International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

NACC/WG/RAP/03 — WP/16
24/03/25

Third Meeting of Rapporteurs of the North American, Central American and Caribbean Working Group (NACC/WG/RAP/03)
(ICAO NACC Regional Office, from 24 to 27 March 2025)

Agenda Item 3: Update NAM/CAR regional needs and NACC/WG objectives, its structure and the review and reporting mechanisms (Dashboard)

WORK PROGRAM AND PRIORITIES OF THE AERONAUTICAL METEOROLOGY AREA

(Presented by MET/TF Rapporteur)

EXECUTIVE SUMMARY

WP/16 presents the update of the needs and objectives of the MET/TF, addressing the progress in its 2023-2025 work program and the priorities for 2026. The results obtained thanks to the collaborative work between the Contracting States members of the MET/TF, the SAM and NACC Regional Offices and various organizations such as the World Meteorological Organization (WMO) Regional Association IV, the International Air Transport Association (IATA), among others, for the implementation of the SARPs of ICAO Annex 3, are highlighted.

Action:	As enunciated in numeral 4
Strategic Objectives:	• Safety • Air Navigation Capacity and Efficiency
References:	• First Meeting of the Meteorology (MET) Task Force (TF) of the North American, Central American and Caribbean (NACC/WG) Working Group (MET/TF/01) March 2023. • Second Meeting of the Meteorology (MET) Task Force (TF) of the North American, Central American and Caribbean (NACC/WG) Working Group (MET/TF/02) March 2024.

1. Introduction

1.1 The Secretariat continues to collaborate with MET/TF member States and various entities to implement the Standards and Recommended Practices (SARPs) of Annex 3 – Meteorological Service for International Air Navigation. To enhance this effort, the MET/TF is actively promoting collaborative work among:

- ICAO's NACC and SAM Regional Offices,
- the World Meteorological Organization (WMO) Regional Association IV (RA-IV) Aviation Services Expert Team (ET-AVI),

- Meteorological Authorities and MET service providers,
- Civil Aviation Authorities' ANS/MET inspectors,
- the International Air Transport Association (IATA)

1.2 The WMO RA-IV ET-AVI has been conducting significant collaborative work with the MET/TF. The results and key activities are disseminated through newsletters, available in both English and Spanish, to provide a detailed overview of the group's progress and achievements. To date, the following editions have been published: No. 1: January 2023, No. 2: August 2023, No. 3: February 2024, and No. 4: August 2024. Additionally, MET/TF members have served as speakers and participants in five webinars and workshops covering a wide range of critical topics for the MET/TF 2023-2025 work program. These topics include operational best practices in forecasting and monitoring, cost recovery, and the implementation of quality management systems (QMS). Special emphasis has been placed on the continuous improvement of aviation services, addressing both technical and management aspects, and promoting the exchange of knowledge and experiences among professionals in the regions. For more information, please visit the website:

RA IV Expert Team on Services for Aviation | World Meteorological Organization

1.3 The 2023-2025 work program has progressed significantly due to the aforementioned effective collaboration, resulting in the completion of several essential activities. Nevertheless, the need to expand technical assistance to the States has been identified, which will be addressed by including additional assistance activities in the 2025-2026 work program. For further details on the progress of the MET/TF 2023-2025 work program, please refer to **Appendix A.**

1.4 A significant achievement is the formulation of the project "Harmonized and Integrated Framework for Operational Safety Oversight and Quality Management, with Verification of Basic Building Blocks for ICAO Annex 3 Meteorological Services in the NAM/CAR Region" designed to strengthen States' capabilities in safety oversight (SO) and quality management (QM) in aeronautical meteorology (QMS MET). The project, positively conceptualized in its preliminary stage by Cuba, and with valuable contributions from the work conducted by Costa Rica, is part of the Multi-Regional Civil Aviation Assistance Program (MCAAP) and is currently under review by the Eighth Meeting of the RLA09801 Project Evaluation Commission (MCAAP/PEC/8) of Project RLA09801. **Appendix B** presents the project details.

