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| WEATHER CLIMATE WATER | **World Meteorological Organization**  **COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS**  **Second Session** 24 to 28 October 2022, Geneva | **INFCOM-2/Doc. 2** |
| Submitted by: Chair  24.X.2022  **APPROVED** |

**AGENDA ITEM 2: REPORT BY THE PRESIDENT OF THE TECHNICAL COMMISSION**

# Report by the President of INFCOM



# DRAFT DECISION

## Draft Decision 2/1 (INFCOM-2)

### Consideration of the report of the president of the Infrastructure Commission

**The Commission for Observation, Infrastructure and Information Systems:**

**Noting** the report by the president of the Commission,

**Decides** to consider the recommendations of the Management Group, standing committees, study groups and advisory groups of the Commission under the relevant agenda items.

See the [annex](#_Annex_to_draft) to the present decision, which includes the report by the president of the Commission.

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Decision justification: The report of the president of the Commission for Observation, Infrastructure and Information Systems, as provided in the [annex](#_Annex_to_draft) to the present decision, highlights the progress in the activities of the Commission and its subsidiary bodies since the third part of the first Session of the Commission (INFCOM-1(III), 12–16 April 2021) according to Resolution 6 (INFCOM-1) – Review of the work programme of the Commission.

The decisions made by the president on behalf of the Commission since its establishment by the World Meteorological Congress, according to [*Basic Documents No. 1*](https://library.wmo.int/index.php?lvl=notice_display&id=14206#.Yx7mGXZByga)(WMO-No. 15), General Regulation 145, are also provided in this report.

## Annex to draft Decision 2/1 (INFCOM-2)

## Report by the president of the Commission for Observation, Infrastructure and Information Systems (INFCOM)

**REPORT BY THE PRESIDENT OF THE COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS (INFCOM)**

**Introduction**

1. This report by the president of the Commission for Observation, Infrastructure and Information Systems (INFCOM) covers the period from the third part of the first Session of the Commission (INFCOM-1(III), 12–16 April 2021) to the second Session of INFCOM (INFCOM-2, 24–28 October 2022), during which the main consideration was the outcome of the Extraordinary Congress in October 2021, and particularly follow-up of [Resolution 1 (Cg‑Ext(2021)](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) – WMO Unified Policy for the International Exchange of Earth System Data, [Resolution 2 (Cg‑Ext(2021)](https://library.wmo.int/doc_num.php?explnum_id=11113#page=29) – Amendments to the Technical Regulations related to the establishment of the Global Basic Observing Network, and [Resolution 3 (Cg‑Ext(2021) – Systematic Observations Financing Facility: Supporting Members in the implementation of the Global Basic Observing Network.](https://library.wmo.int/doc_num.php?explnum_id=11113#page=34) The COVID-19 pandemic has again resulted in most activities being undertaken by virtual means. INFCOM and its structures continues to be up and running and selected experts are actively engaged in the work of the Commission. Nevertheless, the ongoing global impacts of the pandemic throughout the period made it more difficult to achieve everything that we set out to do. Expectations are high that the evolution of the pandemic will allow the Commission to organize more face-to-face activities, including INFCOM-2.

**Main activities since INFCOM-1(III)**

2. The main activities and achievements of INFCOM during the period April 2021 to September 2022 are:

(1) Consideration of the decisions made at INFCOM-1;

(2) Continuing close coordination with the Commission for Weather, Climate, Water and Related Environmental Services and Applications (SERCOM) and with the Research Board Management Groups, respective leaderships and working structures;

(3) Deployment of the INFCOM governance [webpage](https://community.wmo.int/governance/commission-membership/infcom) in the WMO Community Platform, containing detailed information on the officers, and experts in the various subsidiary bodies, as well as an organizational chart, the reports of the Management Group and links to individual pages of the Standing Committees and Study Groups detailing their activities;

(4) Convening of five INFCOM Management Group meetings (i) on 10 September 2021 (virtual), (ii) on 18 November and 14 December 2021 (virtual), (iii) on 25 and 28 March 2022 (hybrid), (iv) on 31 May and 1 June 2022 (virtual) respectively, and (v) in September 2022 (virtual), with a focus on strategic issues and implementation of Resolutions 1 and 2 of the Extraordinary Congress;

(5) The Management Group engaged with the coordinators, established by the Commission through [Resolution 2 (INFCOM-1)](https://library.wmo.int/doc_num.php?explnum_id=11197#page=41)[[1]](#footnote-2) – Officers, Chairs and vice-Chairs of standing committees and study groups and the Management Group of the Commission for Observation, Infrastructure and Information Systems (Infrastructure Commission) and [Resolution 9 (INFCOM-1)](https://library.wmo.int/doc_num.php?explnum_id=11197#page=151)[[2]](#footnote-3) – Chairs and vice-Chairs of standing committees and coordinators of the Commission for Observation, Infrastructure and Information Systems;

(6) The president of INFCOM, supported and/or represented by the INFCOM vice-presidents, actively participated in a range of (virtual) meetings and related activities including, but not limited to:

(a) World Meteorological Congress, 2021 Extraordinary Session (11 to 22 October 2021);

(b) Executive Council, the 74th and 75th sessions (25 to 29 October 2021, and 20–24 June 2022);

(c) Regional Association Sessions (RA II-17: 27 to 30 September 2021, RA V-18: 1–3 September 2021; RA VI-18(II), 19 November 2021);

(d) WMO Technical Coordination Committee meetings (TCC-1, 1–3 February 2022, TCC-2, 26–27 April 2022);

(e) WMO Policy Advisory Committee meetings (14–16 September 2021, and 27–29 April 2022);

(f) Hydrology Coordination Panel (HCP) meetings (HCP-3, 22–23 and 25 February 2022, HCP-4, 9–12 May 2022);

(g) Climate Coordination Panel (CCP) meeting (CCP-2, 16–17 December 2021);

(h) Capacity Development Panels (CDP) meetings (CDP-3, 15–16 September 2021, CDP-4, 15–16 February 2022);

(i) WMO-IOC Joint Collaborative Board (JCB) meeting (1–2 March 2022);

(j) Executive Council Panel of Experts on Polar and High Mountain Observations, Research, and Services (EC-PHORS) meeting (6–9 April 2022), following up from the decision made at INFCOM-1 based on EC-PHORS-10 proposal to establish the Global Cryosphere Watch (GCW) Advisory Group;

(k) CGMS-50 Plenary session (15-17 June 2022);

(l) Series of bi-weekly meetings until December 2021, then monthly INFCOM Executive officers’ meetings; and

(m) Five INFCOM Management Group meetings (see item 4 above for dates); and

(n) Five meetings of the INFCOM Task Team on the Implementation of the Global Basic Observing Network (GBON).

