# CMO support to IWXXM Transition

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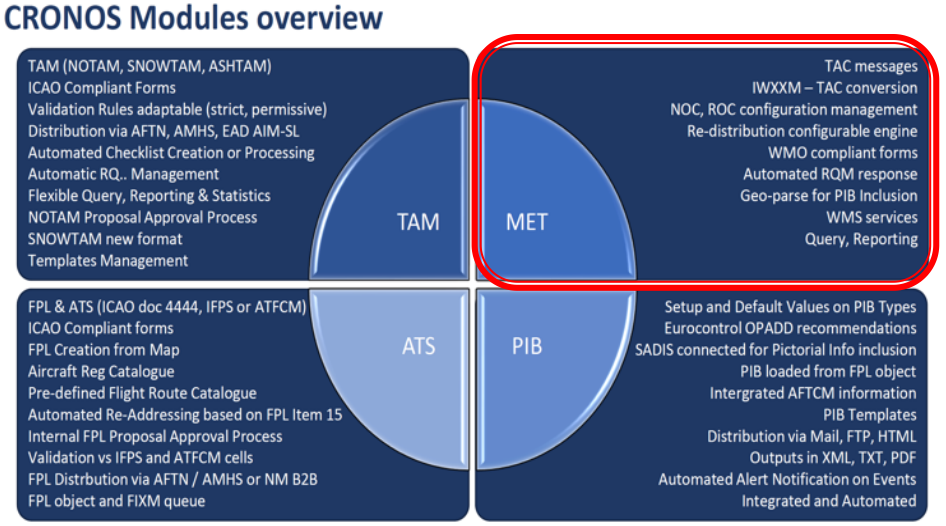
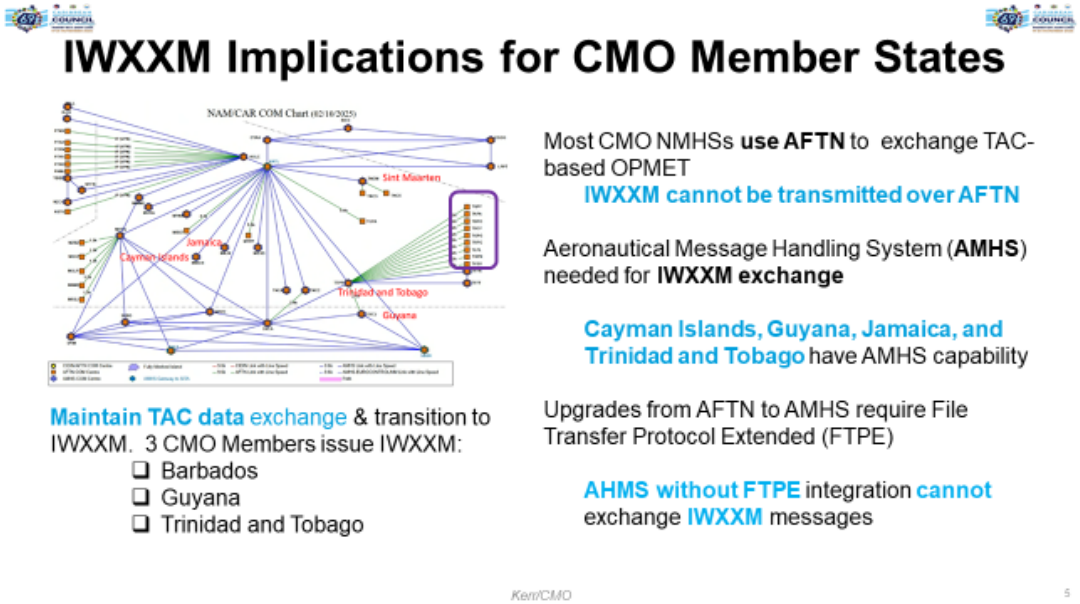
Areas Covered:

- 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

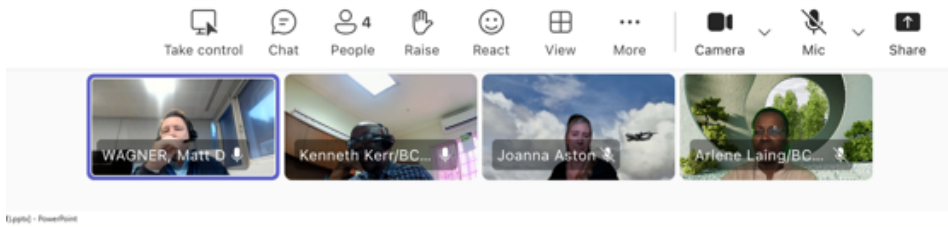
- Software from CMO Science and Technology Officer for conversion
- Exchange of operational meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) format became a Standard in 2020
- Access to AMHS systems to allow exchange of OPMET data in IWXXM format based on ATS Message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



