

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**



**REPORT OF THE
TWENTY-EIGHTH MEETING OF THE ASIA/PACIFIC METEOROLOGY SUB-GROUP
(MET SG/28)**

Bangkok, Thailand, 8 – 12 July 2024

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this Report should be taken as those of the Meeting and not the Organization.

Approved by the Meeting
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HISTORY OF THE MEETING

1. Introduction

1.1. The ICAO Asia and Pacific (APAC) Office hosted the Twenty-eighth Meeting of the Meteorology Sub-group (MET SG/28) of the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) in Bangkok, Thailand, from 8 to 12 July 2024. The first day of the Meeting included a Seminar on recent developments in meteorological service for international civil aviation.

2. Attendance

2.1. Sixty-five (65) participants from nineteen (19) States/Special Administrative Regions, and two (2) international organizations, namely WMO and ICAO, participated in the Meeting. The list of Meeting participants is provided in **Appendix H** of this Report. There were one hundred and eighteen (118) participants joined online for the Seminar session.

3. Chair and Secretariat

3.1. Mr. Pak-Wai Chan, chaired the Meeting, assisted by Mr. Goh Wee Poh, Vice-Chairperson elect. Mr. Tim Hailes, Chair of the Meteorological Information Exchange Working Group (MET/IE WG), moderated the Seminar session on the first day. Mr. Peter Dunda, ICAO Regional Officer, Aeronautical Meteorology and Environment, acted as Meeting Secretary.

4. Organization and language of the Meeting

4.1. The Meeting convened as a single body for discussion on the agenda items. The working language was English, including all documentation. The Meeting considered twenty-two (22) Working Papers (WPs), sixteen (16) Information Papers (IPs) and three (3) Flimsies. In addition, the Seminar reviewed (5) Slide Presentations (SP). The list of papers and presentations is in **Appendix G** of this Report.

5. Draft Conclusions, Draft Decisions, Conclusions and Decisions

5.1. The Meeting recorded outcomes of discussions in the form of Draft Conclusions and Draft Decisions for further consideration by APANPIRG, and Conclusions and Decisions for the MET SG, within the following definitions:

- a) **Draft Conclusions** (formulated by the Sub-group for further consideration by APANPIRG) deal with matters involving economic, environmental or political aspects or global implications that, according to the APANPIRG terms of reference, will not be dealt with by the Sub-group but require the attention of States, or action by the ICAO, following established APANPIRG procedures;
- b) **Draft Decisions** (formulated by the Sub-group for further consideration by APANPIRG) deal with matters of concern only to the APANPIRG and its contributory bodies;
- c) **Conclusions** (adopted by the Sub-group) deal with matters of a technical nature and regional applicability that, according to the Sub-group's terms of reference, require the attention of States or action by the ICAO, following established APANPIRG procedures;
- d) **Decisions** (adopted by the Sub-group) relate solely to matters dealing with the internal working arrangements of the Sub-group.

5.2. The Meeting formulated the following zero (0) Draft Conclusions and one (1) Draft Decision and adopted the following two (2) Conclusions and seven (7) Decisions:

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Draft Decision MET SG/28-01: Additional Secretariat Support	
<p>What: That, the APANPIRG request ICAO seek additional support for the ICAO RO Met through:</p> <p>a) secondment of an administration resource;</p> <p>b) updating the role location requirements allowing the secondee to work remotely to ICAO APAC Office (i.e. in their home State); and/or</p> <p>c) seeking additional administration support within ICAO.</p>	<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: For several years, METSG and its contributing bodies, have reported concerns with the capacity of MET Secretariat to contribute to MET SG effectiveness.</p>	<p>Follow-up: <input type="checkbox"/> Required from States</p>
<p>When: 12 July 2024</p>	<p>Status: Adopted by MET SG</p>
<p>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:</p>	

Conclusion MET SG/28-02: 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 November 2024</p>	<p>Status: adopted by Subgroup</p>
<p>Who: <input type="checkbox"/>Sub groups <input type="checkbox"/>APAC States <input type="checkbox"/>ICAO APAC RO <input type="checkbox"/>ICAO HQ <input checked="" type="checkbox"/>Other: MET SG Ad hoc group on deficiencies</p>	

Conclusion MET SG/28-03: Review of APAC Region IWXXM Implementation Status/ Readiness	
<p>What: States / Administrations provide ICAO an update on the status and readiness dates for the following:</p> <p>(a) AMHS with FTBP/IHE and configuration for single body part;</p> <p>(b) AMHS connection(s) will have sufficient capacity to support IWXXM exchange;</p> <p>(c) when operational IWXXM information will available; and</p> <p>(d) commencement of operational exchange of IWXXM with their Regional OPMET Centre (ROC), and where applicable their respective Inter-regional OPMET Gateway.</p>	<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: As per Amendment 79 to Annex 3 (applicable November 2020), States/ Administrations are required to exchange meteorological information in</p>	<p>Follow-up:</p>

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IWXXM form.	<input checked="" type="checkbox"/> Required from States
When: 31 December 2024	Status: 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:	

Decision MET SG/28-04: Addition of MET/S WG actions to MET SG action list	
What: The outstanding MET/S WG actions, MET/S WG/13-03 and MET/S WG/10-21, are to be added to the action list of the MET SG and progressed, as appropriate.	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: To ensure the improvements to the availability and quality of meteorological information in the APAC region continues to improve.	Follow-up: <input type="checkbox"/> Required from States
When: 12-Jul-24	Status: Adopted by Subgroup
Who: <input checked="" type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Decision MET SG/28-05: Update to MET Deficiency Identification Guide	
What: The Meteorology Sub-group approves the updates to the <i>MET Deficiency Identification Guide</i> and <i>MET Deficiency Report Guide</i> , (subject to the addition of text outlining the role of the Secretariat in proposing any new deficiency, as per the APANPIRG Handbook) to include TCA/VAA and IWXXM form OPMET information deficiency identification and updated potential deficiency thresholds, as provided in Appendix C of the MET SG/28 Report and requests the Secretariat to publish the updated Guides on the ICAO APAC 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: IWXXM form OPMET, SIGMET and TCA/VAA information is a requirement in ICAO Annex 3 and therefore non-compliance should be considered as a potential deficiency.	Follow-up: <input checked="" type="checkbox"/> Secretariat
When: 12-Jul-24	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Decision MET SG/28-06: Meteorological Exercise Guidance Material	
What: The Meteorology Sub-group approves the publication (with the addition of ATFM organizations as potential exercise participants) of the document <i>Guidance for Developing and Coordinating Aviation Exercises for Meteorological Events</i> , as provided in Appendix D of the MET SG/28 report and requests the Secretariat to publish it on the ICAO APAC 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: To provide guidance to organisations developing and coordinating exercises focused on high impact, low frequency meteorological events that pose a risk to aviation	Follow-up: <input checked="" type="checkbox"/> Secretariat
When: 12-Jul-24	Status: Adopted by Subgroup

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Who: Subgroups APAC States ICAO APAC RO ICAO HQ Other:

Decision MET SG/28-07: Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations

What: That, the MET SG approves the proposed updates in Attachment A of WP/14, i.e., include the example from China in Appendix 1 of the <i>Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations</i> .	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
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Why: To provide States with more examples in the guidance material and make the updated version available on the ICAO APAC eDocuments website.	Follow-up: <input type="checkbox"/> Required from States
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When: As soon as practicable	Status: Adopted by Subgroup
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Who: Subgroups APAC States ICAO APAC RO ICAO HQ Other:

Decision MET SG/28-08: Publishing the document on APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM

What: That, the MET SG approves to publish the proposed document on “ <i>APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM</i> ” as a reference document on the ICAO APAC eDocument website which includes a procedure for updating the document as a living document.	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
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Why: To collect further use cases for enhancing the document appropriately to assist in developing appropriate MET information services and the associated SWIM-enabled MET applications to meet the operational needs of ATFM in the APAC Region.	Follow-up: <input type="checkbox"/> Required from States
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When: As soon as practicable	Status: Adopted by Subgroup
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Who: Subgroups APAC States ICAO APAC RO ICAO HQ Other:

Decision MET SG/28-09: Updates to APAC ROBEX Handbook

What: That, the MET SG approves the following updates to the APAC ROBEX Handbook and publish them in the ICAO APAC Office eDocument website: (i) changes related to OPMET performance indices for OPMET monitoring (WP/07) (ii) removing references to FC and 9-hour TAF (iii) updates to METNO procedures (WP/09) (iv) changes related to implementation of 30-hour TAF issuance by China (IP/03) (v) changes to METAR Bulletin SAID33 to remove Mopah, Merauke (WAKK) proposed by Indonesia	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
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Why: To make the latest updates to the ROBEX Handbook available for use by the States and improve the APAC regional OPMET exchange.	Follow-up: <input type="checkbox"/> Required from States
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When: August 2024	Status: Adopted by MET SG
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Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	
Decision MET SG/28-10: Updates to Regional SIGMET Guide	
<p>What: That, the MET SG approves the following updates to, and publish, the SIGMET Guide:</p> <ul style="list-style-type: none"> - inclusion of the additional headers used by MWO Tahiti for their SIGMETs (presented in Flimsy/01 para 2.1) - update of VAAC backup procedures (presented in Appendix C of WP/10) - inclusion for guidance on SIGMET for volcanic ash crossing FIR boundaries (presented in Appendix C of WP/10) - inclusion of additional guidelines on SIGMET coordination for WS SIGMETs (presented in Appendix A and B of WP/10) - update the IWXXM message dissemination tasks in the SIGMET Test procedures (presented in Appendix B of WP/11) - inclusion of additional text related to cases when a neighbouring VAAC continues to issue VAA even if the ash cloud is expected to cross the boundary of the VAAC area of responsibility (presented in Attachment A of Flimsy/03) 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-Regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<p>Why: To make the latest updates to the Regional SIGMET Guide available for use by the States.</p>	<p>Follow-up: <input type="checkbox"/> Required from States</p>
<p>When: August 2024</p>	<p>Status: Adopted by MET SG</p>
Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

6. List of Draft Conclusions, Draft Decisions, Conclusions and Decisions

Draft Conclusions

- N/A

Draft Decisions

- **Draft Decision MET SG/28-01:** Additional Secretariat Support

Conclusions

- **Conclusion MET SG/28-02:** Availability and Timeliness of TAC and IWXXM Meteorological Information
- **Conclusion MET SG/28-03:** Review of APAC Region IWXXM Implementation Status/ Readiness

Decisions

- **Decision MET SG/28-04:** Addition of MET/S WG actions to MET SG action list
- **Decision MET SG/28-05:** Update to MET Deficiency Identification Guide
- **Decision MET SG/28-06:** Meteorological Exercise Guidance Material
- **Decision MET SG/28-07:** Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations
- **Decision MET SG/28-08:** Publishing the document on APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM
- **Decision MET SG/28-09:** Updates to APAC ROBEX Handbook
- **Decision MET SG/28-10:** Updates to Regional SIGMET Guide

7. List of Actions

7.1. In addition, the Meeting agreed to thirty-two (32) actions, as indicated within the Report on Agenda Items and reproduced in the MET SG List of Actions in **Appendix A** of this Report.

REPORT ON AGENDA ITEMS

1. Organisational Matters

Opening of the Meeting

1.1. The Secretary and the Chairperson opened the Meeting and welcomed all participants.

WP/01 – Adoption of the agenda (Secretariat)

1.2. The Meeting adopted the agenda (which was circulated with the invitation) as follows:

- Agenda Item 1: Organisational matters
- Agenda Item 2: Review outcomes from previous meetings
- Agenda Item 3: Air navigation deficiencies
- Agenda Item 4: Regional guidance material
- Agenda Item 5: Planning and monitoring
- Agenda Item 6: Research, development and other initiatives
- Agenda Item 7: Future work program
- Agenda Item 8: Any other business

Election of Vice Chairperson

1.3. Recalling that, due to the retirement of the previous Vice Chairperson, Ms Nguyen Lan Oanh, the Chairperson noted that the agenda item included the election of Vice Chairperson. Therefore, the Chairperson invited nominations for a candidate to fill the vacant Vice Chairperson role from the meeting.

1.4. New Zealand nominated Mr Goh Wee Poh from Singapore for the role of Vice Chairperson. Mr Goh Wee Poh's nomination was seconded by Thailand with strong endorsement from Australia, Hong Kong China and Japan. No other candidates were nominated and the meeting unanimously elected Mr Goh Wee Poh for the role of MET SG Vice Chairperson. Mr Goh Wee Poh accepted the nomination and acknowledged the contributions of the former Vice Chairperson, Ms Nguyen Lan Oanh.

2. Review outcomes from previous Meetings

WP/02 – Review Outcomes from MET SG/27 and APANPIRG/34 (Secretariat)

2.1. The meeting reviewed outcomes from the Twenty-seventh Meeting of the Meteorology Sub-group (MET SG/27), held in Bangkok, Thailand, 4-8 Sep 2023, and the Thirty-fourth Meeting of the APANPIRG (APANPIRG/34), held in Hong Kong, China, 11-13 Dec 2023.

2.2. MET SG/27 formulated two Draft Conclusions and one Draft Decision for further consideration by APANPIRG/34 and adopted two Conclusions and two Decisions on technical matters that do not warrant further consideration by the APANPIRG, as follows:

- MET SG/27 - Draft Conclusions and Draft Decision

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- Draft Conclusion MET SG/27-01: IWXXM version compatibility
- Draft Conclusion MET SG/27-03: Global dissemination of IWXXM
- Draft Decision MET SG/27-06: Replacement of the VOLCEX Steering Group by the MET Exercises Advisory Group

- MET SG/27 - Conclusions and Decisions
 - Conclusion MET SG/27-02: Provision of quality meteorological information
 - Conclusion MET SG 27-04: Meteorological seminars
 - Decision MET SG/27-05: Update the Regional Guidance for Tailored Meteorological Information and Services to support ATM Operations
 - Decision MET SG 27-07: Dissolution of MET/S WG

2.3. Additionally, MET SG/27 agreed to thirteen (13) action items added to the MET SG List of Actions, as presented in Appendix B of WP/02. The Secretariat provided updates on the status of some action items in the MET SG List of Actions, as indicated in Appendix B of WP/02, and the meeting was able to provide (some) further updates as indicated in the updated MET SG List of Actions, as provided in **Appendix A** of this Report.

2.4. After MET SG/27, APANPIRG/34 adopted the Draft Conclusions and Draft Decision presented by MET SG/27, as the following APANPIRG Conclusions and Decision:

- APANPIRG/34 Conclusions and Decision:
 - Conclusion APANPIRG/34/12: IWXXM version compatibility
 - Conclusion APANPIRG/34/13: Global Dissemination of IWXXM
 - Decision APANPIRG/34/14: Replacement of the VOLCEX Steering Group by the MET Exercise Advisory Group

2.5. The following Conclusion adopted by APANPIRG/34 on Air Navigation Deficiencies was also of direct relevance to the MET SG:

- Conclusion APANPIRG/34/16: Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form

2.6. In relation to the above Conclusion, and the MET SG/27 Action No. 1 on MET Deficiencies related to IWXXM implementation, APANPIRG/34 confirmed that the guidance in the APANPIRG Procedural Handbook (Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies) should be followed to identify, assess and report deficiencies in the implementation of Annex 3 Standards and Recommended Practices (SARPs) - including IWXXM-related deficiencies.

2.7. When discussing the status of follow-up on the above outcomes from MET SG/27 and APANPIRG/34, the meeting noted that the Secretariat had published the relevant paper, WP/02, on the meeting website only seven days before the meeting. However, given the scope of the outcomes to be considered, the time available for participants to prepare for the discussion was not adequate, and not compliant with the MET SG terms of reference.

2.8. The meeting also noted the need to revise information in WP/02 to update the lapsed target dates for uncompleted actions in the MET SG List of Actions and indicate the follow-up status on the relevant APANPIRG and MET SG Conclusions and Decisions and requested the Secretariat to make the necessary changes before including into this final report [**ACTION 01**].

2.9. Furthermore, while the meeting was pleased to see some MET SG actions were completed, it was disappointed that several of the actions under the Secretariat's responsibility

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remained in progress or to commence.

2.10. The lack of capacity of the ICAO Meteorological Secretariat has been raised at meetings for several years, and members of the meeting reiterated the critical need for a timely resolution to be implemented. The meeting was reminded that ICAO had unsuccessfully attempted to second an Aviation Meteorological Officer via two State Letters. The meeting requests ICAO review the minimum requirements for this support officer role, and consider the following recruitment options:

- a) secondment of an administrative capability (rather than an Aviation Meteorological Officer)
- b) allow the secondee to work remotely, that is in their home location. An initial training period in Bangkok may be required as well as in person attendance at Meteorology Sub-group and subsidiary group meetings; and/or
- c) seek additional administrative support within ICAO.

Draft Decision MET SG/28-01: Additional Secretariat Support	
<p>What: That, the APANPIRG request ICAO seek additional support for the ICAO RO Met through:</p> <ul style="list-style-type: none"> d) secondment of an administration resource; e) updating the role location requirements allowing the secondee to work remotely to ICAO APAC Office (i.e. in their home State); and/or f) seeking additional administration support within ICAO. 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-Regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<p>Why: For several years, METSG and its contributing bodies, have reported concerns with the capacity of MET Secretariat to contribute to MET SG effectiveness.</p>	<p>Follow-up: <input type="checkbox"/> Required from States</p>
<p>When: 12 July 2024</p>	<p>Status: Adopted by MET SG</p>
<p>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:</p>	

WP/03 – Review outcomes from MET/IE WG/22 (Chairs of MET/IE WG)

2.11. The meeting reviewed outcomes from the Twenty-second Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/22), held in Bangkok, Thailand, from 18 to 21 March 2024, including a joint session with the Eleventh Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/11) on 20 March 2024.