3. Summaries of the activities of the Standing Committees, Study Groups and Advisory Groups during the period April 2021 to September 2022 are provided in the annex.

**Follow-up from 2021 Extraordinary Congress decisions**

***Implementation of the WMO Unified Data Policy per Resolution 1 (Cg-Ext (2021))***

4. INFCOM is expected to take the lead in facilitating the implementation of the Unified Data Policy. For this purpose, Sue Barrell (Australia) has been designated as the Coordinator on the Unified Data Policy Implementation (C-DATA) and leads the facilitation through an internal arrangement, an INFCOM Management Group Focus Group on data policy implementation, which consists of Chairs of all INFCOM Standing Committees (SCs), vice-Chair of SG-DIP with hydrological expertise, and representatives of SERCOM and the Research Board (RB).

5. The key building blocks for implementation, specified in the resolution itself, are (1) the use of WMO Technical Regulations as the formal vehicle for conveying the commitment to Members, and (2) the development of an operational process to track, monitor and report on compliance by Members with [Resolution 1 (Cg-Ext(2021))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9). INFCOM has the primary role in developing and providing the oversight of the Implementation Roadmap, noting that the INFCOM SCs, to varying degrees, will need to reflect the necessary responsibilities within their terms of reference and work plans. While INFCOM has the primary role, some of the implementation responsibilities will also lie with others, such as SERCOM, RB and the Capacity Development Panel, and the secretariat will have an important role in facilitating the implementation.

6. The C-DATA drafted an Implementation Roadmap which, in its initial form, tracks all the action clauses of [Resolution 1 (Cg-Ext(2021))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) and has a first pass at describing the various activities, deliverables, responsible actors, urgency and timeline. The plan follows the flow and logic of Resolution 1 (Cg-Ext(2021)) and, with suitable refinement in structure and content, was reviewed by the Management Group and is provided in the “Implementation Roadmap for Resolution 1, WMO Unified Data Policy” (see Annex 1 of the [president’s report to EC-75](https://meetings.wmo.int/EC-75/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-75/InformationDocuments/EC-75-INF02-4(1b)-REPORT-BY-PRESIDENT-OF-INFCOM_en.docx&action=default)), noting that, as initially drafted for completeness, it does include some duplication, and this will be reduced as the key tasks are better articulated and incorporated in the work of the SCs. Overlap with other existing or new activities across INFCOM will be monitored and leveraged, for example in relation to compliance monitoring implemented for GBON and via Global Data Processing and Forecasting Systems (GDPFS) centres.

7. Resolution 1 will have the biggest direct impact on the work of the Standing Committee on Earth Observing Systems and Monitoring Networks (SC-ON) and the ‎Standing Committee on Data Processing for Applied Earth System Modelling and Prediction (SC-ESMP), and both SCs highlight the need to raise awareness across Members as to what ‘core’ data are already approved and available for free and unrestricted exchange and use. Outreach, case studies and exemplars will be helpful in raising awareness both regarding the commitments that are already reflected in the Implementation Roadmap for Resolution 1, WMO Unified Data Policy and articulated in relevant technical regulations.

8. SC-ON has a range of activities relating to current WIGOS Core data as well as the steps required to add new core data under the WMO Integrated Global Observing System (WIGOS), including through expansion of GBON (see the section of ‘expansion of GBON in other domains’ below) and the development of the Regional Basic Observing Network (RBON), further definition of satellite core and recommended data, new types of data (e.g., weather radar, aircraft, Uncrewed Aircraft Systems (UAS)), implications of tiered networks, regional data exchange and issues associated with observations beyond Member jurisdiction (e.g., ocean, Antarctica).

9. As an initial input to INFCOM, draft Recommendation 6.1(2)/1 (INFCOM-2) will be submitted for consideration on satellite core data, in which an alternative mechanism for maintaining the agreements on satellite core data is being considered, such as bilateral MoUs with each satellite operator.

10. The Focus Group noted that any proposal to Congress on updated core data requirements needs to be based on what is realistically achievable, clearly linked to global requirements and widely supported by Members, emphasizing that core data is required to be exchanged globally on the free and unrestricted basis. In discussing hydrological core data (either as an expansion of GBON or separately), the Focus Group agreed that exploring transboundary exchange requirements may help by providing a ‘bottom up’ view on data exchange, but global requirements for hydrological data from the modelling side, which are especially important for verification of models in the context of adaptation, should be a major focus, because this provides the ‘top down’ perspective of global requirements.

11. One of SC-ESMP’s specific obligations is to integrate the concept of ‘core’ data into the Manual on GDPFS including a review of what are currently referred to as ‘mandatory’ products of Regional Specialized Meteorological Centres (RSMCs). A challenge will be to increase awareness of the products that are already available for free and unrestricted access and use, and to understand user perspectives regarding what more is needed. The GDPFS Symposium to be held 29-31 August 2022, is aimed at reviewing existing capabilities and activities of GDPFS, identifying shortcomings in current capabilities, and articulating user requirements for data and products for short-range to seasonal numerical prediction, which will be submitted as draft Recommendation 6.4(2)/1 (INFCOM-2) as an updated list of ‘core’ products of RSMCs for general purpose activities [requires update after the symposium]. A compliance review mechanism to ensure the sustainable provision of quality assured products and services from designated GDPFS Centres is another aspect required for the data policy implementation, and a two-step approach of compliance review and audit is proposed as draft Recommendation 6.4(3)/2 (INFCOM-2). In the longer term, SC-ESMP needs to develop a process to regularly review and update the core products of RSMCs based on user needs and requirements, for which SERCOM is expected to play a role.

12. The main role for the Standing Committee on Information Management and Technology (SC-IMT) is in providing advice on technical elements of the implementation as well as the technology enabling the data exchange to actually occur, primarily through the WMO Information System (WIS) version 2.0 (WIS 2.0) as the technical means to implement Resolution 1 and to monitor the implementation status. The vocabulary list of ‘Earth System discipline subcategory’, which describes the data category in notification message topic hierarchy in a message queuing protocol (MQP), is being developed in line with Annex 1 of Resolution 1. Another important contribution of SC-IMT is to give guidance on the possible standard attribution language to be applied when attribution is sought by providers of specific WMO ‘core’ data.

13. The Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT) has a less direct role in implementation of [Resolution 1 (Cg-Ext(2021)),](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) per se, but underpins the fact that for the data to be ultimately useful to Members, the role of traceability, uncertainty, known quality and full metadata are critical.

14. RB has highlighted many of the underlying concerns that the Unified Data Policy aims to help Members address either directly or indirectly, namely gaps in policy and practice in data sharing for research purposes, including large heterogeneity in national and institutional data sharing policy, less-open policy of hydrological data, requirements for more than core data, limited usability, accessibility (e.g., because of data format) and capacity to use available data. RB is expected to play a central role in defining recommended data for research use, and in demonstrating, through case studies, the benefits that the free and unrestricted exchange of both core and recommended data brings to research outcomes and to end users.

