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| WEATHER CLIMATE WATER | **World Meteorological Organization****COMMISSION FOR WEATHER, CLIMATE, WATER AND RELATED ENVIRONMENTAL SERVICES AND APPLICATIONS****Second Session**17 to 21 October 2022, Geneva | **SERCOM-2/INF. 2** |
| Submitted by: President of SERCOM4.X.2022 |

## *[Change made under para. 7, page 5 and 6]*

## REPORT OF THE PRESIDENT OF THE COMMISSION, INCLUDING THE REPORTS BY THE CHAIRS OF THE SUBSIDIARY BODIES

### Introduction

(1) This report covers the period from the second part of the first session of the Technical Commission for Weather, Climate, Water and Related Environmental Services and Applications – SERCOM-1(II) in February 2021 to the second session of the Technical Commission for Weather, Climate, Water and Related Environmental Services and Applications – SERCOM-2 in October 2022. During this time the seventy-third session of the Executive Council (EC-73) in June 2021, the Extraordinary session of the World Meteorological Congress (Cg-Ext. (2021)) in October 2021, the seventy-fourth session of the Executive Council (EC-74) and the seventy-fifth session of the Executive Council (EC‑75) in June 2022 were convened.

(2) As the worldwide impacts of the Coronavirus (COVID-19) pandemic have started to subside since SERCOM-1(II), the resumption of in person meetings, albeit initially in a hybrid format, have evidenced many benefits but also highlighted several challenges. With a view to helping support other bodies’ organization and delivery of future meetings, a detailed summary of these findings (lessons learned) was reported to EC-75.

(3) During the past twelve months a significant number of experts, including a number of subsidiary body chairs, have stepped-down from the subsidiary bodies of the six Standing Committees (SCs) and three Study Groups (SGs) of the Commission. While some of these changes have resulted from foreseen retirements (natural attrition) there have also been a number of unforeseen resignations that have cited ‘pressure of work’ and/or ‘unsocial hours of virtual meetings’ as the reasons for deciding to stand-down. The issues of expert retention, leadership succession planning and balanced (area of expertise, regional, gender and experience) selection processes were therefore the subject of a brainstorming session during the first face-to-face hybrid [meeting](https://community.wmo.int/activity-areas/sercom/meetings/first-sercom-full-hybrid-management-group-meeting-20221) of the SERCOM Management Group (MG) in Geneva in May 2022.

(4) The Commission currently has 106 members and experts from 72 countries are members of the Commission’s MG and its subsidiary bodies. The updated [organigram](https://wmoomm.sharepoint.com/sites/wmocpdb/eve_activityarea/Forms/AllItems.aspx?id=%2Fsites%2Fwmocpdb%2Feve%5Factivityarea%2FCommission%20for%20Weather%2C%20Climate%2C%20Water%20and%20Related%20Environmental%20Service%20Applications%20%28SERCOM%29%5Fab506f11%2D3e4f%2Deb11%2Da812%2D000d3aafe55d%2FOrganigram%2Fsercom%2Dorganigram%2D15022021%2Ehtml&parent=%2Fsites%2Fwmocpdb%2Feve%5Factivityarea%2FCommission%20for%20Weather%2C%20Climate%2C%20Water%20and%20Related%20Environmental%20Service%20Applications%20%28SERCOM%29%5Fab506f11%2D3e4f%2Deb11%2Da812%2D000d3aafe55d%2FOrganigram&p=true&ga=1) of SERCOM as well as detailed information on the officers, a [dashboard listing experts](https://app.powerbi.com/view?r=eyJrIjoiOGFhYjJiYmUtOTI3Ny00MTJlLWI1ODUtZmZiNmJhOWQxMGU3IiwidCI6ImVhYTZiZTU0LTQ2ODctNDBjNC05ODI3LWMwNDRiZDhlOGQzYyIsImMiOjl9) in the various subsidiary bodies, reports of the SERCOM MG and links to dedicated webpages of the SCs and SGs detailing their activities, outputs and reports can be found via the SERCOM [website](https://community.wmo.int/activity-areas/sercom).

### Main activities since SERCOM-1(II)

(5) The main activities and achievements of SERCOM during the period February 2021 and October 2022 are as follows.

#### Organization of and participation in meetings

(a) Convening of a further six virtual meetings of the MG (meetings 7 to 12) in May, July, September, December 2021, March and July 2022, with reports available [online](https://community.wmo.int/activity-areas/sercom/sercom-management-group-meetings-reports-and-presentations);

(b) Convening of the first full hybrid SERCOM MG meeting in Geneva, from 2 to 5 May 2022, where two thirds of the MG members (11 out of 18) attended in person and the remainder attended virtually, notwithstanding the full-day schedule and related inconvenient hours for some; the meeting focused on the intersession progress being made by the SCs and SGs and the proposed update of the Strategy for Service Delivery and it Implementation Plan and preparations for the Second (in person) session of SERCOM in October 2022; documents and presentations available [here](https://community.wmo.int/activity-areas/sercom/meetings/first-sercom-full-hybrid-management-group-meeting-20221);

(c) In person participation at the SERCOM MG meeting in Geneva of the recently appointed Technical Coordinators (Services) from the World Meteorological Organization (WMO) Regional Offices demonstrating an important first step in achieving closer coordination with and involvement of regional associations in the plans and activities of SERCOM, based on a better understanding of regional needs and priorities;

(d) Convening of three half-day joint meetings in Geneva in April 2022 of the leadership and Secretariat Focal Points of the Standing Committees on Hydrological Services (SC-HYD), Climate Services (SC-CLI), Services for Agriculture (SC-AGR) and Disaster Risk Reduction and Public Services (SC-DRR) to better align, integrate and coordinate the related activities of these bodies;

(e) Continuing close coordination with the Commission for Observation, Infrastructure and Information Systems (INFCOM) and Research Board Management Groups, respective leaderships and working structures, in particular holding four joint meetings of the executives on cross-cutting issues such as coordinating the update of the WMO regulatory framework; the development of Global Data-processing and Forecasting System (GDPFS) requirements to meet the needs of end users, using sub-seasonal and seasonal prediction as a pilot case; and the improved integration into impact-based services of social science;

(f) The president of SERCOM, supported and/or represented by the SERCOM vice-presidents, has also actively participated in a range of virtual, hybrid and in person meetings and related activities including:

1. Meetings of the WMO Technical Coordination Committee (TCC);
2. Part III of the first session of INFCOM;
3. WMO Data Policy implementation discussions;
4. Eighteenth sessions of regional associations (RAs) I, III, IV and VI;
5. Hydrological Coordination (HCP), Climate Coordination (CCP) and Capacity Development Panels (CDP) and the WMO-Intergovernmental Oceanographic Commission (IOC) Joint Collaborative Board (JCB);
6. Executive Council Task Force on the Comprehensive Review of the RAs Concept;
7. Online forums facilitated by the WMO Public Private Engagement (PPE) Office;
8. Third Meeting of the Capacity Development Panel (CDP-3) (15‑16 September 2021);
9. Extraordinary session of the World Meteorological Congress (Cg-Ext 2021), 11–22 October 2021);
10. Hydrological Assembly (October 2021);
11. Seventy-fourth session of the Executive Council (EC-74)
(25–29 October 2021);
12. Twenty-sixth United Nations (UN) Climate Change Conference of the Parties (COP26) (31 October – 3 November 2021);
13. Chairing of the Flood Forecasting Initiative Advisory Group fourth hybrid meeting (13–15 December 2021);
14. Fourth meeting of the Capacity Development Panel (CDP-4)
(15–16 February 2022);
15. Executive Council – Panel on Polar and High Mountains Observations, Research, and Services (EC-PHORS) – Eleventh meeting (6–9 April 2022);
16. Meeting of the WMO Policy Advisory Committee (PAC) (3–5 May 2022), alongside the president of INFCOM, to present a joint paper on the expert selection processes that have been developed by the technical commissions and to participate in other agenda items of relevance;
17. Fourth Meeting of the Hydrological Coordination Panel (HCP-4)
(9–12 May 2022);
18. Research Board, INFCOM, SERCOM Executives Meeting (11 May 2022);
19. Executive Council – seventy-fifth session (EC-75) (20–24 June 2022);
20. Chairing of the Support Base Partners Forum of the Associated Programme on Flood Management (APFM) and Integrated Drought Management Programme (IDMP) face-to-face meetings in Stockholm Sweden 26–27 August 2022; and
21. Scientific Advisory Panel Meeting (SAP) (6–8 September 2022).

