

International Civil Aviation Organization

ICAO

WORKING PAPER (WP/03)**ICAO Asia and Pacific (APAC)**Twenty-Eighth Meeting of the Meteorology Sub-Group
(MET SG/28)

Bangkok, Thailand, 8 to 12 July 2024

Agenda Item 2: Review outcomes from previous meetings**REVIEW OUTCOMES FROM MET/IE WG/22**

(Presented by the Chairs of MET/IE WG)

SUMMARY

This paper presents a summary of the 22nd meeting of the Meteorological Information Exchange Working Group (MET/IE WG), held 18 - 21 March 2024. It includes an updated action list, revised terms of reference and work plan of the MET/IE WG.

1. INTRODUCTION

1.1 The ICAO Asia and Pacific (APAC) Regional Office hosted the Twenty-Second Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/22) in Bangkok, Thailand, from 18 to 21 March 2024.

1.2 The Meeting included a joint session with the Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11) on 20 March 2024 to discuss agenda items of interest to both groups jointly.

1.3 The meeting was attended by 65 participants from 22 States / Special Administrative Regions, and ICAO. The Meeting Chair was Mr Tim Hailes, National Manager, Transport Customer Engagement, Bureau of Meteorology, Australia. Mr Marco Mang-Hin Kok, Acting Senior Scientific Officer, Hong Kong Observatory, assisted him in the role of Vice Chair of the Meeting. The Secretary for the Meeting was Mr Peter Dunda, Regional Officer Aeronautical Meteorology and Environment, ICAO APAC Office.

1.4 The Meeting considered twenty-seven (27) Working Papers (WPs), five (5) Information Papers (IPs) and two (2) Flimsies in the first two days of the Meeting and an additional five (5) WPs and eight (8) Information Papers in the joint sessions between MET/IE WG/22 and ACSICG/11 on the third day.

2. DISCUSSION

2.1 A copy of the full meeting report, and all related meeting documentation, is available at the following website: <https://www.icao.int/APAC/Pages/2024-MET-IE-WG-22.aspx>

2.2 The Meeting adopted the agenda as listed below:

Agenda Item 1: Organisational matters

Agenda Item 2: Review of follow-up action from previous meetings

Agenda Item 3: Quality control, monitoring and management of meteorological information exchange

Agenda Item 4: Meteorological information exchange in IWXXM form

Agenda Item 5 (new): Meteorological information exchange in SWIM

Agenda Item 6: Guidance material related to meteorological information exchange

Agenda Item 7: Future work program and terms of reference

Agenda Item 8 (new): Joint Session of MET/IE WG/22 and ACSICG/11

Agenda Item 9: Any other business

Agenda Item 10: Next meeting

MET/IE WG/22

Review of follow-up from previous meetings

2.3 The Meeting reviewed the follow-up status of the MET/IE WG List of Actions, which included seventeen (17) new action items agreed upon at the MET/IE WG/21 meeting and twenty-five (25) unresolved action items from previous MET/IE WG meetings. The meeting proposed updates to the follow-up status of the MET/IE WG List of Actions, including closing off at least twenty-three (23) action items.

2.4 The consolidated updates to the status of follow-up on action items as agreed by the meeting is presented in the Action List in **Appendix A** to this paper.

2.5 The meeting reviewed the MET SG/27 outcomes. Concerning Action Items MET SG/25-12 and 25-13, in which shared responsibility was attributed to MET/IE WG and MET/S WG, the meeting agreed that the proposed actions to update the ICAO Doc 9766 and coordinate space weather exercises were not within the scope of the MET/IE WG. Furthermore, considering that the MET/S WG was dissolved with Decision MET SG/27-07, the meeting proposed removing MET/S WG from the MET SG List of Actions and assigning the responsibility to the Secretariat.

2.6 The meeting also discussed the outcomes from APANPIRG/34 and relevant matters will be discussed in WP/03.

Quality control, monitoring and management of meteorological information exchange

2.7 The meeting recalled that APANPIRG/34 recommended that the MET SG include consideration of the implementation of IWXXM when identifying, assessing and reporting air navigation deficiencies.

2.8 The designated ad hoc group proposed an assessment of the IWXXM messages collected during the annual ICAO SIGMET tests and APAC RODB OPMET monitoring activities. The meeting discussed the existing performances indices (availability, regularity and compliance) and agreed to replace these with availability and timeliness. Additional criteria could include the IWXXM version and IWXXM validation statistics.

2.9 The meeting also considered the minimum availability and timeliness criteria for meteorological information in the IWXXM form and consulted criteria used in the European region. It was agreed that a threshold of ninety-five per cent (95%) to identify possible deficiencies. Additional criteria should be that the IWXXM messages are well formed and, where translated from TAC, properly

translated. The meeting considered that consequential updates to the ROBEX Handbook would be required to facilitate the next OPMET monitoring activity and requested the ad hoc group on performance indices to develop the proposed updates for review and possible approval by MET SG/28.

2.10 The meeting formulated the following Draft Conclusion:

Draft Conclusion MET/IE WG/22-01: Availability and Timeliness of TAC and IWXXM Meteorological Information	
<p>What: The annual OPMET monitoring activity of TAC and IWXXM information should monitor availability and timeliness of TAF and METAR messages (instead of availability, compliance and reliability), highlighting any statistics less than 95%.</p> <p>Further, the MET Deficiency Identification Guide should be updated to:</p> <ul style="list-style-type: none"> • Reflect the requirement for IWXXM OPMET information dissemination • Reflect the requirement for successful translation (where applicable) • Identify METAR and TAF that have availability and timeliness scores of less than 95% during the monitoring period. 	<p>Expected impact:</p> <p><input type="checkbox"/> Political / Global</p> <p><input type="checkbox"/> Inter-regional</p> <p><input type="checkbox"/> Economic</p> <p><input type="checkbox"/> Environmental</p> <p><input checked="" type="checkbox"/> Ops/Technical</p>
<p>Why: To support the adoption of IWXXM format meteorological information by aviation, the information must be consistently available, with quality content and sufficient timeliness to support aviation safety and efficiency.</p>	<p>Follow-up:</p> <p><input checked="" type="checkbox"/> Required from MET SG</p>
<p>When: By MET SG/28</p>	<p>Status: To be adopted by Subgroup</p>
<p>Who: MET SG Ad hoc group on deficiencies</p>	

2.11 The meeting noted an issue where the combined effect of late METAR issuance and a software error resulted in ROC Brisbane not disseminating the associated METAR bulletins to other ROCs, APAC RODBs and NOCs and other communications or meteorological offices in its area of responsibility as required. Furthermore, the ROC’s analysis of the software error indicated the issue had existed for decades without being identified.

2.12 ROC Brisbane has since advised MET-IE WG members that a fix was installed on the 16th April 2024, addressing this issue.

2.13 The meeting noted results of APAC OPMET monitoring conducted by the five APAC RODBs, from 1-30 November 2023, and reported in the Performance Indices (PIs) produced by RODB Bangkok.

2.14 The monitoring was applied to OPMET in TAC and IWXXM form; however, only RODBs Bangkok and Singapore could provide data in IWXXM form to analyse and produce PIs.

2.15 The meeting also noted the low PIs for OPMET disseminated in TAC form from individual aerodrome locations, as summarised below:

Availability index = 0 (nil report)

- METAR (SA) = 10 of 317 aerodromes (3.15%)
- TAF (FT) = 18 of 315 aerodromes (5.71%)

Availability index < 0.9

- METAR (SA) = 1 of 317 aerodromes (0.31%)
- TAF (FT) = 9 of 315 aerodromes (2.86%)

Compliance index < 0.9

- METAR (SA) = 47 of 317 aerodromes (14.83%)
- TAF (FT) = 22 of 315 aerodromes (6.98%)

2.16 The meeting noted the PIs for the OPMET disseminated in IWXXM form and received at the RODBs, with 69% LA (METAR) bulletins and 64% LT (TAF) bulletins available at RODB Bangkok and RODB Singapore, respectively.

2.17 The meeting also noted that RODB Bangkok’s OPMET Statistics web application, used to produce the OPMET PIs, is available for States to perform monitoring on request, e.g., to validate corrective actions.

