



CMO support to IWXXM Transition

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Areas Covered:

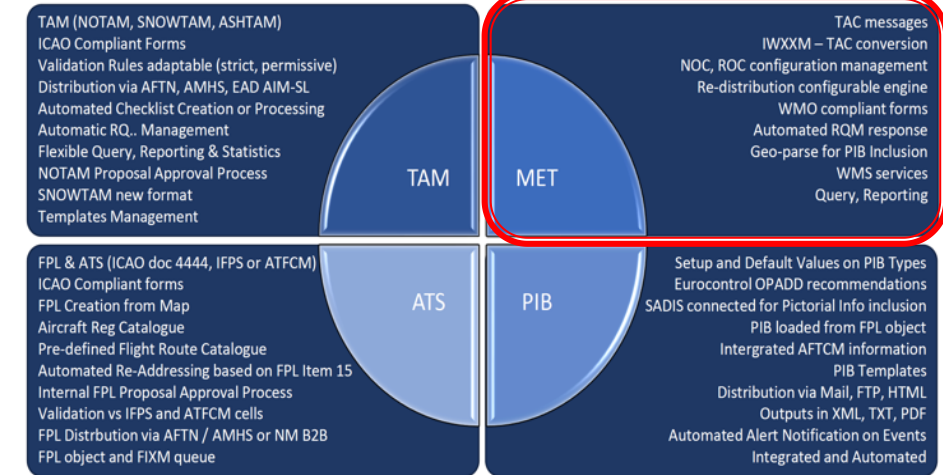
- CMO HQ early efforts
- Exploration of options to assist Member States
- Recent collaboration to automate transition from old to new format

CMO support to IWXXM Transition

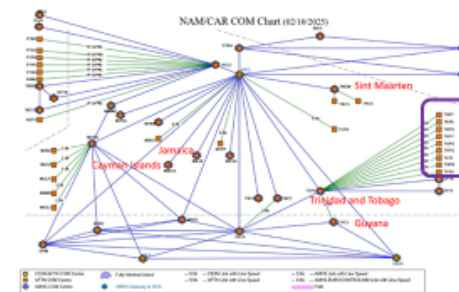


- Software from CMO Science and Technology Officer for conversion
- Exchange of operational meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) format became a Standard in 2020
- Access to AMHS systems to allow exchange of OPMET data in IWXXM format based on ATS Message Handling System (AMHS) remains a challenge
- Most CMO Members utilize AFTN to exchange TAC-based OPMET

CRONOS Modules overview



IWXXM Implications for CMO Member States



Maintain TAC data exchange & transition to IWXXM. 3 CMO Members issue IWXXM:

- ☐ Barbados
- ☐ Guyana
- ☐ Trinidad and Tobago

Most CMO NMHSs **use AFTN** to exchange TAC-based OPMET

IWXXM cannot be transmitted over AFTN

Aeronautical Message Handling System (AMHS) needed for **IWXXM** exchange

Cayman Islands, Guyana, Jamaica, and Trinidad and Tobago have AMHS capability

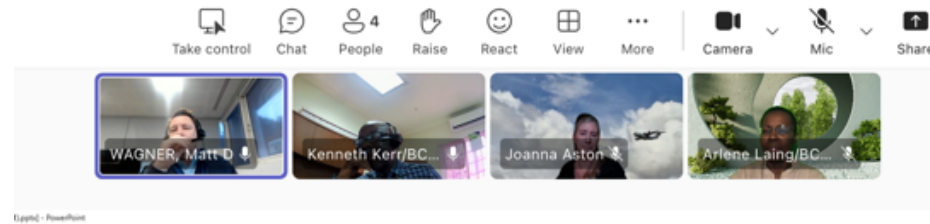
Upgrades from AFTN to AMHS require File Transfer Protocol Extended (FTPE)