2.12. MET/IE WG/22 formulated the following Draft Conclusions for further consideration by the MET SG/28:

- MET/IE WG/22 – Draft Conclusions:
 - Draft Conclusion MET/IE WG/22-01: Availability and Timeliness of TAC and IWXXM Meteorological Information
 - Draft Conclusion MET/IE WG/22-02: Review of APAC Region IWXXM Implementation Status/Readiness (Note: Draft Conclusion ACSICG/11/02 also refers)

2.13. In addition, MET/IE WG/22 recorded seventeen (17) new actions in the MET/IE WG List of Actions and closed at least twenty-three (23) actions from its previous meetings.

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2.14. The meeting was informed that follow-up on action no. MET/IE WG/22-11 required proposed ROBEX Handbook updates for ROC IWXXM exchange to be available for review one month before MET SG/28; however, the requested action was yet to commence. Therefore, the meeting considered options on how to progress the action and requested Australia and Hong Kong, China to prepare a paper to facilitate a review of the proposed ROBEX Handbook updates during the meeting's discussion on ROBEX Handbook updates [Flimsy/02, refers].

2.15. Following the APANPIRG/34 recommendation to include the implementation of IWXXM when identifying, assessing and reporting air navigation deficiencies, MET/IE WG/22 formulated a proposal to assess the IWXXM messages collected during the annual ICAO SIGMET tests and APAC RODB OPMET monitoring activities.

2.16. The meeting supported the above MET/IE WG/22 proposal, including replacing the existing performance indices (availability, regularity and compliance) with availability and timeliness, and setting the minimum availability and timeliness criteria for meteorological information in the IWXXM form at ninety-five per cent (95%), consistent with the European region, to identify possible deficiencies.

2.17. Given the discussion above, the meeting adopted the following Conclusion (based on Draft Conclusion MET/IE WG/22-01):

Conclusion MET SG/28-02: 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: <input checked="" type="checkbox"/> Required from MET SG</p>
<p>When: By November 2024</p>	<p>Status: adopted by Subgroup</p>
<p>Who: <input type="checkbox"/>Sub groups <input type="checkbox"/>APAC States <input type="checkbox"/>ICAO APAC RO <input type="checkbox"/>ICAO HQ <input checked="" type="checkbox"/>Other: MET SG Ad hoc group on deficiencies</p>	

2.18. The meeting also noted that consequential updates to the ROBEX Handbook would be required to facilitate the next OPMET monitoring activity and the ad hoc group on performance indices had developed the proposed updates for review and possible approval by MET SG/28 [WP/07 refers].

2.19. The meeting noted that MET/IE WG/22 supported future, further revision of the performance indices to assess whether the IWXXM is available, successfully passes validation and contains valid translation data (where relevant).

2.20. Results from the MET/IE WG/22 review of the November 2023 APAC SIGMET tests, indicated that SIGMET test messages were not received from three States: Afghanistan/Kabul (OAKB), DPR Korea/Sunan (ZKPY), and Nauru/Nauru (ANYN). The meeting noted that, to date, Afghanistan has not participated in an APAC SIGMET Test.

2.21. The meeting also noted that SIGMET test messages in IWXXM form were received from MWOs Bangkok, Brisbane, Hong Kong, Honiara, Melbourne, Nadi, Port Moresby, Singapore, Tahiti, Taibei, Tokyo and Wellington; however, many States were not ready to issue a test message in the IWXXM form.

2.22. In addition, the meeting noted that the APAC Regional SIGMET Test Procedures would require review to address issues identified in the SIGMET tests related to SIGMET dissemination in IWXXM form [WP/11 refers].

2.23. The meeting noted that MET/IE WG/22 requested the Secretariat to inform the MET Panel to consider issues reported by States that prevented the creation of METAR/SPECI observations in IWXXM form for non-aerodrome locations, as required by users.

2.24. The meeting noted that MET/IE WG/22 reviewed and approved proposed updates to the Regional OPMET Bulletin Exchange (ROBEX) Handbook, Sixteenth Edition. However, due to the Secretariat not making the proposed updates available before the MET/IE WG/22 meeting, additional time was needed to complete the review. Therefore, to avoid such issues in the future, MET/IE WG/22 adopted a better governance process requiring proposed updates to be made available, and the approved ROBEX Handbook updates to be published, in a timely manner as expected.

2.25. The meeting also noted that MET/IE WG/22 proposed the further development of ROBEX Handbook updates to facilitate the dissemination of VONA, ensure clarity of the guidance concerning the ROCs' responsibilities for the distribution of IWXXM formatted OPMET data, and improve the METNO guidance [WP/09 refers].

2.26. The meeting reviewed and approved the MET/IE WG/22 proposed updates to the MET/IE WG Terms of Reference and Work Plan, as presented in Appendix B of WP/03.

2.27. The meeting noted that implementing IWXXM was dependent on access to Air Traffic Service (ATS) Message Handling System (AMHS) with File Transfer Body Part (FTBP). Furthermore, MET/IE WG/22 was informed that 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.

2.28. To review IWXXM implementation status to gauge the readiness of APAC Region for full implementation of IWXXM data exchange, the meeting adopted the following Conclusion (based on Draft Conclusion MET/IE WG/22-02/Draft Conclusion ACSICG/11/02):

Conclusion MET SG/28-03: Review of APAC Region IWXXM Implementation Status/ Readiness	
<p>What: States / Administrations provide ICAO an update on the status and readiness dates for the following:</p> <p>(a) AMHS with FTBP/IHE and configuration for single body part;</p> <p>(b) AMHS connection(s) will have sufficient capacity to support IWXXM exchange;</p> <p>(c) when operational IWXXM information will available; and</p>	<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>

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(d) commencement of operational exchange of IWXXM with their Regional OPMET Centre (ROC), and where applicable their respective Inter-regional OPMET Gateway.	<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: 31 December 2024	Status: 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:	

2.29. The meeting was informed that CNS SG/28 had reviewed the above (parallel) Draft Conclusion ACSICG/11/02 and, agreeing that only items (a) and (b) were under the purview of CNS SG while items (c) and (d) should better be handled by MET SG, adopted Conclusion CNS SG/28/01: *Review of APAC Region IWXXM Implementation Status/ Readiness*, with items (a) and (b), only.

2.30. 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](#).

2.31. The meeting noted that MET/IE WG/22 and ACSICG/11 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.

2.32. To support the expedited implementation of capable primary and, where relevant, secondary networks to support the exchange of IWXXM, the meeting noted that MET/IE WG/22 and ACSICG/11 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.

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

2.34. The meeting noted the latest developments of IWXXM and the IWXXM publication plan related to the proposed amendment to ICAO Annex 3. The changes in individual packages across IWXXM versions are indicated in the *IWXXM package compatibility table*¹. Guidance on the *Common approaches across exchange models*² indicates that, if the version number of an IWXXM

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.

package has not changed or only the patched number has changed, the schemas for the package are fundamentally the same. The meeting requested the Secretariat to add the link to the *IWXXM package compatibility table* to the ICAO APAC Office eDocuments website [**ACTION 02**].

2.35. The meeting noted that 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, and that the document has been published on the ICAO APAC Office e-Documents web page, <https://www.icao.int/APAC/Pages/eDocs.aspx>.

2.36. The meeting noted that MET/IE WG/22 and ACSICG/11 considered the value of conducting the joint meeting session supported future joint meeting sessions.

2.37. The meeting noted issues concerning many MET/IE WG/22 papers not being available in a timely manner as per the MET/IE WG terms of reference and that MET/IE WG/22 agreed to review the timeliness of papers at its future meetings. (Refer Draft Decision MET SG/28-xx: Additional Secretariat support).

2.38. The meeting noted the proposal MET/IE WG/23 to be held in conjunction with ACSICG/12 from 24-27 March 2025.

WP/04 – Review of outcomes from MET/R WG/13 (Secretariat on behalf of Chair MET/R WG)

2.39. The meeting reviewed outcomes from the Thirteenth Meeting of the Meteorological Requirements Working Group (MET/R WG/13) held in Bangkok, Thailand, from 22-26 April 2024, including a joint plenary session with the Fourteenth Meeting of the APAC Air Traffic Flow Management Steering Group (ATFM/SG/14), in conjunction with ICAO APAC Seminar on Meteorology and Air Traffic Management (MET/ATM Seminar) on 22 April 2024.

2.40. The MET/ATM Seminar provided an opportunity for States and Organisations to share information, experiences and ideas on planning and implementing meteorological services to support ATM and ATFM operations, focusing on collaborative arrangements and integrating MET information into ATM.

2.41. Based on positive feedback from participants on the MET/ATM Seminar, and the subsequent joint plenary session of the MET/R WG/13 and ATFM/SG/14, the plan for MET/R WG/14 in 2025 includes a MET/ATM seminar and joint session with ATFM/SG/15.

2.42. Following the MET SG/27 Decision MET SG 27-07: Dissolution of MET/S WG, the MET/R WG/13 proposed updates to its agenda, work program and terms of reference to incorporate the activities of the ad hoc group on SIGMET coordination.

2.43. MET/R WG/13 recorded seven Decisions related to matters including updating regional guidance on MET to support ATM, publishing and conducting a survey of States MET to support ATM, publishing a use cases and user requirements document, and publishing and updating a mapping document on the Seamless ANS Plan and ASBU AMET.

2.44. The meeting noted that, according to the definition in the MET/R WG/13 Report, the above Decisions should be related solely to matters dealing with the internal working arrangements of the MET/R WG.

2.45. The meeting noted the content of the Decisions was inconsistent with the usual

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practice of describing What? Why? When? Who? etc, and, therefore, highlighted the need for diligence by the MET/R WG in applying the Decision definition appropriately to avoid problems such as above. Further, many of the decisions were actions, rather than decisions.

2.46. When considering an appropriate way to resolve the above issue, the meeting noted that the matters presented in five of the above Decisions, i.e., Decision MET/R WG/13-01, -02, -03, -04 and -05, were also to be covered in WP/10, WP/14, WP/18 and WP/15, respectively, and, therefore, there would be opportunities for further discussion and possible decisions by the meeting.

2.47. However, concerning two of the above Decisions, i.e., Decision MET/R WG/13-06 and -07, on mapping APAC Seamless ANS Plan Priority 1 Elements to the GANP's ASBU AMET elements, the meeting did not have sufficient information to adopt an appropriate Decision or formulate an appropriate Draft Decision. Therefore, the meeting requested that the MET/R WG revisit the matters concerned and formulate appropriate Draft Decisions for consideration by the MET SG.

2.48. The meeting also noted that the final Report of MET/R WG/13 was published late and not available before the MET SG/28 meeting. This hinders the follow-up from MET/R WG and poses difficulties for members to refer to the discussed items in MET/R WG when preparing relevant WPs and IPs for MET SG. (Refer Draft Decision MET SG/28-xx: Additional Secretariat support).

Flimsy/01 – ADDITION OF OUTSTANDING MET/S WG ACTIONS TO MET SG LIST
New Zealand

2.49. Following the MET SG/27 Decision to dissolve the MET/S WG, the meeting considered whether the following four outstanding actions, as recorded in the Report of MET/S WG/13 and highlighted in the attachment to Flimsy/01, should be retained by the MET SG:

- MET/S WG/13-01 - MWO Tahiti SIGMET headers to be included in Regional SIGMET Guide
- MET/S WG/13-03 - Share information on next update of IAVW Handbook
- MET/S WG/11-01 - State letter request to user States to ensure the relevant operational units participate in the VAAC back-up tests
- MET/S WG/10-21 - Update of APAC ANP Vol I Table MET I-1 State Volcano Observatories

2.50. On further advice from New Zealand and VAACs Darwin and Wellington, the meeting considered that two of the above actions, MET/S WG/13-01 and MET/S WG/11-01, could be closed after being addressed by the meeting and agreed to retain the actions, MET/S WG/13-03 and MET/S WG/10-21, for follow-up by the MET SG. [**ACTION 03**] The meeting adopted the following Decision:

Decision MET SG/28-04: Addition of MET/S WG actions to MET SG action list	
<p>What: The outstanding MET/S WG actions, MET/S WG/13-03 and MET/S WG/10-21, are to be added to the action list of the MET SG and progressed, as appropriate.</p>	<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 ensure the improvements to the availability and quality of meteorological information in the APAC region continues to improve.</p>	<p>Follow-up:</p> <p><input type="checkbox"/> Required from States</p>

When: 12-Jul-24	Status: Adopted by Subgroup
Who: <input checked="" type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

3. Air navigation deficiencies

WP/05 – Review APANPIRG Air Navigation Deficiencies (Secretariat)

3.1. The meeting noted the current list of air navigation deficiencies, as reviewed by APANPIRG/34 [Conclusion APANPIRG/34/16: *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form*, refers], includes twelve deficiencies concerning MET facilities and services provided in seven APAC States.

Table 1: APANPIRG air navigation deficiencies in the MET field

MET facilities and services	Asia/Pacific States	Def. ID	Status
Aerodrome meteorological observations or reports	Kiribati	AP-MET-02	open
	Nauru	AP-MET-21	open
Meteorological Watch Office (MWO) or SIGMET information	Democratic People's Republic of Korea	AP-MET-16	open
	Nauru	AP-MET-24	open
	Nepal	AP-MET-14	open
	Papua New Guinea	AP-MET-08	open
	Papua New Guinea	AP-MET-22	open
Volcanic ash/activity information	Papua New Guinea	AP-MET-04	open
	Tonga	AP-MET-17	open
WAFS forecasts or flight briefings	Kiribati	AP-MET-18	open
	Nauru	AP-MET-19	open
	Solomon Islands	AP-MET-20	open

3.2. The meeting recalled that, in its review of the air navigation deficiencies, APANPIRG/34 considered removal of the deficiency AP-MET-14, concerning the requirements for issuance and dissemination of SIGMET information for Kathmandu FIR, from the Open List subject to confirmation of the regular dissemination of the Kathmandu FIR SIGMET information in the IWXXM form (in addition to the TAC form).

3.3. In addition, in response to the request [MET SG/27 Action Item 01, refers] for advice concerning the identification of air navigation deficiencies related to the implementation of IWXXM-related SARPs, APANPIRG/34 confirmed that the guidance in the APANPIRG Procedural Handbook (*Uniform Methodology for the Identification, Assessment and Reporting of Air Navigation Deficiencies*) should be followed to identify, assess and report deficiencies in the implementation of Annex 3 SARPs – including IWXXM-related deficiencies.

3.4. Although the meeting did not consider any specific proposals under this agenda item for the identification or rectification of air navigation deficiencies, the meeting was informed that the Pacific Islands Aviation Weather Services (PIAWS) Panel was prioritising efforts towards resolving APANPIRG air navigation meteorological service deficiencies held by Pacific States.

3.5. To facilitate the rectification of deficiencies AP-MET-18, AP-MET-19 and AP-MET-20, the meeting reiterated the need to progress action MET SG 26/04, which requested the Secretariat to provide technical assistance to help the PSID States concerned understand and determine the requirements for WAFS forecasts.

3.6. A copy of the APANPIRG Reporting Form on Air Navigation Deficiencies in the

MET field, including detailed notes, is provided in **Appendix B** of this Report.

WP/06 – MET DEFICIENCIES REVIEW OF THE 2023 ANNUAL SIGMET TEST OUTCOMES AND OPMET MONITORING ACTIVITIES Ad Hoc Group on Deficiencies

3.7. The meeting noted results of the MET Deficiencies ad hoc group review of the 2023 Annual SIGMET test results and November 2023 OPMET Monitoring Activity results, which was done in accordance with the MET Deficiency Identification Guide.

3.8. The meeting was advised that MWO Kabul had not participated in any of the ICAO APAC SIGMET tests and, furthermore, three RODBs had not received any Kabul FIR SIGMETs in recent times.

3.9. Considering the advice above, the meeting requested the Secretariat, with support from the ad hoc group on deficiencies, to prepare the necessary documentation based on the results in Attachment A of WP/06 for APANPIRG to make a detailed assessment of the shortcomings and deficiencies related to SIGMET service in Afghanistan [**ACTION 04**].

3.10. The meeting noted some SIGMETs issued by APAC MWOs were not received in the European region (e.g., Male WC SIGMET, Brisbane WV SIGMET) and that the ad hoc group was considering subsequent investigations.

3.11. The meeting was reminded that RODB Bangkok’s OPMET Statistics web application is available for States to perform OPMET monitoring on request, e.g., to validate corrective actions.