2.18 IWXXM-specific statistics collected at RODB Bangkok, from 1-30 November 2023, were used to analyse IWXXM validation. RODB Bangkok investigated the issue of validating IWXXM v2021-2 messages and found that most of the received IWXXM v2021-2 messages did not pass validation due to reference of AIXM profiles in the schema location where some AIXM data types were missing from the profiles. In IWXXM v3.0, validation issues were caused by the following:

- Missing required id attribute in several elements;
- Invalid attribute included in the element, for example, nil= “true”;
- Incorrect element names; and
- Known issues that affect operational versions, which are described in <https://github.com/wmo-im/iwxxm/wiki/Confirmed-Issues-That-May-Affect-Operational-Versions>.

2.19 Australia thanked Thailand and Hong Kong, China for advising of an issue with its IWXXM data and that a fix to the issue had been deployed. Thailand confirmed that the issue had been resolved.

2.20 The meeting noted a review of APAC OPMET monitoring by the ad hoc group of the OPMET PIs. The review proposed using PIs for availability and timeliness for METAR and TAF in TAC (SA and FT) and IWXXM (LA and LT) forms.

2.21 The meeting noted the low PIs for OPMET disseminated in TAC and IWXXM form from individual aerodrome locations, as summarised below:

Availability index = 0 (nil report)

- METAR (SA) = 3% of aerodromes
- METAR (LA) = 58% of aerodromes
- TAF (FT) = 7% of aerodromes
- TAF (LT) = 60% of aerodromes

Availability index < 0.9

- METAR (SA) = 0.3% of aerodromes
- METAR (LA) = 0.3% of aerodromes
- TAF (FT) = 3% of aerodromes
- TAF (LT) = 0.0% of aerodromes

Timeliness index = 0

- METAR (SA) = 1% of aerodromes
- METAR (LA) = 2% of aerodromes
- TAF (FT) = 15% of aerodromes

- TAF (LT) = 0.0% of aerodromes
- Timeliness index < 0.9
- METAR (SA) = 30% of aerodromes
 - METAR (LA) = 32% of aerodromes
 - TAF (FT) = 9% of aerodromes
 - TAF (LT) = 7% of aerodromes

2.22 IWXXM statistics on METAR/TAF bulletins for 131/125 aerodromes available at Bangkok RODB indicated 65%/64% in IWXXM Version 3.0 and 34%/36% in IWXXM in Version 2021-2.

2.23 The meeting supported using PIs for availability and timeliness for regular OPMET monitoring in the APAC region (Draft Conclusion MET/IE WG/22-01 refers).

2.24 The meeting also noted the status of the regular exchange of OPMET Bulletins from Thailand, Australia, Sri Lanka, Indonesia, Malaysia and India to Beijing ROC, which indicated that METAR bulletins were not being received as expected regularly from Sri Lanka, Indonesia and India. Indonesia and India would follow up with China for issues on regular OPMET exchange.

2.25 The ad hoc group considered what performance indicators should be used moving forward. The group proposed, and meeting endorsed, that performance indices should be revised to consider only availability and timeliness. Further, for IWXXM, availability index should consider whether the IWXXM was available, successfully passes validation and contains valid translation data (where relevant).

SIGMET Tests

2.26 The meeting noted results from the APAC WS SIGMET Test conducted on 22 November 2023. Of the twenty-nine (29) States listed in the Asia/Pacific SIGMET Guide, twenty-six (26) States participated in the WS SIGMET Test 2023. WS SIGMET test messages were not received were Afghanistan/Kabul (OAKB), DPR Korea/Sunan (ZKPY), and Nauru/Nauru (ANYN). The meeting noted that, to date, Afghanistan has not participated in an APAC WS SIGMET Test.

2.27 The States’ SIGMET test participation rate in 2023 was 90%, representing continuing improvement compared to 2022 (86%) and 2021 (79%). The reception of WS SIGMET test messages by the five Asia/Pacific RODBs and ROC London is shown below:

WS SIGMET Test 2023	RODB Bangkok	RODB Brisbane	RODB Singapore	RODB Tokyo	RODB Nadi	ROC London	Total
Number of Reception	46 of 49	47 of 49	48 of 49	49 of 49	42 of 49	48 of 49	280 of 294
Percentage of Reception	94%	96%	98%	100%	86%	98%	95%

Table 1: Asia Pacific RODBs’ and ROC London’s Reception of WS Test SIGMET

2.28 SIGMET test messages in IWXXM form were received from MWOs Bangkok, Brisbane, Hong Kong, Honiara, Melbourne, Nadi, Port Moresby, Singapore, Tahiti, Taipei, Tokyo and Wellington.

2.29 Issues persisted in the WS SIGMET test 2023 concerning incorrect use of the priority indicator and formatting errors in the text of the test messages.

2.30 The meeting noted results from the APAC SIGMET Tests for tropical cyclones and volcanic ash conducted on 8 and 15 November 2023.

2.31 Of the fifty (50) SIGMET test bulletins expected during the WC SIGMET test, thirty-nine (39) were received. The overall availability of WC test bulletins was 78.0%, the same result as in 2022 (78.0%).

2.32 Of the fifty-five (55) SIGMET test bulletins expected during the WV SIGMET test, forty-eight (48) were received. The overall availability of WC test bulletins was 81.8%, lower than in 2022 (87.3%). MWO Nadi did not participate in the WV SIGMET test due to the occurrence of an active TC in the Fiji region on 15 November.

2.33 As with the WS SIGMET test, the meeting noted three States from which the WC and WV SIGMET test messages were not received: Afghanistan/Kabul (OAKB); DPR Korea/Sunan (ZKPY); and Nauru/Nauru (ANYN).

2.34 The meeting noted that some WC and WV test bulletins were duplicated, some WC and WV test bulletins were not received by all RODBs in the ASIA/PAC region, and some States issued SIGMET and advisory test messages in the IWXXM form. Still, many States are not ready to issue a test message in the IWXXM form yet.

2.35 Hong Kong, China presented a paper that highlighted issues with the exchange of SIGMETs in IWXXM form during SIGMET tests.

2.36 While all test SIGMET messages in TAC format could be sent successfully to the five RODBs or two World Area Forecast Centres (WAFCs) during the SIGMET tests, some MWOs received Non-Delivery Reports (NDRs) when disseminating the SIGMET test messages in IWXXM format.

2.37 Likely, not all TAC forwarding settings used in by ROCs along the dissemination path were applicable and available for IWXXM messages, which might have resulted in the direct dissemination of IWXXM messages not being successfully sent from MWO to all the destinations as designated in the SIGMET test procedures, unlike TAC messages.

2.38 It was agreed that the APAC Regional SIGMET Test Procedures would require review (by the ad hoc group on the SIGMET Guide) to address the above-identified issues to ensure it is aligned with the operational procedures for IWXXM SIGMET dissemination, i.e., (i) MWOs sending IWXXM formatted SIGMET to ROCs only and (ii) ROCs forwarding them to RODBs.

Backup Procedures

2.39 Thailand and Singapore presented on outcomes of their Inter-Regional OPMET Gateway (IROG) back-up exercises which demonstrated that the two IROGs successfully backup one another and exchanged 100% of the required data.

2.40 The meeting noted recent back-up tests conducted by the APAC VAACs Darwin, Tokyo and Wellington, issues encountered, system and procedural changes, and tentative dates for upcoming back-up tests.

Meteorological information exchange in IWXXM form

2.41 The meeting noted how Australia provides access to IWXXM format METAR/SPECI observations for weather stations not contained within the ROBEX handbook. However, an issue was identified when Australia attempted to create IWXXM for these non-aerodrome observations (beyond Annex 3 requirements).

2.42 Currently, IWXXM METAR/SPECI observations can only use locations included as an Airport/Heliport element in AIXM. Therefore, Australia cannot fully provide all METAR/SPECI observations to the aviation industry in both TAC and IWXXM forms.

2.43 The meeting noted similar issues in other States and agreed it would be beneficial for IWXXM and future SWIM services to support creation and dissemination of non-aerodrome meteorological information to the aviation industry. Therefore, the meeting requested the Secretariat and Chair to forward the outcomes of its discussion to the MET Panel for further consideration.

Meteorological information exchange in SWIM

2.44 The meeting noted a summary of activities being undertaken by ICAO Meteorology Panel (METP) Working Group on Meteorological Information Exchange (WG-MIE), including Amendments to ICAO Annex 3, enabling MET-SWIM information services, information service definition and information service overview, MET-SWIM documentation, the transition from OPMET exchange to MET-SWIM, notification of changes to IWXXM, updates to the IWXXM Guidelines, and other general outcomes.

