



METEOROLOGY PANEL



Efforts toward Meteorological Information Exchange

P/05 - ICAO NACC MET/TF/4, 28-31 July 2026

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Outline

1. Overview of ICAO METP WG-MIE

2. Items for Regional Coordination

- IWXXM exchange, availability, versions, extensions, and points of contact
- Establishing a METNO procedure
- Guidance material
- Use of AMHS with FTBP
- Consistency across all regions

3. Plans for Global MET Information Exchange

- Removal of TAC as a Standard from Annex 3
- Transition to SWIM (and retirement of FTPs)

4. Other METP items of relevance



Overview of ICAO METP WG-MIE

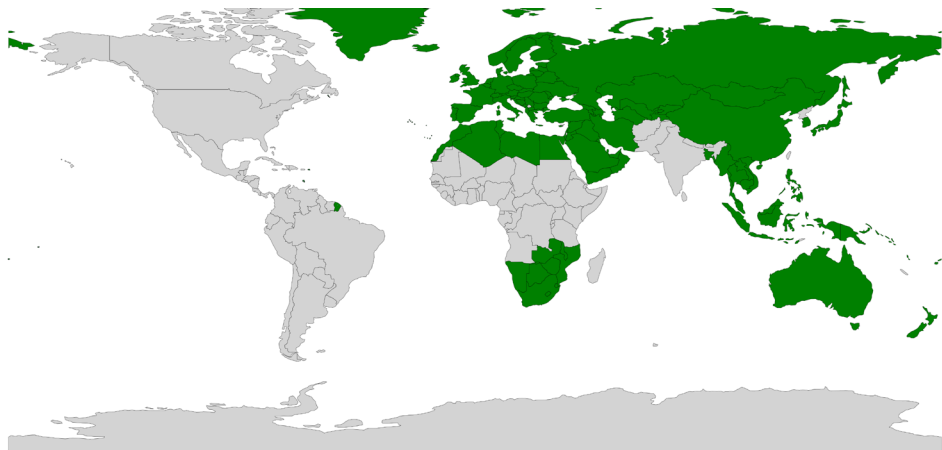
- The ICAO Meteorology Panel (METP) has three Working Groups:
 - Working Group on Meteorological Information Exchange (WG-MIE)
 - Working Group on Meteorological Requirements and Development (WG-MRAD)
 - Working Group on Meteorological Operations Groups (WG-MOG)
- WG-MIE leads the development of policies and procedures in support of implementing the ICAO Meteorological Information Exchange Model (IWXXM) format and MET aspects of System Wide Information Management (SWIM)
 - This includes activities to support strengthening and harmonizing the inter-regional exchange of aeronautical MET information in IWXXM format



Items for Regional Coordination

➔ IWXXM Exchange – Global Availability

- ➔ IWXXM became a Standard format for the exchange of MET information in November 2020 with Amendment 79 to ICAO Annex 3, *Meteorological Service for International Air Navigation*
- ➔ As of June 2026, global availability of IWXXM is lacking; there remains a limited volume of IWXXM being exchanged globally over the Aeronautical Fixed Service (AFS)
- ➔ IWXXM should be exchanged over the Aeronautical Message Handling System (AMHS)



Status of global IWXXM availability from ROC London as of June 2026



Items for Regional Coordination

- ➔ IWXXM Exchange – Global Availability
 - ➔ IWXXM is the cornerstone to all current and future MET services; the industry cannot deliver future global services until IWXXM is fully implemented
 - ➔ Additional implications of delayed availability of IWXXM:
 - ➔ End users delaying their transition to IWXXM due to insufficient availability
 - ➔ Delayed transition to SWIM across the entire MET domain
 - ➔ Financial burden on providers required to produce two data formats
 - ➔ Reliance on legacy systems
 - ➔ Duties of ICAO-designated centres remaining unfulfilled, levying a greater workload on centres who provide IWXXM and leaving them without functional backups