***Implementation of GBON according to the Technical Regulations to come into force on 1 January 2023***

15. To provide oversight on the implementation of GBON according to the technical regulations that will come into force on 1 January 2023 per [Resolution 2 (Cg-Ext(2021))](https://library.wmo.int/doc_num.php?explnum_id=11113#page=29), the Management Group established a Task Team on GBON implementation (TT-GBON), chaired by Michel Jean (Canada) and co-chaired by Pascal Waniha (Tanzania). The terms of reference of the Task Team include oversight over the following major activity areas:

(1) Establishing initial (January 2023) composition of GBON;

(2) Definitions and temporal and spatial criteria for GBON compliance;

(3) Updated global GBON gap analysis;

(4) Updates to WMO observing station catalogue (OSCAR/Surface);

(5) Updates on the WIGOS Data Quality Monitoring System (WDQMS) and links to OSCAR/Surface;

(6) Draft technical specifications for Automatic Weather Stations (AWS), upper-air and marine equipment and consumables for tendering purposes;

(7) Updates on the WIGOS Guide, e.g. on National GBON Gap Analysis and GBON Contribution Plan;

(8) Reporting practices for hourly observations (BUFR templates, technical documentation);

(9) Guidance material and training for SOFF peer advisers;

(10) Technical criteria for initial SOFF prioritization;

(11) "WIS 2.0 Technical Regulations" for the update of the WIS Manual reflecting requirements for the exchange of GBON data.

16. The membership of TT-GBON has a good regional representation to reflect the nature of each region to the GBON implementation.

17. The Task Team, which met five times until September 2022, initiated, approved and is monitoring the execution of the TT-GBON Operating Plan (see [GBON implementation website](https://community.wmo.int/activity-areas/wigos/gbon/implementation-global-basic-observing-network-gbon)) to support the above activity areas. The main drivers for timelines are 1 July 2022, for SOFF to formally open for business, and 1 January 2023, for GBON regulations to take effect. The TT-GBON Operating Plan is also clarifying the engagement of the Regional Associations and their working groups on infrastructure, and discussion with regional working groups has started to engage them to each activity area.

18. It must also be noted that GBON and data policy implementation are clearly linked and complementary, and that duplication between activities for GBON and the data policy implementation will be avoided.

***Expansion of GBON in other domains***

19. GBON expansion is to be understood on two levels: adding new variables and observing systems (e.g., ocean, hydrology, cryosphere, climate):

(1) within its current scope = Global Numerical Weather Prediction (GNWP) and climate monitoring; or

(2) going beyond, e.g., for Greenhouse Gas (GHG) monitoring or global water resources management.

20. It is recognized that the key will be to identify the right priorities. The readiness of Earth System models to assimilate the data is one of the key criteria. The Management Group agreed to recommend taking a sequential approach to the GBON expansion concentrating at first on GBON’s current scope, where an expansion will lead to benefits in terms of improved quality of weather and climate information and services.

21. As requested by the Extraordinary Congress in 2021, a concept note for a study on the potential integration of additional hydrological and cryosphere variables into GBON was submitted to EC-75 (see [EC-75/Doc 3.2(1)](https://meetings.wmo.int/EC-75/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-75/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/EC-75-d03-2(1)-INTEGRATION-HYDROLOGICAL-AND-CRYOSPHERE-VARIABLES-INTO-GBON-approved_en.docx&action=default)); EC-75 endorsed it. and requested the president of INFCOM to conduct a study on the implementation of the study based on the concept note with the support of the Hydrological Coordination Panel. The concept note proposes a mandate, approach and organization of the study, based on a preliminary analysis of the origin of the Congress decision and an assessment of the current status. The study can be considered as a pilot for further expansion of GBON.

22. The further expansion of GBON is considered as part of SC-ON’s work programme. For this, SC-ON and its JET-EOSDE are tasked with developing the GBON expansion principles. SC-ON started the discussion and identified the following key characteristics that are considered fundamental for the current GBON and for its future expansion, as summarized in the five questions of the concept note: GBON prescribes the variables to be observed, it addresses observation requirements that are essential for all WMO Members, and were identified via the Rolling Review of Requirements (RRR); it relies on a well-defined observing remit for each WMO Member; it prescribes the network and temporal densities; and GBON mandates the international exchange of observations. A preliminary analysis of the benefits of GBON, together with a readiness analysis for GBON expansion components against some proposed readiness criteria was also conducted for the following domains:

 Additional variables for GNWP, for assimilation, boundary conditions and verification;

 Additional observing systems for use by GNWP (e.g. additional aircraft-based observing stations);

 Additional climate data, in particular historical data;

 Marine observations, in particular over the high seas;

 Greenhouse gas observations (in particular CO2 and CH4); and

 Hydrological and cryosphere observations.

23. Following on from this preparatory work, the INFCOM Management Group recommended the following:

(1) GBON can be considered as one of the mechanisms for the Unified Data Policy Implementation, including for historical data;

(2) In the current situation, some communities might feel as if they are being left behind, but NWP must have the highest priority for now, being foundational for many WMO activities;

(3) A too rapid expansion is a risk, and a stepwise approach is required;

(4) GBON as approved by Cg-19 must start and progress made with its implementation will constitute phase-1;

(5) Mature additional variables useful to NWP and climate to be added, will constitute phase-2;

(6) Expansion to other areas (e.g., GHG) will be done in phase-3;

(7) SC-ON to ensure expansion of GBON to be based on clear requirements from RRR. Notwithstanding that, financial and political considerations will be crucially important and will need to be factored in.

24. A discussion in August 2022 with the Chairs of SC-ON and HCP, in coordination with the Chairs of JET-EOSDE and JET-HYDMON, led to the identification of the main steps, principles and organization of the requested study for hydrology and cryosphere, as follows:

 Considering the close connections with the Unified Data Policy implementation, one unique task team under SC-ON will deal with both aspects for hydrology, and jointly deal with all five guiding questions related to GBON as listed above and in the concept note.

 The task team will be composed of representatives from SC-ON, JET-EOSDE, JET-HYDMON, SC-ESMP, GCW, Global Climate Observing System (GCOS), and the six Regional Hydrological Advisers (RHA). The Chair of HCP will be invited to participate. The six RHA will provide the link to regional needs and developments, and serve as ambassadors for engaging the hydrological community in the regions.

 Advocacy will play a key role in the development. It is suggested to start with a small set of stations and variables, based on Members willing to share data in order to showcase the benefits for NWP through success stories. The set of variables to start with is based on the requirements presented by the modelling community and those required for the future services of the GDPFS. The requirements of several multinational, transboundary catchment cooperation areas will also be considered.