3.12. The meeting noted the dissemination of SIGMET test messages in IWXXM form was limited, as indicated below:

State	MWO	WS	WC	WV
China	Hong Kong	✓	✓	✓
	Taibei	✓	✓	✓
Fiji	Nadi	✓	✓	✓
Thailand	Bangkok	✓	✓	✓
Singapore	Singapore	✓	✓	✓
Japan	Tokyo	✓	✓	✓
Solomon Islands	Honiara	✓	✓	✓
Australia	Melbourne	✓		
	Brisbane	✓		
Papua New Guinea	Port Moresby	✓		
New Zealand	Wellington	✓		
French Polynesia	Tahiti	✓		

State	Advisory Centre	IWXXM form advisory issued
Japan	TCAC Tokyo	✓
	VAAC Tokyo	✓
Australia	VAAC Darwin	✓
France	VAAC Toulouse	✓

3.13. The meeting was advised that the ad hoc group would consider recommendations on IWXXM deficiencies following the analysis of the 2024 Annual SIGMET Tests.

3.14. The meeting requested the Secretariat to forward the identified issues and proposed

corrective actions (from Attachment A and B of WP/06) for consideration by the States concerned [**ACTION 05**].

3.15. The meeting requested the MET/IE WG to consider the feasibility of including WIFS in the annual SIGMET tests [**ACTION 06**].

3.16. The meeting requested the ad hoc group on SIGMET Guide to propose appropriate updates to the SIGMET test procedures to better incorporate the IROG functionality into the annual SIGMET test analysis [**ACTION 07**].

3.17. Following discussion and recommendations in MET/IE WG/22, [WP/09 Analysis of IWXXM-Specific Statistics Results](#), Draft Conclusion MET/IE WG/22-01: *Availability and Timeliness of TAC and IWXXM Meteorological Information*, MET/IE WG/22 [Flimsy/02 Review Performance Indices and Monitoring](#), the ad hoc group considered that the analysis of operational SIGMET, VAA and TCA IWXXM, in addition to METAR and TAF, may be used to identify deficiencies – in particular when translation of TAC into IWXXM form is unsuccessful. Accordingly, the ad hoc group proposed updates to the *MET Deficiency Identification Guide* (Attachment C of WP/06), as provided in **Appendix C** of this Report.

3.18. The MET SG supported the proposed updates discussed above and adopted the following Decision and agreed to publish the Guides [**ACTION 08**]:

Decision MET SG/28-05: Update to MET Deficiency Identification Guide	
What: The Meteorology Sub-group approves the updates to the <i>MET Deficiency Identification Guide</i> and <i>MET Deficiency Report Guide</i> , (subject to the addition of text outlining the role of the Secretariat in proposing any new deficiency, as per the APANPIRG Handbook) to include TCA/VAA and IWXXM form OPMET information deficiency identification and updated potential deficiency thresholds, as provided in Appendix C of the MET SG/28 Report and requests the Secretariat to publish the updated Guides on the ICAO APAC 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: IWXXM form OPMET, SIGMET and TCA/VAA information is a requirement in ICAO Annex 3 and therefore non-compliance should be considered as a potential deficiency.	Follow-up: <input checked="" type="checkbox"/> Secretariat
When: 12-Jul-24	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

4. Regional guidance material

WP/07 – ROBEX HANDBOOK UPDATES IN ACCORDANCE WITH THE REVIEW OF THE PERFORMANCE INDICES (PIs) USED IN APAC OPMET MONITORING
Thailand and PI Ad-hoc group

4.1. The meeting reviewed proposed updates to the ROBEX Handbook, paragraph 13.3 and Appendix F, presented by the ad hoc group following the MET/IE WG/22 recommendation to monitor the availability and timeliness of METAR and TAF in TAC (SA and FT) and IWXXM (LA and LT) form with a threshold of ninety-five per cent (95%) to identify possible deficiencies.

4.2. The meeting identified the following issues which require correction in the proposed updates to the ROBEX Handbook, Appendix F, as presented in Appendix A of WP/07, which the

meeting requested the Secretariat to coordinate with Thailand and MET/IE WG Chairs in preparation for the November 2024 Monitoring activity [**ACTION 09**]:

- Page 70, para 2.1.2.1: The Routine OPMET data monitoring is typically performed each year during 1-30 November
- Page 73, 2nd para, 1st line: ~~REP_RX~~ = ...
- Page 73, para 2.2.2.2.1: Monitoring Centre: Designated ~~EBBB~~ ...
- Page 75, 2nd para, 5th line: ~~Index~~ ~~Index~~
- Page 79, 4th line: day = monitoring day starting at 1 till ~~30~~ 14.
- Several locations: remove references to FC and 9-hour TAF
- Several locations: Replace “eANP” with “ANP”

WP/08 – UPDATES TO APAC ROBEX HANDBOOK FOR VONA EXCHANGE
Australia, Japan, New Zealand

4.3. The meeting reviewed proposed updates to the ROBEX Handbook (as presented in Attachment A of WP/08), developed by Australia, Japan, New Zealand, to facilitate the dissemination of VONA via the AFS, as required by the proposed amendment to Annex 3 [Action MET/IE WG/22-10: ROBEX Handbook updates – VONA dissemination, refers].

4.4. The meeting supported the proposed updates, in principle, but requested the MET/IE WG Chairs to finalise the details of the proposed VONA exchange updates to the ROBEX Handbook [**ACTION 10**].

4.5. The meeting requested New Zealand to prepare a proposal to include VONA in the SIGMET test procedures for 2026 [**ACTION 11**].

WP/09 – ROBEX HANDBOOK UPDATE - METNO GUIDANCE Australia, Hong Kong China and New Zealand

4.6. The meeting reviewed proposed updates to the ROBEX Handbook (as presented in Attachment B of WP/09), developed by Australia, Hong Kong China and New Zealand, for METNO guidance related to the timing of METNO message issuance, example of METNO message, sender of METNO message, METNO message header and METNO focal point [ACTION MET/IE WG 21 – 15 and ACTION MET/IE WG 22 – 12: ROBEX Handbook updates – METNO guidance, refer].

4.7. The meeting supported the proposed updates to APAC ROBEX Handbook, including editorial changes, as presented in Attachment B of WP/09.

WP/10 – Update to APAC Regional SIGMET Guide (Ad hoc group)

4.8. The Meeting reviewed proposed updates to the Asia/Pacific Regional SIGMET Guide (as presented in Appendices A, B and C of WP/10) developed by the ad hoc group on Regional SIGMET Guide, which included guidance on SIGMET for volcanic ash crossing FIR boundaries and additional guidance on coordinating SIGMET for thunderstorms with neighbouring MWOs and when convective cloud systems affect multiple FIRs.

4.9. The meeting supported the proposed updates to the SIGMET Guide, as presented in Appendix C of WP/10.

WP/11 – UPDATES TO IWXXM EXCHANGE TASKS IN SIGMET TEST PROCEDURES
Chairs of MET/IE WG and MET/SG ad hoc group on Regional SIGMET Guide

4.10. The Meeting reviewed proposed updates to the Asia/Pacific Regional SIGMET Test Procedures (as presented in Appendix B of WP/11) developed by the Chairs of MET/IE WG and MET/SG ad hoc group on Regional SIGMET Guide to address issues in the dissemination of SIGMET test messages in IWXXM form encountered during 2023 ICAO APAC SIGMET tests and update the tasks of dissemination of SIGMET test messages in IWXXM form.

4.11. The meeting requested the Secretariat to include the proposed updates to ICAO APAC Regional SIGMET Test Procedures from Appendix B of WP/11 in the State letter invitation for the 2024 annual SIGMET tests [**ACTION 12**].

4.12. The meeting requested the ad hoc group on SIGMET Guide to include the proposed updates to ICAO APAC Regional SIGMET Test Procedures from Appendix B of WP/11 in the next proposed updates of Appendix C of the Regional SIGMET Guide [**ACTION 13**].

WP/12 – WC SIGMET ISSUANCE EXPERIENCES AND PRACTICES IN THE SOUTH AND SOUTHEAST ASIA SIGMET COORDINATION GROUP Bangladesh, Hong Kong China, India, Indonesia, Maldives, Myanmar, Nepal and Sri Lanka

4.13. The meeting noted the experience gained from Tropical Cyclone Mocha in 2023 on WC SIGMET Coordination and the local WC SIGMET issuance practices in the South and Southeast Asia SIGMET Coordination Group. The forecasters in the group noted further guidelines on the handover of WC SIGMET would be helpful.

4.14. The practices in the North Indian Ocean were supplemented to the consolidated practices shown in Appendix A of WP/12. The meeting noted the practices and agreed to task MET/R WG to consolidate potential guidelines on SIGMET Coordination to supplement the Asia/Pacific SIGMET Guide [**ACTION 14**].

WP/13 – DRAFT GUIDANCE FOR METEOROLOGICAL EXERCISES METEX Advisory Group

4.15. The Meeting reviewed proposed new guidance for organisations planning for a meteorological scenario-based exercise (as presented in the Attachment to WP/13 and **Appendix D** of this Report) and proposed updates to the MET SG Work Plan to reflect the activities of the Meteorological Exercises Advisory Group (as presented in paragraph 2.3 of WP/13).

4.16. The meeting supported the proposal to publish the guidance [**ACTION 15**] and adopted the following Decision:

Decision MET SG/28-06: Meteorological Exercise Guidance Material	
<p>What: The Meteorology Sub-group approves the publication (with the addition of ATFM organizations as potential exercise participants) of the document <i>Guidance for Developing and Coordinating Aviation Exercises for Meteorological Events</i>, as provided in Appendix D of the MET SG/28 report and requests the Secretariat to publish it on the ICAO APAC website.</p>	<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 provide guidance to organisations developing and coordinating exercises focused on high-impact, low-frequency meteorological events that pose a risk to aviation</p>	<p>Follow-up:</p> <p><input checked="" type="checkbox"/> Secretariat</p>
<p>When: 12-Jul-24</p>	<p>Status: Adopted by Subgroup</p>

Who: Subgroups APAC States ICAO APAC RO ICAO HQ Other:

4.17. The proposed update to the MET SG Work Plan is reflected in **Appendix E** of this Report.

WP/14 – UPDATES OF ASIA/PACIFIC REGIONAL GUIDANCE FOR TAILORED METEOROLOGICAL INFORMATION AND SERVICES TO SUPPORT AIR TRAFFIC MANAGEMENT OPERATIONS MET/R WG Ad Hoc Group

4.18. The Meeting reviewed proposed updates to the Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations (Attachment A of WP/14) presented by the MET/R WG ad hoc group to include the implementation example of China in Appendix 1 of the Guidance.

4.19. The meeting supported the proposal to update and publish the guidance [**ACTION 16**] and adopted the following Decision:

Decision MET SG/28-07: Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations	
What: That, the MET SG approves the proposed updates in Attachment A of WP/14, i.e., include the example from China in Appendix 1 of the <i>Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations</i> .	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: To provide States with more examples in the guidance material and make the updated version available on the ICAO APAC eDocuments website.	Follow-up: <input type="checkbox"/> Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

WP/15 – APAC USE CASES AND USER REQUIREMENTS FOR SWIM-BASED MET INFORMATION SERVICES SUPPORTING ATFM MET/R WG Ad Hoc Group

4.20. The Meeting reviewed proposed updates to the reference document of APAC Use Cases and User Requirements for SWIM-based MET Information Services supporting ATFM (as presented in Attachment A of WP/15) developed by the MET/R WG ad hoc group based on the review by ATFM/SG/14, MET/R WG/13 and SWIM TF/9.

4.21. The following minor typo was identified in USE CASE 5, paragraph 3.5.4: ... Electronic Flight Bag (EFB), plus a clarification to refer to total volcanic ash exposure.

4.22. The meeting supported the proposed updates and to publish the document [**ACTION 17**] and adopted the following Decision:

Decision MET SG/28-08: Publishing the document on APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM	
What: That, the MET SG approves to publish the proposed document on “APAC Use Cases and User Requirements for SWIM-based Meteorological	Expected impact: <input type="checkbox"/> Political / Global

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<i>Information Services Supporting ATFM</i> ’ as a reference document on the ICAO APAC eDocument website which includes a procedure for updating the document as a living document.	<input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To collect further use cases for enhancing the document appropriately to assist in developing appropriate MET information services and the associated SWIM-enabled MET applications to meet the operational needs of ATFM in the APAC Region.	Follow-up: <input type="checkbox"/> Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

4.23. Noting the relevance of the document to global initiatives, the meeting suggested the Secretariat could share the document with the other ICAO Offices for information.

WP/22 – UPDATE OF APAC SEAMLESS ANS PLAN Secretariat

4.24. This paper presented progress of update of the APAC Seamless ANS Plan V4.0 for review and approval by APANPIRG/35.

4.25. The Meeting noted the last review of the Seamless Plan was conducted in 2019, in the same year as the last major update of the GANP. Phase III of the Performance Improvement Plan of the Seamless Plan was expected to be implemented by 03 November 2022, and Phase IV by 25 November 2025. The 11th Meeting of the Air Traffic Management Sub-Group of APANPIRG (ATM SG/11, 02 to 06 October 2023) was informed of Secretariat proposal for the update of the APAC Seamless ANS Plan along with a working draft. Guiding principles adopted by the Secretariat for this work and the process agreed by APANPIRG/33 for updating the Plan were shared with the Meeting. The Meeting was informed that the current draft version of the Plan required further consultation both with APAC States/Administrations (through their nominated focal points) and APANPIRG Sub-Groups before it could be considered ready for APANPIRG endorsement. APAC Administrations wishing to participate in the review of the Seamless ANS Plan provided their POC details.

4.26. Circulation of Draft Seamless ANS Plan V3.2.2 to POC for feedback from States was shared in April 2024. Deadline for Feedback from States by email was 10th June 2024. In response, only four States/Administrations provided feedback. In addition, deadline for Reporting of APAC Seamless ANS Plan V3.0 implementation by States through APAC Seamless ANS Reporting Tool Portal was 31st May 2024 for which only six States submitted implementation status through the portal. Update of Draft Seamless ANS Plan to include feedback from States and analysis of Seamless ANS Plan implementation is in progress. It was added that with the lack of enough data, it is not possible to present an adequate analysis of the status of implementation of the operational requirements in APAC region as recommended in the APAC Seamless ANS Plan. The States/Administrations were urged to submit the Seamless ANS Plan implementation Status and provide feedback on the draft Seamless ANS Plan V 3.2.2 through the respective POCs at the earliest.

4.27. The meeting discussed the linkage between APAC Seamless ANS Plan and RANP Vol III. It was clarified that the RANP Vol III update will be taken up by ICAO Secretariat as a separate project due to ongoing global efforts for standardization of the template of Vol III by ICAO HQ.

4.28. The meeting noted and appreciated the efforts by MET/R WG on MET information needed to support elements of APAC Seamless ANS Plan and encouraged the MET/R WG to continue to work on the subject to be considered for inclusion in the next editions of APAC Seamless

ANS Plan.

4.29. The Meeting requested that the States/Administration submit the implementation status and provide feedback to the APAC Seamless ANS plan as soon as possible through the respective POCs after further review.

4.30. It was added that the feedback and reports will be collated and used to update the plan and presented at the ATM SG Meeting in September. The ATM SG Meeting approved the draft Seamless ANS Plan V 3.2.2.

4.31. To facilitate the meeting participants' coordination of feedback within States, a copy of the *Single Point of Contact (SPOC) for Asia/Pacific Seamless ANS Plan Review* is provided in **Appendix F** of this Report.

4.32. The meeting noted that the MET inclusions in the ANS seamless plan did not appear to reflect requirements for en-route meteorological information and requested the Secretariat to facilitate a discussion on the role of MET in the ANS seamless plan. [**ACTION 18**].

Flimsy/02 – ROBEX HANDBOOK UPDATE – ROC'S RESPONSIBILITIES FOR IWXXM EXCHANGE – Australia and Hong Kong, China

4.33. The meeting considered proposed updates to the ROBEX Handbook as agreed in MET/IE WG/22 for ensuring clarity of the guidance concerning the ROCs' responsibilities for the distribution of IWXXM formatted OPMET data (as presented in Attachments A and B of Flimsy/02).

4.34. The meeting supported the proposal and, noting that MET/IE WG/22 had already approved the updates in Attachment A of Flimsy/02, the meeting also approved the updates as presented in Attachment B of Flimsy/02.

4.35. Following the discussion on ROBEX Handbook updates in WP/07, WP/09 and IP/03, and para. 4.2 of this Report, the meeting agreed to update and publish the Handbook [**ACTION 19**] and adopted the following Decision:

Decision MET SG/28-09: Updates to APAC ROBEX Handbook	
<p>What: That, the MET SG approves the following updates to the APAC ROBEX Handbook and publish them in the ICAO APAC Office eDocument website:</p> <ul style="list-style-type: none"> (i) changes related to OPMET performance indices for OPMET monitoring (WP/07) (ii) removing references to FC and 9-hour TAF (iii) updates to METNO procedures (WP/09) (iv) changes related to implementation of 30-hour TAF issuance by China (IP/03) (v) changes to METAR Bulletin SAID33 to remove Mopah, Merauke (WAKK) proposed by Indonesia 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-Regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<p>Why: To make the latest updates to the ROBEX Handbook available for use by the States and improve the APAC regional OPMET exchange.</p>	<p>Follow-up:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Required from States
<p>When: August 2024</p>	<p>Status: Adopted by MET SG</p>

Who: Subgroups APAC States ICAO APAC RO ICAO HQ Other:

Flimsy/03 – PROPOSED ADDITION TO REGIONAL APAC SIGMET GUIDE TO ADDRESS ACTION 25/09 – New Zealand

4.36. The meeting reviewed a proposal to address outstanding action MET SG/25/09 to provide MWO with additional guidance for VA SIGMET issuance, and support the new VA SIGMET example presented in WP/10 (as presented in Attachment A of Flimsy/03).