Items for Regional Coordination

→ IWXXM Exchange – Versions

- WG-MIE agreed that only one version of IWXXM should be exchanged operationally at a time; Version 2025-2 is the latest (published by WMO in November 2025) and only version that should be currently exchanged
- Future versions will be included in the *Procedures for Air Navigation Services – Meteorology* (PANS-MET, Doc 10157) with a one-year delayed applicability
- ICAO Secretariat will issue a State Letter for any version update not tied to an Annex 3 and PANS-MET amendment
- Version 2025-2 schemas can be found at <https://schemas.wmo.int/iwxxm/2025-2/>

IWXXM Version	<u>1.1</u>	<u>2.1</u>	<u>3.0</u>	<u>2021-2</u>	<u>2023-1</u>	<u>2025-2</u>
<i>METAR and SPECI</i>	1.1.0	2.1.1	3.0.0	3.1.0	3.1.0	3.2.0
<i>TAF</i>	1.1.0	2.1.1	3.0.0	3.0.1	3.0.1	3.0.2
<i>SIGMET</i>	1.1.0	2.1.1	3.0.0	4.0.0	4.0.1	4.0.2
<i>AIRMET</i>		2.1.1	3.0.0	3.1.0	3.1.1	3.1.2
<i>Tropical Cyclone Advisory</i>		2.1.1	3.0.0	3.1.0	3.1.0	3.1.1
<i>Volcanic Ash Advisory</i>		2.1.1	3.0.0	3.1.0	3.1.0	3.2.0
<i>Space Weather Advisory</i>			3.0.0	3.0.1	3.0.1	3.1.0
<i>WAFS SIGWX Forecast</i>				1.0.0	1.1.0	1.2.0
<i>Quantitative Volcanic Ash Concentration Information</i>						1.0.0
<i>Volcano Observatory Notice for Aviation</i>						1.0.0
ICAO Annex 3 Amendment	76	77	78	79-80	79-81	82
PANS-MET Edition						first

IWXXM Versions by MET product



Items for Regional Coordination

➔ IWXXM Exchange – State Extensions

- ➔ While the use of extensions within IWXXM is discouraged and should only be introduced where necessary, State extensions should be implemented in a globally-standardized way
- ➔ A global repository for State extensions has been established: <https://eurodex.austrocontrol.at/IWXXM-ext.php>
- ➔ All States are requested to provide information about their extensions for publishing on the repository; METP welcomes ICAO assistance (Secretariat and Regional Officers) to facilitate this (ICAO is establishing an email account). Mandatory information includes:
 - ➔ Name, version, and description of the content of the extension
 - ➔ Related IWXXM schema and version
 - ➔ Link to technical webpage of the extension (when possible)



Items for Regional Coordination

➔ IWXXM Exchange – State Extensions



EUR Data Management Group

[DMG-Home](#)[General Information](#)[Procedures](#)[IWXXM](#)[Links](#)[Contact](#)

IWXXM Global Extension Repository

On behalf of ICAO MET Panel/Met Information Exchange workgroup (WG-MIE), this page aims to gather data on globally used IWXXM State extensions. Extension's designers are strongly encouraged to provide information by using procedure described in [IWXXM Guidelines](#), chapter "3.1.2 Variances to IWXXM".

Following you can find a list of available IWXXM-extension. The XSD-files are provided for download in zip-format.

Name	Version	Description	State	Point of Contact	XSD-File	Related IWXXM Leaf	Related IWXXM Version
MFLocalReport	1.0	Runway's observation data	France	benjamin.revel@meteo.fr	Download	METAR/SPECI	3.0.0
AU-TAF	1.0	This extension supports the inclusion of INTER, Temp and QNH fields.	Australia	david.house@bom.gov.au	Download	TAF	3.0.1

Global IWXXM Extension Repository, hosted by AustroControl



Items for Regional Coordination

→ IWXXM Exchange – Single location messages

- Some States, particularly in Europe, have chosen to move to issuing single location messages in IWXXM rather than bulletins

- Austria
- Belarus
- Belgium
- Czechia
- Georgia
- Italy
- Kazakhstan

- North Macedonia
- Portugal
- Republic of Moldova
- Romania
- Slovenia
- Türkiye
- United Kingdom

- All EUR OPMET changes are communicated via the METNO (slide 11), so that all users are aware of the changes and additions to available data, and regardless of whether the data is accessed via AFS or SWIM, the user gets the same data at the same time
- WG-MIE is determining whether to develop guidance to support States who wish to do so