 A communication package showing requirements and benefits for and from GBON and data policy will be prepared to facilitate engagement with the hydrological community through the RHAs.

 A symposium inviting institutions representing various communities such as hydrology and meteorology should be held towards the end of 2023 at the final stage of the preparatory work to discuss a draft proposal prepared by the task team and adopt it.

25. For the ocean, discussion with the Global Ocean Observing System (GOOS) and its Observation Coordination Group (OCG), has resulted in the identification of marine variables and networks that should be considered candidates for inclusion in GBON, based on their demonstrated crucial importance for GNWP and climate monitoring. Co-design of a fit-for-WMO ocean observing system will enable WMO Experts to more closely collaborate with their GOOS colleagues at every step along the value chain. Exemplar projects, such as Hurricane Intensity forecasting or carbon accounting, are selected to assess the observations required to deliver improved forecasts.

26. The initial suggested GOOS contributions to GBON consist of mature, impactful data that are shared in real time (GOOS Steering Committee-10):

 Air pressure and SST measurements from global drifting buoys,

 Surface meteorological observations from Voluntary Observing Ships (VOS),

 Upper ocean temperature and salinity data from the global array of Argo floats,

 Surface meteorological observations and upper ocean temperature and salinity data from moored data buoys.

**Strategic directions and priorities**

27. The INFCOM Management Group has defined its strategic directions for the medium-term (2022–2023) and the longer term. While developing its strategy, the Management Group has been looking at how to ensure integration of the Commission activities across all Earth System domains while continuing the integration of the work of the previous Commissions.

28. To achieve this, coordination with other bodies is key for (i) assuring the passing of requirements for relevant data and products from the Services Commission, (ii) assuring evolution of measurement, data exchange and data processing and modelling technology according to state-of-the-art science and innovations by working with the research community and the RB, (iii) assuring the provision of appropriate technical support at the regional and national levels and for assisting with the development of capacities of WMO Members, in particular LDCs and SIDS, through engagement with the regional associations, and (iv) making the best use of infrastructure provided by the private sector according to WMO Public Private Engagement (PPE).

29. The Management Group also reviewed and updated the INFCOM work plan in close consultation with all relevant bodies, focusing on revisions to WMO Technical Regulations, supporting manuals and guidance material. The strategic approach of the Commission is as follows:

 Keep momentum on ongoing activities necessary for operational systems; this is an ongoing focus of the work of the Commission;

 Accelerate activities linked to current implementation as decided by Congress and the Executive Council (WIS, WIGOS); this will be a focus for the period 2022–2023 with follow-up activities in the next financial period 2024–2027;

 Promote activities linked to emerging and newly approved deliverables (GBON, Data Policy and implications on other activities such as making more data available via Seamless GDPFS (S/GDPFS), WMO plan of action for hydrology, …) and leverage regional associations and innovation in priority areas from transitioning science to operational applications (e.g., Polar Prediction Project, sub-seasonal-to-seasonal prediction project, Ocean Decade, etc.); this will be a focus for the period 2024–2027;

 Continue the work of integrating activities across the Earth System (climate, ocean, hydrology, atmospheric composition, cryosphere, …);

 Ensure that increased responsibilities that flow from the constituent body reform process (e.g., on cryosphere with the integration of GCW, ocean and hydrology) are appropriately integrated in the work of the Commission.

30. In terms of governance and modus operandi, the Commission is invited to adjust its working structure to align with overarching priorities, while working at good succession planning, improving the gender and regional balance of experts contributing to the work of the Commission, and assuring appropriate balance of the workload across SC, their Expert Teams, the Advisory Groups, and the Study Groups. The Advisory Groups established by the Commission (e.g. GCW-AG) allow the necessary balance between the core activities coordinated through SCs and the specific needs and goals of each of the Earth System domains. The modus operandi between SCs and AGs will require further consideration, to ensure an effective alignment of resources.

31. The Commission has been engaging with other bodies as follows:

 With the regional associations to define regional requirements, and provide implementation solutions and technical support. INFCOM will provide practical advice to LDCs and SIDS to address the growing gap between developed and developing countries in terms of capability. The coordinator for engagement and partnership (regional associations, private sector, academia) with regard to infrastructure matters (C-ENG) as well as the regional association points of contact on infrastructure, together with the secretariat technical coordinators on infrastructure matters will play key roles in this regard to leverage activities at the regional level;

 Continued collaboration with SERCOM on the proposed revisions to the [Rules of Procedure for Technical Commissions](https://library.wmo.int/index.php?lvl=notice_display&id=21534#.YpTGvXZBw2w) (WMO-No. 1240); and the proposed concept note on the designation of Constituent Bodies for approval of regulatory and non-regulatory publications, for future consideration by Congress;

 With SERCOM and RB for an effective Rolling Review of Services requirements process by which requirements from SERCOM are conveyed to INFCOM, and specifically, how SERCOM passes requests, suggested changes, recommendations, etc., to INFCOM for incorporation into the GDPFS Manual;

 With SERCOM and RB for harmonizing terminology and definitions across WMO regulatory and guidance material;

 With the private sector according to WMO PPE.

***Medium to long-term objectives of INFCOM for the period 2022–2023***

32. These refer essentially to activities decided by the 18th Congress (in particular the WMO Strategic Plan 2020–2023), the 2021 Extraordinary Congress, and the Executive Council that are under implementation in the 2022–2023 time frame. They include the following (paras. 33 to 38).

33. For the INFCOM Management Group, the priorities and initial focus include the following activity areas:

 Data Policy implementation and compliance monitoring (see above);

 Implementation of GBON per current Technical Regulations to come into force on 1 January 2023 (see above);

 Providing technical support to SOFF building on GBON requirements and providing guidance and training to the LDCs and SIDS on how to use SOFF; providing gap analysis based on robust tools;

 Working with the research community and SERCOM on providing practical advice to developing countries to address the growing gaps between developed and developing countries in terms of capability. Engage with RB on technical innovation, pilots, emerging new capabilities;

 Prioritization of the implementation of the Global Hydrological Status and Outlook System (HydroSOS, monitoring and predicting global freshwater hydrological conditions) as a cross-cutting activity; and

 Standardization of auditing processes for regional and global centres.