4.37. The meeting supported the proposal and approved the additional text for inclusion in the SIGMET Guide, as presented in Attachment A of Flimsy/03.

4.38. Given the discussion above, the meeting considered the action concerned, MET SG/25/09, can be closed.

4.39. Following the discussion on SIGMET Guide updates in Flimsy/01, WP/10, WP/11 and Flimsy/03), the meeting agreed to update and publish the SIGMET Guide [**ACTION 20**] and adopted the following Decision:

Decision MET SG/28-10: Updates to Regional SIGMET Guide	
<p>What: That, the MET SG approves the following updates to, and publish, the SIGMET Guide:</p> <ul style="list-style-type: none"> - inclusion of the additional headers used by MWO Tahiti for their SIGMETs (presented in Flimsy/01 para 2.1) - update of VAAC backup procedures (presented in Appendix C of WP/10) - inclusion for guidance on SIGMET for volcanic ash crossing FIR boundaries (presented in Appendix C of WP/10) - inclusion of additional guidelines on SIGMET coordination for WS SIGMETs (presented in Appendix A and B of WP/10) - update the IWXXM message dissemination tasks in the SIGMET Test procedures (presented in Appendix B of WP/11) - inclusion of additional text related to cases when a neighbouring VAAC continues to issue VAA even if the ash cloud is expected to cross the boundary of the VAAC area of responsibility (presented in Attachment A of Flimsy/03) 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-Regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
<p>Why: To make the latest updates to the Regional SIGMET Guide available for use by the States.</p>	<p>Follow-up: <input type="checkbox"/> Required from States</p>
<p>When: August 2024</p>	<p>Status: Adopted by MET SG</p>
<p>Who: <input type="checkbox"/>Subgroups <input type="checkbox"/>APAC States <input checked="" type="checkbox"/>ICAO APAC RO <input type="checkbox"/>ICAO HQ <input type="checkbox"/>Other:</p>	

5. Planning and monitoring

IP/02 – METAR BULLETINS AND MET SERVICE OF MONGOLIA – Mongolia

5.1. The meeting noted changes to the aerodromes where meteorological service is required in Mongolia (as presented in IP/02).

5.2. The meeting requested the Secretariat to coordinate with Mongolia to reflect the aerodrome meteorological service requirements reflected by the information presented in IP/02 in the

latest proposal for amendment of the APAC ANP Volume II Table MET II-2 [**ACTION 21**].

WP/16 – UPDATES TO THE ASIA/PACIFIC AIR NAVIGATION PLAN Japan

5.3. The meeting noted proposed amendments to the Tables MET II-2 and MET II-3 of the Asia/Pacific Air Navigation Plan (ANP) Volume II to reflect operational requirements for aerodrome meteorological service and VOLMET broadcasts in Japan (as presented in Appendices A and B of WP/16).

5.4. The meeting noted the Secretariat had recently shared with States a proposal for amendment of the ANP Volume II Table MET II-1 and II-2 for confirmation before the broader circulation to States for comments and subsequent approval and requested the Secretariat to incorporate the proposed amendments to Table MET II-2 in Appendix A of WP/16 into the proposal to be circulated [**ACTION 21**].

5.5. The meeting requested the Secretariat to include the proposed updates to TABLE MET II-3, as presented in Appendix B of WP/16, in the latest proposal for amendment of the ANP Volume II [**ACTION 21**].

IP/03 – PLANS AND THE IMPLEMENTATION FOR THE ISSUANCE OF 30-HOUR TAF
China

5.6. The meeting noted China's plans to issue 30-hour aerodrome forecasts (TAFs) by certain international airports in China (as detailed in IP/03).

5.7. The meeting requested the Secretariat to update the ROBEX Handbook to reflect the change from 24- to 30-hour validity TAF at aerodromes, as presented in IP/03 [**ACTION 19**].

5.8. The meeting also suggested that China consider the provision in ROBEX Handbook (7.3.1) requiring that ROCs should ensure TAFs in a single bulletin have common periods of validity.

5.9. The meeting requested the Secretariat to reflect the change from 24- to 30-hour validity TAF, as presented in IP/03, in the latest proposal for amendment of the ANP [**ACTION 21**].

WP/17 – UPDATE OF THE STATE VOLCANO OBSERVATORIES OF THE UNITED STATES United States

5.10. The meeting noted a proposed amendment to the Table MET I-1 of the APAC ANP Volume I to reflect the designated US State Volcano Observatories in the APAC Region (as presented in paragraph 2.2 of WP/17).

5.11. The meeting requested the Secretariat to include the specific information related to US SVOs from paragraph 2.2 of WP/17 in the latest proposal for amendment of the APAC ANP Vol I, Table MET I-1 [**ACTION 22**].

WP/18 – SURVEY OF STATE METEOROLOGICAL INFORMATION SUPPORTING AIR TRAFFIC MANAGEMENT MET/R WG Ad Hoc Group

5.12. The meeting considered the final report by the MET/R WG Ad Hoc Group summarising the results of the survey on the provision of current and future meteorological (MET) information services by States to support Air Traffic Management (ATM), in particular Air Traffic Flow Management (ATFM) conducted between Oct and Dec 2021, and subsequent proposals to publish and share the information and conduct a future survey.

5.13. The meeting requested the MET/R WG to further refine the *Report on 2021 ICAO APAC Regional Survey on the provision of MET services to support ATM and ATFM*, considering information privacy, for what purpose the information will it be used and, therefore, where and how the survey results should be published or shared [**ACTION 23**].

5.14. To assist with identifying whether there would be value in conducting another survey, the meeting requested MET/R WG to review the outcomes and lessons learned from 2021 survey, what tangible actions have, or will, be done based on the results of the survey [**ACTION 24**].

5.15. The meeting requested the Secretariat, with support from the MET/R WG Chair, to present a paper to the ATM/SG informing the ATM community of the report that was presented to ATFM/SG/14 and summarising the main outcomes from the report [**ACTION 25**].

6. Research, development and other initiatives

IP/04 – WMO ACTIVITIES OF RELEVANCE TO ICAO WMO

6.1. The meeting was informed of some of the recent activities of the World Meteorological Organization (WMO) of relevance to ICAO, particularly in the context of engagement with ICAO and other agencies at the global and regional levels, recent and upcoming events, and other noteworthy information, including links to WMO resources (as presented comprehensively in IP/04).

IP/05 – SADIS/WIFS AND WAFS (Revision 1) WAFC London

6.2. The meeting noted development of the new SADIS and WIFS API services, new higher resolution World Area Forecast System (WAFS) gridded data sets, and WAFS Significant Weather (SIGWX) forecasts, and was informed that, on 26 November 2024 when the new WAFS SIGWX forecasts are introduced there will be changes to the content and appearance of the T+24 high and medium level SIGWX forecasts (as detailed in IP/05).

IP/06 – CASE OF COOPERATION FOR SIGMET COORDINATION BETWEEN THE REPUBLIC OF KOREA AND CHINA Republic of Korea and China

6.3. The meeting noted the development of SIGMET coordination between the Republic of Korea and China, which commenced as a Pilot Project in September 2022, confined to specific times, areas, and weather elements for the purpose of efficiency, and commenced formal operation in October 2023, removing the time limitation.

IP/07 – THE UPGRADED SIGMET COORDINATION PLATFORM China

6.4. The meeting was informed of efforts by China to improve the aeronautical meteorological services in the Asian region, especially to help improve the capabilities for provision of SIGMET service through the use of a SIGMET coordination platform to coordinate SIGMET with MWOs in several neighbouring Countries.

IP/08 – JOINT PROVISION OF SIGMET BY MWO JAKARTA AND MWO SINGAPORE WITHIN PORTIONS OF THE JAKARTA FIR (Revision 1) Indonesia and Singapore

6.5. This meeting noted arrangements for the joint provision of SIGMET by the Meteorological Watch Office (MWO) Jakarta and MWO Singapore within portions of the Jakarta Flight Information Region (FIR), which required consensus by both MWOs on the SIGMET

parameters. Indonesia and Singapore's joint provision of aeronautical meteorological services will contribute towards the safety, regularity and efficiency of international air navigation within the airspace concerned in the Jakarta FIR.

IP/09 – TARANAKI MOUNGA EXERCISE OUTCOMES New Zealand

6.6. The meeting noted outcomes of significance from the August 2023 volcanic ash exercise featuring the simulated eruption of New Zealand volcano Mount Taranaki.

6.7. The meeting requested the Secretariat and New Zealand to present a paper to ATM/SG highlighting the issue presented in para. 2.3 of IP/09, describing the current situation and proposing that States should issue NOTAM to informing aviation stakeholders of a volcano's elevated unrest level to ensure user awareness of the heightened risk of eruption [**ACTION 26**].

IP/10 – IMPROVEMENTS OF TAILORED MET SERVICES TO SUPPORT ATM OPERATIONS IN SOUTHERN CHINA China

6.8. The meeting was informed about progress in the development of MET services supporting ATM and ATFM operations in the middle-south region of China, including advancements in aerodrome real-time weather observation, detection and nowcast service, integration of weather and air traffic data in an aviation multi-data fusion system and the provision of enhanced aerodrome warnings.

IP/11 – AVIATION METEOROLOGICAL SERVICES DURING THUNDERSTORM SEASON IN CHINA China

6.9. The meeting noted efforts made by the aviation MET departments in China to enhance MET services during the thunderstorm season, including a range of initiatives such as weather forecasts with longer lead times, more frequent updates to optimize forecast accuracy, and participation in aviation operational decision-making. Additionally, to enhance MET services for airlines and to maintain a common weather situational awareness, the MET departments in ATMB have focused on strengthening coordination with the MET departments in airlines.

IP/12 – GENERATION AND OPERATIONALIZATION OF FORECAST THUNDERSTORM SIGMET Nepal

6.10. The meeting noted Nepal's expressed desire to enhance its SIGMET service through the development of capability for issuing SIGMET for thunderstorms based on forecast information.

6.11. The meeting was reminded by Hong Kong, China of the relevant guidance presented in WP/10 and also that Nepal was one of the participating countries of the South and Southeast Asia (SSEA) SIGMET Coordination Project, which presented an opportunity for bilateral and multilateral cooperation to help Nepal develop the capability of its SIGMET service.

WP/19 – EARTHQUAKE AND TSUNAMI INFORMATION HANDLING FOR AVIATION Indonesia

6.12. The meeting was informed about Indonesia's experience and practice in integrating Earthquake and Tsunami Information into Aerodrome warnings information to ensure safety in the aerodrome and flight operation.

6.13. Noting that aerodrome warnings can be used to give concise information on Tsunami, the same is not applicable to earthquakes, which may also adversely affect aircraft on the ground,

including parked aircraft, and the aerodrome facilities and services.

6.14. The meeting considered the existing Annex 3 SARPs, and APAC Regional Guidance on Aerodrome Warnings for Tsunami provided guidance on the appropriate responses by MET service providers to Tsunami hazards. However, the scope of these provisions did not include responses by the ATM and airport communities and the meeting was not aware of specific guidance for ATM and airport communities in earthquake or Tsunami scenarios.

6.15. The meeting requested the Secretariat to inform and discuss with other SGs, such as AOP SG and ATM/SG, about the issue of earthquake and tsunami as aviation potential hazard which was presented in WP/19, referring any outcomes back to the MET SG [**ACTION 27**].

WP/20 – BUSINESS FUNCTIONALITY OF APAC COMMON SWIM INFORMATION SERVICES SWIM TF Task Lead

6.16. The meeting reviewed the proposed business functionality of APAC Common SWIM Information Services developed by the ICAO APAC SWIM TF Task Team on Information Services to identify the business functionality to be supported by APAC Common SWIM Information Services for addressing the operational needs in the APAC region.

6.17. The meeting noted the work presented in WP/20 covered a comprehensive list of information services and provided corrections to the information services related to WAFS SIGWX forecasts. The meeting was informed that currently there is no plan for ICAO to implement special aircraft report as an information service.

IP/13 – USE CASE OF MET INFORMATION SERVICES FOR ATFM IN SWIM DEMONSTRATION Hong Kong, China

6.18. The meeting was informed about potential operational benefits for ATFM from sharing MET information and surveillance data as indicated in a SWIM demonstration conducted in May 2024. Machine-readable MET and surveillance information in SWIM could be used directly in future ATFM Systems for automatic calculations and updates of landing slot allocations. Real-time updates enabled by SWIM could also facilitate more efficient re-sequencing of traffic demand. The MET information and surveillance data shared in SWIM environment would also increase situational awareness of airlines and their pilots.

IP/14 – AERODROME WEATHER NOWCASTS Japan

6.19. The meeting noted the application of fully automated Aerodrome Weather Nowcasts by the Japan Meteorological Agency (JMA) to cover the gap between the real-time observation data and the hourly “Aerodrome Sequential Forecasts”. There was strong demand from the aircraft operators for the nowcast service.

IP/15 – COMBINED APAC VAAC MANAGEMENT REPORT Australia, Japan and New Zealand

6.20. The meeting noted the contents of the International Airways Volcano Watch (IAVW) consolidated management report describing activities for all nine designated Volcanic Ash Advisory Centre's (VAAC), as prepared by the Meteorology Panel (METP) Working Group Meteorological Operations Group (WG-MOG) IAVW workstream for the period 1 January 2023 to 31 December 2023. Additional information was provided by the three APAC VAACs Darwin, Tokyo, and Wellington to the APAC region covering the period 1 January 2024 to 31 May 2024.

IP/16 – APAC VAAC BACK-UP Australia, Japan, New Zealand

6.21. The meeting was informed about the recent back-up tests conducted by the APAC VAACs Darwin, Tokyo and Wellington, including issues encountered, system and procedural changes, and the tentative dates for conducting upcoming back-up tests.

7. Future work program

WP/21 – Review the Terms of Reference and Work Plan (Secretariat)

7.1. The Meeting reviewed the terms of reference and work plan of the MET SG and proposed updates to the functions of the group to include exercises and seminars and clarify the environment-related references.

7.2. The meeting also proposed extensive revisions to the work plan to realign deliverables with the functions of the group, and update assignment of responsibilities and target dates.

7.3. The proposed changes are reflected in the terms of reference and work plan in **Appendix E** of this Report.

7.4. The meeting reiterated the need to adhere to the terms of reference, part 7, paragraphs 7.3 to 7.5, which requires the Secretariat to send reminders for submission of papers approx. 6-weeks and 1-week before the due date for submission of papers; the submission of papers at least 28-days before the Meeting; and publishing of papers at least 14-days before the Meeting.

8. Any other Business

Chairperson

8.1. The Chair said that he would step down from the role next year. He said that it was his great honour and pleasure to work with all the colleagues in MET SG and he would invite nomination of new Chair in the next meeting.

8.2. The meeting acknowledged Mr. Pak-wai Chan's significant contributions to ICAO APANPIRG over more than a decade. Beginning as a member of the METWARN Task Force in 2011, Mr. Chan was elected co-chair of the MET Hazards Task Force in 2013, which was later renamed the MET/S Working Group. The meeting expressed gratitude for Mr. Chan's outstanding leadership and contributions to ICAO, aviation, and meteorology. The meeting also wished Mr. Chan success in his role as Director of the Hong Kong Observatory and congratulated him on his recent election as co-Vice-President of the World Meteorological Organization (WMO) Commission for Observation, Infrastructure and Information Systems (INFCOM).

Next Meeting

8.3. The next meeting of the MET SG was tentatively scheduled for July or August 2025, depending on the dates (TBC) of the DGCA meeting in 2025.

8.4. The meeting noted that while IATA was represented in the Seminar, no user groups were represented in the MET SG meeting. The meeting requested the Secretariat to seek more user involvement in the activities of the MET SG, including future MET Seminars. [**ACTION 28**].

8.5. The meeting noted the agenda for MET SG/29 should be expanded to include MET

exercises, possibly as a sub-item under agenda item 6 or 4, and a new agenda item on environmental-related matters relevant to the MET SG. [**ACTION 29**]

Review of Q & A and feedback summary for the MET Seminar

8.6. The meeting noted that the Secretariat would upload the Seminar presentation recordings and slides, and the Q & A and feedback summary on the meeting website and requested the Secretariat to share the Seminar material with the other APANPIRG Sub-groups [**ACTION 30**].

8.7. The meeting also requested the Secretariat to present the issues concerning the space weather advisory service, which were raised by the Seminar, in a paper at the upcoming meeting of the ATM/SG [**ACTION 31**].

8.8. For future seminars, the meeting considered actions to facilitate larger online participation, including broadcasting the invitation more widely and using the MS Teams “event” facility, rather than the MS Teams meeting facility.

8.9. In addition, it was suggested that the survey question 1, on whether the seminar achieved its purpose, be modified to enable the respondents to supplement their answers with comments.

Information on the ICAO APAC Office website

8.10. The meeting was informed of outdated documents on the “MET” part of the ICAO APAC eDocuments website. The *State Contingency Point of Contact for Volcanic Ash Events* was last updated on the website in June 2019, however updated versions of the document have been emailed to the Secretariat as recently as June 2024. Therefore, the meeting requested the Secretariat to update the website with the latest information as soon as possible [**ACTION 32**].

