

International Civil Aviation Organization

ICAO

WORKING PAPER**ICAO Asia and Pacific (APAC)**Twenty-Seventh Meeting of the Meteorology Sub-Group
(MET SG/27)

Bangkok, Thailand, 04 to 08 September 2023

Agenda Item 2: Review outcomes from previous meetings**REVIEW OUTCOMES FROM MET/IE WG/21**

(Presented by the Chairs of MET/IE WG)

SUMMARY

This paper presents a summary of the 21st meeting of the Meteorological Information Exchange Working Group (MET/IE WG), including a conjoint session with Meteorological Services Working Group, held 27 - 29 March 2023. 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-first Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/21) in Bangkok, Thailand, from 27 to 29 March 2023, including included a conjoint session with the Thirteenth Meeting of the Meteorological Services Working Group (MET/S WG/13) on 29 March 2023.

1.2 The meeting was attended by 56 participants from 16 States / Special Administrative Regions, and ICAO. Mr Tim Hailes, National Manager, Transport Customer Engagement, Bureau of Meteorology, Australia, presided as Chair of the Meeting. Following the election of a Vice Chairperson, the Chair was assisted by Mr Marco Mang-Hin Kok, Acting Senior Scientific Officer, Hong Kong Observatory, in the role of Vice Chair of the Meeting. Ms Paula Acethorp, Chief Meteorological Officer, Civil Aviation Authority of New Zealand, presided as Meeting Chair for the conjoint Meeting session, assisted by Mr Hailes and Mr Kok. Mr Peter Dunda, Regional Officer Aeronautical Meteorology and Environment, ICAO APAC Office, acted as Secretary for the Meeting.

1.3 The meeting considered 18 Working Papers (WPs), 9 Information Papers (IPs) and one Flimsy in the first two days of the meeting and an additional three WPs in the conjoint session between MET/IE WG/21 and MET/S WG/13. This paper will focus on the outcomes of MET/IE WG and the conjoint session of the MET/IE and MET/S. A separate paper details the outcomes of the MET/S meeting.

2. DISCUSSION

A copy of the full meeting report, and all related meeting documentation, is available at the following website: <https://www.icao.int/APAC/Meetings/Pages/2023-MET-IE-WG21.aspx>

2.1 The meeting adopted the following agenda:

MET/IE WG/21

Agenda Item 1: Organisational matters

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

Agenda Item 3: Meteorological information exchange schemes

Agenda Item 4: Meteorological information exchange in digital form

Agenda Item 5: Quality control, monitoring and management of meteorological information exchange

Agenda Item 6: Guidance material related to meteorological information exchange

Agenda Item 7: Future work program and terms of reference

Agenda Item 8: Any other business

Agenda Item 9: Next Meeting

Conjoint session of MET/IE WG/21 and MET/S WG/13

Agenda Item 1: Volcanic ash advisory centre (VAAC) backup tests

Agenda Item 2: SIGMET tests

MET/IE WG/21

Review of follow-up from previous meetings

2.2 The meeting reviewed the status of actions from the previous MET/IE WG/20. Several of the actions would be completed with the publication of the ROBEX Handbook 15th Edition. Several old actions were also closed due to being superseded by more recent and refined actions. One amendment to the ICAO APAC Air Navigation Plan (ANP) concerning Table MET II-2 originated by New Zealand was completed and the Secretariat expected to complete unresolved ANP-amendment action items soon.

2.3 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.

2.4 The meeting reviewed the outcomes from the Twenty-Sixth Meeting of the Meteorology Sub-group (MET SG/26), including the Conclusions and Decisions adopted by MET SG/26. Two of the MET SG action items 26/06 and 25/14 would be completed with the publication of the ROBEX Handbook 15th Edition.

2.5 The meeting also reviewed outcomes relevant to MET/IE WG and MET SG from Thirty-Third Meeting of the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/33), including: Conclusion 33/12 – *WAFS, SADIS and WIFS upgrades*; and Conclusion 33/13 – *0.25-degree WAFS hazard data*. The meeting highlighted the urgency for completion of the Secretariat follow-up action on the State letter urging States to make necessary changes for the WAFS-related upgrades in the above two Conclusions.

2.6 The Meeting highlighted the urgency for ICAO to arrange supplementary assistance, such as the advertised Aviation Meteorology Officer secondment from the States, to provide adequate Secretariat support for progressing the MET/IE WG actions.

Meteorological information exchange schemes

2.7 No papers were discussed under this agenda item. The Chair suggested removing this agenda item for the next Meeting. In addition, the Meeting considered adding a new agenda item for the next Meeting on System-Wide Information Management (SWIM).

Meteorological information exchange in digital form

2.8 Hong Kong, China informed the meeting that ICAO Meteorological Information Exchange Model (IWXXM), Version 2021-2, published on 15 November 2021, was compatible with Amendments 79 and 80 to ICAO Annex 3 and reflected a new semantic versioning scheme. The Meeting noted that a new version of IWXXM, Version 2023-1, was expected to be published in May 2023 to resolve issues identified in Version 2021-2, and a new version to comply with Amendment 81 to ICAO Annex 3 is expected to be approved in 2024 (subject to the final approval of Amendment 81).

