INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE

TWENTY-NINHTH MEETING OF THE ASIA/PACIFIC METEOROLOGY SUB-GROUP

(MET SG/29)

Bangkok, Thailand, 18 – 22 August 2025

Approved by the Meeting
Published by the ICAO Asia and Pacific Office, Bangkok

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HISTORY OF THE MEETING

1. Introduction

1.1. The ICAO Asia and Pacific (APAC) Office hosted the Twenty-ninth Meeting of the Meteorology Sub-group (MET SG/29) of the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) in Bangkok, Thailand, from 18 to 22 August 2025.

2. Attendance

2.1. Sixty-five (65) participants from twenty-one (21) States/Special Administrative Regions, and two (2) international organisations, namely the World Meteorological Organisation (WMO) and ICAO, participated in the Meeting. The list of Meeting participants is provided in **Appendix F** of this Report.

3. Chair and Secretariat

3.1. Mr. Goh Wee Poh, Vice-Chairperson of the MET SG, presided over the opening and the Agenda Item 6 sessions. Ms. Paula Acethorp, Chairperson elect, presided over the remainder of the meeting and was assisted by Mr. Goh Wee Poh. Mr. Peter Dunda, ICAO Regional Officer, Aeronautical Meteorology and Environment, acted as Meeting Secretary.

4. Organisation 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-six (26) Working Papers (WPs), twenty-nine (29) Information Papers (IPs), three (3) Flimsies, and one (1) Slide Presentation (SP). The list of papers and presentations is in **Appendix E** 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 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.

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

6.1. The Meeting formulated the following six (6) Draft Conclusions (no Draft Decisions) and adopted the following two (2) Conclusions and seven (7) Decisions, as indicated within the Report on Agenda Items and listed below, and reproduced in **Appendix A** of this Report.

Draft Conclusions

Draft Conclusion MET SG/29/01 – Publishing MET Seminar Presentation Recordings
Draft Conclusion MET SG/29/02 – Management of obsolete planning and implementation guidance documents on the ICAO APAC Office website
Draft Conclusion MET SG/29/03 – IWXXM update notification process
Draft Conclusion MET SG/29/05 – Sharing of Turbulence Reports with Meteorological Service Providers
Draft Conclusion MET SG/29/08 – Establishment of a Group to Address Long-Standing Air Navigation Deficiencies
Draft Conclusion MET SG/29/15 – Enabling the use of QVA by airlines

Draft Decisions

NIL

Conclusions

Conclusion MET SG/29/06 – Lack of Provision of IWXXM Format SIGMET
Conclusion MET SG/29/07 – Lack of Provision of IWXXM Format Advisories

Decisions

Decision MET SG/29/04 – MET information elements of the APAC Seamless ANS Plan (ASAP)
Decision MET SG/29/09 – Approval of Guidance for Updating APAC MET Documentation
Decision MET SG/29/10 – Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations
Decision MET SG/29/11 – Updates to Regional SIGMET Guide
Decision MET SG/29/12 – Updating the APAC Use Cases for SWIM-based Meteorological Information Services Supporting ATFM
Decision MET SG/29/13 – Publication of 2021 Survey of State Meteorological Information Supporting Air Traffic Management Report
Decision MET SG/29/14 – MET Contributions to SWIM TF for MET SWIM Information Services

7. List of Actions

7.1. In addition, the Meeting agreed to thirty (30) actions, as indicated within the Report on Agenda Items and reproduced in **Appendix B** of this Report.

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REPORT ON AGENDA ITEMS

1. Organisational Matters

Opening of the Meeting

1.1. The Secretary and the Vice-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: Environmental-related initiatives and impacts
Agenda Item 8: Future work program
Agenda Item 9: Any other business

1.3. The meeting noted that MET exercises were referenced under Agenda Item 6 in the explanatory notes, and a new agenda item on environmental initiatives and impacts was added, as requested by the previous meeting (Action Item 28/29). However, the meeting clarified that the original intent was to establish a dedicated agenda item specifically for MET exercises. Therefore, it was agreed that Action Item 28/29 should remain open to allow for the future inclusion of a distinct agenda item focused on MET exercises.

Acknowledgement of Outgoing Chairperson and Leadership Contributions

1.4. The meeting recalled that the current Chairperson, Dr. Pak-wai Chan, had previously announced his intention to step down and invite nominations for a new Chair at this session. The Vice-Chairperson took the opportunity to formally acknowledge Dr. Chan's valuable contributions and leadership during his tenure as MET SG Chair. Dr. Chan has contributed to various leadership roles, including co-Chair and Chair of the Meteorological Hazards Task Force. He was Chair of the MET Services working group and Chair of MET SG from 2021 to 2025. Dr. Chan was elected in a very challenging time for the aeronautical meteorological community, especially under the COVID-19 pandemic, as well as when a few new initiatives on the modernisation of international civil aviation services were in the pipeline. Nevertheless, he worked with the Subgroup and other related groups under ICAO. He had since further advanced meteorological support to the new developments and initiatives for the benefit of the international aviation community.

Election of Chairperson

1.5. Australia nominated Ms. Paula Acethorp of New Zealand for the role of Chairperson. Australia noted that Ms. Acethorp has extensive experience in both the Civil Aviation Authority and the Meteorological Service in New Zealand. She has contributed significantly to ICAO APAC for 10 years, including being the chair of the ICAO APAC MET Services Working Group for 2 years. Ms. Acethorp is also the ICAO Meteorology Panel (METP) member from New Zealand and leads the METP Meteorological Operations Working Group on International Airways Volcanic Watch (WG-

MOG/IAVW).

1.6. Australia believes Ms. Acethorp's expertise in Meteorology and ICAO, her highly organised nature and willingness to support those States that need assistance, make her the ideal candidate to Chair the MET SG.

1.7. Ms. Paula Acethorp's nomination was seconded by Singapore and strongly endorsed by the United States, Japan, and Papua New Guinea. With no other nominations received, the meeting unanimously elected Ms. Acethorp as the new MET SG Chairperson. Ms. Acethorp graciously accepted the role and expressed appreciation for her predecessor, Dr. Chan's service and dedication.

