CARIBBEAN METEOROLOGICAL ORGANIZATION

ANNUAL MEETING OF DIRECTORS OF METEOROLOGICAL SERVICES **Doc. 4**
GRACE BAY, TURKS AND CAICOS ISLANDS, 11 NOVEMBER 2026

OPERATIONAL MATTERS

(Submitted by the Coordinating Director)

INTRODUCTION

1. The Annual Meeting of Directors of Meteorological Services (DMS) serves as the principal forum for collectively addressing operational meteorology and hydrometeorology priorities of the National Meteorological and Hydrometeorological Services (NMHSs) of the Caribbean Meteorological Organization (CMO) Member States. It provides the opportunity to review progress in strengthening national and regional service delivery, assess the alignment with the World Meteorological Organization (WMO) priorities, standards, technical regulations, and recommendations and identify areas requiring coordinated action and regional support.

2. During the intersessional period between DMS2025 and DMS2026, CMO Members and NMHSs have continued to advance operational capabilities, strengthen observing and data exchange systems, improve the provision of impact-based forecasts and warnings, and implement regional and international initiatives.

3. This document highlights selected issues affecting or likely to influence the delivery of meteorological and hydrometeorological operations and services NMHS of CMO Member States. These issues are emphasized, reiterated, or introduced in light of developments during 2026 and the evolving requirements for national or regional service delivery. The document seeks to:

- Raise awareness of the current status of CMO Members' implementation of relevant WMO standards, technical regulations and recommendations; identify outstanding gaps and capacity constraints, and highlight forthcoming deadlines and actions requiring attention by NMHSs; and
- Review emerging and ongoing operational, technical and institutional developments that are likely to influence operational meteorological and hydrometeorological services in the near term.
- Identify opportunities for strengthened regional cooperation, shared –service arrangements, technical assistance and resource mobilization to address common operational challenges and support sustained operational readiness and continuity.

A. AVIATION METEOROLOGY DEVELOPMENTS (QUALIFICATION, COMPETENCY, IWXXM, QMS)

Meteorological Authority and the Meteorological Service Provider

4. Directors will recall that Amendment 82 to Annex 3 introduced an explicit distinction between the Meteorological Authority and the Meteorological Service Provider, with the purpose of clarifying State responsibilities regarding meteorological service for international air navigation.

5. The Meeting is asked to note that in accordance with Annex 3, and other ICAO documents, information concerning a **State's Meteorological Authority and Meteorological Service Provider is required to be published in the State's Aeronautical Information Publication** (AIP). In this regards, Amendment 82 highlights the need for States to review their national regulations, circulars and other relevant instruments; incorporate the applicable Amendment 82 requirements into national regulatory frameworks; and clearly define institutional responsibilities, including those of the regulatory authority and the entity providing meteorological services.

6. ICAO's NACC Meteorological Task Force has published **Regional Guidance** material developed to support official reviewing, designation and implementation of the Meteorological Authority and the Meteorological Service Provider requirements, including the verification of existing arrangements, publication in the AIP, regional or delegated agreements, and consistency among applicable information sources.

Update to WMO's Qualification and Competency requirements for Aeronautical Meteorological Personnel

7. The Meeting is reminded that amendments to the ***WMO Technical Regulations (WMO-No. 49)***, **Volume I, Part V: Qualifications**, adopted through Resolution 11 (Cg-19), became applicable on 1 January 2026. Further, WMO has since published a **Summary of Changes to WMO-No. 49, Volume 1, Part V: QUALIFICATION**.

8. These amendments introduced greater national flexibility in determining the qualifications required for aeronautical meteorological personnel (AMP), while retaining the competency requirements applicable to operational service delivery. The principal changes are as follows:

- **National determination of qualifications:** The amendment in paragraph 1.1.2 provides that Members should determine the necessary qualification level for each category of operational personnel, based on relevant national, regional and/or global requirements.
- **Additional or higher qualifications:** A further Note in the same location clarifies that Members may require additional and/or higher qualification levels for operational AMP.
- **Qualification requirements for aeronautical meteorological forecasters:** **Paragraph 1.2.1.1** was **revised to *replace*** *the requirement for an aeronautical meteorological forecaster (AMF) to have* ***successfully completed*** *the Basic Instruction Package for Meteorologists (BIP-M)* **with a requirement for "qualifications consistent with the BIP-M".**

9. These amendments allow Members to determine appropriate qualification arrangements in their national contexts, while ensuring that aviation meteorological personnel possess the knowledge, skills and competencies required for their assigned operational responsibilities.

10. The difference is significant because the amendments changes the emphasis from evidence that an aeronautical meteorological forecaster has **successfully completed the prescribed BIP-M** programme to evidence that the individual's **qualifications are consistent with the BIP-M learning outcomes or requirements**. It provides greater flexibility and allows for different education and training pathways for an aeronautical meteorological forecaster to demonstrate the required knowledge and competencies.

11. The Meeting is asked to note that the accompanying amendments to the **Compendium of WMO Competency Frameworks (WMO-No. 1209), Section 2: Competencies (Second-Level)**, associated with the revised qualification and competency framework for aeronautical meteorological personnel (AMP), also became applicable on 1 January 2026.

12. The changes to the regional variations section clarify the relationship between formal qualifications, the background knowledge and skills underpinning operational competencies, and the maintenance of supporting records. The key changes are as follows:

Removal of the prescribed BIP-M reference: The regional variations section removes the reference stating that an aeronautical meteorological forecaster (AMF) **is required to possess** the Basic Instruction Package for Meteorologists (BIP-M).

The amendment aligns qualifications with BIP-M: The new reference states that the level of qualification(s) necessary to underpin the required competencies of operational Aeronautical Meteorological Forecasters (AMFs) **is to be consistent with the relevant educational framework, background skills and knowledge requirements described in the BIP-M (Competency Standards for Aeronautical Meteorological Personnel- Section 2.2, page 29).**

Evidence of formal learning: The new reference also specifies that the aeronautical meteorological service provider is expected to record evidence that that the aeronautical meteorological personnel for the provision of its services have completed the necessary **formal learning or courses of study** to demonstrate they possess the background skills and knowledge as described in the relevant competency framework.

Record-keeping requirements: The regional variations section adds explicit record-keeping requirements in support of demonstrating that personnel meet the applicable qualification and competency expectations.

13. Directors are reminded that these changes provide flexibility in the formal qualifications used to underpin AMF competencies, without removing the need to demonstrate the required knowledge and skills.

14. In this regard, NMHSs are encouraged to review their qualification and competency procedures against the revised provisions, consult relevant national and regional bodies, to ensure that educational and training pathways adequately underpin the required qualification and competencies, and maintain appropriate records of personnel qualifications and documented evidence that personnel meet the applicable qualification and competency requirements.

Guide to Competency (WMO-No. 1205) - New Section: Addressing Gaps in Competency -

15. The Meeting is further informed that in light of the amendments to the Technical Regulations (WMO-No. 49), Volume I, and the update to the Compendium of WMO Competency Frameworks (WMO-No. 1209), the Fourth Session of the Commission for Weather, Climate, Hydrological, Marine and Related Environmental Services and Applications (SERCOM-4) approved revision of the 2018 edition of the **Guide to Competency (WMO-No. 1205)** to include a new section 2.3 on **Addressing Gaps, within the section on Competency Assessment.** The revised section provides further practical guidance to NMHSs on identifying and addressing gaps in competency of operational personnel assessed as **"not yet competent**", when developing, implementing and or maintaining competency-based training and assessment programmes.

16. The new section clarifies that where assessment outcomes are classified as "not yet competent", a remedial training plan should be put in place. **Importantly, a "not yet competent" result does not necessarily disqualify an individual from the operational environment**. However, the individual must be supervised by competent staff until **remedial training has been completed and reassessment confirms that the individual is competent**.

17. The Guide identifies several areas in which competency gaps may occur, including whether formats, codes and structures conform to standards; scientific understanding of meteorology, hydrology and climatology; IT and communications; timeliness; behaviours, including a desire to adhere to procedures; ability to follow a defined process such as a standard operating procedure; and written and oral communication.

18. A key point to note is that the Guide states that knowledge quizzes alone should not be used as conclusive evidence that an individual is “not yet competent” in an operational role. It may be used, where necessary, with complementary methods, such as scenario-based exercises, simulations, workplace observation or review of operational products to establish the individual’s ability to apply the required knowledge and skills in practice.

19. **Operational significance for CMO Members**: The updated Guide has implications for managing competency gaps while maintaining operational services. Directors and service managers must assess the nature and significance of identified gaps, determine whether individuals may continue working operationally, and ensure there is competent supervision, remedial training and reassessment confirms competence.

20. Competency decisions should be based on multiple forms of evidence. These considerations are particularly important for NMHSs with limited staffing and continuous-service responsibilities, where competency management must be balanced with operational coverage.

ICAO System-Wide Information Management (SWIM) and the ICAO Weather Information Exchange Model (IWXXM)

21. The Meeting is informed that SERCOM 4 approved revision to the Guide to Meteorological Observing and Information Distribution Systems for Aviation Weather Services (WMO-No. 731) to better align it with the new ICAO Procedures for Air Navigation Services – Meteorology (PANS-MET, Doc 10157) and other WMO publications.

22. In particular, the main updates include a new **subsection 4.4.10:Modern Meteorological Information Exchange Systems**, introduced by ICAO.

23. This introduction by ICAO represents a fundamental shift in how aeronautical meteorological information is processed, exchanged, and consumed. It represents a move away from traditional text-based reports, and towards technologies that are designed to facilitate digital, machine-to-machine, and secure data sharing in support of the ICAO Global Air Navigation Plan (GANP).

24. The Meeting is asked to recall that IWXXM is a standard model for reporting aeronautical meteorological information using XML/GML (eXtensible Markup Language/Geography Markup Language). It replaces Traditional Alphanumeric Codes (TAC), in use for decades for coding meteorological information such as METAR/SPECI/TAF/SIGMET/AIRMET text messages with a structured digital format.

25. The update notes that the SWIM system is an advanced infrastructure, governance, and standard framework that enables the management of Air Traffic Management (ATM) related information. SWIM allows information provision and consumption to be decoupled, facilitating the exchange of data via standardized services. Having meteorological information within SWIM (MET-SWIM) enables the sharing of meteorological information, using IWXXM, via modern web-based mechanisms such as publish/subscribe and request/reply. While meteorological information is currently exchanged using IWXXM, it is and will be increasingly transitioned into a full SWIM-based environment.

Implications for National Meteorological Services

26. The approval by SERCOM-4 of revisions to WMO-No. 731, particularly in relation to IWXXM and SWIM signals an important transition in how NMHSs will need to produce, manage and disseminate aeronautical meteorological information.

27. The main implication is that NMHSs must progressively move from traditional text-based exchanges towards structured digital information and, ultimately, service-oriented information exchange through System-Wide Information Management (SWIM). This has implications for technology,

operational procedures, staff competencies, regulatory compliance and collaboration with aviation stakeholders.

Status of IWXXM Implementation

28. The Meeting is informed that since DMS 2025, WMO published its latest version of **IWXXM Version 2025-2 on 26 November 2025** in support of the requirements of ICAO Annex 3 Amendment 82 and updates to **WMO No. 731.** The updated **Schemas** for version 2025-2 covers METAR and SPECI, TAF, SIGMET, AIRMET, Tropical Cyclone Advisories, Volcanic Ash Advisories, Space Weather Advisories, WAFS SIGWX Forecasts, Quantitative Volcanic Ash Concentration Information and Volcano Observatory Notice for Aviation products.

29. The Meeting is asked to note that in keeping with **WMO Manual on Codes (WMO-No. 306), Volume I.3**, and associated **IWXXM technical resources** operational readiness for IWXXM exchange extends beyond an NMHS's ability to generate an IWXXM file. Effective implementation requires the generation and validation of messages against the applicable IWXXM technical specifications, reliable dissemination and receipt, interoperability with relevant systems and OPMET Centres, and monitoring of message availability, timeliness and quality.

30. The Meeting is informed that **ICAO North America, Central America and the Caribbean Working Group (NACC/WG) on Meteorology (MET) Task Force (TF)** has identified acceleration of implementation of Operational Meteorology (OPMET) exchange using IWXXM as a regional priority. At the Task Force 3rd meeting held in Mexico City, 9–12 December 2025 an **Action Plan for the implementation of exchange of OPMET data exchange in IWXXM** in the NAM/CAR Regions was developed and subsequently integrated into its work programme.

31. The NAM/CAR regional action plan for the implementation of OPMET IWXXM Data Dissemination in the NAM/CAR Regions acknowledges support would be needed for appropriate communications and routing arrangements, including Aeronautical Message Handling System (AMHS) and SWIM interoperability where applicable. Further, during the transition, TAC-to-IWXXM conversion arrangements would be necessary to support Members that have not yet established their own generation capabilities

32. Directors are also asked to recall the CMO Headquarters baseline report on the status of IWXXM implementation readiness, which highlighted that progress towards implementation among Member States was slow and that action was required to strengthen operational IWXXM readiness across Members NMHSs.