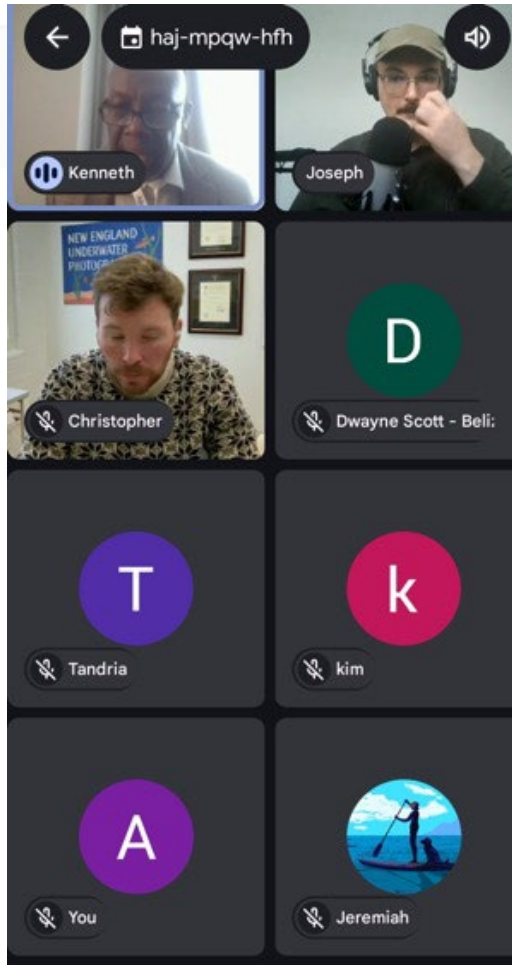



# CMO HQ: Investigating options for IWXXM Transition

- 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



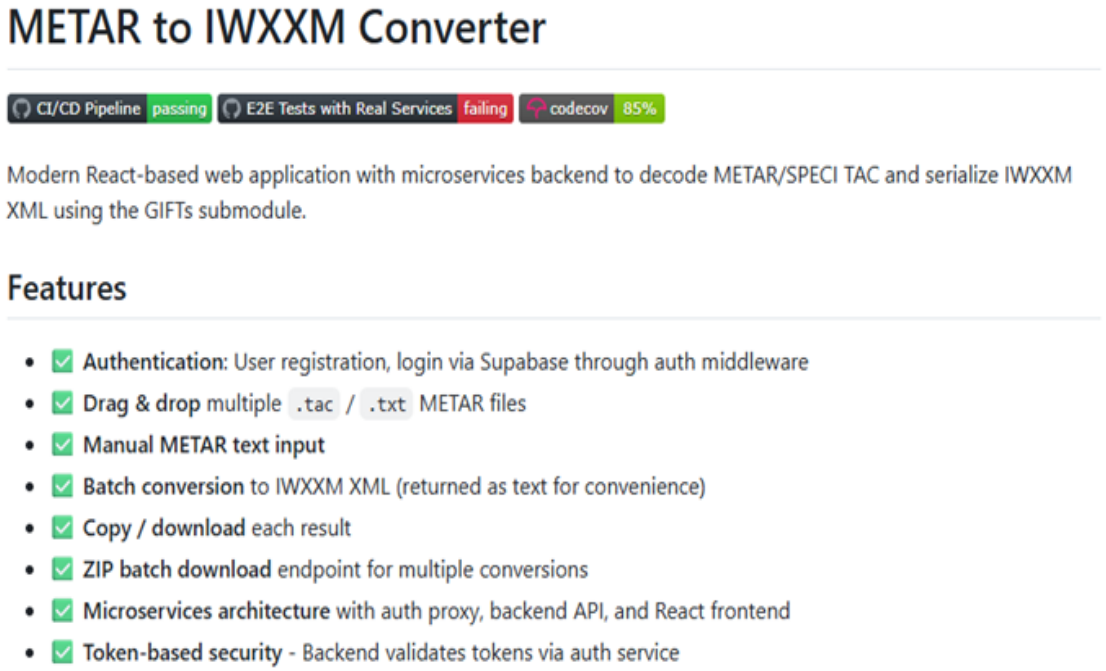

| Country | METAR | Method | IWXXM | Method |
|---|---|---|---|---|
| Anguilla BCT | ✓ | EDIS | x | |
| Antigua and Barbados | ✓ | EDIS | x | |
| Bahamas | ✓ | | x | |
| Barbados | ✓ | BMS Software | ✓ | BMS Software |
| Belize | ✓ | EDIS | x | |
| Cayman islands BCT | ✓ | EDIS | x | |
| Dominica | ✓ | 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
- IWXMM translation tool for METARs for NMSs of CMO Members