2. Review outcomes from previous Meetings

WP/02 – Review Outcomes from MET SG/28 and APANPIRG/35 (Secretariat)

2.1. The meeting reviewed the key outcomes of the Twenty-Eighth Meeting of the Meteorology Sub-Group (MET SG/28) and the Thirty-Fifth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/35). The review focused on the adopted Conclusions, Decisions, and action items relevant to the implementation of ICAO Standards and Recommended Practices (SARPs) and regional plans in the APAC Region.

2.2. MET SG/28 Outcomes included the formulation of one (1) Draft Decision, and adoption of two (2) Conclusions, and seven (7) Decisions. In addition, thirty-two (32) new action items were recorded in the MET SG List of Actions. Notable decisions included updates to regional guidance materials, publication of new documents (e.g., SWIM[1]-based MET services), and enhancements to SIGMET and Regional OPMET Bulletin Exchange (ROBEX) procedures.

2.3. APANPIRG/35 Outcomes included the adoption of eleven (11) Conclusions and two (2) Decisions. Of direct relevance to MET SG were:

- Conclusion APANPIRG/35/13 – Update of information in the Air Navigation Deficiencies Reporting Form.
- Decision APANPIRG/35/11 – Endorsement of additional Secretariat support, based on MET SG/28's Draft Decision.

2.4. When reviewing the implementation status, the meeting noted that several MET SG/28 actions have been completed, including updates to the MET Deficiency Identification Guide, SIGMET Guide, and ROBEX Handbook.

2.5. However, several actions remain ongoing, particularly those requiring coordination with States and updates to the APAC Air Navigation Plan (ANP). The meeting expressed concern over the lack of progress on several Secretariat-led tasks. In response, the Secretariat advised that recruitment for an additional officer to support the Environment (ENV)-part or the MET/ENV programme was nearing completion, and this is expected to improve resource allocation for the MET-part of the programme. Nonetheless, the meeting emphasized that further dedicated support, especially for the MET programme administration—per Decision APANPIRG/35/11—remains essential to meet regional needs effectively.

2.6. On further review of the List of Actions, the meeting agreed to several updates to the

[1] System-Wide Information Management

action items' status and target dates, as follows:

- MET SG actions
  - 28/01 – IN PROGRESS; Ref: MET/IE WG/23-WP/03
  - 28/02 – **COMPLETED**; Ref: APAC eDocs website
  - 28/03 – IN PROGRESS; Ref: MET/IE WG/23-WP/03
  - 28/04 – IN PROGRESS; revised target date to APANPIRG/36.
  - 28/05 – **SUPERSEDED**; superseded by new action 29/04, based on latest monitoring data.
  - 28/06 – **CLOSED**; with the United States' and SIGMET test focal points' agreement to monitor and report on SIGMET test messages received in WIFS.
  - 28/07 – IN PROGRESS
  - 28/08 – **COMPLETED**; Ref: MET Def. Guide, Jul 24; APAC eDocs website
  - 28/09 – **COMPLETED**; Ref: ROBEX HB, 17th Ed.; APAC eDocs website
  - 28/10 – **COMPLETED**; Ref: MET/IE WG/23─WP/11
  - 28/11 – **COMPLETED**; VONA/SIGMET test proposal submitted in WP/21
  - 28/12 – **COMPLETED**; Ref.: T 4/7.5 – AP128/24 (MET), 29 Oct 24
  - 28/13 – **COMPLETED**; Ref: SIGMET Guide, 11th Ed.; APAC eDocs website
  - 28/14 – IN PROGRESS; revised target date to MET/R WG/15
  - 28/15 – **COMPLETED**; Ref: MET Ex. Guide, Jul 24; APAC eDocs website
  - 28/16 – **COMPLETED**; Ref: MET/ATM Guide, Jul 24; APAC eDocs website
  - 28/17 – **COMPLETED**; Ref: SWIM-based MET use-cases, Jul 24; APAC eDocs website
  - 28/18 – IN PROGRESS; revised target date to ATM/SG/13
  - 28/19 – **COMPLETED**; Ref: ROBEX HB, 17th Ed.; APAC eDocs website
  - 28/20 – **COMPLETED**; Ref: SIGMET Guide, 11th Ed.; APAC eDocs website
  - 28/21 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)
  - 28/22 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)
  - 28/23 – **COMPLETED**; MET/ATM survey report submitted in WP/26
  - 28/24 – IN PROGRESS; revised target date to MET SG/30
  - 28/25 – IN PROGRESS; revised target date to ATM/SG/13
  - 28/26 – **COMPLETED**; Ref: ATM/SG/12−WP/37; and ATM/SG/12 Report, 7.14-7.16
  - 28/27 – IN PROGRESS; Ref: AOP/SG/8–WP/27; and AOP/SG/8 Report, 9.9-9.15
  - 28/28 – IN PROGRESS; revised target date to MET SG/30
  - 28/29 – IN PROGRESS; revised target date to MET SG/30 (Ref: para. 1.3)
  - 28/30 – IN PROGRESS; Ref: DC MET SG/29/01 (para. 2.8)
  - 28/31 – **COMPLETED**; Ref: ATM/SG/12−WP/36; and ATM/SG/12 Report, 7.9-7.13
  - 28/32 – **COMPLETED**; Ref: APAC eDocs website, and APANPIRG portal
  - 27/02 – IN PROGRESS; Updates completed from MET SG/27-WP/09, Appx. A
  - 27/03 – **COMPLETED**; Ref: SIGMET Guide, 11th Ed.; APAC eDocs website
  - 27/04 – **COMPLETED**; Ref: SIGMET Guide, 11th Ed.; APAC eDocs website
  - 27/05 – IN PROGRESS; revised target date to MET/R WG/14
  - 27/07 – **COMPLETED**; Ref: SIGMET Guide, 11th Ed.; APAC eDocs website
  - 27/09 – TO COMMENCE
  - 27/10 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)
  - 27/11 – TO COMMENCE
  - 27/12 – TO COMMENCE
  - 26/04 – IN PROGRESS
  - 26/07 – IN PROGRESS
  - 26/08 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)
  - 25/06 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)
  - 25/07 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)
  - 25/09 – TO COMMENCE
  - 25/12 – **CLOSED**; Doc 9766 was updated
  - 25/13 – IN PROGRESS

- MET/S WG (legacy) actions
  - 13/03 – TO COMMENCE
  - 10/21 – IN PROGRESS; revised target date to Sep 2025 (Ref: Flimsy/02)

2.7. Concerning the agreement to close MET SG/25 Action Item 25/12, the meeting was informed that States are encouraged to continue submitting updates to contact information in ICAO Doc 9766-AN/968 (Handbook on the International Airways Volcano Watch – IAVW) directly to the ICAO Meteorology Panel (METP).