2.45 The meeting reviewed updates on the work of the SWIM TF Task 6 team to identify the catalogue of basic data elements to be exchanged via APAC SWIM and propose business functionality to be supported by APAC Common SWIM Information Services for addressing the operational needs in APAC.

2.46 The meeting noted developments in WMO WIS2 and ICAO SWIM interoperability, including the following:

- Publishing of aviation information is one way (i.e. WIS2 to SWIM)
- Responsibility for the WIS2 node, Gateway, and SWIM message broker functions has yet to be identified
- Authorised access may be required to collect published aviation information on the WIS2 node, depending on the mutual agreement among the operators of the WIS2 node, Gateway and SWIM message broker.

Guidance material related to meteorological information exchange

2.47 The meeting reviewed proposals for updates to the Regional OPMET Bulletin Exchange (ROBEX) Handbook, Sixteenth Edition.

2.48 The proposed updates included

- changes to the aerodromes listed in the METAR and TAF bulletins in Table A and Table B
- the use of italics to indicate aerodromes not listed in the APAC ANP, Volume I, Table AOP 1-1
- identification of aerodromes which were listed in the METAR bulletins but not the TAF bulletins, and vice-versa
- identification of aerodromes where meteorological service is required, according to the APAC ANP and the aerodromes were not yet included in the METAR and TAF bulletins.

2.49 The meeting noted the Secretariat did not make WP/19 available for review before the meeting. As a result, the meeting could not approve the proposed updates in addition to those already approved at MET SG/27, and, therefore, additional time would be needed to complete the review process.

2.50 The meeting requested that the Secretariat incorporate other corrections provided by members within one week after the meeting and then ensure the Sixteenth Edition of the ROBEX Handbook is published within two weeks after the meeting. This has since been actioned.

2.51 The meeting considered the need for better governance of the ROBEX Handbook maintenance and update process. The Secretariat should ensure the proposed updates to the ROBEX Handbook are available for consideration one month before meetings of the MET/IE WG and MET SG. Then, the approved updates are published two weeks later. The meeting agreed to reflect the above process in the MET/IE WG work plan.

2.52 On another matter, the proposed amendment to Annex 3 would require dissemination of the VONA via the AFS. Therefore, the meeting requested an ad hoc group (Australia, Japan, New Zealand) to develop proposed updates to the ROBEX Handbook to facilitate the dissemination of VONA.

2.53 The meeting reviewed the proposed update to the ROBEX Handbook to ensure clarity of the guidance concerning the ROCs' responsibilities for the distribution of IWXXM formatted OPMET data (as specified in Conclusion MET SG/24: IWXXM Exchange Approach). It also requested that Australia, Hong Kong China and the Secretariat include the changes with the proposed updates to be presented for review and approval at MET SG/28.

2.54 The meeting noted the proposed update to the ROBEX Handbook for METNO guidance related to the timing of METNO message issuance and example of METNO message. The meeting also proposed clarifying the distribution to IROG partners in other regions, further refinements on the contents regarding the METNO focal points, ensuring clear distinction to the purpose of the ROBEX focal points, and METNO message header to be presented for review and approval at MET SG/28.

2.55 The meeting noted issues concerning the availability of inter-regional OPMET exchange and frequent requests to RODBs for OPMET via RQM reports. Routine requests for OPMET data should be arranged by efficiently implementing a predetermined, regular OPMET exchange. Therefore, ROCs could contact the corresponding relevant IROG to arrange the required regular reception of OPMET messages from other regions.

Future work program and terms of reference

2.56 The meeting briefly reviewed the MET/IE WG Terms of Reference and Work Program. The meeting proposed several updates to the MET/IE WG Terms of Reference and Work Plan for MET SG/28 review. The proposed updates are presented in **Appendix B** to this paper, which includes recent changes to the membership from Japan.

Joint Session of MET/IE WG/22 and ACSICG/11

2.57 The ACSICG/11 meeting report, working/information papers (WP/IPs), and other documents are available on the following ICAO website:

<https://www.icao.int/APAC/Meetings/Pages/2024-ACSICG11.aspx>.

2.58 The following sections focus on specific meeting highlights of relevance to METSG.

2.59 The meeting reviewed several papers that recapitulated the timeline for implementing IWXXM which is dependent on access to Air Traffic Service (ATS) Message Handling System (AMHS) with File Transfer Body Part (FTBP). Currently, the distribution of TAC data internationally is proposed to be no longer required from 2030. Hence, APAC Region requires full implementation of IWXXM data exchange prior to 2030.

2.60 Intra- and inter-regional IWXXM exchange needed to be increased to support the required global availability of meteorological information in the IWXXM form. As indicated in the ICAO *Guidelines for the Implementation of OPMET Data Exchange using IWXXM*, IWXXM exchange depends on the availability of AMHS networks with FTBP and IHE.

2.61 Gaps in the network available and capable of exchanging IWXXM messages intra- and inter-regionally (i.e., between the National OPMET Centres (NOCs), Regional OPMET Centres (ROCs) and Inter-regional OPMET Gateways (IROGs)), hinder the global availability of meteorological information in IWXXM form, inhibit system suppliers and users from switching to IWXXM and delay the realisation of benefits from the implementation of IWXXM.

2.62 To review IWXXM implement status to gauge the readiness of APAC Region for full implementation of IWXXM data exchange, the following Draft Conclusion was proposed and adopted by the meeting:

Draft Conclusion MET/IE WG/22-02 [ACSICG/11-02] – Review of APAC Region IWXXM Implementation Status/ Readiness	
What: States / Administrations provide ICAO an update on the status and readiness dates for the following: (a) AMHS with FTBP/IHE and configuration for single body part; (b) AMHS connection(s) will have sufficient capacity to support IWXXM exchange; (c) when operational IWXXM information will available; and (d) commencement of operational exchange of IWXXM with their Regional OPMET Centre (ROC), and where applicable their respective Inter-regional OPMET Gateway.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: As per Amendment 79 to Annex 3 (applicable November 2020), States/ Administrations are required to exchange meteorological information in IWXXM form.	Follow-up: <input checked="" type="checkbox"/> Required from States
When: 22-Mar-24	Status: Draft to be adopted by Sub group.
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.63 The meeting further noted that inter-regional IWXXM exchange requires at least one capable route between two regions, and for a reliable service, at least two routes should be available. For the APAC region, inter-regional IWXXM exchange, with back-up procedures in place, is only operational between APAC and EUR, as indicated in the [Online Register of APAC IWXXM Exchange Status](#).

2.64 Although inter-regional AMHS circuits were reported as being available for most of the Region pairs listed in the AMC Charts, the meeting noted several reasons for not enabling IWXXM exchange over inter-regionally AMHS-capable circuits.

2.65 The meeting also noted that the standard alternate routing applied for primary link failures in communication centres worldwide will only work for IWXXM messages if the alternate/secondary link is AMHS with FTBP capable. The meeting agreed that a group of operational communications experts (comprising members from AUS, FJI, HKG, SGP and USA) will develop educational material to manage the distribution of IWXXM information when primary AMHS link failure occurs.

2.66 To support the expedited implementation of capable primary and, where relevant, secondary networks to support the exchange of IWXXM, the meeting considered the benefits of developing a checklist of steps to facilitate operational IWXXM exchange as a reference for States and members of the meeting.

2.67 The meeting agreed that a group of communications and meteorology experts (members from Australia, Fiji, Hong Kong China and Singapore) should develop a checklist of steps to facilitate operational IWXXM exchange. Draft checklist items were identified.

2.68 The meeting anticipated that the checklist could form part of the educational material supporting IWXXM implementation and be included in the ICAO State letter associated with Draft Conclusion MET/IE WG/22-02.

2.69 The meeting noted the latest developments of IWXXM and the IWXXM publication plan related to the proposed amendment to ICAO Annex 3. IWXXM Version 2023-1 is a maintenance release that fixed several issues in Version 2021-2 (published in November 2021). The changes in individual packages across IWXXM versions are indicated in the IWXXM package compatibility table¹. If the version number of an IWXXM package has not changed or only the patched number² has changed, the schemas for the package are fundamentally the same.

