www.cgms-info.org/Agendas/PPT/CGMS-54-IROWG-WP-02 The Best Practices document may need to be updated reflecting the needs for the RO data (long term archiving beyond EoL, L0 availability, ..). New action to be created for addressing in next round of WGIII. Apr 9, 2026 Postponed until necessary. Mar 11, 2026 This is a placeholder action. WMO will make a presentation to WGIII in April. …		
WGIII/54.02		WMO	To consider timeline of the WMO gap analysis going beyond a decade to support better application like climate monitoring.		CGMS-55	**OPEN**
WGIII/54.03		SWCG/CMA	To clarify the applications of the different kinds of EUV imagers.		CGMS-55	**OPEN**
WGIII/54.04		WGIII	Review the top priorities of HLPP related to WGIII presented under CGMS High Level Priority Plan (HLPP) agenda item in		30 Apr 2026	**OPEN**

			CGMS-54 WGIII and provide feedback to CGMS Sec			
WGIII/54.05		WGIII	CGMS WGIII to review existing HLPP and agree with three top WGIII priorities in HLPP, and provide agreed list to CGMS Sec		CGMS-55	**OPEN**
WGIII/54.01p	IROWG	WGIII	IROWG to assess the impact of the decline in COSMIC data availability, possibly distinguishing between the respective contributions of low- and medium-inclination orbit, and analysing the number of RO required to mitigate the risk	4 June 2026 - A follow-up call will be arranged to better understand how the action item supports agency priorities - IROWG can help coordinate an assessment - The timeline for completing the assessment depends on the detailed plan for conducting the assessment	End of 2026 (9th WGIII RAWS: 24-26 Feb 2027)	**OPEN**
WGIII/54.02p	WGIII	WGIII	CGMS Risk Assessment 2027 (supported by the WMO Gap Analysis) to analyse the long-term continuity of the Earth Radiation Budget satellite measurements in response to the request from the World Climate Research Program (WCRP) and the Global Energy and Water Exchanges (GEWEX)		9th WGIII RAWS: 24-26 Feb 2027	**OPEN**

CGMS WGIII 7th Risk Assessment Workshops actions (2025)

Action #	Actionee	Agenda item	Description	Feedback	Deadline	Status
7RAWS-1	WMO	4	WMO to provide a summary of the most critical gaps in WIGOS based on WMO Gap Analysis	Mar 27, 2025 Provided by WMO in CGMS-53-WMO-WP-07, ppt	CGMS-53 WGIII	**CLOSED**
7RAWS-2	SWCG	4	The SWCG to review WMO space weather gap analysis and inform WMO on missing or incorrect (NRT) data availability	Apr 17, 2026 Remains open ONGOING (see WMO	For review at next risk assessment, Feb	**ONGOING**

			indicated in the WMO Gap Analysis document.	presentation) CGMS-54-WMO-WP-10 Apr 9, 2026 Will be addressed at CGMS-54 SWCG where they will make a proposal to WGIII. Mar 11, 2026 SWCG reconfirmed they will report to WGIII as far as is possible before the WGIII meeting to enable incorporation in the draft baseline for discussion. Feb 3, 2026 8RAWS: Discussed and finalisation expected at SWCG session in April. Nov 12, 2025 WGIII IS#2 CGMSSEC to send all relevant risk assessment actions to the SWCG	2027 (edited on Jun 4, 2026) CGMS-53 SWCG, WGIII	
7RAWS-3	EUMETSAT	5	EUMETSAT to provide updated graphics of the RO profiles available per satellite mission vs time.	Mar 23, 2025 Provided to the risk assessment book captain (NOAA/Melissa Johnson)	CGMS-53 WGIII	**CLOSED**
7RAWS-4	NASA, JAXA	5	NASA and JAXA to provide a coordinated additional information on possible GPM continuation mission.	Feb 3, 2026 8RAWS: Presentation by NASA, GPM to continue to early 2030s. JAXA will present to WG session in April their PPM mission. Jan 20, 2026 NASA provided updates: GPM performed two orbit boost manoeuvres in November 2023 to raise its altitude and restore its	CGMS-54	**CLOSED**

				lifespan closer to the original estimates of ending in the early 2030s. NASA is working with JAXA to maintain continuity of this important precipitation measurement. Mar 27, 2025 Postponed to CGMS-54		
7RAWS-5	NASA	5	NASA on IMAP mission and if its data is compliant with CGMS Baseline criteria.	Feb 3, 2026 8RAWS: Action closed. Jan 20, 2026 The latency requirement is <5 minutes for data that is received on the ground and then processed and delivered to the space weather community. The space weather data set only includes the data from the five space weather relevant instruments and the necessary spacecraft ancillary data to make it useful. Those instruments include CoDICE (Compact Dual Ion Composition Experiment), HIT (High-energy Ion Telescope), SWAPI (Solar Wind and Pickup Ion), SWE (Solar Wind Electron), and MAG (Magnetometer). I-ALiRT is dependent on the establishment of a global ground station network. NASA currently has agreements with South Korea and Germany and	2026 3-5 Feb: 8th risk assessment (CGMS-54 WGIII)	**CLOSED**

				continue to work on agreements with partners in the southern hemisphere and South America; however, having global coverage at launch in September is not anticipated. …		
7RAWS-6	CGMSSEC	7th risk assessment WS	CGMSSEC to contact ESA to clarify EarthCare instruments and to which observations it should be included in the risk assessment	Mar 27, 2025 EarthCARE has been removed from the risk assessment for Sub-Millimeter Ice Cloud Imager and Precipitation Radar, and has been added to the flyout for LEO Imagers	CGMS-53 WGIII	**CLOSED**
7RAWS-7	CMA	7th risk assessment WS	CMA to confirm if current GEO slots in the Baseline document are compliant with the locations of CMA satellites.	Mar 27, 2025 CMA confirmed the baseline document is currently compliant.	CGMS-53 WGIII	**CLOSED**
7RAWS-8	SWCG	7th risk assessment WS	The SWCG to make a recommendation to WGIII how to separate RO and Ionospheric Electron Density profiles in the CGMS Baseline and the risk assessment documents.	Apr 17, 2026 Proposal provided, included in the draft update of the Baseline document, confirmed by WGIII Apr 16, 2026 Proposed by SWCG Apr 9, 2026 Will be addressed at CGMS-54 SWCG where they will make a proposal to WGIII. Mar 11, 2026 SWCG reconfirmed they will report to WGIII as far as is possible before the WGIII meeting to enable incorporation in the draft baseline for discussion.	2026 3-5 Feb: 8th risk assessment (Q1/2026) (CGMS-54)	**CLOSED**

				Feb 3, 2026 8RAWS: Preliminary input shared by SWCG and added to the master file - further finalisation by SWCG in April WG session for confirmation. …		
7RAWS-9	SWCG	7th risk assessment WS	The SWCG to define how to add each satellite position in the attributes of the in-situ measurements of CGMS Baseline.	Mar 27, 2025 SWCG complemented the baseline document as necessary at this stage.	CGMS-53 SWCG	**CLOSED**
7RAWS-10	NASA, ESA	7th risk assessment WS	NASA and ESA to confirm if the L5 JEDI mission and its data is compliant with CGMS Baseline criteria.	Feb 3, 2026 8RAWS:Confirmed and action closed. Jan 20, 2026 NASA is contributing the JEDI instrument to ESA's Vigil mission, which will produce data for both a low latency operational channel and the higher latency science data channel. For Vigil operational data, ESA have a <5min latency 24/7 requirement for the operational data that will go through ground stations to the forecasting offices. NOAA will be responsible for the official processing of CCOR-3 data and for distributing to their partners and customers. If ESA has clarifying information about Vigil – as the mission lead – NASA would defer to that.	2026 3-5 Feb: 8th risk assessment (CGMS-54 WGIII)	**CLOSED**

				…		
7RAWS-11	ESA	7th risk assessment WS	ESA to (re)confirm if Vigil data is compliant with CGMS Baseline criteria, and if its instruments could be added to the plasma analyser and interplanetary magnetometer measurement of the CGMS Baseline	Mar 10, 2025 E-mail from J-P Luntamaa/ESA: He confirms that ESA Vigil mission data from the baseline instruments is compliant with the CGMS Baseline principles. This compliancy applies to the following Vigil instruments: - Coronagraph (CCOR) - Heliospheric Imager (HI) - Magnetograph (PMI) - Solar wind Plasma Analyser (PLA) - Magnetometer (MAG) Data from CCOR will remain owned by NOAA and they will also handle the data dissemination to the users. NOAA has confirmed that all NOAA data will be compliant with CGMS Baseline.	CGMS-53 WGIII/plenary	**CLOSED**
7RAWS-12	WGII	7th risk assessment WS	WGII to investigate other capabilities for UV limb sounding to complement JPSS	Apr 17, 2026 Was not addressed in WGII. WGIII to follow up on this point. Apr 9, 2026 Will be addressed at CGMS-54 WGII. Mar 11, 2026 Expected to be addressed in WGII next intersessional. WMO/HPohjola will follow up.	To be addressed in the next round of the CGMS risk assessment Feb 2027 (edited on Jun 4, 2026) 2026 3-5 Feb: 8th risk	**ONGOING**

				Feb 3, 2026 8RAWS: Status shared. …	assessment (CGMS-54)	
7RAWS-13	WGII	7th risk assessment WS	WGII to study and report back to WGIII the need of top of the atmosphere spectral solar irradiance capabilities to be recorded in CGMS Risk Assessment and Baseline. (Link to HLPP 1.2.1 being addressed by WGII)	Apr 17, 2026 Status unclear, addressed in WGII. Kept open. Apr 9, 2026 Will be addressed at CGMS-54 WGII. Mar 11, 2026 Expected to be addressed in WGII next intersessional. WMO/HPohjola will follow up. Feb 3, 2026 8RAWS: Status shared. …	To be addressed in the next round of the CGMS risk assessment Feb 2027 (edited on Jun 4, 2026) CGMS-54 WGII	**ONGOING**
-	WGII	7th risk assessment WS	WGII to consider whether observations from geostationary orbit should be added to the CGMS baseline requirements for the broadband short/long wave radiometer (https://cgms-info.org/wp-content/uploads/2021/06/CGMS-Baseline-Sustained-contributions-to-the-observing-of-the-Earth-system-space-environment-and-Sun-v6-1.pdf)	Apr 17, 2026 Remains open Apr 9, 2026 Will be addressed at CGMS-54 WGII. Mar 11, 2026 Expected to be addressed in WGII next intersessional. WMO/HPohjola will follow up. Feb 3, 2026 8RAWS: Discussion will take place in the next WGII IS, report expected in April WG session.	To be addressed in the next round of the CGMS risk assessment Feb 2027 (edited on Jun 4, 2026) CGMS-54 WGII	**ONGOING**

CGMS WGIII 8th Risk Assessment Workshops actions (2026)

Action #	Actionee	Agenda item	Description	Feedback	Deadline	Status
8RAWS-1	CGMSSEC		To provide revised HLPP document with three top-level priorities per CGMS Working Group incl. ISWG	Apr 17, 2026 Proposal made to WGIII, discussion expected to continue. Mar 11, 2026 CGMSSEC to circulate the HLPP to the leading WGIII entity to consider the three most top level priorities for WGIII.	CGMS-54 WGIII	**ONGOING**
8RAWS-2	CGMSSEC		To contact IROWG to articulate the risk level and potential impacts associated with a gap of low inclination RO and potentially have a related presentation in the WGIII meeting in April.	Apr 17, 2026 https://www.cgms-info.org/Agendas/PPT/CGMS-54-IROWG-WP-02 Apr 9, 2026 CGMS-54-IROWG-WP-02 Mar 11, 2026 Christian Marquardt (EUMETSAT) has accepted to present at WGIII in April physically. Mar 2, 2026 WP at WGII in April secured. Feb 25, 2026 CGMS Sec contacted IROWG.	CGMS-54 WGIII	**CLOSED**
8RAWS-3	Eric McVay (NASA)		Present IMAP dataflow timeline.	Mar 11, 2026 NASA agreed to report to the CGMS risk assessment in the future in the event the IMAP mission will meet the CGMS baseline requirements.	CGMS-54 WGIII	**CLOSED**
8RAWS-4	SWCG		Define clearly the quantitative threshold between High and Very High (and Extremely High) Energy Electrons and Protons.	Apr 17, 2026 Confirmed by WGIII Apr 16, 2026 Proposal made by SWCG Apr 9, 2026 Will be addressed at CGMS-54 SWCG where they will make a proposal to WGIII. Mar 11, 2026 CGMSSEC informed and requested the SWCG leading entity to consider this action and report back to WGIII.	CGMS-54 SWCG	**CLOSED**

8RAWS-5	Heikki Pohjola (WMO)		Consolidate attributes for MW imager ranges.	Mar 11, 2026 It was agreed to close this action in light of action WGIII/52.03	CGMS-54 WGIII	**CLOSED**
8RAWS-6	CGMSSEC, WGIII, WMO		Consider in what way GEO rapid scanner capability could/should be covered in the baseline.	Apr 17, 2026 Needs further discussion, will be addressed in next iteration up to CGMS-55 Apr 9, 2026 CGMSSEC has introduced a proposal in the draft update of the CGMS Baseline document CGMS-54-CGMS-WP-40 Mar 11, 2026 Book captain for next steps: WMO/Heikki Pohjola	CGMS-54 WGIII	**OPEN**
8RAWS-7	CGMSSEC, WGIII, WMO		Consider if the sensor type IR dual-angle view imagery for high accuracy SST could/should be an individual instrument type in the table.	Apr 17, 2026 Needs further discussion, will be addressed in next iteration up to CGMS-55 Mar 11, 2026 Book captain to explore other capabilities in the medium to long-term and link it to WMO gap analysis: WMO/Heikki Pohjola	CGMS-54 WGIII	**OPEN**

LIST OF WGIII PARTICIPANTS

CGMS-54 - WGIII List of Participants		
First name	Last name	Organisation
Mikael	Rattenborg	CGMS Secretariat
Anne	Taube	CGMS Secretariat
Min	Guan	CMA
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Na	Xu	CMA
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ZONG	Weiguo	CMA
Lei	Yang	CMA
Ling	Gao	CMA
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Stephan	Bojinski	EUMETSAT
Sean	Burns	EUMETSAT
Simon	Elliott	EUMETSAT
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Andrew	Monham	EUMETSAT
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Frank	Kaspar	EUMETSAT
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Misako	KACHI	JAXA
Takuya	Sakashita	JMA
Kazuki	Yasui	JMA
Kotaro	Bessho	JMA
Mikito	Yamamoto	JMA
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CGMS-54 - WGIII List of Participants		
First name	**Last name**	**Organisation**
Irene	Parker	NOAA
Rishi	Ramsooksingh	NOAA
Andrew	Heidinger	NOAA and ICWG
Heikki	Pohjola	WMO
Roger	Saunders	WMO

CGMS

WORKING GROUP IV

Data access and end user support



WGIV REPORT

Co-Chairs: *Kotaro Bessho, JMA / Natalia Donoho, WMO*
Rapporteurs: *Simon Elliott, EUMETSAT*

1. Opening, objectives and expected outcomes / WGIV chair and rapporteur status

The meeting objectives and expected outcomes were presented verbally, and the group was reminded of the status of WGIV's co-chairs (Natalia Donoho, WMO and Kotaro Bessho, JMA) and rapporteur (Simon Elliott).

2. User-provider dialogue on regional/global scales

2.1 User-provider dialogue on regional/global scales

CGMS-54-WMO-WP-17 Regional Activities in Support of the EW4All Initiative: Summary of Regional Gap Analysis (Zoya Andreeva (virtually))

The Early Warnings for All (EW4All) initiative, launched by the United Nations, aims to ensure that every person on Earth is protected by life-saving early warning systems for hazardous weather, climate, and water-related events by the end of 2027. In support of this ambitious global goal, the World Meteorological Organization (WMO), in collaboration with key partners, is working to assist its members in strengthening their capacities to implement effective early warning systems.

As part of this effort, WMO conducted a Rapid Assessment to inform the planning phase of EW4All, providing baseline data and analysis to identify key capacity gaps across regions.

At its third session, the WMO Commission for Observation, Infrastructure and Information Systems (INFCOM) endorsed a set of priority activities to guide its contributions to EW4All. These include:

- Cataloguing and analysing existing gaps in satellite-based products and applications for priority hazards;
- and Supporting Members in improving access to satellite data and products, alongside capacity development through regional "train-the-trainer" initiatives focused on data access, processing, visualization, and interpretation.

To operationalize these priorities, INFCOM developed an action plan providing a strategic framework for addressing critical gaps. This plan encourages each WMO Regional Association (RA) to define and implement context-specific actions, recognizing that a one-size-fits-all approach is not suitable given the diversity of regional needs and challenges.

This working paper presents an overview of current efforts and progress across regions, led by WMO Regional Satellite Data Requirements Groups, in addressing identified gaps through the EW4All gap analysis.

Action: CGMS Members are strongly encouraged to continue to support multi-hazard early warning systems, including across the four pillars (disaster risk knowledge; detection, observations, monitoring, and forecasting; warning dissemination and communication; preparedness to respond) and to work with WMO Regional Satellite Data Requirements Groups to address specifically identified gaps through the EW4All gap analysis.