Items for Regional Coordination

- ➔ IWXXM Exchange – How to improve?
 - ➔ METP endorses the following actions to advance progress of global IWXXM:
 - ➔ Publishing the status of States' readiness (both availability and quality of data)
 - ➔ Increasing engagement at global and regional levels to better understand challenges
 - ➔ Establishing test networks for IWXXM information exchange
 - ➔ Establishing focal points in all ICAO Regions for coordination
- ➔ METP seeks to identify contacts from each regional OPMET Centre (ROC) and Inter-Regional OPMET Gateway (IROG) to develop a list of contacts



Items for Regional Coordination

- ➔ Establishing a meteorological notice (METNO) procedure
 - ➔ METNO has been adopted in many regions to review currently available OPMET data (in both traditional alphanumeric code (TAC) and IWXXM format) without performing continuous monitoring exercises
 - ➔ The METNO process is defined in the IWXXM Guidelines (https://www.icao.int/sites/default/files/METP/Documents/Guidelines-for-the-Implementation-of-OPMET-Data-Exchange-using-IWXXM_5th-Edition.pdf)
 - ➔ METP notes (and supports) NACC's intention to establish METNO (refer to Conclusion MET TF/3/01: Action Plan for the Implementation of OPMET IWXXM Data Dissemination in the NAM/CAR region)



Items for Regional Coordination

- ➔ Establishing a meteorological notice (METNO) procedure: Generic timeline

Minimum date before	Action	Subsequent Activity / Additional Notes
29 Days	NOCs wishing to make changes send planned changes to ROC	Via email
28 Days	ROC collect changes in their area	Usually via email/AFS
21 Days	ROC sends collated changes to regional FP	FP reviews changes and shares with their regional group (usually RODBs and ROCs), usually via email/AFS
7 Days	ROCs provide the updated METNO-registered OPMET bulletins (TTAAii CCCC) to the: 1. ROCs within its region 2. NOCs within its Area of Responsibility And when data is eligible for inter-regional distribution, 3. IROGs within its Area of Responsibility	At this point, the changes in the METNO are fixed as systems will start making changes in anticipation
Day 0	Operational changes go live	This must be on an AIRAC date¹

¹AIRAC dates ([28-day cycle](#)) defined in ICAO Annex 15, Ch. 6, and ICAO Doc 10066



Items for Regional Coordination

→ Establishing a meteorological notice (METNO) procedure: Format

description	format	Fict	Deleting a Bulletin	DELBU TTAai CCCC, or DELBU FIR/UIR to where app	DELBU FTOS31 LOWM DELBU WSRA31 ALAK UATT
METNO header	NOAA99 CCCC YYGGgg - AA : 2 character area designator - CCCC : issuing centre - YYGGgg : day hour minute issue time in UTC	NOI	This is to be used when an existing bulletin is planned to be discontinued. There is no need to mention all the contained location(s) To add report(s) to existing an bulletin: This statement is used when a new	Notes: It is possible to combine a number of changes into a single METNO, even making multiple changes to a single report (remove some stations & add	Complete message: NOBX99 EBBR 302359 METNO EUR OPMET 221228 NEWBUL FCMJ31 LWSK LWSK LWOH NEWBUL WVCZ31 LKPR LKAA DELBU FTOS31 LOWM DELBU WSRA31 ALAK UATT ADDRPT FCTU33 LTAA LTAJ LTCF LTCI LTFH RMVRPT FCSN31 ESWI ESOW ESSA ESSB ESSP ESSV END
Message Identifier (METNO) + Product Description (EUR OPMET) + AIRAC Date (YYMMDD) that these changes will be applied (usually 21 days ahead)	METNO <area> OPMET YYMMDD	ME	Full sample given in Appendix C to <i>IWXXM Guidelines</i> document		
Adding a new bulletin This is to be used when a completely new bulletin is planned to be distributed	NEWBUL TTAai CCCC LocID,LocId... - TTAai CCCC – proposed header information of new bulletin - LocId... – a list of CCCCs of each ICAO location to be included in this bulletin	NEI NEI	not the before or after state To remove report(s) from an existing bulletin N.B. this specifies the changes to the bulletin not the before or after state	RMVR LocId(s) - re Li T C contained to a single area (FIR etc). There is no provision for any use of wildcards (like “*”)	
			end of METNO	END	END