8.11. In addition, the *WIFS accounts and approving Officials - (APAC)* was dated May 2015. Noting that the information would, therefore, be redundant, the meeting suggested it could be removed from the eDocuments website [**ACTION 32**].

8.12. The *APANPIRG Framework*, located on the APANPIRG part of the website still reflected the former structure of the MET SG, which included the MET/S WG (under MET SG) and VOLCEX SG (under MET/S WG). The meeting noted that the APANPIRG Framework diagram should be updated to reflect the changes resulting from Decisions of MET SG/27 and APANPIRG/34 [**ACTION 32**].

— END OF SECTION —

MET SG/28
APPENDIX A to the Report
List of Actions

MET SG – LIST OF ACTIONS

New action items recorded by MET SG/28

MET SG/28 – LIST OF ACTIONS			
Action No.	Detailed description of actions	Responsibility	Target date
28/01	Revise information in WP/02 to update the lapsed target dates for uncompleted actions in the MET SG List of Actions and indicate the follow-up status on the relevant APANPIRG and MET SG Conclusions and Decisions. [Ref: Report of MET SG/28, para. 2.8.]	Secretariat	MET SG/28 final report
28/02	Add the link to the IWXXM package compatibility table to the ICAO APAC Office eDocuments website. [Ref: Report of MET SG/28, para. 2.34.]	Secretariat	MET SG/28 final report
28/03	Close (former) MET/S WG actions no. MET/S WG/13-01 and MET/S WG/11-01 and retain the actions no. MET/S WG/13-03 and MET/S WG/10-21 for follow-up by the MET SG. [Ref: Report of MET SG/28, para. 2.50.] [Ref: Decision MET SG/28-03]	Secretariat	MET SG/28 final report
28/04	Prepare the necessary documentation based on the results in Attachment A of WP/06 for APANPIRG to make a detailed assessment of the shortcomings and deficiencies related to SIGMET service in Afghanistan. [Ref: Report of MET SG/28, para. 3.9.]	Secretariat, with support from the ad hoc group on deficiencies	APANPIRG/35
28/05	Forward the identified issues and proposed corrective actions (from Attachment A and B of WP/06) for consideration by the States concerned. [Ref: Report of MET SG/28, para. 3.14.]	Secretariat	MET SG/28 final report
28/06	Consider the feasibility of including WIFS in the annual SIGMET tests. [Ref: Report of MET SG/28, para. 2.8.]	MET/IE WG	MET/IE WG/23
28/07	Propose appropriate updates to the SIGMET test procedures to better incorporate the IROG functionality into the annual SIGMET test analysis. [Ref: Report of MET SG/28, para. 3.16.]	Ad hoc group on SIGMET Guide	Aug 2024 – for 2024 APAC SIGMET tests
28/08	Publish the <i>MET Deficiency Identification Guide</i> and <i>MET Deficiency Report Guide</i> , (subject to the addition of text outlining the role of the Secretariat in proposing any new deficiency, as per the APANPIRG Handbook). [Ref: Report of MET SG/28, para. 3.18.] [Decision MET SG/28-04]	Secretariat	MET SG/28 final report
28/09	Correct the issues that MET SG/28 identified in the proposed updates to the ROBEX Handbook, Appendix F, as presented in Appendix A of WP/07. [Ref: Report of MET SG/28, para. 4.2.]	Secretariat, Thailand and MET/IE WG Chairs	In preparation for the November 2024 Monitoring activity
28/10	Finalise the details of the proposed ROBEX Handbook, VONA exchange, updates, as presented in Attachment A of WP/08, to facilitate the dissemination of VONA via the AFS, as required by the proposed amendment to Annex 3 [Action MET/IE WG/22-10: ROBEX Handbook updates – VONA dissemination, refers]. [Ref: Report of MET SG/28, para. 4.4.]	MET/IE WG Chairs	MET/IE WG/23
28/11	Prepare a proposal to include VONA in the SIGMET test procedures for 2026. [Ref: Report of MET SG/28, para. 4.5.]	New Zealand	MET SG/29
28/12	Include the proposed updates to ICAO APAC Regional SIGMET Test Procedures from Appendix B of WP/11 in the State letter invitation for the 2024 annual SIGMET tests. [Ref: Report of MET SG/28, para. 4.11.]	Secretariat	Aug 2024 – for the 2024 APAC SIGMET tests
28/13	Include the proposed updates to ICAO APAC Regional SIGMET Test Procedures, as presented in Appendix B of WP/11, in the next proposed updates of Appendix C of the Regional SIGMET Guide. [Ref: Report of MET SG/28, para. 4.12.]	SIGMET Guide	MET SG/29
28/14	Consolidate the SIGMET issuance practices, as shown in Appendix A of WP/12, for potential inclusion in the guidelines on SIGMET Coordination to supplement the Asia/Pacific SIGMET Guide. [Ref: Report of MET SG/28, para. 4.14.]	Ad hoc group on SIGMET coordination	MET/R WG/14

MET SG/28
APPENDIX A to the Report
List of Actions

MET SG/28 – LIST OF ACTIONS			
Action No.	Detailed description of actions	Responsibility	Target date
28/15	<p>Publish the <i>Guidance for Developing and Coordinating Aviation Exercises for Meteorological Events</i>, as presented in Appendix D to the MET SG/28 report (with the addition of ATFM organizations as potential exercise participants), on the ICAO APAC website.</p> <p>[Ref: Report of MET SG/28, para. 4.16.] [Ref: Decision MET SG/28-05]</p>	Secretariat	MET SG/28 final report
28/16	<p>Publish the example from China, as presented in Attachment A of WP/14, in Appendix 1 of the <i>Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations</i>.</p> <p>[Ref: Report of MET SG/28, para. 4.19.] [Ref: Decision MET SG/28-06]</p>	Secretariat	MET SG/28 final report
28/17	<p>Publish the <i>APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM</i>, as presented in Attachment A of WP/15 (with minor typo corrected), which includes a procedure for updating the document as a living document, on the ICAO APAC eDocument website.</p> <p>[Ref: Report of MET SG/28, para. 4.20. – 4.22.] [Ref: Decision MET SG/28-07]</p>	Secretariat	MET SG/28 final report
28/18	<p>Facilitate a discussion on the role of MET in the ANS seamless plan, noting that the MET inclusions in the ANS seamless plan did not appear to reflect requirements for en-route meteorological information.</p> <p>[Ref: Report of MET SG/28, para. 4.32.]</p>	Secretariat	ATM/SG/12
28/19	<p>Publish the APAC ROBEX Handbook updates, as presented in Attachments A and B of Flimsy/02, WP/07, WP/09, IP/03, and para. 4.2 of the MET SG/28 report, on the ICAO APAC Office eDocument website.</p> <p>[Ref: Report of MET SG/28, para. 4.35. and 5.7.] [Ref: Decision MET SG/28-08]</p>	Secretariat	MET SG/28 final report
28/20	<p>Publish the SIGMET Guide updates, as presented in Flimsy/01, WP/10, WP/11 and Flimsy/03.</p> <p>[Ref: Report of MET SG/28, para. 4.39.] [Ref: Decision MET SG/28-09]</p>	Secretariat	MET SG/28 final report
28/21	<p>Incorporate the aerodrome meteorological service requirements as reflected by the information in IP/02, the proposed amendments as presented in Appendices A and B of WP/16, and the change from 24- to 30-hour validity TAF as presented in IP/03, into the next proposal for amendment of the APAC ANP Volume II Tables MET II-2 and MET II-3.</p> <p>[Ref: Report of MET SG/28, para. 5.2., 5.4., 5.5. and 5.9.]</p>	Secretariat	Aug 2024
28/22	<p>Incorporate the specific information related to United States State Volcano Observatories as presented in para. 2.2 of WP/17 in the latest proposal for amendment of the APAC ANP Vol I, Table MET I-1.</p> <p>[Ref: Report of MET SG/28, para. 5.11.]</p>	Secretariat	Aug 2024
28/23	<p>Further refine the <i>Report on 2021 ICAO APAC Regional Survey on the provision of MET services to support ATM and ATFM</i>, considering information privacy, for what purpose the information will it be used and, therefore, where and how the survey results should be published or shared.</p> <p>[Ref: Report of MET SG/28, para. 5.13.]</p>	MET/R WG	MET SG/29
28/24	<p>Review and report on the outcomes and lessons learned from <i>2021 ICAO APAC Regional Survey on the provision of MET services to support ATM and ATFM</i>; including tangible actions that have or will be done based on the results of the survey, to assist the MET SG with identifying whether there would be value in conducting another survey.</p>	MET/R WG	MET SG/29

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MET SG/28 – LIST OF ACTIONS			
Action No.	Detailed description of actions	Responsibility	Target date
	[Ref: Report of MET SG/28, para. 5.14.]		
28/25	Present a paper to the ATM/SG informing the ATM community of the <i>Report on 2021 ICAO APAC Regional Survey on the provision of MET services to support ATM and ATFM</i> that was presented to ATFM/SG/14 and summarising the main outcomes from the report. [Ref: Report of MET SG/28, para. 5.15.]	Secretariat, with support from the MET/R WG Chair	ATM/SG/12
28/26	Present a paper to ATM/SG highlighting the issue presented in para. 2.3 of IP/09, describing the current situation and proposing that when a State Volcano Observatory reports that a volcano’s unrest level is elevated, States should issue NOTAM to inform aviation stakeholders and ensure user awareness of the heightened risk of an eruption. [Ref: Report of MET SG/28, para. 6.7.]	Secretariat and New Zealand	ATM/SG/12
28/27	Inform and discuss with other APANPIRG Sub-Groups such as AOP SG and ATM/SG about the issue of earthquake and tsunami as a potential hazard to aviation, as presented in WP/19, and refer any outcomes back to the MET SG [ACTION 27]. [Ref: Report of MET SG/28, para. 6.15.]	Secretariat	AOP SG/08 and ATM/SG/12
28/28	Seek more user groups (e.g., IATA, etc.) involvement in the activities of the MET SG, including future MET Seminars. [Ref: Report of MET SG/28, para. 8.4.]	Secretariat	MET SG/29
28/29	Expand the agenda for MET SG/29 to include MET exercises, possibly as a sub-item under agenda item 6 or 4, and a new agenda item on environmental-related matters relevant to the MET SG. [Ref: Report of MET SG/28, para. 8.5.]	Secretariat and Chair	MET SG/29
28/30	Upload the Seminar presentation recordings and slides, the Q&A, and the feedback summary on the meeting website, and share the Seminar material with the other APANPIRG Subgroups. [Ref: Report of MET SG/28, para. 8.6.]	Secretariat	As soon as possible
28/31	Present the issues concerning the space weather advisory service, which were raised by the Seminar, in a paper at the upcoming meeting of the ATM/SG. [Ref: Report of MET SG/28, para. 8.7.]	Secretariat	MET SG/29
28/32	Update the ICAO APAC Office website as soon as possible to remove outdated documents on the “MET” part of the ICAO APAC eDocuments website provide the latest information on the State Contingency Point of Contact for Volcanic Ash Events and changes to the MET SG and contributory bodies in the APANPIRG Framework. [Ref: Report of MET SG/28, para. 8.10., 8.11., 8.12.]	Secretariat	As soon as possible

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

Unresolved action items recorded by MET SG/27

MET SG/27 – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
27/02	Updates to the ICAO APAC ROBEX Handbook: Coordinate with all the States concerned (ref: MET SG/27, WP/09 and WP/14) to incorporate the proposed updates in the ROBEX Handbook, Sixteenth Edition [ACTION MET SG/27-02] [Ref: Report of MET SG/27, para. 4.4.]	Secretariat	Dec 2023	IN PROGRESS

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MET SG/27 – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
	Ref: MET/IE WG22, WP/19 Ref: MET/R WG/13 Report, para. 2.09., and MET/R WG/13 action item 03 https://www.icao.int/APAC/Documents/edocs/2024-04_APAC-ROBEX-HB_16TH-ED.pdf			
27/03	Update to Regional SIGMET Guide: Include the proposed example on guidance on SIGMET for volcanic ash crossing FIR boundaries, Appendix A of WP/10, in the next update of the APAC Regional SIGMET Guide. [Ref: Report of MET SG/27, para. 4.7.] Ref: MET/R WG/13 Report, para. 2.9., and MET/R WG/13 action item 03.	Secretariat	Dec 2023	TO COMMENCE
27/04	Volcanic ash advisory and SIGMET examples: Review and revise the volcanic ash advisory and SIGMET examples in WP/10, Appendix B, when the OBS (or EST) VA CLD on the Volcanic Ash Advisory (VAA) indicates "VA NOT IDENTIFIABLE FM SATELLITE DATA", to ensure consistency between the SIGMET and advisory information. [Ref: Report of MET SG/27, para. 4.8.]	Ad hoc group in collaboration with the VAACs	Jul 2024 (MET SG/28)	TO COMMENCE
27/05	Document of cases of SIGMET coordination: Identify common SIGMET coordination practices from the document of cases of SIGMET coordination in WP/11 and develop further the document to separate the procedural information, which could potentially be used to supplement to the Asia/Pacific Regional SIGMET Guide. [Ref: Report of MET SG/27, para. 4.16.] Ref: MET/R WG/13 Report, para. 2.10., and MET/R WG/13 WP/09 – SIGMET coordination common practices and guidelines	Ad hoc group	Jul 2024 (MET SG/28)	IN PROGRESS
27/07	Update of VAAC backup procedures in APAC Regional SIGMET Guide: Include the proposed updates for the example in Appendix A of WP/10 and the proposal in WP/13 in the eleventh edition of the Asia/Pacific Regional SIGMET guide. [Ref: Report of MET SG/27, para. 4.22.] Ref: MET/R WG/13 Report, para. 2.09., and MET/R WG/13 action item 03.	Secretariat	Dec 2023	IN PROGRESS
27/08	Siem Reap Angkor International Airport (VDSA) – ROBEX Handbook update: Coordinate the necessary updates to incorporate VDSA in the ROBEX Handbook. [Ref: Report of MET SG/27, para. 5.2.] Ref: MET/IE WG22, WP/19 https://www.icao.int/APAC/Documents/edocs/2024-04_APAC-ROBEX-HB_16TH-ED.pdf	Secretariat	Dec 2023	COMPLETED IN PROGRESS
27/09	Siem Reap Angkor International Airport (VDSA) – METNO process: Notify the update to the ROBEX system by following the METNO process. [Ref: Report of MET SG/27, para. 5.3.]	Responsible NOC	Dec 2023	TO COMMENCE
27/10	Proposal for amendment of the APAC Air Navigation Plan: Compile a proposal for amendment and to the ANP incorporating amendments in WP/14 and paragraph 5.5. of the Report of MET SG/27 and seek confirmation from the States concerned before circulating the proposal for amendment to States and Organizations for comments and Regional agreement. [Ref: Report of MET SG/27, para. 5.6.]	Secretariat	Dec 2023	TO COMMENCE
27/11	MET deficiencies review of 2022 SIGMET test: Utilise the proposed actions in WP/17, Appendix A, when advising States of SIGMET corrective actions.	Secretariat	Dec 2023	TO COMMENCE

MET SG/28
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MET SG/27 – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
	[Ref: Report of MET SG/27, para. 5.9.]			
27/12	Proposed amendment to ICAO Annex 3: Survey States on their needs for implementation support for the proposed amendment to ICAO Annex 3. [Ref: Report of MET SG/27, para. 5.17.]	Secretariat	Dec 2023	TO COMMENCE

Unresolved action items recorded by MET SG/26

MET SG/26 – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
26/04	APANPIRG AN Deficiencies – requirements for WAFS forecasts: Provide technical assistance to help the States concerned understand and determine the requirements for WAFS forecasts. [Ref: Report of MET SG/26, para. 3.2.] Ref: MET SG/27, WP/07 – Review APANPIRG Air Navigation Deficiencies	Secretariat	Nov 2022	IN PROGRESS
26/07	APAC ANP, Volume III amendment – examples from other ICAO Regions: Consider examples of Volume III adopted by other ICAO Regions in the MET work plan on a proposal for amendment of MET-specific material in the APAC ANP, Volume III. [Ref: Report of MET SG/26, para. 5.8.] Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan	Secretariat and MET/R WG	Nov 2022	IN PROGRESS
26/08	APAC ANP, Volume II amendment – Nepal: Initiate an appropriate proposal for amendment of the ANP Volume II, to reflect the requirements for aerodrome meteorological offices in Nepal. [Ref: Report of MET SG/26, para. 5.9.] Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan	Secretariat and Nepal	Nov 2022	IN PROGRESS

Unresolved action items recorded by MET SG/25

MET SG/25 – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
25/06	Finalise the proposals for amendment of the APAC ANP (Vol I and II) and ROBEX Handbook as agreed in previous meetings to ensure accuracy of the requirements specifications against which the OPMET monitoring is analysed [Ref: para. 4.6.-4.7.] Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan, and WP/09 – Updates to the ICAO APAC ROBEX Handbook	Secretariat	Nov 2021	IN PROGRESS
25/07	Finalise a proposal for amendment of the APAC ANP (Table MET II-1) and consequential amendment to the APAC Regional SIGMET Guide as necessary to ensure the correct use of FIR indicator for Port Moresby [Ref: para. 4.12.-4.14.] Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan, and APAC Regional SIGMET Guide, Tenth Edition, uploaded to the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx	Secretariat	Nov 2021	IN PROGRESS ANP amendment pending; SIGMET Guide amended, 9 th Ed.