Kotaro Bessho thanked WMO for the comprehensive report covering all the regional associations.

WGIV agreed the following action:

Actionee	AGN item	Action #	Description	Deadline
WGIV	**2.1**	WGIV/ A54.01	CGMS Members are strongly encouraged to continue to support multi-hazard early warning systems, including across the four pillars (disaster risk knowledge; detection, observations, monitoring, and forecasting; warning dissemination and communication; preparedness to respond) and to work with WMO Regional Satellite Data Requirements Groups to address specifically identified gaps through the EW4All gap analysis	CGMS-55 2027

CGMS-54-CMA-WP-18 Main outcomes of the AOMSUC-15, 2025 (GAO Ling)

Overview: The conference was held in Qingdao, China, in October 2025. It was hosted by China Meteorological Administration (CMA). In total, 50+ countries were represented. The conference was held jointly with 2025 FengYun Meteorological Satellite User Conference, and enjoyed the largest geographic participation in in Asia-Oceania Meteorological Satellite Users Conference (AOMSUC) history

Major focus: The following themes were the main focus of the conference:

- Satellite data reception & processing infrastructure;
- AI/ML & emerging technologies;
- Operational meteorology & NWP;
- Disaster risk reduction & early warning, and
- Capacity building for developing countries.

RA II & RA V members strongly support EW4ALL. The Virtual Lab (VLab) and AOMSUC remain critical platforms for addressing these gaps.

CMA was thanked for hosting the 15th AOMSUC in October 2025 despite the logistical challenges. The 16th AOMSUC will take place from 6 to 11 December 2026 in Australia.

CGMS-54-EUMETSAT-WP-23 EUMETSAT's regional user support (Sally Wannop)

In the context of data access and training, EUMETSAT continues to support the extended WMO RA VI, the NMHSs outside of EUMETSAT Member States, and the WMO RA I community. Core focus in 2025 has been the ongoing transition from MSG to MTG for the 0° Meteosat service.

EUMETSAT has undertaken an initiative to provide the DAWBEE community, NMHSs within Western Balkans, Eastern Europe and Caucasus countries, with basic EUMETCast Europe reception equipment and MTG FCI visualisation software. The equipment and software will be rolled out in Q2/3 2026.

Working with the European Union and the African Union Commission, EUMETSAT has supported the roll out of new reception stations, PUMA 2025. Providing access and the visualisation of the MTG Africa data sent via the EUMETCast Africa service. In partnership with the European Union, ECMWF and African

partners EUMETSAT is supporting the 4-year (2025-2029) “Strengthening Early Warning in Africa” (SEWA) project. EUMETSAT’s activities include the provision of regional data processing capabilities (AMSAF) using nowcasting tools, related cloud infrastructure, upgrade to RARS (DBNET stations), and data application training support, including test beds.
Kotaro Bessho noted the collaboration between ECMWF/EUM/AUC and asked how this was coordinated. Sally explained that an EU project called SEWA manages the joint activities, and this framework takes care of coordination. ECMWF and EUM together work based on activities co-defined by the EU and AUC.

CGMS-54-GUEST-WP-06 User support for the transition to MTG in Africa (Sarah Kimani, Chair of RAIDEG (virtually))

User support for the transition to MTG in Africa presentation outlined Africa’s coordinated efforts to support users in transitioning to the Meteosat Third Generation (MTG) satellite system, led through the RA-1 Dissemination Expert Group (RAIDEG) under the framework of the WMO and in collaboration with EUMETSAT. RAIDEG plays a central role in enhancing access to satellite data, improving dissemination systems, and strengthening user capacity across the African continent. Its mandate includes identifying user requirements, recommending data access solutions such as EUMETCast, guiding infrastructure development, and promoting the effective use of satellite-derived products for weather, climate, and environmental applications.

Preparations for MTG in Africa began as early as 2016, with structured planning, stakeholder engagement, and strategic milestones such as the Abidjan Declaration in 2018. These efforts led to the development of the MTG-Africa baseline and the concept of the African Meteorological Satellite Application Facility (AMSAF), aimed at maximizing the benefits of next-generation satellite capabilities.
A key component of the transition is the deployment of upgraded PUMA 2025 stations, designed to enable reliable access to MTG data across RA-I countries. The rollout, which began in 2024, targets installation in 49 countries and is supported by rigorous testing and validation processes to ensure operational readiness. Equally important is capacity development. Comprehensive training programs, including Training of Trainers and regionally coordinated training sessions in both English and French, are being implemented to equip users with the skills needed to utilize MTG data and associated systems effectively.

With MTG now operational, Africa is entering a new phase focused on scaling infrastructure deployment, strengthening user engagement, and advancing the application of satellite data through continuous collaboration among national meteorological services, regional institutions, and international partners.

Overall, the transition to MTG represents a significant advancement in Africa’s ability to monitor weather and climate, enhancing forecasting capabilities and supporting socio-economic resilience across the continent.

Vincent Gabaglio (EUMETSAT) noted that user engagement started more than 5 years prior to satellite launch, which was indeed necessary for a timely transition.

2.2 Implementation of coordinated satellite broadcast systems

CGMS-54-CMA-WP-11 The update of CMACast Services (LI Xiaoru)

The document described the status of the CMA data broadcast system (CMACast) system service. In the framework of GEONETCast, CMACast distributes data to Asia-Pacific users who use the Integrated CMACast system to receive, process data and make weather forecasts in last 2025. In addition, some parts of FY4C products will be broadcasted by CMACast to users in 2026. CMACast will keep providing meteorological data dissemination service for the users.

CGMS-54-CMA-WP-15 Update and plans of FengYun satellite data and application services
(GAO Ling)

This document describes the data policy of FENGYUN satellite data, the status and plans of the FENGYUN satellite data distribution and services. Two new satellites were successfully launched in 2025, and the distribution information for new products from the previous FY-3F is updated. FENGYUN satellite data are open to National Meteorological Services (NMSs) and other international organizations and users free of charge via many ways. For real-time users, FENGYUN satellite data can be accessed via direct broadcasting station, CMACast, FY Satellite Data Download Toolkit Pro, Global Telecommunication System (GTS), and WMO Information System (WIS). For non-real-time users, FENGYUN satellite data can be accessed from the FENGYUN satellite data center website, download toolkits and offline data services. For emergency users, FENGYUN satellite emergency support mechanism (FY_ESM). The application platforms, FENGYUN Earth and SWAP are still provided to the international users. Meanwhile, MAZU-FENGYUN Satellite AI Toolbox, a comprehensive satellite application platform for EW4ALL, is being developed.

Concerning upcoming launches, CMA stated that FY-4D will be launched this or next year. FY-3J expected for the same time.

CGMS-54-JMA-WP-07 Update and plans on usage of cloud services, data dissemination and distribution of Himawari-8/9 (Kazuki Yasui)

JMA mainly distributes Himawari-8/9 data in two ways. One is the HimawariCast service, by which primary sets of imagery are disseminated as operational meteorological services via a commercial communication satellite. The other is the HimawariCloud service, by which full sets of imagery are delivered to National Meteorological and Hydrological Services (NMHSs) via a private Internet cloud service. JMA also distributes sets of Himawari-8/9 imagery and products to NMHSs via JDDS (the JMA Data Dissemination System). In conjunction with four Japanese institutions, provided Himawari-8/9 data distribution/archive services for research, development and education purposes. In addition to the private sector and other communities, JMA provides meteoroidal data including the Himawari-8/9 data via the Japan Meteorological Business Support Center. JMA's next-generation Himawari-10 satellite is currently under manufacture, with related data distribution also in planning (see CGMS-54-JMA-WP-05). The Agency is additionally considering the Himawari-10 imager data format and plans for the transition from Himawari-8/9 data.

Simon asked whether JMA would provide software for converting Himawari-10 data to HRIT format, as they have done for Himawari-8 and –9. JMA explained that this was currently under consideration.

CGMS-54-KMA-WP-08 KMA Report on the Update of GK2A Data Services (JEON Dae-gyeom)

- KMA has operated the GK2A satellite since 2019, providing high-resolution meteorological data
- Data is distributed through multiple channels, including satellite broadcasting, FTP, and API services

- The legacy Data Service (DataSvc) page has been discontinued; users are now required t o access services via the NMSC portal
- APIs previously provided by NMSC have been integrated into the KMA API Hub, improving accessibility and unified data services
- KMA is preparing the next-generation GK5 (2031) to enhance observation capabilities and expand data services

Kotaro noted that this is the first time seeing channels for GKMI on GK5; he asked why this selection was made, especially in VIS. KMA stated that the GK5 instrument will be very similar to the Geostationary Himawari Imager (GHMI). Users and academics were consulted about the channel choice, and they wanted more water vapour information. As such, a 0.91 channel was added instead of the blue channel (0.51). Also, the blue channel can be replaced with simulated data. Kotaro noted that JMA also asked their researchers about channel selection, but in Japan they wanted to keep current selection.

2.3 Global or inter-regional data exchange and access, WIS

CGMS-54-WMO-WP-18 Status of satellite community's transition from GTS to WIS 2.0 (Simon Elliott)

In response to a question from CMA about constraints on the use of data formats, Simon explained that this topic was addressed in WGI under its item 4.2. Currently, core satellite data must be exchanged on WIS 2.0 in BUFR, GRIB or CREX. The proposal for WGI was to request WMO to update the technical regulations to allow the exchange of core satellite data in standard formats such as netCDF, subject to endorsement by CGMS.

2.4 Disaster support and EW4ALL

CGMS-54-CMA-WP-09 MAZU: CMA's Best Practice to support EW4ALL (YANG Shunan)

This presentation outlined CMA's best practice to support the UN's Early Warnings for All (EW4ALL) initiative: MAZU brand and its Cloud-based early warning support platform (CEWS).

CEWS is a cloud-based, co-developed, and lightweight platform, integrating AI, gridded forecasts, and multi-source data to provide global extreme weather warnings. It combines 5 NWP and 4 AI models with high-resolution FY satellite products, supporting impact-based warnings for health, agriculture, hydrology, et c.

CEWS has delivered customized tailed early warning solutions for Pakistan, Solomon Islands, and Ethiopia, serving over 40 countries with 160+ warnings in 2025. It has enabled international training, consultations, and real-event support such as Super Typhoon Yagi (2024) and heavy rain and snow process in Central Asia.

Looking ahead, CMA invites partners to co-develop AI solutions and join WMO pilot projects. The MAZU-FENGYUN Satellite Toolbox for EW4ALL is also under development.

In response to a question from KMA, CMA confirmed that the system was easy to configure, and that the cloud infrastructure used was the commercial Cloud.

CGMS-54-CMA-WP-19 Status of FY-ESM and New Support for Disaster Monitoring (GAO Hao)

China Meteorological Administration (CMA) established the Emergency Support Mechanism of FENGYUN (FY) Satellite (FY_ESM) in 2018 for international user disaster prevention.

CMA will provide highly frequent observation of the target area covering a 2,000 km x 2,000 km area at an interval of up to 1 minute through FY_ESM.

Since 2018, 38 countries have registered as FY_ESM members, and more than 189 emergency support services have been provided to 60 countries worldwide.

CMA developed a tailor-made cloud platform, FengYun Earth CHARTER version, for a typical disaster monitoring application for end users (EU) of the Charter community in 2025.

This document presented the updated information of Rapid Scan Services under the Emergency Support Mechanism of FENGYUN Satellite (FY_ESM), including the satellite rapid scan service status, activation procedure, new support for disaster monitoring, and an overview of FY_ESM services in 2025.

CGMS-54-JMA-WP-08 Status of JMA Himawari Request service (Kazuki Yasui)

In January 2018, the Japan Meteorological Agency (JMA) launched a new international service "HimawariRequest", in collaboration with the Australian Bureau of Meteorology. The service allows NMHS users (NHMSs) in Himawari8/9 coverage area to request Target Area observation covering a 1,000km x 1,000km area every 2.5 minutes.

Target Area observation supports JMA's national/international services including the RSMC Tokyo - Typhoon Center and the Tokyo Volcanic Ash Advisory Centre.

In response to a recommendation made at the 2015 Joint RA II/RA V Workshop on the WMO Integrated Global Observing System (WIGOS) for Disaster Risk Reduction, JMA developed the service through the RA II WIGOS Project to Develop Support for NMHSs in Satellite Data, Products and Training.

As of 1 March 2026, JMA had taken registrations from 22 NMHSs in RA II and RA V, and 19 have completed preparation for their requests. There have been 355 international requests since the commencement of the service, among which 323 have been approved. Targets have included tropical cyclones in the South Pacific, extreme weather and bushfires in Australia, and volcanic activity in Indonesia. JMA plans to change the email based HimawariRequest service to a web-based system for improved operational efficiency and quicker response to user needs.

JMA expects the HimawariRequest service to support disaster risk reduction activities in the Asia-Oceania region based on the regional monitoring of extreme events such as tropical cyclones and volcanic eruptions using the Target Area observation.

As part of the RA II WIGOS Project, JMA has developed user-friendly map content displaying the locations of request-based high-frequency regional observations in real time for at-a-glance viewing. This content is now available on the RA II WIGOS Project webpage.

2.5 Support to the ocean user community

CGMS-54-EUMETSAT-WP-15 Marine user engagement and cross-organisational collaboration in support to multi-instrument applications (Ben Loveday and Hayley Evers-King)

This presentation provides an overview of the marine community and EUMETSAT's approach to user engagement within it. The community is highly diverse, spanning research, governance and regulation, service development, private enterprise, and the public, with each group having distinct perspectives and requirements for marine Earth observation. EUMETSAT supports these users at the application level, where the use case landscape is broad, and workflows typically integrate data from multiple sensors. Users are generally data-agnostic and value coordinated, synergistic approaches to training and engagement from operational agencies. In response, EUMETSAT delivers multi-partner training activities, contributes to the development of community standards, supports open-source collaborative tools, and aligns its efforts with wider strategic frameworks such as the UN Ocean Decade. It also provides a coherent and unified view of Copernicus and mandatory mission product suites (including via OSI SAF), aiming to make data and services accessible, consistent, and relevant to user applications.

CGMS-54-IOC-UNESCO-WP-02 GOOS: Ocean statement of guidance and emerging coastal requirements (WMO)

The presentation summarized recent efforts from the Global Ocean Observing Community (GOOS) and the CoastPredict UN Decade Programme to develop observational requirement s to fit the needs of users of ocean observations for several application areas including NWP, climate and coastal hazards.

Those observational requirements set the basis for a gap analysis of the current observing system capacities, and the development of recommendations to fill in those gaps. Those are reflected in Statements of Guidance, made available to WMO Members to support decisions regarding upgrades of observational networks. GOOS has coordinated the Statement of Guidance for the Ocean. CoastPredict has followed a similar process focused on very high-resolution requirements for coastal applications.

WMO presented a synthesis of the main findings in terms of gaps which could be considered by the space agencies.

More detailed information can be found in the Oceanic Statement of Guidance, to be published in May (https://doi.org/10.59327/WMO/ESDP/SOG/OCE)

2.6 Support to Arctic observations

CGMS-54-WMO-WP-19 WMO updates on cryosphere activities (WMO)

The Task Team on Cryosphere and Polar Observation from Space (TT-CPOS) was established by the WMO Commission for Observation, Infrastructure and Information Systems (INFCOM) in 2025 at its Management Group meeting, with the proposed Terms of References. Membership and the selection of Co-Chairs have been approved by the President of INFCOM, based on nominations from selected WMO Members/partners, in consultation with the Chair of Advisory Group on Global Cryosphere Watch (AG-GCW) and the acting Chair of the Standing Committee on Earth Observing Systems and Monitoring Networks (SC-ON).

The fourteenth session of the WMO Executive Council Panel on Polar and High-mountain Observations, Research and Services (PHORS-2026) highlighted sustained monitoring and improved data sharing as

essential, especially in polar and high-mountain areas where observing networks are limited and fragmented. The session requested the TT-CPOS to undertake a benefit analysis of satellites monitoring the cryosphere.
Under the framework of the WMO Integrated Global Observing System (WIGOS) Rolling Review of Requirements (RRR), the Statements of Guidance for Cryosphere Applications were developed for sea-ice and snow components, providing recommendations to National Meteorological and Hydrological Services (NMHSs), oceanic and cryospheric institutes, space agencies and the various coordination initiatives.

Action: CGMS to provide guidance to the Task Team on Cryosphere and Polar Observation from Space in delivering its mandates through expert engagement

Natalia noted that the action pertains to WGII, and the response should come from them.

WGIV agreed the following action:

Actionee	AGN item	Action #	Description	Deadline
WGII	**2.6**	WGIV/ A54.02	CGMS to provide guidance to the Task Team on Cryosphere and Polar Observation from Space in delivering its mandates through expert engagement	CGMS-55 2027

2.7 Support to observations using hyperspectral infrared instruments

CGMS-54-JMA-WP-05 Update on Himawari-10 and its hyperspectral infrared sounding mission (Kazuki Yasui)

In March 2023, the Japan Meteorological Agency (JMA) contracted the manufacture of the Himawari-10 satellite, equipped with the GHMI, the Geostationary Himawari Sounder (GHMS) and other equipment, as the successor to the Himawari-8/9 satellite. Initial operation is scheduled for JFY 2030. The Agency plans to unify Himawari L1 data from the currently provided Himawari-8/9 data format to NetCDF format, and to provide users with Principal Component Analysis (PCA) data rather than raw observation data from the GHMS.