#### Issuance of guidance materials

(g) Issuance of guidance material on various aspects of services delivery, including but not limited to:

1. [*Guidelines on Seasonal Hydrological Predictions*](https://library.wmo.int/doc_num.php?explnum_id=11081) (WMO-No. 1 274);
2. [*WMO Guidelines on Multi-hazard Impact-based Forecast and Warning Services*](https://library.wmo.int/index.php?lvl=notice_display&id=21994#.Yo4yuKhBw2w) (WMO-No. 1150), Part II: Putting Multi-Hazard Impact-Based Forecast and Warning Services (IBFWS) into Practice;
3. Fully revised edition (static) of the WMO [*Sea-Ice Information* *and Services*](https://library.wmo.int/index.php?lvl=notice_display&id=7542) (WMO-No 574);
4. Fully revised (online) [*WMO Information for Shipping*](https://community.wmo.int/activity-areas/Marine/Pubs/WMO-No9-Vol-D-Information-for-Shipping) (WMO-No. 9 Volume D);
5. *Guidelines on Implementation of a Coastal Inundation Forecasting – Early Warning System* (WMO-No. 1293);
6. *Assessment Guidelines for End-to-End Flood Forecasting and Early Warning Systems* (WMO-No. 1286);
7. [*Aerodrome Reports and Forecasts: A Users’ Handbook to the Codes*](https://library.wmo.int/index.php?lvl=notice_display&id=716) (WMO‑No. 782); and
8. Several other publications are at an advanced stage of development and are expected to be approved at SERCOM-2 and issued before Cg-19, including a fully revised edition of the [*WMO Strategy for Service Delivery and its Implementation Plan*](https://library.wmo.int/index.php?lvl=notice_display&id=16002) (WMO-No. 1129), proposed to be renamed as, *The WMO Guide for Service Delivery 2023–33*.

#### Communication and awareness raising

(h) Establishment of the [SERCOM website](https://community.wmo.int/activity-areas/sercom) in the WMO Community Platform, containing detailed information on the officers, organigram, experts in the various subsidiary bodies, reports of the MG and links to dedicated webpages of the SCs and SGs detailing their activities, outputs and reports;

(i) Establishment of the dashboard “[Experts in SERCOM](https://app.powerbi.com/view?r=eyJrIjoiOGFhYjJiYmUtOTI3Ny00MTJlLWI1ODUtZmZiNmJhOWQxMGU3IiwidCI6ImVhYTZiZTU0LTQ2ODctNDBjNC05ODI3LWMwNDRiZDhlOGQzYyIsImMiOjl9)” with information updated continuously on the composition and regional and gender statistics of the various subsidiary bodies of the Commission; and

(j) Appointment of a new SERCOM gender focal point and establishment of a SERCOM gender focal point network comprising representation from each of SERCOM’s six SCs; approval of an ambitious SERCOM Gender Equality Action Plan with the primary aim of increasing the representation of women in SERCOM’s subsidiary bodies from the current 34% to 40% in the next intersessional period with a longer-term aspiration of achieving closer to 50%;

### 2022/23 Priorities

(6) The President of SERCOM highlights the following priorities for 2022/2023:

1. Review and update of the SERCOM work programme in close consultation with all relevant bodies, focussing on revisions to WMO Technical Regulations, supporting Manuals and guidance material;
2. Continued implementation of the new sub-structures as described in the proposed revisions to the [*Rules of Procedure for Technical Commissions*](https://library.wmo.int/index.php?lvl=notice_display&id=21534#.YIAXoegzbIU) (WMO-No. 1240);
3. Further improving the expert selection and de-selection process based on further considerations of expertise, regional and gender representation, diversity and inclusivity;
4. Responding to the UN Secretary-General’s challenge, announced on World Meteorological Day, 23 March 2022, to ensure that everyone on Earth has access to an early warning system/service within the next 5 years. Also, increasing the urgency to accelerate implementation of the supporting frameworks for WMO’s Global Multi-hazard Alerting System (GMAS). In order to deliver on this challenge it will be necessary to undertake coordinated and directed effort across all WMO bodies, with other UN organizations and agencies (for example through the WMO Coordination Mechanism) and with actors in the private sector, primarily through PPE initiatives;
5. Support for the strategy for and measures to enhance the visibility, effectiveness and implementation of the Global Framework for Climate Services (GFCS) with related activities and projects driven by better alignment with the priorities of GFCS stakeholders and clearer linkages to needs of Members;
6. Update and reformulation of the *WMO Strategy for Service Delivery* (WMO‑No. 1129), proposed to be renamed as, The WMO Guide for Service Delivery 2023–33; and
7. Supporting INFCOM’s work on the implementation of the new WMO Unified Policy for the International Exchange of Earth-system Data, including the development of technical regulatory material and associated guidance.

### Documents to be adopted without debate

(7) The president of SERCOM, in consultation with the officers and the MG, recommends that the following documents be adopted without debate:

(a) [SERCOM-2/Doc. 4](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d04-REVIEW-OF-CG-EC-RESOLUTIONS-AND-DECISIONS-draft1_en.docx&action=default) – Review of Resolutions of Congress and the Executive Council related to the Commission;

(b) [SERCOM-2/Doc. 5.3](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-3-UPDATE-GUIDE-TO-AGRI-MET-PRACTICES-draft1_en.docx&action=default) – Updates to Guide on Agricultural Meteorological Practices (WMO-No. 134);

(c) [SERCOM-2/Doc. 5.4](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-4-SERVICES-FOR-AVIATION-UPDATE-TO-GUIDES-draft2_en.docx&action=default) – Services for Aviation – Update to WMO Guides in Aeronautical Meteorology (WMO-Nos. 732 and 904);

(d) [SERCOM-2/Doc. 5.5(4)](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-5(4)-GUIDE-TO-CLIMATOLOGICAL-PRACTICES-draft1_en.docx&action=default) – Fourth edition of the Guide to Climatological Practices (WMO-No. 100);

(e) [SERCOM-2/Doc. 5.5(5)](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-5(5)-CLIMATE-DATA-REQUIREMENTS-draft1_en.docx&action=default) – Climate Data Requirements and Solutions;

(f) [SERCOM-2/Doc. 5.8(1)](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-8(1)-REVIEW-ON-MEER-AND-SAR-BEST-PRACTICES-draft1_en.docx&action=default) – Marine Environmental Emergency Response and Search and Rescue;

(g) [SERCOM‑2/Doc. 5.9](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-9-INTEGRATED-ENERGY-SERVICES-draft1_en.docx&action=default) – Integrated Energy Services;

(h) [SERCOM‑2/Doc. 5.11](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d05-11-INTEGRATED-URBAN-SERVICES-draft1_en.docx&action=default) – Good practices on high-resolution modelling for integrated urban services;