33. The Task Force action plan calls for the establishment of an Ad Hoc Group comprising the United States, Cuba, Mexico and the **CMO Headquarters**, mandated to **propose a regional project for a temporary TAC-to-IWXXM translation service** to generate IWXXM OPMET data on behalf of States and Territories that are not yet able to do so, providing transitional support until they develop their own IWXXM generation capabilities.

34. Subsequently, CMO Headquarters in collaboration with *Brown University* developed an **open-source portal-based TAC-to-IWXXM Translator prototype tool,** which supports testing of METAR, SPECI, TAF and SIGMET. Initial portal testing in March 2026 successfully demonstrated the conversion capability of the tool while identifying areas for improvements in user experience, security and operational usability. Additional testing in September 2026 by participating NMHSs using representative and, where possible, actual operational TAC products, assessed both TAC to IWXXM conversion and the validation of the resulting IWXXM messages.

35. The initiative is being developed as a sustainable, robust and progressively Member-owned regional capability, aligned with ICAO transition, while strengthening national capacity and avoiding long-term dependence on an externally managed service.

36. The longer-term objective is to enable each Member State NMHS to establish and maintain its own native IWXXM generation and validation capability. The CMO Headquarters regional translator is therefore intended to serve as a transitional support mechanism, complementing the development of national capabilities.

Actions for CMO Members NMHSs

37. NMHSs that have not yet established fully operational native IWXXM capabilities are encouraged to:

1. Participate in testing and refinement of the CMO TAC-to-IWXXM Translator and, subject to successful user acceptance testing and confirmation of operational suitability, consider its use as a transitional mechanism to support IWXXM exchange.

2. Progressively develop national capabilities for native IWXXM generation, validation and exchange, supported by appropriate staff training and the necessary technical infrastructure, with the aim of achieving sustainable national implementation.

Strengthening Quality Management Systems in CMO Member States

38. The Meeting is asked to recall that CMC63 (Grand Cayman, November 2022), directed the CMO Headquarters to develop a programme of actions leading to a regional project to facilitate Quality Management System (QMS) certification of Members NMHS operational services.

39. The Meeting is informed that the CMO Headquarters in collaboration with WMO conducted a Quality Management Skills Development Training for Caribbean National Meteorological and Hydrological Services workshop from 9–13 March 2026, under the WMO Voluntary Cooperation Programme.

40. **Ten (10) participants from eight (8) Caribbean countries successfully completed the ISO 9001:2015 Internal Quality Auditor course and obtained internationally recognized certification**. The training also covered quality assurance, risk management, metrology, verification, inspection and continuous improvement of meteorological services.

41. A key outcome was the establishment of a Regional Pool of QMS Auditors. The pool is intended to support peer audits, mentoring and technical assistance, strengthening regional capacity to advance QMS implementation and maintenance.

42. The Meeting is also advised that the International Organization for Standardization (ISO) announced in September 2026 the launch of the new edition of quality management system **ISO 9001:2026**, which replaces the 2015 edition.

43. The revision retains the established QMS framework, rather than a complete replacement of its approach. The main points relevant to NMHSs include greater emphasis on leadership, organizational quality culture and ethical behavior; clearer treatment of risks and opportunities to support planning and decision-making; clarification of how organizations consider relevant stakeholders and their needs; and changes intended to clarify requirements and improve alignment with other ISO management system standards.

44. For NMHSs, these changes should be considered in the context of operational forecasting, warning services, aviation meteorology, data quality, staff competence, corrective actions and continuity of service. Directors are encouraged to utilize the Regional Pool of QMS Auditors to advance or strengthen national QMS implementation and to prepare for transition to ISO 9001:2026.

45. Directors are asked to note the achievements of the regional QMS capacity-development project, support the proposed coordination arrangements for the Regional Pool of QMS Auditors, and encourage NMHSs to assess their readiness and plan for transition to ISO 9001:2026.

B. EARLY WARNINGS FOR ALL IMPLEMENTATION

Implementation of Amendments to the WMO Technical Regulations (WMO-No.49) - Early Warning Services

46. The Meeting is asked to recall that the updated WMO Technical Regulations, Volume I (**WMO-No. 49**), incorporating the new section on Early Warning Services are scheduled to enter into force on 1 January 2027, with full implementation required by 31 December 2029.

47. NMHSs are asked to note that the updated WMO Technical Regulations was published in July 2026. The Regulations established the framework for NMHSs to provide authoritative early warning services for meteorological, hydrological, climatological and related environmental hazards. The Common Alerting Protocol (CAP) and the Register of Alerting Authorities (RAA) are integral components of the new regulations.

48. Accordingly, the remainder of 2026 represents an important preparatory period for NMHSs to assess their readiness, identify implementation gaps and plan institutional, technical and operational measures required to comply with the regulations.

Guide to Early Warning Services

49. To support NMHSs in their implementation of EWS, SERCOM-4 considered and endorsed the **Guide to Early Warning Services**, to be used as the principal reference to support Members in applying the WMO Technical Regulations - Early Warning Services in accordance with their national circumstances.

50. The Guide provides practical guidance covering governance, operational procedures, impact-based forecasting and warnings, dissemination, quality management, competencies and continuous improvement. It places particular emphasis on integrating the different elements of the early warning value chain and strengthening coordination among NMHSs, disaster risk management authorities, sectoral agencies, communication providers and other stakeholders.

51. The Guide also includes provisions specific to Caribbean circumstances, including: For Small Island Developing States and other capacity-constrained Members, regional, sub-regional and bilateral shared-service arrangements may provide a sustainable means of delivering and maintaining early warning services, including specialized forecasting, technical support and operational backup.

C. IMPACT-BASED FORECASTING and WARNING SERVICES AND THE COMMON ALERTING PROTOCOL

Status of Implementing the Common Alerting Protocol (CAP) & Impact-Based Forecast and Warning Services (IBFWS)

Regional and National CAP/IBFWS Workshops

52. Directors are reminded that during 2026 the CMO Headquarters continued to support implementation of the Common Alerting Protocol (CAP) and Impact-Based Forecasting and Warning Services as part of regional efforts to strengthen early warning services under the Early Warnings for All (EW4All) initiative.

53. In May 2026, CMO Headquarters in collaboration with WMO, with support from the Climate Risk and Early Warning Systems (CREWS), conducted a regional workshop on Impact-Based Forecast and Warning Services (IBFWS) in Port of Spain, Trinidad and Tobago, bringing together 28 participants from NMHSs and disaster management agencies across the Caribbean. The workshop provided an important foundation for advancing implementation by strengthening participants' understanding of impact-based approaches to forecasting and warning. It also reinforced the importance of collaboration between NMHSs, disaster management agencies and other relevant sectors in developing and delivering effective impact-based warnings.

54. Recognizing that Members NMHSs have different levels of technical capacity and that some already operate their own CAP tools, the CMO Headquarters, in collaboration with WMO, has supported Members experiencing implementation challenges through the provision of shared, country-adapted CAP Composers integrated within the Caribbean WIS 2.0 Node. Online CAP platforms have since been established for an additional six countries, bringing the total number of countries with country-specific CAP composer on the CMO CAP Composer platform to ten.

55. Building on the regional workshop, CMO Headquarters conducted four targeted national CAP/IBFWS workshops in August 2026 in St Vincent and the Grenadines (17–18 August), St Kitts and Nevis (20–21 August), Antigua and Barbuda (24–25 August), and Jamaica (27–28 August). These workshops enabled more focused consideration of national circumstances, capabilities and implementation priorities. Participants strengthened their practical knowledge of CAP, including the use of the WMO CAP Composer integrated on CMO WIS2.0 Caribbean Node, and explored how impact information could be incorporated into warnings to communicate expected consequences and recommended protective actions.

Survey on Status of CAP Implementation and IBFWS Operational Readiness

56. To assess progress towards implementing Early Warnings for All (EW4All) across CMO Member States, the CMO Headquarters Unit conducted a regional survey examining early warning capabilities and reported changes over the preceding 12 months at NMHSs. Areas assessed included hazard monitoring and forecasting, impact-based forecasting and warning services (IBFWS), warning issuance and dissemination, inter-agency coordination, and the institutional and operational capacity needed to sustain effective early warning services.

57. The survey also assessed the extent to which CMO-supported IBFWS and CAP workshops in 2026 had translated into practical action, including planned and completed activities and the integration of IBFWS and CAP into operational procedures and practice. The findings provide a snapshot of regional progress and follow-through from recent capacity-building activities.

58. The survey received 17 responses from the 18 English-speaking Caribbean countries and territories targeted. Of these, 16 respondents reported participation in at least one CMO-led IBFWS, CAP or communications workshop during 2026.

59. Among the 17 respondents, 13 (76.5%) reported having official warning issuance procedures, while nine (52.9%) reported CAP warning generation and seven (41.2%) reported that CAP Composer was used operationally. For dissemination, 16 respondents (94.1%) reported social media dissemination, 14 (82.4%) reported radio/television arrangements and WhatsApp or other messaging platforms, and 13 (76.5%) reported website publication. Two respondents (11.8%) reported SMS or cell-broadcast capability (Figure 1.0). These findings indicate that several conventional and digital dissemination channels are widely used, while operational use of CAP Composer and cell broadcast remains less common.

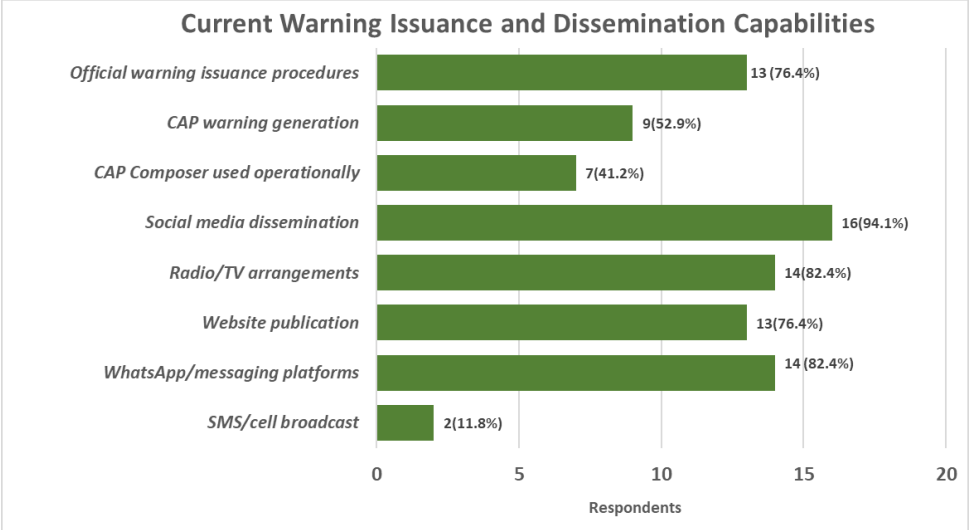


Figure 1. Current warning issuance and dissemination capabilities. Multiple responses were permitted

60. The implementation-status responses also indicate that CAP and warning arrangements are at different stages of maturity (Figure 2.). Six respondents (35.3%) reported official warnings using CAP as operational and in use, while five (29.4%) reported CAP Composer use as operational and in use. Four (23.5%) reported impact-based warning procedures operational and in use, three (17.6%) reported warning issuance SOPs operational and in use, and two (11.8%) reported IBFWS/CAP exercises operational and in use. These figures point to a need to consolidate CAP tools and messages within documented, tested warning procedures.

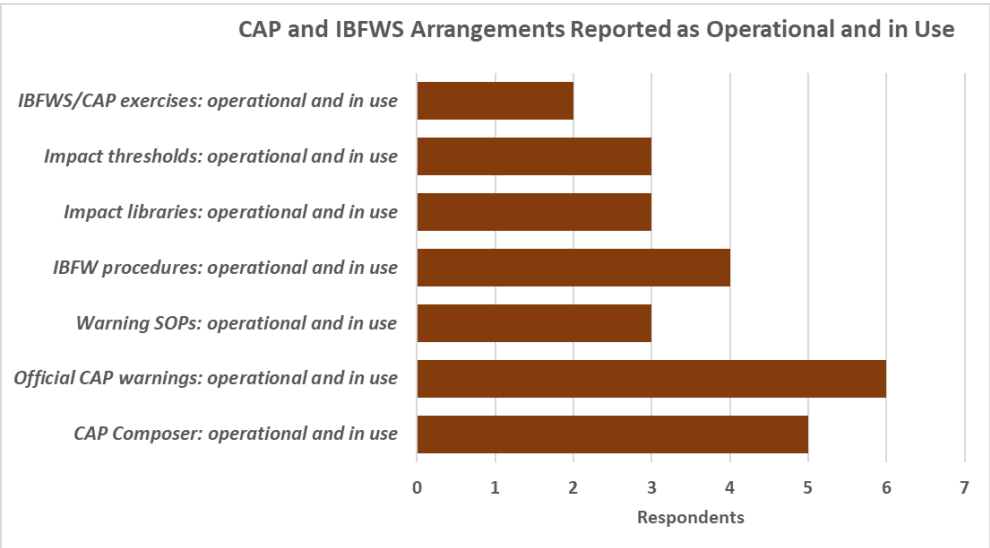


Figure 2. Selected CAP and IBFWS arrangements reported as operational and in use

Survey Findings on IBFWS and Operational Readiness in Early Warning Services

61. To assess progress in implementing Early Warnings for All (EW4All), the survey examined reported changes over the preceding 12 months in hazard monitoring and forecasting, IBFWS, warning issuance and dissemination, coordination with disaster-management and sectoral agencies, and the staffing, systems and operational continuity needed to sustain effective early warning services. The survey also examined current operational capability and planned or ongoing follow-up activities associated with CMO-supported workshops. Reported changes should not be attributed solely to the workshops.