CGMS-54-EUMETSAT-WP-19 Status of hyperspectral and IASI NG instruments (Dorothée Coppens)

IASI-NG and IRS L0/L1 commissioning activities are progressing very well and preparations for the L2 commissioning are already in place, even if not covered in this document- This is expected to enable timely early dissemination to Cal/Val partners and pre-operational dissemination to all users for both instruments.

The dissemination baseline was recalled at the end of the paper.

Mikael asked which would be the initial L2 products from IRS and Dorothée confirmed that they would be equivalent to the METOP IASI L2 products. There will also be 3D winds from the IRS. Kotaro asked about possible access to the IRS L1B radiance data. EUMETSAT explained that the datasets are large and will be available from the data store only.

2.8 Support to developing countries

CGMS-54-CMA-WP-17 Report on Establishing a Meteorological Satellite Application Center (WU Jingyan) Response to WGIV/A53.03

CMA delivered a report on bridging the gap in satellite data application, in which it proposed the establishment of Meteorological Satellite Application Centers. This report was formulated based on feedback from WMO Regional Associations (RA II and RA V) and an extensive survey of 239 users across 87 countries.

Amid rising climate-induced extreme weather events, meteorological satellites can play a vital role in achieving the UN's "Early Warnings for All" (EW4All) by 2027. However, a critical gap exists between vast satellite data and their operational use in disaster resilience, especially for resource-limited countries where the bottleneck is no longer data access but data application capacity.

CMA's report reveals a systemic "triple bottleneck": 70% of users find existing data insufficient for operational needs; 80% report inadequate local infrastructure; and over 90% of resource-limited country users urgently need ready-to-use, AI-driven solutions, not raw data. These findings highlight a "scissors gap" between big data generation and effective decision-making.

To bridge this gap, CMA proposes to establish Meteorological Satellite Application Centers to act as a transformative "middleware" layer. Focusing on demand tracking, customized solutions, lightweight tools, and rapid response service capabilities, these centers aim to provide ready-to-use services, not just satellite data—an inclusive approach that enables more nations, especially resource-limited countries.

EUMETSAT welcomed the need analysis presented, which primarily applies to Least Developed Countries (LDCs) and noted that it is already undertaking some activities offering regional support, such as its Satellite Application Facility (SAF) network and the provision of the European Weather Cloud together with ECMWF.

CMA explained that the applications being developed are for all WMO members, but this presentation looks at the benefits of a Meteorological Satellite Application Center (MSAC) primarily from their perspective (they have a limited capability to use the data). All satellite operators were encouraged to support LDCs in their use of satellite data.

There remained some lack of clarity in the group about whether the intention was to establish one MSAC per satellite operator or one per region, and what criteria would need to be met to be considered an MSAC. CMA explained that a regional focus would allow the sharing of effort between agencies in the area. The hope is the LDCs would establish their own capabilities in due course, with initial support provided by regional MSACs.

CMA noted that the goal of the MSACs would be to ingest data from all providers and fuse them into a seamless API for the end users at LDSs. The focus has been put there because they have more limited infrastructure; centres would push out light weight APIs and use a central cloud infrastructure to carry the processing load. CMA also explained that there is a need to move beyond simple phenomenon description toward integrated satellite data analysis. By detecting precursor signals of cascading hazards, risk alerts

can be issued to break the chain of disaster impacts — strengthening the role of satellite data in supporting EW4ALL.
In response to a question from WMO and NOAA about who is making the recommendation and who should be establishing an MSAC, CMA stated that the expectation at this stage is to first build consensus within this working group (WGIV) on the necessity of establishing MSACs.

EUMETSAT recalled that satellite operators can make the inputs to enable NMSs to make alerts and warning, but that this is a national responsibility.

CMA explained that currently satellite data are mainly used for monitoring; but they want the satellite data to be able to do more *before* the disasters occur. It would be better for the LDCs to get key information in advance so that they can make a more precise forecast. This would be picked up in a deeper discussion of the MSAC Terms of Reference. CMA confirmed the desire to first establish regional MSACs and subsequently connect them together.

The WGIV co-chair recalled that there are many questions to be addressed. The results presented were clear, but the necessity to establish the MSACs was less obvious. The questions and opinions voiced by the group make it clear that further debate was needed. CMA reminded the group of the intention of confirming the need to establish the MSACs in the context of EW4All, but the number of open issues and questions made it clear that further discussion by the group was needed. CMA explained the wish to make better use of satellite data within the WMO framework, so that more can be done with satellite data irrespective of the data type or the group using them. The WGIV co-chair reminded the group that not all CGMS members are involved in forecasting services – he also identified the need to consider VLab and how that would fit with the MSAC concept.

NOAA confirmed the need but asked how should the MSACs be implemented. The group stressed the need to avoid redundancy with ongoing efforts. NOAA went on to ask how the difference between members with and without forecast centres would be considered, and where the MSACs could fit from an organisational perspective? Noting that further discussions would be needed, NOAA asked about the need to link the timing to EW4All.

CMA outlined the following overall plan:

- agree that MSACs are necessary before the end of 2027, and in the scope of EW4All,
- work with CGMS members to understand how the MSACs can be implemented, and then
- implementation of the MSACs as a 3rd step.

EUMETSAT noted that satellite operators are already endeavouring to make their data available for EW4All, and that the MSACs could be part of this. Although the situation is somewhat straightforward in Europe, there is work to be done for the other regions to assess what this would mean. The group also noted that EW4All is not a WMO initiative - but rather part of the UN Secretary-General's Acceleration Agenda.

Noting the time constraints of the meeting and the importance of the topic, WGIV agreed to organise an extraordinary WGIV intersessional meeting before CGMS-54 Plenary to specifically address the CMA initiative on Establishing Meteorological Satellite Application Centers.

Actionee	AGN item	Action #	Description	Deadline
WGIV rapporteur	**2.8**	WGIV/ A54.10	Organise an extraordinary WGIV intersessional meeting before CGMS-54 Plenary to specifically address the CMA initiative on Establishing Meteorological Satellite Application Centers	End of 2026

3. Coordination of metadata (incl. standards within ocean communities)

Metadata matters

CGMS-54-WGIV-WP-17 Future of Meta data task group (Simon Elliott)

It was reported that the Task Group on Metadata had been running well and had played a constructive role supporting the definition of the WIS 2.0 topic hierarchy to be used for satellite and space weather data.

Currently the Task Group is establishing a new chairperson, and its activities are in abeyance until such time as that is concluded.

Action: WGIV leadership to finalise the appointment of a chairperson for the Task Group on Metadata.

WGIV agreed the following action:

Actionee	AGN item	Action #	Description	Deadline
WGIV leadership	**3**	WGIV/ A54.03	WGIV leadership to finalise the appointment of a chairperson for the Task Group on Metadata	CGMS-55 2027

4. Cloud services interoperability

CGMS-54-WGIV-WP-15 Way forward of the CGMS WGIV Cloud Service Expert Group (2025-2026) including the outcome and recommendations from the 3rd cloud technology workshop (Melissa Andersen Garcia, on behalf of Kumar Machado)

Over the years, members of the CGMS Working Group IV Cloud Service Expert Group met regularly to discuss Cloud Services and adoption. More recently attendance has decreased, probably due to conflicting priorities from members, and duplication between activities within Cloud Services and other working groups.

Recommendation: The Expert Group recommends sunsetting the group and re-evaluate in 2-year if the landscape has shifted significantly enough to warrant an update. There will be a dedicated agenda item for WGIV to enable members to report on their compliance with the Best Practices.

WGIV agreed the following recommendation:

Actionee	AGN item	Recommend-ation #	Description	Deadline
WGIV leadership	**4**	WGIV/ R54.01	The Expert Group recommends sunsetting the group and re-evaluate in 2 years if the landscape has shifted significantly enough to warrant an update. There will be a dedicated agenda item for WGIV to enable members to report on their compliance with the Best Practices.	CGMS-56 2028

5. Data preservation/data access

5.1 Long term data preservation - data access

CGMS-54-WGIV-WP-09 Direction of CGMS approach towards long term data preservation (Simon Elliott)
Simon noted the work with Dr Nitant Dube from ISRO in sense of coordination with CEOS WIGSS. Efforts will continue to foster communication and thus minimize overlap between the groups.

5.2 Long term data preservation – interoperability

Nothing salient to report.

6. User readiness for new satellite systems incl. training and VLab matters

CGMS-54-VLab-WP-02 Status and plans of the VLab (XIAN Di)

This working paper reported on recent activities of the WMO–CGMS Virtual Laboratory for Education and Training in Satellite Meteorology (VLab) and outlines planned actions for the coming period.

Since CGMS-53, VLab members have delivered a wide range of training activities, with a particular emphasis on capacity development related to new generations of satellite systems, identified by members as a major training priority. In addition, targeted training initiatives have supported the implementation of the Early Warnings for All (EW4All) initiative.

Sustained funding remains a critical issue for the VLab. While the VLab Trust Fund has historically benefited from regular contributions from several satellite operators, a recent decline in contributions has created challenges in maintaining the current level of support for coordination activities and training delivery. Continued and additional voluntary contributions from CGMS members are therefore essential to safeguard the long-term sustainability and effectiveness of the VLab.

During the recent period, a comprehensive review and update of the Guidelines on Satellite Skills and Knowledge for Operational Meteorologists was completed. CGMS members are invited to take note of the revised Guidelines on Satellite Skills for Operational Meteorologists and Specialists in Related Application Areas.

In addition, VLab members have initiated work to update the VLab Strategy for the 2028–2031 period, with the objective of submitting it for approval to INFCOM-4 in November 2026. A draft version of the strategy will be presented to the CGMS Plenary for information, while the final version will be circulated to CGMS members for endorsement via correspondence prior to INFCOM-4.

The VLab Management Group (VLMG) has continued to coordinate VLab activities and support training delivery through regular online meetings. A key milestone was the Eleventh VLMG Meeting, held in Muscat, Oman, from 20–23 January 2024, hosted by the Directorate General of Meteorology under the Civil Aviation Authority (CAA). The next VLMG meeting is planned for 2027, with the host organization and timing to be confirmed. CGMS members active in VLab are encouraged to attend VLMG-12 meeting in person.

Actions:
1. CGMS members to contribute to the WMO VLab Trust Fund to ensure continued technical support (via the VLab Technical Support Officer) and the continuation of training activities, including travel support for WMO Members with limited resources.

2. CGMS members to take note of the revised Guidelines on Satellite Skills for Operational Meteorologists and Specialists in Related Application Areas.

3. CGMS members to take note of the planned update of the VLab Strategy (2028 2031) and its endorsement process prior to submission to INFCOM-4.

4. CGMS Members are invited to advertise their training events (in partnership with VLab Centres of Excellence) via the VLab Training Calendar and ensure that the relevant contact person information is kept up to date.

5. CGMS Members active in VLab are invited to ensure that a suitable representative is able to attend the 12th VLab Management Group (VLMG-12) meeting, preferably in person.

WGIV agreed the following actions:

Actionee	AGN item	Action #	Description	Deadline
CGMS Satellite Operators	**6**	WGIV/ A54.04	CGMS members to contribute to the WMO VLab Trust Fund to ensure continued technical support (via the VLab Technical Support Officer) and the continuation of training activities, including travel support for WMO Members with limited resources.	CGMS-55 2027
CGMS Satellite Operators	**6**	WGIV/ A54.07	CGMS Members active in VLab are invited to advertise their training events (in partnership with VLab Centres of Excellence) via the VLab Training Calendar and ensure that the relevant contact person information is kept up to date.	CGMS-55 2027
CGMS Satellite Operators	**6**	WGIV/ A54.08	CGMS Members active in VLab are invited to ensure that a suitable representative is able to attend the 12th VLab Management Group (VLMG-12) meeting, preferably in person.	CGMS-55 2027

CGMS-54-EUMETSAT-WP-18 Task Group on User readiness for new satellite systems – EUMETSAT (Sreerekha Thonipparambil)

The task group on user readiness reviews how the satellite agencies are implementing the "Best Practices for Achieving User Readiness for New Satellite Systems". The task group also identifies if any updates or additions are needed for the Best Practises document and to explore ways for CGMS members to share their user readiness experiences.

The first meeting in December 2024 confirmed that the Best Practices document provides a solid foundation for user readiness activities, with agencies such as EUMETSAT, NOAA, and JMA applying it across their upcoming missions. The group also discussed the approach of commercial data providers and how they align with these practices through contractual agreements.

The second meeting in February 2026 reviewed JMA's progress on Himawari-10 user readiness and EUMETSAT's overview of user preparation activities for MTG and EPS-SG.
Kotaro thanked the Task Group for its work, especially for the summarised report of BPs for user readiness. The BPs have been very useful for Himawari-10 for many people, both internal and external to JMA. They are following the best practice manual.

7. Research to operations - Operations to research (R2O/O2R)

CGMS-54-NOAA-WP-20 Progress and plans of the R2O/O2R activities in the framework of CGMS (Vijay Tallapragada (virtually))

- NASA and NOAA co-championed the CGMS Futures 2022+ Research to Operations Pilot following the CGMS-51 Plenary in Tokyo.
- A 2024 survey of CGMS members highlighted diverse operational constraints and research priorities, emphasizing the need for a coordinated, adaptable R2O/O2R approach across the satellite community. We presented these findings at CGMS-53 in 2025.
- The R2O/O2R Pilot Kick-off Phase can be considered complete, and we recommend WGIV to continue this theme as a standing agenda item, consistent with the objectives to foster collaboration and knowledge sharing to enhance the transition of research into operations, while remaining flexible to each agency's needs.
- The group recognized Dr. Laurie Rokke (NOAA, retired) for her contributions and welcomed Jessica Shallcross (NOAA's NESDIS/OSPO/SPSD/SPB) in 2026.

A number of actions relating to R2O/O2R to be taken into account as part of the normal work of CGMS members were identified and explained in the document. There were no actions specifically directed at WGIV.

8. Future direction 2022+ initiative

CGMS-54-CGMS-WP-3wgiv Future direction: Proposal on the way forward

The CGMS-51 Plenary endorsed the CGMS future direction 2022+ strategic themes.

Since then, the strategic themes have been integrated into the working structure of the CGMS Working Groups and progress has been made in several areas. From the perspective of the CGMS Secretariat, the initiation phase has been concluded.

This working paper provided an overview and proposed way forward for each of the themes.

Action: CGMS members are requested to consider the closure of the initiation phase for the CGMS future direction themes, and to recommend the closure to plenary for endorsement.

WGIV agreed to recommend to plenary that the initiation phase of the Future Directives 2022+ could be considered closed.

9. Review of WGIV actions and recommendations

Review of WGIV actions and recommendations

CGMS-54-WGIV-WP-07 Status of CGMS-53 WGIV actions and recommendations (and any relevant plenary actions) (Simon Elliott)

The status of actions open at the time of the Working Group meeting were reviewed and updated as necessary.

CGMS-54-WGIV-WP-10 CGMS-54 WGIV actions and recommendations (verbal) (Simon Elliott)

A verbal summary of the actions raised during this meeting of WGIV was presented and agreed.

10. CGMS High Level Priority Plan (HLPP)

Review and updating of the HLPP

CGMS-54-CGMS-WP-36wgiv Status of implementation of CGMS High Level Priority Plan (2025-2029) (Mikael Rattenborg)

The WGIV leadership team addressed the status of the CGMS HLPP and its relationship to WGIV during dedicated side meetings. The proposed update to the HLPP will be presented to the CGMS 54 Plenary session.

CGMS-54-WGIV-WP-12 Identification of top priorities for WGIV. For discussion (no presentation)

This was discussed internally by the WGIV leadership team. See the preceding point.

11. Future CGMS WGIV meetings

Future WGIV session (incl. dates for future plenary and intersessional meetings, proposals for new agenda items)

CGMS-54-WGIV-WP-11 Decision on dates on WGIV intersessional activities in 2026-2027 (CGMS-54 to CGMS-55) (Simon Elliott) (for decision)

WGIV agreed the following dates and times for the intersessional meetings from CGMS 54 to CGMS 55:

- Intersessional Meeting #1: 09 September 2026, 12 UTC
- Intersessional Meeting #2: 01 December 2026, 12 UTC
- Intersessional Meeting #3: 02 March 2027, 12 UTC

CGMS-55 the dates are as follows:

- WG meetings: 19-23 April 2027 (pending plenary confirmation), likely hosted by EUMETSAT
- Plenary session: 1-3 June or as backup 15-17 June (pending plenary confirmation), tentatively to be hosted by IMD.

CGMS-54-CGMS-WP-14wgiv Status of co-chairs, rapporteurs, and representatives at meetings (CGMS, ISWGs, VLAB…)

There is no change from the WGIV perspective.

12. Conclusions, preparation of the WGIV report for plenary

CGMS-54-WGIV-WP-14 Wrap-up time and report preparation by co-chairs and rapporteurs, preparing next steps for plenary

The draft report of WGIV will be available for review by the members in due time for the Plenary session in June 2026.

