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WORKING PAPER

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**Eleventh Meeting of the North American, Central American and the Caribbean Working Group
(NACC/WG/11)**

Guatemala City, Guatemala, September 21-25, 2026

**Agenda Item 3: Presentation of the progress of the action plans of the NACC/WG Task Forces
and the progress in the regional work**

**METEOROLOGICAL SUPPORT FOR OPERATIONAL RESILIENCE, AIR TRAFFIC MANAGEMENT
AND AIR NAVIGATION SERVICES**

(Presented by the MET/TF Rapporteur)

EXECUTIVE SUMMARY

This Working Paper presents progress in the follow-up to NACC/WG/10 Decision 10/06 concerning the integration of meteorological and climatological information to strengthen the operational resilience of air navigation service providers. Based on the results reviewed during MET/TF/4 and ENV-SUS/WG/1, the paper highlights the contribution of meteorological and climate information to air traffic management, contingency planning, service continuity, risk assessment and adaptation. It also proposes strengthening coordination among the NACC/WG Task Forces, States, air navigation service providers, airports, meteorological services and other relevant stakeholders to translate this information into operational, planning and investment decisions.

Action:	As presented in Section 4.
Strategic Objectives:	• Every Flight is Safe and Secure • Aviation is Environmentally Sustainable • Aviation Delivers Seamless, Accessible, and Reliable Mobility for All • No Country Left Behind • The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All
References:	• Summary of Discussions of NACC/WG/10 • Summary of Discussions of MET/TF/4 • Annex 3 — Aeronautical Meteorological Service for International Air Navigation • Procedures for Air Navigation Services — Meteorology (PANS-MET, Doc 10157) • First Meeting of the NAM/CAR Working Group on Environment and Aviation Sustainability (ENV/SUS/WG/1),

1. Introduction

1.1 The Tenth Meeting of the North American, Central American and Caribbean Working Group (NACC/WG/10) adopted Decision NACC/WG/10/06 concerning the integration of meteorological and climatological information to strengthen the operational resilience of air navigation service providers. In follow-up to this Decision, the MET/TF 2026 Work Programme incorporated activities related to contingency planning, Multi-Hazard Early Warning Systems and the use of meteorological and climatological information in support of air navigation.

1.2 During MET/TF/4, the Meeting examined the contribution of meteorological services to the continuity of essential aviation services, the management of adverse weather conditions, and preparedness, response and recovery from severe events. The Caribbean Meteorological Organization (CMO) highlighted that meteorological services, airports and air navigation systems form part of national critical infrastructure and should be integrated into Multi-Hazard Early Warning Systems and national preparedness and response mechanisms.

1.3 Subsequently, the First Meeting of the NAM/CAR Working Group on Environment and Aviation Sustainability (ENV/SUS/WG/1), held in Mexico City, Mexico, from 9 to 11 September 2026, examined climate risk assessment, adaptation and aviation resilience. The discussions highlighted the need to use meteorological and climate information to identify hazards, assess the exposure and vulnerability of infrastructure, operations and services, determine potential consequences, and prioritize risks requiring treatment. The information presented by Airports Council International, Latin America and the Caribbean (ACI-LAC), also identified regional needs for data, guidance, methodologies, risk assessments and case studies to support airport adaptation.

1.4 In this context, this Working Paper examines how meteorological and climate information can support operational resilience, air traffic management and the continuity of air navigation services. It also identifies opportunities for coordination among the NACC/WG Task Forces, States, air navigation service providers, airports, meteorological services and other relevant stakeholders to translate such information into operational, planning and investment decisions.

2. Meteorological Support for Operational Resilience and Air Navigation Services

2.1 Aeronautical meteorological services and Multi-Hazard Early Warning Systems share the objective of protecting lives, critical infrastructure and essential services through timely, accurate and actionable meteorological information. Although they serve different users and processes, they rely on common observations, forecasts and warnings that can support both public safety and the continuity of aviation operations.

2.2 The Caribbean Meteorological Organization (CMO) highlighted that airports and air navigation systems are critical assets for emergency response, medical evacuations, humanitarian assistance, relief operations and post-disaster recovery. Disruption to these services may have cascading effects on operational safety, connectivity and States' response capabilities, particularly in the Caribbean.

2.3 The integration of aviation into Multi-Hazard Early Warning Systems comprises four interrelated components: risk knowledge; detection, monitoring and forecasting; warning dissemination and communication; and preparedness and response capability. In aviation, these components include

airport risk maps, operational wind limits, volcanic ash monitoring, METAR, TAF, SIGMET, tropical cyclone advisories, and mechanisms for communicating information to airport operations centres, air traffic control units and aircraft operators.