Items for Regional Coordination

→ Guidance material

- Reference documents are provided on the ICAO Public METP page:
<https://www.icao.int/airnavigation/aeronautical-meteorological-service/documents>
- Current documentation related to IWXXM and SWIM include:

IWXXM Guidelines, Version 5

Provides guidance on implementing IWXXM format **over the AFS**

Guidelines for MET-SWIM Implementation

Provides practical, operational guidance to stakeholders on how to implement MET services in SWIM

MET-SWIM Roadmap, Version 3

Defines global, phased pathway for transitioning MET information from message-based to service-based exchange



Items for Regional Coordination

- ➔ Guidance material
- ➔ Other updates to METP documentation:

Doc 9766, *Handbook on the International Airways Volcano Watch (IAVW)*

Updated guidance on new Volcano Observatory Notice to Aviation (VONA) and Quantitative Volcanic Ash concentration information (QVA) products

Doc 8896, *Manual of Aeronautical Meteorological Practice, 14th Edition (2026)*

Includes a number of updates for WAFS, QVA, VONA, converting wind direction, map projections, and editorial changes

Annex 3, Amendment 82

Became applicable
November 2025

PANS-MET, First Edition

Became applicable
November 2025



Items for Regional Coordination

- ➔ Use of AMHS with File Transfer Body Part (FTBP)
 - ➔ Successful IWXXM exchange requires FTBP capability within AMHS
 - ➔ WG-MIE wants to ensure each Region is implementing AMHS with FTBP consistently
 - ➔ Does NACC plan to implement specific requirements for AMHS with FTBP?
 - ➔ Are any States experiencing issues with FTBP capability?
 - ➔ Where AMHS/FTBP is not available and where mutually agreed, States can use other secure protocols to transfer of IWXXM between NOCs and ROCs



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Items for Regional Coordination

- ➔ Consistency across all Regions
- ➔ METP supports enhanced collaboration between the ICAO Regions and the METP



Panel sets Requirements



Regions manage implementation



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4. Other METP items of relevance



Plans for Global Information Exchange

- ➔ Removal of TAC as a Standard from Annex 3
 - ➔ Traditional text-based MET products in TAC format no longer suffice for modern international air navigation
 - ➔ To support a full transition to IWXXM, the METP included a proposal to remove TAC as a Standard format for international MET information exchange in Amendment 83 to Annex 3, with delayed applicability of November 2030
 - ➔ Refer Attachment B to State Letter AN 10/1-26/5 for the *Transition Plan for Modernized MET Information Exchange*
 - ➔ State consultation period closed in early July
 - ➔ ICAO Secretariat will review feedback and confer with ICAO Air Navigation Commission (ANC) on finalized amendment package



Plans for Global Information Exchange

- ➔ Removal of TAC as a Standard from Annex 3
- ➔ If approved, METP will need to work diligently on the following items associated with the removal of TAC from Annex 3:
 - ➔ Consequential amendments and communication with other Panels
 - ➔ Transition of TAC templates in PANS-MET from Appendices (binding) to Attachments (guidance)
 - ➔ Future of flight briefing services
 - ➔ Communication of guidance for visualizing IWXXM data

Airport	Validity	Wind	Visibility	Weather
ENBL	17/05/25 08:50 UTC	21004KT 160V260	8KM 2500M W	-RA VCFG

Table 1a – tabular representation of METAR data.

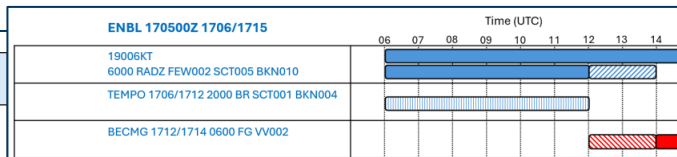


Figure 2a – Tabular representation of a TAF which indicates the validity time of each part of the TAF. Shading is used to represent the different change groups (in this example diagonal stripes indicated a gradual change to the conditions, i.e. BECMG, whilst vertical stripes indicated temporary changes). Colour can also be used to give an indication of how each change groups relates to pre-agreed threshold values.