End of WGIV meeting

LIST OF WGIV ACTIONS FOLLOWING CGMS-54 PLENARY DISCUSSIONS

CGMS WGIV actions

Action #	Actionee	Agenda item	Description	Feedback	Deadline	Status
WGIV/A48.01	CMA, EUMETSAT	WGIV/3	To report on the status of data dissemination from Indian Ocean Data Coverage partners, as identified in CGMS-43-EUM-14 roadmap	Mar 24, 2025 close and make new action on EUM to handle this (A53.01) Feb 12, 2025 WIS 2.0 is operational. Satellite data are starting to flow. Monitor and report progress. There will a paper on this at WG III / Risk Assessment. Apr 24, 2024 This will be revisited as the WIS2.0 is implemented and the global data exchange infrastructure evolves …		**CLOSED**
A47.06	CGMS members	WGIV/16	CGMS members, through WGIV, to review CGMS members' adherence levels to the CEOS Data Preservation Guidelines on a regular basis (every 2-5 years). For review at CGMS in the 2023-2024 timeframe.	Mar 24, 2025 ToRs to be adjusted on LTDP to refer to data access and interoperability only. This will then be in the agenda, and this action can be closed Feb 12, 2025 this will be addressed together with the review of the ToRs. Can moved to WG II as related to data quality. This is part of the proposal for the update to the ToRs. Before putting this topic in WGIV there was a discussion deciding it concerned archives and reprocessing, thus architecture. To be discussed with WG II. Apr 25, 2024 Will be addressed at forthcoming intersessional meeting. A leader for this preparation work will facilitate a meaningful discussion. …		**CLOSED**

			The Terms of Reference of the CGMS Working Groups to be reviewed every 5 years. WGIV to review its ToRs in 2023.	Mar 24, 2025 ToRs endorsed at WGIV meeting, noting point on LTDP to refer to data access and interoperability only Feb 12, 2025 draft update will be shared with team prior to WG meeting in March 2025 Apr 25, 2024 we will follow in the footsteps of WGI and take this up at the next intersessional meeting Sep 9, 2024 . …		**CLOSED**
WGIV/A50.01	CGMS members	§3.4	CGMS members continue to foster the growth of EOTEC DevNet by, for example: joining the CoPs, identifying other experts for the CoPs, contributing to EOTEC DevNet products, and sharing EOTEC DevNet information within their network.	Mar 24, 2025 To be addressed as standing agenda item for WGIV rather than an un-closable action, and closed hereFeb 12, 2025 EOTEC DevNet remain keen to contribute and would present if invited (note that VLab is a part of EOTEC DevNet) Apr 25, 2024 EOTEC DevNet is complimentary to VLab. We could ask for input at next WGIV CGMS 53 under item 3.5 Disaster Support		**CLOSED**
WGIV/(P)A50.01	CGMS members	6		Mar 24, 2025 actions from paper to be passed to plenary and this action closed (Action to be monitored by WGIV) CGMS members are invited to contact WMO to provide contributions to the WMO VLab Trust Fund to ensure the continuation of technical support to the VLab through the VLab Technical Support Officer as well as to the implementation of VLab projects.		**CLOSED**
A51.06	CGMS space agencies	WGIV report	CGMS agencies to nominate additional members for all the WGIV Task Groups, in particular those agencies who currently have no representatives in the Task Group(s):	Mar 10, 2026 Chair of TG-Metadata still required. Mar 24, 2025 WG session asked for nominations for co-rapporteur, chair of TG-Metadata and members of TG-Data Access/Exchange.		**ONGOING**

			· WGIV Task Group on Data Access/Exchange · WGIV Task Group on Metadata - CGMS members to nominate a chairperson for this TG. · WGIV Task Group on User Readiness	WMO, NOAA, JMA, KMA and ISRO contacted individually asking for members of TG-Data Access/Exchange. Feb 12, 2025 TG Metadata needs a new chair as Anna has to step down. Also need members for TG on Data Access/Exchange …		
WGIV/A53.01	CGMS members	1, 2.4, 8	endorsement of Nat as co-chair of WGIV by plenary	To be included in WGIV inputs to plenary for endorsement	CGMS 53 plenary 2025	**CLOSED**
WGIV/A53.02	CGMS members	1, 2.4, 8	nominations for co-rapporteur of WGIV	To be sent to CGMS SEC	2025	**OPEN**
WGIV/A53.03	CMA	2.9	CMA Satellite Application Centre for support to developing countries.	Analyse the results of the survey data and the results of the existing surveys and at intersessional provide a detailed analysis and proposal of what the solution might look like Sep 9, 2025 CMA plan to address this at AOMSUC in Qing Dao, and will report at intersessional meeting #2 in December 2025 Mar 10, 2026 CMA presented an overview of their proposal for a Satellite Application Centre for support to developing countries at intersessional meeting #3. This will be circulated to WGIV after the meeting. Members can provide their input to CMA and the issue considered at the Working Group meeting in April.	WGIV intersessional	**CLOSED**
WGIV/A53.04	CGMS members	6	Contributions to VLAB funding	CGMS members are invited to contact WMO to provide contributions to the WMO VLab Trust Fund to ensure the continuation of technical support for the VLab through the VLab Technical Support Officer as well as for the implementation of VLab projects Sep 9, 2025 WMO recognized contributions received from KMA and EUMETSAT	CGMS 54 2026	**CLOSED (re-created)**

WGIV/A53.05	CGMS members	6	Development of VLab Jupyter notebooks	CGMS members are invited to develop and provide Jupyter Notebooks for each satellite product with clear instructions on downloading, processing, and visualizing the product	CGMS 54 2026	**OPEN**
WGIV/A53.06	CGMS members	6	Establish VLab CoEs	CGMS members are invited to establish agreements with respective VLab Centres of Excellence (CoEs) for collaboration on training development programs. These agreements should ensure the availability of trainers with the necessary expertise within CoEs to address local and regional training needs	CGMS 54 2026	**OPEN**
WGIV/A53.07	CGMS members	6, 8	endorsement of Xian Di as co-chair of VLAB by plenary	To be included in WGIV inputs to plenary for endorsement	CGMS 53 plenary 2025	**CLOSED**
WGIV/A53.08	WGIV leadership	8	Update draft ToRs to refine definition of LTDP task as per A47.06	Update draft ToRs to refine definition of LTDP task as per A47.06 Update included in §8 of WGIV report for CGMS 53	CGMS 53 plenary 2025	**CLOSED**
WGIV/A53.09	EUMETSAT	9	To report on the status of data dissemination from Indian Ocean Data Coverage partners, as identified in CGMS-43-EUM-14 roadmap	Consider original paper answering this action which described which operators provide what data and how, over the Indian Ocean. Based upon this, and the state of the art including WIS 2.0, provide an updated analysis	WGIV CGMS 54 2026	**OPEN**
WGIV/A53.10	WGIV leadership	8	The Terms of Reference of the CGMS Working Groups to be reviewed every 5 years. WGIV to review its ToRs in 2030.	To be presented for agreement at WGIV in WGs meeting of CGMS 58 in 2030, and for endorsement by CGMS 58 plenary session in 2030	2030	**ONGOING**
WGIV/A53.11	CMA	7	Aug 12, 2025 Action transferred from WGIII: CMA to present best practices for regional EW4ALL for the benefit of the local government in CGMS-54 WGIV meeting.	14 Apr 2026: presentation made, "MAZU: CMA's Best Practice to support EW4ALL", https://www.cgms-info.org/Agendas/GetWpFile.ashx?wid=8e124423-8c9b-457f-9294-8cbdcab8a796&aid=3c912a70-ba8b-431f-8015-fa7baa1b2a94	CGMS-54 WGIV	**CLOSED**

WGIV/53.07p	CGMSEC, CGMS members, WGII, WGIV	Plenary 6	For reference only! See detailed action breakdown further below. On AI/ML: CGMS Secretariat to survey CGMS contributing agencies. WGII and WGIV to propose initial standards to be presented at CGMS-54 (To facilitate the use of AI/ML by CGMS contributing agencies and meteorological data users, CGMS shall identify standards for using and converting meteorological EO data into a suitable form for Machine Learning applications. The key elements to be addressed are: + Data standards and formats, such as for example the Zarr usage best + practices Most relevant data transformation/representation per measurement type, i.e., remapping, standard vertical grids, etc. + Adoption of standard metadata per measurement type, preferably using CF metadata conventions, i.e., source of the information, AI fused or original data, error characterisation of original and fused data.)	Jun 4, 2026 Response to action presented in https://www.cgms-info.org/Agendas/PPT/CGMS-54-CGMS-WP-30-p Information document, presented to WGII in April on undertaken survey: https://www.cgms-info.org/Agendas/PPT/CGMS-54-WGII-WP-09-p Detailed survey outcome: https://www.cgms-info.org/Agendas/WP/CGMS-54-CGMS-WP-32-p Sub-actions on AI/ML applications catalogue, space weather AI readiness and AI error propagation framework for precipitation products closed following plenary deliberations, with the creation of a Task Team to address the next steps. 15 Apr 2026 CGMSSEC / EUMETSAT will elaborate on the response to these actions and raise new or revised actions as necessary 14 Apr 2026 CGMSSEC presented the preliminary outcome of the survey on AI/ML. https://www.cgms-info.org/Agendas/PPT/CGMS-54-WGII-WP-07, https://www.cgms-info.org/Agendas/WP/CGMS-54-WGII-WP-07 (12 Aug 2025 WGII and WGIV leading entities requested to provide the questions for the survey to CGMSSEC for September.)	Autumn 2025, CGMS-54	**CLOSED**
WGIV/A54.01	WGIV	2.1	CGMS Members are strongly encouraged to continue to support multi-hazard early warning systems, including		CGMS-55	**OPEN**

			across the four pillars (disaster risk knowledge; detection, observations, monitoring, and forecasting; warning dissemination and communication; preparedness to respond) and to work with WMO Regional Satellite Data Requirements Groups to address specifically identified gaps through the EW4All gap analysis			
WGIV/A54.02	WGII	2.6	CGMS to provide guidance to the Task Team on Cryosphere and Polar Observation from Space in delivering its mandates through expert engagement		CGMS-55	**OPEN**
WGIV/A54.03	WGIV leadership	3	WGIV leadership to finalise the appointment of a chairperson for the Task Group on Metadata		CGMS-55	**OPEN**
WGIV/A54.04	CGMS Satellite Operators	6	CGMS members to contribute to the WMO VLab Trust Fund to ensure continued technical support (via the VLab Technical Support Officer) and the continuation of training activities, including travel support for WMO Members with limited resources.		CGMS-55	**OPEN**

WGIV/A54.07	CGMS Satellite Operators	6	CGMS Members active in VLab are invited to advertise their training events (in partnership with VLab Centres of Excellence) via the VLab Training Calendar and ensure that the relevant contact person information is kept up to date.		CGMS-55	**OPEN**
WGIV/A54.08	CGMS Satellite Operators	6	CGMS Members active in VLab are invited to ensure that a suitable representative is able to attend the 12th VLab Management Group (VLMG-12) meeting, preferably in person.		CGMS-55	**OPEN**
WGIV/A54.10	WGIV Rapporteur	2.8	Organise an extraordinary WGIV intersessional meeting to specifically address the CMA initiative on Establishing a Meteorological Satellite Application Centers		CGMS-55	**OPEN**
WGIV/54.01p	WGIV Task Group on Data Access and Exchange	WGIV	WGIV to address Data Access from Web Platforms, looking for commonalities and the possible development of Good Practices. This activity is to be included in the work of the WGIV Task Group on Data Access and Exchange		End of 2026	**OPEN**

LIST OF WGIV PARTICIPANTS

CGMS-54 - WGIV List of Participants		
First name	Last name	Organisation
Antoine	Berment	CGMS Secretariat
Mikael	Rattenborg	CGMS Secretariat
Shunan	Yang	CMA
Li	Xiaoru	CMA
Jingyan	Wu	CMA
Di	Xian	CMA
Chang	Liu	CMA
Ling	Gao	CMA
Min	Guan	CMA
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Hao	Gao	CMA
Sean	Burns	EUMETSAT
Simon	Elliott	EUMETSAT
Hayley	Evers-King	EUMETSAT
Mark	Higgins	EUMETSAT
Benjamin	Loveday	EUMETSAT
Karolina	Nikolova	EUMETSAT
Sreerekha	Thonipparambil	EUMETSAT
Sally	Wannoop	EUMETSAT
Dorothee	Coppens	EUMETSAT
Vincent	Gabaglio	EUMETSAT
Sarah	Kimani	GUEST
Kiko	Katayama	JMA
Kazuki	Yasui	JMA
Kotaro	Bessho	JMA
Dohyeong	Kim	KMA
Byungil	Lee	KMA
Daegyeom	Jeon	KMA
Yungyo	Lee	KMA
Donghyun	Kim	KMA
Joel	Scott	NASA
Melissa	Andersen Garcia	NOAA
Vijay	Tallapragada	NOAA

CGMS-54 - WGIV List of Participants		
First name	**Last name**	**Organisation**
Konstantin	Litovchenko	ROSHYDROMET
Natalia	Donoho	WMO
Zoya	Andreeva	WMO
Ran	Zhang	WMO
Belén	Martín Míguez	WMO
Albert	Fischer	WMO
Champika	Gallage	WMO

CGMS

SWCG

Space weather coordination group



SWCG REPORT

Co-Chair: *ZONG Weiguo, CMA / Juha-Pekka Luntama, ESA*
Rapporteurs: *Andrew Monham, EUMETSAT*

1. Welcome, objectives and review of agenda

CGMS-54-SWCG-WP-12 Meeting objectives and expected outcomes by co-chairs (verbal) (Co-chairs)

SWCG Acting Chairs Dr. Zong Weigou and Dr. Juha-Pekka Luntama, supported by Rapporteur Mr. Andrew Monham, welcomed the participants, consisting of representatives from CMA, ESA, EUMETSAT, ISRO, JAXA, KMA, NASA, NICT, NOAA, Roscosmos, ROSHYDROMET and WMO (see Annex 1 for full list of participants).

Apologies were received from SWCG Co-Chair, James Spann for not being able to attend on-site, due to family reasons and also from SWCG Co-Chair, who has announced he will be stepping down as Co-Chair following the CGMS-54 WG meetings.

SWCG reviewed and adopted the draft agenda proposed by the CGMS Secretariat prior to the meeting which is in line with the Terms of Reference for SWCG.

CGMS-54-SWCG-WP-17 Review of updated Terms of Reference (Andrew Monham)

Andrew Monham presented the proposed update to the Terms of Reference for the CGMS Space Weather Coordination Group.

This is the first update since the establishment of the SWCG in 2018, reflecting the CGMS-53 appointment of James Spann as co-chair and contains minor updates, refining SWCG interfaces with other CGMS WGs and external bodies. It also encompasses the scope of the HLPP 6.1 which has been recommended for removal from the HLPP.

The SWCG endorsed the updated Terms of Reference.

2. CGMS risk assessment and baseline update

CGMS-54-WGIII-WP-12swcg Status and outcome of the 8th CGMS WGIII risk assessment (Melissa Johnson (NOAA))

CGMS conducts an annual risk assessment against the CGMS baseline to track how well CGMS is meeting its commitments. For each sensor/observation such assessment is based on a qualitative analysis of all the orbits and satellite missions from which the observation is provided. It is based on planned launch dates and design life while resiliency, quality and availability are not analyzed in detail. Hosted payloads operated by Members are included as well as commercially sourced data if the provision is consistent with the CGMS Baseline principles of sustained commitment to provide the data on a free and open basis for operational applications.

The Risk Assessment process is fully described in the CGMS Contingency Plan. The risk assessment was updated in a workshop in February following updates provided by the agencies.

In general, the risk of not meeting commitments remains low with improvement in the risk posture for coronagraphy on the Sun-Earth line. Exceptions identified:

- Risk of not having energetic particle sensors in the LEO afternoon orbit in the early 2030s.
- Slight risk of gap in GEO magnetometers at 128°E in 2030.

Discussion
It was decided that no specific action needs to be taken regarding the slight risk on the GEO magnetometers. This is due to a later than foreseen launch of GK5, but it is quite likely that the previous mission will be extended to cover the gap.

CGMS-54-WGIII-WP-16swcg CGMS baseline document updates proposed from the 8th risk assessment workshop (Melissa Johnson + SWCG leading entity) For recommendation to WGIII

The 'Baseline' constitutes the commitments and plans of CGMS members to provide particular observations and services. CGMS members plan to maintain the capabilities and services described below to support the global observing system. This document will remain consistent with the principles of the WMO Integrated Global Observing System (WIGOS) Vision and the WIGOS Vision serves as important input in the development of CGMS members' plans.

Associated Open Actions have been addressed by SWCG (see other agenda points)

- WGIII/7RAWS-8: SWCG to make a recommendation to WGIII how to separate RO and Ionospheric Electron Density profiles in the CGMS Baseline and Risk Assessment.
- WGIII/7RAWS-4: SWCG to clearly define the quantitative threshold between High and Very High (and Extremely High) Energy Electrons and Protons.

Discussion

RAWS actions are closed.