1.5 In accordance with **Decision NACC/WG/09/06** – PRIORITIES OF THE MET/TF 2025 WORK PROGRAM, the following priorities guide the 2025-2026 MET/TF work program:

a) Continuation of the verification process of Basic Building Blocks (BBBs) for ICAO Annex 3 Meteorological Services in the NAM/CAR region, based on collaboration between Civil Aviation Authorities (CAAs), Meteorological Authorities, and Meteorological Service Providers.
b) Implementation of a quality management system in MET processes (QMS MET) that includes: qualifications, competencies, education, and training of meteorological personnel; evaluation of the operational accuracy of measurements or observations and forecasts, among other quality control and assurance processes.
c) Exchange of meteorological information related to operations under IWXXM.
d) Provision of harmonized Significant Meteorological Information (SIGMET).
e) Conducting a workshop on severe weather phenomena and aviation from June 23 to 27, 2025, in collaboration with the SAM RO and WMO RA-IV.

f) Organizing the NAM CAR SAM Workshop on Amendment 82 to ICAO Annex 3 (August 26-28, 2025), addressing the implementation of ICAO Doc. 10157, Procedures for Air Navigation Services (PANS-MET).

2. Analysis and Discussion

2.1 The verification of MET BBBs faces challenges in its implementation by the States, as outlined in the project in **Appendix B** (See also **Conclusion E/CAR/CATG/7/02**, paragraph a)). This framework, which incorporates the BBB structure, GANP and eANP guidelines, national regulations, and quality surveillance and control processes, along with a regional dashboard, aims to facilitate periodic verification and improve collaboration between CAAs, MET Authorities, and MET Service Providers. It is expected that the aforementioned project will enhance the verification, similarly, based on the Secretariat's efforts to enhance the GREPECAS dashboard through iSTARs4.0, it is expected that the notification, monitoring, and implementation tracking will be enabled.

2.2 The Steering Committee of the RLA09801 MCAAP Project had approved the SIGMET Improvement Workshop to increase the availability and quality of messages in NAM CAR States. In this regard, the ICAO NACC Regional Office developed the SIGMET Workshop Part 1 (SIGMET/Workshop/P1) – Analysis and Forecasting Techniques, in Mexico City, Mexico, from May 29 to June 2, 2023. Part 2 of the workshop (SIGMET/Workshop/P2) was developed in cooperation with WMO RA-IV in San José, Costa Rica, from November 27 to December 1, 2023, to provide training to aeronautical meteorology personnel on best practices for SIGMET and TAF production and aviation hazard forecasting.

2.3 Regarding **Conclusion NACC/WG/09/05** IMPLEMENTATION OF OPMET EXCHANGE UNDER IWXXM, the MET/TF recognizes the urgency to accelerate the implementation of OPMET exchange under IWXXM. The MET/TF will follow up on the ongoing analysis by the Communications Working Group (COMM/TF). This analysis will consider the capabilities of the File Transfer Body Part (FTBP) of Aeronautical Message Handling Systems (AMHS) and the States' readiness to generate IWXXM at the source. The results, which will include the identification of best-practices and the evaluation of alternatives such as the conversion of reports in Traditional Alphanumeric Code (TAC), will be presented for consideration at the next MET/TF/3 or NACC/WG/10 meeting.

2.4 Regarding **Conclusion NACC/WG/09/10** CAR REGION PROJECTS AND ACTIVITIES IN GREPECAS, WP/21 will present more information; however, it should be noted that GREPECAS/22 was informed about the closure of MET projects, following the completion of the required documentation for the implementation of meteorological requirements. Nevertheless, the need to follow up on these implementations through the secretariat was emphasized, given that GREPECAS does not have resources for project management. GREPECAS/22 also highlighted the importance of strengthening the implementation of QMS MET, OPMET exchange under IWXXM format, and harmonized SIGMET provision. Likewise, the importance of continuing to disseminate information on changes in information produced by the World Area Forecast System (WAFS), implemented in November 2024, and the evolution of quantitative volcanic ash information (QVA), scheduled for November 2025, depending on the development of technical capabilities of Volcanic Ash Advisory Centers (VAAC), was underscored.

2.5 The **NACC/WG/9**, when discussing the implementation activities of the Surveillance Task Force (SURV/TF), discussed the limited availability of upper air weather data in Latin America and the need to establish Aircraft-Based Observations (ABO) sources as a priority. It was discussed that ADS-B can

improve the accuracy of meteorological observations and forecasts, especially in areas with limited traditional meteorological observation coverage. The integration of potential ADS-B meteorological data into numerical weather prediction models and other meteorological applications can significantly enhance diagnostic and forecasting capabilities, enabling greater accuracy and timeliness, and contributing to safer and more efficient operations. The MET/TF remains attentive to any considerations the SURV/TF may provide.

