



ICAO's Amendment 82

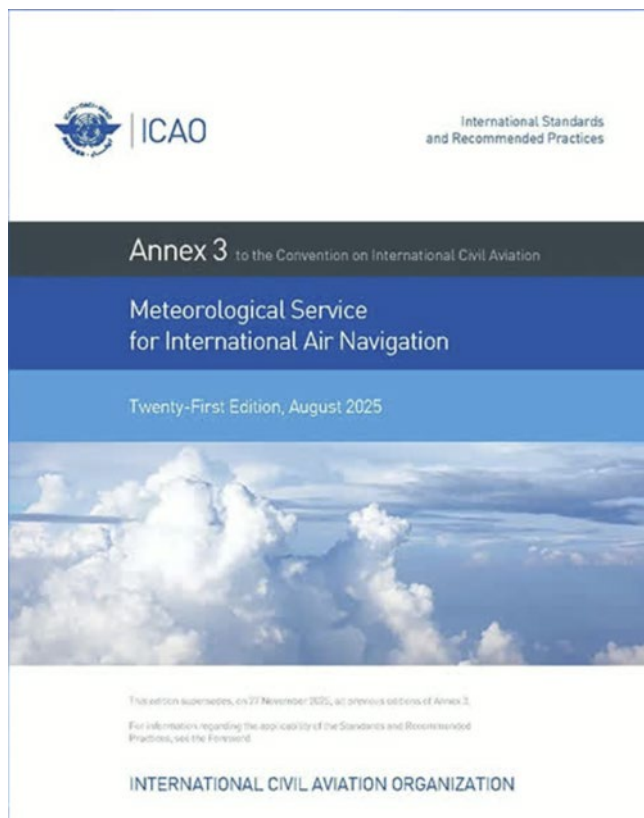
21st Edition ICAO Annex 3 Meteorological Service for International Air Navigation

**“Implications for CMO Member States National
Meteorological and Hydrological Services ”**

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Key Issues for Caribbean National Meteorological Services

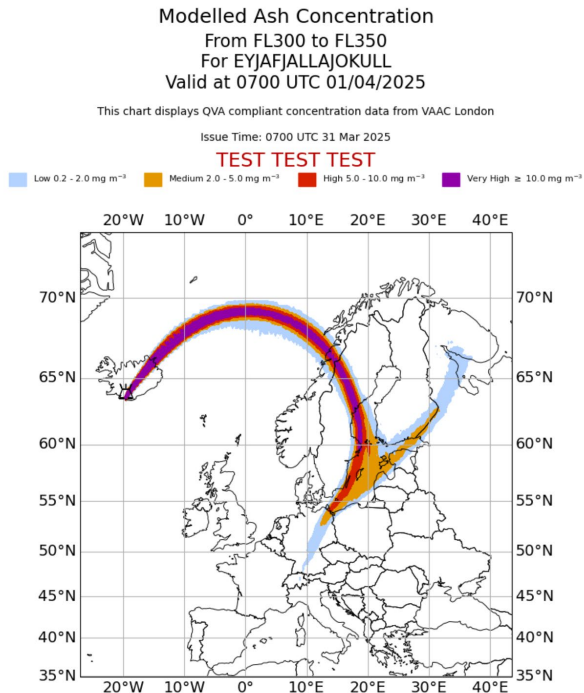


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Three (3) important updates and **one (1) enhanced oversight area** NMHSs must pay attention to:

- **Governance:** Updated & New definitions of Meteorological Authority & Meteorological Service Provider
- **Quantitative Volcanic Ash (QVA) Concentration Information**
- **Digital Information Exchange / Information Model (IWXXM)**
- **Greater emphasis on performance metrics: timelines, accuracy, and corrective actions (QMS)**

ICAO Amendment — Mandatory Quantitative Volcanic Ash (QVA) Information



Test Example of QVA Concentration
Forecast by UKMET Office

Why This Matters for the Caribbean

- Region affected by local and extra-regional volcanoes
- NMHSs issue volcanic ash SIGMETs, and monitor regional ash hazards

Operational Implications

- QVA changes how forecasters must assess and communicate volcanic ash risk
- Requires **updates to National SOPs** and **SIGMET Procedures**
- Requires **formal training**, refresher courses, and **new competencies** for forecasters



Updated ICAO SARPs: Key Definitions



New distinction:

Meteorological Authority

- Entity designated by the State
- **Arranges for the provision** of meteorological services for international air navigation
- Responsible for **regulation, oversight, and compliance**

Meteorological Service Provider

- Entity designated to **deliver operational meteorological services** (observations, forecasts, warnings)
- Acts on behalf of the Contracting State
- Provides **aviation-focused services to support flight operations and planning**