2.9 The Meeting also noted that the IWXXM messages issued in Version 3.0 will not comply with the latest amendment (Amendment 80) to ICAO Annex 3, and noted that the producers of IWXXM reports should implement or upgrade their systems to support at least IWXXM Version 2021-2. Therefore, the Meeting formulated the following proposed Conclusion for consideration by MET SG (Draft Conclusion MET/IE WG/21-01):

Conclusion MET SG-XX: IWXXM VERSION COMPATIBILITY	
What: That, States are requested to ensure that MET service providers, air navigation service providers (ANSPs), airlines and other end users do the following: a) make the necessary system upgrades to support the IWXXM version which complies with the latest amendment to Annex 3 as stated in the IWXXM compatibility table*; and b) prepare for future system upgrades to support future IWXXM versions driven by further amendments to Annex 3. (*Link to the IWXXM capability table: https://github.com/wmo-im/iwxxm/wiki/Package-Compatibility)	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: Most States are generating and exchanging IWXXM OPMET data in version 3.0. With the evolution of ICAO Annex 3, IWXXM version 3.0, which complied with Amendments 78 to Annex 3, is no longer compliant with Amendments 80 to ICAO Annex 3. To avoid the potential impact to operations due to IWXXM version compatibility issues of the systems, States are required to upgrade the systems for generating, exchanging and consuming IWXXM reports to support the IWXXM version which complies with the latest amendment to Annex 3.	Follow-up: <input checked="" type="checkbox"/> Required from States
When: 29-Mar-23	Status: Draft to be adopted by Subgroup
Who: <input 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:	

2.10 Hong Kong China and New Zealand developed updates to the IWXXM Implementation in APAC Region – FAQs (IWXXM FAQs) to incorporate lessons learnt and common issues identified during the implementation and monitoring of IWXXM exchange via the Air Traffic Services Message Handling System (AMHS). The meeting suggested minor editorial changes to the IWXXM FAQs some paragraphs. The Meeting considered the updates would provide an additional helpful information resource on IWXXM implementation in the APAC Region and, therefore, adopted the following Decision:

Decision MET/IE WG/21-02: UPDATES TO IWXXM FAQs	
What: That, the MET/IE WG endorses the updates to the IWXXM FAQs document in WP/07 for sharing with States and the publishing of the updated version of IWXXM FAQs to the APAC eDocument website.	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: The IWXXM FAQs document has proven a useful guide to assist States with their implementation of IWXXM. The inclusion of recent learnings from States will add further value to this IWXXM FAQs document.	Follow-up: <input type="checkbox"/> Required from States
When: 29-Mar-23	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.11 Australia and Hong Kong China informed the meeting of the updates to the IWXXM Online Register of APAC IWXXM Exchange Status. The Meeting noted eight Regional OPMET Centres (ROCs) capable of routinely receiving and disseminating IWXXM messages in the APAC Region. However, some ROCs and National OPMET Centres were still unprepared to receive IWXXM messages via AMHS.

2.12 The meeting noted that a new table was added to the register to reflect the progress of the inter-regional exchange of IWXXM OPMET data made by Inter-Regional OPMET Gateways (IROGs). The register indicated that the inter-regional exchange of IWXXM was currently only enabled with APAC and Europe, with data being exchanged between the Inter-regional OPMET Gateways (IROGs) in Singapore and London. The Meeting requested IROGs update each interregional circuits in the IWXXM online register.

2.13 The Meeting discussed the need to seek support from the ICAO Aeronautical Communication Services Implementation Coordination Group (ACSICG) to support network connections with other ICAO regions to facilitate the global exchange of IWXXM messages, and formulated the following Draft Conclusion MET/IE WG/21-03:

Draft Conclusion MET/IE WG/21-03: GLOBAL EXCHANGE OF IWXXM	
What: That, ACSICG prioritise the implementation of intra- and inter-region network circuits, including support for the Air Traffic Services Message Handling System (AMHS) with File Transfer Body Part (FTBP) and Interpersonal Message Heading Extension (IHE), to support the global exchange of messages in the ICAO Meteorological Information Exchange Model (IWXXM) form.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Aviation users require access to global OPMET information provided in IWXXM form. Without suitable communication network connections, global exchange will not be possible, preventing users from safely migrating from text to new IWXXM services.	Follow-up: <input type="checkbox"/> Required from States
When: 29-Mar-23	Status: Draft to be adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.14 ACSICG/10 agreed a modified version of the above Draft Conclusion MET/IE WG/21-03 to propose further action by States and ICAO to support the global dissemination of meteorological information in IWXXM form, would be an appropriate outcome from ACSICG/10. The ACSICG/10 formulated the following Draft Conclusion for consideration by CNS SG:

Draft Conclusion ACSICG/10/05: GLOBAL DISSEMINATION OF IWXXM	
What: Support the global dissemination of meteorological information in the ICAO Meteorological Information Exchange Model (IWXXM) form by prioritizing the implementation of intra- and inter-regional aeronautical communication services and network circuits, including support for the Air Traffic Services Message Handling System (AMHS) with File Transfer Body Part (FTBP) and Interpersonal Message Heading Extension (IHE), and facilitating, through inter-regional consultation, the enhancement of interregional network redundancy (i.e., primary circuits and backup paths).	Expected impact: <input checked="" type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Following the provisions of ICAO Annex 3 – <i>Meteorological Service for International Air Navigation</i> , States shall ensure that certain meteorological information is disseminated to users in the IWXXM form. However, without suitable communication network connections to support the necessary intra- and inter-regional exchange of IWXXM messages, global dissemination of meteorological information in IWXXM form will not be possible. Consequently, the migration of user and supplier systems from meteorological information in the traditional alphanumeric code (TAC) form to the IWXXM form, as envisaged in the Global Air Navigation Plan (GANP), will remain inhibited.	Follow-up: <input type="checkbox"/> Required from States
When: Now	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input checked="" type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: PIRGs in other ICAO Regions	

2.15 To encourage States to share updates on their IWXXM capabilities and increase the awareness of other enabling ICAO APAC groups on the latest IWXXM exchange status, the Meeting requested the Secretariat to include the link to the register on the ICAO APAC Office "eDocuments" website.