2.6 The Secretariat participated in the WMO regional workshop on Aircraft-Based Meteorological Observations (ABO) for the Americas, held in Panama City, Panama, from December 10 to 12, 2024. The follow-up actions considered by the MET/TF included:

a) Maintaining regional collaboration and coordination among Meteorological Services, industry stakeholders, and relevant organizations, including WMO, IATA, and Aircraft Operators,
b) Promoting the adoption of ABO technologies within the region, in line with GREPECAS and NACC/WG implementation activities, to increase the quantity and quality of meteorological data and improve the quality of aeronautical forecasts, and
c) Promoting ABO to strengthen meteorological observation and forecasting in accordance with ICAO SARPs, particularly in data-sparse regions, contributing to enhanced operational safety.

2.7 In accordance with **Recommendation 2.3/2 of the 14th Air Navigation Conference 2024** – TURBULENCE EPISODES AS A GLOBAL RISK TO OPERATIONAL SAFETY (NE/02), the MET/TF, at its second meeting in March 2024, with the timely support of the United States of America and IATA, addressed the use of turbulence information and improvements to the World Area Forecast System (WAFS) products and the availability of IATA's “Turbulence Aware” service, as measures for exchanging best practices and sharing experiences, as well as to encourage States to improve the availability of Aircraft observations and reports. Appreciation is reiterated to the United States and IATA.

2.8 WP/21 presents the status of the GREPECAS/22 MET initiatives, including the results of its asynchronous phase, online from September 16 to October 11, 2024, and its face-to-face phase from November 20 to 22, 2024, in Lima, Peru. WP/21 presents the need to address the challenges in monitoring severe weather conditions and their influence and impact on the efficiency and safety of Free Route Operations (FRTO) and especially in the case of more direct trajectories such as Strategic Direct Routing (SDR). WP/21 also address the need to develop contingency protocols, weather monitoring, and real-time route updates, the harmonized provision of SIGMET, the need to strengthen efforts to boost the implementation of QMS MET, and OPMET exchange under IWXXM.

3. Conclusions

3.1 Collaboration with the WMO RA-IV ET-AVI is highlighted, evidenced by the publication of four newsletters and the conduct of five webinars and workshops.

3.2 The MET/TF 2023-2025 work program has shown significant progress, although there is a recognized need to expand technical assistance to address States’ needs and priorities.

3.3 The project "Harmonized and Integrated Framework for Operational Safety Oversight and Quality Management" was addressed, focusing on strengthening States' capacities in safety oversight and MET Quality Management.

3.4 The priorities of the MET/TF 2025-2026 work program were detailed, including the cyclical verification of BBBs, the implementation of QMS MET, the exchange of IWXXM information, the provision of harmonized SIGMET, and the conduct of workshops on severe weather phenomena and Amendment 82 to ICAO Annex 3.

3.5 Challenges in the implementation of MET BBBs and the need to accelerate OPMET exchange under IWXXM were acknowledged, and the importance of improving the availability and quality of SIGMET and TAF messages was emphasized.

3.6 The importance of ABO information and the implementation of turbulence information were mentioned, and the significance of QMS MET was stressed.

4. Suggested Actions

4.1 The Meeting is invited to consider the following activities:

a) Ask the NAM/CAR States to continue nominating representatives for the MET/TF.
b) Provide comments to optimize the 2025-2026 MET/TF work program.
c) Continue the work of the SURV/TF to achieve the generation of ADS-B meteorological data and other ABO observation sources, for integration into meteorological analysis and forecasting systems.
d) Expedite the implementation of OPMET exchange under IWXXM, based on the results formulated by the COMM/TF, promoting compatibility with AMHS systems and considering alternatives for TAC report conversion.
e) Promote the implementation of QMS MET, with special emphasis on the evaluation of the operational accuracy of measurements and forecasts in accordance with the aircraft operators' needs and the Annex 3 requirements.
f) Encourage the improvement in the availability of Aircraft Observations and Reports, and the use of turbulence information, including the integration of WAFS products and other relevant sources.