2.70 The ICAO METP WG-MIE and WMO Task Team on Aviation Data (TT-AvData) are working together to establish a formal communications process aligned with AIRAC cycles for future versions and releases of IWXXM to ensure that there is improved awareness of new IWXXM releases.

2.71 The METP WG-MIE approved the updated ICAO document *Guidelines for the Implementation of OPMET data exchange using IWXXM*, Version 5, to assist States with implementing IWXXM. The document has been published on the ICAO APAC Office e-Documents web page, <https://www.icao.int/APAC/Pages/eDocs.aspx>

2.72 The meeting also received updates from China, Fiji, Pakistan, Republic of Korea, Thailand and USA on their respective status and plans for IWXXM exchange.

Future MET/IE WG and ACSICG joint meeting sessions

2.73 The meeting participants noted the value of conducting the joint session and supported future joint meeting sessions. There was also some discussion about the duration of the joint session, and the meeting agreed that the Secretariat and Chairs should consider this matter further and possibly prioritise the materials presented and discussed in the joint session.

¹ Reference for the existing IWXXM versions: <https://github.com/wmo-im/iwxxm/wiki/Package-Compatibility>

² IWXXM packages are identified by its version number in the form of MAJOR.MINOR.PATCH. See <https://github.com/wmo-im/iwxxm/wiki/Common-approaches-across-exchange-models#version-policy> for details.

Any other business

2.74 The meeting noted disappointment that many meeting papers were not available in accordance with the terms of reference of the MET/IE WG. Moving forward, the meeting agreed that States should expect routine meeting papers to be available in accordance with the terms of reference. Where a paper is submitted late the acceptance of the paper will be at the discretion of the Chairs following consultation with the author. Further, the meeting agreed to review the timeliness of papers at future meetings.

Next Meeting

2.75 The Meeting proposed the following tentative dates for the next Meeting of the MET/IE WG:

- 24-27 March 2025 (aligned with the ACSICG)

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information in this paper;
- b) Consider the proposed Conclusions in para. 2.10, and 2.62; and
- c) Propose further updates, as necessary, to the Action List in **Appendix A**; and Terms of Reference and Work Programme of MET/IE WG in **Appendix B**.

APPENDIX A — List of Actions (MET/IE WG)

MET/IE WG – LIST OF ACTIONS

(Note: Proposed updates are indicated with ~~strikethrough~~ and highlighted text)

New action items recorded by MET/IE WG/22

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/22 01	<u>MET/IE WG meeting – agenda</u> Consider incorporating the joint session (MET/IE WG and ACSICG) in the MET/IE WG meeting agenda. [Ref: Report of MET/IE WG/22, para. 1.2.]	3 months before MET/IE WG/23	Secretariat and Chairs	TO COMMENCE
MET/IE WG/22 02	<u>IROG backup exercise – IWXXM data</u> Provide an update on conducting an IROG backup exercise for IWXXM data. [Ref: Report of MET/IE WG/22, para. 2.3.]	1 month before MET/IE WG/23	Singapore and Thailand	TO COMMENCE
MET/IE WG/22 03	<u>ROBEX Handbook updates – procedure for OPMET monitoring</u> Include the procedure for obtaining the latest ROBEX data, i.e., from the Secretariat (rather than from the published ROBEX Handbook) for use as the benchmark for OPMET monitoring, in the next proposed update to the ROBEX Handbook. [Ref: Report of MET/IE WG/22, para. 2.4.]	1 month before MET SG/28	Secretariat	TO COMMENCE
MET/IE WG/22 04	<u>ROBEX Handbook updates – criteria for IWXXM monitoring</u> Develop consequential updates to the ROBEX Handbook to facilitate OPMET monitoring to identify IWXXM dissemination that does not meet availability and timeliness thresholds of ninety-five per cent (95%) and additional criteria to ensure the messages are well-formed and (where translated from TAC) properly translated. [Ref: Report of MET/IE WG/22, para. 3.4.]	1 month before MET SG/28	Ad hoc group on Performance Indicators (PIs) [Ref: MET/IE WG/21 action item 07]	TO COMMENCE
MET/IE WG/22 05	<u>METAR bulletin dissemination – resolving the issue at ROC Brisbane</u> Investigate a quick resolution to the METAR bulletin dissemination issue at ROC Brisbane (as presented in MET/IE WG/22 WP/07) and provide an update for inclusion in the MET/IE WG report to MET SG. [Ref: Report of MET/IE WG/22, para. 3.8.]	1 month before MET SG/28	Australia	TO COMMENCE
MET/IE WG/22 06	<u>SIGMET Guide updates – SIGMET test procedures for IWXXM</u> a) Report the problem concerning the dissemination of SIGMET test messages in IWXXM form (as presented in MET/IE WG/22 WP/25) to the ad hoc group on the SIGMET Guide, and b) propose an appropriate update to the SIGMET test procedures in the SIGMET Guide to address the IWXXM test message issues. [Ref: Report of MET/IE WG/22, para. 3.42.]	a) Apr 2024, b) 1 month before MET SG/28	a) Secretariat, and b) ad hoc group on the SIGMET Guide	TO COMMENCE
MET/IE WG/22 07	<u>IWXXM dissemination – issues for non-ROBEX locations</u> Forward the MET/IE WG/22 discussion outcomes concerning the issue of disseminating METAR/SPECI in the IWXXM form for weather stations not listed in the ROBEX handbook (as presented in MET/IE WG/22 WP/15) to the MET Panel for further consideration. [Ref: Report of MET/IE WG/22, para. 4.4.]	April 2024	Secretariat and Chair	TO COMMENCE
MET/IE WG/22 08	<u>ROBEX Handbook updates – publishing the Sixteenth Edition</u> a) Incorporate corrections to the proposed ROBEX Handbook updates (as presented in MET/IE WG/22 WP/19) as provided by MET/IE WG/22 members, and b) publish the Sixteenth Edition of the ROBEX Handbook. [Ref: Report of MET/IE WG/22, para. 6.6.]	a) 29 Mar 2024, b) 5 Apr 2024	a) Secretariat and MET/IE WG/22, b) Secretariat	COMPLETED TO COMMENCE
MET/IE WG/22 09	<u>ROBEX Handbook updates – focal points</u> Review the membership of the ROBEX Handbook focal points and clarify the purpose of these contacts; propose appropriate updates to the ROBEX Handbook. [Ref: Report of MET/IE WG/22, para. 6.10.]	1 month before MET SG/28	Secretariat	TO COMMENCE
MET/IE WG/22 10	<u>ROBEX Handbook updates – VONA dissemination</u> Develop proposed updates to the ROBEX Handbook to facilitate the dissemination of VONA via the AFS, as required by the proposed amendment to Annex 3. [Ref: Report of MET/IE WG/22, para. 6.11.]	1 month before MET SG/28	Ad hoc group (NZL, AUS, JPN)	TO COMMENCE
MET/IE WG/22 11	<u>ROBEX Handbook updates – ROC IWXXM exchange</u> Include the changes concerning ROC responsibilities for IWXXM exchange (as presented in MET/IE WG/22 WP/23) with the next proposed updates to the ROBEX Handbook. [Ref: Report of MET/IE WG/22, para. 6.13.]	1 month before MET SG/28	Secretariat, AUS and HKG	TO COMMENCE

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ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/22 12	ROBEX Handbook updates – METNO guidance Include within the proposed changes (as presented in MET/IE WG/22 WP/24), distribution to IROG partners in other regions, further refinements on the contents regarding the METNO focal points (ensuring clear distinction to the purpose of the ROBEX focal points) and METNO message header with the next proposed updates to the ROBEX Handbook. [Ref: Report of MET/IE WG/22, para. 6.15.]	1 month before MET SG/28	HKG, NZL and AUS	TO COMMENCE
MET/IE WG/22 13	IWXXM Guidelines document – availability on ICAO APAC website Consider publishing the <i>Guidelines for the Implementation of OPMET data exchange using IWXXM</i> , Version 5, on the CNS section of the ICAO APAC Office eDocuments webpage. [Ref: Report of MET/IE WG/22, para. 8.16.]	April 2024	Secretariat	TO COMMENCE
MET/IE WG/22 14	IWXXM distribution – guidance when primary AMHS fails Develop educational material on managing the distribution of IWXXM information when primary AMHS link failure occurs. [Ref: Report of MET/IE WG/22, para. 8.25.]	1 month before MET/IE WG/23	Ad hoc group (AUS, FJI, HKG, SGP and USA)	TO COMMENCE
MET/IE WG/22 15	IWXXM operational exchange – checklist Develop a checklist of steps required to facilitate operational IWXXM exchange. [Ref: Report of MET/IE WG/22, para. 8.27.]	1 month before MET/IE WG/23	Ad hoc group (AUS, FJI, HKG and SGP)	TO COMMENCE
MET/IE WG/22 16	MET/IE WG and ACSICG joint session – duration and discussion Consider the duration of and prioritise the materials presented and discussed in the joint session (MET/IE WG and ACSICG) at future meetings. [Ref: Report of MET/IE WG/22, para. 8.33.]	3 months before MET/IE WG/23	Secretariat and Chairs	TO COMMENCE
MET/IE WG/22 17	MET/IE WG meeting – timeliness of papers Review the timeliness of availability and submission of papers at future MET/IE WG meetings [Ref: Report of MET/IE WG/22, para. 9.1.]	MET/IE WG/23	Secretariat and Chairs	TO COMMENCE