**User: admin@metar.local**
**Password: xxxxxxx!**



## 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

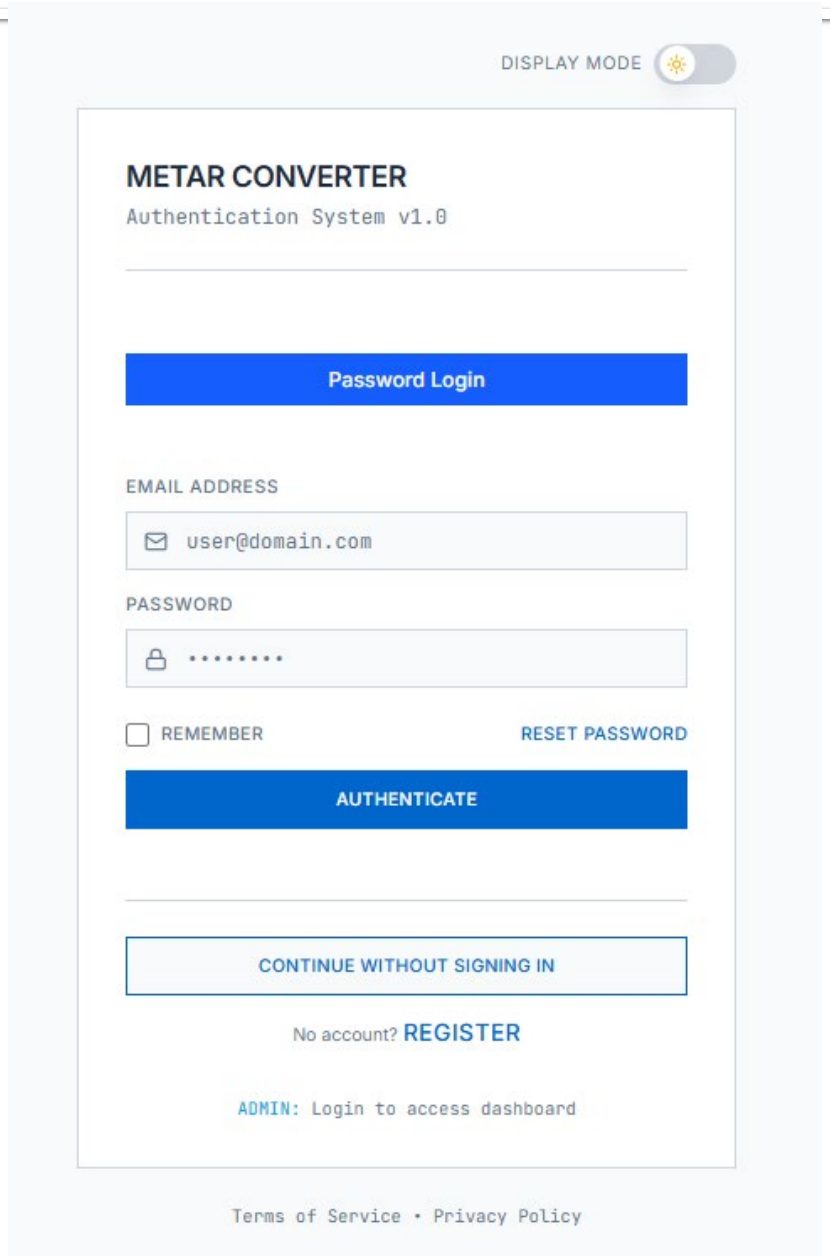
- ✅ **Authentication**: User registration, login via Supabase through auth middleware
- ✅ **Drag & drop** multiple `.tac` / `.txt` METAR files
- ✅ **Manual METAR text input**
- ✅ **Batch conversion** to IWXXM XML (returned as text for convenience)
- ✅ **Copy / download** each result
- ✅ **ZIP batch download** 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)