34. For SC-ON and SC-MINT, which are addressing strategic objective 2.1, the focus is on the following activity areas:

 Expansion of GBON in other domains (see above);

 Environment sustainability of observations;

 Adoption of High-Level Guidance on the evolution of global observing systems in response to the WIGOS Vision 2040 and creation of actions to become part of the regulatory material. Recommendation on the life cycle and frequency of the WIGOS Vision and associated implementation activities (High-Level Guidance – HLG – on the evolution of global observing systems in response to the WIGOS Vision 2040);

 Monitoring the progress of the advancement of the WIGOS Vision 2040 space component;

 Adoption of reviewed RRR process taking into account the WMO Earth System approach;

 Engaging with the regional associations and assuring the further development and consolidation of the network of Regional WIGOS Centres (RWCs), including training on OSCAR, WDQMS, and Incident Management System (IMS) (see Annex 1 of the [INFCOM president report to EC-75](https://meetings.wmo.int/EC-75/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-75/InformationDocuments/EC-75-INF02-4(1b)-REPORT-BY-PRESIDENT-OF-INFCOM_en.docx&action=default) for the establishment of RWCs);

 Assuring protection of radio frequencies, especially with regard to new and competing technologies, and space weather;

 Integration of Earth System domains observations in WIGOS; including in particular (i) interacting with HCP via the INFCOM Joint Expert Team on Hydrological monitoring (JET-HYDMON) for further integration of hydrological observations in WIGOS and development of an integrated network design as well as interacting with the RB for further integration of the Global Atmosphere Watch (GAW) observations in WIGOS; (ii) promoting understanding of the value chain and providing support in evaluating priority investment areas through the GOOS ObsCoDe Ocean Decade programme, expanding GBON in global oceans for GNWP, and using the power of WMO’s regulatory framework to help improve the exchange of ocean data in Exclusive Economic Zones (EEZs); (iii) conclude the implementation of the GCW pre-operational plan 2020–2023 and undertake the integration plan recommended by the Study Group on Cryosphere (SG-Cryo), as adopted by INFCOM2; (iv) promoting the further integration of the GCOS network observations into WIGOS; and (v) developing an extensible tiered networks approach;

 Harmonization of terminology and definitions across WMO in relation to measurement;

 Harmonization of Quality Assurance and Quality Control (QA/QC) procedures, learning from the GAW community, and others.

35. For SC-IMT, which addresses WMO Strategic Objective 2.2, the focus is on the following activity areas:

 WIS 2.0 Architecture and transition plan;

 OpenCDMS development and implementation, and DAYCLI implementation in close collaboration with SC-CLI;

 WIS 2.0 pilot projects supporting Data Policy, SOFF, GBON and LDCs to make data internationally available via WIS;

 Engagement with the regional associations for WIS 2.0 implementation to the regions;

 WHOS implementation and its integration into WIS.

36. For SC-ESMP, which addresses WMO Strategic Objective 2.3, the focus is on the following activity areas:

 Development of the Seamless GDPFS Roadmap,

 Development of more S/GDPFS pilot projects to implement the GDPFS in Earth system domains,

 Renewal of the Guide to GDPFS (WMO-No. 305),

 Engagement with the regional associations in implementing the seamless GDPFS, taking into consideration the current and planned evolution of NMHSs,

 Having a better understanding of the issues that Members have in accessing and using required GDPFS products,

 Development of the guidelines on high-resolution numerical weather prediction,

 Development of the guidelines on the WIS metadata for GDPFS products,

 Establishment of new types of GDPFS activities such as those for hydrological services, and new centres designation for sub-seasonal forecasting, global numerical ocean prediction, etc.

 Further improvement of the GDPFS Web Portal by adding more information on the designated GDPFS Centres including the accessibility of their products,

 Development of the review process of designated GDPFS Centre compliance and the initiation of the review of the designated GDPFS Centres’ compliance,

 Organization of the 3rd Workshop for operational climate prediction,

 Contribution to HydroSOS.

***Longer term focus activities (2024 and beyond)***

37. For the longer term, 2024 and beyond, INFCOM will be focusing on the following activities:

 Addressing the emerging needs for coordinated Greenhouse Gas (GHG) monitoring and tracking infrastructure, which is aimed at strengthening the scientific underpinning of the Paris Agreement through routine operational GHG monitoring;

 Expanding GDPFS activities to all Earth system domains to introduce missing core data, which are defined in WMO Unified Data Policy, into the GDPFS Manual;

 Promoting the Earth system modelling to integrate Earth system components into the GDPFS aiming at producing seamless prediction products;

 Investigating how to assure environment sustainability of observations across domains; develop and provide guidance to Members and training to developing countries accordingly;

 Further expansion of GBON in other domains, including related roadmap(s);

 Transition from the GTS to WIS 2.0 in support of all domains and application areas;

 Integration of hydrological modelling into the GDPFS in accordance with its concept and support regional implementation of HydroSOS;

 Gradual implementation of the INFCOM-related plan of action for hydrology and requirements from the Water and Climate Coalition;

 Consolidation of climate data exchange including World Weather Records and Climatological Standard Normals in close collaboration with SERCOM;

 Roadmap for a sustained cryosphere hazards focus as a component of WMO activities, and with which to identify monitoring, reporting, and cataloguing needs, in support of risk assessment and reporting, and early warning systems, in collaboration with SERCOM and RB.

38. See [INFCOM-2/INF. 5.3](https://meetings.wmo.int/INFCOM-2/InformationDocuments/Forms/AllItems.aspx) for details on the proposed INFCOM strategic directions.

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**Annex**

**Summary of activities of the Standing Committees,   
Advisory Groups and Study Groups**

For activities of the Standing Committees and Study Groups prior to April 2021, see the [*Commission for Observation, Infrastructure and Information Systems: Abridged Final Report of the First Session*](https://library.wmo.int/?lvl=notice_display&id=21866#.Yyh9a3bP2Uk) (WMO-No. 1251).

***1. Standing Committee on Earth Observing Systems and Monitoring Networks (SC-ON)***

Chair: Estelle Grueter (Switzerland) and Vice-Chair: Sidney Thurston (USA)

1.1 Since April 2021, the Committee has been focusing on the preparation of decisions to be taken by INFCOM-2 discussed under agenda item 6.1;

1.2 Three virtual meetings of the Standing Committee took place on 19 May 2021, 2 September 2021 and 14 March 2022;

1.3 Five meetings of the SC-ON Expert Team Chairs were organized on 17 May 2021, 8 September 2021, 10 January 2022, 22 February 2022 and 8 July 2022 to coordinate activities between the Expert Team, and to address synergies between SC-ON Expert Teams, and some other groups (e.g., AG-GCW, SG-OOIS);

1.4 SC-ON also discussed issues of common interest with the Standing Committee on Information Management and Technology (SC-IMT) on the auditing of RWCs, WIGOS Station Identifiers, WIGOS metadata, and the WDQMS, with the Study Group on Ocean Observations and Infrastructure Systems (SG-OOIS) on ocean observing networks, and with the Advisory Group on the GCW on polar and cryosphere observation matters;

1.5 In addition, the Standing Committee chair and vice-chair have been meeting on a bi-weekly basis with the Secretariat to discuss and adjust the SC-ON work programme as needed;