AMHS without FTPE integration **cannot** exchange **IWXXM** messages

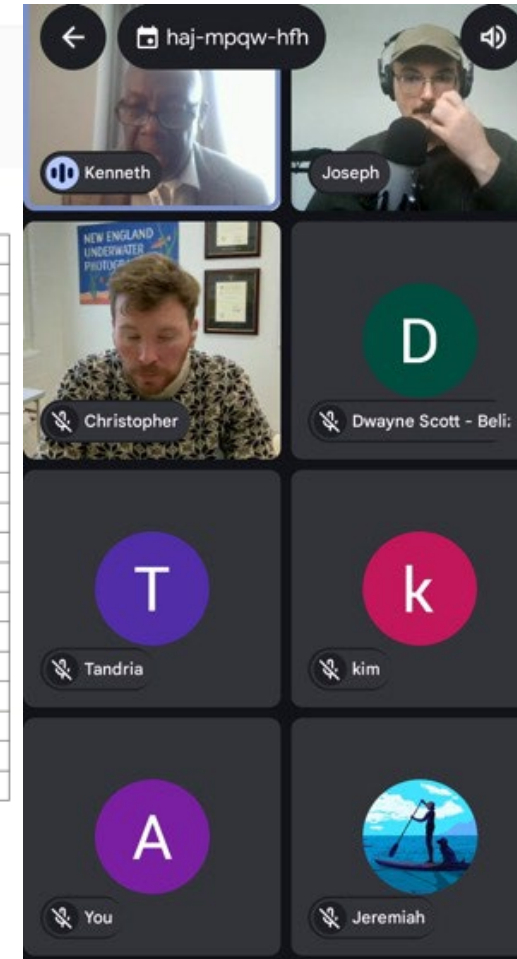
CMO HQ: Investigating options for IWXXM Transition



- Problem → Solution
- Met/TF – 3rd meeting proposal
 - Pilot testing of a Cuba–Washington–Caribbean IWXXM data exchange as an interim solution
- Collaboration with Brown University for open-source Caribbean-sensitive TAC - IWXXM converter



Country	METAR	Method	IWXXM	Method
Anguilla BCT	✓	EDIS	x	
Antigua and Barbados	✓	EDIS	x	
Bahamas	✓		x	
Barbados	✓	BMS Software	✓	BMS Software
Belize	✓	EDIS	x	
Cayman islands BCT	✓	EDIS	x	
Dominica	✓	Meade Software	x	
Grenada	✓	EDIS	x	
Guyana	✓	AHMS	✓	AHMS
Jamaica	✓	AHMS	x	
Montserrat BCT	✓	EDIS	x	
Saint Lucia	✓	EDIS	x	
St Kitts and Nevis	✓	NWS FTP	x	
St Maarten	✓	CMO Software	✓	CMO Software
St Vincent and the Grenadine	✓	EDIS	x	
Trinidad and Tobago	✓	CRONOS	✓	CRONOS
Turks and Caicos BCT	✓	EDIS	x	
Virgin Island (British) BCT	✓	EDIS	x	



CMO HQ: Status of IWXXM Transition



- Engagement with Brown University
- IWXXM translation tool for METARs for NMSs of CMO Members

User: admin@metar.local
Password: xxxxxxxx!

METAR to IWXXM Converter

CI/CD Pipeline passing E2E Tests with Real Services failing codecov 85%

Modern React-based web application with microservices backend to decode METAR/SPECI TAC and serialize IWXXM XML using the GIFTS submodule.

Features

- ✓ Authentication: User registration, login via Supabase through auth middleware
- ✓ Drag & drop multiple .tac / .txt METAR files
- ✓ Manual METAR text input
- ✓ Batch conversion to IWXXM XML (returned as text for convenience)
- ✓ Copy / download each result
- ✓ ZIP batch download endpoint for multiple conversions
- ✓ Microservices architecture with auth proxy, backend API, and React frontend
- ✓ Token-based security - Backend validates tokens via auth service

- Project is open-source
- Site is currently password-protected
- Tool has graphical interface
- NMHSs performed early testing and provided feedback (promising)