2.8. Noting the lack of progress on MET SG Action Item 28/30, and the Secretariat's continued uncertainty regarding the feasibility of uploading past MET Seminar presentation recordings to the ICAO APAC meeting website, the meeting formulated the following Draft Conclusion to address the issue:

Draft Conclusion MET SG/29/01 – Publishing MET Seminar Presentation Recordings	
What: That ICAO be requested to make available the MET Seminar presentation recordings.	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To provide Member States and stakeholders with access to valuable technical and operational information shared during the MET Seminars, thereby supporting capacity building, knowledge sharing, and regional collaboration in aeronautical meteorology.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Draft to be adopted by MET SG
Who: ☐ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

FLIMSY/02 – UPDATES TO APAC MET ANP (Secretariat)

2.9. The Secretariat presented proposals for amendment (PfAs) to Volumes I and II of the APAC Air Navigation Plan (ANP) to update meteorological (MET) provisions. These updates aim to align the ANP with current operational requirements and resolve multiple outstanding action items from previous MET SG and Working Group meetings (in the List of Actions).

2.10. Key changes include revised listings for State volcano observatories, updated responsibilities for meteorological watch offices and aerodrome MET services, and updated VOLMET broadcast requirements. Notably, outdated references to the SADIS 2G satellite broadcast have been removed. The proposals reflect inputs from various States and international organizations and are consistent with ICAO's global standards.

2.11. The Secretariat informed the meeting that the processing of the PfAs is expected to commence immediately following the meeting, with completion anticipated by September 2025. This timeline would also allow for the timely incorporation of additional updates provided during the meeting, as reflected in WP/12, WP/20, and WP/25 **[ACTION 29/01]**.

WP/04 – Review outcomes from MET/IE WG/23 (MET/IE WG Chairs)

2.12. The meeting reviewed outcomes from the Twenty-Third Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/23), held in Bangkok from 25–28 March 2025, which brought together 65 participants from 19 States and ICAO to review progress and coordinate regional efforts in aeronautical meteorological information exchange.

2.13. MET/IE WG/23 reviewed 19 working papers, 7 information papers, and several flimsies and presentations, including a joint session with the Twelfth Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/12). Key outcomes included updates to the MET/IE WG action list, revised terms of reference, and an updated work plan. Twelve action items from MET/IE WG/22 were completed, and six unresolved items from earlier meetings were either completed or superseded. Concerns were raised regarding delays in Secretariat deliverables and the impact on meeting effectiveness.

2.14. Under quality control and monitoring, the 2024 SIGMET tests showed mixed results. Participation in WS SIGMET tests was 83%, with persistent issues in priority indicators. IWXXM-format SIGMET dissemination remains limited, though improvements are expected. MET/IE WG/23 adopted Decision MET/IE WG/23-03 to calculate OPMET performance indices using IWXXM product versions rather than package versions, improving accuracy and consistency.

2.15. Cambodia, China, and Regional OPMET Data Bank (RODB) Nadi presented updates on quality control and ROBEX Handbook alignment. MET/IE WG/23 emphasised maintaining the current ROBEX focal point information and strengthening communication between Regional and National OPMET Centres (ROCs and NOCs). Thailand and Singapore reported successful Inter-Regional OPMET Gateway (IROG) backup exercises, and further investigations into IROG outage impacts were requested.

2.16. Guidance material updates included the publication of the ROBEX Handbook 17th Edition and preparation for the 18th Edition. The meeting endorsed ROBEX Handbook updates related to Volcano Observatory Notice for Aviation (VONA) dissemination and aerodrome additions, as well as updates to the IWXXM implementation FAQs. A Draft Conclusion (MET/IE WG/23-01) was proposed to manage obsolete documents on the ICAO APAC website.

2.17. SWIM-related discussions focused on refining APAC Common SWIM Information Services and aligning terminology. Hong Kong, China presented updates on IWXXM schema development, with a release candidate available for testing. A Draft Conclusion (MET/IE WG/23-02) was proposed to establish an IWXXM update notification process in coordination with WMO.

2.18. The conjoint session with ACSICG/12 reviewed educational material and a checklist for managing IWXXM distribution during AMHS[1] link failures. These were adopted as living documents in Draft Conclusions (ACSICG/12/05 and ACSICG/12/06) and subsequently endorsed by the Twenty-ninth Meeting of the Communications, Navigation, and Surveillance Sub Group (CNS SG/29). The conjoint session also discussed IWXXM implementation status, AMHS upgrades, and the online register of IWXXM exchange status.

2.19. Finally, MET/IE WG/23 reviewed and updated the MET/IE WG Terms of Reference and Work Plan. It was proposed that MET/IE WG/24 be held in conjunction with ACSICG or SWIM Task Force (SWIM/TF) in 2026, potentially hosted in Fiji.

2.20. The meeting was informed that recently Fiji has offered to host the 2026 MET/IE

[1] Air Traffic Services (ATS) Message Handling System

WG/24 and ACSICG/13 meetings concurrently, continuing the established practice of joint sessions to advance regional collaboration on IWXXM, AMHS, and SWIM implementation. Arrangements are still being confirmed between Fiji, ICAO and the Chairs of MET/IE WG, but the meeting is likely to be held in Fiji.