MET SG/28
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MET SG/25 – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
25/09	Review SIGMET Guide as necessary to guide MWOs to handle cases when VAAC would not hand over to the neighbouring VAAC even if the ash cloud is expected to cross the AoR [Ref: para. 4.12.-4.14.]	Ad hoc group	Mar 2023	TO COMMENCE
25/12	Provide updates to the contact lists in the ICAO Doc 9766-AN/968 (Handbook on the International Airways Volcano Watch (IAVW)) to the ICAO METP [Ref: para. 5.15.]	MET SG, Secretariat	Mar 2022	TO COMMENCE
25/13	Coordinate possible SWX advisory exercise/s and training workshop/s with the appropriate body under METP for [Ref: para. 5.28.] Ref: ICAO APAC webinar on space weather information service (TBD) Ref: Secretariat to coordinate with Australia [MET/IE WG/20 - ACTION 01] Ref: MET/R WG new deliverable #7 to promote user education on SWX service.	Secretariat	Nov 2021	IN PROGRESS

— END OF SECTION —

APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

Extracted from APANPIRG/34, Appendix D to the Report on Agenda Item 4.

Editorial Note: Updates show deleted text using strikeout (text to be deleted) and added text with grey shading (text to be inserted).

REPORTING FORM ON (OPEN) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
MWO and SIGMET service (Annex 3: Chapter 3, 3.4 and Chapter 7)	Democratic Peoples' Republic of Korea (DPRK) (AP-MET-16)	Requirements for MWO and SIGMET service not established for Pyongyang FIR	2008	Reported by ICAO Regional Office mission	Establish MWO to provide required service, including SIGMET information for Phnom Penh FIR. See notes below for more information.	GACA, Democratic Peoples' Republic of Korea	TBC	A
Meteorological observations and reports. (Annex 3: Chapter 4)	Kiribati (AP-MET-02)	METAR from Kiribati not available on regular basis.	1998	Reported by airlines	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. See notes below for more information.	State designated MET authority	TBC	A
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Kiribati (AP-MET-18)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. See notes below for more information.	State designated MET authority	TBC	U
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Nauru (AP-MET-19)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. See notes below for more information.	State designated MET authority	TBC	U
Meteorological observations and reports. (Annex 3: Chapter 4)	Nauru (AP-MET-21)	METAR/SPECI service not provided	2008	Reported by TCB CAEMSA-SP Technical Expert	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. See notes below for more information.	State designated MET authority	TBC	U

APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

REPORTING FORM ON (OPEN) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Provision of SIGMET information (Annex 3, Chapter 7)	Nauru (AP-MET-24)	Lack of SIGMET issued for the Nauru FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U
Provision of SIGMET information (Annex 3: Chapter 7)	Nepal (AP-MET-14)	Requirements for issuance and dissemination of SIGMET information for Kathmandu FIR have not been fully implemented	2000		Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	A
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3, 3.6, 4.8)	Papua New Guinea (AP-MET-04)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs.	1995	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. See notes below for more information.	Rabaul Volcano Observatory, NWS and ASL of Papua New Guinea	TBC	A
Provision of SIGMET for volcanic ash (Annex 3: Chapter 7)	Papua New Guinea (AP-MET-08)	Requirements for issuance and proper dissemination of SIGMET for volcanic ash have not been fully implemented	Dec 2003	Reported by airlines, noted by Volcanic Ash Advisory Centres and confirmed by ICAO mission	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash. See notes below for more information.	NWS of Papua New Guinea	TBC	U
Provision of SIGMET information (Annex 3, Chapter 7)	Papua New Guinea (AP-MET-22)	Lack of SIGMET issued for the Port Moresby FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U

APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

REPORTING FORM ON (OPEN) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCS (Annex 3: Chapter 9)	Solomon Islands (AP-MET-20)	WAFCS forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCS. See notes below for more information.	State designated MET authority	TBC	U
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3: 3.6, 4.8)	Tonga (AP-MET-17)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs	2008	Reported by TCB CAEMSA-SP technical expert	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. See notes below for more information.	MOI and MEIDECC	TBC	U

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
AP-MET-01	Solomon Islands	December 2020	Removed from the open List; APANPIRG/31 Conclusion 31/19, refers.	Closed
AP-MET-02	Kiribati	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> Kiribati is now delivering observations regularly but is continuing work on upgrading its observing facility before providing resolution information. 	Open
		September 2017	APANPIRG/28 noted that Kiribati should: <ul style="list-style-type: none"> Verify the status of implementation of CAP; and Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-03	Indonesia	September 2017	Removed from the open List, APANPIRG/28 Conclusion 28/29 refers.	Closed
AP-MET-04	Papua New Guinea	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> VAACs Darwin and Wellington are planning a series of exercises in the next six months with the Papua New Guinea (PNG) State Volcano Observatory and MWO to address the PNG volcanic activity information and SIGMET deficiencies, along with the Nauru SIGMET deficiency (due to PNG providing SIGMETs on Nauru's behalf). 	Open
		November 2022	APANPIRG/33 noted MET SG/26 recommended that Papua New Guinea: <ul style="list-style-type: none"> Conduct additional corrective actions, including seeking confirmation from the recipient operational units and providing evidence of the relevant established procedures; and Submit an official report to ICAO providing complete details of the action taken. 	

MET SG/28

APPENDIX B

APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
		September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> Verify the status of implementation of CAP; and Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-05	–	–	This Index No. is not used.	Closed
AP-MET-06	Indonesia	September 2017	Removed from the open List, APANPIRG/28 Conclusion 28/29 refers.	Closed
AP-MET-07	Philippines	November 2019	Removed from the open List, Conclusion APANPIRG/30/19, refers.	Closed
AP-MET-08	Papua New Guinea	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> VAACs Darwin and Wellington are planning a series of exercises in the next six months with the Papua New Guinea (PNG) State Volcano Observatory and MWO to address the PNG volcanic activity information and SIGMET deficiencies, along with the Nauru SIGMET deficiency (due to PNG providing SIGMETs on Nauru's behalf). 	Open
		September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> Verify the status of implementation of CAP; and Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-09	Cambodia	September 2018	Removed from the open List, APANPIRG/29 Decision 29/23 refers	Closed
AP-MET-10	–	–	This Index No. is not used.	Closed
AP-MET-11	Cambodia	September 2018	Removed from the open List, APANPIRG/29 Decision 29/24 refers	Closed
AP-MET-12	Lao PDR	September 2018	Removed from the open List, APANPIRG/29 Decision 29/24 refers	Closed
AP-MET-13	–	–	This Index No. is not used.	Closed
AP-MET-14	Nepal	December 2023	APANPIRG/34 considered the deficiency could be removed from the Open List subject to receiving confirmation of the regular dissemination of the Kathmandu FIR SIGMET information in IWXXM form (in addition to TAC form)	Open
		September 2023	MET SG/27 noted that: <ul style="list-style-type: none"> Nepal made significant progress towards rectification of the deficiency, including confirmation of the regular issuance of SIGMET information in 2022, successful participation in the annual APAC regional SIGMET tests, coordination of SIGMET with neighbouring MWOs, and validation from users of receipt of the SIGMET information. Nepal was not disseminating SIGMET information in the IWXXM form in addition to the dissemination of SIGMET information in the TAC form, as required by Annex 3. Nepal was in the process of procuring a solution to provide SIGMET in IWXXM form. APANPIRG may review the status of the deficiency and remove it from the Open List, subject to Nepal confirming in writing to ICAO, and validated by RODB Bangkok, that the regular dissemination of SIGMET information in IWXXM form in addition to TAC form. 	
		September 2017	APANPIRG/28 noted that Nepal should: <ul style="list-style-type: none"> Verify the status of implementation of CAP; and Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	

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APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
AP-MET-15	–	–	This Index No. is not used.	Closed
AP-MET-16	Democratic People's Republic of Korea	September 2017	APANPIRG/28 noted that DPRK should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	Open
AP-MET-17	Tonga	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> • Tonga is developing an MOU between organisations involved in providing and sharing volcanic activity information, which includes the procedures to be followed. 	Open
		November 2022	APANPIRG/33 noted MET SG/26 recommended that Tonga: <ul style="list-style-type: none"> • Conduct additional corrective actions, including seeking confirmation from the recipient operational units and providing evidence of the relevant established procedures; and • Submit an official report to ICAO providing complete details of the action taken. 	
		September 2017	APANPIRG/28 noted that: <ul style="list-style-type: none"> • Removal of the Deficiency from the open List is subject to the concurrence of the ATS units, MWOs and VAACs concerned that the Deficiency is resolved. 	
		June 2018	MET SG/22 noted that: <ul style="list-style-type: none"> • VAAC Wellington was coordinating with Tonga on the validation of corrective action taken to resolve the Deficiency. 	
		29 May 2017	MOI, Civil Aviation Division, advised that: <ul style="list-style-type: none"> • Relevant operating procedures implemented in the units concerned and case studies of real volcanic events presented as evidence of the State volcano observatory's issuance of the required volcano observation information. 	
		10 May 2013	Ministry of Infrastructure (MOI), Civil Aviation Division, advised that: <ul style="list-style-type: none"> • MOU established between the national authority providing volcano monitoring (Ministry of Lands, Environment, Climate Change and Natural Resources – MLECCNR) and the national authority providing meteorological service for international air navigation (MOI) for the reporting of volcanic activity to the associated ACCs, MWOs and VAACs in accordance with the relevant ICAO SARPs. 	
AP-MET-18	Kiribati	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> • Kiribati, Nauru and Solomon Islands are working with their local users to determine whether there is any requirement for local WAFS information provision. 	Open
		September 2017	APANPIRG/28 noted that Kiribati should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-19	Nauru	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> • Kiribati, Nauru and Solomon Islands are working with their local users to determine whether there is any requirement for local WAFS information provision. 	Open

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APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
		September 2017	<p>APANPIRG/28 noted that Nauru should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-20	Solomon Islands	September 2023	<p>MET SG/27 was informed that:</p> <ul style="list-style-type: none"> • Kiribati, Nauru and Solomon Islands are working with their local users to determine whether there is any requirement for local WAFS information provision. 	Open
		September 2017	<p>APANPIRG/28 noted that Solomon Islands should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
		June 2019	<p>MET SG/23 requested the Secretary in conjunction with support from other States to provide Solomon Islands with assistance in preparing the full report on rectification of the Deficiency.</p>	
AP-MET-21	Nauru	September 2017	<p>APANPIRG/28 noted that Nauru should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	Open
AP-MET-22	Papua New Guinea	September 2023	<p>MET SG/27 was informed that:</p> <ul style="list-style-type: none"> • VAACs Darwin and Wellington are planning a series of exercises in the next six months with the Papua New Guinea (PNG) State Volcano Observatory and MWO to address the PNG volcanic activity information and SIGMET deficiencies, along with the Nauru SIGMET deficiency (due to PNG providing SIGMETs on Nauru’s behalf). 	Open
		September 2017	<p>APANPIRG/28 noted that Papua New Guinea should:</p> <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-23	Solomon Islands	November 2022	<p>Removed from the open List; refer to:</p> <ul style="list-style-type: none"> • Conclusion APANPIRG/33/14 – <i>Update of information in APANPIRG Air Navigation Deficiencies Reporting Form</i>; • APANPIRG/33 WP/14 – <i>STATUS OF AIR NAVIGATION DEFICIENCIES IN THE ASIA/PAC REGION</i>; • APANPIRG/33 WP/13 – <i>METEOROLOGY SUB-GROUP (MET SG/26) REPORT</i>; and • APANPIRG/33 IP/08 – <i>RECTIFICATION OF APANPIRG AN DEFICIENCY AP-MET-23</i> 	Closed
		October 2021	<p>MET SG/25 requested the Solomon Islands, with assistance from its partner States, to conduct additional corrective action to enable the MET SG to confirm that Solomon Islands had fully resolved the Deficiency; maintain a log of all SIGMETs issued over at least one month to capture the operational WC-, WS- and WV-SIGMETs, plus any test WV-SIGMETs; pass the details [of the log] to the ad hoc group [on AN Deficiencies] to compare against SIGMETs received by RODB Brisbane [MET SG/25, Action No. 25/10]. Subject to Solomon Islands demonstrating resolution of the issues concerning content, format and timeliness of SIGMET information (as discussed in MET SG/25, WP/12) and sustainable provision of ICAO-compliant SIGMET service, MET SG would support the removal of Deficiency AP-MET-23 from the APANPIRG open list. Therefore, to facilitate the removal of the Deficiency from the open List, MET SG/25 requested the Secretariat coordinate with the Solomon Islands to report the resolution of the Deficiency to APANPIRG [MET SG/25, Action No. 25/11].</p>	

MET SG/28
APPENDIX B

APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

NOTES ON THE (OPEN AND CLOSED) AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION				
Index No.	State	Update Date	NOTES ON OPEN AND CLOSED DEFICIENCIES	Status
		June 2019	MET SG/23 requested the Secretary in conjunction with support from other States to provide Solomon Islands with assistance in preparing the full report on rectification of the Deficiency.	
		September 2017	APANPIRG/28 noted that Solomon Islands should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	
AP-MET-24	Nauru	September 2023	MET SG/27 was informed that: <ul style="list-style-type: none"> • VAACs Darwin and Wellington are planning a series of exercises in the next six months with the Papua New Guinea (PNG) State Volcano Observatory and MWO to address the PNG volcanic activity information and SIGMET deficiencies, along with the Nauru SIGMET deficiency (due to PNG providing SIGMETs on Nauru's behalf). 	Open
		September 2017	APANPIRG/28 noted that Nauru should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the Deficiency. 	

Acronyms/Abbreviations/Definitions (used in this document)

ACC	— Area control centre
ASL	— Air Services Ltd.
ATS	— Air traffic services
CAEMSA-SP	— Cooperative Agreement for the Enhancement of Meteorological Services to Aviation - South Pacific
CAP	— Corrective action plan
FIC	— Flight information centre
FIR	— Flight information region
GACA	— General Administration of Civil Aviation
IATA	— International Air Transport Association
MEIDECC	— Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication
MET	— Meteorological
METAR	— Aerodrome routine meteorological report (<i>in meteorological code</i>)
MWO	— Meteorological watch office
NWS	— National Weather Service
SIGMET	— Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations
SPECI	— Aerodrome special meteorological report (<i>in meteorological code</i>)
TBC	— To be confirmed
TCB	— Technical Cooperation Bureau (of ICAO)

MET SG/28
APPENDIX B

APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

Acronyms/Abbreviations/Definitions (used in this document)

VAAC — Volcanic ash advisory centre
WAFC — World area forecast centre

— END OF SECTION —

Updates to MET Deficiency Identification Guide

Editorial note – proposed updates are indicated with ~~strikethrough~~ and **highlighted** text.

Purpose

Analysis of the annual ICAO SIGMET test and annual OPMET Monitoring activities undertaken as part of the work plan of the Meteorological Information Exchange Working Group will identify OPMET exchange issues ~~by the APAC RODBs may highlight potential air navigation deficiencies in the meteorology field.~~ This document aims to guide the identification of potential deficiencies arising from the outcomes of these activities, ~~focusing on first assisting States in undertaking a root cause analysis to determine whether the issue may be resolved quickly (minimum resolution time to be determined on a case-by-case basis).~~

A deficiency is to be applied only when there is no **simple** resolution planned and undertaken. The ICAO Secretariat may also provide other sources of MET deficiency information, and the principle of root cause analysis will also be used to determine an appropriate response.

Unless specially outlined, these criteria shall be understood to apply to both traditional alphanumeric code (TAC) and IWXXM form messages.

Note – identifying a deficiency can be an opportunity for a State to use as evidence for the need for increased resources and assistance.

Method

Annual ICAO SIGMET test

Following the finalisation of the results of the annual ICAO SIGMET test, the following criteria will indicate when a possible MET deficiency for SIGMET, TCA and VAA issuance should be considered:

- a) ~~Any~~ No RODB ~~does not~~ receives an expected SIGMET, TCA and/or VAA during the test.
 - If four or fewer RODBs receive a SIGMET, TCA and/or VAA, then the MWO shall be requested to update their dissemination list to include all RODBs and a test **SIGMET** message shall be issued to confirm this update.
- b) User systems cannot ingest an expected SIGMET, TCA and/or VAA.
 - A **SIGMET** message may contain format errors. Minor errors, such as priority indicators, should be communicated directly to the issuing centre ~~MWO~~ for resolution, followed by a test **SIGMET** message to confirm the correct format/bulletin information.
- c) A SIGMET, TCA and/or VAA is not received by any RODB within 5 minutes of issuance (referring to Annex 3 Appendix 10 section 1.1 “*Messages and bulletins containing operational meteorological information shall achieve transit times of less than 5 minutes, unless otherwise determined to be lower by regional air navigation agreement.*”).
 - States to undertake root cause analysis, with assistance from deficiencies ad hoc group, to determine reason for slow dissemination or receipt (eg internal process requiring email to ATS to disseminate via AFS on behalf of MWO).
- d) IWXXM form test SIGMET, TCA and/or VAA are not successfully validated and/or successfully translated (where relevant).