62. The survey findings indicate encouraging progress in earl warning capabilities over the preceding months. This progress should be viewed in the context of CMO Headquarters' regional and national capacity-development activities, particularly the workshops and training activities undertaken on the Common Alerting Protocol, Impact-Based forecasting and warning Services, communication and coordination and leadership.

63. Of the selected five capability areas assessed, four recorded progress by 70% or more of the NMHSs. Hazard monitoring and forecasting recorded the highest level of reported progress, with 13 of 17 NMHSs (76.5%) indicating progress in this area while impact-based warnings, warning issuance and dissemination, and coordination with disaster management and sector agencies each recorded 70.6%. These findings are encouraging and are consistent with the areas targeted through the regional and national capacity-development programme, particularly strengthening impact-based warning practices improving CAP application and enhancing coordination between the NMHSs and their stakeholders.

64. However, progress in staffing, systems and operational continuity reported a lower level of progress, by only 41.2% of the NMHSs, highlighting a continuing challenge in translating improved technical knowledge and practices into maintaining adequate human resources, operational systems, service continuity and sustainable operational capabilities.

65. The findings suggest that the next phase of CMO's support should place greater emphasis on implementation and institutionalization, with follow up assessments to determine the extent to which the knowledge and practices developed through workshops have been incorporated into routine operations at NMHSs.

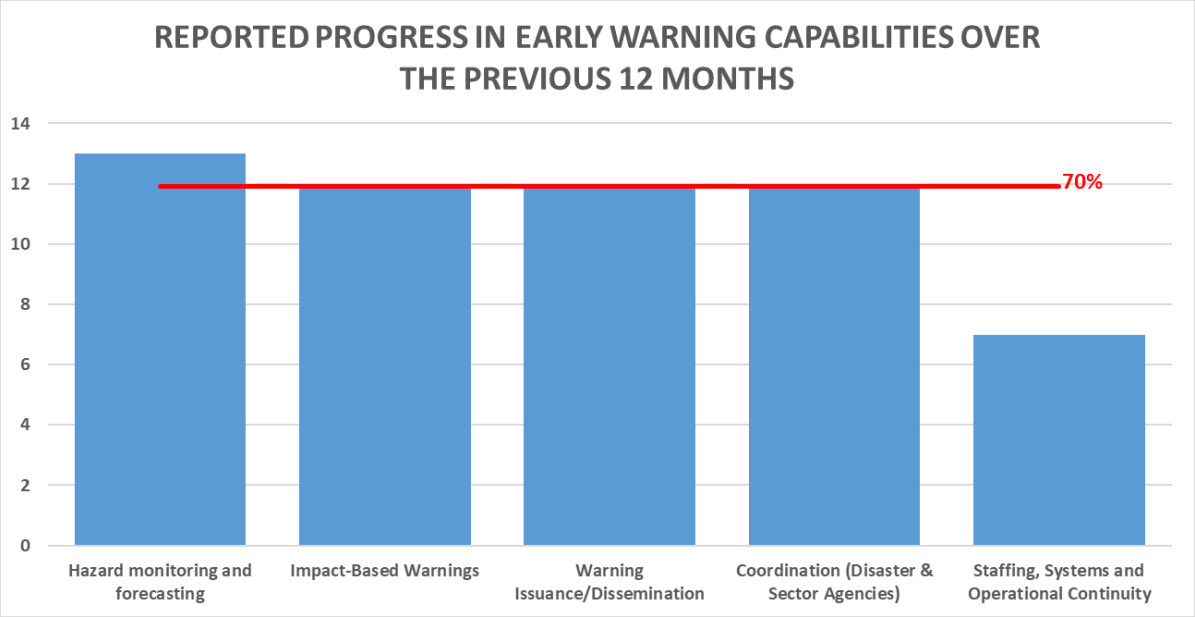


Figure 3. Respondents reporting some or significant improvement over the preceding 12 months

Post-Workshop Implementation Activities

66. Further evidence of progress following the CAP and IBFWS workshops is reflected in the activities undertaken by NMHSs. Of the 17 respondents, 58.8% reported disseminating warnings through additional channels, 47.1% had delivered further staff training, and 41.2% had established or refined impact thresholds. A further 23.5% reported developing or revising an impact-related product or arrangement. These findings indicate that workshop participation is translating into practical initiatives, particularly in warning dissemination and staff capacity development. However, further support is

needed to accelerate the integration of impact-based approaches into national operational procedures and warning services.

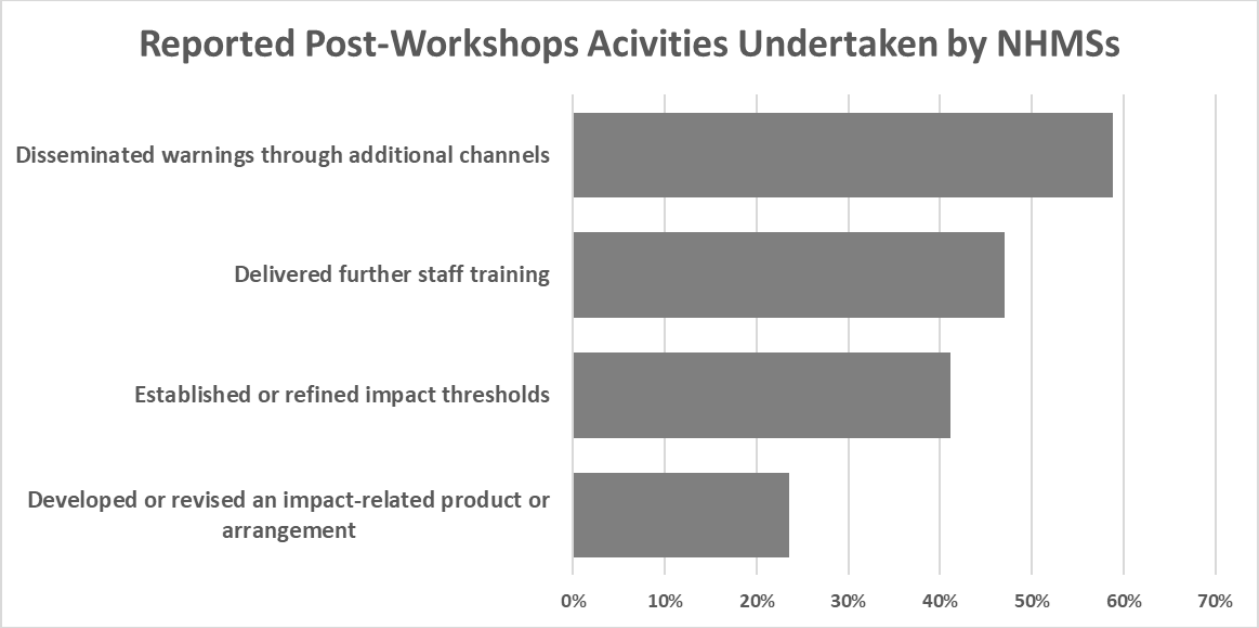


Figure 5. **Activities undertaken by workshop-participating organizations following CMO IBFWS and CAP workshops in 2026**

WMO Register of Alerting Authorities

67. The Meeting is reminded that the WMO Register of Alerting Authorities (RAA) is an important component of effective CAP-based warning dissemination because it identifies officially recognized organizations authorized to issue alerts, the areas for which they are responsible and the basis of their authority. Registration also supports the dissemination and accessibility of trusted warnings through the WMO Severe Weather Information Centre (SWIC). WMO is encouraging Members to ensure that their recognized alerting authorities are registered by 2027.

68. A preliminary review of publicly available RAA records for CMO Members indicates that some entries contain incomplete information. Examples include missing information on the basis of authorization, CAP feed URLs and defined alerting areas.

69. Ahead of the 2027 milestone, Members are encouraged to review their national arrangements and verify that relevant alerting authorities and associated information are accurately recorded. This review should recognize that responsibility for issuing CAP alerts may rest with agencies other than the NMHS, depending on national arrangements. Clear identification of the responsible authorities and their respective roles is essential to ensuring that warnings are issued and disseminated through established national procedures.

Priorities for Continued Support

70. Directors are asked to note that the workshop and survey findings reinforce the need for targeted support, based on each NMHS's existing capabilities and outstanding requirements.

- **CAP implementation**: Tailor support to each NMHS's status, addressing technical and operational gaps for those using the shared CMO/WMO CAP Composer, transitioning to operational use, or requiring assistance with their own systems.

- **IBFWS implementation:** Prioritize locally relevant impact thresholds and impact libraries, stronger warning-issuance SOPs, improved inter-agency coordination, and exercises to test the end-to-end warning process.

D. WIGOS IMPLEMENTATION: OSCAR/SURFACE, REGIONAL WIGOS CENTER, SOFF, GBON, WDQMS, RBON

Regional WIGOS Centre (RWC) – CMO/BCT Node

71. During 2026, the CMO Headquarters/BCT contributing node of the RA IV Regional WIGOS Centre (RWC) continued to work in pilot mode in collaboration with the Trinidad and Tobago RWC Node to improve metadata completeness, data availability and timeliness, incident management, and coordination among NFPs across 18 English-speaking Caribbean countries, covering 27 GBON land stations and 7 upper-air stations.

72. During the period, challenges among NMHSs in fulfilling WIGOS implementation persisted, including incomplete or imprecise OSCAR/Surface station metadata, and the requirement for continuous data availability not being met, due to gaps in data transmission.

OSCAR/Surface

73. The CMO in collaboration with the WMO held a **Training Workshop on RWC Functions and Tools** in San José, Costa Rica, from 9–11 February. The workshop strengthened the practical competencies of NFPs in station registration, OSCAR/Surface station metadata management, understanding the link between OSCAR/Surface, WDQMS and GBON monitoring and incident management of data availability and quality, and IMS incident tracking and resolution.

74. The workshop also highlighted the need for improved coordination, standardized reporting, better on-boarding of NFPs, and further training to support the transition from pilot to fully operational RWC arrangements.

WMO Integrated Global Observing System (WIGOS) and WIGOS Data Quality Monitoring System (WDQMS)

75. The *WMO Integrated Global Observing System* (WIGOS) and its associated *WIGOS Data Quality Monitoring System* (WDQMS) remain important tools for assessing the operational performance of the regional observing network and the availability of surface observations to Global Numerical Weather Prediction (NWP) Centres.

76. Analysis of 34 surface observing stations across English-speaking Caribbean NMHSs indicates an overall improvement in data availability between October 2025 and September 2026. The average station data availability increased from approximately 84.4% in October 2025 to 88.4% in September 2026, an improvement of about four percentage points. The number of stations achieving green level (at least 80%) availability increased from 25 to 26, while the number in the intermediate category (30% to less than 80%) declined from nine to seven. However, one station, Anguilla, fell below 30% availability.

77. These results demonstrate progress across the regional observing network, but also highlight the need to address station-specific weaknesses that continue to affect the availability of international data exchange.

Table 1. Comparison of station data availability between October 2025 and September 2026

Data Availability Category	October 2025	September 2026	Change
High availability (≥80%)	25 stations (73.5%)	**26 stations (76.5%)**	+1 station
Intermediate availability (30% to <80%)	9 stations (26.5%)	**7 stations (20.6%)**	−2 stations
Low availability (<30%)	0 stations (0%)	**1 station (2.9%)**	+1 station
Total	**34 stations**	**34 stations**	
Mean availability across stations	**84.4%**	**88.4%**	**+4.0 percentage points**

78. The regional results are encouraging when assessed against the WMO required 80% availability threshold. In September 2026, more than three-quarters of the stations assessed achieved high availability, compared with just under three-quarters in October 2025. Moreover, 22 stations maintained availability of at least 80% in both periods, providing evidence of sustained performance across a substantial part of the network. Improvements were not confined to stations that were already performing well. Several stations with relatively low availability in October 2025 recorded substantial gains by September 2026.