2.16 MET SG Member States are reminded to update the register with their latest capabilities: <https://docs.google.com/spreadsheets/d/1WEcGfMRZq2dgHsfdpFhiefJEcA8OeMhfbCJHTqA7NX0/edit#gid=0>

2.17 Australia has implemented the capability to include TAF extensions in individual IWXXM TAF reports and IWXXM TAF bulletins and is preparing to send test products internationally to interested recipients, including Hong Kong China and New Zealand. In addition, Australia plans to replace its operational IWXXM TAF bulletins with the TAF extensions bulletins. Australia is also testing the dissemination of individual TAF reports in IWXXM format and considering various options for the filename convention. The Meeting noted that rather than adopting a single filename convention, different filename conventions may be useful to meet different use cases.

2.18 Cambodia, China, Hong Kong China, Indonesia, Singapore and Thailand informed the meeting of the updates on their status of IWXXM implementation.

Quality control, monitoring and management of meteorological information exchange

2.19 IROGs Singapore and Bangkok conducted their IROG backup exercises on 14 and 29 September 2022. During the first exercise, where IROG Bangkok over IROG Singapore, IROG Bangkok routed 99.80% of METAR bulletins and 100% TAF bulletins to IROG London during the test.

During the second exercise, where IROG Singapore took over IROG Bangkok, IROG Singapore successfully routed 100% METAR bulletins and 100% TAF bulletins to MID/AFI during the exercise.

2.20 These exercises also validated the dissemination process for notification between IROG Singapore and IROG Bangkok, and the procedures for handover and takeover of responsibilities in the event of technical problems.

2.21 The Meeting invited Singapore and Thailand to investigate the feasibility and possible timeline for the IWXXM IROG backup exercise. The Meeting requested the Secretariat to lead the drafting of a paper to the ACSICG 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 on a global scale and explore the possibility of a conjoint meeting session of the MET/IE WG and ACSICG in 2024. Subsequently the Secretariat and Chairs prepared a paper for the 10th meetings of ACSICG ([ACSICG/10, WP/17](#)). The ACSICG meeting supported the proposal to conduct a conjoint meeting session of the MET/IE WG and ACSICG in 2024. Therefore, the ACSICG/10 requested the Co-Chairs and Secretariat to consider convening a conjoint meeting session in 2024.

2.22 RODB Bangkok computed OPMET Performance Indices (PIs) on OPMET data from the five RODBs: Bangkok, Brisbane, Nadi, Singapore and Tokyo in November 2022. The Meeting noted that the monitoring results indicated significant improvement in the PIs in 2022 compared with 2021.

2.23 Regarding the action from the previous MET/IE meeting for the ad hoc group to review the PIs used in APAC OPMET monitoring, Thailand agreed to lead the action in coordination with the Secretariat, Chairs, New Zealand, Hong Kong China and Australia. The Meeting also invited the above ad hoc group to consider monitoring the timeliness of IWXXM messages.

2.24 Thailand implemented IWXXM-specific statistics at RODB Bangkok and the Meeting appreciated the significant progress in developing the new IWXXM statistics. The Meeting invited Thailand to provide the MET/IE WG with further advice on the problems identified in validating IWXXM v2021-2 format.

2.25 The IWXXM-specific statistics demonstrated that many States are now distributing IWXXM; however, many States are generating IWXXM through translation which is dependent on the quality of traditional alphanumeric code (TAC)-formatted information, otherwise the translated IWXXM does not pass validation, preventing its reliable use. The Meeting formulated the following proposed Conclusion for consideration by MET SG (Draft Conclusion MET/IE WG/21-04):

Conclusion MET SG/27-XX: PROVISION OF QUALITY METEOROLOGICAL INFORMATION	
What: That, States are reminded that the provision of specified meteorological information in IWXXM form has been an ICAO Annex 3 standard requirement since 2020. Where a State provides, or arranges the provision of, IWXXM information through translation services (from traditional alphanumeric code (TAC)-formatted information), the TAC-formatted information must be ICAO compliant otherwise translation errors occur, resulting in higher costs for users and preventing the benefits of IWXXM being obtained.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Most States are now producing meteorological information in IWXXM. However, users will only consider transition from TAC to IWXXM forms when they can reliably access quality IWXXM information from all the required States.	Follow-up: <input checked="" type="checkbox"/> Required from States

When: 29-Mar-23	Status: Draft to be adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.26 Indonesia provided information on resolving an issue identified in APAC OPMET monitoring, which had impeded the exchange of METAR bulletins from Indonesia to RODB Brisbane. The Meeting noted the importance of OPMET monitoring in identifying and resolving such issues.

Guidance material related to meteorological information exchange

2.27 The Meeting reviewed draft updates for the Asia Pacific ROBEX Handbook, Fifteenth Edition — March 2023. The updates included previously endorsed and requested changes by MET/IE WG/19, MET/IE WG/20, MET SG/25 and MET SG/26.

2.28 The meeting discussed and agreed to a range of subsequent updates to the ROBEX Handbook, Fifteenth Edition, including:

- updates to focal point information;
- removal of the requirement to indicate the RODB responsible for storing the METAR and TAF bulletins in bold text in Appendix A and B, which was considered no longer relevant;
- correction of the references to IWXXM TAF bulletins from "LC" to "LT" in para. 13.3.1.1 and Appendix D, para. 2.1.1;
- 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;
- updates proposed by China to reflect changes in observation time for bulletins containing METAR for ZBSJ and ZWSH;
- updates proposed by New Zealand in Appendix B, Table B to reflect the recent implementation of 30-hour validity TAF for some aerodromes and cessation of the trend service with 30-hour TAF routinely issued every three hours;
- updates proposed by Hong Kong, China to reflect the inclusion of two aerodromes, RPLC and RPVP in Philippines, in the Hong Kong METAR/SPECI and TAF bulletins and reflect the implementation of TAF issuance at 3-hourly intervals for VHHH; and
- updates proposed by Thailand to reflect changes to the aerodromes in bulletins disseminated by Bangkok, the bulletins times and available times of METAR bulletins, and the TAF validity in TAF bulletins; and to include ROC Beijing in disseminating all Bangkok METAR/TAF Bulletins.