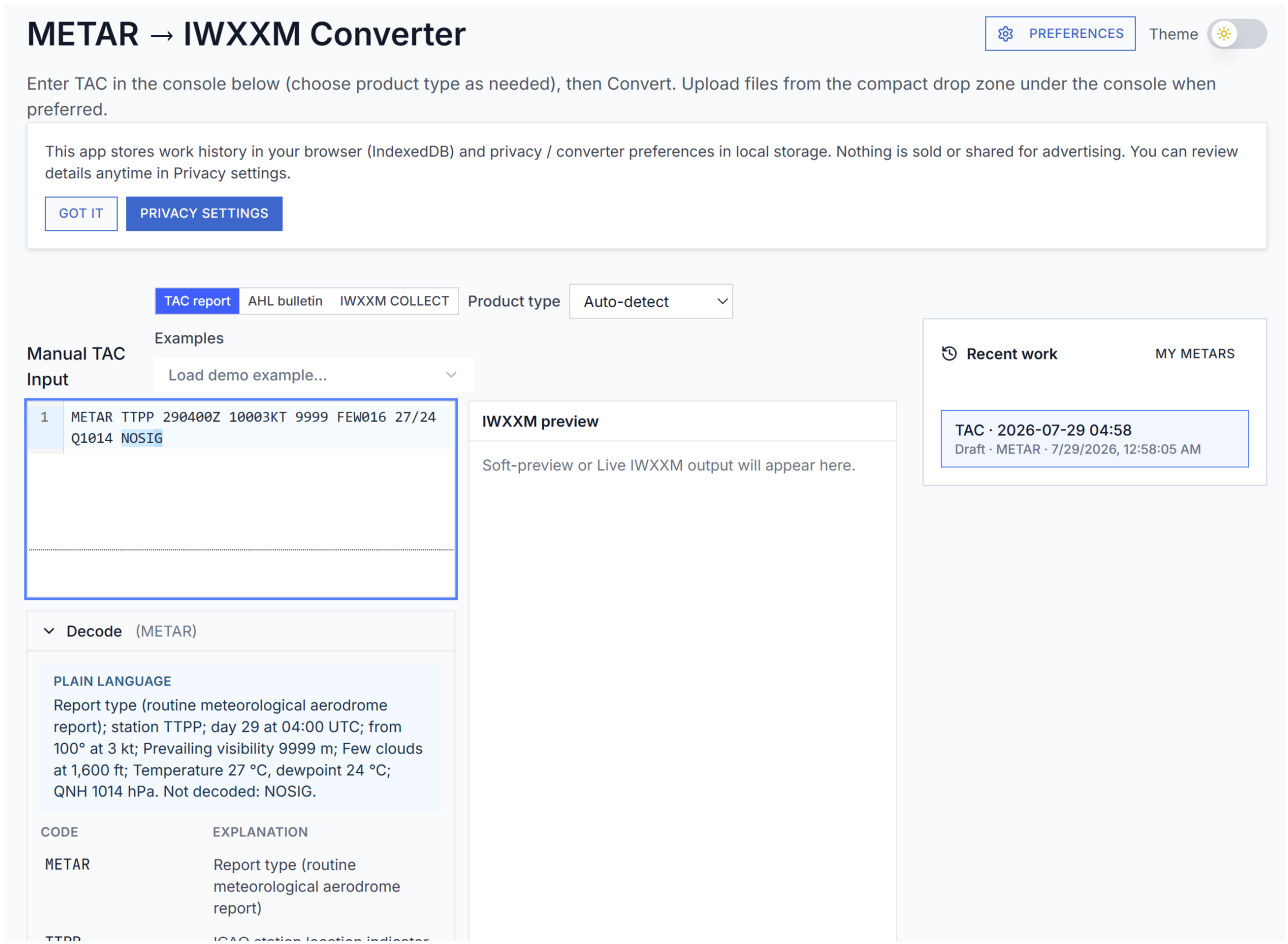
# Following Initial Testing - Additional Upgrades