Unresolved action items recorded by MET/IE WG/21

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/21 01	Amend the MET/IE WG meeting agenda as follows: a) Remove the agenda item titled “Meteorological information exchange schemes”; and b) Add a new agenda item on “SWIM”. [Ref: MET/IE WG/21 Report, para 3.1] Ref: MET/IE WG/22, provisional agenda	MET SG/27	Secretariat and Chairs	COMPLETED TO COMMENCE
MET/IE WG/21 02	The meeting requested IROGs to provide updates for each of the interregional circuits in the IWXXM online register. [Ref: MET/IE WG/21 Report, para 4.13] Ref: MET/IE WG/22, WP/13	MET SG/27	APAC IROGs	IN PROGRESS TO COMMENCE
MET/IE WG/21 03	Publish the link to the online register of APAC IWXXM exchange status on the ICAO APAC Office, “eDocuments”, website. [Ref: MET/IE WG/21 Report, para 4.16]	MET SG/27	Secretariat	COMPLETED TO COMMENCE
MET/IE WG/21 04	Investigate the feasibility and possible timeline for conducting an IROG backup exercise for IWXXM data. [Ref: MET/IE WG/21 Report, para 5.3] Ref: MET/IE WG/22, action item 22-02; update to be provided at the next MET/IE WG meeting	MET/IE WG/22	Singapore and Thailand	COMPLETED TO COMMENCE
MET/IE WG/21 05	Submit a paper to the ACSICG proposing action to facilitate the establishment of redundant paths (primary circuit and backup paths) in consultation with the counterpart in other Regions to support the reliable implementation of Annex 3 IWXXM provisions globally. [Ref: MET/IE WG/21 Report, para 5.7] Ref: ACSICG/10, WP/17 Ref: Draft Conclusion ACSICG/10/05 - GLOBAL DISSEMINATION OF IWXXM Ref: MET SG/27, WP/25 – OUTCOMES OF CNS SG/27	ACSICG/10	Secretariat and Chairs	COMPLETED TO COMMENCE

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ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/21 06	Submit a paper to the ACSICG proposing a conjoint meeting session of the MET/IE WG and ACSICG in 2024. [Ref: MET/IE WG/21 Report, para 5.7] Ref: ACSICG/10, WP/17	ACSICG/10	Secretariat and Chairs	COMPLETED TO COMMENCE
MET/IE WG/21 07	Review the Performance Indices (PIs) used in APAC OPMET monitoring, and consider monitoring the timeliness of IWXXM messages. [Ref: MET/IE WG/21 Report, para 5.10, and MET/IE WG/20 action item 05] Ref: MET/IE WG/22, WP/10	MET/IE WG/22	Ad hoc group: Thailand (lead), Secretariat, Chairs, New Zealand, Hong Kong China and Australia	COMPLETED TO COMMENCE
MET/IE WG/21 08	Provide the MET/IE WG with further advice on the problems identified in APAC OPMET monitoring in validating IWXXM v2021-2 form. [Ref: MET/IE WG/21 Report, para 5.14] Ref: MET/IE WG/22, WP/09	MET/IE WG/22	Thailand	COMPLETED TO COMMENCE
MET/IE WG/21 09	Include the following updates in the ROBEX Handbook, Fifteenth Edition: a) Remove the requirement to indicate the RODB responsible for storing the METAR and TAF bulletins in bold text in Appendix A and B; b) Correct the references to IWXXM TAF bulletins from “LC” to “LT” in para. 13.3.1.1 and Appendix D, para. 2.1.1; and c) Include updates in Appendices A and B to reflect the changes to the METAR and TAF bulletins SAPK31 and FTPK31, as requested by Pakistan by email to ICAO. [Ref: MET/IE WG/21 Report, para 6.3] Ref: ROBEX HB 15 th Ed.	ASAP	Secretariat	COMPLETED TO COMMENCE
MET/IE WG/21 10	Include the updates to Appendix A of the ROBEX Handbook, Fifteenth Edition, as proposed by China and presented in Appendix F of the MET/IE WG/21 Report. [Ref: MET/IE WG/21 Report, para 6.8] Ref: ROBEX HB 15 th Ed.	ASAP	Secretariat	COMPLETED TO COMMENCE
MET/IE WG/21 11	Include the aerodrome updates in the ROBEX Handbook, Fifteenth Edition, as proposed by New Zealand and presented in Appendix F of the MET/IE WG/21 Report. [Ref: MET/IE WG/21 Report, para 6.11] Ref: ROBEX HB 15 th Ed.	ASAP	Secretariat	COMPLETED TO COMMENCE
MET/IE WG/21 12	Incorporate the changes to Table B format (as proposed by New Zealand in MET/IE WG/21, WP/12, and subject to the minor change suggested by the Meeting) in the proposal for updates to follow the publication of the ROBEX Handbook, Fifteenth Edition. [Ref: MET/IE WG/21 Report, para 6.11]	MET/IE WG/22	Secretariat	TO COMMENCE
MET/IE WG/21 13	Include the proposed updates in the ROBEX HANDBOOK, Fifteenth Edition, as proposed by Hong Kong, China and presented in Appendix F of the MET/IE WG/21 Report. [Ref: MET/IE WG/21 Report, para 6.12-6.14] Ref: ROBEX HB 15 th Ed.	ASAP	Secretariat	COMPLETED TO COMMENCE
MET/IE WG/21 14	Include the proposed updates in the ROBEX HANDBOOK, Fifteenth Edition, as proposed by Thailand and presented in Appendix F of the MET/IE WG/21 Report. [Ref: MET/IE WG/21 Report, para 6.15-6.17] Ref: ROBEX HB 15 th Ed.	ASAP	Secretariat	COMPLETED TO COMMENCE

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ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/21 15	Keep abreast of the METP developments on METNO procedures and develop a proposal to improve the METNO procedure in the APAC ROBEX Handbook. [Ref: MET/IE WG/21 Report, para 6.19] MET/IE WG/20-09: Develop updates to the ROBEX Handbook, Appendix E – <i>Procedure and Format of METNO bulletin for APAC ROBEX Bulletins</i> to clarify the procedures concerning the general area designator in the METNO Header (in paragraph 2.2.) and the responsibilities for issuing METNO messages. [Ref: Report of MET/IE WG/20, para. 6.4.] Ref: MET/IE WG/22, WP/24	MET SG/27	Secretariat, Chair, Vice Chair and METNO focal points and invited the RODBs Secretariat and ROBEX Focal Points from Australia, Hong Kong, China, Japan and Singapore	COMPLETED TO COMMENCE
MET/IE WG/21 16	Contact the listed members that were not in attendance at MET/IE WG/21 to confirm their membership status on the MET/IE WG [Ref: MET/IE WG/21 Report, para 7.2]	MET SG/27	Secretariat	TO COMMENCE
MET/IE WG/21 17	Include the IWXXM-specific statistics, such as IWXXM versions, in future SIGMET test results. [Ref: MET/IE WG/21 and MET/S WG/13 Conjoint Session Report, para 2.12] Ref: MET/IE WG/22, WP/09	MET/IE WG/22	Thailand, in coordination with the SIGMET test focal points (Japan and Singapore)	COMPLETED TO COMMENCE