(i) [SERCOM‑2/Doc. 9.1](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d09-1-COORDINATION-WITH-OTHER-WMO-BODIES-draft1_en.docx&action=default) – Coordination with other WMO bodies;

(j) [SERCOM‑2/Doc. 9.2](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d09-2-ADVICE-HYDROLOGICAL-COORDINATION-PANEL-draft1_en.docx&action=default) – Advice from the Hydrological Coordination Panel;

(k) [SERCOM-2/Doc. 11.1](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d11-1-REVIEW-OF-RES-AND-REC-OF-PAST-COMMISSIONS-draft1_en.docx&action=default) – Review of Resolutions and recommendations of the previous commission structure; and

(l) [SERCOM-2/Doc. 11.2](https://meetings.wmo.int/SERCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/SERCOM-2/English/1.%20DRAFTS%20FOR%20DISCUSSION/SERCOM-2-d11-2-REVIEW-OF-PREVIOUS-RESOLUTIONS-AND-DECISIONS-draft1_en.docx&action=default) – Review of previous Resolutions and decisions of the Commission and evaluation of implementation of relevant actions.

(8) The SERCOM-3 session, which will include the election of the officers of the Commission, is expected to be convened in the first quarter of 2024. In the lead up to SERCOM-3, in addition to completing its programme of work for the eighteenth Financial Period, the Commission will be looking to develop a new workplan that more closely maps to the WMO Strategic Plan 2024–27 as well as considering what changes to its structures and expert composition will be necessary to support the delivery of the new plan. SERCOM’s 2024–27 workplan, proposals for new structures, MG and subsidiary body composition will be submitted for approval at SERCOM-3.

### Report of the Chair of the Standing Committee on Services for Aviation

#### Membership

(9) The Standing Committee on Services for Aviation (SC-AVI) comprises 14 members from 14 WMO Member States and Territories. All six WMO Regions have representation in the membership of SC-AVI as follows: RA I (2), RA II (2), RA III (2), RA IV (3), RA V (2) and RA VI (3). The distribution of responsibilities of the 14 members of SC-AVI is as follows: Chair (1), Vice-Chair (2), Co-Chairs of Expert Teams (5) and Thematic Coordinators (6). Since SERCOM-1(II), one SC-AVI member has stepped-down while two members have joined. 5 of the 14 members of SC-AVI are female (36%). This figure is largely unchanged since SERCOM-1(II). The International Civil Aviation Organization (ICAO) is an *ex officio* member of SC-AVI. ICAO is represented by the Secretariat and the Chair and the Deputy Chair of the Meteorology Panel.

#### Meetings

(10) SC-AVI convened its second meeting (SC-AVI-2) in a hybrid mode – in person at WMO headquarters in Geneva, Switzerland and online via Microsoft Teams – in March/April 2022. Two fifths of the SC-AVI members attended SC-AVI-2 in person while the remainder attended online. The Final Report, Addendum No. 1 to the Final Report and an Executive Summary of SC-AVI-2 are [available here](https://community.wmo.int/activity-areas/aviation/reports/final-reports#sc-avi). The results of a Satisfaction Survey on the planning, preparation and conducting of SC-AVI-2 is also available via the same link.

(11) In addition, SC-AVI continues to convene video/teleconferences (VTC) on a quarterly basis. Since SERCOM-1(II), SC-AVI VTCs have been held in March, June, September and December 2021 plus February, June, and September 2022. Summaries of SC-AVI VTCs are available upon request via the Chair of SC-AVI. [https://community.wmo.int/activity-areas/aviation/reports/final-reports](https://community.wmo.int/activity-areas/aviation/reports/final-reports#sc-avi) Matters discussed:

(12) The quarterly video/teleconferences and biennial meetings of SC-AVI have provided routine opportunities for the Standing Committee to discuss and, where necessary, resolve matters of direct and/or indirect concern, including:

1. Outcomes of (Extraordinary) Congress, Executive Council, Technical Commissions, RAs and other valid sources – for example, in the context of the Cg-Ext. (2021) Resolution on the WMO Unified Policy for the International Exchange of Earth-system Data and the EC-73 adoption of an amendment to the *Technical Regulations*, Volume II, *Meteorological Service for International Air Navigation*,
2. Establishment and dissolution of SC-AVI subsidiary bodies – for example, the establishment of an Advisory Group on Volcanic Science for Applications (AG-VSA) and the dissolution of a Task Team on the update to the Long-Term Plan for Aeronautical Meteorology (TT-LTP),
3. Monitoring and maintenance of operating plans of SC-AVI subsidiary bodies – specifically the operating plans of the Expert Team on Education, Training and Competency (ET-ETC), Expert Team on Aeronautical Meteorological Hazards Science (ET-MHS), Expert Team on the Impacts of Climate Change and Variability on Aviation (ET-CCV), and AG-VSA mentioned above,
4. New or replacement SC-AVI members or core experts of SC-AVI subsidiary bodies, or other such management issues,
5. Coordination with other WMO bodies including subsidiary bodies of the Infrastructure Commission (INFCOM) and Research Board (RB) - for example on matters associated with the maintenance of the ICAO Meteorological Information Exchange Model (IWXXM) by INFCOM SC-IMT TT-AvData and the launch of Phase 2 of the Aviation Research and Development Project (AvRDP2) by RB WWRP; and
6. Coordination with ICAO and other agencies.

(13) In addition, these routine calls/meetings provide opportunities for SC-AVI to forward plan meetings and other events, and their associated activities, milestones and deliverables, in an efficient and effective matter, including maximizing opportunities to convene meetings/events back-to-back or combined with partners such as ICAO.

#### Specific Outputs and recommendations

(14) During the SC-AVI-2 meeting in March/April 2022, the Standing Committee formulated five recommendations, five decisions and four actions. The five recommendations are for consideration at SERCOM-2 while the five decisions and four actions are internal to SC-AVI.

(15) The five recommendations of SC-AVI-2 can be summarized as follows:

1. **Recommendation 1 (SC-AVI-2)** concerning a proposed update to WMO guidance on service delivery [SC-AVI-2 Final Report, 4.2.5 refers];
2. **Recommendation 2 (SC-AVI-2)** concerning a proposed update to WMO guidance on cost recovery [SC-AVI-2 Final Report, 4.3.6 refers];
3. **Recommendation 3 (SC-AVI-2)** concerning a proposed update to the SC-AVI terms of reference [SC-AVI-2 Final Report, 6.2.3 refers];
4. **Recommendation 4 (SC-AVI-2)** concerning a proposed amendment to WMO Technical Regulations and guidance addressing aeronautical meteorological personnel competency and qualification [SC-AVI-2 Final Report Addendum No. 1, 4.1.16 refers];
5. **Recommendation 5 (SC-AVI-2)** concerning a plan of action for the discontinuation of WMO-No. 49, Volume II, Meteorological Service for International Air Navigation [SC-AVI-2 Final Report Addendum No. 1, 4.4.11 refers].

(16) Insofar as the five decisions and four actions arising from SC-AVI-2 were concerned, these mainly related to the update of the operating plans of the SC-AVI subsidiary bodies and improvements to the operating plan template, the update to the long-term plan for aeronautical meteorology, and arrangements for the SC-AVI-3 meeting to be held in 2023.

### Report of the Chair of the Standing Committee on Services for Agriculture

#### Membership

(17) The Standing Committee on Services for Agriculture Aviation (SC-AGR) comprises 17 members from 15 WMO Member States and Territories and from one UN agency (FAO). All six WMO Regions have representation in the membership of SC-AGR as follows: RA I (3), RA II (2), RA III (2), RA IV (2), RA V (1) and RA VI (5). The distribution of responsibilities of the 17 members of SC-AVI is as follows: Chair (1), Vice-Chair (1), Chairs of Expert Teams (5) and Core Members (8). 7 of the 17 members of SC-AGR are female (41%).