2.29 The Meeting also agreed that the format changes proposed by New Zealand to Table B of the ROBEX Handbook to facilitate clearer communication of the TAF availability and validity period would be incorporated in the following proposal for updates to the ROBEX Handbook.

2.30 The Meeting noted that when the ROBEX Handbook was updated from the 13th to 14th edition published in 2022, Appendix E was updated with the addition of General rules in METNO Procedure. As a result, inconsistencies or ambiguities were identified between the METNO procedures mentioned in “Section 13.1 - Changes to OPMET Bulletin Procedures” and “Appendix E Section 1 – METNO Procedures – General rules”.

2.31 The Meeting was informed that the ICAO Meteorology Panel (METP) Working Group on Meteorological Information Exchange (WG-MIE) was looking into developing a globally consistent procedure for METNO. Therefore, the Meeting tasked the Secretariat, Chair, Vice Chair and METNO focal points and invited the RODBs to keep abreast of the METP developments and develop a proposal to improve the APAC ROBEX Handbook for consideration by the MET SG.

Future work programme and terms of reference

2.32 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 wWork Plan for MET SG/27 review. The proposed updates are presented in **Appendix B** to this paper. The Meeting requested the Secretariat to contact the listed members not in attendance at MET/IE WG/21 to confirm their membership status on the MET/IE WG as presented in the Terms of Reference.

Any other business

2.33 No discussion under this item.

Conjoint session of the MET/IE WG and the MET/S WG

Volcanic Ash Advisory Centre (VAAC) Backup tests

2.34 No papers were discussed under this agenda item. However, the MET/S WG/13 meeting session reviewed IP/09 under agenda item 6 in which the VAACs Darwin, Tokyo and Wellington reported information on VAAC backup tests conducted between VAACs Darwin-Wellington, Darwin-Tokyo, Washington-Montreal, and Darwin-Washington.

SIGMET Tests

2.35 The meeting reviewed results of a WS SIGMET test that was conducted on 23 November 2022 and noted:

- Test messages were not received from 4 States, namely: Afghanistan, DPR Korea, Nauru and Papua New Guinea. The rate of participation in the SIGMET test by States was 86%, which is an improvement compared to 79% in 2021 and 2020.
- A few errors were identified in the test messages: one incorrect priority indicator in a message header; and two messages with invalid formats.

2.36 The 2022 WS SIGMET test was the first test to include IWXXM format SIGMETs, in addition to the TAC format. Nine MWOs issued IWXXM format WS SIGMETs during the test: Hong Kong, Taipei, Nadi, Tokyo, Wellington, Manila, Singapore, Honiara and Bangkok.

2.37 The Secretariat, in coordination with the MET/S WG ad hoc group on air navigation deficiencies, would advise States concerned of the deficiencies identified in the SIGMET test and propose corrective actions.

2.38 The meeting also reviewed results of a WC/WV SIGMET test that was performed on 9/16 November 2022, respectively and noted:

- The overall availability of WC and WV test bulletins was 78% and 87%, respectively, which was slightly better than in 2021 (76% and 86%)
- In 2022, the following 4 States did not issue WC SIGMET test messages: DPR Korea, Myanmar, Nauru and Papua New Guinea. In addition, the following 5 States did not issue WV SIGMET test messages: Afghanistan, Cambodia, DPR Korea, Nauru and Papua New Guinea.
- A few errors were identified in the WC and WV test bulletins: one incorrect priority indicator in a message header; and eight messages with errors in the SIGMET code elements; and

- SIGMET test messages in the IWXXM form were received from some (APAC) States, including: Australia, China (MWO Hong Kong and MWO Taipei), Fiji, Japan, Singapore, Solomon Islands and Thailand.

2.39 The Meeting appreciated the efforts of RODB Tokyo to extend the WV and WC test analysis to include information on the number of test SIGMETs issued by each MWO, relating to the number of separate advisories they received from each of their related VAACs or TCACs.

2.40 The Chair encouraged States to utilize the SIGMET test functionality to validate SIGMET capability following system changes.

2.41 Regarding the data on SIGMET test messages in IWXXM form, the Meeting noted that the designated ad hoc group had developed updates in the ICAO APAC Regional SIGMET Test Procedures 2022 to include guidance on SIGMET test messages disseminated in the IWXXM.

2.42 To take full advantage of the IWXXM test messages and consider the IWXXM-specific statistics, the Meeting requested Thailand, in coordination with the SIGMET test focal points (Japan and Singapore), to include the IWXXM-specific statistics, such as IWXXM versions, in future SIGMET test results.

2.43 The Meeting further requested the Secretariat and Chair in coordination with the designated ad hoc group to ensure that the APAC Regional SIGMET Guide be updated to include MWO Ulaan Baatar in the MWO list and to include the additional headers used by MWO Tahiti for their SIGMETs.

Any other business

2.44 The Secretariat informed the meeting that ICAO State letters Ref.: AN 10/1-23/1 and AN 2/36-23/6, dated 26 January and 13 February 2023, respectively, presented several proposals for the amendment of ICAO Annex 3. The proposed amendments presented in the State letters were envisaged for applicability on 28 November 2024 or, for proposed amendments related to quantitative volcanic ash information, on 27 November 2025.

2.45 The Meeting noted that the proposals might require States, operators and service providers in the aviation system to implement significant changes, including the following:

- The transfer of the means of compliance for SARPs in Annex 3 into a separate Procedures for Air Navigation Services – Meteorology (PANS-MET);
- Increase the responsibility of the State's designated meteorological authority to include providing oversight and regulation of the meteorological service;
- Provide forecasts of quantitative volcanic ash concentration information;
- Provide the volcano observatory notice for aviation (VONA); and
- Provide meteorological information to users through information services (SWIM).