1.6 Altogether, the Standing Committee and its teams have been focusing on the activities detailed below:

 Reviewing INFCOM-1(III) and 2021 Extraordinary Congress decisions of relevance to SC-ON, consideration of the Management Group guidance, and preparing related input to INFCOM-2;

 Fostering the integration of observations in various Earth system domains into WIGOS. For example, it has been promoting the implementation of WIGOS tools for hydrology and some other domains;

 Addressing regional requirements and perspectives (e.g., connections with ocean, the GOOS regional alliances) – look at specific issues where benefits potentially exist; develop common understandings, lessons learned from previous activities;

 Drafting of the concept note for Station Sets (or clusters of stations, multi-purpose stations) and how to manage them in OSCAR/Surface for the recording of their WIGOS metadata;

 Drafting of the concept note for Tiered Networks, and considerations around the concept of reference stations;

 Establishing relationships with the industry and the private sector, particularly the Hydro-Meteorological Equipment Industry (HMEI) and the International Air Transport Association (IATA) to facilitate their engagement in relevant SC-ON activities;

 Reviewing capacity development activities relevant to observing networks;

 Contributing to activities assessing the environmental impact of observations (observing network aspects; observing station and instrument aspects are being covered by SC-MINT);

 Providing the required input of SC-ON to the INFCOM Task Team on the Implementation of GBON.

1.7 With the support of its Expert Teams and coordination with other groups, the Committee also provided oversight or guidance on the following activities:

 Drafting of the HLG on the evolution of global observing systems in response to the WIGOS Vision 2040, in consultation with many stakeholders;

 Drafting of the evolution of the RRR process taking into account the WMO Earth system approach;

 Development of the process for the design of RBON;

 Drafting of principles for GBON expansion, and the concept note concerning hydrology and cryosphere;

 Providing oversight for the implementation of AMDAR in the regions, fostering collaboration with IATA on the collaborative AMDAR programme (WICAP) and maintaining the planning documentation through the updated WICAP Implementation Plan [(INFCOM-2/INF. 6.1(5))](https://meetings.wmo.int/INFCOM-2/InformationDocuments/Forms/AllItems.aspx);

 Establishment of the Global Data Centre and the Lead Centre for Aircraft-based observations — both assigned to USA/NOAA;

 Providing oversight for the implementation of the UAS Demonstration Campaign, including facilitating endorsement by the INFCOM Management Group of the UAS Demonstration Campaign Plan [(INFCOM-2/INF. 2(3))](https://meetings.wmo.int/INFCOM-2/InformationDocuments/Forms/AllItems.aspx);

 Promoting the relevant observing network aspects of the implementation of the Hydrology Action Plan;

 Coordinating radio frequency issues, including preparation of the position paper for WRC-23;

 Satellite matters, satellite data utilization, integration of in situ and satellite data, how to engage with SC-ON members with expertise in satellite matters, including the Coordinator on Satellite matters (C-SAT), the Expert Team on Satellite Systems and Utilization (ET-SSU), the Cryosphere and Polar Observations community, and how to coordinate relevant actions;

 Implementation of the network of RWCs and related training and support to the regions; promoting data quality monitoring in the various domains; and assisting with WIGOS Station Identifier issues and required updates of the WIGOS Manual and Guide.

***2. Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT)***

Chair: Bruce Hartley (New Zealand) and Vice-Chair: Janice Fulford (USA)

Since April 2021, SC-MINT has been focusing on the following activities:

 Developing a survey on Environmental sustainability of observations to assess Members’ practices;

 Conducting activities in support of traceability of measurements to international standards:

o Holding the Thirteenth International Pyrheliometer Intercomparison (IPC-XIII) and Third International Pyrgeometer Intercomparison (IPgC-III);

o Realization of the interlaboratory comparison in RA I;

o Preparation of the interlaboratory comparison in RA III;

o Review of Regional Instrument Centre performances;

o Developing a set of conditions to be met prior to introducing changes in the solar and terrestrial radiation reference to ensure long-term stability and comparability of radiation measurements.

 Harmonization of terminology across WMO Publications:

o Development of a proposal for a WMO standard Vocabulary;

o Review of measurement-related terms used in various publications.

 The WMO 2022 Upper-Air Instrument Intercomparison;

 Transition of the former CIMO Testbeds and Lead Centres to the Measurement Lead Centres;

 Development of best practices and guidance material:

o Update of ten chapters of [*Guide to Instruments and Methods of Observation*](https://library.wmo.int/index.php?lvl=notice_display&id=12407) (WMO-No. 8):

Vol I, Ch 12 – Measurement of upper-air pressure, temperature and humidity,

Vol I, Ch 13 – Measurement of upper wind,

Vol I, Ch 14 – Observation of present and past weather; state of the ground,

Vol II, Ch 2 – Measurement of snow,

Vol II, Ch 3 (NEW) – Measurement of glaciers and ice caps,

Vol III, Ch 3 – Aircraft-based observations,

Vol III, Ch 5 – Special profiling techniques for the boundary layer and the troposphere,

Vol III, Ch 6 – Electromagnetic methods of lightning detection,

Vol III, Ch 8 – Balloon techniques,

Vol V, Ch 5 – Training of instrument specialists,

o Best Practice Guide on Operational Weather Radars;

o Survey on the Use of the [*Guide to Instruments and Methods of Observation*](https://library.wmo.int/index.php?lvl=notice_display&id=12407) (WMO-No. 8) - (IOM-No. 135);

o [Generic Automatic Weather Station Specifications (IOM-No. 136)](https://library.wmo.int/index.php?lvl=notice_display&id=22031#.Ysaf6lVByYk);

o Guidelines for Conducting and Reporting on the Verification and Calibration of Discharge Measurement Instruments.

 Capacity development:

o Conducting an online Training Workshop on Quality, Traceability and Compliance – General Metrology and Temperature, for Regional Instrument Centres (RICs) and Regional Marine Instrument Centres (RMICs);

o Hosting a training workshop on transition to automation for RA V and provision of associated, freely accessible, online material on the Moodle platform;

o Co-hosting the Sixth Marine Instrumentation Workshop for the Asia-Pacific Region.

 Preparation of the 2022 WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (TECO-2022);

 Reestablishment of the management Committee for the Assessment of the Performance of Flow Measurement Instruments and Techniques (Project X), and establishment of the new workplan.

***3. Standing Committee on Information Management and Technology (SC-IMT)***

Chair: Remy Giraud (France), Vice-Chair: Jeremy Tandy (United Kingdom)

Since April 2021, SC-IMT has been focusing on:

 The workshop for WIS 2.0 demonstration projects;

 The establishment of the “WIS2 in a box” project;

 The definition of WIS 2.0 architecture and transition plan;

 The finalization of the Information Management guidance, included in the Guide to the WIS;

 Amendments of the Manual on Codes via fast-track procedure in June 2021, November 2021 and May 2022;

 The preparation of the decisions to be submitted to the INFCOM-2 session and discussed under agenda item 6.3;

 Integration of climate data within WIS 2.0 and support of the OpenCDMS project.