3. Updates on space-based observational capabilities

CGMS-54-CMA-WP-12 The update of space weather observations on FengYun satellites (ZONG Weiguo)

- CMA/NSMC launched **FY-3H** (Sun-synchronous orbit, **FY-4C** (geostationary orbit)in **late 2025**.
- The new space weather payloads onboard FY-4C and FY-3H will enhance CMA's capabilities for **solar EUV imaging, solar X-ray flux and EUV spectra**, **ionospheric emission and spectrum**, **aurora monitoring**.
- After **the post-launch test** for approximate **six** months to check the **data validation**, CMA/NSMC will provide these new space weather products to public in 2026, welcome to use these new observations in the **operation** and the **science studies**.

Discussion

- Plans for availability to the public with NRT?
  - 4 levels of data are defined. Level-2 will be open to public for science uses. Expected this will be available in real-time.
  - What about in-situ measurements? Radiation monitors are not embarked on these new satellites, but they are on other satellites in the future. Particle observations will be continued.

CGMS-54-ESA-WP-01 ESA Space Safety Space Weather Missions Update (Juha-Pekka Luntama)

- The presentation provides a summary of the implementation status of the Space Weather missions in the framework of the ESA Space Safety Programme
- The presentation covers missions in development: Vigil, Aurora, SHIELD, SWORD, space weather nanosatellites: SWING and SAWA

Discussion

- The Hermeria Swing mission is fully outsourced to industry, but will be compliant with CGMS operational requirements.
- Cooperation with NASA on the Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES) was made on the now cancelled Gateway and cooperation should continue on Moon and Mars mission space weather payloads.
- Concerning the size of the Nanosatellite mission, they are bigger than cubesats… 40-50Kg range. Industry selected preexisting designs to keep cost low.

CGMS-54-NICT-WP-01 NICT space weather observation update (Tsutomu Nagatsuma)

Since 2021, NICT has been developing Radiation Monitors for Space Weather (RMS) for onboard installation on the meteorological satellite Himawari-10. The RMS consists of a high-energy electron sensor and a very-high-energy proton sensor and is designed to conduct space environment measurements over Japan.

Since CGMS-53, two major milestones have been achieved in the development of RMS. First, particle irradiation tests were conducted using the engineering models (EMs) of RMS-e and RMS-p to verify sensor performance and to acquire calibration data. Second, the Critical Design Review (CDR) of the RMS proto-flight model (PFM) was successfully completed.

The RMS PFM is scheduled to be manufactured by the end of FY 2026 and delivered to the satellite bus manufacturer after final verification. Once onboard Himawari-10, RMS will contribute to the global network of operational space-based space weather observations.

In addition, NICT has started a study on the feasibility of SWx observations onboard future geostationary meteorological satellites beyond Himawari-10 in collaboration with JMA.

Discussion
It was remarked that this will help to fill observation gaps.

CGMS-54-NOAA-WP-13 Status and Plans for NOAA Space Weather Activities (James Spann)

The following activities were presented:

Space Weather Follow-On Program

- SOLAR-1 (formerly SWFO-L1): Launched on September 24, 2025, this is the first satellite dedicated exclusively to space weather operations. It represents the final element of the Space Weather Follow-On Program.
    1. Status: Positioned at Lagrange Point 1 (L1) and in the final stages of commissioning. All instruments and systems are operating as expected.
    2. Data release planned for the day following the provisional review.
    3. Instruments: SupraThermal Ion Sensor (STIS), Solar Wind Plasma Sensor (SWiPS), Compact Coronagraph 2 (CCOR-2), and Magnetometer (MAG).

Space Weather Next Program

- This next-generation program is divided into three distinct orbital elements and an innovation element.
    1. SW L1 SOLAR Series
        - Both upcoming satellites in this series will feature a core instrument suite for solar and solar wind observations: a Space Weather Solar Coronagraph, X-ray Irradiance, Suprathermal Ion Sensor, Solar Wind Plasma Sensor, and Magnetometer. A partner-contributed instrument is also included.
        - SOLAR-A: Currently in Phase B (Preliminary Design Review passed) with a scheduled launch in 2029. The partner-contributed instrument is the ESA Energetic Particle Spectrometer.
        - SOLAR-B: Currently in Phase B (PDR pending) with a launch date yet to be determined. The partner-contributed instrument is also TBD.
    2. SW GEO Series
        - Status: Requirement and concept definition work is ongoing.
        - Notes: The program is actively exploring the inclusion of a photospheric magnetic field imager in addition to particle, magnetic fields, and solar observing instruments.
    3. SW LEO Series
        - Status: Currently in the concept phase.
        - Notes: The Space Weather Office (SWO) is evaluating the best approach to leverage commercial and partner assets and capabilities. Mitigation of space weather impacts on satellite orbits drag and communications is being considered.
    4. Innovation
        - The SWO office is partnering with NASA Technology Mission Directorate to develop a solar sail mission to go to a sub L1 location. Spacecraft studies and consideration instrument payloads are currently under way.

Discussion

No points raised.

CGMS-54-NOAA-WP-22 NOAA's Contributions to the Space Weather observations at Lagrange Point 5 (L5) (Nai-Yu Wang (SWO))

The following contributions were presented:
● NOAA is planning to provide a compact coronagraph to the ESA Vigil Lagrange 5 (L5) mission.
● NOAA's collaboration with ESA Vigil L5 mission from the off Sun-Earth-Line (60 degrees off-SEL) will enhance space weather monitoring and improve early warning capabilities for space weather impacts on Earth.
● NOAA is planning for a synergistic approach by Integrating data from several advanced observatories at key orbital locations at the Sun-Earth Lagrange point 1 (L1) (SOLAR-1, and planned NOAA SOLAR-A), at the geostationary orbit (GOES-19), and at the Lagrange point 5 (L5) (ESA VIGIL). to provide continuous, 24/7, and enhanced monitoring of solar activity to protect earth's technology infrastructure and human exploration activities.

Discussion
No points raised.

4. Updates on space weather activities - agency reports

CGMS-54-EUMETSAT-WP-12 EUMETSAT space weather activity status and planning update (Andrew Monham)

EUMETSAT presents the progress in implementing its space weather roadmap for an increasing role in delivery of operational space weather data services in support of European and global operational space weather services. An exchange of letters with ESA has set the foundation for collaboration on operational space weather in support of a potential future European Commission funded programme following approval by EUMETSAT Member States in 2025.

EUMETSAT has already embarked on limited activities such as supporting space weather data distribution from international satellite operators and the integration of the NOAA SEM-2 and ESA NGRM radiation monitor processors into the EUMETSAT Ground Segment. Ionospheric Radio Occultation product deliveries are already part of the EUMETSAT baseline. Operationalisation of topside TEC products from Metop, Metop-SG and multi-mission products, including commercial RO, is envisaged if use case expressed by partners.

Discussion
Concerning the WIS-2.0 test of SOSMAG, it was clarified that this is a process test and only a fixed data set was made available.

CGMS-54-ESA-WP-03 ESA space weather service network: progress and next steps (Alexi Glover)

- The latest status of the ESA space weather service network was presented, covering:
  - maturing R2O2R processes and procedures
  - highlights of the targeted application & tool development
  - space weather training via the SWW portal

Discussion

- Regarding the February 2026 workshop, it was clarified that a report of the end user feedback will be prepared.
- Regarding the space weather training course it was clarified that training also at user level or operational staff level, like VLAB is being planned.
- Regarding aurora tourism and whether any activities are on-going, it was mentioned that the Umea ESWW had a trip to view the aurora – organisers gave input on how they organise and needs.

CGMS-54-ISRO-WP-10 ISRO space weather activity report: Aditya L1 performance (Dr. Sankarasubramaniam)

An overview of the Aditya-L1 performance was presented, covering:

- Summary of science experiments and payloads
- Sample observations from in-situ measurements.
- Sample observations from remote sensing measurements.
- Data availability (within 48 hours of observations) https://www.issdc.gov.in/adityal1.html
- Summary of research articles from the mission.

Discussion

No points raised.

CGMS-54-KMA-WP-09 KMA: Multi-Satellite Geostationary Observations of Recent Space Weather Events (Dr. OH Daehyeon)

The presentation covered the following:

- Using GK2A, Himawari-9, GOES-18 and -19, KMA analysed 8 magnetopause crossing events since May 2025.
- Magnetospheric responses to compression events show local time–dependent asymmetries, with distinct variations in timing, intensity, and duration across sectors such as noon–midnight and dawn–dusk.
- This provides multi-point observational evidence confirming spatially structured magnetospheric responses on GEO orbit to compression, as previously inferred from modelling and single-point measurements.
- This shows the value of multi-point observations in providing a more comprehensive view of magnetospheric responses in space weather events.

Discussion

No points raised.

CGMS-54-NASA-WP-01 NASA Space Weather Program Update (Jamie Favors (virtually))

The NASA update was presented, covering:

- The NASA Space Weather Strategy

- Heliophysics 2025 highlights including launches.
- The R2O2R process
- 2025 accomplishments
- Artemis II support

Discussion
No points raised.

CGMS-54-NICT-WP-02 NICT space weather activities (Tsutomu Nagatsuma)

NICT Space Environment Laboratory routinely operate space weather services of Japan on 24/7 bases as a part of ICAO's global centers, ACFJ. NICT continues to strengthen its space weather monitoring and service capabilities through advances in real-time data acquisition, multi-satellite observations, and impact-oriented information provision.

A major milestone is the establishment of a dedicated ground receiving station at the Kashima Space Technology Center for NOAA's SWFO-L1 (SOLAR-1) mission. Following the launch in September 2025, Kashima successfully achieved first signal reception and stable operations, and preparations are underway to enable secure data streaming in compliance with NOAA's operational requirements.

In parallel, NICT is advancing impact-oriented space weather services through the introduction of SAFIR (Space weather Alerts For social Impacts and Risks). SAFIR shifts from physics-based alerting to societal impact-based information, supported by utilization guidelines and introductory materials for users. Together, these activities contribute to more resilient infrastructure operations and informed decision-making in response to space weather events.

In addition, near real-time acquisition of space environment data from Japan's Quasi-Zenith Satellite System (QZSS) has been realized. QZS-2 and QZS-4 carry SEDA sensors measuring high-energy electrons, light ions including protons, and the geomagnetic field. These observations complement SWx measurements onboard Himawari and enhance spatial coverage over the Japanese longitude sector. Near real-time data acquisition began in December 2025, with further development of databases and visualization tools planned.

Discussion

- The user engagement process to get an understanding of requirements was discussed. NICT use a government-led committee to obtain user requirements address the relationship between the magnitude of the event and its impact.
- It was clarified that data received at the NICT ground station for Solar-1 is transferred to NOAA in real-time.

CGMS-54-WMO-WP-09 WMO report on the Space Weather Expert Team priorities and activities (Kirsti Kauristie, ET-SWx Co-Chair (virtually))

The WMO report on the Space Weather Expert Team (ET-SWx) priorities and activities outlines the main points of the preparatory work for the WMO INFCOM-4 meeting to be held during Q4/2026. Inputs for the next versions of the WIGOS Manual, Guide and Visio2050 are expected as main deliverables from ET-SWx for INFCOM-4 assessment and approval. ET-SWx has composed its inputs to the WIGOS documents

in coordination with the WMO Secretariat and submitted them to the next steps in the INFCOM-4 preparations.

In the Manual and Guide SWx space-based component is expected to be compliant with the CGMS baseline and follow the general guidance for WMO space-based observations. CGMS involvement in the refining work of the WIGOS Vision2050 would be welcome for unified specifications throughout the different sub-systems. Also, ET-SWx and CGMS should join their efforts in advancing the protection of critical radio frequencies for SWx observations.

Discussion

- The subject of heterogeneity in space weather formats and metadata was discussed, highlighting that there is no space weather equivalent to CF. WMO are starting to address metadata formats.
- It was agreed to raise an action on CGMS SWCG to review the terminology consistency for WIGOS Vision, OSCAR and CGMS baseline.
- Other CGMS support to the WMO-ET-SWx shall be made through CGMS representatives on the Expert team.

SWCG agreed the following action.

Actionee	AGN item	Action #	Description	Deadline	Status
SWCG	**4**	CGMS-54	Review terminology consistency for WIGOS Vision, OSCAR and CGMS baseline. Provide feedback to WMO	September 2026 (input on WIGOS Vision for WMO INFCOM)	

5. International space weather data user activities

CGMS-54-GUEST-WP-01 Recent Activities of International Space Environment Services (ISES) (Mamoru Ishii (virtually))

The presentation covered the following:

- Overview of Officials and member states (noting Thailand joined as a new collaborative expert centre last year.
- WMO-ISES-COSPAR Coordination and the 2023 Space Weather International Coordination Forum
- Establishment of "Global Ionosonde Operation Network (GION) – progress in data sharing and format standardisation.
- Discussion on future style of ISES Global Space Weather Warning System (G-SWxWS)

Discussion

- Regarding the G-SWXWS, it was noted that Option 1 on Slide 17 is analogous to the ICAO SWx centres' structure. It was questioned how this may work at national level,

where national interests may be prioritised. How to work across national boundaries? This is being discussed in ISES.

- Regarding the space-based observations, ISES feel they are well established: It was noted there will be an ISES-CGMS Coordination Meeting at the US SWW on 30 April.

CGMS-54-NOAA-WP-15 Solar Wind Measurements from an International L1 Constellation: Enabling Cal/Val and Novel Research (Dimitrios Vassiliadis (virtually))

The recently launched Aditya-L1 (9/2023), and IMAP and SWFO-L1 (now SOLAR-1) satellites (9/2025) have reached L1 and joined legacy missions ACE, DSCOVR, and Wind in taking measurements of the solar wind upstream of the Earth. Simultaneous measurements of plasma, magnetic field, and particle distributions from this number of multiple platforms is unprecedented and will certainly benefit operations as well as research. The satellites have been measuring structures ranging from CMEs and shocks, which produce intense space weather at Earth, down to lower amplitude events such as switchbacks and intervals of turbulence which are of significant research interest. Detailed comparisons have been made for several recent events using IMF and, starting more recently, plasma data from several of the missions and especially from SOLAR-1 and IMAP which flew less than 1 RE from each other while enroute to Lagrange 1. Mission scientists have developed a plan for creating datasets with useful observations and common formats with the goal of sharing the data broadly for R&D objectives. At the same time, the space weather/science communities have advocated for extending the operational lives of legacy missions. A number of presentations and special sessions are planned in conferences and workshops.

Discussion

- It was discussed that agencies may agree on when missions can be operationally added and noted that while it is good to have continuity of observations, the right balance with resource requirements (small but not negligible) has to be met. It does represent a unique opportunity to get better understanding with so many sensors.
- It was asked whether orbit deployment of the upcoming L1 satellites will be planned such that 3 D structures can be better observed. It was clarified that the Solar missions are viewed as continuity missions and are not intended to augment current capabilities.
- It was agreed that this input closes the action SWCG/A53.02, “Consider how to harness the suite of L1 constellation missions for operational space weather usage.” NOAA will continue to monitor the progress of activities initiated and report to the SWCG.

6. WIGOS Vision, OSCAR/Space and Gap Analysis for Space Weather

CGMS-54-WMO-WP-10 WIGOS Vision, OSCAR/Space and Gap Analysis for Space Weather (Heikki Pohjola)

This working paper introduces the latest status of OSCAR/Space database and its recent developments related to SWx activities including data latency records. In addition, the outcome of the annual WMO Gap Analysis for space weather is presented. It identifies gaps for the remote sensing of the solar disk from the L1 orbit at any wavelength and no geomagnetic field measurements in the ionosphere at the

end of the period. Finally, a short update on WIGOS Vision 2050 related to space weather was given. WIGOS Vision has three components detailing space weather instruments expected to be needed in 2050 for in-situ measurements and remote sensing of the sun and heliosphere on Sun-Earth line and off Sun-Earth line.

Discussion

- The Action SWCG/A50.01 "Supply latency information to OSCAR DB with granularity of each relevant space weather sensor on their space missions" remains open – work is on-going.
- Oscar surface metadata has been added, but does not contribute directly to the space-based gap analysis.
- The Action 7RAWS-2 "The SWCG to review WMO space weather gap analysis and inform WMO on missing or incorrect (NRT) data availability indicated in the WMO Gap Analysis document" remains open – work is on-going.
- Discussion on how to handle observations which are in red (marked as observation gaps), noting that many can be covered by the ground. It was noted that care needs to be taken with the maintainability / continuity of ground-based infrastructure, but it would be good to differentiate where no ground-based alternative is available for space-based observation gaps. A new action is raised to cover this.

- SWCG agreed the following action.

Actionee	AGN item	Action #	Description	Deadline	Status
SWCG	**6**	CGMS-54	Review OSCAR space-based gaps and identify which ones may be covered by ground-based sensors.	September 2026 (input on WIGOS Vision for WMO INFCOM)	

7. Briefing from GSICS GRWG space weather subgroup on intercalibration

CGMS-54-SWCG-WP-07 GSICS GRWG space weather sub-group report (Tsutomu Nagatsuma, NICT, Chair)

The GSICS GRWG Space Weather Sub-group continues to promote activities aimed at the crosscalibration of space weather sensors, especially high energy particle sensors. During the current reporting period, the sub-group successfully established its Work Plan, which defines four tasks, each led by designated task Leads to drive the associated activities. In particular, under the task "Define procedure for dataset cross-calibration," the development of the document "Procedure for Dataset Cross-Calibration: Roadmap" was initiated.