2.46 To help inform the APAC States on the proposed new provisions for quantitative volcanic ash concentration information, the Meeting invited the VAACs Darwin, Tokyo and Wellington to present explanatory information to the MET SG.

2.47 Concerning the proposals for amendment to Annex 3 concerning SWIM, the Meeting was informed that the METP was considering the removal of Annex 3 requirements for global exchange of MET information in the traditional alpha-numeric code form in 2029.

2.48 The Meeting was also informed that the proposed changes to the World Meteorological Organization qualification and competency requirements relating to Aeronautical Meteorological

Forecasters and Aeronautical Meteorological Observers is available at the following website:
<https://community.wmo.int/en/activity-areas/aviation/resources/amp-qual-comp-amendments>

Next meeting

2.49 The meeting proposed the following (tentative) dates for the next meeting of the MET/IE WG, including Conjoint Session of MET/IE WG/21 and MET/S WG/13:

- 18-20 March 2024 (aligned with MET/S WG); or
- April 2024 (aligned with the ACSICG).

2.50 Based on the outcome of ACSICG/10 mentioned in para. 2.21 above, the Secretariat and Chairs of MET/IE WG would discuss with the Secretariat and Chairs of ACSICGS the possibility of holding MET/IE WG meeting in parallel with ACSICG meeting in the same week in 2024 to conduct a conjoint meeting session of MET/IE WG and ACSICG, while retaining the conjoint session between MET/IE WG and MET/S WG.

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. 2.9 and 2.25; 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

MET/IE WG – LIST OF ACTIONS

New 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]	MET SG/27	Secretariat and Chairs	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]	MET SG/27	APAC IROGs	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	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]	MET/IE WG/22	Singapore and Thailand	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]	ACSICG/10	Secretariat and Chairs	TO COMMENCE IN PROGRESS (ref: ACSICG/10, WP/17)
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]	ACSICG/10	Secretariat and Chairs	TO COMMENCE COMPLETED (ref: ACSICG/10, WP/17)
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]	MET/IE WG/22	Ad hoc group: Thailand (lead), Secretariat, Chairs, New Zealand, Hong Kong China and Australia	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]	MET/IE WG/22	Thailand	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]	ASAP	Secretariat	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]	ASAP	Secretariat	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]	ASAP	Secretariat	TO COMMENCE

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
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]	ASAP	Secretariat	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]	ASAP	Secretariat	TO COMMENCE
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 SG/27	Secretariat, Chair, Vice Chair and METNO focal points and invited the RODBs	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]	MET/IE WG/22	Thailand, in coordination with the SIGMET test focal points (Japan and Singapore)	TO COMMENCE

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

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/2627	Secretariat, in coordination with participants from Australia	IN PROGRESS
MET/IE WG/20 02	Coordinate the consequential amendments to the ANP (Volume II, Table MET II-2 – Aerodrome Meteorological Offices) and the 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.]	Before MET SG/2627	Secretariat, in coordination with participants from Vietnam	IN PROGRESS ANP PfA pending circulation by the Secretariat
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/2627	Secretariat, in coordination with participants from Thailand	IN PROGRESS
MET/IE WG/20 04	Develop updates to the document <i>IWXXM implementation in APAC Region – FAQs</i> based on lessons learnt from monitoring IWXXM validation conducted by ROC Hong Kong. [Ref: Report of MET/IE WG/20, para. 4.31.]	Before MET SG/2627	Members from Hong Kong, China, assisted by members from New Zealand	COMPLETED (ref: MET/IE WG/21, WP/07)
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/242	Secretariat and Chair MET/IE WG and designated ad hoc group, including Members from Thailand and TBD New Zealand, Hong Kong China	IN PROGRESS
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.]	Before MET/IE WG/242	Thailand, in coordination with the Secretariat	IN PROGRESS

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/20 07	Update the ROBEX Handbook, Appendix I, to reflect changes in the focal point information for Thailand and Malaysia. [Ref: Report of MET/IE WG/20, para. 6.2.]	Before MET SG/2627	Secretariat, in coordination with participants from Thailand and Malaysia	COMPLETED (subject to publication of updates in MET/IE WG/21, WP/10; ROBEX HB 15 th Ed.)
MET/IE WG/20 08	Delete the list of area designators in the ROBEX Handbook, Appendix D, 2.1.2. c), which replicates WMO No. 386, Table C1, Part II – Area Designators and, therefore, is unnecessary in the ROBEX Handbook. [Ref: Report of MET/IE WG/20, para. 6.3.]	Next ROBEX Handbook update	Secretariat	COMPLETED (subject to publication of updates in MET/IE WG/21, WP/10; ROBEX HB 15 th Ed.)
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/2627	Secretariat and ROBEX Focal Points from Australia, Hong Kong, China, Japan and Singapore	IN PROGRESS (related to work underway by METP WG-MIE)
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. [Ref: Report of MET/IE WG/20, para. 6.9.]	Next ROBEX Handbook update	Secretariat, in coordination with participants from Indonesia	IN PROGRESS ANP Pfa pending circulation by the Secretariat
MET/IE WG/20 11	Coordinate with Mongolia to: a) Notify the regional focal point and team for management of the METNO process of the changes in IP/11; and b) Include the proposals in IP/11 in the next update of the ROBEX Handbook. [Ref: Report of MET/IE WG/20, para. 6.14.]	Next ROBEX Handbook update	Secretariat, in coordination with participants from Mongolia	COMPLETED (subject to publication of updates in MET/IE WG/21, WP/10; ROBEX HB 15 th Ed.)
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. [Ref: Report of MET/IE WG/20, para. 6.15.]	Before MET SG/2627	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. [Ref: Report of MET/IE WG/20, para. 7.5.]	Before MET SG/2627	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. [Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 1.4.]	Before MET/IE WG/242	Members from VAAC Darwin	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> . [Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.17.]	Before MET SG/2627	Secretariat	IN PROGRESS
MET/IE WG/20 16	Develop a proposal to update the SIGMET Test Procedures to include disseminating SIGMET and advisory messages in IWXXM form. [Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.18.]	Before MET SG/2627	MET/IE WG and MET/S WG designated ad hoc group	COMPLETED (Ref: SIGMET test procedures 2022)