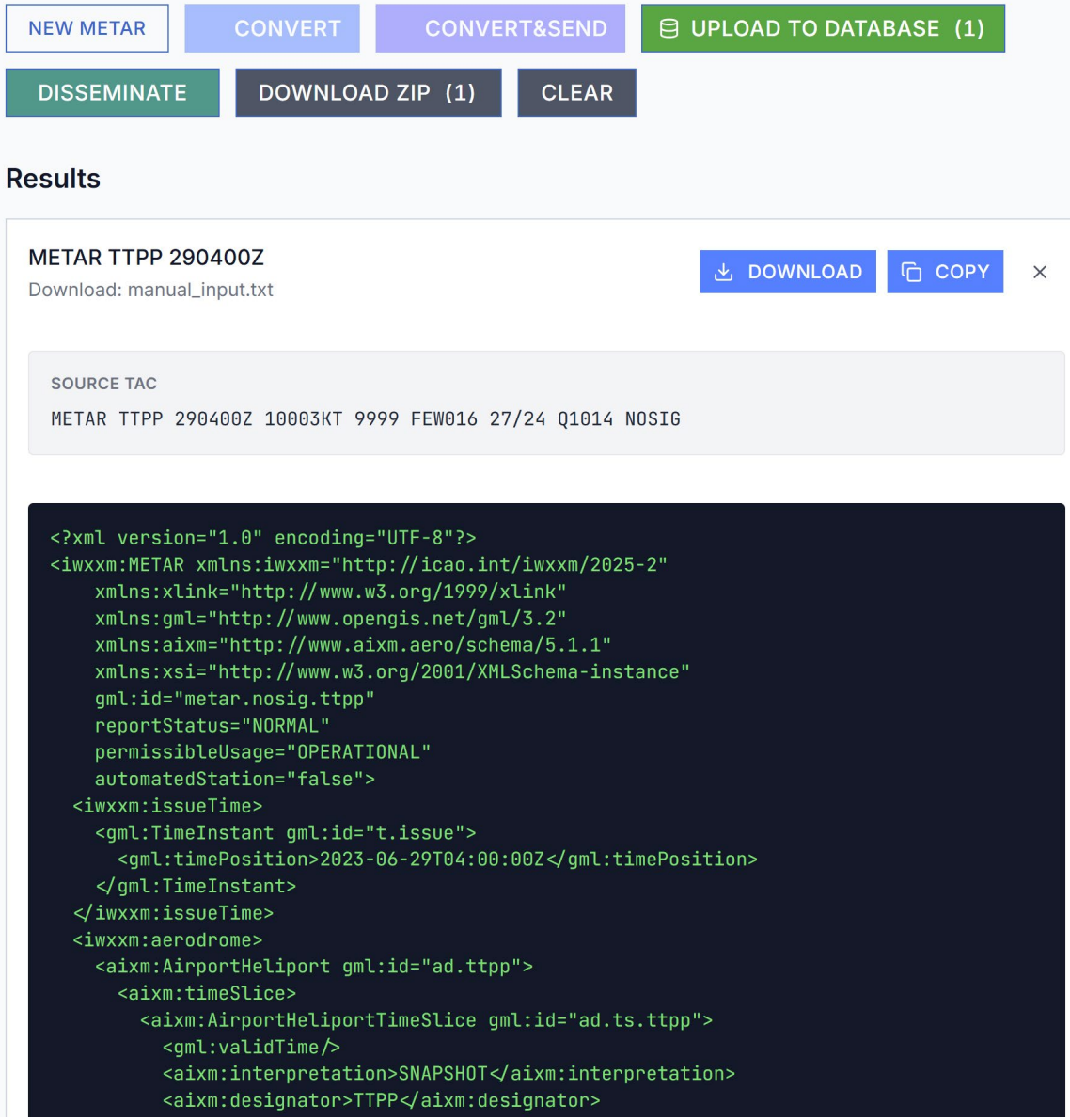
Current feature set:

- 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



# Converter Interface

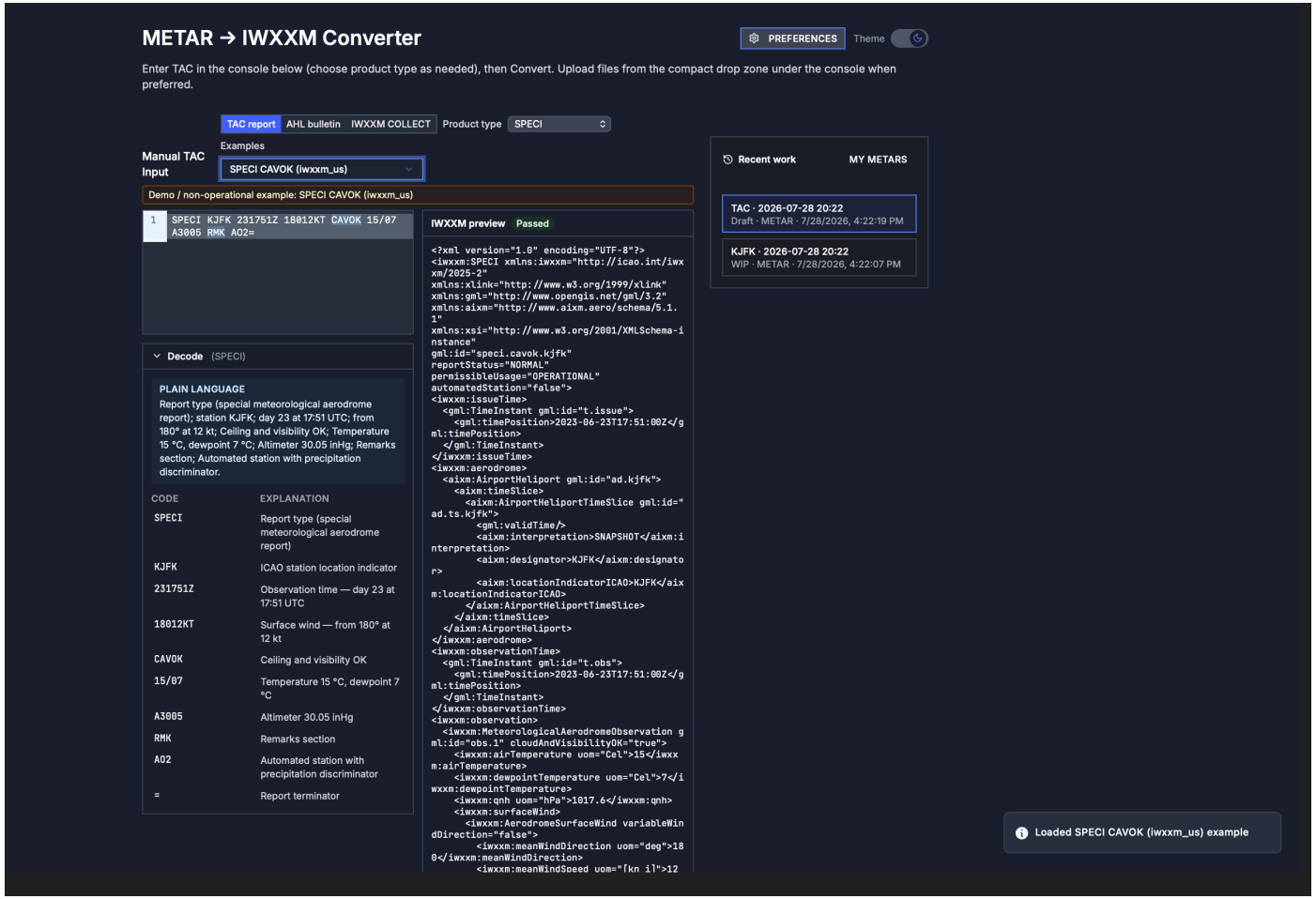



**Practical operational tool that hides the complexity of IWXXM behind a simple, user-friendly interface**

# Metar & Speci


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
METAR
Examples
Manual TAC Input
METAR basic (annex3)
Demo / non-operational example: METAR basic (annex3)
1 METAR KJFK 231751Z 18012KT 10SM FEW040 15/07 A3005=
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
IWXXM preview
Passed
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


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
SPECI
Examples
Manual TAC Input
SPECI CAVOK (iwxxm_us)
Demo / non-operational example: SPECI CAVOK (iwxxm_us)
1 SPECI KJFK 231751Z 18012KT CAVOK 15/07 A3005 RMK AO2=
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
IWXXM preview
Passed
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
AO2
Automated station with precipitation discriminator
=
Report terminator
Loaded SPECI CAVOK (iwxxm_us) example

# TAF


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=
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
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:AirportHeliport gml:id="ad.yudo">
<aixm:timeSlice>
<aixm:AirportHeliportTimeSlice gml:id="ad.ts.yudo">
<gml:validTime/>
<aixm:interpretation>SNAPSHOT</aixm:interpretation>
<aixm:designator>YUDO</aixm:designator>
<aixm:locationIndicatorICAO>YUDO</aixm:locationIndicatorICAO>
</aixm:AirportHeliportTimeSlice>
</aixm:timeSlice>
</aixm:AirportHeliport>
</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
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

# 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**