Regarding the update of the COSPAR/PRBEM Data Analysis Procedure, the future approach was reconsidered, and a remote meeting was convened to discuss the way forward. In addition, a COSPAR/PRBEM business meeting is scheduled to be held at COSPAR in August this year.

The Space Weather breakout session at the 2026 GSICS Annual Meeting included five presentations related to cross-calibration, including results based on multiple GEO satellite datasets, and provided an opportunity for fruitful discussions.

Discussion
SWCG thanked Nagatsuma-san for his leadership of the intercalibration activities over the years.

8. Future directions 2022+ initiative

CGMS-54-CGMS-WP-3swcg Future direction: Proposal on the way forward

The CGMS-51 Plenary endorsed the CGMS future direction 2022+ strategic themes. Since then, the strategic themes have been integrated into the working structure of the CGMS Working Groups and progress has been made in several areas. From the perspective of the CGMS Secretariat, the initiation phase has been concluded. This working paper provides an overview and proposed way forward for each of the themes.

Discussion

- Recommendation endorsed
- It was discussed that it would be good to periodically step back and look at the relevance of the CGMS activities in the evolving global environment and therefore consider repeating the Future Directions process every 5 years or so. It was recommended to consider this for Plenary deliberation.

9. Review and updating of the HLPP

CGMS-54-CGMS-WP-36swcg Status of implementation of CGMS High Level Priority Plan (2025-2029) (Mikael Rattenborg)

This working paper provides the status of implementation of CGMS High Level Priority Plan (2025-2029). It incorporates inputs from:

- WG I, II, III and IV
- CGMS Space Weather Coordination Group
- International Science Working Group chairs and rapporteurs
- GSICS
- CEOS-CGMS Joint Working Group on Climate

It was agreed that Section 6.1 is redundant to the Terms of Reference and can be removed from the HLPP.

CGMS-54-SWCG-WP-16 Identification of top priorities for SWCG

This is addressed in the WGIII meeting.

10. Review of SWCG list of actions

CGMS-54-SWCG-WP-10 Status of CGMS-53 SWCG list of actions (incl. review of any relevant CGMS-53 plenary actions) (Andrew Monham)

The status of actions open at the time of the Working Group meeting were reviewed and updated as necessary.

New SWCG actions were raised during the CGMS-54 WG meeting.

11. Future CGMS SWCG meetings

CGMS-54-SWCG-WP-02 Decision on dates on SWCG intersessional activities in 2025-2026 (CGMS-54 to CGMS-55) (Andrew Monham)

CGMS-55 date proposals:

- intersessional sessions: 24 Sep 2026, 24 Nov 2026, 28 Jan 2027, 18 Mar 2027 (12 UTC)
- 9th WGIII RAWS: 24-26 Feb 2027
- WG meetings: 19-23 Apr 2027; Location: EUMETSAT
- Plenary session: 1-3 Jun or 15-17 Jun 2027; Location: (Tentatively India)

12. SWCG organisational matters

CGMS-54-CGMS-WP-14swcg Status of co-chairs, rapporteurs, and representatives at meetings (CGMS, ISWGs, VLAB…)

Dr. Nagatsuma is being reassigned to other activities in NICT and therefore has to step down from his CGMS SWCG responsibilities. A nomination for a replacement Co-Chair from CMA has been received: Dr. Zong Weigou.

SWCG agreed to recommend to Plenary that Dr. Zong Weigou takes the role of Co-Chair of the SWCG.

It was noted that the co-rapporteur, Dr. Jesse Andries has left WMO and had to step down from his SWCG duties. A replacement co-rapporteur is not currently sought.

SWCG thanked Dr. Nagatsuma and Dr. Andries for their valuable contributions to CGMS SWCG activities.

13. Any other business

None.

14. Conclusions, preparation of the SWCG report for plenary

The Chairmen thanked the SWCG for the constructive discussion and progress.

End of SWCG meeting

LIST OF SWCG ACTIONS FOLLOWING CGMS-54 PLENARY DISCUSSIONS

CGMS SWCG ACTIONS							
Action #	**Actionee**	**Agenda item**	**Description**	Action feedback/closing document	**Deadline**	**Status**	**HLPP**
SWCG/A50.01	CGMS Members	SWCG/6	Supply latency information to OSCAR DB with granularity of each relevant space weather sensor on their space missions.	CGMS-54: WMO OSCAR presentation – on-going SWCG 53-IS#2.01 Jesse to organise discussion on latency definition needs in OSCAR with Elsayed etc. Some latency info added, but further inputs still required by WMO - proposed to keep OPEN SWCG IS#2: Inputs needed before the CGMS Risk Assessment in February SWCG IS#1: CGMS Members to provide inputs on SWCG/A50.01 by IS#3 (26 January 2023)	CGMS-53	**OPEN**	1.3
SWCG/A50.03	SWCG (RO TG)	Joint WGI-WG-IV-SWCG/4	Establish requirements for and recommend an implementation of an optimised system for radio occultation observations for ionosphere monitoring	CGMS-54: Closed with reference to the ToR and HLPP 6.4 (as normal work of the TG) SWCG 53-IS#2: Output from RO TG - Encourage the set up of a SWx ROMEX to the CGMS Plenary. NOAA will draft a plan – identifying metrics. 5 TG meetings taken place. Next steps identified in TG report	CGMS-53	**CLOSED**	6.4

SWCG/A50.05	CGMS Members	Joint WGI-WG-IV-SWCG/6	CGMS members are invited to support the WRC-23 preparatory process on agenda item 9.1 Topic A (space weather) through its national regulatory authorities, regional WRC-23 preparations or directly in the relevant ITU fora, as appropriate, i.e. identification of frequency bands requiring protection, with coordination with WMO-ET-SWx/WMO-ET-RFC	WRC-23 performed. RF standing agenda item SWCG IS#2: Markus Dreis invited to SWCG IS#3 26 Jan 2023. o Action: Heikki (WMO) to send input from WMO-ET-SWx RF subgroup. SWCG IS#1: - WRC takes place 20 Nov-15 Dec. 2023. - Markus Dreis (EUMETSAT) to be invited to report latest developments and needs at SWCG IS#2, 30 November.	CGMS-53	**CLOSED**	6.1
WGII+SWCG/(P)A50.05	CGMS Members	4.5	CGMS WGII and SWCG members are invited to nominate candidates for a subgroup within GSICS on Space Weather Cal/Val and Intercalibration, which will be focused on providing intercalibration for Space Weather. Please provide nominations to cgmssec@eumetsat.int and mitch.goldberg@noaa.gov	Membership requests now managed by GSICS Subgroup Discussion on membership / Action status to take place under SWCG agenda point 7. 2023 3 Feb: CGMSSEC contacted M Goldberg for a status update.	CGMS-53	**CLOSED**	6.2
SWCG/A51.01	SWCG (Anomaly TG)	Joint WGI-WG-IV-SWCG/2	Expand extent of anomaly data feedback	CGMS-54: Closed in favour of more specific actions Anomaly TG Action TG53#3-1: All CGMS members requested to provide updated anomaly data covering 2024. Template: CGMS spacecraft space	CGMS-53	**CLOSED**	2.5.1

				weather anomaly report template_v2.1 Action TG53#2-1: Andrew to discuss with Scott Leonard / Jim Spann on approach to filtering entries into the database. Action TG53#2-2: Andrew to contact @CGMSSEC to follow-up letter previous letter. CMA to enquire about status Action CGMS53-TG#2: Andrew to request CGMSSec to add the activity mapping to UN COPUOS LTSG to the CGMS website			
SWCG/A51.02	SWCG (Anomaly TG)	Joint WGI-WG-IV-SWCG/2	Review current usage of space weather data for spacecraft operations and goals for improvement.	TRANSFERRED to SES TG of WGI	CGMS-53	**CLOSED (Transferred)**	2.5.1
SWCG/A51.03	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Report Space Weather data gaps & discrepancies between providers and user surveys and OSCAR DB and related priorities for resolution.	Existing surveys reviewed. Is normal work going forward	CGMS-53	**CLOSED**	
SWCG/A51.04	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Propose standardised Space Weather operational formats and CF convention metadata examples.	CGMS-53 Proposal from Edmund Henley Action 53-IS#2.02: Andrew to canvas CGMS operational agencies on formats used / planned for their Space Weather data.	CGMS-53	**CLOSED (2 New actions from Edmund presentation)**	6.6

				Data Access Action CGMS53-TG#2-1 (WMO): Connect the activity with the effort taking place at WMO-ET-SWx and further discussion would be useful between Edmund, Jesse and Christian in order to consider the action wording and CGMS-specific contributions.			
SWCG/A51.05	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Implement improved data access through existing mechanism infrastructure	CGMS-53: Merge action with SWCG/A51.06: Review usage plans and implementation status for improved data access through heritage, new and future mechanism infrastructures, learning lessons from terrestrial data access approaches. EUMETSAT Data Hub partnership agreements for EUMETCast NRT dissemination progressing Data Access Action CGMS53-TG#2-2: WMO (Heikki) to consider adding ionospheric RO specific variable to OSCAR. Data Access NOAA presentation on the GOES-E transition and reporting of any changes from a user perspective to be added to the Joint WG agenda.	CGMS-53	**CLOSED in favour of merged action with 51.06**	6.5

				Data Access CGMS-52 TG#2 action: Regarding coordination / sharing of ground station resources to aid low latency delivery, NOAA and EUMETSAT to compile list of GS supporting downlinks of RO data together with RF reception capabilities / capacity constraints / locations			
SWCG/A51.06	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Review future landscape of operational data delivery mechanisms and coordination taking into account WIS 2.0 and other cloud-based data access mechanisms.	CGMS-53: Merge action with SWCG/A51.05: Review usage plans and implementation status for improved data access through heritage, new and future mechanism infrastructures, learning lessons from terrestrial data access approaches. WMO ET-SWx-5 meeting (fall 2024) had an extensive session around WIS2.0 landscape WMO Study Group on Future Data Infrastructure (SG-FIT) Online Workshop (23-25 September 2024)	CGMS-53	**CLOSED in favour of merged action with 51.05**	6.5
SWCG/A51.07	NOAA	SWCG/2	Report on the STEREO-A coverage implementation	Input to WGIII RA group made	RA Workshop 2024	**CLOSED**	1.1.5
SWCG/A51.08	NOAA	SWCG/4	Provide NOAA aviation and satellite industry testbed reports to SWCG when available	Closed based on presentation links provided at CGMS-53 (see SWCG	CGMS-53	**CLOSED**	

				Report) Summary presentation made in CGMS-52. Full reports to be issued.			
SWCG/A51.10	SWCG/data access + RO TGs	SWCG/5	Consider ICAO PECASUS requirements for improved LEO RO observation, energetic (tens of Kev) electron precipitation flux from LEO orbit, SEP flux spectra (100s MeV to GeV)	Mike Bettwy, NOAA, representing ICAO Space Weather Centers Coordination Group) presentation made to CGMS-53 Data Access CGMS-52 TG#3-1 action : Mike Bettwy to obtain more detailed requirements and present to the SWCG / Joint meeting in China (remote presentation possible) Invite PECASUS, other advisory groups to state requirements in a coming SWCG meeting. Coordinate with WMO on WIGOS revision.	CGMS-53	**CLOSED in favour of new action based on Mike's presentation.**	
SWCG/A51.11	SWCG	SWCG/9	Produce a report of space weather observation requirements for improved STC services and space sustainability	Transferred to WGI SESTG Coordinate with WGI and include coordination service providers, US Office of Space Commerce, EU SST and space weather service providers (ISES)	CGMS-53	**CLOSED (Transferred)**	6.7
SWCG/A52.01	SWCG	SWCG/5	Consider HLPP / Baseline updates on the following: - Thermospheric density observations	Updates proposed at CGMS-53	CGMS-53	**CLOSED**	

			to be added to baseline (CMA observations) - Assessment of thermospheric measurement means in HLPP - Auroral observations to be added to baseline (CMA observations)	SWCG 53 IS#2 Updates to baseline and HLPP will be addressed in the RA Workshop based on CMA progress and overall CGMS member commitment to provide sustained operational, globally available measurements of thermospheric density and Aurora. Definition of the measurements needs to be clarified			
SWCG/A52.02	SWCG	SWCG/10	Consider observation requirements in support of interplanetary human exploration	CGMS-54: NASA confirmed closure. CGMS-53: See links provided in CGMS Report, Keep Open for NASA response. Data Access Action CGMS53 TG#3-2: Jim Spann, Jamie Favors to report on work of SRAG. See SRAG Home	CGMS-53	**CLOSED**	
SWCG/A52.03	SWCG Data Access TG	Joint WGI-WG-IV-SWCG	Report on space weather product level definitions, identify any differences and propose steps for alignment.	CGMS-54: Inputs still required Data Access Action CGMS53-TG#2-7: Inputs from CGMS agencies on product level definitions requested	CGMS-53	**OPEN**	
SWCG/A52.04	SWCG / Anomaly Database TG	Joint WGI-WGIV-SWCG/2	SWCG to seek feedback from space weather analysts on value of the collected EDAC 2023 data	Closed by NICT report and new action to collect 2024, historical and future data. Preliminary feedback positive. EUMETSAT to	CGMS-53	**CLOSED in favour of new action**	

				collect 2024 data and other agencies encouraged to do so.			
SWCG/A53.01	SWCG	SWCG/2	Decide which NASA missions have sufficient commitment to include in CGMS baseline (e.g. JEDI, Punch, SDO)	CGMS-54: NASA have made review NASA/NOAA to coordinate	CGMS-54	**OPEN**	
SWCG/A53.02	SWCG Data Access TG	SWCG/5	Consider how to harness the suite of L1 constellation missions for operational space weather usage.	CGMS-54: Closed based on NOAA presentation CGMS-54-NOAA-WP-15	CGMS-54	**CLOSED**	
SWCG/A53.03	SWCG Data Access TG	SWCG/5	Establish response to the ICAO space weather service identified needs presented at CGMS-53.	CGMS-54: Closed based on NOAA presentation CGMS-54-NOAA-WP-23	CGMS-54	**CLOSED**	
SWCG/A53.04	SWCG Data Access TG	SWCG/8	Review usage plans and implementation status for improved data access through heritage, new and future mechanism infrastructures, learning lessons from terrestrial data access approaches.	CGMS-54:Inputs made by EUM and WMO – other agency's inputs still needed (in coord with WGIV) Merged from A51.05/51.06	CGMS-54	**OPEN**	
SWCG/A53.05	CGMS Spacecraft Operators	Joint WGI-WGIV-SWCG/2	CGMS Members operating satellites to produce EDAC data covering 2024 and report on ability to supply historical and future data.	CGMS-54: Closed in favour of new actions	CGMS-54	**CLOSED**	
SWCG/A53.06	SWCG Anomaly TG	Joint WGI-WGIV-SWCG/2	Assess suitability of SPARK database tool as repository for CGMS anomalies, including data access criteria, metadata needs and standardisation.	CGMS-54: Closed based on TG Report: CGMS-54-SWCG-WP-03	CGMS-54	**CLOSED**	
SWCG/A53.07	SWCG TG on Improving User Data Access	Joint WGI-WGIV-SWCG/3	Draft WMO-CF profiles with improved metadata in coordination with WMO ET-SWx, ISES, COSPAR and research community and proposed follow-up activities.	CGMS-54: Follow-up from Edmund's presentation to be made in TG.	CGMS-54	**OPEN**	
SWCG/A53.08	WGI SESTG & SWCG	Joint WGI-WGIV-SWCG/5	Assess possibility to share satellite orbit data to estimate thermospheric drag.	CGMS-54: Close in favour of new action based on Irfan's and Myrto's presentations	CGMS-54	**CLOSED**	
53.07iv	WGII, SWCG	Plenary 6	Space weather AI readiness:		Q1 2026, April 2026	**OPEN**	

			SWCG and WGII to jointly hold 2–3 online meetings in order to address the prediction of solar flares and coronal mass ejections (CMEs), as well as tackling the challenges associated with real-time forecasting.				
SWCG/A54.01	SWCG	4	Review terminology consistency for WIGOS Vision, OSCAR and CGMS baseline. Provide feedback to WMO		September 2026 (WMO INFCOM)	**OPEN**	
SWCG/A54.02	SWCG	6	Review OSCAR space-based gaps and identify which ones may be covered by ground-based sensors.		September 2026	**OPEN**	
SWCG/A54.03	SWCG	Joint WG AOB	Review and reorganise the joint meetings..scope for effectiveness and efficiency		SWCG-IS#2	**OPEN**	
SWCG/A54.04	SWCG Anomaly TG	Joint	CGMS Members operating satellites to suggest measures to enable satellite anomaly data supply.		SWCG-IS#1	**OPEN**	
SWCG/A54.05	SWCG Anomaly TG	Joint	CGMS Members operating satellites to supply Functional anomalies and EDAC events over two/three historical time periods to be defined within the Task Group and organise analysis.		SWCG-IS#1	**OPEN**	
SWCG/A54.06	SWCG Anomaly TG	Joint	CGMS Members to decide whether SPARK should become the baseline repository of CGMS anomalies, define access preferences (centralised vs federated)		SWCG-IS#1	**OPEN**	
SWCG/A54.07	SWCG Anomaly TG	Joint	CGMS Members to identify source of further SPARK funding.		SWCG-IS#1	**OPEN**	
SWCG/A54.08	SWCG	Joint	SWCG to coordinate for cross-verification and data sharing of POD for thermospheric density application		CGMS-55	**OPEN**	

LIST OF SWCG PARTICIPANTS

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Yungyo	Lee	KMA
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CGMS

SWCG

Joint WGI-WGIV-SWCG



JOINT WGI-WGIV-SWCG REPORT

Co-Chairs: *ZONG Weiguo, CMA / Juha-Pekka Luntama, ESA*
Rapporteurs: *WGI - Karolina Nikolova & WGIV - Simon Elliott*

1. Welcome, objectives and review of agenda

SWCG Acting Chairs Dr. Zong Weigou and Dr. Juha-Pekka Luntama, supported by Rapporteurs Ms. Karolina Nikolova and Simon Elliott, welcomed the participants, consisting of representatives from CMA, ESA, EUMETSAT, IROWG/JCSDA, ISRO, JAXA, JMA, KARI, KMA, NASA, NICT, NOAA and WMO (see Annex 1 for full list of participants).