Notes

~~1) Deficiencies ad hoc group to recommend whether follow up SIGMET tests should be conducted to ensure SIGMET issues have been resolved~~

~~2) While the items above discuss SIGMET issuance, they equally apply to VAA and TCA issuance.~~

APAC RODB Annual OPMET Monitoring

Following finalisation of the results of the APAC RODB Annual OPMET Monitoring, the following criteria will indicate when a possible MET deficiency should be considered, noting that these criteria apply for both TAC and IWXXM form messages:

- a) No ~~Any~~ RODB ~~does not~~ receives a METAR/SPECI or TAF for aerodromes in Table MET-II-2 during the OPMET Monitoring ~~test~~.
 - If four or fewer RODBs receive a METAR/SPECI or TAF, then the NOC or ROC shall be requested to update their dissemination list to include all RODBs and the RODBs will be requested to confirm receipt once complete.
- b) A Table MET II-2 METAR/SPECI or TAF with an availability/~~regularity/compliance~~ and/or timeliness score of less than 95% ~~50%~~ (referring to the availability and timeliness defined in the ROBEX Handbook, threshold to be reviewed regularly).
 - NOC to provide information to explain the score. If a resolution can be made quickly, RODBs will be requested to confirm the resolution by compiling one month's statistics. If the resolution requires a longer term (i.e. greater than ~~six~~ ~~three~~ months but to be determined on a case-by-case basis), consider deficiency.
- c) A Table MET II-2 METAR/SPECI or TAF in IWXXM form with successful validation and/or translation (where applicable) scores of less than 95%.

Any other potential deficiency source

The ICAO Secretariat may identify other sources of information that could indicate a MET deficiency and, if appropriate, request the ad hoc group on deficiency under MET/~~S~~ ~~WSG~~ to assist with root cause analysis.

Deficiency Resolution Support

Once a MET deficiency has been applied (and for existing MET deficiencies), the following steps may be followed by the ad hoc group on deficiencies:

1. Engage with State holding a deficiency, to assist in carrying out a root cause analysis of the issue.
2. Develop a Corrective Action Plan (CAP) (template to be developed) with the State to resolve the issue and collect evidence to show resolution. The CAP may include developing tests/exercises to support the deficiency resolution.
3. Assist State in compiling a report to ICAO outlining evidence of resolution deficiency. States may find the MET deficiency report guide (Attachment A to this Guide) useful in drafting a report.

Note – the ad hoc group on deficiencies will assist the State in the deficiency resolution; however, the State is responsible for the work being carried out and for ensuring the resolution remains in place.

Attachment A to MET Deficiency Identification Guide – Deficiency Reporting Guide

Agenda Item x: choose from provisional agenda items

UPDATE ON MET DEFICIENCY AP-MET-xx

(Presented by <name of State or Organisation>)

SUMMARY

<Use this section to summarise the paper e.g. This paper outlines the work done by <State name> on resolving deficiency AP-MET-xx. If this is a progress update to inform of actions taken to date, then use an information paper template. For providing information to support a deficiency resolution, use a working paper template.>

1. INTRODUCTION

1.1 *<Describe the deficiency – e.g. APANPIRG deficiency AP-MET-xx refers to METAR from xxxx aerodrome not being available on a regular basis.>*

2. DISCUSSION

Corrective Action Plan and Implementation

2.1 *<Use this section to describe the actions taken or planned to resolve the deficiency e.g. regular METARs are now provided from the aerodrome or an AWS will be installed later in the year or information on volcanic activity is now provided to various organisations. Give some details on how these corrective actions help resolve the deficiency. The Corrective Action Plan can be provided as an attachment to the paper.>*

Evidence of MET deficiency resolution

2.2 *<Use this section to outline evidence of deficiency resolution or progress – e.g. letter from local airlines, ATS, MWO, VAAC, etc and/or results from OPMET monitoring, results of SIGMET test or other evidence as appropriate. Evidence such as letters can be included as an appendix to the paper and be referred to in this section.>*

3. ACTION BY THE MEETING

3.1 *<If this is a working paper, you can request the meeting to carry out an action – e.g. agreeing that the deficiency should be resolved and making a recommendation to APANPIRG to remove*

it from the deficiency list. If this is an information paper, you can request the meeting to note the progress of the deficiency resolution work.>

[Example for WP]

3.1 The meeting is invited to:

- i. Note the information contained in this paper; and
- ii. formulate a Draft Conclusion for the removal of the deficiency AP-MET-xx from the APANPIRG Deficiency Database.

[Example for IP]

3.1 The meeting is invited to note the information on the progress of the deficiency resolution work contained in this paper.

<If adding attachments such as letters or monitoring results, include them here under the main body of the paper.>

Guidance for Developing and Coordinating Aviation Exercises for Meteorological Events

**Asia/Pacific Air Navigation Planning and Implementation
Regional Group – Meteorology Sub-group**

Guidance for Developing and Coordinating Aviation Exercises for

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1. Background and Purpose

- 1.1. High impact meteorological events¹ such as tropical cyclones, volcanic eruptions and severe space weather can pose a risk to aviation, however the low frequency and irregular nature of these events means there can be long periods of inactivity. Therefore, it is important to exercise these events on a regular basis. Conducting exercises allows better coordination and preparedness for when these events eventually occur in real-life and so provides a form of risk mitigation.
- 1.2. At the 34th Meeting of the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG), following recommendation by its Meteorology Sub-group (MET SG), it was agreed that the work of the previous Volcanic Ash Exercises (VOLCEX) Steering Group in arranging exercises was no longer required². A new Meteorology Exercise (METEX) Advisory Group (AG) was instead formed under the MET SG to continue provide guidance to organizations on developing and coordinating exercises focused on high impact, low frequency meteorological events that pose a risk to aviation.
- 1.3. This document is intended to assist organizations (e.g. aeronautical meteorology service providers, national aviation authorities) to plan, conduct and report outcomes from exercises related to such events.

2. Exercise Scenarios

- 2.1. The first step in organizing an exercise is to identify what aspects of the aviation system you wish to exercise – e.g. the response to a space weather event, or the impact on a national network of volcanic ash deposition at a busy airport. Consideration should be given to what events may impact aviation in your region of the globe – and how recently they have occurred. For example, if there has been a significant volcanic event in the past year, there may be more value in exercising a different scenario.
- 2.2. Examples of high impact, low frequency meteorological events that can impact aviation include (but not limited to):
 - Volcanic unrest and/or eruption

¹ In the context of this document, the term ‘meteorological events’ is understood to include atmospheric hazards such as volcanic ash and space weather, as well as traditional meteorological hazards.

² Decision APANPIRG/34/14: Replacement of the VOLCEX Steering Group by the MET Exercise Advisory Group

- Space weather impacts
 - Tsunamis
 - Tropical cyclones
 - Radiation leakage
 - Flooding
- 2.3. Coordinating with a warning provider or advisory centre (e.g. Volcanic Ash Advisory Centre (VAAC), Space Weather Centre (SWXC)) would be beneficial to decide on a credible scenario that will accurately test the key components of the aviation system and meet your exercise objectives.
- 2.4. Consideration should be made of the length of the exercise – typically, an exercise will be run during ‘regular business hours’ over one day but, if needed, could simulate a multi-day event during that time. For example, a volcanic ash exercise may have extra volcano observatory notice to aviation (VONA) reports provided as pre-exercise information to advise the participants of the increasing level of volcanic activity that would have been observed prior to the main exercise scenario.

3. Exercise Leader

- 3.1. An exercise should be led by a designated Exercise Leader, who is responsible for the overall running of the exercise.
- 3.2. The Exercise Leader would usually have duties such as:
- Making an exercise plan and determining the time for carrying out the exercise;
 - Coordinating with various parties involved in the exercise;
 - Preparing exercise materials; including objectives and expected outcomes;
 - Developing guidelines for implementing the exercise;
 - Guiding the course of the exercise according to the agreed exercise scenario to achieve the exercise objectives;
 - Summarizing the exercise in a report; and
 - Reporting the outcomes of the exercise to an appropriate body for further action and consideration (for example, to appropriate sub-group(s) of the APANPIRG).
- 3.3. The Exercise Leader can determine the continuation, postponement or cancellation of planned exercise activities, based on operational considerations on the day of the exercise.

4. Exercise Planning

4.1. When determining which parties should be invited to participate in the exercise, consider the following points:

- If possible, include all organizations that would normally be involved in the response to a particular scenario. This would usually include, at a minimum:
 - Warning providers such as VAACs, SWXCs, Meteorological Watch Offices, national meteorological, hydrological or volcanological services
 - Air navigation service provider (ANSP)
 - NOTAM office
 - National aviation authority
 - Airlines
 - Airport operator, if relevant
 - If appropriate, military representation, emergency service providers and rescue coordination organizations should be considered.
- Consider the exercise objectives and whether there is value in extending the exercise into a neighboring flight information region (FIR) and including representatives from these regions too.
- Consider relevant observers that might benefit from observing the exercise.
- Giving participants plenty of notice for the exercise is important, to ensure organizations can make relevant staff available.
 - If possible, use a polling tool to allow participants to choose from a range of potential exercise dates – this will help maximize participation from the proposed participating organizations.

4.2. Once a core set of participants is identified, the exercise organizer may want to consider sharing an overview of the exercise plan with the core participants for feedback and suggestions including any additional participants that should be included, or useful extensions on the plan.

- It is not recommended to share detailed information on the exercise scenario – for example information on the exact areas and altitudes that will be impacted during the exercise. Participants should react to information that is shared as the exercise progresses; by having too many details in advance, participants are less likely to fully exercise their current processes and may get less of an opportunity to learn.

- For example, an exercise organizer may say that an exercise will include a space weather event that impacts GNSS-based communication and navigation in a particular FIR. The timing and severity of the planned impact in the exercise does not need to be shared ahead of time.

4.3. Creating a run sheet or flow chart of the *likely* progress of the exercise can be a useful way for an exercise organizing team to determine what activities are required ahead of time.

- For example, a flow chart may describe the initial stages of an event and will help prompt thinking about what actions may be taken during the exercise (Figure 1).

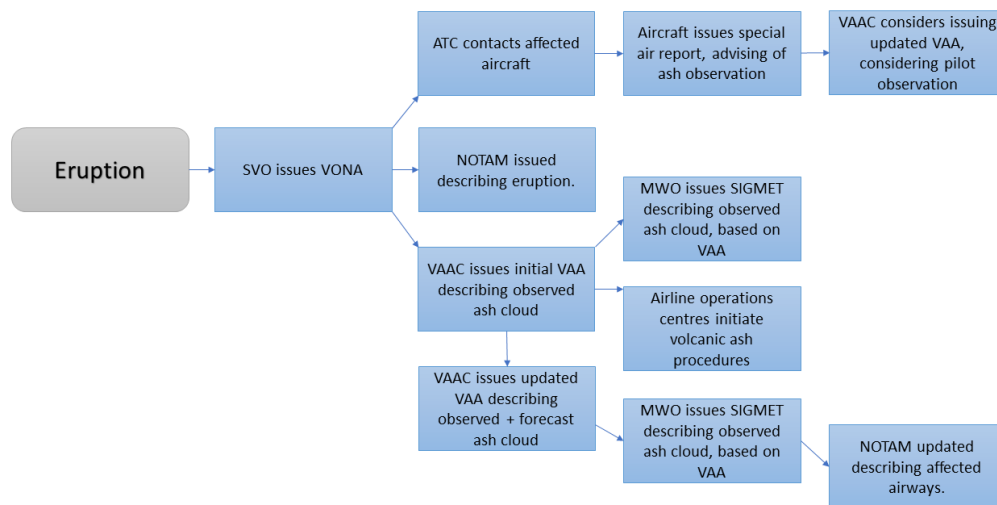


Figure 1. Example flow chart for initial stages of a volcanic ash exercise.

- Further, a flow chart may help exercise organizers to consider what variables they may like to insert – for example, they may request an airline participant to send a special air report that describes the event occurring just outside the warning/advisory area, to exercise the process of the warning service provider updating their message.
 - It is worth ensuring the exercise plan includes an opportunity at the end for participants to share any immediate lessons learned, while they remain ‘fresh’ in their minds.
- 4.4. The event organizers should confirm with the warning service provider what the advisory extent or warning geographic location is ahead of time. Alternatively, the organizer may supply the warning service provider with exercise material such as exercise satellite images (see example in Figure 2 below) and exercise model output to indicate the area affected, for the provider to react to as part of the exercise. Note – it is important that other participants do not receive detailed information

ahead of the exercise and that the exercise is allowed to unfold more in line with a real event.

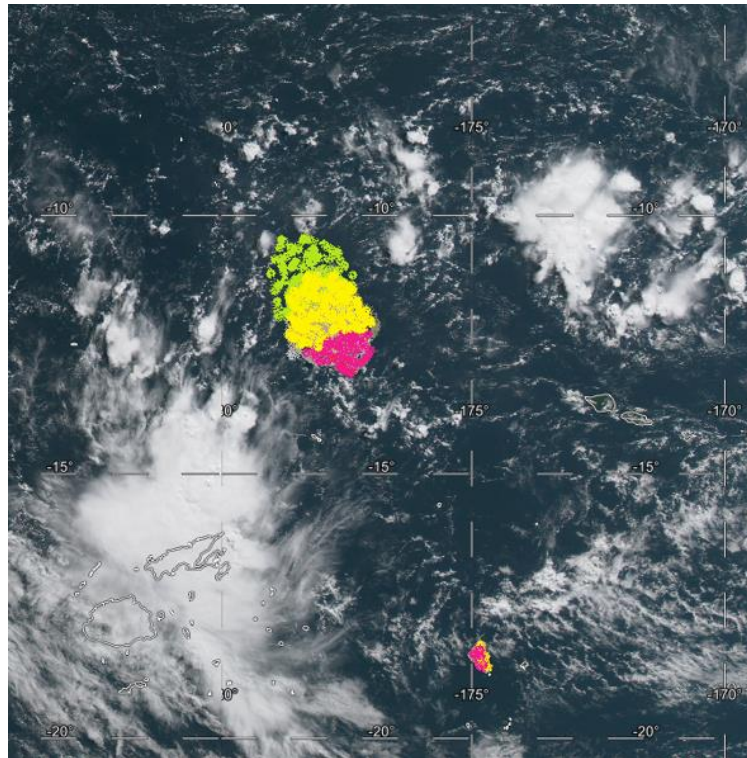


Figure 2. Example of a mocked up 'exercise satellite image', used to prompt VAAC and State volcano observatory action during a 2020 VOLCEX exercise.

5. Exercise Directive

- 5.1. An exercise directive is a document intended for participants that describes the planned exercise, including the scope of the exercise, participants involved, exercise rundown, communication strategies, and any fallback plan for the exercise in case of postponement.
- 5.2. An exercise directive typically begins with a high-level description of the scenario being planned, along with inclusion of the exercise objectives. This allows the reader to understand the intent of the exercise and where effort should be focused.
- 5.3. The exercise directive then typically includes information on:
 - How the exercise will be conducted
 - Will the exercise be carried out as an in-person exercise? Will it be carried out with participants connecting virtually? A combination of both?
 - Who the participants in the exercise are
 - Who is the exercise organizer?

- Will you include any contact information?
- How communication will occur during the exercise
 - Some messages may be sent through 'operational' systems – such as advisories or SIGMETs that use the 'EXER' status indicator. Where available (such as in a volcanic ash advisory), a remark field can be utilized to emphasize the message has been issued as part of an exercise.
 - Other messages may be sent via email or other non-operational method, to reduce the risk of leakage into the operational environment and causing disruption if users believe the scenario is live.
 - Regardless of the chosen method(s) of issuance, it is highly recommended to ensure a NOTAM is issued ahead of time to publish the exercise date and time, so that non-participating airspace users can ignore any related messages they may see on the day.
 - If possible, it would also be worth including information in the relevant Aeronautical Information Publication (AIP) Supplement, so that organizations such as flight planning tool providers can be aware of the exercise and manually intervene, so messages do not display in operational systems. However, such tool providers must ensure their tools fully display the exercise nature of any 'EXER' messages received, to avoid any confusion by users of their tools.
 - Past exercises have shown that despite pre-exercise communication, sometimes exercise advisories and/or SIGMETs disseminated through operational systems are mistaken for operational information. Therefore, it would be highly encouraged to make an extra announcement prior to the exercise (for example, via email), in addition to the NOTAM and AIP exercise announcement information. This would increase the likelihood of regular receivers of such information being aware of the exercise, ensuring the 'EXER' status indicator will not be overlooked.
- How participants interact during the exercise
 - Outside of the expected exercise messages (NOTAM, SIGMET etc), it is useful to provide a method for participants to discuss other actions they may be simulating during the exercise. This could be in the form of a virtual online meeting or other instant messenger tools.
 - An example for a volcanic ash exercise could be a VAAC telling other participants that they would brief their communications team on the eruption – an ANSP may then decide to connect their communications team with the VAAC communications team to ensure consistent messaging to media. Another example would be a VAAC sharing a satellite image which they had annotated to show where the volcanic ash signature was visible, and where a sulfur dioxide signature was visible. A further example would be an airline

advising that in such a scenario, they would divert an affected flight to a nearby airport.

- Using a 'chat' tool can act as a place to share copies of any messages sent, so that exercise observers can maintain a good understanding of the exercise activities as it progresses. Further, it allows participants to be aware of all messages disseminated and advise if they have not received an expected message (e.g. 'EXER' SIGMET).
- A chat tool can also allow participants to inform others of any problems they may encounter during the exercise.
- How any postponement decision will be made and communicated
 - If a real event occurs on the day of the scheduled exercise, it may be appropriate to postpone (or cancel) the exercise. In addition, it is good practice to confirm on the morning of the exercise that it will go ahead (or not) and to communicate that decision to all participants.