79. The most notable improvements occurred at three stations in Belize and Dominica. Punta Gorda in Belize increased from 46% to 97%, a gain of 51 percentage points, moving from intermediate to high availability, while Dominica's Canefield Airport station improved from 36% to 98%, and Melville Hall Airport increased from 30% to 100%.

80. Overall, the WDQMS results indicate an improvement in the availability of surface observations from the stations assessed, although performance remains uneven across the region.

Global Basic Observing Network (GBON)

81. Directors are asked to note that at the global level, **WMO's Global Basic Observing Network (GBON) Compliance App** reported 25 compliant Members in the third quarter of 2026, with gaps of 2,175 surface stations and 417 upper-air stations. These figures highlight the continuing global challenge of establishing and sustaining the observations required for weather forecasting.

82. The Meeting is informed that progress towards meeting GBON surface requirements among CMO Members remains uneven. A year on year comparison of surface-station data availability for 2025 and 2026, based on the 26 GBON stations assessed, indicates a modest improvement in average availability, although the number of stations meeting the 80% reference level declined.

83. The results demonstrate that, while several stations have improved substantially, maintaining the continuity and reliability of internationally exchanged observations remains a challenge across the sub-regional GBON.

84. The mean data availability across the 26 stations increased from 71.2% in 2025 to 73.1% in 2026. However, the number of stations reporting at least 80% of expected observations decreased from thirteen (13), representing 50% of the stations assessed, to twelve (12), or approximately 46%.

85. Meanwhile, the number of stations in the 30% to below 80% category increased from eleven (11) to thirteen (13), while the number below 30% decreased from two (2) to one (1). These results

indicate that improvements in average performance have not yet translated into a broader distribution of consistently high station availability (Figure 6).

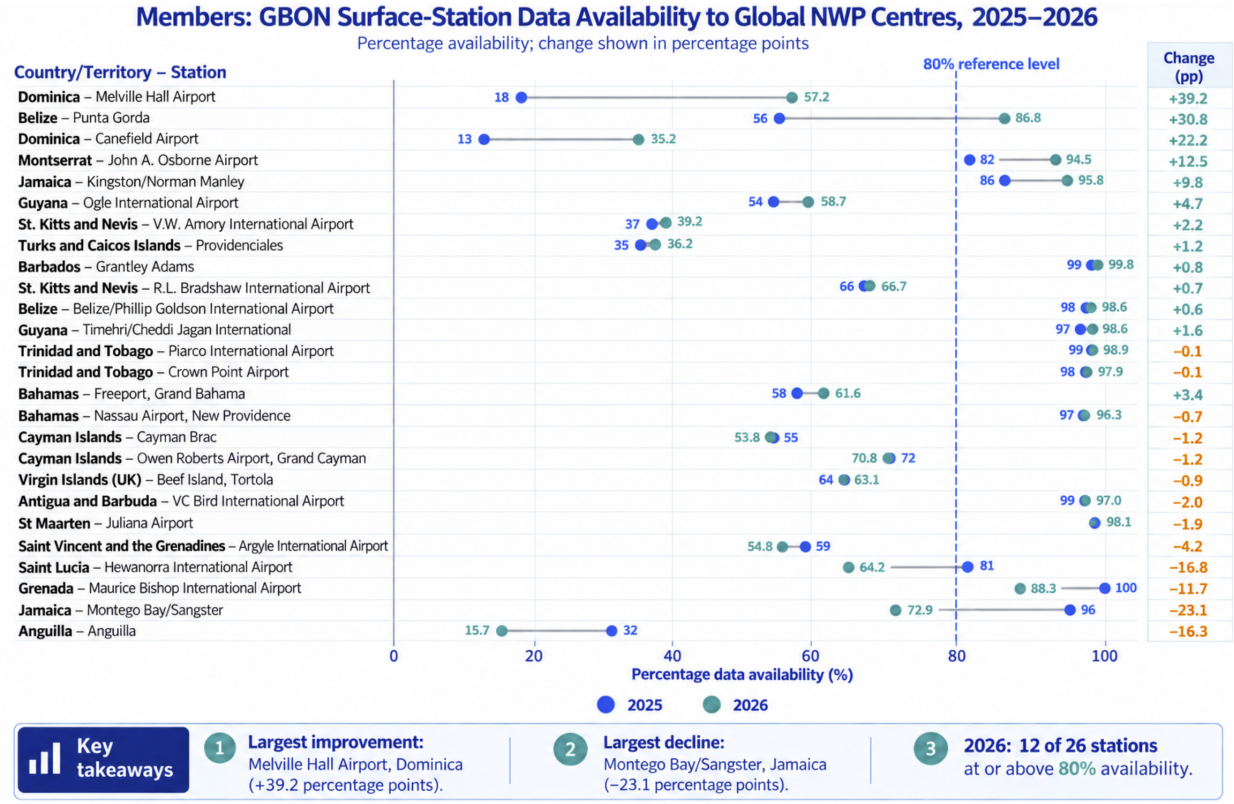


Figure 6. Comparison of surface-station data availability to Global Numerical Weather Prediction Centres, 2025–2026.

86. Several stations recorded substantial improvements during the reporting period. Melville Hall Airport in Dominica increased from 18% data availability in 2025 to approximately 57% in 2026, while Punta Gorda in Belize improved from 56% to approximately 87%. Canefield Airport in Dominica also improved, from 13% to approximately 35%. Further gains were recorded at John A. Osborne Airport in Montserrat, where availability increased from 82% to approximately 95%, and Kingston/Norman Manley Airport in Jamaica, which increased from 86% to approximately 96%.

87. The improvement at Punta Gorda is particularly notable, as the station moved from below the 80% reference level to substantially above it. These results demonstrate the potential for targeted operational and technical interventions to improve the contribution of individual stations to the global observing system.

88. The most significant decline in the dataset occurred at Montego Bay/Sangster Airport in Jamaica, where data availability decreased from 96% in 2025 to approximately 73% in 2026, a reduction of 23 percentage points. This decline should, however, be considered in the context of the impacts of Hurricane Melissa, which affected the station and disrupted its operations. This experience highlights the vulnerability of observing infrastructure to high-impact weather events and the importance of resilient equipment, reliable communications, backup arrangements and timely restoration of data transmission following disruptions. The decline should not be interpreted solely as a persistent operational deficiency, but also as an indication of the potential consequences of hurricane impacts on the continuity of observations required for global weather prediction.

89. Other stations also recorded notable declines. Hewanorra International Airport in Saint Lucia decreased from 81% to approximately 64%, Anguilla from 32% to approximately 16%, and Maurice Bishop International Airport in Grenada from 100% to approximately 88%. These results reinforce the

need to investigate the causes of reduced availability and distinguish between temporary disruptions, equipment or communications failures, and persistent operational deficiencies.

90. The 2026 results identify stations requiring particular attention. Anguilla recorded approximately 16% availability, the lowest value among the 26 stations assessed, while Canefield Airport in Dominica and Providenciales in the Turks and Caicos Islands recorded approximately 35% and 36%, respectively. Although both stations in Dominica improved considerably, neither had reached the 80% reference level by 2026. Targeted follow-up is therefore warranted to improve their contribution to the international observing system.

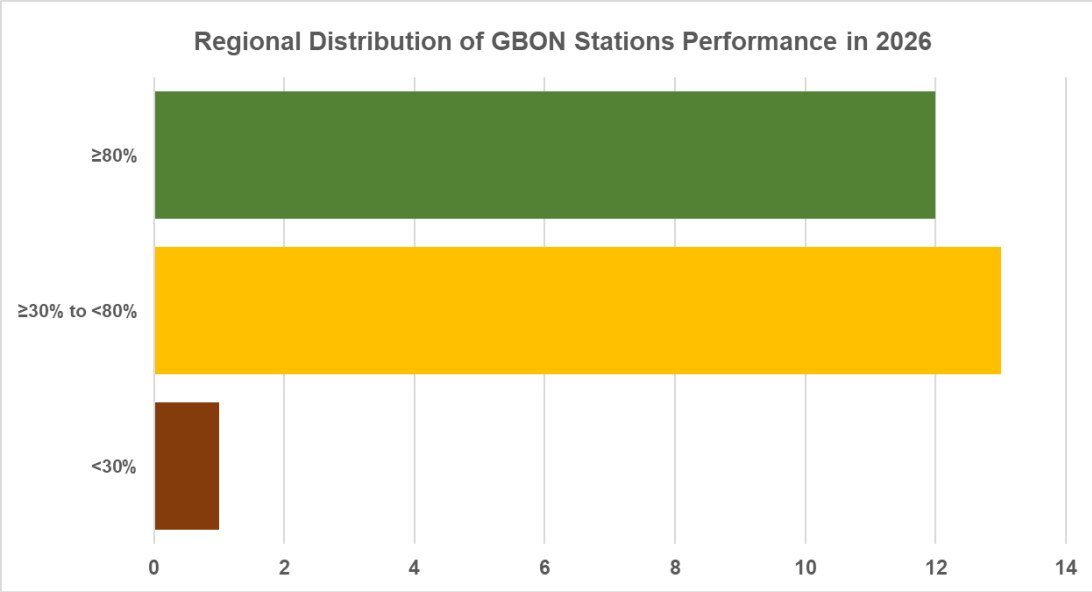


Figure 7. Regional distribution of GBON station performance in 2026 summarizing distribution of stations across the three data-availability categories: green: ≥80% availability, yellow: ≥30% but <80% availability and brown: <30% availability.

91. The Meeting is asked to recall that, in November 2025, only two of seven English-speaking Caribbean GBON upper-air stations (Barbados and Jamaica) were compliant with GBON requirements, exchanging observations twice daily. The Meeting is informed that, since August 2026, compliance has increased to five of the seven stations, with Belize, Trinidad and Tobago and St Maarten joining Jamaica and Barbados. The Cayman Islands and The Bahamas remain non-compliant. This represents an increase from 2 of 7 stations (28%) to 5 of 7 stations (71%) meeting GBON requirements.

92. The Meeting is asked to note that GBON remains an operational priority as reliable observations support forecasting and effective early warnings and is directly linked to funding from the Systematic Observation Funding Facility. Integration of automatic weather stations (AWS) with WIS 2.0 remains a viable and practical solution for closing GBON compliance gaps, particularly at stations where airports close overnight and personnel are unavailable to prepare and exchange observations.

93. NMHSs are encouraged to assess the feasibility of integrating existing or new AWS with WIS 2.0. Particular attention should also be given to stations with persistently low data availability, significant deterioration in performance, or disruptions caused by hurricanes and other high-impact events.

Systematic Observations Financing Facility (SOFF) Portfolio and Implementation Progress

94. The Meeting will recall DMS 2025 where it was reported that eight (8) of the eleven (11) CMO

Member States eligible for Systematic Observations Financing Facility (SOFF) funding were actively engaged in the Readiness Phase. The 2026 assessment indicates further progress, with eleven of the twelve Engish-speaking Caribbean countries assessed having achieved their Country Hydromet Diagnostics, National Gap Analysis and National Contribution Plan deliverables. Grenada remains on track to complete all three. These deliverables provide the foundation for identifying observing-systems gaps and planning investments to strengthen compliance with GBON.

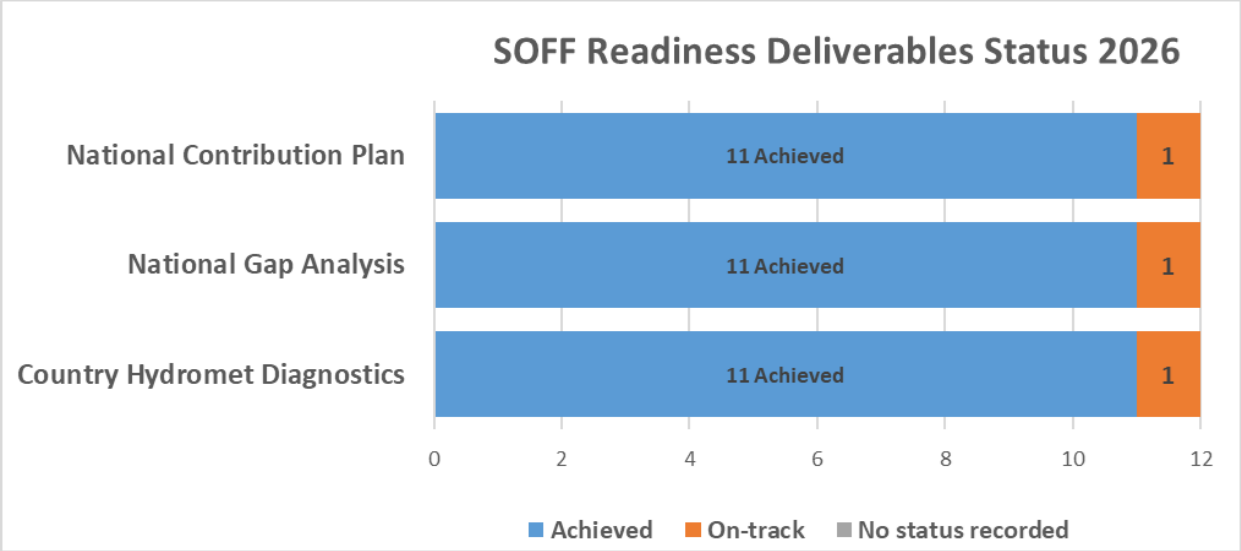


Figure 8. Status of SOFF readiness deliverables across 12 English-speaking Caribbean countries assessed, as at October 2026.

