



| ICAO

CAPACITY & EFFICIENCY

Webinar on the Implementation of the ICAO Meteorological Information Exchange Model (IWXXM) and Updates to the Tropical Cyclone Advisory Centre (TCAC)

Mr. Luis Sánchez

Regional Officer, Aeronautical Meteorology and Environment

International Civil Aviation Organization

North American, Central American and Caribbean Regional Office



On-line, 17 June 2020, 11:00am (Mexico City time)



✈ Strategic Approach for the recovery of Aviation in the NAM and CAR regions:

- ✈ Coordinated approach with aviation and industry stakeholders.
- ✈ 100% alignment with ICAO aviation recovery principles and recommendations - ICAO CART (Council Aviation Recovery Working Group).
- ✈ Aim to provide practical and aligned guidance to governments and industry operators to restart the international air transport sector and recover from the impacts of COVID-19 on a coordinated global basis.
- ✈ An on-line platform to support States:

<https://www.icao.int/NACC/Pages/NACC-COVID19.aspx>



ICAO

**Strategic Approach
for Aviation
Recovery in the
NAM/CAR Regions**

ICAO NACC Regional Office





✈ SARP for MET service

- ✈ Annex 3
- ✈ Geared towards safe, regular and efficient operations



Annex 3 to the Convention on International Civil Aviation

Meteorological Service for International Air Navigation

Part I — Core SARPs
Part II — Appendices and Attachments
Twentieth Edition, July 2018



This edition supersedes, on 8 November 2018, all previous editions of Annex 3.



ICAO

CAPACITY & EFFICIENCY

Updated: 15 June 2020

ICAO Air Navigation Commission

Meteorology Panel

(comprising individual Experts – not State representatives)

Peter Lechner
Bill MaynardManagement Group
Co-ordination work

Job Cards 1,2,5, (ATMRPP6)

WG-1 MET Requirements & Integration (WG-MRI)
Dennis Hart
Jun Ryuzaki**WS-1 MET for ATM**
Kevin Johnston**WS-2 GANP Update**
Stéphanie Desbios**WS-3 PANS-MET**
Rosalind Lapsley

Job Cards 6,7,9,12

WG-2 MET Information & Service Development (WG-MISD)
Pat Murphy**WS-1 RRM**
Harmut Walter**WS-2 HWIS**
Sharon Lau**WS-3 SWX Information**
Pat Murphy**WS-4 VA & SO₂**
Karen Shelton-Mur

Job Cards 4, (CP8)

WG-3 MET Information Exchange (WG-MIE)
Sue O'Rourke
Bill Maynard**WS-1 IWXXM Requirements**
Patrick Simon**WS-2 MET-SWIM Plan**
Pat Murphy**WS-3 IWXXM Documentation**
Tim Hailes**WS-4 Support & Coordination**
Bill Maynard

Job Cards 3,8,10 (OPSG legacy)

WG-4 MET Operations Group (WG-MOG)
Jon Dutton**WS-1 IAWW Operations**
Paula Acethorp**WS-2 WAFS Operations**
Job Dutton**WS-3 SADIS/WIFS Operations**
Karen Shorey**WS-X SWX Operations**
TBD

Job Card 11

WG-5 MET Cost Recovery Guidance & Governance (WG-MCRGG)
Pat Murphy/Jaakko Nuottokari**WS-1 White Paper**
Dennis Hart**WS-2 Development of Guidance** - Rodrigo Fajardo**WS-3 Definition of MA**
Greg Brock**WS-4 SWIM Management & Governance** - Bill Maynard

ATM – Air Traffic Management
 GANP – Global Air Navigation Plan
 HIWS – Hazardous Weather Information Service
 IAWW – International Airways Volcano Watch
 IWXXM – ICAO Meteorological Information Exchange Model
 MA – Meteorological Authority
 PANS – Procedures for Air Navigation Services

RRM – Release of Radioactive Material
 SADIS – Secure Aviation Data Information System
 SO₂ – Sulphur Dioxide
 SWIM – System-wide Information Management
 SWX – Space Weather

VA – Volcanic Ash
 WAFS – World Area Forecast System
 WIFS – WAFS Internet File Service
 WG – Working Group
 WS – Work Stream

Note – The *primary* Job Card and Work Stream responsibilities are as shown. There are numerous areas where several WG and WS teams collaborate.