2.21. Given the discussion above, the meeting adopted the two MET/IE WG/23 Draft Conclusions proposed in WP/04, paragraphs 2.28 and 2.40 (Draft Conclusions MET/IE WG/23-01 and MET/IE WG/23-02), as follows:

Draft Conclusion MET SG/29/02 – Management of obsolete planning and implementation guidance documents on the ICAO APAC Office website	
What: That, ICAO take appropriate action to manage (clearly identified as obsolete or remove) the archive of obsolete and historic planning and implementation guidance documents on its website, including those related to MET and other AN fields.	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Obsolete OPMET- and ANS-related documents (e.g., FASID Tables) that are accessible on the ICAO APAC Office website are not clearly identified as obsolete and non-operational information for historic reference purposes only. Therefore, they could be understood by readers to represent the current operational requirements.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Draft to be adopted by APANPIRG
Who: ☐ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

Draft Conclusion MET SG/29/03 – IWXXM update notification process	
What: That, ICAO in coordination with WMO take appropriate action to initiate an IWXXM update notification process for all relevant stakeholders, including IWXXM consumers and system vendors.	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: WMO develops new versions of IWXXM to affect improvements and support the evolution of ICAO Annex 3 SARPs. To avoid the potential impact on operations due to IWXXM version compatibility issues, States must upgrade the systems for generating, exchanging and consuming IWXXM reports to support the IWXXM version that complies with the latest amendment to Annex 3.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Draft to be adopted by APANPIRG
Who: ☐ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☒ ICAO HQ ☐ Other:	

WP/03 – Review of outcomes from MET/R WG/14 (MET/R WG Chair)

2.22. The meeting reviewed outcomes from the Fourteenth Meeting of the Meteorological Requirements Working Group (MET/R WG/14), held from 28 April to 2 May 2025 in Bangkok, Thailand, in conjunction with the ICAO APAC Seminar on Meteorology and Air Traffic Management (MET/ATM Seminar) and the Fifteenth Meeting of the Air Traffic Flow Management (ATFM) Steering Group (ATFM/SG/15). A joint plenary session on 30 April facilitated cross-sectoral dialogue between MET and ATM stakeholders. The MET/ATM Seminar attracted 162 in-person and 73 online participants, featuring 13 presentations across three sessions focused on ICAO provisions, collaborative MET/ATM integration, and turbulence-related initiatives.

2.23. MET/R WG/14 reviewed follow-up actions from MET/R WG/13, noting 4 of the seven decisions were completed and the remainder were reassigned as actions to be completed by the group. Thirteen action items were closed, with six remaining under monitoring. MET/R WG/14 emphasized the importance of aligning future decisions with APANPIRG standards to ensure effective implementation.

2.24. Key outcomes included the endorsement of a mapping document linking MET services to Priority 1 and 2 elements of the APAC Seamless Air Navigation Services (ANS) Plan (ASAP), which was published as an appendix to the paper during the MET SG/29 meeting. This mapping supports regional planning and aligns with ASBU AMET elements. MET/R WG/14 declared this deliverable complete and dissolved the associated ad hoc group (Decision MET/R WG/14-02). The meeting adopted the following Decision:

<table>
<tr><td colspan="2">Decision MET SG/29/04 – MET information elements of the APAC Seamless ANS Plan (ASAP)</td></tr>
<tr><td>What: That, the MET SG approves the publication of the mapping document (MET SG/29 WP/03, Appendix D) as an appendix to the APAC Seamless ANS Plan (ASAP).</td><td>Expected impact:
☐ Political / Global
☐ Inter -Regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The mapping document provides the MET information required to support the Priority 1 and 2 elements of the ASAP via a mapping analysis. These elements are critical and recommended upgrades that would bring potential benefits to the region. To ensure effective document management and user awareness, this appendix will be updated in the next edition of ASAP.</td><td>Follow-up: ☐ Required from States</td></tr>
<tr><td>When: As soon as practicable</td><td>Status: Adopted by Sub Group</td></tr>
<tr><td colspan="2">Who: ☒ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ
☐ Other:</td></tr>
</table>

2.25. MET/R WG/14 also addressed the 2021 regional survey on MET services supporting ATM. A refined report is to be published (refer to Decision 29/12, para. 5.3), and ongoing work to evaluate the feasibility and value of conducting a future survey is in progress. Additionally, MET/R WG/14 endorsed updates to the APAC Use Cases and User Requirements for SWIM-based MET Information Services Supporting ATFM, incorporating a new use case from Hong Kong, China, and editorial improvements.

2.26. A case study from the Republic of Korea on managing snowfall disruptions at Incheon Airport was commended and will be included in the Regional ATFM Framework and MET-ATM Guidance. Solomon Islands shared progress on rectifying a MET-related air navigation deficiency, with

support requested from ICAO to prepare a formal report.

2.27. Hong Kong, China presented a trial of probabilistic TAF forecasts (PROBnn), demonstrating enhanced operational planning and user confidence. China showcased a closed-loop MET service model and a turbulence forecasting system based on Eddy Dissipation Rate (EDR) data. Hong Kong, China also introduced an Automatic Dependent Surveillance – Broadcast (ADS-B)-based turbulence detection algorithm, and a probabilistic runway headwind forecast model.

2.28. MET/R WG/14 reviewed regional SIGMET coordination efforts, including operational transitions and harmonization of WC SIGMET[1] issuance practices. Two decisions were adopted to consolidate user feedback and define minimum validity durations for WS SIGMETs[2]. Updates were also noted on SIGMET coordination platforms and future trials of the Hazardous Weather Information Service (HWIS).

2.29. Finally, MET/R WG/14 reviewed and updated its Terms of Reference and Work Plan. India raised concerns regarding runway visual range (RVR) sensor placement, and ICAO was requested to provide technical guidance. The next MET/R WG meeting and MET/ATM Seminar are tentatively scheduled for May 2026 in Bangkok.

2.30. Concerning the work discussed in 2.24, the meeting noted that this would be discussed further in WP/26.

2.31. Regarding Decision MET/R WG/14-02, the meeting noted that the associated task under Deliverable 2 of the MET/R WG work plan has been completed, and the relevant ad hoc group has been dissolved. No further follow-up is required.

2.32. In response to queries from the meeting, the Chair of the MET/R WG and the Secretariat acknowledged that several items recorded as Decisions during MET/R WG/14 should have been classified as action items. Specifically, Decisions 14-03 through 14-08 will be reclassified accordingly. The MET/R WG will ensure that proposals at MET/R WG/15 are recorded in line with the accepted definitions and classifications.

2.33. The Chair reminded the MET SG meeting of the importance of ensuring that the formulation and recording of actions and decisions by the MET/R WG remain consistent with established APANPIRG practices, as well as those of the MET SG and MET/IE WG.