95. The country-level portfolio status presented in Figure 2 shows varying levels of progress among the Caribbean countries assessed. Belize and Guyana have already advanced to the Investment Phase, with Guyana's investment funding request approved at the 13th SOFF Steering Committee meeting in February 2026.

96. A key development in 2026 was the approval of Antigua and Barbuda's Investment funding request under Decision 15.3 by the 15th SOFF Steering Committee on 21 October. Before this decision, Jamaica was ranked third in the existing Investment Phase funding pipeline and remains among the pending requests following Antigua and Barbuda's approval. The Committee also agreed to add six further requests to the pipeline, including those from Dominica, Saint Lucia and Saint Vincent and the Grenadines. These three Eastern Caribbean countries are proposed for a coordinated multi-country approach to achieve economies of scale and harmonize technical implementation while retaining national ownership. Consideration of pending requests will depend on available resources and the SOFF prioritization process.

97. These decisions provide further momentum for strengthening the regional observing network. CMO Members are encouraged to address outstanding readiness requirements, sustain progress towards investment approval where applicable, and prioritize the long-term operation of observing systems and the international exchange of GBON observations.

Table 2. SOFF readiness deliverables and portfolio phase by country, October 2026

Country	Hydromet Diagnostics	National Gap Analysis	National Contribution Plan	SOFF Portfolio Phase (Oct 2026)	Investment Phase Progress Report
Antigua and Barbuda	Achieved	Achieved	Achieved	**Investment Phase – Funding request approved (Decision 15.3) October 2026**	
Barbados	Achieved	Achieved	Achieved 2026	Readiness Phase	
Belize	Achieved	Achieved	Achieved	**Investment Phase: September 2026 investment-phase progress recorded**	**Investment Phase initiated: First Investment Phase Progress Report**
Dominica	Achieved	Achieved	Achieved 2026	**Readiness Phase: Investment funding request added to pipeline under Decision 15.3**	
Grenada	On-track	On-track	On-track	Readines Phase	
Guyana	Achieved	Achieved	Achieved	**Investment Phase: Investment funding request approved at the 13th SOFF Steering Committee in February 2026**	
Jamaica	Achieved	Achieved	Achieved	**Readiness Phase : Investment Phase funding pipeline – Order 3 following the 14th Steering Committee**	
Saint Lucia	Achieved	Achieved	Achieved 2026	**Readiness Phase: Investment funding request added to pipeline under Decision 15.3**	
St Vincent and the Grenadines	Achieved	Achieved	Achieved 2026	**Readiness Phase: Investment funding request added to pipeline under Decision 15.3**	
St. Kitts and Nevis	Achieved	Achieved	Achieved	Readiness Phase	
Trinidad and Tobago	Achieved	Achieved	Achieved 2026	Readiness Phase	
Bahamas	Achieved	Achieved	Achieved	Readiness Phase	

Regional Basic Observing Network (RBON)

98. In February 2026, WMO advanced the design of the Regional Basic Observing Network (RBON) in WMO Regional Association IV (RA IV) through a workshop held in San José, Costa Rica, from 12–14 February, in collaboration with CMO Headquarters. The workshop mapped key regional challenges to WMO's Rolling Review of Requirements (RRR) Application Areas; identified and agreed on high-priority variables and observational requirements; discussed operational and emerging observing techniques; explored opportunities for performance monitoring, testing and improving available RBON guidance; and drafted the RA IV RBON implementation roadmap in collaboration with key stakeholders.

99. The workshop outcomes recommended a phased approach to RBON design in RA IV, with Phase I prioritizing hurricanes, tropical storms, and extreme temperatures and heatwaves, followed by flash and riverine floods, droughts and dry spells in Phase II. Participants agreed on a first draft of RBON requirements for Phase I and identified actions needed to finalize the requirements and implementation roadmap for consideration at the 20th Session of RA IV in 2027. Actions were also proposed to strengthen capacity development and raise Members' awareness of RBON.

100. Directors are encouraged to have their NMHSs participate actively in the forthcoming consultation, review the proposed requirements against national and regional observing needs, identify critical observational gaps, and prioritize sustainable improvements using existing infrastructure, complementary observing technologies and regional cooperation.

E. WIS 2.0 TRANSITION

Global Implementation and Developments

101. The Meeting is asked to recall that the transition to WMO Information System 2.0 (WIS 2.0) continued during 2026, with further developments in implementation, data access and technical guidance. The Meeting is informed that, in its WIS 2.0 Operational Newsletter No.3 - Implementation Progress Review, published in July 2026, WMO reported 116 operational WIS 2.0 nodes representing 92 Members, were operational as at 30 June 2026. This represented 48% of WMO Members having implemented WIS 2.0.

102. The reported implementation rate for WMO Regional Association IV (RA IV) Members that had implemented at least one (1) WIS 2.0 node was 77% (17 of 22 Members). Across RA IV there were 28 operational WIS 2.0 nodes, of which 18 (64.3%) were implemented by English-speaking Caribbean NMHSs, either integrated on the CMO Caribbean WIS2 or through standalone national nodes.

103. The Meeting is asked to note that WMO announced the availability of a standalone WIS2 Downloader in July 2026 and released the second edition of the WIS2 Cookbook (Version 1.1.0) in June 2026 along with WIS2box version 1.3.0, which incorporated software improvements, bug fixes and security updates.

104. The Downloader supports automated data-retrieval workflows, enabling NMHSs to retrieve data published through WIS 2.0 and integrate it into forecasting, climate and early warning workflows. It can therefore help Members establish the receiving-side arrangements needed to make effective operational use of WIS 2.0 data. The updated Cookbook provides additional implementation guidance for data publishers, including guidance on metadata and references to WIGOS stations and networks.

Progress in the transition from GTS to WIS 2.0 and TAC to BUFR

105. The Meeting is informed of WMO's introduction of enhanced transition-monitoring tools in the WMO WDQMS portal, which became available from January 2026. These tools track two distinct transitions: Global Telecommunication System (GTS) to WMO Information System 2.0 (WIS 2.0), showing whether observations are available through GTS, WIS 2.0 or both; and Traditional Alphanumeric Codes (TAC) to the Binary Universal Form for the Representation of meteorological data (BUFR), showing whether observations are reported in TAC, BUFR or both formats. This monitoring supports the transition to WIS 2.0 ahead of the planned decommissioning of GTS by 2033.

106. For CMO Members, these tools provide an opportunity to strengthen regional monitoring alongside existing data availability, timeliness and quality indicators. During migration, parallel reporting will be needed to maintain continuity. A station should not be considered fully transitioned solely because it appears on WIS 2.0. WMO require Members to verify that observations are published, correctly encoded, received by intended international users, and supported by complete and accurate metadata.

107. Any decision to discontinue existing GTS reporting arrangements or decommission related systems should follow **WMO Transition Guidance** and be coordinated with the WMO Secretariat and the relevant RTH or WIS centre, as applicable, to maintain continuity of international data exchange.

Caribbean WIS 2.0 Implementation

108. The CMO Headquarters Caribbean WIS 2.0 network continues to facilitate the publication and exchange of meteorological data and warnings from participating Members. The current status of data exchange within WIS 2.0 among CMO members and the wider English-speaking Caribbean indicates active participation. The majority of data exchanged falls under the WMO core data policy, with surface land weather data representing the largest share of data exchanged on WIS 2.0.

109. Following the regional WIS 2.0 training workshop hosted by the CMO and WMO in June 2026, participating Members continued work on publishing and retrieving additional meteorological datasets. The overview of the regional WIS 2.0 network (Table 2) indicates new publications across several data categories including SYNOP, METAR, CLIMAT, DAYCLI and CAP alerts, although the range of products varies among participating countries. Barbados has also begun integrating radar data through WIS 2.0, representing a further step in expanding regional data exchange.

110. The availability and operational use of these datasets are important considerations in assessing the extent to which WIS 2.0 transition is progressing national and regional levels.

Table 3. Progress in the Transition of Meteorological Data Publication to WIS 2.0 across English-speaking Caribbean, October 2026

No.	Member State / Territory	SYNOP	UPPER AIR	METAR	CLIMAT	DAYCLI	RADAR	CAP Alerts
1	Anguilla	✓		—	—	—		—
2	Antigua and Barbuda	✓		—	—	—		—
3	The Bahamas	✓	—	✓	✓	✓	—	—
4	Barbados	✓	✓	—	—	—	✓	—
5	Belize	✓	✓	—	—	—	—	—
6	British Virgin Islands	✓		—	—	—		—
7	Cayman Islands	✓		—	—	—	—	—
8	Dominica	✓		—	—	—		—
9	Grenada	✓		✓	—	—		—
10	Guyana	✓		—	—	—	—	—
11	Jamaica	✓	✓	✓	—	—	—	—
12	Montserrat	✓		—	—	—		—
13	Saint Kitts and Nevis	✓		✓	—	—		—
14	Saint Lucia	✓		✓	—	—	—	—
15	Saint Vincent and the Grenadines	✓		✓	—	—		—
16	Sint Maarten	✓	✓	✓	✓	—	—	—
17	Suriname	✓		—	—	—		—
18	Trinidad and Tobago	✓	✓	—	—	—	—	—
19	Turks and Caicos Islands	✓		✓	—	—		✓

111. The transition from the Global Telecommunication System (GTS) to WIS 2.0 must remain a key implementation priority for Caribbean Members. NMHSs must ensure the continued availability of operationally required information during transition. Testing of WIS2.0–to-GTS gateways is essential to maintain continuity and confirm that required data can be exchanged reliably.

112. Only Trinidad and Tobago and Belize have been engaged in GTS-to-WIS 2.0 gateway testing. The WMO-supported WIS 2.0 training workshop in June 2026 provided regional technical staff with practical exposure to data-ingestion and automation workflows, the WIS 2.0 Downloader, and the steps involved in transitioning from the GTS to WIS 2.0.

113. The next phase of implementation should place greater emphasis on the operational use of the system, including the retrieval of required datasets using the WIS 2.0 Downloader.

CMO Operational WIS 2 Node Execution Team (COWET)

114. The Meeting will recall that CMC 67 approved the establishment of the CMO Operational WIS 2-Node Execution Team (COWET), as a regional operational network of designated WIS 2.0-trained experts to support the operation, maintenance, troubleshooting and interoperability of the CMO Caribbean WIS 2.0 Network.

115. Meeting is informed that the first meeting of COWET was convened on 7 October 2026 to formalize the Team's operational role and advance arrangements for the sustainability of the Caribbean Regional WIS 2.0 Node. The meeting reviewed its Terms of Reference, mandate and proposed work programme, identifying priorities that included expanding the pool of regional technical expertise, strengthening arrangements for collective system monitoring, maintenance and troubleshooting, improving cybersecurity and data quality, and building technical capacity through practical training and knowledge-sharing.

116. The Team also reviewed the phased data-exchange programme, covering AWS observations, upper-air data, CAP messages and climate data under Phase 1, followed by IWXXM, aviation, radar and NWP products, as applicable, under Phase 2. Members volunteered to contribute to the expanded regional technical support pool, building on the experience of Belize and Trinidad and Tobago. The co-

leads were tasked with coordinating implementation of the work programme, guiding technical contributions and reporting on progress at subsequent meetings, with CMO Headquarters providing secretariat support.

Recommended Actions for CMO Member NMHSs

117. In light of these developments, CMO Member NMHSs are encouraged to:

- **Increase dataset publication, including** SYNOP, METAR, CLIMAT, DAYCLI, CAP messages, radar and other applicable observational and environmental information.
- **Strengthen operational use of WIS 2.0 through the use of the WIS 2.0 downloader to** retrieve and use of national, regional and global datasets in forecasting, climate services and early-warning operations.
- Participate in WMO's GTS-to-WIS 2.0 transition testing.