----- On hold

<https://www.icao.int/airnavigation/METP/Pages/default.aspx>

On-line, 17 June 2020, 11:00am (Mexico City time)



| ICAO

CAPACITY & EFFICIENCY

IWXXM SARPs, policies and guidance materials

- ✈ From November 2013, AMDT 76 has enabled States (in a position to do so) to exchange METAR/SPECI, TAF and SIGMET in digital (XML/GML) form
- ✈ From November 2016, AMDT 77 has required that States should disseminate + AIRMET, volcanic ash and tropical cyclone advisory information in digital form.



International Standards
and Recommended Practices



Annex 3
to the Convention on
International Civil Aviation

Meteorological Service for International Air Navigation

Part I
Core SARPs

Part II
Appendices and Attachments

This edition incorporates all amendments adopted by the Council prior to 28 February 2013 and supersedes, on 14 November 2013, all previous editions of Annex 3.

For information regarding the applicability of Standards and Recommended Practices, see Foreword.

On-line, 17 June 2020, 11:00am (Mexico City time)



ICAO

CAPACITY & EFFICIENCY

IWXXM SARPs, policies and guidance materials



ICAO

International Standards
and Recommended Practices

Annex 3 to the Convention on International Civil Aviation

Meteorological Service for International Air Navigation

Part I — Core SARPs
Part II — Appendices and Attachments
Twentieth Edition, July 2018

This edition supersedes, on 8 November 2018, all previous editions of Annex 3.

For information regarding the applicability of the Standards and Recommended Practices, see Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

✈ From November 2018, AMDT 78 has required that States should disseminate meteorological information in IWXXM GML form; with the addition of space weather information from Nov 2019.

✈ Adopted AMDT 79

✈ 5 November 2020

✈ IWXXM as a RP for SIGWX (4 Nov 2021)



On-line, 17 June 2020, 11:00am (Mexico City time)



| ICAO

CAPACITY & EFFICIENCY



Recommendation 2.3/2 — Further Development of IWXXM for the Exchange of Aeronautical Meteorological Information

That States:

- a) provide ICAO with their ICAO Meteorological Information Exchange Model (IWXXM) implementation plans before 2020;

That ICAO:

- a) promote the importance of exchanging meteorological information for aeronautical purposes in compliance with the IWXXM;
- b) in close coordination with the World Meteorological Organization (WMO),
 - 1) ensure that the IWXXM format is the only standard exchange format by 2026;
 - 2) develop the policies and procedures necessary to ensure a smooth transition from traditional alpha numeric code (TAC) format to IWXXM format for the purpose of data exchange to support international air navigation, as an interim step toward full IWXXM implementation;
 - 3) promote awareness of the changes brought about by the IWXXM data format, production, dissemination and data exchange among operators; and
 - 4) monitor the status of implementation of IWXXM at State and regional levels.



| ICAO

CAPACITY & EFFICIENCY



METEOROLOGY PANEL



Recommendation 5/3: Roadmap for IWXXM and TAC

That the MET Panel:

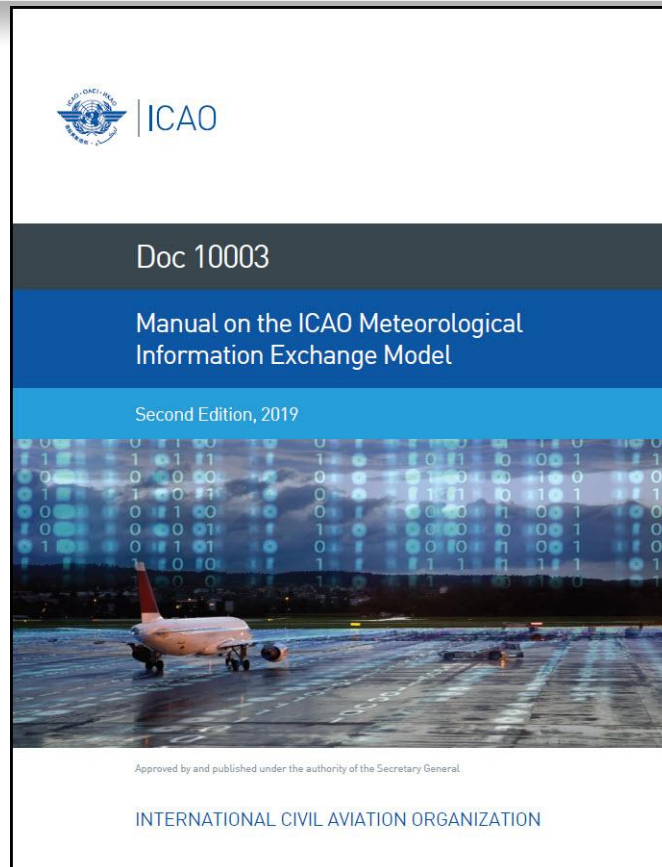
- a) Agree to propose a change to Annex 3 – Meteorological Service for International Air Navigation provisions to remove traditional alphanumeric code (TAC) forms from the Annex not later than 2026, ensuring adequate lead-time of this change.
- b) Create a Roadmap document outlining the different steps to be considered so that the current legacy TAC products are no longer required to be distributed internationally after 2026.
- c) Determine mechanisms to ensure TAC is secondary information and promote the use of ICAO Information Meteorological Exchange Model (IWXXM) data, particularly leading up to full system-wide information management (SWIM) implementation.