Impact of Key Definitions Update

ICAO now **expects legal clarity**

States must clearly formally assign these roles—not yet consistently defined across the Caribbean

Many States will need to either **formally designate the NMHS as the MET Authority** **or assign authority to another entity** (e.g. Civil Aviation Authority), with the NMHS serving only as the service provider

Impact for cost recovery

NMHS may:

- **Lose direct control over cost-recovery frameworks**
- **Need to negotiate service-level agreements (SLAs) with the CAA**
- **Justify costs more rigorously under regulatory oversight.**



Updated Definitions' Implications

Increased Accountability for Quality Management (QM)

Caribbean NMHSs must ensure that:

- The **QM system is active**, documented, and **independently reviewed**
- **Roles and responsibilities** for QM implementation are **clearly assigned**
- The Meteorological Authority provides oversight but **does not** run the day-to-day QM

Required Updates to National Legislation and Policy Frameworks

Some Caribbean States may need to revise:

- **Civil aviation regulations**
- **Meteorological acts**
- **MoUs between NMHSs and Civil Aviation Authorities**
- **Service-level agreements with ANSPs**



IWXXM Impact on CMO Member States NMHSs

Amendment 82 to ICAO Annex 3, **strengthens and expands the digital requirements** in terms of IWXXM

Key elements relevant to IWXXM:

- A stronger shift from “products” to **information services**, aligning with SWIM
- Expanded IWXXM capability for:
 - Volcanic ash quantitative information
 - Tropical cyclone information
 - Space weather
 - Enhanced metadata and quality indicators



IWXXM Implications for CMO Member States

Transitional Burden:

- Maintaining TAC + IWXXM - Caribbean NMHSs will need support for IWXXM Format (in addition to TAC)
- Require **investment in new message handling systems** or upgrade to legacy systems

Impact: Many Caribbean States rely on the National Weather Service **EDIS** to exchange aviation data

States currently using only TAC via EDIS, will require technical upgrades

Compliance with ICAO Annex 3 Amendments means CMO NMHSs must:

- **Assess system readiness**
- **Evaluate whether current systems (including eDIS connections) can handle IWXXM**



IWXXM Challenges Going Forward

- Members **NMHSs** will continue to **face challenges** in fully operationalizing **IWXXM**
- ICAO **Regional OPMET Centres (ROCs)** collect IWXXM-formatted OPMET data and bulletins from National Operations Centres.
- **ROC London: Collects and distributes METAR, TAF, SIGMET** for many Caribbean States and exchanges data with North, Central, and South America.
 - Provides **TAC → IWXXM conversion** and validation for States unable to generate IWXXM natively

CMO HQ and ROC London discussed **provision of regional TAC → IWXXM translation** support

- Initially, to **assist British Overseas Territories. Extend to other CMO Members if required**

Discussion needed with ICAO NACC Regional Office on IWXXM conversion

ICAO NACC Regional OPMET: TAC → IWXXM conversion?



Key Oversight Area: Quality and Accuracy – QMS

Emphasis on Data Quality, Accuracy & Timeliness

Observations, forecasts, and warnings must meet defined standards

Quality Management System (QMS) Requirements

- Active, documented, and independently reviewed
- Roles and responsibilities clearly assigned:
 - **Meteorological Authority:** Oversight
 - **Service Provider:** Day-to-day implementation

Implications for NMHSs

- Strengthen governance and verification processes.
- Ensure consistency and reliability of meteorological services for international aviation



Status of QMS Implementation at CMO NMHSs

- Since **2012**, WMO standards require NMHSs to implement and maintain a **Quality Management System (QMS) - ISO 9000 series (typically ISO 9001)**
- Implementing **QMS** remains **complex for many CMO Members NMHS**, with varying levels of readiness and operational integration

October 2025:

- QMS progress across the region is **uneven**, although **some improvements** recorded during the year



NMHSs QMS Implementation Status

QMS Operational Levels Vary Across NMHSs

- **5 NMHSs:** Fully functional QMS integrated into daily operations
- **2 NMHSs:** Legacy QMS needs to be updated
- **5 NMHSs:** Actively implementing QMS
- **3 NMHSs:** Have not yet started implementation



Capacity-Building & Upcoming ISO Revision

CMO Headquarters to **strengthen QMS Capabilities** in 2026

- Regional **QMS Lead Auditor training workshop in Q1 2026**

Capacity-Building provides internationally recognized ISO 9001:2015 Lead Auditor certification

- Implementing, Auditing, Maintaining QMS

ISO 9001:2015 is being revised, **new version (ISO 9001:2026) expected by September 2026**



- NMHSs encouraged to **start budgeting and preparing for transition** to updated standard



THANK YOU VERY MUCH!

MUCHAS GRACIAS!

Questions?

Preguntas?

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