F. RADIO-FREQUENCY COORDINATION AND PREPARATIONS FOR WRC-27

118. The Meeting is advised that building on the work reported at DMS2025, CMO Headquarters continued to support regional preparations for the ***World Radiocommunication Conference 2027* (WRC-27)**, scheduled for 18 October to 12 November 2027 in Shanghai, China. WRC-27 will consider several matters that directly threaten meteorological and other earth observing systems and meteorological satellite data transmission that underpin the forecasting of tropical cyclones, heavy rainfall, marine hazards and other high-impact events affecting the Caribbean.

119. The meeting will recall that WMO published its preliminary position on the agenda of WRC-27. The draft recommendation submitted to INFCOM-4 proposes that this preliminary position be finalized for submission to the twentieth *World Meteorological Congress* (Cg-20). The proposed WMO position expresses serious concern about continuing threats to several radio-frequency bands allocated to meteorological aids, meteorological-satellite, Earth exploration-satellite and radiolocation services, arising from the growing spectrum requirements of other radiocommunication services.

120. These frequency bands are essential to the operation of meteorological observing systems, including radiosondes, weather radars and satellite-based observations. This highlights the importance of CMO Members NMHSs engaging their national telecommunications and spectrum-management authorities to ensure that the requirements of meteorological and hydrological services are adequately represented and that the **frequencies needed for reliable weather, climate and environmental observations remain protected**.

121. The Meeting is informed that in September 2026, WMO and the International Telecommunication Union (ITU) released the revised edition of the **Handbook on Use of Radio Spectrum for Meteorology: Weather, Climate, Water and Related Environmental Applications**. The handbook provides updated technical and operational guidance on protecting the frequencies used by meteorological observing systems, including weather radars, satellites and radiosonde from the risk of harmful interference that could compromise data quality, forecasting and early warning services. The handbook was officially launched during the opening of the Global ITU/WMO Seminar on Spectrum use for meteorology: challenges, opportunities and evolving requirements, held at the ITU headquarters in Geneva. The **Coordinating Director was invited to present** on efforts in the Caribbean to protect radio frequencies for meteorological applications. The global seminar was a unique opportunity to meet several key experts involved in WRC-27 preparation, to learn from their presentations, and to consult with allies on advocacy.

122. The handbook is especially timely as WMO and ITU prepare for WRC-27, where international spectrum-management decisions could affect meteorological and Earth-observation systems. WMO has specifically encouraged countries to bring their meteorological and radiocommunication communities closer together. CMO Headquarters has been actively engaged with the *Caribbean Telecommunications Union* (CTU) Spectrum Management Task Force, which comprises of national regulators.

123. Of particular concern are WRC-27 agenda items addressing potential interference to passive satellite observations, proposed International Mobile Telecommunications (IMT) use in bands important to meteorological satellite operations and **sea-surface temperature measurements**, and additional safeguards for passive sensing. **These threats to weather observations and meteorological satellite data transmission require the active involvement of NMHSs in national and regional preparations for WRC-27.**

124. WMO provided a customized briefing document (**Annex I**) for the Caribbean. All WMO National Focal Points for Radio Frequency Coordination were provided with a National Regulatory Authority (NRA) Engagement Kit (an excerpt is shown in **Annex II**), guiding the focal points on making initial contact with their NRA and on articulating the importance of protecting frequencies for earth observation and meteorological data transmission.

125. CMO Headquarters supported NMHS engagement with national telecommunications regulatory authorities. In August 2026, assistance was provided to the National Meteorological Service of Belize to strengthen engagement and advocacy with its national regulator ahead of the 13th Latin America Spectrum Management Conference, held in Costa Rica in September 2026. Later that same month, CMO Headquarters provided training to radio-frequency focal points from Barbados, Grenada, Guyana, and Trinidad and Tobago for engagement and advocacy with their National Regulatory Authorities.

126. Directors are encouraged to:

a) Ensure that you designate a National Focal Point for Radio Frequency matters and submit their name and contact to the CMO Headquarters and WMO Secretariat.

b) Register your meteorological equipment frequencies used by your NMHS so that they can be protected and licensed to operate on their respective frequencies

c) Ensure that your NMHS participates in national preparations for WRC-27 and provide vital observations and data transmission needs to national telecommunications regulatory authorities for consideration in relevant national positions;

d) Support the work of designated National Focal Points for Radio Frequency Matters, including participating in INFCOM-4 and briefing them on the relevant WMO spectrum-related documents;

e) Coordinate regional positions through the relevant national spectrum management authority involved with ITU Region 2 processes, taking account of the WMO and CMO positions on WRC-27 agenda items relevant to meteorology.

ANNEX I

WORLD METEOROLOGICAL ORGANIZATION

ADVOCACY BRIEF

Protecting the Spectrum Behind Caribbean Early Warnings

Caribbean regional edition | For National Radiocommunication Authorities and Policymakers | WMO · WRC-27 · 2026

This brief addresses the Caribbean region, where weather, climate and water hazards are monitored primarily from space and through radio-based systems. Satellite soundings, weather radar, radiosondes and data buoys feed the forecasts and multi-hazard early warnings that small island and low-lying coastal States rely on to anticipate tropical cyclones, storm surge, coastal flooding, heavy rainfall and drought. Every one of these systems needs protected, interference-free access to specific radio-frequency bands.

Several of those bands are contested at the World Radiocommunication Conference 2027 (WRC-27), in Shanghai, 18 October to 12 November 2027. **The decisions taken there will determine whether the Caribbean keeps the observations on which its warnings depend. Once a frequency band is lost to interference, it is extremely difficult and costly to recover.**

THE 2025 EVIDENCE: A REGION ON THE FRONT LINE

Cat 5

Hurricane Melissa – the first Category 5 hurricane on record to make landfall in Jamaica (28 Oct 2025)

41%

of Jamaica's GDP wiped out by Melissa: US$ 8.8 billion in damage from one storm

>60%

of the time clouds block infrared sea-surface temperature sensing – microwave bands from space are irreplaceable

4.5-5.5 mm/yr

sea-level rise across Central America & the Caribbean – faster than the 3.6 mm/yr global mean

WHAT THESE HAZARDS DEPEND ON

Caribbean hazard	What 2025 showed	The observing system — and the spectrum — it depends on
Tropical cyclones & rapid intensification	Melissa struck Jamaica with 298 km/h winds and 892 hPa – the equal-most intense Atlantic landfall on record. Its slow approach gave warning lead time, but rapid intensification to Category 5 challenged forecasting.	Microwave and infrared soundings from passive satellite sensors detect hurricane intensification before landfall, and the data must then reach forecasters. **AI 1.7** protects the MetSat/EESS satellite downlinks that distribute this data; **AI 1.1, 1.3, 1.8 and 1.18** protect the EESS (passive) sounding bands that take the measurement.
Warming seas	Record-high sea-surface temperatures in the Caribbean Sea and Gulf of Mexico, with the highest category of extreme marine heatwaves.	Sea-surface temperature is measured from space; with clouds blocking infrared >60% of the time, microwave SST bands (**AI 1.7, 1.19**) are irreplaceable.
Storm surge & coastal flooding	Sea level is rising faster than the global average (4.5-5.5 mm/yr at the coast vs 3.6 mm/yr globally), compounding surge and coastal-flood risk for every low-lying island State.	Satellite altimetry and the passive bands that calibrate it are the only way to track sea-level rise basin-wide and model surge.
Drought & water security	Severe water shortages affected parts of the Caribbean in 2025; in Cuba, drought drove water rationing that strained agriculture, infrastructure and power supply.	Drought monitoring relies on satellite precipitation, soil-moisture and vegetation products – including the 1.4 GHz soil-moisture band, where ground interference already degrades data.

THE THREAT AT WRC-27: PRIORITIES FOR THE CARIBBEAN

WMO has identified the WRC-27 agenda items below as directly affecting the meteorological and Earth-observation bands on which countries depend for weather forecasting, early warning services, and environmental monitoring. **Each carries a formal WMO technical position. Supporting them protects the region's ability to see hazards coming.**

WRC27 Agenda Item	What is at risk	Why it matters for the Caribbean — and the WMO position
AI 1.1 / 1.3	Satellite terminals on aircraft and ships (AI 1.1) and new NGSO gateway stations (AI 1.3) operating next to the passive bands used for atmospheric temperature profiling (50.2–50.4 and 52.6–54.25 GHz).	These soundings underpin the forecasts behind every Caribbean warning for windstorms, floods and severe weather. WMO does not oppose, provided the EESS (passive) bands are protected through appropriate emission limits.
AI 1.7	New 5G (IMT) identification in the 7 125–8 400 MHz range used for meteorological-satellite and Earth-observation data downlinks, overlapping the 7 075–7 250 MHz range used for sea-surface temperature.	**MAJOR concern**. **Threatens the global distribution of satellite data the region depends on, and the SST measurements used to track cyclone intensification**. WMO opposes IMT in the MetSat/EESS downlink bands (7 450–7 550, 7 750–7 900, 8 025–8 400 MHz) and the 7 125–7 250 MHz SST overlap.
AI 1.8	New radiolocation (vehicle and imaging radar) allocations in the 231.5–700 GHz range, overlapping or adjacent to passive bands that sense cloud ice, snowfall and water vapour.	These bands sharpen forecasts of deep convection and heavy rainfall that drive Caribbean flash floods. WMO opposes allocations in 250–252 GHz and 296–356 GHz and seeks strict emission limits elsewhere.
AI 1.18	Emission limits for active services next to passive sensing bands above 76 GHz (86–92, 114.25–116, 164–167 and 200–209 GHz).	These window bands detect precipitation, convection and flooding and anchor long climate records. WMO supports mandatory limits and urges action before widespread deployment makes protection impractical.
AI 1.19	New protection for the sea-surface temperature measurement bands at 4.2–4.4 and 8.4–8.5 GHz.	SST is central to Caribbean cyclone and marine forecasting yet has no formal protection today. WMO supports these new allocations and safeguards against adjacent mobile interference (linked to AI 1.7).

WHAT WE ASK OF NATIONAL ADMINISTRATIONS

1	**Adopt the WMO Preliminary Position.** Reflect it in your national WRC-27 position – in particular **support for AI 1.19** and **opposition to harmful IMT identification under AI 1.7**.
2	**Bring your NMHS to the table.** Include the National Meteorological and Hydrological Service in national WRC-27 consultations and delegations, especially on AI 1.1, 1.3, 1.7, 1.8, 1.18 and 1.19.
3	**Protect the systems already in service.** Verify that your NMHS's radars, radiosondes, satellite receivers and data platforms are licensed and, where applicable, recorded in the ITU Master International Frequency Register so they hold international protection – and act on interference reports.
4	**Speak with one regional voice.** Coordinate a common Caribbean position through the relevant regional and ITU Region 2 processes, so small island and coastal States are heard together on the spectrum behind their early warnings.

Sources: WMO State of the Climate in Latin America and the Caribbean 2025 (WMO-No. 1395); Preliminary WMO Position on the WRC-27 Agenda (ET-RFC, 2026); ITU/WMO Handbook on Use of Radio Spectrum for Meteorology (2026).

WORLD METEOROLOGICAL ORGANIZATION

NRA ENGAGEMENT KIT

Templates for engaging your National Regulatory Authority

Prepared for National Focal Points on Radio Frequency Matters | World Meteorological Organization (WMO) | 2026

What is in this kit?

This kit contains everything a National Focal Point for Radio Frequency matters (NFP-RF) needs to engage their National Regulatory Authority (NRA): three ready-to-use correspondence templates, two annexes to enclose with the letters, a WRC-27 agenda-item reference for drafting the cover note, and a fill-in RF systems inventory worksheet for your own records. The templates and annexes have placeholder fields marked in blue that you fill in before sending.

All templates are designed to be used as formal correspondence on your NMHS headed paper.

Kit contents

1 **Template 1** First contact letter to your NRA
- ↳ **Systems Annex** Meteorological systems and frequency bands (enclose with the letter)

2 **Template 2** Cover note for sharing the WMO Position Paper

3 **Template 3** Interference report to your NRA
- ↳ **Interference Annex** Report of harmful interference (enclose with the report)

R **Reference** WRC-27 agenda items relevant to NMHS operations (use when drafting Template 2)

W **Worksheet** RF Systems Inventory (fill-in, for your records)

Placeholder fields appear like this: **[Your name / NMHS name]**

Before using any template: read the 'How to use' box at the top of each template, fill in all blue placeholder fields, have the letter signed by the appropriate level of management (see each template for guidance) and print on your NMHS headed paper.