Following Initial Testing - Additional Upgrades



Current feature set:

- METAR → IWXXM conversion
- IWXXM validation (XSD + Schematron)
- Airport data lookup
- IWXXM version handling
- General TAC→IWXXM (tac2iwxxm: METAR, SPECI, TAF, AIRMET, SIGMET, VAA, TCA) - **ongoing testing** implementation for the TAF, AIRMET, SIGMET, VAA, TCA file formats
- METAR and SPECI are passing the official examples provided by WMO
- Working on EDIS → RTH Washington dissemination
- Working on AMHS / SWIM / AFS adapters

A screenshot of the 'METAR CONVERTER Authentication System v1.0' login interface. The page has a light blue background. At the top right, there is a 'DISPLAY MODE' toggle switch. The main content area is a white box with a blue border. Inside, the title 'METAR CONVERTER' is followed by 'Authentication System v1.0'. Below this is a blue button labeled 'Password Login'. There are two input fields: 'EMAIL ADDRESS' with the placeholder 'user@domain.com' and a lock icon, and 'PASSWORD' with a lock icon and masked characters. Below the password field is a checkbox for 'REMEMBER' and a link for 'RESET PASSWORD'. A large blue button labeled 'AUTHENTICATE' is below these. At the bottom of the white box is a button labeled 'CONTINUE WITHOUT SIGNING IN'. Below the white box, there is a link 'No account? REGISTER' and a link 'ADMIN: Login to access dashboard'. At the very bottom of the page, there are links for 'Terms of Service' and 'Privacy Policy'.



Converter Interface

METAR → IWXXM Converter

PREFERENCES

Theme



Enter TAC in the console below (choose product type as needed), then Convert. Upload files from the compact drop zone under the console when preferred.

This app stores work history in your browser (IndexedDB) and privacy / converter preferences in local storage. Nothing is sold or shared for advertising. You can review details anytime in Privacy settings.

GOT IT

PRIVACY SETTINGS

TAC report

AHL bulletin

IWXXM COLLECT

Product type

Auto-detect



Manual TAC
Input

Examples

Load demo example...

IWXXM preview

Soft-preview or Live IWXXM output will appear here.

Recent work

MY METARS

TAC · 2026-07-29 04:58

Draft · METAR · 7/29/2026, 12:58:05 AM

Decode (METAR)

PLAIN LANGUAGE

Report type (routine meteorological aerodrome report); station TTPP; day 29 at 04:00 UTC; from 100° at 3 kt; Prevailing visibility 9999 m; Few clouds at 1,600 ft; Temperature 27 °C, dewpoint 24 °C; QNH 1014 hPa. Not decoded: NOSIG.

CODE	EXPLANATION
------	-------------

METAR	Report type (routine meteorological aerodrome report)
-------	---

TTPP	ICAO station location indicator
------	---------------------------------

NEW METAR

CONVERT

CONVERT&SEND

UPLOAD TO DATABASE (1)

DISSEMINATE

DOWNLOAD ZIP (1)

CLEAR

Results

METAR TTPP 290400Z

Download: manual_input.txt



DOWNLOAD



COPY



SOURCE TAC

METAR TTPP 290400Z 10003KT 9999 FEW016 27/24 Q1014 NOSIG

```
<?xml version="1.0" encoding="UTF-8"?>
<iwxxm:METAR xmlns:iwxxm="http://icao.int/iwxxm/2025-2"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:aixm="http://www.aixm.aero/schema/5.1.1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  gml:id="metar.nosig.ttpp"
  reportStatus="NORMAL"
  permissibleUsage="OPERATIONAL"
  automatedStation="false">
  <iwxxm:issueTime>
    <gml:TimeInstant gml:id="t.issue">
      <gml:timePosition>2023-06-29T04:00:00Z</gml:timePosition>
    </gml:TimeInstant>
  </iwxxm:issueTime>
  <iwxxm:aerodrome>
    <aixm:AirportHeliport gml:id="ad.ttpp">
      <aixm:timeSlice>
        <aixm:AirportHeliportTimeSlice gml:id="ad.ts.ttpp">
          <gml:validTime/>
          <aixm:interpretation>SNAPSHOT</aixm:interpretation>
          <aixm:designator>TTPP</aixm:designator>
```

Practical operational tool that hides the complexity of IWXXM behind a simple, user-friendly interface



Metar & Speci

METAR → IWXXM Converter

Enter TAC in the console below (choose product type as needed), then Convert. Upload files from the compact drop zone under the console when preferred.