Apologies were received from SWCG Co-Chair, James Spann for not being able to attend on-site, due to family reasons and also from SWCG Co-Chair, Tsutomu Nagatsuma who has announced he will be stepping down as Co-Chair following the CGMS-54 WG meetings.

The participants reviewed and adopted the draft agenda proposed by the CGMS Secretariat prior to the meeting.

1.1 Item 8.1 from WGI: International cooperation

Highlights of the outcome of the International Conference on Spacecraft Mission Operations (SMOPS-2026), (Nandini Harinath (virtually))

ISRO/ISTRAC provided a short report on the outcome of the SMOPS-2026 conference (instead of in WGI due to time constraints)

Nandini extended thanks and greetings from Benguluru. The presentation provided a brief overview of the International Conference on Spacecraft Mission Operations (SMOPS-2026). The technical programme of the conference was presented. It spanned over 4 technical sessions and included 120 oral presentations, 80 poster presentations. Three panel discussions were held with over 1000 attendees. Three plenary sessions were held on the topics of “Turning Design into Achievement”, “Mission OPS Strategy & Future Roadmap” and “Ground Segment and Constellations”. 15 best paper awards were given. There were 18 key talks and 7 interactive sessions. There were 23 Indian industries participating. Proceedings are to be published in Acta Astronautica.
EUMETSAT D/OPS was present at the conference, CGMS Secretariat extended thanks on his behalf.

2. Space weather spacecraft anomaly report database

CGMS-54-SWCG-WP-03 Report on progress of the Space Weather Spacecraft Anomaly Database Task Group (Andrew Monham)

The Space Weather Spacecraft Anomaly Database Task Group objective is to promote the collection of spacecraft anomaly data as the data source for space weather actors, to analyse the impact of space weather on satellite systems. Particularly to improve:

- spacecraft design robustness
- support the spacecraft operations community with space weather warnings and improved post-event anomaly analysis
- tools modelling space weather effects

Data collection from CGMS agencies and other sources remains problematic, although NOAA have provided some (GEO) data for the first time, along with the more regular inputs from ESA and EUMETSAT.

CGMS needs to establish what measures can be taken to overcome barriers in supplying the data. It is suggested that historical anomaly data might be considered to be supplied from these operators (which may be considered less sensitive?) such that value assessment can be made against archived space weather data.

The compiled anomaly database since 2015 is available on the CGMS website on the SWCG page: Space weather coordination group – CGMS – Website.

Strong backing for this activity is received from UN COPUOUS with the published Long-Term Sustainability Guidelines specifically encouraging support to this CGMS activity. The CGMS/WMO compliance matrix has been published on the CGMS website.

Study work on the SPARK tool under NASA/NOAA contract is now being finalised. This provides an excellent anomaly database structure with strong security and data analysis features. CGMS must now decide whether this platform can be supported, both conceptually and financially. A dedicated presentation from the developer on the latest status is provided separately.

Following the recommendation from the CGMS-53 NICT analysis of 2023 EUMETSAT EDAC, further, more expansive collection of EDAC data in EUMETSAT has been performed and it is confirmed that EUMETSAT tools should allow a systematic collection, if desired, in the future. NICT is presenting a new analysis of the latest data separately (see below). ESA could collect data if requested on specific adhoc events. With no response from other agencies, it is recommended to define historical reference periods for collection and analysis (assuming agreed participation of further agencies).

Discussion

- It was stressed in the discussion that feedback is needed to get a sense of what is needed in order to be able to provide data. When looking at historical data, how far back in do we need to go to overcome the barriers to sending more recent data? There have been indications that sharing data from instruments rather than satellite platforms may be easier to access (components not shared with other satellites involved in national security for instance. If there is no way to get the data, we should just admit that.

- It was agreed to close the general action SWCG/A51.01 on expanding the extent of anomaly feedback with the more specific proposed actions. Some rewording / combination of functional anomaly and EDAC analysis was made – please refer to the action list below. Note that for the historical analysis, it was proposed that 3 periods should be considered:
    - Quiet conditions at solar min
    - Quiet conditions at solar max
    - Active conditions at solar max
- It was agreed to close the action SWCG/A53.06 "Assess suitability of SPARK database tool as repository for CGMS anomalies, including data access criteria, metadata needs and standardisation", based on the positive feedback made from the Task group. New, specific actions on the way forward are proposed (see below). Regarding the funding, it was estimated that about 50% FTE would be needed to secure maintenance of the tool, without further expansion of functionality.

CGMS-54-NICT-WP-03 Trend analysis of satellite anomalies using EDAC data (Tsutomu Nagatsuma)

Space environment effects such as single event upsets (SEUs), surface charging, and deep dielectric charging are major causes of satellite anomalies. These effects are driven by solar energetic particles, galactic cosmic rays, and variations in magnetospheric energetic particles associated with substorms and geomagnetic storms. To mitigate minor anomalies, spacecraft commonly implement error detection and correction (EDAC) techniques, which provide a valuable record of space environment–induced disturbances.

This study analysed long-term trends of EDAC events observed by LEO satellites, Sentinel-3B and Metop-C, using EDAC data provided by EUMETSAT. EDAC occurrences were examined separately inside and outside the South Atlantic Anomaly (SAA). For Sentinel-3B, EDAC events outside the SAA showed a decreasing trend from 2023 to 2025, potentially reflecting reduced galactic cosmic ray flux during the current solar maximum. Within the SAA, EDAC events also exhibited a slight decline, which may be associated with a contraction of the high-flux region of the SAA.

For Metop-C, EDAC events were compared with onboard space environment monitor data. A clear log-linear relationship was identified between EDAC occurrence and proton flux, with the strongest correlation observed for protons above 16 MeV. Notably, the EDAC event rate in 2025 was higher than in 2023, suggesting a possible contribution from material degradation.

These results demonstrate that combining long-term EDAC records with space environment data enables the separation of environmental effects from aging-related instrument degradation, supporting improved satellite risk assessment and spacecraft design validation.

Discussion

- Concerning material degradation, noting extent of SAA might have been changing, it was discussed whether a multiple linear regression to disentangle the multiple potential sources of

change had been considered. This was agreed to be an interesting idea, noting also that the spectral shape of SAA is changing and should be analysed before drawing a conclusion. ESA are making a mission which will monitor component sensitivity to space environment effects (launch after 2028).

- See overall discussion of EDAC from the TG report and related actions below.

CGMS-54-GUEST-WP-02 Spacecraft Anomaly Resolution Knowledgebase SPARK, exploring and analysing CGMS anomalies (Alec Engell (NextGen) (virtually))

The SPARK tool has been developed under a NASA/NOAA study contract in the US. This tool provides powerful data analysis capabilities both within the tool and allows additional private data analyses with external data in the NASA Heliocloud. CGMS anomalies, as well as NASA anomalies have been ingested (although CGMS currently do not have access to the NASA data). On-boarding / demonstration sessions can be arranged.

Discussion

- See overall discussion of SPARK from the TG report and related actions below.
- Link to tool is here: Space Weather Analyst™ Space Weather Analyst™

Joint WGI, WGIV and SWCG agreed the following actions.

Actionee	AGN item	Action #	Description	Deadline	Status
SWCG Anomaly TG	Joint-WGI-WGIV-SWCG/2		CGMS Members operating satellites to suggest measures to enable satellite anomaly data supply.	SWCG-IS#1 (24 Sept. 2026)	
SWCG Anomaly TG	Joint-WGI-WGIV-SWCG/2		CGMS Members operating satellites to supply Functional anomalies and EDAC events over two/three historical time periods to be defined within the Task Group and organise analysis.	SWCG-IS#1 (24 Sept. 2026)	
SWCG Anomaly TG	Joint-WGI-WGIV-SWCG/2		CGMS Members to decide whether SPARK should become the baseline repository of CGMS anomalies, define access preferences (centralised vs federated)	SWCG-IS#1 (24 Sept. 2026)	
SWCG Anomaly TG	Joint-WGI-WGIV-SWCG/2		CGMS Members to identify source of further SPARK funding.	SWCG-IS#1 (24 Sept. 2026)	

3. Space weather data access

CGMS-54-SWCG-WP-05 Report from the CGMS SWCG Task Group on improving user data access to space weather data from orbital sensors (Andrew Monham)

The Task Group on Improving User Data Access to Space Weather Data from Orbital Sensors helps glue together the feedback obtained from the various outreach activities of SWCG:

- Data Provider and User Surveys conducted 2017-2019
- CGMS-User meetings held in space weather workshops in Europe, USA and Asia
- CGMS-International Space Environment Service coordination meetings (http://www.spaceweather.org/)

And identifies the priorities for improving the provision of CGMS Agency space weather sensor data to operational users.

The Task Group has been active with wide participation of all representing relevant roles of data providers and users, holding 3 meetings and a number of outreach events to external parties in workshops in Europe, USA.

Furthermore the group is cooperating closely with the WMO Expert Team on Space Weather.
Based on identification of priorities, the group has made progress in:

- Analysing the needs for space-based observational data to support the ICAO mission
- Assessing the suitability and usage of current and planned data access mechanisms available to the agencies
- Further developing the approach to format and metadata usage in coordination with the WMO-ET-SWx

Work is set to continue to mature these tasks before CGMS-55.

CGMS-54-WMO-WP-20 Report on the work of the WMO ET-SWx Task Team on Latency Assessment (Simon Elliott)

The WMO Expert Team on Space Weather is interested in the scope for timely exchange of small data sets. WIS 2.0 is being considered as a candidate architecture to support this. A Task Team on Data Latency has been set up comprising Simon Elliott (EUMETSAT), Kirill Kholodkov (RAS), Joaquim Eduardo Rezende Costa (INPE), and Kasper van Dam (KNMI) with support from Zoya Andreeva and Heikki Pohjola from WMO. Work is well underway preparing for the assessment campaign. It is planned for the second quarter of 2026. The outcome of the latency assessment will be provided as input to the Expert Team on Space Weather.

The current status of WIS 2.0 was presented. The dataflow in WIS 2.0 and interaction between consumer, supplier, global broker and global cache was provided. Assessment campaign to start soon. The assessments will offer an objective measure of the time to get small data sets from a supplier to multiple

consumers world-wide using the existing WIS 2.0 infrastructure. Due to regulatory constraints, the approach is only valid for payloads less than 4096 bytes. Timeliness in the order of 1 second is expected. The Space Weather community (through WMO ET-SWx) can use this information when considering options for data exchange. Results from first campaign were presented for 40 hours, during which 2106 messages were transferred with no losses with a mean time delay of 0.197s and standard deviation of 0.014s.

Discussion

- It was discussed whether this timeliness would hold true where a large number of simultaneous requests for data are being processed. Due to the use of MQTT, it was expected that this should not impact performance.

CGMS-54-GUEST-WP-03 Formats and Metadata for operational space weather data: progress on clarifying scopes and next steps (Edmund Henley (virtually))

As a discipline, space weather lacks some key standards on variable naming and coordinate reference frame identification which have helped terrestrial weather advance, and build ecosystem of tools able to automagically use & combine observation and model data from many sources.
The lack of standardised formats and metadata in operational space weather data from space incurs friction penalties on users, hidden from providers. See CGMS-52 for details, CGMS-53 for big-picture.

This presentation details progress on discussing with space weather research community. As more countries address space weather operationally, CGMS providers should consider what can be done to make their observation data more intercomparable. And how to balance aiming for compatibility with standards & practices in terrestrial weather, and the space weather research community (a key user).

Since CGMS-53, progress has been made to engage with those in the research community who we in the operational world rely on disproportionately in space weather (compared to terrestrial weather):

- Discussions on metadata + data at IHDEA 2025
- Getting some of this into the literature – notably via COSPAR-PSW ISWAT roadmap papers.

Recommended scope for any CGMS work: focus on operations layer (ISES, WMO ET-SWx) – get needs for this. Also: consider resuming cheap strawperson trial on datafile layer, continue engaging with research community.

Discussion

- The complexity of the problem is recognised. ISES and other users have been asked for their input in the past, and SWCG will do again. But experts always muddle through somehow, and ISES and most other users consulted are experts so may not give the answer needed. Is really about seeking funding. HAPI for 1-dimensional data and SPASE for higher dimensional data sets seems to have potential, within a NetCDF format. It is recommended to keep the current action open and

discussion to converge on a solution will continue at forthcoming US SWW in Boulder and at the next Task group meeting.

CGMS-54-NOAA-WP-23 Analysis and next steps in meeting needs of ICAO space weather service (Erin Lynch (virtually))

The results of an ICAO Space Weather Centres poll on their needs for space-based observations were presented. An analysis of the data needed to support the ICAO mission was conducted within the SWCG Data Access Task Group was conducted to assess:

- How the needs are currently being met
- Plans for ensuring continuity in the future
- Potential gaps.

Discussion

- The rationale for ICAO requiring space-based radio burst measurements, rather than a ground-based solution was not understood. It was noted that there are no plans for a space-based system. Reference is made to the action raised in the SWCG meeting: *"Review OSCAR space-based gaps and identify which ones may be covered by ground-based sensors."*. Needs of ICAO will be assessed in this context. It was also noted in this respect that Europe has inaugurated a new radio telescope, but ground-based coordination is needed for the global network. It was agreed that the ICAO requirements should not need to specify the source of measurement data, but specify the needs which CGMS and ISES can attribute to space and ground sensor requirements.
- Concerning purchase of commercial Radio Occultation data, it is needed to avoid duplication through agency coordination. This is done for the neutral atmosphere RO data. It was noted that the CGMS-52 endorsed a Best Practice on "Relationship with the private sector Commercial data purchases" which includes the issue of avoiding data buy duplication: CGMS-best-practice-document-Relationship-with-the-private-sector-for-commercial-data-purchases.pdf
- SWCG will meet with ISES in the upcoming US SWW and discuss with ICAO SWx representative about what is there, not there, planned, not planned, in order to manage expectations.
- The current action can be closed.

4. Ionospheric Radio Occultation system optimisation

CGMS-54-SWCG-WP-14 Report from the CGMS SWCG Task Group on Ionospheric Radio Occultation System Optimisation (Erin Lynch (virtually))

The Task Group on Ionospheric Radio Occultation System Optimisation was formed at CGMS-50 to address the full scope of HLPP (6.4):

- In coordination with IROWG establish requirements for and recommend an implementation of an optimised system for radio occultation observations for ionospheric monitoring. All documentation is available on the Google Drive

The task group benefits from the participation of ionospheric RO experts along with representatives of the CGMS RO data providers. Three meetings were actively supported. Progress has been made in:

- Refining the capability table of ionospheric RO missions
- Developing a recommendation for the GNSS RO baseline for ionospheric observations
- Assessing NOAA's OSSE and architecture study to understand requirements

Discussion

- The long-standing action: "Establish requirements for and recommend an implementation of an optimised system for radio occultation observations for ionosphere monitoring" can be closed, as it is both the Terms of Reference for the Task Group and the HLPP. Work to fulfil this is the key objective of the Task Group.
- The TG also addressed the existing action coming from the Risk Assessment Workshop; "The SWCG to make a recommendation to WGIII how to separate RO and Ionospheric Electron Density profiles in the CGMS Baseline and the risk assessment documents". The action is closed with the proposed update to the CGMS Baseline.

5. Space environment sustainability Space Weather aspects

CGMS-54-SWCG-WP-08 Space weather issued addressed by the Space Environment Sustainability Task Group (Juha-Pekka Luntama)

The presentation was deferred from the Joint meeting due to time-pressure and instead held within the SWCG meeting. It provides a summary of the ongoing space weather related actions in
the Space Environment Sustainability Task Group:

- WGI/A53.08: Review current usage of space weather data for spacecraft operations and goals for improvement
    - Specific request made for CGMS Member agencies to provide inputs to the ESA-provided space weather SESTG STC approaches Excel sheets.
    - ESA was requested to provide more details in these SWx Excel sheets to facilitate comparison with other agencies' approaches and achieved accuracies.
- WGI/A53.09: Produce a report of space weather observation requirements for improved STC services and space sustainability
    - To be produced following delivery and analysis of inputs from WGI/A53.08
        - Identification of services where performance is not sufficient
        - Identification of missing or insufficient observations
        - Identification of existing data sources that are not utilised effectively
    - Outputs:
        - Report allowing CGMS members to identify means to provide missing or better observation data
        - Establishing access or sharing existing data that are not utilised

CGMS-54-ESA-WP-06 Use of GNSS for thermospheric density determination (Myrto Tzmali)

Dedicated electrostatic accelerometers have flown on four geodetic missions (CHAMP, GRACE, GRACE-FO, Swarm). These instruments measure all non-gravitational surface forces: atmospheric drag, solar radiation pressure, Earth albedo, and thruster firings. Accelerometer-derived densities are the observational gold standard: accuracy of ~2–5% under nominal conditions. They have underpinned all major empirical density models (DTM, NRLMSISE, JB2008).