GENERAL GUIDANCE ON NRA ENGAGEMENT

1. **Start early and be consistent.** Building a productive relationship with your NRA takes time. Regular, predictable contact is more effective than occasional urgent requests.
2. **Involve senior management.** Letters signed by your NMHS Director or Permanent Representative to WMO carry significantly more weight than those signed by the NFP alone. Use Template 1 as a Director-level introduction.
3. **Lead with national relevance.** NRAs respond best to arguments framed in terms of national interests – public safety, disaster risk reduction, economic impacts of weather services – rather than abstract international obligations.
4. **Be specific about your systems.** Before engaging your NRA, compile an inventory of all systems your NMHS operates that use radio frequencies, with their frequency bands. Use the RF Systems Inventory worksheet at the end of this kit, whose rows are pre-filled from the Quick Reference table in the NFP-RF Starter Guide.
5. **Follow up systematically.** After every communication, follow up if you do not receive a response within a reasonable timeframe (typically 4–6 weeks for a formal letter). Keep a record of all correspondence.
6. **Use WMO resources.** You don't have to start from scratch. The WMO Position Paper on WRC-27 is your authoritative reference on each agenda item, and the NFP-RF Starter Guide points you to the full set of supporting resources and explains how to use each one.

TEMPLATE 1 · FIRST CONTACT LETTER TO YOUR NRA

Use when: you are making initial contact with your National Regulatory Authority for the first time, or re-establishing contact after a period without engagement.

How to use this template

- This letter should be signed by your NMHS Director or the most senior available official – not by the NFP-RF alone. A Director-level signature significantly increases the likelihood of a substantive response.
- Attach the systems annex (in this kit) as an enclosure, completed with the systems your service operates.
- Do not attach the full WMO Position Paper with this first letter – it is too long for an initial contact. Use Template 2 separately once engagement is established.
- Fill in all fields marked in blue before sending. Where your country does not use certain systems (for example, weather radars), adapt the relevant paragraph accordingly.
- After sending, follow up by telephone or email after 4 weeks if no response has been received.

[Name of NMHS Director / signatory]
[Title]
[National Meteorological and Hydrological Service (NMHS) / Organization name]
[Address]
[City, Country]
[Email │ Telephone]
[Date]

[Name of NRA Director / Head of Spectrum Management Division]
[Title]
[Name of National Regulatory Authority (NRA)]
[Address]
[City, Country]

Subject: Establishment of liaison on radiofrequency spectrum matters – World Radiocommunication Conference 2027 (WRC-27)

Dear **[Title and name of NRA Director]**,

I write to you in my capacity as Director of the **[NMHS name]**, the National Meteorological and Hydrological Service (NMHS) of **[Country]**, and as the Permanent Representative of **[Country]** with the World Meteorological Organization (WMO). I am pleased to establish formal contact with **[NRA name]** on matters related to the management of the radiofrequency spectrum, which is of critical operational importance to our Service.

The **[NMHS name]** operates a range of systems that depend on reliable, interference-free access to specific radiofrequency bands. These include **[list applicable systems from the following: weather radars / radiosonde stations for upper-air observations / meteorological satellite data reception systems / data collection platforms / lightning detection networks / space weather sensors]**. These systems form the backbone of our national weather forecasting, early warning and climate monitoring capabilities, directly contributing to the protection of lives and livelihoods across **[Country]**.

The radiofrequency spectrum on which these systems depend is under increasing pressure from competing commercial services, particularly mobile broadband and satellite communications. Safeguarding our access to essential frequency bands requires proactive engagement at both the national and international levels – and close collaboration between our two organizations.

In this context, I am writing to:

- Formally introduce the WMO National Focal Point for Radio Frequency matters (NFP-RF) at our Service, **[NFP name, title]**, who will serve as the primary point of contact with **[NRA name]** on spectrum matters. The NFP-RF role has been established by WMO across its membership to strengthen national engagement on radiofrequency issues and to ensure that meteorological requirements are properly reflected in regulatory decisions.
- Share, as an enclosure to this letter, a short summary of the meteorological systems we operate and the frequency bands they depend on. It provides an overview of the systems and frequency bands that are of primary operational importance to our Service.

- Request an initial meeting with the relevant spectrum management officials at **[NRA name]** at a time of your convenience. The purpose of the meeting would be to: introduce our key spectrum requirements; discuss the current licensing and registration status of our systems; and explore how our two organizations can best cooperate ahead of the World Radiocommunication Conference 2027 (WRC-27), which will take place 18 October – 12 November 2027 in Shanghai, China.

WMO plays an important role in representing the spectrum requirements of the global meteorological community at the international level, including through the submission of formal positions to WRC-27 on agenda items that directly affect meteorological and environmental observing systems. Our Service's engagement with **[NRA name]** is a key link in ensuring that these international positions are reflected in **[Country]**'s national delegation position at WRC-27.

I look forward to the establishment of a productive working relationship between our organizations. Please do not hesitate to contact **[NFP name]** at **[NFP email / telephone]** to arrange an initial meeting or to request any additional information.

Yours sincerely,

[Name of Director / Signatory]
[Title]
[NMHS name]

Enclosure: Annex – National meteorological systems and frequency bands

ANNEX · NATIONAL METEOROLOGICAL SYSTEMS AND FREQUENCY BANDS

A short summary of the systems your service operates and the bands they use — enclose it with your first-contact letter (Template 1).

The table below summarizes the main systems operated by **[NMHS name]** that depend on radiofrequency spectrum. These systems operate in frequency bands allocated to meteorological services under the ITU Radio Regulations.

System	Frequency band	Purpose
[System name, e.g. C-band weather radar network]	**[e.g. 5600–5650 MHz]**	**[e.g. Precipitation monitoring, flood detection, severe weather warnings]**
[System name]	**[Frequency band]**	**[Purpose]**
[System name]	**[Frequency band]**	**[Purpose]**
[System name]	**[Frequency band]**	**[Purpose]**

► *Complete this table with the systems actually operated by your NMHS. This is a short, outward-facing summary. Use the Quick Reference table in the NFP-RF Starter Guide to identify the relevant frequency bands.*

TEMPLATE 2 · COVER NOTE FOR SHARING THE WMO POSITION PAPER

Use when: formally transmitting the WMO Preliminary Position on WRC-27 Agenda Items to your NRA, with a targeted summary of the items most relevant to your country.

How to use this template

- This letter can be signed at Director or NFP level, depending on the relationship already established with the NRA.
- Attach the current WMO Preliminary Position on WRC-27 Agenda Items as the main enclosure.
- Section **[B]** of the letter requires you to select and describe the WRC-27 agenda items most relevant to your country. Do not list all agenda items – focus on key items that directly affect systems your NMHS operates or rely on.
- Send this letter as soon as possible – national WRC-27 positions are being formed now (2026). The earlier your NRA receives this, the more influence it can have.
- Follow up with a request to be included in any national coordination meetings on WRC-27 preparation.

[Name and title of signatory]
[NMHS name and address]
[Date]

[Name and title of NRA contact]
[NRA name and address]

Subject: WMO Preliminary Position on WRC-27 Agenda Items – Transmission and Request for Consideration in National WRC-27 Preparations

Dear **[Title and name]**,

I write further to our **[ongoing liaison / meeting of [date]** / initial contact of **[date]**], to formally transmit the enclosed World Meteorological Organization (WMO) Preliminary Position on WRC-27 Agenda Items and to request that it be taken into consideration in **[Country]**'s national preparations for the World Radiocommunication Conference 2027 (WRC-27), scheduled to take place 18 October – 12 November 2027 in Shanghai, China.

The WMO Position Paper is developed by WMO's Expert Team on Radio Frequency Coordination (ET-RFC) and sets out the technical and regulatory positions of the international meteorological community on each WRC-27 agenda item that affects weather, climate, water and related environmental observing systems. The document is submitted formally to relevant ITU-R Study Group meetings and will be presented as an official WMO contribution at WRC-27 itself.

The WMO Position Paper addresses all WRC-27 agenda items that are of significance to the global meteorological community and should be considered as a whole. However, to facilitate national review, I would like to draw your attention to several agenda items that are of particular relevance to the systems operated by **[NMHS name]** and to the meteorological services provided in **[Country]**:

> **Agenda Item [number, e.g. 1.7] – [Short title, e.g. IMT identification in 4.4–4.8 GHz / 7.125–8.4 GHz / 14.8–15.35 GHz]**
> *This agenda item proposes **[brief description of what is proposed, e.g. new IMT/5G identification in these frequency bands]**. This directly affects **[specific system(s) operated by your NMHS, e.g. our meteorological satellite data reception stations]**. **[One sentence on the operational impact, e.g. Identification of IMT in these bands would risk interference to the satellite data feeds on which our national numerical weather prediction relies.]** WMO's position on this item is **[brief summary, e.g. to oppose IMT identification in specific critical sub-bands while remaining open to solutions that ensure full protection of meteorological operations]**.*

► *Repeat the above block for each relevant agenda item. Limit to several items for clarity. See the WRC-27 Agenda Items reference in this kit for the proposal, threat and WMO position on each item.*

We consider alignment between **[Country]**'s national position and the WMO position to be important for the protection of our national meteorological infrastructure and, by extension, for the quality and reliability of the weather, climate and early warning services we provide to **[Country]**'s population and economy.

We would welcome the opportunity to discuss these items further and to provide any additional technical information that may be helpful. We also respectfully request to be informed of and, where possible, included in any national consultations or working group meetings being convened in preparation for WRC-27.

The WMO Position Paper is attached to this letter. For any technical questions, please do not hesitate to contact **[NFP name]** at **[NFP email]**.

Yours sincerely,

[Name and title of signatory]
[NMHS name]

Enclosure: WMO Preliminary Position on WRC-27 Agenda

TEMPLATE 3 · RADIO FREQUENCY INTERFERENCE REPORT TO YOUR NRA

Use when: you have detected harmful interference affecting a meteorological system and need to report it formally to your NRA so that it can act, as the administration of your country, under the harmful-interference procedure of the ITU Radio Regulations (Article 15, Section VI). The technical particulars are recorded on the official reporting forms, attached as the annex (Appendix 10).

How to use this template

- Before using this template, check whether your NRA has established a national procedure, reporting format, or online system for reporting harmful interference. Where such a mechanism exists, it should normally be used in accordance with national requirements. This template is intended primarily for cases where no specific national reporting format is available, or as a cover letter accompanying the required national forms.
- This letter gives your NRA the particulars it needs to act, as the administration of your country, under the procedure for harmful interference in the Radio Regulations (RR Article 15, Section VI). Under RR No. 15.27 those particulars should, whenever possible, be given on the Appendix 10 form (Report of harmful interference), reproduced as the annex.
- Complete the annex (Appendix 10 form) as fully as possible – the note to Appendix 10 requires that sufficient information be provided to allow an appropriate investigation to be conducted. The body of the letter need only summarize the case; the detailed particulars belong in the annex.
- Attach supporting evidence: radar screenshots showing the interference pattern, spectrum captures or signal-analysis outputs, system logs, and geolocation data.
- Keep a copy of every interference report submitted. Where the interference is recurrent, a log of multiple events strengthens the case for action. Follow up with your NRA after 4 weeks if no acknowledgement has been received.

[NFP-RF name and title]
[NMHS name]
[Address]
[Email | Telephone]
[Date of report]

[Name and title of NRA spectrum management contact]
[NRA name and address]

Subject: Report of harmful radio frequency interference affecting a meteorological system – request for action under Article 15 (Section VI) of the ITU Radio Regulations

Dear **[Title and name]**,

I write to report a case of harmful radio frequency interference (RFI) affecting a meteorological system operated by **[NMHS name]**, and to request that **[NRA name]**, as the administration of **[Country]**, take the appropriate action under the procedure for harmful interference set out in Article 15, Section VI, of the ITU Radio Regulations (RR). The interference is seriously degrading the operation of the affected system and, if unresolved, risks impairing our ability to **[detect severe weather / issue early warnings / provide accurate upper-air measurements – adapt as appropriate]**.

In summary, the interference affects **[system type, e.g. our C-band weather radar at [station name]]** operating **[in the band / at the frequency]**, and has been observed **[on date(s), at time(s) (UTC), for duration]**. It manifests as **[brief description of the operational impact, e.g. degraded radar imagery in the [azimuth]** sector / erroneous radiosonde data above **[altitude]]**. **[Where known, the source is suspected to be [type and approximate location]**.]

The full particulars of the interference are set out in the annex to this letter, presented on the Appendix 10 form (Report of harmful interference) in accordance with RR No. 15.27. Supporting evidence is enclosed and listed at the end of this letter.

We respectfully request that **[NRA name]** investigate this matter and take the necessary steps to identify the source of the interference and to ensure that it is eliminated, in accordance with national spectrum regulations and the Radio Regulations. Specifically, we request that **[NRA name]**, as the administration of **[Country]**:

- Acknowledge receipt of this report and confirm that an investigation has been opened.

- Investigate the matter and identify the source of the interference, and take the action necessary under national regulations and the Radio Regulations to ensure that the harmful interference is eliminated.
- Where resolution requires action beyond national borders – for example a foreign terrestrial source or a space-based emission – pursue the matter through the relevant procedures of the Radio Regulations, including international coordination and, where appropriate, the assistance of the Radiocommunication Bureau.
- Keep **[NMHS name]** informed of the progress and outcome of the investigation.