3.1 The workshop on WIS 2.0 demonstration projects was held online in September 2021. Eleven projects were presented and demonstrated that adopting WIS 2.0 principles provides significant benefits for Members.

3.2 The “WIS2 in a box” project was established in November 2021 to provide a reference implementation of WIS 2.0 and to facilitate LDCs, SIDS and those Members able to use open-source software to implement WIS 2.0. The project was established in close connection with another project to enable real-time data exchange from AWS in Malawi.

3.3 The Expert Team on WIS 2.0 Architecture and Transition (ET-W2AT) has worked on defining the technical architecture and the plan for the transition from the GTS to WIS 2.0. In addition, ET-W2AT finalized the proposed amendments to the Manual on WIS and the updated implementation plan to be discussed under agenda item 6.3.

3.4 A workshop on the WIS 2.0 introduction to the industry was held online with more than 200 participants from the private sector and NMHSs.

3.5 The Expert Team on Information Management (ET-IM) has drafted the Information Management guidance to be added in the Guide to WIS as proposed in [INFCOM-2/Doc. 6.3(2)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/INFCOM-2-d06-3(2)-UPDATE-OF-GUIDE-TO-WIS-draft1_en.docx&action=default).

3.6 A new task team, Task Team on Climate Data Models (TT-CDM), was established within the ET-Metadata to develop a new data model for climate observations in support of the OpenCDMS project. The work defining the data model, together with broader support of the OpenCDMS project, is ongoing and progress is reported under agenda item xxx. A new BUFR sequence to support the reporting of daily climate summaries (DAYCLI) has also been included in the update to the Manual on Codes and is now available for operational use.

***4. Standing Committee on Data Processing for Applied Earth System Modelling and Prediction (SC-ESMP)***

Chair: David Richardson (ECMWF) and Vice-Chair: Hamza Athumani Kabelwa (Tanzania).

4.1 Since April 2021, the Committee has been focusing on the preparation of decisions to be taken by INFCOM-2 discussed under agenda item 6.4.

4.2 SC-ESMP organized the GDPFS Symposium on requirements for NWP data and products (29–31 August 2022) as the follow-up of the WMO Unified Data Policy ([Resolution 1 (Cg-Ext(2021)](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9)), that aimed at developing the list of core data to meet user requirements of Members. SC-ESMP also organized the 3rd Workshop for Operational Climate Prediction (OCP-3) (20–22 September 2022) aiming at identifying the user requirements and develop the work plan to improve GDPFS for climate services. In addition, SC-ESMP supported the organization of the Workshop on the Development of GDPFS Requirements for the Operational Exchange of Data and Products needed for Delivery of Sub-seasonal and Seasonal Prediction Products to meet needs of end users (8 and 9 March 2022) where Presidents of INFCOM and SERCOM and the Chair of RB participated.

4.3 Two virtual meetings of the Standing Committee took place in November 2021 and July 2022. Five virtual meetings and two physical meetings of the SC-ESMP Expert Teams and Task Teams were organized to address the assigned tasks: (1) Expert Team on the development of the Guide on GDPFS (ET-Guide) in May 2021, (2) Expert team on Operational Weather Forecasting System (ET-OWFS) in July 2021, (3) Task Team on the Development of a Review Process of Designated GDPFS Centre Compliance (TT-COMPLIANCE) in November 2021, (4) Expert Team on Operational Climate Prediction System (ET-OCPS) in December 2021, (5) Expert Team on Space Weather in June 2022, (6) Task Team on the Development of the Guidelines on High-resolution Numerical Weather Prediction (TT-HRNWP) in August 2022 and (7) ET-OCPS in September 2022.

4.4 In addition, the Standing Committee chair and vice-chair have been meeting on a bi-weekly basis with the Secretariat to discuss and adjust the SC-ESMP work programme as needed. Since April 2022, other Expert Team Chairs and co-chairs attended the meetings to prepare for the said GDPFS Symposium.

4.5 SC-ESMP worked together with other expert groups on: (1) development of the compliance review process of RSMCs with the Expert Team on Audit and Certificate (ET-AC) under SC-IMT and other expert groups responsible for compliance review, (2) development of the GDPFS for hydrological services with the Standing Committee on Hydrological Services (SC-HYD), (3) preparation of the OCP-3 with the Expert Team on Climate Service and Information System Operation (ET-CSISO), WCRP Working Group on Sub-seasonal to Interdecadal Prediction (WGSIP) and WWRP/WCRP Sub-seasonal-to-Seasonal Prediction Project (S2S) and (4) development of the Seamless GDPFS pilot project with World Weather Watch Programme (WWRP) under RB. SC-ESMP also communicate with the expert communities of ocean and cryosphere to discuss GDPFS in Earth System domains.

4.6 Altogether, the Standing Committee and its teams has been focusing on the activities detailed below:

 Reviewing INFCOM-1(III) and 2021 Extraordinary Congress decisions of relevance to SC-ESMP, consideration of the management group guidance, and preparing related input to INFCOM-2;

 Organizing the GDPFS Symposium on requirements for NWP data and products, aiming to collect and understand user requirements from Members and SERCOM and review and update the list of core data products from RSMCs for general purpose activities;

 Developing Seamless GDPFS Roadmap and its pilot project;

 Collecting good practices of the collection and usage of the vulnerability and exposure data from Members of the ET-OWFS members aiming to support the impact-based forecasting;

 Renewing the [*Guide on Global Data-processing System*](https://library.wmo.int/index.php?lvl=notice_display&id=6832) (WMO-No. 305) in alignment with the [*Manual on GDPFS*](https://library.wmo.int/index.php?lvl=notice_display&id=12793) (WMO-No. 485), which was renewed in 2017);

 Developing the review process of Regional Specialized Meteorological Centres’ compliance using a two-step approach of compliance review and audit;

 Drafting the guidelines on high-resolution numerical weather prediction;

 Organizing OPC-3, aiming to identify the user requirements and develop the work plan to improve GDPFS for climate services;

 Opening the access GPC products including hindcast data to Members;

 Reviewing the compliance of Members who run for GPCs-LRF and -SSF and LC-SSFMME;

 Advancing the development of Global Annual to Decadal Climate Update (GADCU);

 Participation in IAEA-led major international nuclear emergency exercises, ConvEx-3 (2021);

 Developing new GDPFS activities for hydrological services;

 Developing new GDPFS activities to integrate the data archive functions based on TIGGE and S2S data archive;

 Arranging the new designation for GPC-LRF, GPC-SSF and LC-SSFMME;

 Establishing a new Expert Team on Space Weather.