✈ Guidance material

✈ Doc 10003 - Manual on the Digital Exchange of Aeronautical Meteorological Information

- ✈ First Edition 2014
- ✈ Amendment No. 1 (29 Sep 2017)
- ✈ Second Edition 2019





ICAO

CAPACITY & EFFICIENCY



Chapter 1. Background

- 1.1 The evolving global air transport system
- 1.2 Net-centric operations
- 1.3 Consequences for meteorological services

Chapter 2. Digital information exchange principles

- 2.1 Global interoperability
- 2.2 System-wide information management
- 2.3 Data, information and service modelling
- 2.4 Identified components to support the digital exchange

Chapter 3. IWXXM logical model

- 3.1 Scope
- 3.2 Baseline version
- 3.3 Specification

Chapter 4. IWXXM XML schema

- 4.1 Introduction
- 4.2 Specification

Chapter 5. Metadata for aeronautical meteorological information exchange

- 5.1 Introduction
- 5.2 Metadata as indicators

Chapter 6. Ensuring information quality through XML validation

- 6.1 Introduction
- 6.2 Validation of IWXXM messages

Chapter 7. Exchanging of IWXXM messages

- 7.1 Introduction

Appendix A. UML

Appendix B. XML/GML

Appendix C. WMO codes registry





ICAO

CAPACITY & EFFICIENCY

1 Introduction

- 1.1 Purpose
- 1.2 Background
- 1.3 Intended Audience

2 Current Operations and Capabilities

- 2.1 Current Capabilities
- 2.2 Data Producer/Originating Unit
- 2.3 Data Aggregator
- 2.4 Data Switch
- 2.5 National OPMET Centre (NOC)
- 2.6 Regional OPMET Centre (ROC)
- 2.7 Interregional OPMET Gateway (IROG)
- 2.8 International OPMET Databank

3 Inclusion of IWXXM within ICAO Annex 3

4 Proposed service concept

- 4.1 Operating principles
 - 4.1.1 Managing the transition
 - 4.1.2 Variances to the IWXXM Model
 - 4.1.3 Translation
 - 4.1.4 Data collection
 - 4.1.5 Transmission & Routing
 - 4.1.6 Compliance Testing
 - 4.1.7 International OPMET Databank
 - 4.1.8 Aeronautical Information Metadata

5 Functional requirements - Framework

- 5.1 Functional definitions
 - 5.1.1 Data Producer/Originating Unit
 - 5.1.2 Data Aggregator
 - 5.1.3 Data Translation Centre
 - 5.1.4 Data Switch
 - 5.1.5 International OPMET Databank
- 5.2 Regional Centres Definitions
 - 5.2.1 National OPMET Centre (NOC)
 - 5.2.2 Regional OPMET Centre (ROC)
 - 5.2.3 Interregional OPMET Gateway (IROG)
 - 5.2.4 International OPMET Databank

6 Generation and use of IWXXM

- 6.1 Operational Status Indicator (PermissibleUsage)
 - 6.1.1 Definition of Operational and Non-Operational messages
 - 6.1.2 Technical Detail on the Operational Status Indicator
- 6.2 Unique GML.ID
- 6.3 Translating TAC to IWXXM
 - 6.3.1 Pre-requisites for Translation Centres
 - 6.3.2 Data Validation
 - 6.3.3 Incomplete (Partial) Translation
 - 6.3.4 Monitoring Functions
 - 6.3.5 Validation of the Translator
 - 6.3.6 Commencement of Translation Services
 - 6.3.7 Translation Agreement

7 Requirements to Transition

- 7.1 Phase 1: Pre-Requisites to Transition
 - 7.1.1 Managing the Transition
 - 7.1.2 Documentation
 - 7.1.3 Processes
- 7.2 Phase 2: From Nov 2016 until IWXXM Exchange is a Standard
 - 7.2.1 Operations
 - 7.2.2 Processes
- 7.3 Phase 3: After IWXXM Exchange becomes a Standard