IP/02 – OUTCOMES OF THE SIXTH MEETING OF METEOROLOGY PANEL (METP/6) (Australia – METP member)

2.34. The sixth meeting of the ICAO Meteorology Panel (METP/6), held in Montreal, Canada, from 3 to 7 March 2025, brought together 60 experts from 19 States and six international organizations to advance aeronautical meteorological services. A major outcome was the development of the Aircraft Volcanic Encounter Report (AVER), replacing the legacy Volcanic Ash Reporting (VAR) form, to improve volcanic ash reporting. This update supports the implementation of quantitative volcanic ash concentration information (QVA), with proposals to elevate QVA to a Standard in Annex 3 and enhance its resolution.

*[**Editorial Note:** In this report, the acronyms QVA and QVACI are used interchangeably to*

[1] SIGMET for tropical cyclones
[2] SIGMET for phenomena other than tropical cyclones and volcanic ash

refer to Quantitative Volcanic Ash Concentration Information.]

2.35. The Panel reviewed enhancements to the Space Weather Information Service (SWIS), including higher-resolution forecasts and a proposed "outlook" feature for 12–24-hour forecasts. Due to delays in integrating regional space weather centres (SWXCs) and the absence of a global cost recovery mechanism, the technical review of SWIS was deferred to 2030. The Panel also endorsed transitioning SWIS to a SWIM-enabled service by Amendment 84 to Annex 3.

2.36. Updates to World Area Forecast Services (WAFS) included improved resolution, multi-step SIGWX forecasts, and new Application Programming Interfaces (APIs), with future probabilistic and turbulence-type forecasts planned for 2028. The Panel supported the development of new SWIM-enabled services—Aerodrome Meteorological Observation Information Service (AMOIS) and Aerodrome Meteorological Forecast Information Service (AMFIS)—for aerodrome observations and forecasts and reviewed the emerging HWIS, aimed at improving global access to data on CB clouds, icing, and turbulence.

2.37. METP/6 endorsed Version 3 of the MET-SWIM Roadmap and new MET-SWIM Implementation Guidelines, and recommended cessation of the use of legacy text formats by 2030 in favour of IWXXM. To support this transition, the Panel proposed amendments to Annex 3 and Procedures for Air Navigation Services – Meteorology (PANS-MET) and discussed strategies to increase IWXXM data availability globally.

2.38. Additional outcomes included new guidance on converting wind direction between magnetic and true north, updates to the Manual of Aeronautical Meteorological Practice (Doc 8896), and alignment with the Global Aviation Safety Plan (GASP) to address turbulence as a safety risk. The Panel also reaffirmed ICAO's policy on data access, emphasizing State discretion and cost recovery principles, and acknowledged progress in developing a cost recovery mechanism for SWIS.

2.39. The meeting noted that the MET-SWIM Roadmap (Version 3) and the newly developed MET-SWIM Implementation Guidelines supersede the previous METP documents—*Plan for MET in SWIM* and *Roadmap for MET in SWIM* (both Version 2.3, April 2021). Accordingly, the meeting requested the Secretariat to update the relevant documents on the ICAO APAC eDocuments website to reflect these changes **[ACTION 29/02]**

WP/05 – OUTCOMES OF CNS SG/29 (Secretariat)

2.40. The Twenty-Ninth Meeting of the Communications, Navigation and Surveillance Subgroup (CNS SG/29) of APANPIRG was held in Bangkok, Thailand, from 16–20 June 2025, with participation from 23 Member States, international organizations, and industry partners. A key outcome of CNS SG/29 was the formulation of Draft Decision CNS SG/29/06, which formally adopts Version 1.0 of the APAC Common SWIM Information Services list. This document provides a foundational framework for States and Administrations in the Asia/Pacific region to plan and implement SWIM services in alignment with ICAO's global strategy.

2.41. The endorsed list, developed through extensive coordination with expert groups including MET SG, ATFM SG, FF-ICE Ad-Hoc Group[1], and SURICG[2], outlines prioritized SWIM services across aeronautical, flight, meteorological, and surveillance domains. Only services with complete and validated information were included in the initial publication, while those with incomplete

[1] Flight and Flow Information for a Collaborative Environment – ad hoc group
[2] Surveillance Implementation Coordination Group

fields were retained for future refinement. The list will be published on the ICAO APAC e-document portal following its adoption by APANPIRG/36.

2.42. CNS SG/29 also reviewed the outcomes of SWIM TF/10, which addressed architecture options for SWIM implementation over the Common aeRonautical Virtual Private Network (CRV) and the Internet. A dual-connected Edge EMS (Enterprise Messaging Service) model was favored for early deployment. Four strategic recommendations were adopted to support SWIM transition, including coordination with expert groups on data migration, joint planning with ACSICG, consideration of additional data formats, and ensuring ATM automation systems are SWIM-compatible.

2.43. Further discussions in CNS SG/29 focused on the development of a regional federated Public Key Infrastructure (PKI) architecture to support secure SWIM operations. This led to the creation of the ANS Information Assurance Task Force (ANSIA TF), tasked with harmonizing cybersecurity provisions, including PKI and digital certificates, across the region. Several States volunteered to join, and the first meeting is scheduled for Q1 2026.

2.44. CNS SG/29 emphasized the importance of regular review and updates to the APAC Common SWIM Information Services list to reflect evolving operational needs. It was agreed that the list serves as a guidance document and should be supported by clear instructions and references to ensure consistent understanding and implementation.

2.45. The meeting endorsed Draft Decision CNS SG/29/06, which adopts Version 1.0 of the APAC Common SWIM Information Services list. It was noted that further discussion on the future development of this document would be addressed under WP/24.

FLIMSY/01 – DGCA/60 DISCUSSION AND OUTCOMES ON TURBULENCE (Secretariat)

2.46. At the 60th Conference of Directors General of Civil Aviation of the Asia and Pacific Region (DGCA/60), held in Sendai, Japan, from 28 July to 1 August 2025, over 300 participants reviewed key aviation safety issues, including a severe turbulence incident involving a Singapore Airlines flight diverted to Bangkok in May 2024. Discussion Paper DP/3/19, presented by Thailand and co-sponsored by Singapore, highlighted the critical role of robust Emergency Response Plans (ERPs), inter-agency coordination, and airport readiness. Airports of Thailand demonstrated effective crisis management through swift ERP activation and medical support.

2.47. The paper emphasized the importance of timely meteorological data, turbulence forecasting, and continuous vigilance during monsoon seasons. It advocated for enhanced turbulence reporting to Air Traffic Control (ATC) and regional collaboration in safety data sharing. DGCA/60 adopted Action Item 60/9, urging States to strengthen ERPs and share turbulence-related insights and best practices.