#### Meetings/sessions

(18) The following is the list of SC-AGR Meetings that have already taken place:

1. First Meeting, 28 January 2021, Virtual meeting;
2. Second Meeting, 22 June 2021, Virtual Meeting; and
3. Third Meeting, 5–7 April 2022, Virtual Meeting.

(19) The fourth SC-AGR meeting is scheduled to take place in Geneva in a hybrid format from 10–11 October 2022 combined with a workshop on agrometeorological issues from 12–13 October 2022.

#### Matters discussed

(20) From third SC-AGR Meeting:

1. Inclusion of FAO and World Food Programme (WFP) representatives into the SC-AGR. FAO representatives, Oscar Rojas and Jorge Beltran, attended the third SC-AGR meeting;
2. Spearhead global food security issues under climate variability and climate change (includes further integration of climate and crop / pasture / animal models);
3. Enhance multi-disciplinary efforts to aid user relevance;
4. Enhance work of Task Teams;
5. Enhance work on global drought policy and preparedness;
6. Enhanced connectivity with DRR, SC-HYD and other SCs (especially on drought);
7. Enhance gender balance initiatives– learn from other SCs– ensure Gender Focal points established in SC-AGR;
8. Build upon the deep talents within SC-AGR (e.g. crop modelling, agricultural science, drought research, systems R&D);
9. Consider switching to more use of consultants in achieving aims of ETs.

#### Specific Outputs and recommendations

1. Establishment of the Task Team on Climate Services and Fisheries (SC-AGR-3)
At the SERCOM MG in May 2022, SC-AGR issued the following Recommendations proposing enhanced coordination / collaboration between various bodies:
2. Recommendation 1 (SC-AGR-3) on capacity development, involving a proposed joint Expert Team across SERCOM and WMO CDP;
3. Recommendation 2 (SC-AGR-3) on drought preparedness, involving SERCOM, the UN Convention to Combat Desertification and the IDMP; and
4. Recommendation 3 (SC-AGR-3) on global food security, involving SERCOM, the Food and Agriculture Organization of the UN and the World Food Programme.
5. This last recommendation resulted in SC-AGR to lead, in collaboration with SC-HYD and SC-CLI, to develop preliminary recommendations and guidance material on research, development, and extension regarding crop and pasture production (including agricultural models) to reduce food insecurity
6. SC-AGR decided that the following documents shall be presented at the second session of SERCOM:
7. Draft Recommendation, on the draft Global Drought Classification System Implementation Plan – however, to the complex issues involved in this plan, the Expert Team on Drought requested more time to develop this plan and the document was removed for consideration from SERCOM-2;
8. Update to the [*Guide on Agricultural Meteorological Practices*](https://library.wmo.int/doc_num.php?explnum_id=3996) (WMO-No. 134) for endorsement to the seventy-sixth session of the Executive Council.

#### Outputs

1. The following deliverables have been completed by the respective SC-AGR Expert Teams and under final review by the SC-AGR members:
2. Guidelines on Roving Seminars (ET-ACDC);
3. Guidance document on the impacts of air pollution on crop damage (ET-ASC);
4. Quantifying the impacts of particulate matter on crop yield: A synthesis of current knowledge (ET-ASC);
5. Guidance on applications of Weather and Climate Forecasts for Agriculture including Numerical Weather Prediction (NWP) and coupling of weather / climate models with agricultural models (ET-AAS);
6. Guidance on applications of NWP and Sub-Seasonal to Seasonal and Multi-Year Forecasts for Agriculture in developing climate risk insurance products and coupling of weather/climate models with agricultural bio-economic models (ET-AAS);
7. Guidance on developing complete agroclimatic data series (ET-ARM).

### Report of the Chair of the Standing Committee on Climate Services

#### Membership

1. The Standing Committee on Climate Services (SC-CLI) inclusive of its five subsidiary bodies in the form of Expert Teams (ETs) comprises 90 members from 15 WMO Member States and Territories. All six WMO Regions have representation in the membership of SC-CLI as follows: RA I (13), RA II (9), RA III (13), RA IV (16), RA V (12) and RA VI (25). The distribution of responsibilities of the 90 members of SC-CLI is as follows: Chair (1), Vice-Chair (2), Co-Chairs of ETs (5). 37 of the 90 members of SC-CLI are female (41%). All details on the nature, composition, activities and deliverables of the SC-CLI ETs is available [online](https://community.wmo.int/governance/commission-membership/sercom/officers/management-group/sc-cli).

#### Meetings/sessions

1. As of mid-August 2022, the SC-CLI has had four virtual and hybrid meetings on the following dates:
2. First meeting- 19–20 January 2021 (Online) - [Report](https://community.wmo.int/meetings/first-meeting-standing-committee-climate-services-sc-cli-1):;
3. Second meeting- 21–22 April 2021 (Online) - [Report](https://community.wmo.int/activity-areas/climate/meetings/sc-cli-2):;
4. Third meeting- 5–6 October 2021 (Online) – [Report](https://community.wmo.int/activity-areas/climate/meetings/third-meeting-standing-committee-climate-services-sc-cli-3):;
5. Fourth meeting- 5–7 April 2022 (Hybrid) - [Report](https://community.wmo.int/activity-areas/climate/meetings/fourth-meeting-standing-committee-climate-services-sc-cli-4):;
6. Fifth meeting will be held in hybrid format from 31 August to 1st September 2022.

#### Matters discussed

1. The fourth meeting of the Standing Committee on Climate Services (SC-CLI-4) was held on 5–7 April 2022 in a hybrid format. The background information, agenda, work plan, documents, presentations, and recordings of the meeting are available at: [https://community.wmo.int/activity-areas/climate/meetings/fourth-meeting-standing-committee-climate-services-sc-cli -4](https://community.wmo.int/activity-areas/climate/meetings/fourth-meeting-standing-committee-climate-services-sc-cli%20-4)
2. In the latest MG Meetings of the Commission for Weather, Climate, Water and Related Environmental Services and Applications, the Standing Committee on Climate Services (SC-CLI) presented its priorities, progress updates, milestones, risks. The contribution focused on top-level cross-cutting and major activities with other bodies, including:
3. Consolidation of SERCOM GDPFS requirements for objective seasonal forecasts;
4. Doc for EC on Climatological Normals (CLINO), including differences between guidance on climate change benchmarking and climate normals;
5. Establishment of minimum standards for climate services information based on user needs for inclusion in the WMO technical regulatory framework and considering adding to the SC-CLI workplan;
6. Inclusion of attribution to SERCOM of all training and website materials and presentations to adhere to Chapter 3 of WMO Standing Instructions;
7. Promotion of the concept and highlight the urgency of the collection of members’ CLINO 1991–2020 among the expert networks, and provide the necessary expertise support to Members in calculating and submitting CLINO 1991–2020;
8. Review existing GFCS exemplars on agriculture and food security, water resources, health, energy and DRR;
9. Compile strategic documents to guide development of climate services for urban, marine, aviation and national infrastructure applications;
10. Develop and complement existing guidance in collaboration with RAs, partners and the private sector, to enhance its utility for guiding implementation of climate services, with particular attention to the articulation of user requirements;
11. SERCOM/SC-CLI requirements for GDPFS and seasonal-to-sub-seasonal forecasts (S2S);
12. Consolidate SERCOM requirements associated with Decision 9 (EC-72 objective seasonal forecasts), and to articulate the requirements to SC-ESMP;
13. Establish a small task group among INFCOM, SERCOM and RB to work on the requirements review process and then report-back to INFCOM/SERCOM/RB executives;
14. Organize the Third WMO workshop on operational climate prediction (20–22/09/2022);
15. Establishment of a Joint Study Group on Greenhouse Gaz (GHG) monitoring, composed of reps of INFCOM, SERCOM and RB, and other WMO & relevant international agencies to oversee and guide the further development of the concept for the greenhouse gas monitoring system (Resolution 4 (EC-75)).