6. On the Day of the Exercise

- 6.1. An important task for participants is to keep logs of messages they both receive and disseminate, along with a record of actions they took (or would take, if a real event) during the exercise. This is important when reviewing the exercise outcomes and helps identify any opportunities for improvement in the system.
- 6.2. Having a mid-exercise 'check in' can be a useful opportunity to check with participants on how the exercise is going for them. Are they able to access all exercise material? Have they noted any problems so far (e.g. leakage of exercise material into operations), or identified any issues that would occur if the exercise was real?
- 6.3. The Exercise Leader should supervise the exercise as it progresses – is the flow of information delivered by each party appropriate? Is the time difference required for publishing information and the content of the information disseminated appropriate? Are there actions being taken that are not in accordance with the predetermined scenario – and is this a problem or a useful deviation?
- 6.4. The Exercise Leader should organize a debrief at the end of the exercise. This is important to gather initial reflections, lessons learned, and any recommendations from exercise participants. Core participants can be asked to provide a short summary of what worked well, what they found challenging and what they learned during the exercise. This should be followed up by written summaries from the participants (in addition to their exercise logs), to assist the Exercise Leader and exercise organizers to write the exercise report.

7. Exercise Report

- 7.1. An exercise report should briefly describe the exercise objectives and summarize the outcomes. The focus should be on the lessons learned during the exercise and any recommendations for improvement.
- 7.2. A draft report should be shared with participants for review and to ensure that there is agreement on any recommendations made.
- 7.3. Once published, participants should be encouraged to share the exercise report within their organizations and with industry peers, if possible. This ensures that lessons learned can benefit other service providers and aviation users and have a greater impact on aviation safety.
- 7.4. The Exercise Leader should report outcomes and findings of the exercise to an appropriate body such as the APANPIRG MET SG (and other sub-groups, as appropriate) so that issues, lessons learned, and recommendations can be shared with all Asia and Pacific States.
- 7.5. The Exercise Leader should provide a copy of the finalized report to the METEX AG so outcomes can be shared with other potential Exercise Leaders and placed in an exercise archive on the ICAO Asia and Pacific Office e-documents site.
- 7.6. The exercise organizers should follow up on any recommendations after a suitable period, to ensure that they are being acted upon.
- 7.7. Exercise participants should be encouraged to utilize connections made during the exercise to improve their own contact lists for the purpose of communication during a real event in the future.

8. Useful Documents and Websites

8.1. Appendix of useful links:

- Handbook on the International Airways Volcano Watch (ICAO Doc 9766) (available [here](#))
- Manual on Space Weather (ICAO Doc 10100)
- Annex 3 – *Meteorological Service for International Air Navigation*
- <https://www.icao.int/APAC/Pages/eDocs.aspx>
 - Asia and Pacific Regional SIGMET guide
 - Previous exercise documentation

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

**METEOROLOGY SUB-GROUP (MET SG)
TERMS OF REFERENCE**

1. Objectives of the MET SG

- a) Ensure the continuous and coherent development of the MET parts of the Asia/Pacific Regional Air Navigation Plan (APAC ANP) and other relevant regional documentation in a manner that is harmonized with adjacent regions, consistent with ICAO standards and recommended practices (SARPs), the Global Air Navigation Plan and the Global Aviation Safety Plan and reflects global requirements;
- b) Facilitate the implementation of aeronautical meteorological systems and services, as identified in the APAC ANP, Aviation System Block Upgrade (ASBU) priority modules and Asia/Pacific Seamless ANS Plan elements, with due observance to the primacy of air safety, regularity and efficiency; and
- c) Identify and address specific air navigation deficiencies in the field of aeronautical meteorological (MET) services.

2. Functions of the MET SG:

- a) Review MET parts of the APAC ANP, prepare amendment proposals as necessary to reflect updates and changes in the operational and global requirements;
- b) Monitor the level of and, as necessary, facilitate the implementation of aeronautical meteorological services to support the effective implementation of ASBU priority modules and the Asia/Pacific Seamless ANS Plan elements;
- c) Identify air navigation deficiencies in the field of aeronautical meteorology, e.g., through systems performance monitoring and, where necessary, propose appropriate corrective action and facilitate the development and implementation of action plans by States to resolve identified deficiencies;
- d) Review and update the APANPIRG list of air navigation deficiencies in the field of aeronautical meteorology, as necessary, to reflect the current situation;
- e) Monitor research and development and trials, **exercises** and demonstrations in the field of aeronautical meteorology and other relevant areas and facilitate the transfer of this information and expertise, as necessary, between States;
- f) ~~Make specific recommendations and d~~ **Develop guidance materials and conduct seminars** aimed at improving aeronautical meteorological services through the use of existing and/or new procedures, facilities and technologies;
- g) Review and identify inter-regional and intra-regional coordination issues in the field of aeronautical meteorology and, as necessary, recommend actions to address those issues; and
- h) ~~Identify and progress environmental initiatives related to aeronautical meteorology~~ **Share aeronautical meteorological initiatives being undertaken to reduce the environmental impact of aviation operations.**

- i) Share information on the impacts of climate change on aviation operations.

3. Establishment of the MET SG

3.1. The Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) established the MET SG to assist in its planning and implementation work, charging MET SG with preparatory work on specifically defined problems in the field of aeronautical meteorology requiring expert advice for their resolution. APANPIRG also appointed MET SG as the 'parent' group for other contributory bodies working in the field of aeronautical meteorology for APANPIRG.

4. Membership of the MET SG

4.1. Membership of the MET SG comprises experts provided by States, whether Members or not of the APANPIRG, International Organizations and bodies having experience in the provision of aeronautical meteorological information and services.

5. Chairing and Secretary of the MET SG

5.1. The MET SG shall elect a Chairperson, and Vice-Chairperson if needed, from the experts provided by States. The maximum term of the Chairperson and Vice Chairperson is four years. The Secretary of APANPIRG will appoint the Secretary of the MET SG.

6. Meetings of the MET SG

6.1. The Chairperson of the MET SG, in consultation with Members and the Secretary, shall decide the date and duration of Meetings. As a rule, the MET SG should agree, at each Meeting, on the date and duration of the next Meeting and on a tentative schedule of future Meetings.

7. Documentation and Record of Meetings of the MET SG

7.1. The MET SG shall record the proceedings of its Meetings in the form of a Report or a Summary and submit the Report or Summary for review and consideration by APANPIRG. A Meeting Report should cover completed action on any part of the MET SG work plan and outline the needs of MET SG for further directives or guidance from the APANPIRG to proceed in its work. Reports on Meetings shall be of a simple layout and as concise as practicable and should normally cover:

- a) Short introduction;
- b) Summary of findings (presented in the order of discussion of the agenda items, including any proposals for action); and
- c) Work plan and schedule for future Meetings.

7.2. The Secretary should publish the Report as early as practicable (21-days) after the Meeting.

7.3. The Secretary should disseminate the meeting invitation as early as practicable, i.e., not less than 3-months before the Meeting, and reminders for submission of papers approx. 6-weeks and 1-week before the due date for submission of papers.

7.4. Contributors should submit papers to the ICAO Secretariat as early as practicable, i.e., 28-days before the Meeting at which they are intended to be considered. The Secretary should publish

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papers, and send a notification of their availability, as early as practicable, i.e., 14-days before the Meeting at which they are intended to be considered.

7.5. The Secretary, in consultation with the Chairperson, may decide to accept papers submitted less than 28-days before the Meeting at which they are intended to be considered when there is a clear benefit to the Meeting in doing so.

8. Delegated authority of the MET SG

8.1. The MET SG may propose actions for further consideration by APANPIRG and record these in the MET SG Report as either draft Conclusions or draft Decisions of APANPIRG.

8.2. Additionally, APANPIRG has empowered MET SG to adopt proposals for action on technical matters (especially those concerning guidance to States in the implementation of ICAO SARPs and global and regional plans) that do not have additional economic, environmental, inter-regional or political effects, which should be considered by APANPIRG. The MET SG shall record these in its Meeting Report as Conclusions or Decisions of MET SG.

METEOROLOGY SUB-GROUP (MET SG) WORK PLAN

ToR Ref*	Detailed description of deliverable	Responsibility	Target date	Status of progress
a)	Draft amendment proposal for APAC ANP to fulfil missing data in Tables MET	MET/S WG and Secretariat	As required Mar-2022	In progress
a)	Draft amendment proposal for APAC ANP to clarify the MET-related implementation planning guidance in the ANRF and other parts of Volume III	MET/R WG MET/IE WG MET/S WG with guidance from ICAO Secretariat	May-2022 MET SG/29	In progress
b)	Revised draft regional guidance material on MET information needed to support the elements of the APAC Seamless ANS Plan	MET/R WG (Deliverable 3 2)	May-2022 As required	In progress
b) c) g)	Promote aviation exercise outcomes of significance to MET SG, create or update as required guidance material for developing aviation exercises for meteorological events, provide expert support to exercise leaders as appropriate. Final report on ICAO volcanic ash exercises (Papua New Guinea, North-east Asia, Philippines, etc.)	APAC VOLCEX/SG MET SG	TBD As required	In progress Not started
c) d)	Update the reporting form on APANPIRG AN deficiencies to reflect progress to add/remove Monitor the regional implementation of meteorological observations, forecasts, warnings, and advisories, to identify potential deficiencies in the MET field	MET SG Chair, Secretariat	Annually Jun-2022	In progress
c) d)	Reporting form updates showing the status of implementation of corrective action for Investigate , and implement as appropriate, options to assist States in the resolution of resolving AN deficiencies in the MET field	MET/S WG (Activity 2 and 6)	Annually Mar-2022	In progress
f)	Report on the Progress report on of implementation and testing of IWXXM exchange	MET/IE WG (Activity 7)	Annually Jun-2022	In progress
g)	Information on ICAO provisions related to meteorological authority and quality assurance, cost recovery, competency, training and qualifications for meteorological service provision shared with States	MET SG Chair, Secretariat	Annually Jun-2022	In progress
g)	Analysis of MET information used in the Region specifically to support ATM operations	MET/R WG (Deliverable 2 1)	MET SG/29 May-2022	In progress
h) i)	Share aviation meteorological initiatives being undertaken to reduce the environmental impact of aviation operations and share information on the impacts of climate change on aviation operations Environmental Issues Identify issues in the field of aeronautical meteorology related to environmental issues	MET SG Chair, Secretariat	Annually Jun-2022	In progress
b) e) g)	Consideration of a MET-focused SWIM workshop	Secretariat, MET/IE WG Chair	TBD	Not started
e) f) g)	SIGMET coordination activities in APAC Region Coordinate on the next steps to promote integration and expansion of SIGMET coordination activities among States/Administrations.	MET/R WG (Deliverable 7 9) MET/S WG (Activity 8)	MET SG/29 Jun-2022	In progress

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ToR Ref*	Detailed description of deliverable	Responsibility	Target date	Status of progress
d)	Develop User Requirements for SWIM-based MET Information Services Supporting ATFM	MET/R WG (Deliverable 6)	MET SG/29 May 2022	In progress
e)	Conduct seminars to improve knowledge and to assist States implementation of new MET service	MET SG MET/R WG MET/IE WG	Annually	In progress
	MET expert contribution to SWIM/TF – Identify meteorological expert/s to contribute to the APAC SWIM/TF to ensure meteorological aspects are fully considered	MET SG	Nov 2021	In progress
	Develop or improve regional guidance material related to the implementation of aviation meteorological services, including input to the Regional SIGMET Guide	MET SG MET/R WG MET/IE WG	Annually	In progress

* Corresponding functions of the MET SG, as listed in the *Terms of Reference of the MET SG* (Ref: APANPIRG Procedural Handbook, Sixth Edition — 1 June 2020, A/L No 01)

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Single Point of Contact (SPOC) for Asia/Pacific Seamless ANS Plan Review

SINGLE POINT OF CONTACT (SPOC) FOR ASIA/PACIFIC SEAMLESS ANS PLAN REVIEW (UPDATED: 15 MAY 2023)

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Single Point of Contact (SPOC) for Asia/Pacific Seamless ANS Plan Review

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LIST OF WORKING PAPERS, INFORMATION PAPERS, PRESENTATIONS AND FLIMSIES

WORKING PAPERS			
WP No.	Agenda Item No.	Title	Presented by
WP/01	1	Adoption of the Agenda	Secretariat
WP/02	2	Review Outcomes from MET SG/27 and APANPIRG/34	Secretariat
WP/03	2	Review Outcomes from MET/IE WG/22	Chairs of MET/IE WG
WP/04	2	Review Outcomes from MET/R WG/13	Chair MET/R WG
WP/05	3	Review APANPIRG Air Navigation Deficiencies	Secretariat
WP/06	3	MET Deficiencies Review of the 2023 Annual SIGMET Test Outcomes and OPMET Monitoring Activities	Ad Hoc Group on Deficiencies
WP/07	4	ROBEX Handbook Updates in accordance with the review of the Performance Indices (PIs) Used in APAC OPMET Monitoring	Thailand and PI Ad-hoc group
WP/08	4	Updates to APAC ROBEX Handbook for VONA Exchange	Australia, Japan, New Zealand
WP/09	4	ROBEX Handbook Update - METNO Guidance	Australia, Hong Kong China and New Zealand
WP/10	4	Updates to APAC Regional SIGMET Guide	Ad hoc group on Regional SIGMET Guide
WP/11	4	Updates to IWXXM Exchange tasks in SIGMET Test Procedures	Chairs of MET/IE WG and MET/SG ad hoc group on Regional SIGMET Guide
WP/12	4	WC SIGMET issuance experiences and practices in the South and Southeast Asia SIGMET Coordination Group	Bangladesh, Hong Kong China, India, Indonesia, Maldives, Myanmar, Nepal and Sri Lanka
WP/13	4	Draft Guidance for Meteorological Exercises	METEX Advisory Group
WP/14	4	Updates of Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations	MET/R WG Ad Hoc Group
WP/15	4	APAC Use Cases and User Requirements for Swim-Based MET Information Services Supporting ATFM	MET/R WG Ad Hoc Group
WP/16	5	Updates to the Asia/Pacific Air Navigation Plan	Japan
WP/17	5	Update of the State Volcano Observatories of the United States	United States

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WP No.	Agenda Item No.	Title	Presented by
WP/18	5	Survey of State Meteorological Information Supporting Air Traffic Management	MET/R WG Ad Hoc Group
WP/19	6	Earthquake and Tsunami information handling for Aviation	Indonesia
WP/20	6	Business Functionality of APAC Common Swim Information Services	SWIM TF Task Lead
WP/21	7	Review the Terms of Reference and Work Plan	Secretariat
WP/22	4	Update of APAC Seamless ANS Plan	Secretariat

INFORMATION PAPERS			
IP No.	Agenda Item	Title	Presented by
IP/01	1	Meeting Bulletin	Secretariat
IP/02	5	METAR Bulletins and MET Service of Mongolia	Mongolia
IP/03	5	Plans and the implementation for the issuance of 30-Hour TAF	China
IP/04	6	WMO activities of relevance to ICAO	WMO
IP/05	6	SADIS/WIFS and WAFS	WAFC London
IP/06	6	Case of cooperation for SIGMET coordination between the Republic of Korea and China	Republic of Korea and China
IP/07	6	The upgraded SIGMET coordination platform	China
IP/08	6	Joint provision of SIGMET by MWO Jakarta and MWO Singapore within portions of the Jakarta FIR	Indonesia and Singapore
IP/09	6	Taranaki Mouna Exercise Outcomes	New Zealand
IP/10	6	Improvements of tailored MET services to support ATM operations in Southern China	China
IP/11	6	Aviation meteorological services during thunderstorm season in China	China
IP/12	6	Generation and operationalization of forecast thunderstorm SIGMET	Nepal
IP/13	6	Use case of MET information services for ATFM in SWIM demonstration	Hong Kong, China
IP/14	6	Aerodrome weather nowcasts	Japan
IP/15	6	Combined APAC VAAC Management Report	Australia, Japan and New Zealand

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INFORMATION PAPERS			
IP No.	Agenda Item	Title	Presented by
IP/16	6	APAC VAAC back-up	Australia, Japan and New Zealand

PRESENTATIONS		
SP No.	Title	Presented by
SP/01	World Area Forecast System (WAFS) SIGWX upgrade	Aviation Weather Center (AWC), NOAA
SP/02	New Annex 3 Volcanic Hazard Information Services	Coordinator - MET Panel IAVW workstream
SP/03	Space Weather Advisory Service for Aviation	Australia Bureau of Meteorology
SP/04	An introduction to a typical case of space weather	China
SP/05	Space Weather: Impacts on Airlines	IATA

FLIMSY		
FLIMSY No.	Title	Presented by
FL/01	Addition of outstanding MET/S WG actions to MET SG list	New Zealand
FL/02	ROBEX Handbook Update – ROC’s responsibilities for IWXXM exchange	Australia and Hong Kong, China
FL/03	Proposed addition to Regional APAC SIGMET Guide to address Action 25/09	New Zealand

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	STATE/NAME		TITLE/ORGANIZATION
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— END OF DOCUMENT —