2.48. The meeting encouraged further support for this initiative, recognizing its potential to improve forecasting, identify turbulence hotspots, and enhance aviation safety across the Asia-Pacific region.

2.49. The Chair highlighted the absence of clearly defined regulatory and procedural measures to support the production and sharing of turbulence reports. The meeting noted that while such reports are currently exchanged among operators within the International Air Transport Association (IATA) forum, they are not readily accessible to meteorological service providers.

2.50. The United States informed the meeting that it would explore the potential availability of air-reports through World Area Forecast Centre (WAFC) Washington and the WAFS Internet File Service (WIFS).

2.51. In response to DGCA/60 Action Item 60/9, the meeting requested the Chair and Secretariat to consider including a dedicated agenda item in future MET SG meetings to facilitate the sharing of experiences, best practices, and developments related to turbulence reports. This would support an assessment of how States obtain, produce, and share air-reports, and identify any differences in practices across the region.

2.52. Based on the above discussion, the meeting formulated the following Draft Conclusion:

Draft Conclusion MET SG/29/05 – Sharing of Turbulence Reports with Meteorological Service Providers	
What: That States be urged to: a) In accordance with Annex 3, share special air-reports, with meteorological service providers, including turbulence reports, to support enhanced forecasting and situational awareness; and b) Provide information on the number of special air-reports received each calendar year.	Expected impact: ☒ Political / Global ☒ Inter -Regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: To address DGCA/60 Action Item 60/9 and improve aviation safety through better access to turbulence data, recognizing the critical role of timely meteorological information in emergency response planning, turbulence forecasting, and regional collaboration—particularly during high-risk weather periods such as the monsoon season.	Follow-up: ☒ Required from States
When: As soon as practicable	Status: Draft to be adopted by APANPIRG
Who: ☐ Sub Groups ☐ RASG-APAC ☒ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

3. Air navigation deficiencies

WP/06 – REVIEW APANPIRG AIR NAVIGATION DEFICIENCIES (Secretariat)

3.1. The Secretariat presented a review of air navigation deficiencies in the MET field across seven APAC States, as last reviewed by APANPIRG/35. These deficiencies include gaps in aerodrome meteorological observations, SIGMET services, volcanic ash advisories, and the availability of WAFS forecasts. A total of twelve open deficiencies were recorded, with corrective action plans (CAPs) pending or under development. A copy of the APANPIRG Reporting Form on Air Navigation Deficiencies in the MET field, including detailed notes, is provided in **Appendix C** of this Report.

3.2. The review emphasized the importance of compliance with ICAO SARPs and the APAC ANP, noting that unresolved deficiencies can adversely affect the safety, regularity, and efficiency of international civil aviation. The meeting noted that the Pacific Islands Aviation Weather Services (PIAWS) Panel continues to support technical coordination, particularly for small island developing States, to address WAFS-related deficiencies.

3.3. The meeting was invited to assess the current list of deficiencies, update CAPs, and ensure coordination through designated focal points. States were urged to submit progress reports and validate corrective actions using the ICAO Reporting Form. The MET Deficiency Identification Guide is being developed to assist States in identifying and resolving deficiencies systematically.

3.4. Additionally, APANPIRG/35 endorsed Conclusion 35/13, requesting ICAO to update the Deficiency Database based on the latest information. The APANPIRG Chair encouraged participants to brief their Director Generals and prioritize resolution efforts, with further discussions expected at the APANPIRG/35 Midyear Review Meeting.

3.5. Papua New Guinea updated the meeting on its progress in establishing Aeronautical Fixed Service (AFS) connections to address its deficiency in SIGMET provision. The Chair also noted that New Zealand and Australia plan to support Papua New Guinea through a volcanic ash exercise, tentatively scheduled for 2026.

WP/07 – MET DEFICIENCIES REVIEW OF THE 2024 ANNUAL SIGMET TEST OUTCOMES AND 2024 TAF AND METAR APAC PERFORMANCE INDICES (Ad-hoc group)

3.6. The MET Deficiencies Ad Hoc Group presented a comprehensive review of the outcomes of the 2024 ICAO APAC Regional SIGMET Test and the APAC Performance Indices for TAF and METAR, focusing on the identification and assessment of meteorological deficiencies across the region. The review was conducted following the APANPIRG Procedural Handbook and the MET Deficiency Identification Guide. Key findings highlighted several States that did not participate in the SIGMET tests or failed to issue required SIGMETs in both Traditional Alphanumeric Code (TAC) and IWXXM formats. Afghanistan was specifically noted for not providing any SIGMETs for the Kabul FIR, prompting a proposed conclusion recommending that the ICAO APAC Office assess this as a significant safety-related deficiency.

3.7. Additionally, 19 APAC States were identified as not issuing all required SIGMETs in IWXXM format, despite IWXXM's status as a Standard under ICAO Annex 3. The review also covered the issuance of volcanic ash and tropical cyclone advisories in IWXXM format, with Australia, the United States, India, Fiji, and France noted for non-compliance. A separate conclusion was proposed for the ICAO APAC Office to assess these gaps as potential deficiencies.

3.8. Regarding METAR and TAF performance, the 2024 APAC Performance Indices revealed that several States did not meet the 95% threshold for timeliness and availability. While no formal conclusions were proposed due to recent updates in monitoring criteria, States were encouraged to use the data to investigate and improve their services ahead of the next monitoring cycle in November 2025.