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/20 17	Follow up with Myanmar on the appropriate addressing of letters from ICAO inviting participation in SIGMET tests. [Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.23.]	Before MET SG/2627	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. [Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.24.]	Before MET SG/2627	Secretariat	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.]	May 2021 Before MET SG/27	WG	TO COMMENCE
02	Propose updates to the ROBEX Handbook: to ensure the availability of the AFTN addresses for the designated APAC ROCs [ref: para. 2.6.]	May 2021 Before MET SG/27	WG	To commence COMPLETED (subject to publication of updates in MET/IE WG/21, WP/10; ROBEX HB 15 th Ed.)
05	Propose updates to the ROBEX Handbook: to include the necessary consequential changes to OPMET bulletins described in WP/08 (SAPS31 NFFN, SAPS32 NWWW, SAPS33 NTAA, SANG31 YBBN, FTSP31 NFFN, FTSP32 NWWW, FTSP33 NTAA, FTNG31 YBBN) and presented in Attachment A to WP/08 and to include information on the (KWBC) bulletins containing Pago Pago METAR and TAF [ref: para. 4.3.]	May 2021 Before MET SG/27	Secretariat	PART COMPLETED ROBEX HB 14 th Ed.; updates pending concerning Pago Pago
11	Propose updates to the ROBEX Handbook: to include the OPMET exchange information for Van Don International Airport (VVVD), as advised by Viet Nam and presented in MET/IE WG/19, WP/15 – A new international airport (VVVD) to join ROBEX network for international OPMET data exchange. [ref: para. 6.11.]	May 2021	Viet Nam and Secretariat	IN-PROGRESS MET/IE WG/20; IP/02 COMPLETED (subject to publication of updates in MET/IE WG/21, WP/10; ROBEX HB 15 th Ed.)

Unresolved action items recorded by the conjoint session of MET/IE WG/19 and MET/S WG/11

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
01	State letter request to user States to ensure the relevant operational units participate in the VAAC backup tests and provide the VAACs with their current, valid AFTN addresses for receipt of the VAA messages. [Ref: para. 1.1.-1.3., MET/IE WG/19 and MET/S WG/11 conjoint session]	Before next scheduled test	Australia, New Zealand, Secretariat	TO COMMENCE CLOSED (ref: MET/S WG work plan)
02	Investigate possible improvements to the template for the SIGMET test summary table to enable a more detailed analysis of the SIGMET tests, including analysis of more than one WC and/or WV SIGMET test message issued by the same MWO (which receives TCA and/or VAA from more than one TCAC and/or VAAC). [Ref: para. 2.16., MET/IE WG/19 and MET/S WG/11 conjoint session]	Before next scheduled test	SIGMET test Focal Points, Secretariat	TO COMMENCE COMPLETED

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

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/ REMARKS
Terms of Reference and Work Program				
01	Terms of Reference and Work Program – online coordination: Make use of regular online coordination meetings to facilitate progress on follow-up on the action items in the Task List/s [ref: para. 2.3. and 7.3.]	As necessary	Secretariat and WG Chairs and members	IN-PROGRESS CLOSED (ref: MET/IE WG work plan)
OPMET Monitoring				
07	OPMET performance indices – States’ follow-up: Inform States concerned of the locations with low performance indices and advise the States to take appropriate corrective actions; address the above communication also the Regional OPMET Centres (ROCs) responsible for the collection of OPMET messages from the originating stations [ref: para. 3.4. and 3.5.]	Before MET SG/26	Secretariat	IN-PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 1 and Activity 2 CLOSED Superseded by later activities
Regional Guidance Materials				
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.]	Before MET SG/27	MET/IE WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
14	ROBEX Handbook updates – IWXXM-related data: Investigate the development of an online repository for ROBEX data in which States would share and maintain up to date information on the IWXXM-capabilities of the ROBEX scheme and the AMHS addresses to support the required dissemination of IWXXM messages [ref: para. 4.6.]	Before MET SG/24	MET/IE WG	IN-PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6 COMPLETED IWXXM online register
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.]	Before MET SG/27	MET/IE WG	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 APAC ANP and ROBEX Handbook [ref: para. 3.7.]	Before MET SG/27	Vietnam and Thailand	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
20	ANP and ROBEX Handbook updates – Indonesia new aerodromes: Determine any requirement (based on IP/09) to update the ICAO APAC ANP and/or ROBEX Handbook [ref: para. 8.27.]	Before MET SG/27	Secretariat and Indonesia	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
SIGMET test				
28	SIGMET test results – corrective action plan: Investigate the reason for the reduced reception of SIGMET test messages at Regional OPMET Centre (ROC) London compared to APAC RODB’s and share the results with MET/S for potential corrective action [ref: para. 6.12.]	Before MET SG/26	MET/IE WG	IN-PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3 CLOSED Superseded by later activities
Other				

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
30	VAAC backup test procedures – review and update: Refer to the pertinent information from IP/08 and determine appropriate action for the next review and update of the VAAC backup test procedures [ref: para. 8.25.]	Before MET SG/26	MET/IE WG and MET/S WG	IN-PROGRESS Ref: MET/IE WG, 5-Work Plan, Activity-4 CLOSED (ref: MET/S WG work plan)