Unresolved action items recorded by MET/IE WG/20

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/20 01	Follow up with Australia on opportunities to combine the ICAO APAC 2022 Webinar on Space Weather and Australia and New Zealand's 2022 Space Weather Exercise. [Ref: Report of MET/IE WG/20, para. 2.10.]	Before MET SG/27	Secretariat, in coordination with participants from Australia	COMPLETED IN PROGRESS
MET/IE WG/20 02	Coordinate the consequential amendments to the (a) ANP (Volume II, Table MET II-2 – Aerodrome Meteorological Offices) and the (b) ROBEX Handbook to reflect the requirements for MET service at QUANG NINH/Van Don International Airport (ICAO location indicator VVVD). [Ref: Report of MET/IE WG/20, para. 3.5.] (a) Ref: MET SG/27, WP/14 - Review of the APAC ANP (b) Ref: ROBEX HB 15 th Ed.	Before MET SG/27	Secretariat, in coordination with participants from Vietnam	(a) IN PROGRESS ANP PfA pending circulation by the Secretariat; (b) COMPLETED
MET/IE WG/20 03	Provide contact details for IROG Jeddah (Saudi Arabia) and IROG Johannesburg (South Africa) to the members from Thailand to discuss their support for IWXXM and AMHS/FTBP and the timing for the testing and implementation of the inter-regional IWXXM exchange. [Ref: Report of MET/IE WG/20, para. 4.15.]	Before MET SG/27	Secretariat, in coordination with participants from Thailand	IN PROGRESS
MET/IE WG/20 05	Invite interested WG members to form an ad hoc group to review the Performance Indices (PIs) used in APAC OPMET monitoring. [Ref: Report of MET/IE WG/20, para. 5.13.]	Before MET/IE WG/22	Secretariat and Chair MET/IE WG and designated ad hoc group, including Members from Thailand and New Zealand, Hong Kong China	IN PROGRESS COMPLETED
MET/IE WG/20 06	Use as the benchmark for OPMET monitoring the latest available ROBEX data provided by the Secretariat (rather than by the published ROBEX Handbook). [Ref: Report of MET/IE WG/20, para. 5.15.] Ref: MET/IE WG/22, action item 22-03; update the ROBEX Handbook to reflect the above procedure	Before MET/IE WG/22	Thailand, in coordination with the Secretariat	COMPLETED IN PROGRESS
MET/IE WG/20 09	Develop updates to the ROBEX Handbook, Appendix E – <i>Procedure and Format of METNO bulletin for APAC ROBEX Bulletins</i> to clarify the procedures concerning the general area designator in the METNO Header (in paragraph 2.2.) and the responsibilities for issuing METNO messages. [Ref: Report of MET/IE WG/20, para. 6.4.]	Before MET SG/27	Secretariat and ROBEX Focal Points from Australia, Hong Kong, China, Japan and Singapore	SUPERSEDED by MET/IE WG/21-15 IN PROGRESS (related to work underway by METP WG-MIE)

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ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/20 10	Coordinate with Indonesia to: a) Validate the proposed updates in WP/08, which concerned aerodrome names that were not reflected in the ANP, Table AOP I-1 – <i>International Aerodromes Required in the APAC Regions</i> ; and b) Include the validated proposals in the next update of the ROBEX Handbook. <i>[Ref: Report of MET/IE WG/20, para. 6.9.]</i> Ref: MET SG/27, WP/14 - Review of the APAC ANP	Next ROBEX Handbook update	Secretariat, in coordination with participants from Indonesia	IN PROGRESS ANP PFA pending circulation by the Secretariat
MET/IE WG/20 12	Document the steps States should take to: a) Effect changes to the ROBEX scheme; and b) Notify States of changes to MET service. <i>[Ref: Report of MET/IE WG/20, para. 6.15.]</i>	Before MET SG/27	Secretariat	IN PROGRESS
MET/IE WG/20 13	Convene a quarterly meeting of the MET/IE WG (core) members to progress updates to the work plan and terms of reference, including assigning specific dates and responsibilities (incl. identifying a lead and supporting resources for activities) and merging Activities 1 and 2 in the work plan. After the Secretariat and Chairs of MET SG and WGs have prepared the integrated reporting template. <i>[Ref: Report of MET/IE WG/20, para. 7.5.]</i>	Before MET SG/27	Chair MET/IE WG and Secretariat	IN PROGRESS
MET/IE WG/20 14	Coordinate a proposal to supplement the VAAC Backup Test Procedures in the Appendices of the APAC Regional SIGMET Guide with information on the backup arrangement with VAACs Washington and Montreal. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 1.4.]</i> Ref: MET SG/27	Before MET/IE WG/22	Members from VAAC Darwin	COMPLETED IN-PROGRESS
MET/IE WG/20 15	Concerning the inclusion of MWOs not located in the APAC Region, perform a cross-check of the ICAO APAC SIGMET Test Procedures against the legacy FASID Tables MET 3A – <i>Tropical Cyclone Advisory Centres</i> and 3B – <i>Volcanic Ash Advisory Centres</i> . <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.17.]</i>	Before MET SG/27	Secretariat	IN PROGRESS
MET/IE WG/20 17	Follow up with Myanmar on the appropriate addressing of letters from ICAO inviting participation in SIGMET tests. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.23.]</i>	Before MET SG/27	Secretariat, in coordination with participants from Myanmar	IN PROGRESS
MET/IE WG/20 18	Submit a paper to MET SG requesting States to provide up to date contact information for letters from ICAO requesting the States to participate in SIGMET tests. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.24.]</i> Ref: MET SG/27, WP/23	Before MET SG/27	Secretariat	COMPLETED TO COMMENCE

Unresolved action items recorded by MET/IE WG/19

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
01	Propose updates to the ROBEX Handbook: to ensure clarity of the guidance concerning the ROCs' responsibilities for the distribution of IWXXM formatted OPMET data [ref: para. 2.5.] Ref: MET/IE WG/22, WP/23	Before MET SG/27	WG	COMPLETED TO COMMENCE
05	Propose updates to the ROBEX Handbook: to include information on the (KWBC) bulletins containing Pago Pago METAR and TAF [ref: para. 4.3.] Ref: MET SG/27, WP/09 - ROBEX HB UPDATES	Before MET SG/27	Secretariat	IN PROGRESS

Unresolved action items recorded by MET/IE WG/18 and MET/S WG/10

The following action items are applicable to one or both of the MET/IE WG and MET/S WG

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ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
13	ROBEX Handbook updates – Update process: Propose options for a more streamlined process for updating the ROBEX Handbook data, such as through the development of a more dynamic, online repository for ROBEX data [ref: para. 4.4.] Ref: closed due to inaction and no clear solution provided	Before MET SG/27	MET/IE WG	CLOSED IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
15	ROBEX Handbook updates – IWXXM-related flexibility: Propose updates, as necessary, to reflect APAC States’ requirement for flexibility of the ROBEX scheme structure during the transition to Region-wide implementation of IWXXM exchange [ref: para. 4.7.] Ref: MET/IE WG/22, WP/23	Before MET SG/27	MET/IE WG	COMPLETED IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
18	ROBEX Handbook and SIGMET Guide updates – Legacy FASID information: Prepare the consequential updates of the required information from the legacy FASID Tables relating to meteorology, apart from Table MET 1A, Table MET 1B and Table MET 3C, and the existing ICAO APAC regional guidance documentation, according to the proposal in WP/11 and the Draft Decision [ref: para. 4.16.]	Before MET SG/27	Secretariat and States	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
19	ANP and ROBEX Handbook updates – Vietnam NOC: Coordinate on the implementation of the Vietnam NOC, including development of proposed updates to the (a) APAC ANP and (b) ROBEX Handbook [ref: para. 3.7.] (a) Ref: MET SG/27, WP/14 - Review of the APAC ANP (b) Ref: ROBEX HB 15 th Ed.	Before MET SG/27	Vietnam and Thailand	(a) IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6 (b) COMPLETED
20	ANP and ROBEX Handbook updates – Indonesia new aerodromes: Determine any requirement (based on IP/09) to update the ICAO APAC (a) ANP and/or (b) ROBEX Handbook [ref: para. 8.27.] (a) Ref: MET SG/27, WP/14 - Review of the APAC ANP (b) Ref: MET SG/27, WP/09 - ROBEX HB UPDATES	Before MET SG/27	Secretariat and Indonesia	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6