3.9. Given the discussion above, the meeting supported continued efforts to resolve deficiencies through corrective action plans, improved coordination, and adherence to ICAO standards. In addition, the meeting adopted the following Conclusions:

Conclusion MET SG/29/06 – Lack of Provision of IWXXM Format SIGMET	
What: The MET Sub-group recommends to the ICAO APAC Office, in its role assessing potential deficiencies, that it reviews the information provided in this paper on the lack of IWXXM implementation for SIGMET issuance: Afghanistan, Bangladesh, Cambodia, DPR Korea, India, Indonesia, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nauru, Nepal, Pakistan, Papua New Guinea, Republic of Korea, Sri Lanka, Viet Nam	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: SIGMET information in IWXXM format is a Standard in ICAO Annex 3 and therefore non-compliance should be considered as a potential deficiency.	Follow-up: ☒ Secretariat

When: 18-Aug-25	Status: Draft to be adopted by Subgroup
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Conclusion MET SG/29/07 – Lack of Provision of IWXXM Format Advisories	
What: The MET Sub-group recommends to the ICAO APAC Office, in its role assessing potential deficiencies, that it reviews the information provided in this paper on the lack of IWXXM implementation for advisory issuance: Volcanic ash advisory (VAA): United States, France Tropical cyclone advisory (TCA): Australia, United States, India, Fiji	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Tropical cyclone and volcanic ash advisory information in IWXXM format is a requirement in ICAO Annex 3 and therefore non-compliance should be considered as a potential deficiency.	Follow-up: ☒ Secretariat
When: 18-Aug-25	Status: Draft to be adopted by Subgroup
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

3.10. The meeting requested SIGMET-test focal points to identify, in future SIGMET test analyses, which advisory test messages were not received, to support more targeted follow-up and resolution efforts **[Action 29/03]**.

3.11. The meeting considered a suggestion to conduct future OPMET analyses on an aerodrome-specific basis rather than by State. However, it was noted that this approach may be challenging due to the large number of aerodromes involved.

3.12. The meeting requested the Secretariat to share the results presented in WP/07 with the relevant States as soon as possible following the meeting, and no later than the end of August 2025 **[Action 29/04].**

Flimsy/03 – UPDATE ON NEW ZEALAND STATUS OF TC SIGMET IN IWXXM (New Zealand)

3.13. New Zealand provided the meeting an update on its progress in issuing Tropical Cyclone (TC) SIGMETs in IWXXM format, following findings from the 2024 ICAO APAC Regional SIGMET Test (WP/07).

3.14. While IWXXM format was successfully issued for Volcanic Ash (VA) SIGMETs, TC SIGMETs were not. An internal investigation and system testing were conducted, and on 15 August 2025, New Zealand successfully issued test TC SIGMETs in both TAC and IWXXM formats for the NZZC and NZZO FIRs, confirmed by RODB Brisbane.

3.15. Given the discussion above, the meeting agreed New Zealand could be removed from the list of States in Conclusion MET SG/29/06.

WP/08 – ACTION REQUIRED FOR ASIA AND PACIFIC MET DEFICIENCIES (New Zealand and Australia)

3.16. New Zealand and Australia presented a paper analysing the status of air navigation deficiencies in the Asia-Pacific region, with a particular focus on MET deficiencies. Of the 154

deficiencies recorded in the APANPIRG Deficiencies Database, 12 relate to MET services, with 83% of these held by Pacific Small Island Developing States (PSIDS). Notably, eight of the MET deficiencies are categorized as "Urgent" due to their direct impact on aviation safety, and all have remained unresolved for over 14 years—three for more than 25 years.

3.17. The paper highlighted deficiencies such as the lack of access to WAFS products, the absence of METAR/SPECI observing programmes, and inadequate SIGMET issuance and volcanic ash reporting. The safety implications were underscored by IATA data[1] showing that meteorology was a contributing factor in 30% of global fatal accidents over the past two decades, and 50% of those in the APAC region.

3.18. Given the limited diversion options for long-haul flights across the Pacific, the paper emphasized the urgency of addressing these deficiencies. It also referenced Articles 69 and 70 of the Chicago Convention, which empowered the ICAO Council to consult with States and recommend remedial actions, including financial arrangements.

3.19. The paper concluded by recommending that APANPIRG consider alternative strategies to accelerate resolution, such as reassessing long-standing deficiencies and supporting States in documenting corrective actions.

3.20. The meeting noted the analysis and formulated the following Draft Conclusion for APANPIRG to improve assistance mechanisms for States in resolving MET deficiencies:

<table>
<tr><td colspan="2">Draft Conclusion MET SG/29/08 – Establishment of a Group to Address Long-Standing Air Navigation Deficiencies</td></tr>
<tr><td>What: That APANPIRG establish a multi-disciplinary group comprising experts from the ATM, AOP, and MET domains to propose practical and sustainable options for resolving long-standing air navigation deficiencies in the Asia/Pacific region.</td><td>Expected impact:
☒ Political / Global
☒ Inter-regional
☒ Economic
☐ Environmental
☒Ops/Technical</td></tr>
<tr><td>Why: To accelerate progress on deficiencies—many of which have persisted for over a decade—by fostering coordinated, multi-disciplinary approaches that reflect the interconnected nature of air navigation services and support States in overcoming systemic and resource-related challenges, particularly in the Pacific Small Island Developing States (PSIDS).</td><td>Follow-up:
☒ Secretariat</td></tr>
<tr><td>When: 18-Aug-25</td><td>Status: Draft to be adopted by PIRG</td></tr>
<tr><td colspan="2">Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT</td></tr>
</table>

WP/09 – UPDATE ON MET DEFICIENCY AP-MET-20 (Solomon Islands)

3.21. On behalf of the Solomon Islands, the Chair MET/R WG presented an update on the resolution of APANPIRG Air Navigation Deficiency AP-MET-20, which previously identified the lack of WAFS forecasts for inclusion in flight briefings and documentation. The Solomon Islands Meteorological Services (SIMS) has implemented a corrective action plan that includes the provision of METAR, SPECI, TAF, TAF3[2], Area QNH, and SIGMET services to Air Traffic Services (ATS)

[1] https://www.iata.org/en/publications/safety-report/
[2] Aerodrome Forecast in TAF-code issued every 3 hours

under formal agreements with the Solomon Islands Airport Corporation Limited and Solomon Airlines.

3.22. WAFS SIGWX forecasts are now made available via the SIMS website, supported by an internal procedure (Pro17_WAFC) guiding duty forecasters on posting and updating the products. Solomon Airlines has confirmed access and use of the forecasts, and screen captures of the available products were provided as evidence.

3.23. This update was provided in response to Action MET/R WG/14-01, which tasked the Secretariat and the ad hoc group on air navigation deficiencies with assisting Solomon Islands in preparing a report for MET SG/29.