TAC report

AHL bulletin

IWXXM COLLECT

Product type

METAR

Manual TAC Input

Examples

METAR basic (annex3)

Demo / non-operational example: METAR basic (annex3)

1

METAR KJFK 231751Z 18012KT 10SM FEW040 15/07 A3005=

Decode (METAR)

PLAIN LANGUAGE

Report type (routine meteorological aerodrome report); station KJFK; day 23 at 17:51 UTC; from 180° at 12 kt; Prevailing visibility 10 statute miles; Few clouds at 4,000 ft; Temperature 15 °C, dewpoint 7 °C; Altimeter 30.05 inHg.

CODE	EXPLANATION
METAR	Report type (routine meteorological aerodrome report)
KJFK	ICAO station location indicator
231751Z	Observation time — day 23 at 17:51 UTC
18012KT	Surface wind — from 180° at 12 kt
10SM	Prevailing visibility 10 statute miles
FEW040	Few clouds at 4,000 ft
15/07	Temperature 15 °C, dewpoint 7 °C
A3005	Altimeter 30.05 inHg
=	Report terminator

Recent work

MY METARS

TAC · 2026-07-28 20:22

Draft · METAR · 7/28/2026, 4:22:19 PM

KJFK · 2026-07-28 20:22

WIP · METAR · 7/28/2026, 4:22:07 PM

<?xml version="1.0" encoding="UTF-8"?>
<iwxxm:METAR xmlns:iwxxm="http://icao.int/iwx
m/2025-2"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:aixm="http://www.aixm.aero/schema/5.1.
1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-i
nstance"
gml:id="metar.basic.kjfk"
reportStatus="NORMAL"
permissibleUsage="OPERATIONAL"
automatedStation="false">
<iwxxm:issueTime>
 <gml:TimeInstant gml:id="t.issue">
 <gml:timePosition>2023-06-23T17:51:00Z</g
ml:timePosition>
 </gml:TimeInstant>
</iwxxm:issueTime>
<iwxxm:aerodrome>
 <aixm:AirportHeliport gml:id="ad.kjfk">
 <aixm:timeSlice>
 <aixm:AirportHeliportTimeSlice gml:id="a
d.ts.kjfk">
 <gml:validTime/>
 <aixm:interpretation>SNAPSHOT</aixm:i
nterpretation>
 <aixm:designator>KJFK</aixm:designato
r/>
 <aixm:locationIndicatorICAO>KJFK</aix
m:locationIndicatorICAO>
 </aixm:AirportHeliportTimeSlice>
 </aixm:timeSlice>
 </aixm:AirportHeliport>
</iwxxm:aerodrome>
<iwxxm:observationTime>
 <gml:TimeInstant gml:id="t.obs">
 <gml:timePosition>2023-06-23T17:51:00Z</g
ml:timePosition>
 </gml:TimeInstant>
</iwxxm:observationTime>
<iwxxm:observation>
 <iwxxm:MeteorologicalAerodromeObservation g
ml:id="obs.1" cloudAndVisibilityOK="false">
 <iwxxm:airTemperature uom="Cel">15</iwxx
m:airTemperature>
 <iwxxm:dewpointTemperature uom="Cel">7</i
wxxm:dewpointTemperature>
 <iwxxm:qnh uom="hPa">1017.6</iwxxm:qnh>
 <iwxxm:surfaceWind>
 <iwxxm:AerodromeSurfaceWind variableWin
dDirection="false">
 <iwxxm:meanWindDirection uom="deg">18
0</iwxxm:meanWindDirection>

METAR → IWXXM Converter

Enter TAC in the console below (choose product type as needed), then Convert. Upload files from the compact drop zone under the console when preferred.