2.4 During severe weather events, air navigation service providers use this information to manage airspace restrictions, coordinate diversions, protect communications, navigation and surveillance equipment, implement contingency procedures, and coordinate actions with airports and operators. Airports use the same information to make decisions concerning the continuation or suspension of operations, protect facilities and equipment, activate emergency plans, and plan for post-event reopening.

2.5 The effectiveness of these processes depends on the availability and continuity of meteorological infrastructure, including weather radars, automatic weather observing systems, surface stations, upper-air observations, lightning detection networks, satellite reception systems and forecasting offices. The loss or degradation of these capabilities may simultaneously affect public warnings, aeronautical meteorological services and air navigation operations.

2.6 Consequently, meteorological support for operational resilience is not limited to the provision of standardized products. It also requires the timely integration of meteorological information into air traffic management, contingency planning, infrastructure protection, operational coordination and service recovery processes. This approach requires capable institutions, competent personnel, harmonized procedures and continuous coordination among meteorological services, civil aviation authorities, air navigation service providers, airports, operators and emergency management organizations.

3. Risk Assessment, Adaptation and Regional Needs

3.1 Meteorological and climatological information provides an essential input for assessing risks that may affect aviation infrastructure, operations and services. The process includes hazard identification, assessment of exposure and vulnerability, analysis of potential consequences, and determination of the risk level. The combination of likelihood and consequence allows organizations to prioritize risks requiring treatment.

3.2 The assessment should consider present and future conditions, as well as interdependencies among airports, airspace, communications, navigation and surveillance systems, meteorological services and other critical components. Based on the prioritized risks, organizations can establish adaptation objectives, select measures, assign responsibilities, resources and timelines, and implement monitoring and review mechanisms. Adaptation should be understood as a continuous process.

3.3 Information presented by Airports Council International, Latin America and the Caribbean (ACI-LAC), indicates that participating airports are already experiencing effects associated with extreme temperatures, storms, changing precipitation patterns and flooding, with consequences for infrastructure, capacity and operational continuity. The survey also identified challenges related to the availability of climate data and projections, insufficient guidance and methodologies, and the need for risk assessments, good practices and case studies.

3.4 These results confirm the need to strengthen regional capacity to translate meteorological and climatological information into operational, planning and investment decisions. This work should consider the needs of States, air navigation service providers, airports and other stakeholders, and should be supported by common methodologies, experience-sharing and case studies that enable an assessment of the benefits of having adaptation plans or measures in place, as well as the consequences of not implementing them.

4. Regional Coordination and Next Steps

4.1 The results reviewed during MET/TF/4 and ENV/SUS/WG/1 support continued follow-up to NACC/WG/10 Decision 10/06 through progressive coordination among the MET/TF, the Airspace Management and Capacity Balancing Task Force (AMCB/TF), the Aerodromes Task Force (AGA/TF) and the ENV/SUS/WG. This coordination should consider the operational needs of States, air navigation service providers, airports, meteorological services and other relevant stakeholders.

4.2 As a next step, it is proposed to identify one or more case studies from the NAM/CAR Regions to analyse how meteorological and climatological information contributes to service continuity, air traffic management, contingency planning and risk management. The selected cases should allow comparison between the consequences of not having adaptation plans or measures in place and the benefits achieved when such measures have been implemented. The experience presented by ACI-LAC concerning Sangster International Airport in Jamaica provides a potential airport-related reference for this work.

4.3 Based on the results achieved, the MET/TF and ENV/SUS/WG may define regional follow-up products, capacity-building activities and potential contributions for consideration by the NACC/WG or a future meeting of Directors of Civil Aviation. The objective will be to support States and organizations in using meteorological and climatological information to make operational, planning and investment decisions aimed at strengthening operational safety, capacity, service continuity and the resilience of the aviation system.

5. Action by the Meeting

5.1 The Meeting is invited to:

- a) note the progress made in the follow-up to NACC/WG/10 Decision 10/06 and the activities undertaken by the MET/TF and ENV/SUS/WG;
- b) support coordination among the MET/TF, the Airspace Management and Capacity Balancing Task Force (AMCB/TF), the Aerodromes Task Force (AGA/TF) and the ENV/SUS/WG to strengthen the use of meteorological and climatological information in support of operational resilience, air traffic management and air navigation services;
- c) encourage States, air navigation service providers, airports and meteorological services to identify their information needs, develop risk assessment capabilities, and integrate adaptation measures into their planning and management processes; and
- d) support the identification and documentation of regional case studies to assess the benefits of having adaptation plans or measures in place, as well as the operational, economic and service continuity consequences of not implementing them.

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