#### Specific Outputs and recommendations

1. During the Fourth Meeting of the Standing Committee on Climate Services (SC-CLI-4), Agenda Item 2 focused on receiving progress reports from the co-leads of each ET on the status of the deliverables as committed in the updated version of Resolution 4 (SERCOM-1) on the work programme of the subsidiary bodies of the Commission. Co-leads presented the status of the deliverables and the progress of activities, particularly in terms of outputs and publications:
2. WMO Annual Statement on the State of the Global Climate in 2021;
3. WMO Annual State of Regional Climate Reports;
4. WMO Decadal Statement (2011–2020);
5. WMO Guidelines on Implementation of Climate Watches;
6. Guidelines on Regional State of the Climate;
7. Guidance on Communication of Key Messages;
8. Modernization of the State of the Climate Monitoring: Discussion Paper on Baselines;
9. Guidelines on the Definition and Characterization of Extreme Weather and Climate Events;
10. Concept and Methodology of the Decadal Report 2011–2020;
11. Guidelines on Regional Climate Outlook Forums (RCOFs) Operational Practices including expansion of RCOF product portfolio;
12. Guidance on the use and interpretation of regional climate change projections;
13. Guidance on objective regional sub-seasonal climate forecasts;
14. Guidance on climate services requirements for objective regional seasonal climate forecasts and related standard procedures;
15. Guidance on establishment and operations of Regional Climate Centres (RCCs) nearly ready for publication;
16. Guidance on technical specifications of Climate Services Toolkit data and tools;
17. Guide to Climatological Practices (WMO- No 100)- Fourth Edition;
18. Guidance on Communicating Climate Science and Services;
19. Guidelines for the Assessment of Competencies for Provision of Climate Services;
20. Roadmap on Implementation of Quality Management System in Climate Services;
21. SERCOM Strategy for Service Delivery (new edition of WMO-No. 1129).

### Report of the Chair of the Standing Committee on Hydrological Services

#### Membership

1. The SC-HYD currently counts 18 members. Since SERCOM-1, two new members have joined SC-HYD: Ms Milica Djordjevice (Bosnia-Herzegovina) and Ralph Philip (GWP). Recommendations by HCP, further discussed by SC-HYD at its first face-to-face meeting, on the expansion of membership in SC-HYD were approved through Decision 25, SC-HYD 10. New members will be considered and proposed before the next SC-HYD meeting.

#### Meetings/sessions

(31) Since its establishment [SC-HYD](https://community.wmo.int/activity-areas/sercom/sc-hyd) has met virtually nine times in plenary, four of which since SERCOM-1(II). In addition, SC-HYD met face-to-face from 13 to 17 June 2022. This face-to-face session was attended by 12 members in person, and by an additional four virtually. The meeting provided the opportunity to review the status of advancement of the different deliverables under SC-HYD, and to discuss the integration of activities stemming from the WMO Vision and Strategy for hydrology and its associated Action Plan (Res. 4 Cg-Ext(2021) into the current workplan of the committee.

#### Matters discussed

(32) The SC-HYD workplan is being implemented by 13 activity groups working on approximately 35 milestones/deliverables. The activity groups have met more than 80 times in virtual meetings, leading to nine Resolutions approved in SERCOM-1, EC-73, Cg-Ext(2021) and 18 milestones/deliverables being already achieved (see [SC-HYD 10/INF. 4](https://filecloud.wmo.int/share/s/XCyTg00GQ4Sc90cXsNbV3g)  for details). SC-HYD has been working in close collaboration with other Standing Committees and Expert Groups (e.g. SC-AGR, SC-DRR, SC-ESMP, SG-URB, SG-ENG, SG-CRYO) as well as the RB whenever needed, and taking into account the recommendations of the Hydrological Coordination Panel (HCP) on issues cross-cutting with hydrological observations, data and information (mainly dealt with by JET-HYDMON). With the approval of the WMO Vision and Strategy for hydrology and its associated Action Plan (through Res. 4 Cg-Ext(2021), and the distribution of responsibilities for its implementation recommended by HCP, the workplan of SC-HYD has been reviewed and expanded. Discussions on this matter have been held at the SC-HYD face-to face meeting, leading to a proposed revised version of its workplan (see [Doc. 5 SC-HYD 10](https://filecloud.wmo.int/share/s/Sd565rUeRuqmVf3STd8kxg)).

#### Specific Outputs and recommendations

(33) SC-HYD requests SERCOM to consider the workplan (provided at this [link](https://filecloud.wmo.int/share/s/2qOJcoerRViSqNA5ARtuYg)) in the review of the current SERCOM workplan at SERCOM-2 and note that updated to the SC-HYD terms of reference.

SC-HYD encourages SC-DRR to improve the level of collaboration on issues related to ET-CHE, engaging on a continuous basis the SC-HYD Focal points.

(34) SC-HYD decided to have a face-to-face meeting in 2023 and continue with virtual meetings every quarter. The next SC-HYD virtual meeting is planned for September- 2022 prior to SERCOM-2.

(35) SC-HYD feel importance in having face-to-face meetings of activity groups when needed (e.g. kick-off, or finalization meetings), noting that virtual meetings will stay as regular working mechanism.

### Report of the Chair of the Standing Committee on Marine Meteorological and Oceanographic Services

#### Membership

(36) The Standing Committee on Marine Meteorological and Oceanographic Services (SC-MMO) comprises 19 members from all WMO Regions. Leadership is by the Chair and two Vice Chairs. Membership includes three ex officio positions representing the interests of key WMO partners: the International Maritime Organization (IMO), the International Hydrographic Organization (IHO) and the IOC of UNESCO. The Chairs of SC-MMO subsidiary bodies observe in the SC-MMO. The Chair of SC-MMO holds the position of WMO Services representative to the JCB. Details of current SC-MMO membership are [here](https://community.wmo.int/activity-areas/sercom/sc-mmo).

(37) Of the total number (81) of experts in SC-MMO and subsidiary bodies, almost 20% of these have resigned or retired from their positions during the period. Subsequently, approximately 12% of these vacancies have been filled. The high turnover of SC-MMO experts has been challenging, particularly during the establishment of a new Standing Committee and its activities. Details of SC-MMO subsidiary bodies, including Terms of References are [here](https://community.wmo.int/activity-areas/Marine/Governance).

#### Meetings/sessions

(38) There were two SC-MMO meetings and two meetings during the report period:

1. SC-MMO-2 online, 25–26 Jan 2022 ([report](https://filecloud.wmo.int/share/s/vXR_MepfQvyvcRc9_zidZA));
2. SC-MMO-3 online, 13–14 June 2022 ([report](https://filecloud.wmo.int/share/s/U8evhOVUQBWzB6pmBuLFpQ));
3. JCB1 series (PART X) online, 9 March 2021;
4. JCB2 online, 1–2 March 2022.