TAC report

AHL bulletin

IWXXM COLLECT

Product type

SPECI

Manual TAC Input

Examples

SPECI CAVOK (iwxxm_us)

Demo / non-operational example: SPECI CAVOK (iwxxm_us)

1

SPECI KJFK 231751Z 18012KT CAVOK 15/07 A3005 RMK A02=

Decode (SPECI)

PLAIN LANGUAGE

Report type (special meteorological aerodrome report); station KJFK; day 23 at 17:51 UTC; from 180° at 12 kt; Ceiling and visibility OK; Temperature 15 °C, dewpoint 7 °C; Altimeter 30.05 inHg; Remarks section; Automated station with precipitation discriminator.

CODE	EXPLANATION
SPECI	Report type (special meteorological aerodrome report)
KJFK	ICAO station location indicator
231751Z	Observation time — day 23 at 17:51 UTC
18012KT	Surface wind — from 180° at 12 kt
CAVOK	Ceiling and visibility OK
15/07	Temperature 15 °C, dewpoint 7 °C
A3005	Altimeter 30.05 inHg
RMK	Remarks section
A02	Automated station with precipitation discriminator
=	Report terminator

Recent work

MY METARS

TAC · 2026-07-28 20:22

Draft · METAR · 7/28/2026, 4:22:19 PM

KJFK · 2026-07-28 20:22

WIP · METAR · 7/28/2026, 4:22:07 PM

<?xml version="1.0" encoding="UTF-8"?>
<iwxxm:SPECI xmlns:iwxxm="http://icao.int/iwx
m/2025-2"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:aixm="http://www.aixm.aero/schema/5.1.
1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-i
nstance"
gml:id="speci.cavok.kjfk"
reportStatus="NORMAL"
permissibleUsage="OPERATIONAL"
automatedStation="false">
<iwxxm:issueTime>
 <gml:TimeInstant gml:id="t.issue">
 <gml:timePosition>2023-06-23T17:51:00Z</g
ml:timePosition>
 </gml:TimeInstant>
</iwxxm:issueTime>
<iwxxm:aerodrome>
 <aixm:AirportHeliport gml:id="ad.kjfk">
 <aixm:timeSlice>
 <aixm:AirportHeliportTimeSlice gml:id="a
d.ts.kjfk">
 <gml:validTime/>
 <aixm:interpretation>SNAPSHOT</aixm:i
nterpretation>
 <aixm:designator>KJFK</aixm:designato
r/>
 <aixm:locationIndicatorICAO>KJFK</aix
m:locationIndicatorICAO>
 </aixm:AirportHeliportTimeSlice>
 </aixm:timeSlice>
 </aixm:AirportHeliport>
</iwxxm:aerodrome>
<iwxxm:observationTime>
 <gml:TimeInstant gml:id="t.obs">
 <gml:timePosition>2023-06-23T17:51:00Z</g
ml:timePosition>
 </gml:TimeInstant>
</iwxxm:observationTime>
<iwxxm:observation>
 <iwxxm:MeteorologicalAerodromeObservation g
ml:id="obs.1" cloudAndVisibilityOK="true">
 <iwxxm:airTemperature uom="Cel">15</iwxx
m:airTemperature>
 <iwxxm:dewpointTemperature uom="Cel">7</i
wxxm:dewpointTemperature>
 <iwxxm:qnh uom="hPa">1017.6</iwxxm:qnh>
 <iwxxm:surfaceWind>
 <iwxxm:AerodromeSurfaceWind variableWin
dDirection="false">
 <iwxxm:meanWindDirection uom="deg">18
0</iwxxm:meanWindDirection>
 <iwxxm:meanWindSpeed uom="[kn 1]">12

Loaded SPECI CAVOK (iwxxm_us) example

METAR → IWXXM Converter

PREFERENCES

Theme



Enter TAC in the console below (choose product type as needed), then Convert. Upload files from the compact drop zone under the console when preferred.