— END —

Appendix A
2023–2025 Work Plan

Reference	Description of Deliverable	Status
Annex 3 Global Air Navigation Plan (GANP) e-ANP	Regional event on structuring elements of the meteorological service for international air navigation	Ongoing
Annex 3 ICAO guidance material	Regional event on provisions related to the implementation of data exchange of Meteorological Operational Information (OPMET) under the ICAO Meteorological Information Exchange Model (IWXXM)	Completed. States require further assistance to achieve implementation
Annex 3 GANP e-ANP ICAO guidance material	Regional seminar on provisions related to the aeronautical meteorological authority, quality assurance, operational safety oversight responsibilities and functions, and competency-based training and education for aeronautical meteorology personnel.	Ongoing. In addition to the webinars and assistance activities deployed, the following project proposal was formulated: “Harmonized and Integrated Framework for Operational Safety Oversight and Quality Management, with Verification of Basic Building Blocks for ICAO Annex 3 Meteorological Services in the NAM/CAR Region”
Annex 3 e-ANP	Review of the current CAR/SAM provisions on Significant Meteorological Information (SIGMET)	Completed
Annex 3 e-ANP ICAO guidance material	SIGMET Tests for the CAR Region, Analysis and Report.	
Annexo 3 e-ANP ICAO guidance material	Dissemination and analysis of the MET-System Wide Information Management (SWIM) Plan and the MET-SWIM roadmap	Completed States require further assistance to be prepared for the implementation
Annex 3 GANP e-ANP BBBs/ASBU Frameworks	Event for the review of national and regional MET systems and essential services	Postponed. To be included in the 2025-2026 work plan
GANP e-ANP	Review of the MET tables of e-ANP Vol. I and Vol. II and formulation of the corresponding amendment proposals	Ongoing
GANP ASBU framework	Development of the MET tables for Volume III of the e-ANP	Postponed. To be included in the 2025-2026 plan once the NACC/WG finalizes the definition of the roadmap and specific MET tasks

Reference	Description of Deliverable	Status
Annex 3 Annex 19 USOAP CMA	Technical assistance to increase States' capabilities for safety oversight on aeronautical meteorology	Completed. More related activities will be included in the 2025-2026 plan

MCAAP PROYECT/ACTIVITY PROPOSAL FORM

Rev. FEB2025

Proposal N.	12 - 2025	Focus Area:	2 - Improve Regional Capacity and Efficiency	Proponent:	RO/MET	MET/TF Initiatives

Project/Activity title:	Harmonized and Integrated Safety Oversight (SO) and Quality Management (QM) Framework, with verification of Basic Building Blocks (BBB) for ICAO Annex 3 Meteorological Services in the NAM CAR Region	**Local** ***(of implementation)*****:**	Virtual + Mexico City

Problem statement or opportunity:

NAM CAR States struggle with a fragmented approach to safety oversight and quality management of ICAO Annex 3 Meteorological Services, hindering the achievement of optimal safety and efficiency. Specifically:

- Lack of a fully integrated system that synergizes the Civil Aviation Authority's (CAA) safety oversight responsibilities with the Meteorological Authority/Service Providers's quality management system (QMS), resulting in inconsistent identification, analysis, and resolution of safety deficiencies.
- The verification of Basic Building Blocks (BBBs), if conducted, is often conducted in isolation from routine quality assurance and quality control processes, leading to inconsistencies and missed opportunities for improvement in identifying and resolving safety concerns.
- Quality audits, both internal and external, are not consistently used to effectively analyze identified deficiencies, forward recommendations, support resolution, and track corrective actions, hindering the timely resolution of safety concerns and the use of enforcement actions when needed.
- There is a need to establish a cyclic review of the implementation status of the MET essential services, and to use the results of the audits to update that status in accordance with conclusion GREPECAS 22/10, including the status of the corrective actions.
- There is insufficient use of quality control and quality assurance data to inform and enhance safety oversight activities, limiting the proactive identification, analysis, and mitigation of potential safety risks and the tracking of the corrective actions.
- There is a lack of the use of the EFOD system to effectively notify differences against ICAO SARPS, and the correct publication of the meteorological services in the AIP.