#### Matters discussed

(39) During the report period, the following items have been discussed within SC-MMO, including:

1. The development and implementation of Operating Plans of the SC-MMO and subsidiary bodies were decided and harmonized;
2. Key deliverables and submissions in accordance with SC-MMO workplan: Revisions and development of guidance material for which SC-MMO is responsible; Designation & arrangements for marine related Regional Specialized Meteorological Centres (RSMCs); Marine services Cost Option Investigation Report; Marine Service Capacity Development (including support to the WMO Marine Services Course). New and emergent items that have been presented for this session are: Ice Analysist & Forecaster Competency Framework; Marine Environmental Emergency Response (MEER) and Search and Rescue (SAR) best practice review; Status report on WMO-IMO Symposium; Concept Note for an Multi-Hazard Early Warning Systems (MHEWS) Framework which considers Coastal Inundation Forecasting Initiative (CIFI) among other activities (led by SC-DRR, contribution by SC-MMO); and
3. Other Priorities identified by subsidiaries and partners, in particular: updates of guidance documents on Maritime Safety Information (MSI); Marine Impact-Based Forecasting (IBF); Recommendations for Rolling Review Requirements (RRR) process; Iridium SafetyCast implementation.

(40) SC-MMO Chair (Member of the JCB) and SERCOM President (Observer to JCB) contributed to the drafting and finalization of the JCB developed joint [WMO-IOC Collaborative Strategy](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EeI3sQ1DQ2lJjH7r1dCLpQUBhmpRDzZUA7KBe-WNd1UE8g?e=8frmpH) (2022–2025), which was endorsed by both WMO Executive Council and IOC Assembly in 2021. The membership of the JCB is [here](https://community.wmo.int/JCB/Membership).

#### Specific Outputs and recommendations

(41) SC-MMO is to continue and strengthen ongoing cross-cutting activities with partners/external entities, including: Task Team proposals to SERCOM and X-cutting (e.g. Polar, Fisheries); input into IOC/IMO/IHO meetings and documents; Linkage to other SERCOM/INFCOM/CDP/JCB etc.; Ocean satellite paper (WMO, IOC); Response to requests/input to other groups as requested; Support to communications – awareness material, Public Private Partnership (PPP). etc.

### Report of the Chair of the Standing Committee on Disaster Risk Reduction and Public Services

#### Membership

1. The Standing Committee on Disaster Risk Reduction and Public Services (SC-DRR) comprises 11 members from 8 WMO Member States and Territories. Five WMO Regions have representation in the membership of SC-DRR as follows: RA II (2), RA III (1), RA IV (2), RA V (1) and RA VI (3). The distribution of responsibilities of the 11 members of SC-DRR is as follows: Chair (1), members (7) and focal points from UNDRR and RB (3). Since SERCOM-1(II), four SC-DRR members have stepped-down due to the changes of the positions or retirement while two focal points have joined. 2 of 11 members of SC-DRR are female, after two female members resigned.

#### Meetings/sessions

1. SC-DRR convened its second and third meeting online and fourth meeting in a hybrid mode – in person at WMO headquarters in Geneva, Switzerland and online via Microsoft Teams in 16–17 June 2022.
2. [Second Meeting of the Standing Committee on Disaster Risk Reduction and Public Services (SC-DRR-2), 6 July 2021, Online Session](https://community.wmo.int/meetings/2nd-meeting-standing-committee-disaster-risk-reduction-and-public-services-sc-drr);
3. [Second Meeting of the Standing Committee on Disaster Risk Reduction and Public Services (SC-DRR-2) - Part II, 13–14 September 2021, Online Session](https://community.wmo.int/meetings/2nd-meeting-standing-committee-disaster-risk-reduction-and-public-services-sc-drr-part-ii);
4. [Third Meeting of the Standing Committee on Disaster Risk Reduction and Public Services (SC-DRR-3), 24–26 January 2022, Online Session](https://community.wmo.int/meetings/3rd-meeting-standing-committee-disaster-risk-reduction-and-public-services-sc-drr); and
5. [Fourth Meeting of the Standing Committee on Disaster Risk Reduction and Public Services (SC-DRR-4), 16–17 June 2022, Hybrid Session](https://community.wmo.int/meetings/4th-meeting-standing-committee-disaster-risk-reduction-and-public-services-sc-drr-4).

#### Matters discussed

(44) During the reporting period, the following items have been discussed within SC-DRR, including:

1. Outcomes of (Extraordinary) Congress, Executive Council, Technical Commissions, RAs and other valid sources;
2. Coordination and collaboration with the INFCOM and RB and other SCs for the Early Warning System (EWS) initiative, activities to support hydrological services, fire weather services, Guide for Service Delivery, Methodology for Cataloguing Hazardous Events, WMO Coordination Mechanism, MHEWS Interoperable Environment Framework, the Global Platform for Disaster Risk Reduction in May 2022 in Indonesia;
3. Establishment of two Advisory Groups (AG) – AG on Tropical Cyclones (AG-TC) and AG on Severe Weather Forecasting (AG-SWF);
4. Monitoring the updates and workplans of Expert Teams – the Expert Team on the WMO Coordination Mechanism (ET-WCM) to support humanitarian activities of the UN and other organizations, Expert Team on MHEWS Technical Guidance (ET-MTG), Expert Team on MHEWS Interoperable Environment (ET-MIE), Expert Team on General Service Delivery (ET-GSD), Expert Team on the Global Multi-hazard Alert System Framework (ET-GMAS), Expert Team on Cataloguing Weather, Water, Climate, Environmental and Space Weather Hazardous Events (ET-CHE), AG -TC and AG-SWF;
5. Identify connections and supportive frameworks to form an ET on Wildfire including experts from SERCOM, RB, INFCOM and partners as appropriate;
6. Support socialization of WCM objectives with Members;
7. Advise on the connection between GMAS development and high-level advocacy efforts related to the Centre of Excellence on Climate and Disaster Resilience and the UN Secretary-General, António Guterres, call for having alerts for all in five years;
8. Partnerships with other UN humanitarian agencies such as UNDRR, OCHA, IFRC, WFP, UN Woman, EC etc., academia and private sectors.

#### Specific Outputs and recommendations

(45) Two Resolutions and five Recommendations are for consideration at SERCOM-2.

1. Recommendation on *WMO Guide for Service Delivery 2023–2033* (WMO-No. 1129);
2. Recommendation on Implementation Plan for the Methodology for Cataloguing Hazardous Events;
3. Recommendation on WMO Coordination Mechanism Implementation Plan;
4. Recommendation on Concept Note on MHEWS Interoperable Environment Framework;
5. Recommendation on Technical Guide on Tropical Cyclones;
6. Resolution on UN Global Warning/Adaptation Initiative; and
7. Decision on Proposed Activities on Wildfires Early Warning Systems.