TAC report

AHL bulletin

IWXXM COLLECT

Product type

TAF

Manual TAC
Input

Examples

TAF basic (annex3)

Demo / non-operational example: TAF basic (annex3)

1 TAF YUDO 151800Z 1600/1618 13005MPS
9000 BKN020=

▼ Decode (TAF)

PLAIN LANGUAGE

Report type (terminal aerodrome forecast); station YUDO; day 15 at 18:00 UTC; day 16 00:00 UTC to day 16 18:00 UTC; from 130° at 5 m/s; Forecast visibility 9000 m; Forecast broken clouds at 2,000 ft.

CODE	EXPLANATION
TAF	Report type (terminal aerodrome forecast)
YUDO	ICAO station location indicator
151800Z	Issue time — day 15 at 18:00 UTC
1600/1618	Validity — day 16 00:00 UTC to day 16 18:00 UTC
13005MPS	Forecast wind — from 130° at 5 m/s
9000	Forecast visibility 9000 m
BKN020	Forecast broken clouds at 2,000 ft
=	Report terminator

IWXXM preview Passed

```
<?xml version="1.0" encoding="UTF-8"?>
<iwxxm:TAF xmlns:iwxxm-us="http://www.weather.gov/iwxxm-us/3.0"
  xmlns:iwxxm="http://icao.int/iwxxm/2025-2"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:aixm="http://www.aixm.aero/schema/5.1.1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  gml:id="taf.us.yudo"
  reportStatus="NORMAL"
  permissibleUsage="OPERATIONAL">
  <iwxxm:issueTime>
    <gml:TimeInstant gml:id="t.issue">
      <gml:timePosition>2012-08-15T18:00:00Z</gml:timePosition>
    </gml:TimeInstant>
  </iwxxm:issueTime>
  <iwxxm:aerodrome>
    <aixm:AirportHelipoint gml:id="ad.yudo">
      <aixm:timeSlice>
        <aixm:AirportHelipointTimeSlice gml:id="ad.ts.yudo">
          <gml:validTime/>
          <aixm:interpretation>SNAPSHOT</aixm:interpretation>
          <aixm:designator>YUDO</aixm:designator>
          <aixm:locationIndicatorICAO>YUDO</aixm:locationIndicatorICAO>
          </aixm:AirportHelipointTimeSlice>
        </aixm:timeSlice>
      </aixm:AirportHelipoint>
    </iwxxm:aerodrome>
    <iwxxm:validPeriod>
      <gml:TimePeriod gml:id="t.valid">
        <gml:beginPosition>2012-08-16T00:00:00Z</gml:beginPosition>
        <gml:endPosition>2012-08-16T18:00:00Z</gml:endPosition>
      </gml:TimePeriod>
    </iwxxm:validPeriod>
    <iwxxm:baseForecast>
      <iwxxm:MeteorologicalAerodromeForecast gml:id="fcst.base.yudo" cloudAndVisibilityOK="false">
        <iwxxm:phenomenonTime xlink:href="#t.valid"/>
        <iwxxm:prevailingVisibility uom="m">9000</iwxxm:prevailingVisibility>
        <iwxxm:surfaceWind>
          <iwxxm:AerodromeSurfaceWindForecast variableWindDirection="false">
            <iwxxm:meanWindDirection uom="deg">13
```

Recent work

MY METARS

TAC - 2026-07-28 20:22

Draft · METAR · 7/28/2026, 4:22:19 PM

KJFK - 2026-07-28 20:22

WIP · METAR · 7/28/2026, 4:22:07 PM

Next Steps



Testing IWXXM through:

- WIS2 dissemination pathway
- EDIS → RTH Washington dissemination
- AMHS / SWIM / AFS adapters



Thank you!

CMO Headquarters Unit, www.cmo.org.tt