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. [Report of MET/IE WG/17, para. 3.1 – 3.4, refers]	Before MET SG/27	Cambodia and Secretariat	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 APAC ANP, including AOP and MET tables. [Report of MET/IE WG/17, para. 3.6 – 3.8, refers]	Before MET SG/27	China and Secretariat	IN PROGRESS
17/4	Coordinate a proposal to update the ROBEX Handbook to enable the regular exchange of several international OPMET bulletins to the ROBEX Centre Beijing and present it for further review and possible endorsement by MET/SG/23. [Report of MET/IE WG/17, para. 3.9 – 3.12, refers]	17 Jun 2019	Secretariat China	COMPLETED (subject to publication of updates in MET/IE WG/21, WP/10; ROBEX HB 15 th Ed.)
17/10	Liaise with the SADIS Provider concerning obtaining OPMET availability statistics on SADIS for future meetings of the MET/IE WG. [Report of MET/IE WG/17, para. 4.21, refers]	Before MET SG/27	Secretariat	IN PROGRESS
17/11	Present a consolidated proposal for updates to the ROBEX Handbook, to reflect the establishment of an NOC (within the ROBEX scheme) in Vietnam, for further review and possible endorsement by MET/SG/23. [Report of MET/IE WG/17, para. 5.9 – 5.10, refers]	17 Jun 2019	Vietnam, Thailand and Secretariat	IN-PROGRESS COMPLETED
17/12	Propose any necessary updates to the ROBEX Handbook to reflect the actual requirements for OPMET information. [Report of MET/IE WG/17, para. 5.11 – 5.13, refers]	17 Jun 2019	States with low PIs for OPMET	CLOSED Superseded by later activities
17/16	Coordinate the requirements for all additional, new updates to the ROBEX Handbook and consolidate these into an update proposal for further review and possible adoption by MET/SG/23. [Report of MET/IE WG/17, para. 6.5, refers]	17 Jun 2019	Secretariat	CLOSED Superseded by later activities
17/20	Propose updates to all required APAC documentation regarding the originating address of Australian WV SIGMETs (i.e., YMMC, rather than AMMC). [Report of conjoint session of MET/IE WG/17 and MET/S WG/9, para. 2.24, refers]	Before MET SG/27	Secretariat and Australia	IN PROGRESS ANP Table MET II-1 pending update

Unresolved action items recorded by MET/IE WG/16

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
16/4	Review the usage of the request-reply service provided and, where appropriate, arrange for the routine provision of OPMET bulletins as an alternative to the usage of the request-reply service for routine access to the stored OPMET data [Report of MET/IE WG/16, para. 5.8, refers].	Mar 2019	APAC RODBs	CLOSED Superseded by later activities

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

ICAO ASIA AND PACIFIC METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP (MET/IE WG)

TERMS OF REFERENCE AND WORK PLAN

(Note: Proposed updates are indicated with ~~strikethrough~~ 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 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	Under guidance from the ICAO APAC Secretariat: <ul 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) Report on deficiencies in 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 and SIGMET tests; h) Provide support for the APAC Volcanic Ash 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; and 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 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 reflect the requirement for an annual (quarterly) schedule of e	Chair 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 and Secretariat
Working Group Progress Report	MET SG Meeting	Working Paper (MET SG meeting)	Annually/submitted 28-days or more before the meeting	Chair and Secretariat

			(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 2: Timeliness, compliance and regularity of OPMET exchange	Ongoing	MET/IE WG	
Activity 3: SIGMET and Advisory Tests	Ongoing	MET/IE WG	
Activity 4: VAAC Backup Tests	Ongoing	MET/IE WG	
Activity 5: IROG Backup Tests	Ongoing		
Activity 6: Regional guidance material related to data exchange	Ongoing	MET/IE WG	
Activity 7: IWXXM implementation	2021-2023-2023-2026	MET/IE WG	
Activity 8: MET information exchange scheme	Ongoing 2021-2026	MET/IE WG	
Activity 9: MET information in SWIM	Ongoing 2021-2026		