### Report of the Chair of the Study Group for Integrated Health Services

#### Membership

(46) The HEA-SG is composed of [19 technical experts](https://community.wmo.int/health-who-wmo-sercom-integrated-health-study-group-team-members), including the Co-chairs Dr Diarmid Campbell Lendrum and Juli Trtanj, selected from the WMO expert network. Juan Jose Castillo from WHO/PAHO, Washington DC, nominated by WHO joined the HEA-SG as a new member in Jan 2022

#### Meetings/sessions

(47) The following meetings were held under SG-HEA:

1. **2022 Joint HEA-SG Meetings**
2. Seventh Joint Meeting – WHO-WMO SG-HEA, 25 August 2022 (Online session);
3. [Sixth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/ERliwnfcrZNKnruorI0MsKoBAFPXgU2npyagImUh6sfoqA?e=fF266i), 11 August 2022 (Online session);
4. [Fifth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EV-z8in-IuxDtGpcg9uU9f4Bnj-EFDgnAyixT-2Zu9DgPQ?e=ssd7Ze), 15 July 2022 (Online session);
5. [Fourth Joint Meeting – WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EXuK-A7J_AZNk38KOt_Tw2gBcQ758RHj9bc5M_vSE4t9rw?e=213u2J), 01 June 2022 (Online session);
6. Third Joint Meeting in Geneva – WHO-WMO SG-HEA, 10–12 May 2022 (Hybrid format);
7. Second Joint Meeting – WHO-WMO SG-HEA, 14 April 2022 (Online session); and
8. First Joint Meeting – WHO-WMO SG-HEA, 3 March 2022 (Online session).
9. 2021 Joint HEA-SG Meetings
10. [Fifteenth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EQ1TEVdaUCNBtp55uKn04PsBX1Clfydj6maKkoO5vMBfkw?e=Lql2ha), 28 October 2021 (Online session);
11. [Fourteenth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/Edy0ZxgWWapLlO-MSnVjwbYB194NoYoSNZnTujgp5SEgbQ?e=vzOvfn), 14 October 2021 (Online session);
12. [Thirteenth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/ERKN6eGeTb1NrIuCidYSKr4BJiNwJdljO2HMPlg1zmdh_g?e=BEAuzN), 30 September 2021 (Online session);
13. [Twelfth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EYKdFfwY0CFErl8g2vIiU1kBBhlFTNez38sO6PVGAtVZyg?e=tkUKSe), 16 September 2021 (Online session);
14. [Eleventh Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EfKxXttXiLJJkx7GDeu1lDMBULJxqbOk6p1BUiYM3oh2Tw?e=tQuKUW), 02 September 2021 (Online session);
15. [Tenth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/ESrBw1D7RsdDkuy9yUcIUVcBuGu1Cn5ikfC320muTuWBjQ?e=Ke3e0M), 19 August 2021 (Online session);
16. Ninth Joint Meeting – WHO-WMO SG-HEA, 22 July 2021 (Online session);
17. [Eighth Joint Meeting – WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/Ea2zLvjNX65KobdNvBFYWGgBvWpOJvvyrO2VIDAeTZBsJQ?e=m1oJjo), 17 June 2021 (Online session);
18. [Seventh Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EbFPCMD4blVIi9ED0mejonsBNnafwqBcg_PMUKEa1Bj0MA?e=rXrdgn), 20 May 2021 (Online session);
19. [Sixth Joint Meeting – WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/ET0rd0hmpetFgU0myHHpLaQBSpF1sJ-OtyoEt95ymUFW7g?e=nJJD0H), 15 April 2021 (Online session);
20. [Fifth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EdmGeBjIosNPr5q2xAdu4vwBrNJvJpvcQ8-rT26CRagHmg?e=yAT9F9), 18 March 2021 (Online session);
21. [Fourth Joint Meeting - WHO-WMO SG-HEA](https://wmoomm.sharepoint.com/%3Ab%3A/s/wmocpdb/EbHxX_rxnsVEk4c-T_3Bq50ByBhhaW-knt0nSENeAS5OKQ?e=g82l7F), 18 February 2021 (Online session).
22. 2021 Subgroup Meetings
23. Team 1 Meeting – WHO-WMO SG-HEA, 8 July 2021 (Online session);
24. Team 2 Meeting – WHO-WMO SG-HEA, 10 June 2021 (Online session);
25. Team 1 Meeting – WHO-WMO SG-HEA, 3 June 2021 (Online session);
26. Team 1 Meeting – WHO-WMO SG-HEA, 6 May 2021 (Online session);
27. Team 2 Meeting – WHO-WMO SG-HEA, 8 April 2021 (Online session);
28. Team 2 Meeting – WHO-WMO SG-HEA, 11 March 2021 (Online session);
29. Team 1 Meeting – WHO-WMO SG-HEA, 4 March 2021 (Online session);
30. Team 2 Meeting – WHO-WMO SG-HEA, 11 February 2021 (Online session);
31. Team 1 Meeting – WHO-WMO SG-HEA, 4 February 2021 (Online session).

#### Matters discussed

(48) During the reporting period, the following items have been discussed within SG-HEA, including:

1. The SG scoped and reviewed the high-level goals of the pre-existing joint WHO-WMO Master Plan (2019–23) as well as existing capacity, gaps, and services for the health community as a basis for the development of the Implementation Plan;
2. The SG spent substantial time developing a more impactful theory of change and overarching vision for integrated climate and health services, laying out catalytic activities and mechanisms for delivery and implementation of climate science and services for health as well as outlining global grand challenge areas to guide this work, considering the identified regional and national needs (based on Regional Consultations and National Meteorological and Hydrological Services (NMHS) inputs);
3. The SG developed key good practices required for transformational change and impact of climate services for health protection which underpin the proposed actions and mechanisms of the Implementation Plan (see INF: Conceptual Framework);
4. Technical bottlenecks in climate and health data equity, provision, integration and access were heavily discussed, along with needs to strengthen national capacity in NMHS for health engagement and services, and further steps for engagement, career and skill development of the Integrated Health Focal Points;
5. The SG identified emerging issues and opportunities to enhance support to decision-makers on extreme heat and health, including the need to upscale of Heat Health Warning Systems, good practices in risk communication, consolidate technical resources across WMO bodies and programmes, and support for the Global Heat Health Information Network (GHHIN) as a user interface platform;
6. SG- regularly discuss communication needs, and provide editorial support for the WHO-WMO ClimaHealth Portal;
7. Regular update and collaboration with the RB COVID-19 Task Team activities and identification of further needs and requirements around infectious diseases (See Decision Doc). Future interaction and collaboration with SG-URB and SG-ENE planned on issues of climate-urban-health (extreme heat) nexus; and
8. Scoping of opportunities for Climate Services for Health 2023 Report and need to enhance systems for monitoring progress of needs, and the availability, access, and use of climate information.

#### Specific Outputs and recommendations

(49) COP26 event: “Climate Science and Services for Health Adaptation” at the WHO Health Pavilion (Nov 2021)

Three regional consultations with NMHS integrated health focal points and health sector partners, Region III & IV – The Americas (26 October 2021), Region I – Africa (5 May 2022), Region VI – Europe, (8 June 2022).

(50) Preparation of SERCOM documents:

1. SERCOM Recommendation: Implementation Plan for Advancing Integrated Climate and Health Science and Services 2023–2033. INF: Detailed Implementation Plan structured around six functional categories and four grand challenge areas. INF: Conceptual Framework, as the underpinning document of the Implementation Plan (publication planned);
2. SERCOM Decision: WMO Activities on Extreme Heat; INF: Considerations on Heatwave Naming;
3. SERCOM Decision: Addressing Infectious Disease Research and Products; INF: Meteorological and Air Quality (MAQ) Services for COVID-19 Risk Reduction and Management: Recommendations for NMHS; and
4. SERCOM Decision: Enhancing Interoperability of Health and Climate Data.

**Report of the Chair of the Study Group on Integrated Energy Services**

#### Membership

(51) The [SG-ENE](https://community.wmo.int/activity-areas/sercom/SG-Energy) is composed by 16 members selected from the WMO expert network. Since its composition in 2020, the following changes have been approved in the SG-ENE membership:

1. Carlo Buontempo (ECMWF), Director of C3S, was replaced by Chiara Cagnazzo, Sectoral information System Manager at C3S; and
2. Raphael Legrand (Météo France), head of the Data Science and Consultancy, was replaced by Michel Yann, head of the ENERGIE division at Météo France.