4.7 With the support of its Expert Teams and coordination with other groups, the Committee also provided oversight or guidance on the following activities:

 Developing the implementation plan of GDPFS to support the implementation of Cataloguing Weather, Water, Climate, Environmental and Space Weather Events;

 Organizing the Workshop on the Development of GDPFS Requirements for the Operational Exchange of Data and Products needed for Delivery of Sub-seasonal and Seasonal Prediction Products to meet needs of end users.

***5. Advisory Group on the Global Cryosphere Watch (AG-GCW)***

Chair: Árni Snorrason (Iceland), Vice-Chair: Shawn Marshall (Canada).

5.1 The Advisory Group was established by INFCOM-1(III) through [Resolution 7 (INFCOM-1).](https://library.wmo.int/doc_num.php?explnum_id=11197/#page=146)

5.2 GCW-AG was established under the remit of INFCOM, as a result of the WMO governance reform, building on the development work led by the Executive Council Panel on Polar and High Mountain Observations, Research, and Services (EC-PHORS). GCW-AG has continued the implementation of the GCW Pre-operational plan approved by [Resolution 18 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008/#page=338). Specific areas of focus have been the inclusion of cryosphere in the WMO Unified Data Policy, further integration of cryosphere observations and data in WIGOS and WIS, support to the implementation of the Third Pole Regional Climate Centre-Network, coordination of an international effort for evaluating sea ice thickness products derived from EO satellite observations, preparation and publication of guides for best practices for glaciers, ice caps, and permafrost.

5.3 A key component of the work of GCW-AG is the alignment with the structure and workplans of the SCs of INFCOM and the relationship with the relevant SCs of SERCOM. The recommendations made by SG-Cryo to INFCOM-2 will enable the evolution of the mandate of GCW-AG.

***6. Study Group on Data Issues and Policies (SG-DIP)***

Chair: Sue Barrell (Australia), Vice-Chair: Silvana Alcoz (Uruguay)

6.1 With [Recommendation 18 (INFCOM-1)](https://library.wmo.int/doc_num.php?explnum_id=11197#page=453), and its adoption by the Extraordinary Congress of 2021 through [Resolution 1 (Cg‑Ext(2021)](https://library.wmo.int/doc_num.php?explnum_id=11113#page=9) on the WMO Unified Data Policy for the International Exchange of Earth System Data, the work of the Study Group was regarded as completed by the management group. The Study Group therefore did not have specific activities since April 2021.

6.2 However, the Chair of the Study Group, Sue Barrell (Australia) continued to play a role with her appointment as Coordinator on the Implementation of the Unified Data Policy (C-DATA), and her engagement with the Standing Committee Chairs in this regard and development of the Implementation Roadmap for Resolution 1, WMO Unified Data Policy” (see Annex 1 of the [president’s report to EC-75](https://meetings.wmo.int/EC-75/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-75/InformationDocuments/EC-75-INF02-4(1b)-REPORT-BY-PRESIDENT-OF-INFCOM_en.docx&action=default)). See details on the Unified Data Policy implementation activities in the main part of this INFCOM president’s report to INFCOM-2.

***7. Study Group on Ocean Observations and Infrastructure Systems (SG-OOIS)***

Chair: Paula Etala (Argentina) and Vice-Chair: R. Venkatesan (India)

Since April 2021, SG-OOIS has been focusing on the description of the functional connections between all players and activities (e.g., GOOS SC, OCG, ETOOFS, OOPC, …). This analysis resulted in a final report with 15 recommendations to INFCOM and GOOS, with a view to establishing effective, sustainable approaches for ocean observing and information systems.

***8. Study Group on Cryosphere Cross-cutting Functions (SG-CRYO)***

Chair: Árni Snorrason (Iceland); Vice-Chair: Shawn Marshall (Canada)

8.1 Since April 2021, SG-CRYO has been focusing on developing recommendations to INFCOM on an optimal integration within the governance structure of WMO of those activities that will address the cryosphere information requirements, to enable the delivery of the objectives of the WMO Strategic and Operating Plans, as well as identify gaps.

8.2 INFCOM established GCW-AG based on the recommendations made by SG-CRYO, to serve as a coordination mechanism, with a focus on the integration of cryosphere information across all components of the value cycle of WMO activities.

8.3 The SG-Cryo recommendations to INFCOM-2 reflect the work conducted through regular virtual meetings and one face-to-face meeting, on 7–10 June 2022. The recommendations prepared address gaps in the integration of cryosphere information in infrastructure, research, and services. These recommendations will enable the evolution of the mandate of GCW in INFCOM.

***9. Study Group on Implementation of the Global Basic Observing Network   
(SG-GBON)***

Chair: Stefan Klink (Germany) and Vice-Chair: Pascal Waniha (Tanzania)

9.1 With [Recommendation 2 (INFCOM-1)](https://library.wmo.int/doc_num.php?explnum_id=11197#page=290), and its adoption by the Extraordinary Congress of 2021 through [Resolution 2 (Cg‑Ext(2021)](https://library.wmo.int/doc_num.php?explnum_id=11113#page=29) on the update of regulatory material related to the establishment of the Global Basic Observing Network (GBON), the work of the Study Group was regarded as completed by the management group. The Study Group therefore did not have specific activities since April 2021.

9.2 However, with the GBON Technical Regulations coming into force on 1 January 2023, the president of INFCOM, in consultation with the management group, established the Task Team on the Implementation of GBON. See details on the activities of the Task Team in the main part of this INFCOM president’s report to INFCOM-2.

***10. Joint WMO, Intergovernmental Oceanographic Commission of UNESCO (IOC), United Nations Environment Programme (UNEP), International Science Council (ISC) Study Group on the Global Climate Observing System (JSG-GCOS)***

Co-Chair: CHAO Quingchen (WMO) [China], Co-Chair: Martin Visbeck (IOC/ISC)

Since April 2021, JSG-GCOS has been focusing on reviewing the GCOS governance and structure as requested by its ToR. It gathered information about the GCOS programme and intensively discussed the current situation, provided an extensive set of detailed analysis and shared an interim report that comments on several elements and aspects of the programme for reflection by the sponsors. The Joint Study Group completed a final report that includes six high-level recommendations summarizing the detailed outcomes and identified another 16 additional recommendations, as well as a proposed review of the MoU. The work of the Joint Study Group is now completed, and the report will now be presented by the co-chairs to the sponsors and as an information document to INFCOM-2.

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1. Coordinator on Hydrology in Earth System Modelling (C-HESM) – Narendra Tuteja (Australia); and Coordinator on Satellite Matters (C-SAT – Peng Zhang (China)). [↑](#footnote-ref-2)
2. Coordinator for engagement and partnership (Regional Associations, private sector, academia) with regard to infrastructure matters (C-ENG Dr Yoshiaki Sato (Japan)). [↑](#footnote-ref-3)