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 1: Availability of OPMET information				
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 WAFS.	MET/IE WG	1.8	Annually Jun	
Activity 2: Performance indices of OPMET exchange Timeliness, compliance and regularity of OPMET exchange				
Activity 2.1: Monitor and collate OPMET data.	RODBs and IATA	-	Annually Dec	
Activity 2.2: Score RODB OPMET reception against PI thresholds.	RODB Bangkok	-	Annually Jan	
Activity 2.3: Analyse data and share results with RODBs	RODB Bangkok	2.2	Annually Jan	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 2.4: Prepare paper report results to MET/IE WG meeting and identify corrective actions	RODB Bangkok	2.3	Annually Feb	
Activity 2.5: Report summary of OPMET timelinessavailability, compliance and regularity results to METSG	Chair	2.4	Annually Maybefore MET SG	
Activity 2.6: Inform States of non-compliance and corrective actions.	Secretariat	2.5	Annually Jun	
Activity 2.7: Provide support for States to rectify deficiencies support corrective actions if requested.	RODBs	2.6	As required	
Milestone 2: Achieve 95% (90%) or greater OPMET timelinessavailability, compliance and regularity for AOP (non-AOP) aerodromes at RODBs, SADIS and WIFS.	MET/IE WG	2.7	Annually Jun	
Activity 3: SIGMET and Advisory Tests				
Activity 3.1: Review SIGMET Test procedures	MET/IE WG	-	Annually Aug	
Activity 3.2: State Letter regarding SIGMET Tests	Secretariat	3.1	Annually Sep	
Activity 3.3: Email States regarding SIGMET Tests	Secretariat	3.2	Annually	Last Wed in Oct
Activity 3.4: Conduct and collate data for WC SIGMET Tests	RODBs	3.2	Annually	2 nd Wed in Nov
Activity 3.5: Conduct and collate data for WV SIGMET Tests	RODBs	3.2	Annually	3 rd Wed in Nov
Activity 3.6: Conduct and collate data for WS SIGMET Tests	RODBs	3.2	Annually	4 th Wed in Nov
Activity 3.7: Analyse test data	RODB Singapore and Tokyo	3.4 - 3.6	Annually Jan	
Activity 3.8: Assess SIGMET test results to identify corrective actions from Nov tests	RODB Singapore and Tokyo	3.4 – 3.6	Annually Feb	
Activity 3.9: Report to MET/IE WG	RODB Singapore and Tokyo	3.8	Annually Mar	
Activity 3.10: Report on SIGMET Test Results to MET SG.	Chair	3.9	Annually May	
Activity 3.11: Advise States of SIGMET deficienciescorrective actions	Secretariat	3.9	Annually Jun	
Milestone 3: Improved issuance and compliance of SIGMETs	MET/IE WG	3.11	Annually Jun	
Activity 4: VAAC Back-up Tests				
Activity 4.1: Review and Update VAAC Back-up Test procedures	MET/IE WG and VAACs		Annually	2 months prior to test
Activity 4.2: Issue Notice of VAAC Back-up Tests	Secretariat/VAACs	4.1	Annually Aug	
Activity 4.3: Conduct VAAC Back-up Test between Darwin and Tokyo	VAACs	4.2	Annually Oct – TBC	
Activity 4.4: Conduct VAAC Back-up Test between Darwin and Wellington	VAACs	4.2	Annually Oct – TBC	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 4.5: Collect test results and send to VAAC Provider State members	RODBs	4.3	Annually Oct – TBC	
Activity 4.6: Analyse Test results	VAAC Back-up Focal Points Members	4.5	Annually Nov	
Activity 4.7: Report to MET/IE WG	VAAC Back-up Focal Points Members	4.6	Annually Feb	
Activity 4.8: Report to MET SG.	Chair	4.7	Annually May	
Activity 4.9: Advise relevant States, VAACs and RODBs of any deficiencies.	Secretariat	4.7	Annually Jun	
Milestone 4: VAAC Back-up Tests conducted analysed and report complete.	VAAC Back-up Focal Points Members	4.8	Annually Jun	
Activity 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 2021-2023	
Activity 5.2: Review IROG Back-up Test procedures to include all IROG.	IROG Bangkok and Singapore	-	Apr 2019-2023, Annually Feb	
Activity 5.3: Updated IROG Back-up Procedures in ROBEX Handbook.	Secretariat	5.2	Annually May	
Activity 5.4: Identify list of MET Bulletins to monitor.	IROG Bangkok and Singapore	-	Annually Jan/Feb	
Activity 5.5: Conduct IROG Back-up Test of Bangkok and analyse results	IROG Bangkok and Singapore	5.4	Annually Sept/Oct	
Activity 5.6: Conduct IROG Back-up Test of Singapore and analyse results	IROG Bangkok and Singapore	5.4	Annually Jan/Feb	
Activity 5.8: Report to MET/IE WG	IROG Bangkok and Singapore	5.7	Annually Mar	
Milestone 5: IROG Back-up Tests conducted, analysed and report complete.	IROG Bangkok and Singapore	5.7	Annually Mar	
Activity 6: Regional guidance material related to data exchange				
Activity 6.1: Review OPMET exchange definitions as defined monitoring procedure in ROBEX Handbook and update as necessary.	All RODBs	-	Annually Apr	
Activity 6.2: Changes to RODB monitoring procedures and Implement updates to Appendix A and B in ROBEX Handbook.	Secretariat	6.1	Annually May	
Activity 6.3: Document roles for monitoring IWXXM performance in APAC	WG Thailand and Secretariat		Nov 2021-2023	
Activity 6.4: Define Propose quality threshold for translated data following consultation with users	IATA, Chair WG		Nov 2021-2023	
Activity 6.5: Advise Secretariat of changes to ROBEX Handbook.	All States	-	Annually Apr	
Activity 6.6: Complete update of ROBEX Handbook including Table MET 2A.	Secretariat	-	Annually May	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
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 6: RODB Monitoring procedures published in ROBEX Handbook remains relevant	Secretariat	6.7	Annually Sep	
Activity 7: IWXXM Implementation				
Activity 7.1: Monitor migration to IWXXM.	WG	-	As required	
Activity 7.2: Conduct survey to determine status of IWXXM implementation.	Secretariat		May 2021	
Activity 7.3: Report to MET SG on APAC States' IWXXM implementation status, and need/timing for another APAC IWXXM Workshop.	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 7.6: Conduct IWXXM tests and report to MET/IE WG and RODB Singapore on the status of the testing and implementation of digital OPMET exchange.	WG		Annually Mar	
Activity 7.7: Maintain a register of IWXXM tests conducted, detailing Met software, UAs and MTAs tested	RODB Singapore	7.5	As required	
Activity 7.8: Arrange provision for the next IWXXM Workshop in APAC	Secretariat/Chair, WG	7.2	Sep 2021	
Activity 7.9: Actively participate in the next APAC IWXXM Workshop	Secretariat/Chair, WG	7.7	Oct 2021	
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 7.11: Development and Publishing AMHS/FTBP network map	Pierre, Secretariat		Monthly	
Activity 7.12: State Maintain IWXXM online status 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 8: MET Information Exchange Structure				
Activity 8.1: Review ROBEX Scheme diagram.	All RODBs, Secretariat		May Annually	
Activity 8.2: Review the structure of the ROBEX exchange in light of the introduction of SWIM.	WG		Annually Feb	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 8.3: Review use of the Request/Reply service	RODBs	-	May 2021-2023	
Activity 8.4: Improve the efficiency of Request/Reply service	RODBs	8.3	Sep 2024-2023	
Milestone 8: Improved efficiency and effectiveness of ROBEX Scheme	MET/IE WG	-	2021-2023	
Activity 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 9.3: Develop guidance to support States' implementation of MET information services	WG	-	As required	
Milestone 9: Participated in the development of SWIM Meteorological MET-SWIM services implemented in for APAC	MET/IE WG	-	2023-2027	