The affected meteorological system is licensed under **[licence reference]** and **[is / is not]** recorded in the ITU Master International Frequency Register (MIFR). It operates in conformity with the relevant provisions of the Radio Regulations and the national frequency allocations, and is therefore entitled to protection from harmful interference under those provisions.

We remain available to provide any further technical information that may assist the investigation. Please direct any queries to **[NFP name]** at **[NFP email / telephone]**.

Yours sincerely,

[Name and title of signatory]
[NMHS name]

Enclosure: Annex – Report of harmful interference (ITU Radio Regulations, Appendix 10).

*Enclosures: **[List attached evidence – radar imagery, spectrum captures, signal-analysis output, system logs, geolocation data and so forth]***

ANNEX · REPORT OF HARMFUL INTERFERENCE

ITU Radio Regulations, Appendix 10 (Rev.WRC-07) · see Article 15, Section VI

This annex reproduces the Appendix 10 reporting form. Provide information against every field for which data is available; under the note to Appendix 10, sufficient information must be given to allow an appropriate investigation to be conducted. For a meteorological receiver, the affected system is recorded under "the transmitting station interfered with" and "the receiving station experiencing the interference".

Particulars concerning the station causing the interference

(a) Name, call sign or other means of identification	**[Enter value]**
(b) Frequency measured (state date and time, UTC)	**[Enter value]**
(c) Class of emission	**[Enter value]**
(d) Bandwidth (state whether measured or estimated)	**[Enter value]**
(e) Measured field strength or power flux-density (state date and time, UTC)	**[Enter value]**
(f) Observed polarization	**[Enter value]**
(g) Class of station and nature of service	**[Enter value]**
(h) Location / position / area / bearing (QTE)	**[Enter value]**
(i) Location of the facility which made the above measurements	**[Enter value]**

Particulars concerning the transmitting station interfered with

(j) Name, call sign or other means of identification	**[Enter value]**
(k) Frequency assigned	**[Enter value]**
(l) Frequency measured (state date and time, UTC)	**[Enter value]**
(m) Class of emission	**[Enter value]**
(n) Bandwidth (measured or estimated, or the necessary bandwidth notified to the Radiocommunication Bureau)	**[Enter value]**
(o) Location / position / area	**[Enter value]**
(p) Location of the facility which made the above measurements	**[Enter value]**

Particulars furnished by the receiving station experiencing the interference

(q) Name of station	**[Enter value]**
(r) Location / position / area	**[Enter value]**

(s) Dates and times (UTC) of occurrence of harmful interference	**[Enter value]**
(t) Bearings (QTE) or other particulars	**[Enter value]**
(u) Nature of interference	**[Enter value]**
(v) Field strength or power flux-density of the wanted emission at the receiving station (state date and time, UTC)	**[Enter value]**
(w) Polarization of the receiving antenna or observed polarization	**[Enter value]**
(x) Action requested	**[Enter value]**

Note – For convenience and brevity, telegraphic reports may use the letters above in place of the explanatory titles, including only those letters for which information is provided. Sufficient information must nonetheless be provided to the administration receiving the report so that an appropriate investigation can be conducted.

REFERENCE · WRC-27 AGENDA ITEMS RELEVANT TO NMHS OPERATIONS

A reference for selecting and wording the agenda items most relevant to your country when you draft the Template 2 cover note — you use it to prepare the note.

Use this reference to identify the WRC-27 agenda items relevant to your service and to find wording you can adapt when completing the cover note (Template 2). For each item, the examples illustrate two kinds of stake your service may have: a system your NMHS directly operates (for example a MetSat reception station threatened by AI 1.7), or a shared global observing system your service depends on for forecasting data even without operating it directly (for example SST measurements for AI 1.19, temperature sounding for AI 1.1/1.3). Pick the items that apply to you and adapt the example text to your national situation.

Agenda item	Our systems affected	Our national ask
AI 1.1 ESIMs in 47.2–50.2 / 50.4–51.4 GHz – atmospheric temperature profiling (50.2–50.4 GHz passive band)	*e.g. **[NMHS name]** depends on atmospheric temperature sounding products derived from the 50.2–50.4 GHz passive band (e.g. from AMSU-A, ATMS, MWS on MetOp-SG) as essential inputs to numerical weather prediction. These are global shared observing systems – protecting their frequency bands is a collective responsibility of all WMO Members.*	*We ask that your delegation support adequate emission limits for ESIMs operating adjacent to the 50.2–50.4 GHz passive band, consistent with the WMO position on AI 1.1.*
AI 1.3 NGSO FSS gateways in 51.4–52.4 GHz – temperature/humidity profiling (52.6–54.25 GHz passive band)	*e.g. **[NMHS name]** depends on atmospheric temperature and humidity sounding products derived from the 52.6–54.25 GHz passive band as essential NWP inputs. These products are provided by global shared satellite systems – degradation of their frequency bands affects every NMHS that uses their data.*	*We ask that your delegation support mandatory NGSO emission limits to protect the 52.6–54.25 GHz passive band, consistent with the WMO position on AI 1.3.*
AI 1.4 FSS/BSS downlinks in 17.3–17.8 GHz – protect adjacent EESS (active) at 17.2–17.3 GHz	*e.g. **[NMHS name]** depends on high-resolution surface, flood and snow-mass products from spaceborne synthetic aperture radar (EESS active) planned for the adjacent 17.2–17.3 GHz band. This is a shared global observing system – protecting its band is a collective responsibility of all WMO Members.*	*We ask that your delegation support protection of the EESS (active) in the adjacent 17.2–17.3 GHz band when new FSS/BSS downlink allocations are made in 17.3–17.8 GHz, consistent with the WMO position on AI 1.4.*
AI 1.7 IMT/5G in 4.4–4.8 / 7.125–8.4 / 14.8–15.35 GHz – MetSat downlinks and SST measurements	*e.g. MetSat/EESS data reception ground station operated by **[NMHS name]** receiving downlinks at 7450–7550 MHz (GSO MetSats), 7750–7900 MHz (NGSO MetSats) or 8025–8400 MHz (EESS). Interference in these bands would cut off access to satellite imagery and environmental data that cannot be replaced by any other source.*	*We ask that your delegation oppose IMT identification in 7450–7550 MHz, 7750–7900 MHz and 8025–8400 MHz. WMO also does not support IMT identification in 7125–7250 MHz, to protect sea surface temperature (SST) measurements made in the overlapping 7075–7250 MHz range – consistent with the WMO position on AI 1.7.*
AI 1.8 Radiolocation in 231.5–700 GHz – passive sensors for cloud ice, snowfall, severe weather	*e.g. **[NMHS name]** depends on cloud ice, snowfall and severe convection products derived from passive sensors above 230 GHz (e.g. MetOp-SG-B ICI, EPS-Sterna) as inputs to weather forecasting and climate monitoring. These are shared global observing systems – protecting their frequency bands is a collective responsibility of all WMO Members.*	*We ask that your delegation oppose new radiolocation allocations in bands overlapping EESS (passive) sensors above 230 GHz, consistent with the WMO position on AI 1.8.*
AI 1.11 Space-to-space MSS links in 1518–1675 MHz – protect MetSat (1675–1710 MHz) and radiosondes (1668.4–1700 MHz)	*e.g. **[NMHS name]** operates radiosonde (MetAids) stations in 1668.4–1700 MHz and/or receives meteorological-satellite data in the adjacent 1675–1710 MHz band. New space-to-space MSS links in 1670–1675 MHz could degrade these operations.*	*We ask that your delegation ensure that space-to-space MSS provisions in the 1518–1675 MHz range have no negative impact on MetSat operations in 1675–1710 MHz or radiosonde (MetAids) operations in 1668.4–1700 MHz, consistent with the WMO position on AI 1.11.*
AI 1.12 Low-data-rate MSS in 1427–2025 MHz – protect EESS (passive) at 1400–1427 MHz and EESS/SOS TT&C at 2025–2110 MHz	*e.g. **[NMHS name]** depends on soil-moisture, sea-surface-salinity and vegetation products from EESS (passive) measurements in the protected 1400–1427 MHz band, and on satellite command-and-control (TT&C) links in 2025–2110 MHz. These are shared global systems – degradation of their bands affects every NMHS that uses their data.*	*We ask that your delegation support mandatory MSS unwanted-emission limits to protect EESS (passive) in 1400–1427 MHz (RR No. 5.340) and ensure no impact on EESS/SOS operations in 2025–2110 MHz, consistent with the WMO position on AI 1.12.*
AI 1.13 MSS direct-to-device (satellite-to-phone) in 694–2700 MHz – protect adjacent meteorological bands	*e.g. **[NMHS name]** operates meteorological radars in 2700–2900 MHz and/or depends on EESS (passive) at 1400–1427 MHz, MetSat downlinks at 1675–1710 MHz and satellite TT&C at 2025–2110 MHz. Satellite direct-to-device services in adjacent IMT bands could interfere with these systems.*	*We ask that your delegation ensure that new MSS direct-to-device allocations cause no negative impact on EESS (passive) 1400–1427 MHz, MetSat 1675–1710 MHz, EESS/SOS 2025–2110 MHz, or meteorological radars 2700–2900 MHz, consistent with the WMO position on AI 1.13.*
AI 1.14 Additional MSS allocations in 2010–2170 MHz – protect EESS/MetSat TT&C at 2025–2110 MHz	*e.g. **[NMHS name]** depends on satellite command-and-control (TT&C) links in 2025–2110 MHz used to operate the meteorological and Earth-observation satellites that supply national weather and climate data. New MSS use of the adjacent 2010–2025 MHz band could interfere with these links.*	*We ask that your delegation ensure that any additional MSS allocation in 2010–2025 MHz does not impact EESS/MetSat operations in the adjacent 2025–2110 MHz band, consistent with the WMO position on AI 1.14.*
AI 1.17 Space weather sensors in 27.5–614 MHz – no current regulatory protection for receive-only sensors	*e.g. Space weather sensor (e.g. riometer, solar flux monitor) operated by **[NMHS name]** in one or more of the six bands listed under AI 1.17 as part of the WMO global monitoring network. If no such sensor is operated nationally: **[NMHS name]** depends on space weather warnings that rely on these globally distributed receive-only sensors to protect GNSS, aviation and satellite operations.*	*We ask that your delegation support new primary MetAids (space weather) allocations for receive-only sensors in the six bands listed under AI 1.17, consistent with the WMO position.*
AI 1.18 EESS (passive) protection above 86 GHz – hail, deep convection, flood detection sensors	*e.g. **[NMHS name]** depends on precipitation, hail and severe convection products derived from passive sensors in the 86–92, 114.25–116, 164–167 and 200–209 GHz bands (e.g. GMI, ATMS, MWS, MWI) as inputs to numerical weather prediction and early*	*We ask that your delegation support mandatory emission limits in Resolution 750 for active services adjacent to the EESS (passive) bands listed under AI 1.18, consistent with the WMO position.*

Agenda item	Our systems affected	Our national ask
	warning. These are shared global systems – degradation of their bands affects every NMHS that uses their data.	
AI 1.19 New EESS (passive) allocations at 4.2–4.4 / 8.4–8.5 GHz – SST measurements (linked to AI 1.7)	*e.g. **[NMHS name]** does not operate passive SST sensors directly but depends on SST satellite products (e.g. from SMOS, SMAP, AMSR) as essential inputs to weather forecasting, hurricane/cyclone prediction and climate monitoring. These products are derived from the 6425–7250 MHz band, currently unprotected under RR No. 5.458. Loss or degradation of SST measurements would affect all NMHSs that use them – protecting this band is a collective responsibility.*	*We ask that your delegation support new primary EESS (passive) allocations at 4.2–4.4 and 8.4–8.5 GHz and mandatory provisions against adjacent IMT potential deployment, consistent with the WMO position on AI 1.19.*
AI 7 Satellite regulatory procedures (standing item) – filing, coordination and notification of satellite networks	*e.g. **[NMHS name]** depends on MetSat and EESS satellite systems whose ITU frequency filings must remain workable, and on the "all emissions prohibited" protection (RR No. 5.340) for passive sensing bands. Changes to satellite filing and coordination procedures could affect these.*	*We ask that your delegation ensure that changes to satellite regulatory procedures impose no undue constraints on MetSat/EESS filings and preserve the RR No. 5.340 protection of passive bands, consistent with the WMO position on AI 7.*
AI 10 Preliminary agenda for WRC-31 (standing item) – which spectrum topics advance to the next conference	*e.g. **[NMHS name]**'s future observing capability depends on which topics enter the WRC-31 agenda – including possible new EESS (passive) allocations and protections, and proposed IMT identifications in bands adjacent to passive sensing.*	*We ask that your delegation support WRC-31 preliminary agenda items that protect and extend meteorological and EESS (passive) spectrum, and scrutinise those that could threaten it, consistent with the WMO position on AI 10.*