Unresolved action items recorded by MET/IE WG/17

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
17/1	Coordinate all necessary notifications concerning the planned handover of the provision of SIGMET service valid for Phnom Penh FIR from MWO Chengdu to MWO Phnom Penh, including the following: (a) changes to the routing of the SIGMET and advisory information at the responsible VAAC, TCAC and the RODBs; and (b) updates to the ANP, including the legacy FASID tables, and the Regional SIGMET Guide. <i>[Report of MET/IE WG/17, para. 3.1 – 3.4, refers]</i>	Before MET SG/27	Cambodia and Secretariat	(a) COMPLETED (b) IN PROGRESS
17/3	Coordinate all necessary notifications concerning the planned provision by China of OPMET information for the new Beijing Daxing International Airport, from 15 August 2019, including the following: (a) updates to the ROBEX Handbook and notification to States via “METNO”; and (b) updates to the ICAO Doc. 7910; and (c) APAC ANP, including AOP and MET tables. <i>[Report of MET/IE WG/17, para. 3.6 – 3.8, refers]</i> (b) Ref: ICAO Doc. 7910 – (ZBAD) BEIJING/DAXING	Before MET SG/27	China and Secretariat	(a) and (c) IN PROGRESS (b) COMPLETED
17/10	Liaise with the SADIS Provider concerning obtaining OPMET availability statistics on SADIS for future meetings of the MET/IE WG. Propose appropriate actions to apply the statistics to improve OPMET availability. <i>[Report of MET/IE WG/17, para. 4.21, refers]</i>	Before MET SG/27	Secretariat	IN PROGRESS
17/20	Propose updates to all required APAC documentation regarding the originating address of Australian WV SIGMETs (i.e., YMMC, rather than AMMC). <i>[Report of conjoint session of MET/IE WG/17 and MET/S WG/9, para. 2.24, refers]</i>	Before MET SG/27	Secretariat and Australia	IN PROGRESS ANP Table MET II-1 pending update

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Unresolved action items recorded by ROBEX WG/13

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
13/7	Investigate feasibility of including provisions in the regional guidance material related to the issuance of routine TAF at intervals of three (3) hours; present draft material to MET SG/21 [Ref: ROBEX WG/13 Decision 13/7].	Before MET SG/27	Secretariat and ROBEX WG	IN PROGRESS Coordinate necessary follow-up through the ICAO ANP working group [Ref: MET/IE WG/16 Report para. 2.9].

APPENDIX B — MET/IE WG Terms of Reference and Work Plan

(Note: Proposed updates are indicated with ~~strike through~~ and **highlighted** text)

TERMS OF REFERENCE

1. MEMBERSHIP
<p>The MET/IE WG is made up of experts from the following bodies:</p> <ul style="list-style-type: none"> • APAC Regional OPMET Data Banks (RODBs): Brisbane, Nadi, Tokyo, Singapore and Bangkok; • APAC Regional OPMET Centres (ROCs); • World Area Forecast Centres (WAFCs), London and Washington; • Secure Aviation Data Information Service (SADIS) and WAFS Internet File System (WIFS) Provider States, United Kingdom and United States; • APAC Volcanic Ash Advisory Centres (VAACs): Darwin, Tokyo and Wellington; • Designated focal points for SIGMET tests and regional OPMET bulletin exchange (ROBEX); • Pacific Islands Aviation Weather Services (PIAWS) Panel; and • International Air Transport Association (IATA).

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2. DESCRIPTION	
Objective	Increase OPMET-availability and reliability timeliness of Meteorological Information needed for flight planning (efficiency) and in-flight re-planning (safety) in support of the Global Air Navigation Plan (GANP) framework and the Aviation System Block Upgrade (ASBUs) methodology.
Benefits	Increase in safety and efficiency (time and fuel savings).
Functions of the group	<p>Under guidance from the ICAO APAC Secretariat:</p> <ol style="list-style-type: none"> a) Review the OPMET exchange schemes in the APAC and other regions and develop proposals for their optimization, taking into account the requirements by the aviation users and global OPMET exchange; b) Review and update of the procedures for inter-regional OPMET exchange and ensure the availability of the required APAC OPMET data for SADIS and WIFS; c) Monitoring the format and dissemination of OPMET messages; d) Monitor and participate in inter- and intra-regional trials of aeronautical meteorological information exchange in support of the implementation of IWXXM and SWIM; e) Conduct trials and develop standardized quality control, monitoring and management procedures related to exchange of IWXXM and TAC OPMET information; f) Participate in the implementation and promote awareness of the transition to digital exchange of OPMET (IWXXM) and System Wide Information Management (SWIM); g) Conduct regular regional VAAC back-up, IROG back-up and SIGMET tests; h) Provide support for the APAC MET Exercises; i) Review and update the regional guidance material related to OPMET exchange, including relevant material on IWXXM, AMHS and SWIM; j) Liaise and consult with other appropriate bodies within ICAO and WMO dealing with communication and/or management aspects of the OPMET exchange; k) Coordinate and seek support from other enabling ICAO groups (e.g. SWIM TF, ACSICG, CRV OG, etc.) to support MET information exchange initiatives; and l) Provide advice and report to the MET Sub-group on the above issues for further co-ordination through the ICAO Secretariat with other appropriate bodies.

3. Communication Strategies				
Description	Target Audience	Delivery Method	Frequency / Date	Responsibility
Annual working group meeting	All APAC States	In person	Annual / March	Chair(s) and Secretariat
Interim Work Program Progress Report	MET/IE WG Members	Web-conference E-mail	Quarterly/as determined by Chair	Chair(s) and Secretariat
MET Chairs Coordination Meeting	Chairs of MET SG and its contributory working groups	Web-conference E-mail	Quarterly/as determined by MET SG Chairs	Chair(s) and Secretariat
Major Work Program Progress Report	MET/IE WG Members	Working Paper (MET/IE WG meeting)	Annually/published 14-days or more before the meeting	Chair and Secretariat
General correspondence	MET/IE WG Members	E-mail	As required	MET/IE WG Members
New, specific proposal for action (WP)	MET/IE WG Meeting	Working Paper (MET/IE WG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	MET/IE WG Members or States
New, specific information (IP)	MET/IE WG Meeting	Information Paper (MET/IE WG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	MET/IE WG Members or States
Working Group Meeting Report	MET/IE WG Members and all APAC States	MET/IE WG Meeting Report	Annually/published 21-days or less after the meeting	Chair(s) and Secretariat
Working Group Progress Report	MET SG Meeting	Working Paper (MET SG meeting)	Annually/submitted 28-days or more before the meeting	Chair(s) and Secretariat

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			(published 14-days or more before the meeting)	
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WORK PROGRAM

Activity	Time Frame	Responsibility	Status
Activity 1: Availability of OPMET information	Ongoing	MET/IE WG	
Activity 1 2: Availability and Timeliness, compliance and regularity of OPMET exchange	Ongoing	MET/IE WG	
Activity 2 3: SIGMET and Advisory Tests	Ongoing	MET/IE WG	
Activity 4: VAAC Backup Tests	Ongoing	MET/IE WG	
Activity 3 5: IROG Backup Tests	Ongoing		
Activity 4 6: Regional guidance material related to data exchange	Ongoing	MET/IE WG	
Activity 7: IWXXM implementation	20212023-20232026	MET/IE WG	
Activity 5 8: MET information exchange scheme	Ongoing 2021-2026	MET/IE WG	
Activity 6 9: MET information in SWIM	Ongoing 2021-2026		

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
<i>Activity 1: Availability of OPMET information</i>				
Activity 1.1: Perform real time monitoring if required	IATA	-	If required	
Activity 1.2: Monitor and score SADIS/WIFS OPMET reception.	IATA	-	Annually Jan	
Activity 1.3: Capture OPMET monitoring.	RODBs	1.2	Annually Oct/Nov	
Activity 1.4: Assess TAC OPMET monitoring results and share results with RODBs	RODB Bangkok	1.3	Annually Oct/Nov	
Activity 1.6: Prepare paper reporting results and deficiencies to MET/IE WG meeting.	IATA and RODB Bangkok	1.4	Annually Feb	
Activity 1.7: Report summary of OPMET availability results to MET SG	Secretariat and Chair	1.5	Annually May	
Activity 1.8: Advise States of OPMET deficiencies and corrective actions.	Secretariat	1.6	Annually Jun	
Activity 1.9: Actively engage States with corrective against deficiencies.	ROCs	1.7	As required	
Milestone 1: Achieve 95% (90%) or greater OPMET availability for AOP (non-AOP) aerodromes at RODBs and WAES.	MET/IE WG	1.8	Annually Jun	
Activity 1 2: Performance indices of OPMET exchange Availability and Timeliness of OPMET exchange				
Activity 1 2.1: Monitor and collate OPMET data.	RODBs and IATA	-	Annually Dec/Nov	