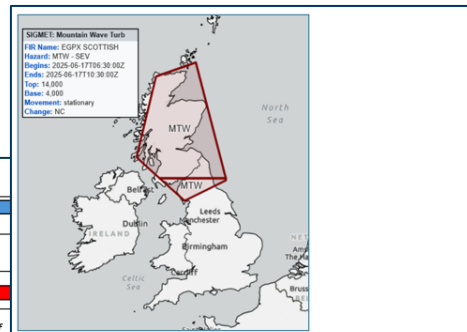


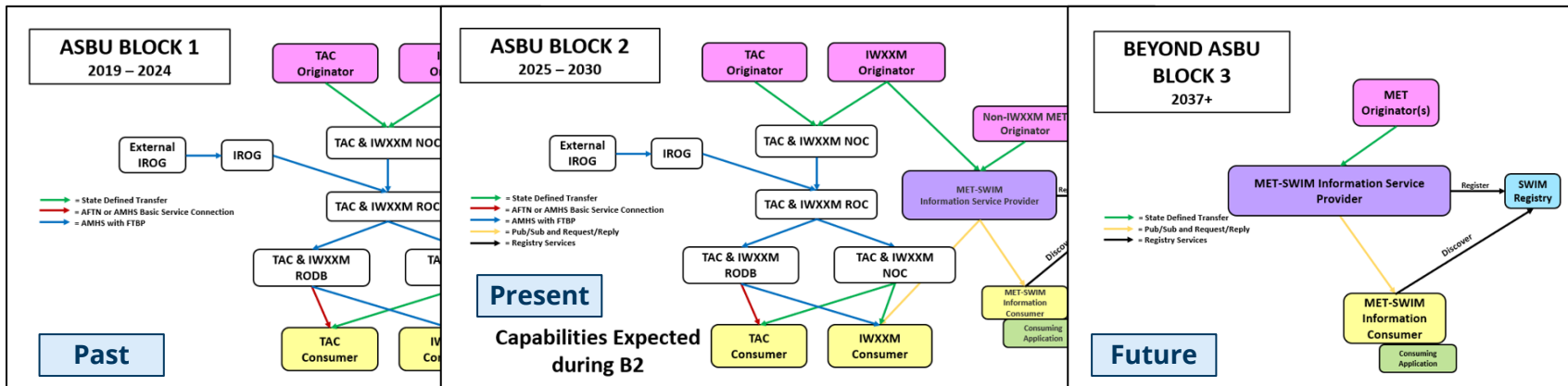
Figure 3 – representation of an IWXXM SIGMET on a map.



Plans for Global Information Exchange

➤ Transition to SWIM

- Through the Global Air Navigation Plan (GANP), ICAO has made SWIM implementation a key priority across all information domains
- Amendment 81 to Annex 3 (effective November 2024) included a provision for States to *"ensure that MET information [...] is provided through information services"*



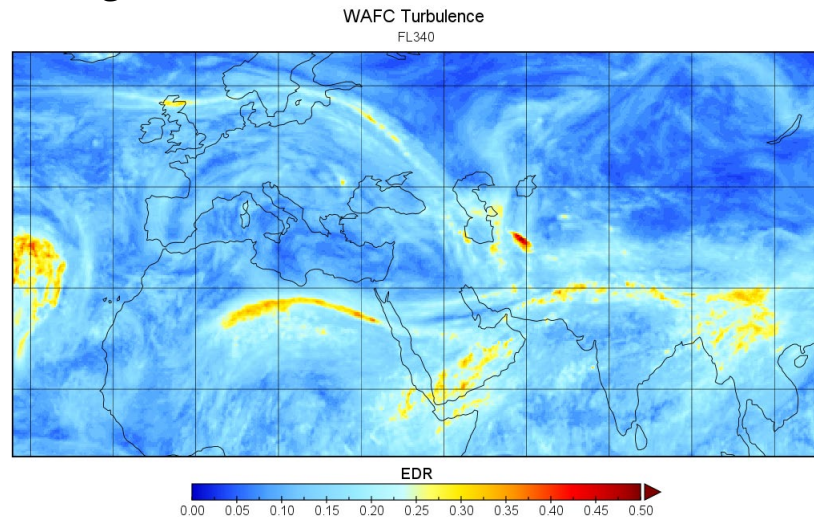


Plans for Global Information Exchange

➔ Transition to SWIM

➔ Available MET-SWIM services:

- ➔ **World Area Forecast System (WAFS)** transitioned from a File Transfer Protocol (FTP) server to an Application Programming Interface (API) for SWIM-enabled exchange of WAFS data
- ➔ The legacy WAFS Internet File Service (WIFS) FTP will be retired in November 2028
- ➔ SIGWX BUFR format will also be retired with the FTP
- ➔ Users are encouraged to transition to the WIFS API ASAP!



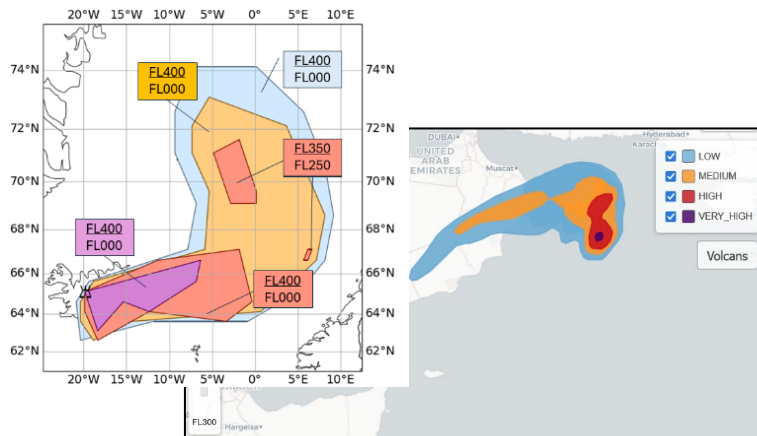


Plans for Global Information Exchange

→ Transition to SWIM

→ Partly-available* MET-SWIM services:

- **Quantitative volcanic ash concentration information (QVA)** was introduced with Amendment 82 to Annex 3, effective November 2025, for significant ash clouds (refer to guidance in ICAO Doc 9766)
- VAACs will provide deterministic and probabilistic gridded ash concentration forecasts as well as QVA ash polygons
- Data will be accessible via API
- *2 VAACs became operational in November 2025; the other 7 to follow. London & Toulouse APIs are available for interested users until then





Plans for Global Information Exchange

➤ Transition to SWIM

➤ Planned MET-SWIM services:

- **Aerodrome Meteorological Observational Information Service (AMOIS)** and **Aerodrome Meteorological Forecast Information Service (AMFIS)** are planned to be the future aerodrome observations and forecasts, with significantly increased temporal resolution (e.g., data on 1-minute intervals) and optional parameters
- New IWXXM schema will be developed for AMOIS and AMFIS
- The aerodrome observation and forecast information is intended to only be available via SWIM information services (e.g., not for distribution over the AFS)
- METP is aiming for November 2030 applicability of these services as Recommended Practices in Annex 3



Plans for Global Information Exchange

→ Transition to SWIM

→ Planned MET-SWIM services:

- **Hazardous Weather Information Service (HWIS)** is planned to be the future en-route warning information service, to complement SIGMETs
- The METP timeline for HWIS is not yet determined, but likely November 2033
- **Space Weather Information Service (SWIS)** is planned to exchange space weather information (e.g., the Space Weather Advisory (SWXA) via SWIM services (likely Advanced Message Queuing Protocol (AMQP)) by November 2030

→ Challenges:

- “No Country left behind” – balancing early adoption and global implementation
- Visualization of MET data – whether to standardize or allow creativity
- Investment and resources – implementing new services is costly



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Other METP Items of Relevance

- ➔ The ICAO Air Navigation Commission (ANC) will conduct a final review of the proposals for Amendment 83 to Annex 3 and Amendment 1 to PANS-MET in late September 2026
 - ➔ Expected applicability of November 2027

- ➔ METP will hold its next in-person meeting (METP/7) in November 2027
 - ➔ Goal of the meeting: endorse proposals for Amendment 84 to Annex 3 and Amendment 2 to PANS-MET



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Thank you!

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