(52) The SG-ENE accepted the invitation of the RB to include one of its members, Dr Faten Attig-Bahar, in the SG-ENE composition. Dr Bahar is a young researcher of the University of Carthage, Tunisia, whose expertise is on wind energy technology and assessment

12 male and 5 female

#### Meetings/sessions

(53) The SG-ENE convened six meetings; the first five meetings were held virtually, the sixth meeting in a hybrid mode – in person at WMO headquarters in Geneva, Switzerland and online via Microsoft Teams

1. First Meeting of SG-ENE, 18th December 2020, Virtual;
2. Second Meeting of SG-ENE, 8th February 2021, Virtual;
3. Third Meeting of SG-ENE, 24th June 2021, Virtual;
4. Fourth Meeting of SG-ENE, 18th October 2021, Virtual;
5. fifth Meeting of SG-ENE, 16th March 2022, Virtual; and
6. sixth Meeting of SG-ENE, 24–26 August 2022, Hybrid.

#### Matters discussed

(54) During the reporting period, the following items have been discussed within SG-ENE, including:

1. The SG has contributed the development of the publication “Weather and Climate Services for Net-Zero energy transition”. This publication is an update of the GFCS Energy Exemplar and is going to be presented at SERCOM-2 as a recommended SERCOM guideline for NMHSs to support national strategies for net-zero energy transition;
2. SG members have contributed to the annual State of the Climate Services for Energy report that will be launched in October 2022. A side event at COP27 will be organized;
3. The SG is developing a WMO energy portal to be a knowledge and engagement hub for NMHSs, research and private entities to find information and partnership opportunities for developing integrated energy services. The Portal will include an energy resilience Atlas to map climate risks for the energy infrastructures;
4. The SG launched a survey among the WMO members to diagnose the NMHSs needs and requirements for providing integrated services for the national energy sector. More than 100 members completed the survey. The analysis of the results will guide the SG-ENE to promote capacity development activities tailored to the regional needs;
5. The SG has promoted two online training activities: one focussing on the European energy sector in September 2021 and one focussing on Central Asia in February 2022. More regular training courses will be promoted in future, together with complementary capacity development activities. A five-years capacity development plan is under development;
6. The SG is building linkages within the WMO governance structure especially with, RB, SG-URB, SC-CLI, SG-HYD and the newly formed SG-GHG if INFCOM. It has also strong interaction with International Energy Agency (IEA) through the wind and solar IEA technical teams and the involvement in the IEA Climate Resilience Consultation Group. Join activities have been carried out with UN-Energy and International Atomic Energy Agency (IAEA), and MoUs have been signed with SEforALL, ENEL Foundation, Coalition for Disaster Resilience Infrastructure (CDRI), IRENA;
7. Specific Outputs and Recommendations for the SERCOM-2, the SG-ENE will submit a recommendation for Good practices / Guidelines on Weather and Climate Services for Net-Zero energy transition for approval;
8. The Capacity development plan based on the Energy survey results will not be ready for approval, however, it could be mentioned as an upcoming output of SG-ENE; and
9. Members should be aware and link with lunching event of the State of Climate Services report and activities at COP27.

### Report of the Chair of the Study Group on Integrated Urban Services

#### Membership

(55) The SG-URB had nine members selected from the WMO expert network (list in below). In July 2021, Dr Anurag DIPANKAR of Met Services of Singapore (MSS) informed that he would not be able to join the study group anymore as he left MSS to join Studied Agronomic Engineering (ETH Zurich). Dr Kirill Tudriy of Roshydromet was not active (neither attending group meetings nor replying emails) after August 2021.

Dr Feng LIANG – Co-Chair – (China Meteorology Administration, Female)
Dr Gerald MILLS – member – (University College Dublin, Ireland, Male)
Dr Valery MASSON – member – (MétéoFrance, Male)
Dr Kenza KHOMSI – member – (Met Morocco, Female)
Assoc. Prof. Chao REN – member – (University of Hong Kong, China, Female)
Eng. Mariano RE – member – (National Water Institute, Argentina, Male)
Mr Daniel BADER – member – (Columbia University Earth Institute, USA, Male)
Dr Kirill TUDRIY – member – (Roshydromet, Male, not active after August 2021)
Dr Anurag DIPANKAR – member – (MSS, Male, left in July 2021)

(56) There are other three group members from UN-Habitat and International Council for Local (ICLEI) who did not get formal nomination approval since they are not in WMO expert network. Secretariat also contacted to Global Covenant of Mayors and C40 for their representative joining SG-URB, but did not get response.

Stefanie Holzwarth – Co-Chair – (UN-Habitat, Female)
Nele Kapp – member – (UN-Habitat, Female)
Nazmul Huq – member – (ICLEI, Male)

#### Meetings/sessions

(57) The following meetings were held during the reporting period:

1. In accordance with its terms of reference, the SG-URB has whole group meetings on a quarterly basis. In addition, specific subgroup discussion meetings are held as needed. From Feb 2021 to July 2022, totally 7 whole group and 10 subgroup online meetings were held. Next whole group teleconference is scheduled in Sep 2022;
2. The SG-URB organized a side event at UNFCCC COP26 with the title “Benefits of Integrated Urban Services (IUS)” on 11 November 2021 at the IPCC-WMO-UKMO Pavilion. The session was moderated by P/SERCOM and six members from SG-URB were involved. Two experts introduced the general concept of IUS and an overview of user requirements for IUS, respectively. Four experts acted as panellists to discuss challenges and opportunities of developing and implementing elements of integrated urban services around the world;
3. WMO RA II Pilot Project on Public private Engagement for Smart Meteorological Services in Mega-cities (PPE-SMSC) will contribute to the demonstration of practical implementation of IUS in several cities in China. Two of the members from SG-URB were invited to attend the project kick-off meeting on 25 February 2022, and were nominated as a member and the co-chair of Scientific Advisory Committee for the pilot project, respectively;
4. Representative of SG-URB attended the WMO Flood Forecasting Initiative fourth Meeting of the Advisory Group in December 2021 and the ninth Meeting of the Standing Committee on Hydrological Services in March 2022, to recommended consideration of urban and coastal floods in the Hydrology Action Plan and take the consideration of urban flood models in the SC-HYD model catalogue;
5. One of the important elements of the SG-URB work is building collaborations outside of WMO. Since July 2021, several meetings with ICLEI were organized in order to add questions to the CDP Annual City Survey in relation to the missing topics including on some socio-economic elements. Two teleconferences were organized to explore connection between SG-URB and UrbanShift to assist cities in taking opportunities of IUS as a part of a solution for maximizing urban resilience;
6. A dedicated webinar launching the Good practices on high-resolution modelling for IUS was organized on the 24 May 2022; and
7. Urban activities within WMO are distributed between different bodies and often are not implemented in a coordinated way. To establish an initial exchange of information a dedicated workshop was organized at WMO headquarters in Geneva on 13–15 June 2022.

#### Matters discussed

(58) The SG-URB considers opportunities to extend its membership. In particular it considers soliciting experts in urban observation and social economic assessment. It requests the Secretariat and SERCOM MG assist with the identification of appropriate experts.

(59) Specific Outputs and recommendations:

1. The SG-URB provided contribution towards development of the dedicated section on urban network design for WMO Integrated Global Observing System (WIGOS) High-Level Guidance 2040;
2. Good practices on High-resolution Modelling for IUS will be submitted to SERCOM II for approval;
3. The SG-URB works with the other groups to develop Summary and recommendations of the workshop on integration of urban-related activities in WMO;
4. Implementation of Integrated Urban Hydro-Meteorological, Climate and Environmental Services (Volume III of Guidance on IUS) is under preparation; and
5. The SG-URB contributes to the Memorandum of Understanding between WMO and UN-Habitat related to cooperation on IUS.

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