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5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 1 2.2: Score RODB OPMET reception (availability and timeliness) against 95% thresholds.	RODB Bangkok	-	Annually Jan	
Activity 1 2.3: Analyse data and share results with RODBs	RODB Bangkok	2.2	Annually Jan	
Activity 1 2.4: Prepare paper report results to MET/IE WG meeting and identify corrective actions	RODB Bangkok	2.3	Annually Feb	
Activity 1 2.5: Report summary of OPMET availability and timeliness, compliance and regularity results to MET SG	Chair	2.4	Annually before MET SG	
Activity 1 2.6: Inform States of non-compliance and corrective actions.	Secretariat	2.5	Annually Jun	
Activity 1 2.7: Provide support for States to support corrective actions if requested.	RODBs	2.6	As required	
Milestone 1 2: Achieve 95% (90%) or greater OPMET availability and timeliness, compliance and regularity for AOP (non-AOP) aerodromes at RODBs; SADIS and WIFS are reported.	MET/IE WG	2.7	Annually Jun	
Activity 2 3: SIGMET and Advisory Tests				
Activity 2 3.1: Review SIGMET Test procedures	MET/IE WG	-	Annually Aug	
Activity 2 3.2: State Letter regarding SIGMET Tests	Secretariat	3.1	Annually Sep	
Activity 2 3.3: Email States regarding SIGMET Tests	Secretariat	3.2	Annually	Last Wed in Oct
Activity 2 3.4: Conduct and collate data for WC TC SIGMET Tests	RODBs	3.2	Annually	2 nd Wed in Nov
Activity 2 3.5: Conduct and collate data for WV VA SIGMET Tests	RODBs	3.2	Annually	3 rd Wed in Nov
Activity 2 3.6: Conduct and collate data for WS other SIGMET Tests	RODBs	3.2	Annually	4 th Wed in Nov
Activity 2 3.7: Analyse test data	RODB Singapore and Tokyo	3.4-3.6	Annually Jan	
Activity 2.8 3.9: Report to MET/IE WG	RODB Singapore and Tokyo	3.8	Annually Mar	
Activity 2.9 3.10: Report on SIGMET Test Results to MET SG (via annual MET/IE WG report).	Chair	3.9	Annually May	
Activity 2.10 3.11: Advise States of SIGMET corrective actions	Secretariat	3.9	Annually Jun	
Milestone 2 3: Improved issuance and compliance of SIGMETs	MET/IE WG	3.11	Annually Jun MET SG	

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5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 4: VAAC Back-up Tests				
Activity 4.1: Review and Update VAAC Back-up Test procedures	MET/IE WG and VAACs		Annually	
Activity 4.5: Collect test results and send to VAAC Provider State members	RODBs	4.3	Annually Oct—TBC	
Milestone 4: VAAC Back-up Tests conducted.	VAAC Back-up Focal Points Members	4.8	Annually Jun	
Activity 3 5: IROG Back-up Tests				
Activity 5.1: Investigate the feasibility and benefits of back-up arrangements of IROG Tokyo, Nadi and Brisbane	IROG Nadi, Tokyo and Brisbane	-	Nov 2023	
Activity 5.2: Review IROG Back-up Test procedures to include all IROG.	IROG Bangkok and Singapore	-	Apr 2023, Annually Feb	
Activity 3.1 5.3: Updated IROG Back-up Procedures in ROBEX Handbook to include IWXXM.	Secretariat	5.2	Annually May	
Activity 3.2 5.4: Identify list of MET Bulletins to monitor.	IROG Bangkok and Singapore	-	Annually Jan/Feb	
Activity 3.3 5.5: Conduct IROG Back-up Test of Bangkok and analyse results	IROG Bangkok and Singapore	5.4	Annually Sept/Oct	
Activity 3.4 5.6: Conduct IROG Back-up Test of Singapore and analyse results	IROG Bangkok and Singapore	5.4	Annually Jan/Feb	
Activity 3.5 5.8: Report to MET/IE WG	IROG Bangkok and Singapore	5.7	Annually Mar	
Milestone 3 5: IROG Back-up Tests conducted, analysed and report complete.	IROG Bangkok and Singapore	5.7	Annually Mar	
Activity 4 6: Regional guidance material related to data exchange				
Activity 4.1: Propose updates to the ROBEX Handbook	MET/IE WG and Secretariat		As required	
Activity 4.2: Draft updates to the ROBEX Handbook	Secretariat		Annually One month before the MET/IE WG and MET SG	
Activity 4.3: Publish updates to the ROBEX Handbook	Secretariat		Annually Two weeks after the MET/IE WG and MET SG	
Activity 6.1: Review OPMET exchange definitions as defined in ROBEX Handbook and update as necessary.	All RODBs	-	Annually Apr	
Activity 6.2: Implement updates to Appendix A and B in ROBEX Handbook.	Secretariat	6.1	Annually May	

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5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 6.3: Document roles for monitoring IWXXM performance in APAC	Thailand and Secretariat		Nov 2023	
Activity 6.4: Propose quality threshold for translated data following consultation with users	IATA, Chair WG		Nov 2023	
Activity 6.6: Complete update of ROBEX Handbook including Table MET 2A.	Secretariat	-	Annually May	
Activity 6.7: Review ANP Tables (initially MET II-2) and ensure all necessary aerodromes are contained in OPMET bulletins	WG	-	May Annually	
Activity 6.8: Seek MET/SG endorsement of the updated ROBEX Handbook.	Secretariat	-	Annually Jun	
Activity 6.9: Support MET SG with development of MET-specific requirements in the ANP, Volume III	WG		As required	
Milestone 4 6: ROBEX Handbook remains relevant	Secretariat	6.7	Twice Annually Sep	
Activity 7: IWXXM Implementation				
Activity 7.1: Monitor migration to IWXXM.	WG	-	As required	
Activity 7.3: Report to MET SG on APAC States' IWXXM implementation status.	Secretariat/Chair, WG	7.2	Next meeting MET SG	
Activity 7.4: Increase awareness of the requirement for States to exchange of OPMET data in IWXXM format and the impact of inability to do so.	WG		As required	
Activity 7.5: Support States with the planning and implementation of the dissemination of the required meteorological information in IWXXM form, in particular at the designated APAC Regional OPMET Centres (ROCs) and Regional OPMET Databanks (RODBs).	WG		As required	
Activity 7.10: Prepare information (e.g. issues, CONOPS) for MET/P WG-MIE (possible MET/IE agenda items on issues on IWXXM and information service provision)	WG		As required	
Activity 7.12: Maintain IWXXM online register	Australia, Hong Kong, China and Secretariat		Monthly	
Milestone 7: Report to MET/IE WG and MET SG on IWXXM exchange and testing.	Secretariat and Chair	7.5, 7.6 and 7.8	Annually May	
Activity 5 8: MET Information Exchange Scheme Structure				

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5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 5 8.1: Review ROBEX Scheme diagram.	All RODBs, Secretariat		May Annually	
Activity 5 8.2: Review the structure of the ROBEX exchange in light of the introduction of SWIM.	WG		Annually Feb	
Activity 5.3: Maintain IWXXM online register	Australia, Hong Kong, China and Secretariat		Monthly	
Activity 8.3: Review use of the Request/Reply service	RODBs	-	May 2023	
Activity 8.4: Improve the efficiency of Request/Reply service	RODBs	8.3	Sep 2023	
Milestone 5 8: Improved efficiency and effectiveness of ROBEX Scheme	MET/IE WG	-	2023	
Activity 6 9: MET information in SWIM				
Activity 9.1: Assist in the definition of the APAC SWIM Met service catalogue	WG	-	As required	
Activity 9.2: Assist in the definition of the APAC SWIM Met data catalogue	WG	-	As required	
Activity 6.1 9.3: Develop guidance to support States' implementation of MET information services	WG	-	As required	
Milestone 6 9: MET-SWIM services implemented in APAC	MET/IE WG	-	2023-2027	

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