Proposed project/activity: ***(to solve the problem or take advantage of the opportunity)***	1. Hire two Subject Matter Experts (SMEs) to work virtually for a total of 15 business days each, to develop an Integrated Audit Guide and Checklist, and Documented Correlation Matrices. The SMEs will produce a guide and checklist that includes step-by-step instructions for conducting integrated safety oversight and QM activities, including the verification of BBBs, formulation of differences and AIP publications. The SMEs will also develop documented correlation matrices to represent the connections between Safety Oversight Activities, Quality Control (QC) and Quality Assurance (QA) Processes and Procedures, and BBB Periodic Verification. The integrated audit guide, check list and correlation matrices will be produced in English and translated into Spanish, or vice versa. 2. Hold a 3-day bilingual workshop in Mexico for the two SMEs to disseminate the content of the Integrated Audit Guide, Checklist, and Correlation Matrices. The workshop will provide training on the use of the integrated audit framework and correlation matrices, facilitate discussions and feedback from NAM CAR states on the developed materials. The workshop will be conducted in both English and Spanish, with interpretation provided.	**Language of the event**	Bilingual *
		Requires interpretation	☒
		Requires document translation	☒
Expected support from MCAAP: ***(details the activities/tasks to be funded by the project)***	1- 18 days of salary (USD 300/day) for each of the 2 SMEs (being 15 for the virtual work and 3 for the workshop) 2- Airfare and per diem for 2 SMEs to deliver a 3-day workshop in Mexico City 3- Interpretation for the workshop 4- Translation of the orientation material, estimated at 100 pages.	**Main ICAO Strategic Objectives:** ***(select up to 3)***	Choose an item. NACC/CAP 7.3.1 NACC/CAP 7.4.4

Objective: ***(what you want to achieve by solving the problem or taking advantage of the opportunity)***

1) To develop and implement a harmonized framework that integrates safety oversight and quality management activities for ICAO Annex 3 meteorological services in the NAM CAR region, including the periodic verification of Basic Building Blocks (BBBs).
2) To train civil aviation inspectors and quality management auditors to conduct effective integrated safety oversight and quality activities, to improve compliance with ICAO Annex 3, and strengthen the BBBs cyclic review process.

Justification: *(1- why this is the ideal solution 2- If it this a step of a larger action, describe the action)*	The fragmented approach to safety oversight and quality management in NAM CAR States hinders the effective identification, analysis, and resolution of safety deficiencies. This gap leads to inconsistent application of ICAO Annex 3 standards and missed opportunities for proactive risk mitigation. The development of an integrated audit guide and checklist, along with documented correlation matrices, will establish a standardized approach, increasing States' situational awareness regarding the integration of safety oversight and quality management, promoting the timely resolution of safety concerns and deficiencies. The lack of integrated guidance and tools for conducting safety oversight and quality management activities, including the verification of Basic Building Blocks (BBBs), is an inhibiting factor for States to comply with obligations under the ICAO Annex 3 and GREPECAS Conclusion 22/10. The development of the integrated audit guide, checklist, and correlation matrices, and their dissemination through a bilingual workshop, will provide safety inspectors and quality auditors with the confidence and tools necessary to conduct effective integrated safety and quality activities, improve compliance, and strengthen the cyclic verification process.
Deliverables/expected outcomes:	1) Integrated Audit Guide and Checklist (digital format). 2) Documented correlation matrices to represent the connections between Safety Oversight Activities, Quality Control (QC) and Quality Assurance (QA) Processes and Procedures, and Basic Building Blocks Periodic Verification (digital format). 3) Workshop documentation. 4) Translated orientation material. 5) A 3-day bilingual workshop to disseminate the content of the material produced.
Impacted States/subregion:	NAM CAR States
Follow-up actions:	1) Monitoring annual reporting of BBBs – essential services implementation status through NACC Dashboard 2) Verification of the application of the integrated audit guide and checklist through annual reports to the NACC/WG MET/TF 3) Annual monitoring of self-assessment records in the OLF for MET Protocole questions

Personnel (representing cost to the Project)			**Period/Duration (w/days)**	**Total cost estimated for the Project**
Type	**Number**	**Estimated cost**	**33 working days**	**USD 22,000**
SME	2 SMEs	USD 18,300	**Details**	**Details**
State/Organiz	Choose an item.	Click or tap here to enter text.	15 working days (2 SMEs virtual work each) 3 working days (workshop)	USD 10,800 SME salaries (USD 5,400 each) USD 7,500 air tickets and per diem 2 SME (USD 3,750 each) USD 2,200 interpretation for the workshop USD 1,500 document translation
ICAO	Choose an item.	Click or tap here to enter text.		
Other	Choose an item.	Click or tap here to enter text.		