8 Data Validation and Statistics

- 8.1 IWXXM Validation Statistics to be Gathered by ROCs an RODBs
 - 8.1.1 Data and Type of Data
 - 8.1.2 Proposed Statistics
 - 8.1.3 Statistics Presentation
- 8.2 IWXXM Validation Statistics to be Gathered by SADIS & WIFS

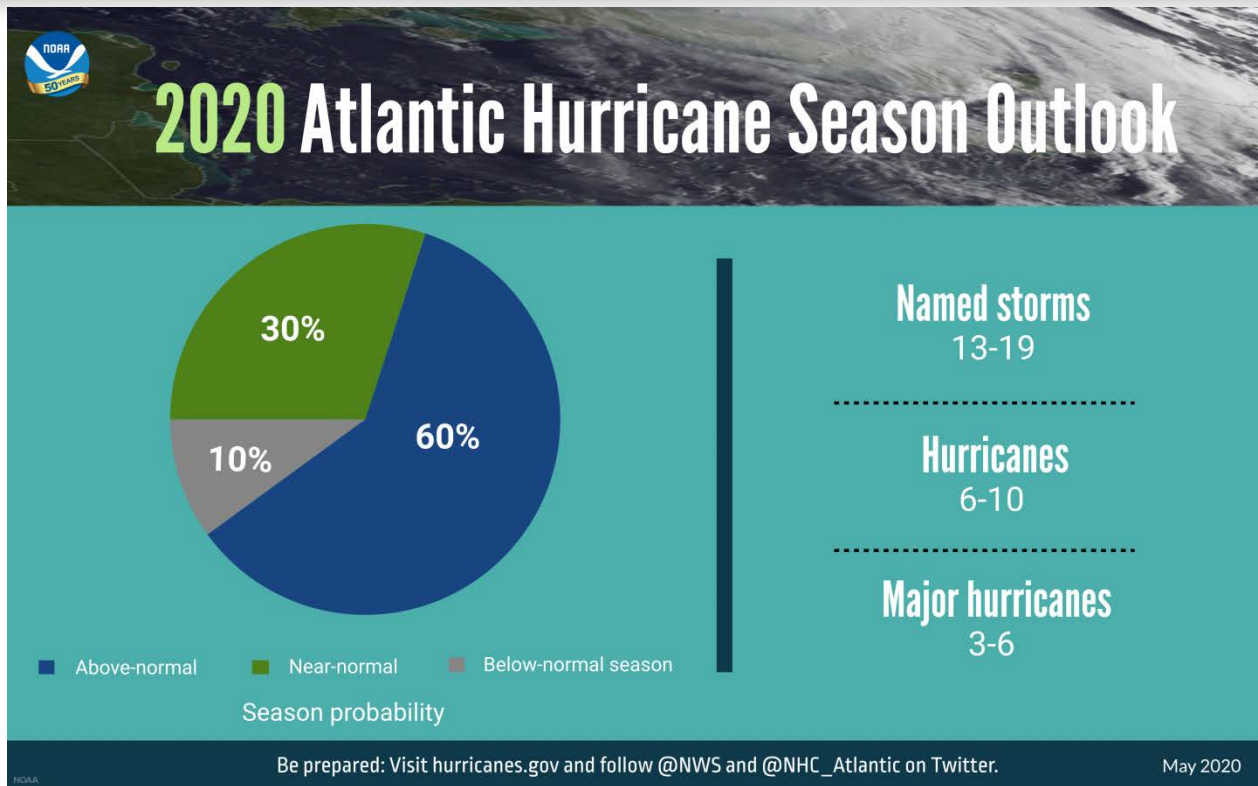
9 Acronyms and Terminology

INTERNATIONAL CIVIL AVIATION ORGANISATION



GUIDELINES FOR THE IMPLEMENTATION OF OPMET DATA EXCHANGE USING IWXXM

THIRD EDITION –MAY 2019



Atlantic Ocean
From June 1 to November 30

Eastern North Pacific
From May 15 to November 30

<https://www.noaa.gov/media-release/busy-atlantic-hurricane-season-predicted-for-2020>

On-line, 17 June 2020, 11:00am (Mexico City time)



ICAO

CAPACITY & EFFICIENCY



ICAO

North American
Central American
and Caribbean
[NACC] Office
Mexico City

South American
[SAM] Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
[WACAF] Office
Dakar

European and
North Atlantic
[EUR/NAT] Office
Paris

Middle East
[MID] Office
Cairo

Eastern and
Southern African
[ESAF] Office
Nairobi

Asia and Pacific
[APAC] Sub-office
Beijing

Asia and Pacific
[APAC] Office
Bangkok



THANK YOU