The challenges on accelerometers were presented. Despite the challenges, accelerometer-derived densities at 400–550 km remain irreplaceable for orbit prediction, reentry forecasting, and space weather research. There is an observational gap as only a handful of satellites carry dedicated accelerometers - severely limiting global coverage in local time and latitude.

Discussion

- No comments.

CGMS-54-NOAA-WP-11 Update on thermospheric density measurements from satellites with GNSS Precise Orbit Determination (POD) (Irfan Azeem (virtually))

The thermosphere, extending from approximately 80 to 600 kilometers above the surface influences various space-based activities, including satellite operations and space traffic management. Global Navigation Satellite System (GNSS) Precise Orbit Determination (POD) is an innovative solution for monitoring thermospheric density, improving understanding of upper atmospheric variability and space weather. An increasing number of LEO satellites are now being equipped with POD antennas for navigation, highlighting the growing importance of precise orbital tracking. To fully realize the benefits of this technology, international collaboration is essential to proliferate thermospheric density data, enhance data reliability, and enable standardization and interoperability of data across international missions and platforms.

Discussion

- It was suggested this could be challenging, noting data could come from fleets, individual providers, with heterogeneous inputs. The preference is to get data through the GNSS measurements: ranges, pseudo-ranges and phase offsets.
- Consensus on what to include in radiation models is needed, potentially through another workshop.
- NOAA would like to do another pilot study with some data from the commercial sector and a bigger team looking at those data.
- It was agreed to raise an action to coordinate the cross verification and data sharing of POD for thermospheric density verification and to advocate for a workshop.

Joint WGI, WGIV and SWCG agreed the following actions.

Actionee	AGN item	Action #	Description	Deadline	Status
SWCG	Joint-WGI-WGIV-SWCG/5		SWCG to coordinate for cross-verification and data sharing of POD for thermospheric density application	CGMS-55	

6. AI/ML

CGMS-54-CGMS-WP-38 Report on preliminary outcome of the survey on AI/ML (Paolo Ruti) 53.07

It was noted that this presentation is from WGII and this joint session is used to expand the audience.

There is a strong community interest in making EO data and services more AI-ready, but maturity remains uneven across agencies: Few agencies are already advancing with roadmaps, pilot services, Spatio-Temporal Asset Catalogues (STAC) adoption, cloud-native formats, and AI-oriented access approaches, while others remain in planning or early exploration phases.

Agencies consistently highlight that users need a usable access for efficient implementation into ML workflows (efficient data filtering and extraction, chunking, machine-readable metadata, provenance, and practical tooling). There is demand for a shared AI/ML catalogue, mainly to avoid duplication, accelerate uptake, improve benchmarking, and strengthen collaboration.

Challenges reported by users remain concentrated around data access speed, preprocessing burden, interoperability across sources, standards maturity, and platform or usage constraints. There is clear interest in a community coordination on best “AI-ready” EO practices under a CGMS–WMO framework, with respondents indicating that joint guidance, shared practices, and lightweight coordination mechanisms would be useful next steps.

Discussion

- ESA commented that in space weather applications, different AI/ML models are used for different observations, such as F10.7 for orbit predictions compared with sun spot identification. It may not be feasible to use a common approach.
- Results are considered to be the first steps. Use cases can be identified and feedback provided and shared with the space weather community.
- It was noted that the survey focussed on AI/ML pipelines for discoverability of different fields.

7. Review of actions

The status of all actions emanating from this Joint WG meeting is presented in the CGMS-54 SWCG Report.

8. AOB

It was noted that topics presented were mainly of concern to both SWCG and WGI, whereas WGIV interest was limited to the data access agenda point. It was therefore recommended to consider structuring the Joint meeting differently for the CGMS-55 WG sessions.

9. Next steps and conclusions

The Chairs thanked the participants for their contributions and productive discussions.

End of Joint WGI-WGIV-SWCG meeting

LIST OF JOINT WGI-WGIV-SWCG ACTIONS FOLLOWING CGMS-54 PLENARY DISCUSSIONS

CGMS JOINT WGI-WGIV-SWCG ACTIONS							
Action #	**Actionee**	**Agenda item**	**Description**	Action feedback/closing document	**Deadline**	**Status**	**HLPP**
SWCG/A50.03	SWCG (RO TG)	Joint WGI-WG-IV-SWCG/4	Establish requirements for and recommend an implementation of an optimised system for radio occultation observations for ionosphere monitoring	CGMS-54: Closed with reference to the ToR and HLPP 6.4 (as normal work of the TG) SWCG 53-IS#2: Output from RO TG - Encourage the set up of a SWx ROMEX to the CGMS Plenary. NOAA will draft a plan – identifying metrics. 5 TG meetings taken place. Next steps identified in TG report	CGMS-53	**CLOSED**	6.4
SWCG/A50.05	CGMS Members	Joint WGI-WG-IV-SWCG/6	CGMS members are invited to support the WRC-23 preparatory process on agenda item 9.1 Topic A (space weather) through its national regulatory authorities, regional WRC-23 preparations or directly in the relevant ITU fora, as appropriate, i.e. identification of frequency bands requiring protection, with coordination with WMO-ET-SWx/WMO-ET-RFC	WRC-23 performed. RF standing agenda item SWCG IS#2: Markus Dreis invited to SWCG IS#3 26 Jan 2023. o Action: Heikki (WMO) to send input from WMO-ET-SWx RF subgroup. SWCG IS#1: - WRC takes place 20 Nov-15 Dec. 2023. - Markus Dreis (EUMETSAT) to be invited to report latest developments and needs at SWCG IS#2, 30 November.	CGMS-53	**CLOSED**	6.1

SWCG/A51.01	SWCG (Anomaly TG)	Joint WGI-WG-IV-SWCG/2	Expand extent of anomaly data feedback	CGMS-54: Closed in favour of more specific actions Anomaly TG Action TG53#3-1: All CGMS members requested to provide updated anomaly data covering 2024. Template: CGMS spacecraft space weather anomaly report template_v2.1 Action TG53#2-1: Andrew to discuss with Scott Leonard / Jim Spann on approach to filtering entries into the database. Action TG53#2-2: Andrew to contact @CGMSSEC to follow-up letter previous letter. CMA to enquire about status Action CGMS53-TG#2: Andrew to request CGMSSec to add the activity mapping to UN COPUOS LTSG to the CGMS website	CGMS-53	**CLOSED**	2.5.1
SWCG/A51.02	SWCG (Anomaly TG)	Joint WGI-WG-IV-SWCG/2	Review current usage of space weather data for spacecraft operations and goals for improvement.	Transferred to SES TG of WGI	CGMS-53	**CLOSED (Transferred)**	2.5.1
SWCG/A51.03	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Report Space Weather data gaps & discrepancies between providers and user surveys and OSCAR DB and related priorities for resolution.	Existing surveys reviewed. Is normal work going forward	CGMS-53	**CLOSED**	

SWCG/A51.04	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Propose standardised Space Weather operational formats and CF convention metadata examples.	CGMS-53 Proposal from Edmund Henley Action 53-IS#2.02: Andrew to canvas CGMS operational agencies on formats used / planned for their Space Weather data. Data Access Action CGMS53-TG#2-1 (WMO): Connect the activity with the effort taking place at WMO-ET-SWx and further discussion would be useful between Edmund, Jesse and Christian in order to consider the action wording and CGMS-specific contributions.	CGMS-53	**CLOSED (2 New actions from Edmund presentation)**	6.6
SWCG/A51.05	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Implement improved data access through existing mechanism infrastructure	CGMS-53: Merge action with SWCG/A51.06: Review usage plans and implementation status for improved data access through heritage, new and future mechanism infrastructures, learning lessons from terrestrial data access approaches. …	CGMS-53	**CLOSED in favour of merged action with 51.06**	6.5
SWCG/A51.06	SWCG (Data Access TG)	Joint WGI-WG-IV-SWCG/4	Review future landscape of operational data delivery mechanisms and coordination taking into account WIS 2.0 and other cloud-based data access mechanisms.	CGMS-53: Merge action with SWCG/A51.05: Review usage plans and implementation status for improved data access through heritage, new and future mechanism infrastructures, learning lessons from terrestrial data access approaches.	CGMS-53	**CLOSED in favour of merged action with 51.05**	6.5

				WMO ET-SWx-5 meeting (fall 2024) had an extensive session around WIS2.0 landscape WMO Study Group on Future Data Infrastructure (SG-FIT) Online Workshop (23-25 September 2024)			
SWCG/A52.03	SWCG Data Access TG	Joint WGI-WG-IV-SWCG	Report on space weather product level definitions, identify any differences and propose steps for alignment.	CGMS-54: Inputs still required Data Access Action CGMS53-TG#2-7: Inputs from CGMS agencies on product level definitions requested	CGMS-53	**OPEN**	
SWCG/A52.04	SWCG / Anomaly Database TG	Joint WGI-WGIV-SWCG/2	SWCG to seek feedback from space weather analysts on value of the collected EDAC 2023 data	Closed by NICT report and new action to collect 2024, historical and future data. Preliminary feedback positive. EUMETSAT to collect 2024 data and other agencies encouraged to do so.	CGMS-53	**CLOSED in favour of new action**	
SWCG/A53.05	CGMS Spacecraft Operators	Joint WGI-WGIV-SWCG/2	CGMS Members operating satellites to produce EDAC data covering 2024 and report on ability to supply historical and future data.	CGMS-54: Closed in favour of new actions	CGMS-54	**CLOSED**	
SWCG/A53.06	SWCG Anomaly TG	Joint WGI-WGIV-SWCG/2	Assess suitability of SPARK database tool as repository for CGMS anomalies, including data access criteria, metadata needs and standardisation.	CGMS-54: Closed based on TG Report: CGMS-54-SWCG-WP-03	CGMS-54	**CLOSED**	
SWCG/A53.07	SWCG TG on Improving User Data Access	Joint WGI-WGIV-SWCG/3	Draft WMO-CF profiles with improved metadata in coordination with WMO ET-SWx, ISES, COSPAR and research community and proposed follow-up activities.	CGMS-54: Follow-up from Edmund's presentation to be made in TG.	CGMS-54	**OPEN**	

SWCG/A53.08	WGI SESTG & SWCG	Joint WGI-WGIV-SWCG/5	Assess possibility to share satellite orbit data to estimate thermospheric drag.	CGMS-54: Close in favour of new action based on Irfan's and Myrto's presentations	CGMS-54	**CLOSED**	

LIST OF JOINT WGI-WGIV-SWCG PARTICIPANTS

CGMS-54 – Joint WGI, WGIV and SWCG List of Participants		
Firstname	**Lastname**	**Organisation**
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CGMS

Photographs



PHOTOGRAPHS

WGI



WGII



WGIII



WGIV



SWCG



JOINT WGI-WGIV-SWCG



PLENARY SESSION



ABBREVATIONS

Abbreviation	Meaning
ACE	Advanced Composition Explorer
AMV	Atmospheric Motion Vector
AOD	Aerosol Optical Depth
AWS	Automatic Weather Station
CAMS	Copernicus Atmosphere Monitoring Service
CCI	Convective Cloud Information
CCOR	Compact Coronagraph
CDR	Climate Data Records
CFOSAT	Chinese-French Oceanography Satellite
CRC	China-Russia Consortium
CSR	Clear Sky Radiance
D3S	Distributed Space Weather Sensor System
DCP	data collection platform
DCS	Data Collection Service
DRS	Direct Relay Satellite
DRT	Data Relay Transponder
DWL	Doppler Wind Lidar
E-DCP	Enhanced DCP
EARS	EUMETSAT Advanced Retransmission Service
ECV	essential climate variables
EO	Earth Observation
EORC	JAXA Earth Observing Research CenteR
EOSC	Earth-observing satellite constellation
EOTEC DevNet	Earth Observation Training, Education, and Capacity Development Network
ERSA	ESA Radiation Sensor Array
ESA PB-EO	ESA Programme Board for Earth Observation
ESC	Expert Service Centres
ESD	NASA's Earth Science Division
ET-SWx	Expert Team on Space Weather
EUVST	Extreme Ultraviolet HighThroughput Spectroscopic Telescope
EZIE	Electrojet Zeeman Imaging Explorer
FCDR	fundamental climate data record
FDR	Fundamental Data Records
FOC	Full Operational Capability
FRP	Fire Radiative Power
FY	FengYun
FY_ESC	Emergency Support Mechanism of FY Satellite
GAW	WMO Global Atmospheric Watch
GBON	Global Basic Observation Network
GEO-XO	Geostationary and Extended Orbits
GeoHSS	Hyper Spectral Sounding instrument on a geostationary satellite
GNC-A	GEONETCast Americas broadcast

Abbreviation	Meaning
GNSS	Global Navigation Satellite System
GOES	Geostationary Operational Environmental Satellites
GOLD	Global-scale Observations of the Limb and Disk
GSICS	Global Space-based Inter-Calibration System
GST	2024 Global Stocktake
GTS	Global Telecommunication system
HAPS	High Altitude Platform Systems
HERMES	Heliophysics Environmental and Radiation Measurement Experiment Suite
HSS	Hyperspectral IR Sounder
ICON	Ionospheric and Connection Explorer
IDA	Internal Dosimeter Array
IDCS	international DCS channels
INFCOM	WMO Commission for Observation, Infrastructure and Information Systems
INPE	Brazilian Ministry of Science, Technology, and Innovations
IOC	Initial Operational Capability
IODC	Indian Ocean Data Coverage
IPWV	Integrated Precipitable Water Vapour
IS40e	Intelsat Commercial Satcom mission
ISCCP-NG	Next Generation of the International Satellite Cloud Climatology Project
ISES	International Space Environment Service
KSEM	Korean Space wEather Monitor
MAP	Multi-mission Aerosol product
MMDRPS	Multi-Mission Meteorological Data Receiving and Processing System
MODIS	Moderate Resolution Imaging Radiometer Suite
MOSDAC	Meteorological and Oceanographic Satellite Data Archival Center
MTG-S	Meteosat Third Generation Sounding
NCMRWF	National Centre for Medium Range Weather Forecast (India)
NGRM	Next Generation Radiation Monitor
NKN	National Knowledge Network
NREN	National Research and Education Network
NSF	National Science Foundation (USA)
NWP	Numerical weather prediction
OGC	Open Geospatial Consortium
OMI	Ozone Monitoring Instrument
OSOS	First International Operational Satellite Oceanography Symposium
OSSEs	Observing System Simulation Experiment
OSW TG	Ocean Surface Wind Task Group
OVW	ocean vector winds
PMAp	Polar Multi-mission Aerosol product
PSTEP	Project for SolarTerrestrial Environment Prediction
RDCA	rapidly developing cumulus areas
RO	radio occultation
ROSES	Research Opportunities in Space and Earth Science
RRR	Rolling Requirements Review

Abbreviation	Meaning
RTSWnet	Real-Time Solar Wind network
S2P	Space Safety Programme
SAN	SWFO Antenna Network
SAS & R	satellite aided search and rescue
SBIR	Small Business Innovation Research
SCO	Space Climate Observatory
SDR	sensor data records
SETT	Socio Economic Tiger Team
SOHO	Solar and Heliospheric Observatory
SOSMAG	Service Oriented Spacecraft Magnetometer
SSA	single scattering albedo
SST	Sea Surface Temperature
STEREO	Solar Terrestrial Relations Observatory
SWCEM	WMO Space-based Weather and Climate Extremes Monitoring
SWFO-L1	Space Weather Follow-On – Lagrange 1
SWO	Space Weather Observations
SWORM	the Space Weather Operations, Research and Mitigation team
SWOT	Strengths, Weaknesses, Opportunities, and Threats
SWxSA	Space Weather Science Application
TANSO-FTS	Thermal And Near-infrared Sensor for carbon Observation Fourier-Transform Spectrometer
TEMPO	Tropospheric Emissions: Monitoring of Pollution
ToR	Terms of Reference
VLab	WMO-CGMS Virtual Laboratory for Education and Training in Satellite Meteorology
VLMG	VLab Management Group
WIS	WMO's Information System
WSI	WIGOS Station Identifiers

GENERAL CGMS INFORMATION

CGMS Agenda and Working Papers

The agenda and Working Papers (WPs) are available at: CGMS Agenda and Working Paper Tool (cgms-info.org)

List of actions and recommendations

Please contact the CGMS Secretariat for the latest status of actions and recommendations.

CGMS List Servers

Information on points of contact and list servers is available upon request from the CGMS Secretariat at cgmssec@eumetsat.int.

CGMS Charter, members and observers

Other information such as the CGMS Charter and the current list of members and observers are available at https://cgms-info.org/about-cgms/.

General enquiries

Please contact the CGMS Secretariat at cgmssec@eumetsat.int in case of any enquiries related to CGMS.



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