3.24. The meeting noted the progress made and recommended that the Secretariat expedite implementation of the previously agreed Action Item 26/04 concerning WAFS forecast requirements. The Chair MET/R WG noted that he had been in contact with Solomon Islands to confirm the users need and the status of implementation of Medium-level SIGWX and WAFS upper wind and upper-air temperature information. Subject to Solomon Islands resolving the remaining issues outlined in WP/09, and using the MET Deficiency Report and Identification Guide, the meeting further recommended that ICAO consider the removal of deficiency AP-MET-20 from the APANPIRG Air Navigation Deficiency Database.

3.25. The Chair advised the meeting that work plans had been previously drafted by the PIAWS Panel, with assistance by the ICAO Secretariat, to assist Pacific Island States in resolving existing AN deficiencies, and this included suggested actions to resolve deficiencies related to WAFS information provision. It was suggested the Secretariat could resend the work plans to the affected States.

IP/03 – ABOUT THE POTENTIAL DEFICIENCIES AND THE MODIFICATION PLAN (China)

3.26. China presented an information paper addressing potential deficiencies in its Terminal Aerodrome Forecast (TAF) services, as identified in the 2024 APAC Performance Indices. While METAR performance at Chinese airports was fully compliant, TAF indices fell below the 0.95 threshold due to early dissemination practices. Currently, TAF bulletins are issued two hours before their validity period, which differs from the timing specified in the ICAO APAC ROBEX Handbook.

3.27. Chinese Aerodrome Meteorological Offices (AMOs) prioritize early updates and continuous monitoring, issuing amendments promptly to ensure flight crews receive timely forecast information. This operational approach, while effective locally, has led to regional performance discrepancies. China has actively engaged with ICAO APAC MET/IE WG and Bangkok RODB to address the issue and confirmed that Beijing ROC will adjust TAF filing times to align with Annex 3 recommendations.

3.28. The meeting welcomed China's commitment to align bulletin filing times with Annex 3 provisions. It encouraged continued collaboration with the Bangkok RODB and MET/IE WG to ensure full resolution of the identified discrepancies.

IP/04 – ACHIEVEMENTS AND PLANS OF THE REPUBLIC OF KOREA FOR IWXXM IMPLEMENTATION (Republic of Korea)

3.29. The Republic of Korea has made significant progress in implementing IWXXM, aligning with APANPIRG recommendations to address air navigation deficiencies. Republic of Korea's Aviation Meteorological Office (AMO) completed IWXXM version 2023-1 development and successfully conducted inter-State exchange tests with Japan via AMHS.

3.30. International AMHS connections with China and Japan were established in 2022, and a phased domestic migration from the Aeronautical Fixed Telecommunications Network (AFTN) to AMHS is underway, targeting full operational use by 2028. A pilot AMHS system is planned for 2025, with an IWXXM exchange test with China and participation in the Annual SIGMET Test. To ensure continuity, IWXXM data has been available via Open API since 2019, with the latest version released in August 2025.

3.31. The meeting acknowledged these achievements. In response to concerns about the process for notifying APANPIRG of air navigation deficiencies, the Secretariat clarified that the ICAO APAC Office is responsible for comparing the implementation status against the APAC Air Navigation Plan and ICAO SARPs. While implementation monitoring activities are reviewed as part of this assessment, they alone do not constitute sufficient grounds for determining a deficiency.

4. Regional guidance material

WP/15 – UPDATING MET-RELATED REGIONAL GUIDANCE DOCUMENTS (New Zealand)

4.1. New Zealand outlined a streamlined process for States to initiate updates to MET-related regional guidance documents, including the APAC ANP, ROBEX Handbook, and Regional SIGMET Guide. The paper introduces a "Quick Reference Guide to Updating APAC MET Documents," designed to assist States in navigating amendment procedures efficiently. It emphasizes the importance of maintaining consistency across related tables when changes are made and provides instructions for submitting proposals through ICAO channels.

4.2. Regarding updates to the ROBEX Handbook, the Chair of the MET/IE WG reminded the meeting that operational changes to the ROBEX scheme should be communicated through the METNO process outlined in the Handbook.

4.3. The meeting supported the publication of the proposed guide on the APAC eDocuments website, subject to editorial refinements. These included revising the title to "Guidance for Updating APAC MET Documentation." The meeting subsequently adopted the following Decision:

<table>
<tr><td colspan="2">Decision MET SG/29/09 – Approval of Guidance for Updating APAC MET Documentation</td></tr>
<tr><td>What: That the "Guidance for Updating APAC MET Documentation" be approved for publication on the ICAO APAC eDocuments website, following incorporation of editorial improvements as suggested by the meeting.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒Ops/Technical</td></tr>
<tr><td>Why: To provide States with a clear and streamlined reference for initiating updates to MET-related regional guidance documents, ensuring consistency across related materials and facilitating timely and accurate amendments through established ICAO procedures.</td><td>Follow-up:
☒ Secretariat</td></tr>
<tr><td>When: 18-Aug-25</td><td>Status: Draft to be adopted by PIRG</td></tr>
<tr><td colspan="2">Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT</td></tr>
</table>

4.4. The meeting requested the Secretariat to publish the finalized "Guidance for Updating APAC MET Documentation" on the ICAO APAC eDocuments website **[Action 29/05]**.

4.5. The meeting also requested the MET SG Chairs to consider presenting proposals for further improvements to the "Guidance for Updating APAC MET Documentation" at the next meeting **[Action 29/06]**.

WP/10 – ROBEX HANDBOOK UPDATES (Secretariat)

4.6. The Eighteenth Edition (March 2025) of the ICAO APAC ROBEX Handbook was presented, incorporating updates endorsed by MET/IE WG/23. Key revisions include enhanced guidance for VONA dissemination via AFS, aligning header structures with global practices, and updated focal point contact details. Hong Kong, China reorganized METAR/SPECI and TAF bulletins, adding three aerodromes and streamlining bulletin series for improved regional exchange. These updates support Amendment 82 to Annex 3 and ensure consistency with ICAO provisions and inter-regional practices.

4.7. The meeting noted additional revisions proposed in WP/12, WP/17, WP/25, and IP/28 to maintain operational alignment. Hong Kong, China, also informed the meeting that it provided the Secretariat directly with proposed updates to the ROBEX Handbook, Tables A and B in July 2025. The meeting requested the Secretariat to incorporate these updates into the next revision of the ROBEX Handbook, scheduled for publication in September 2025 **[Action 29/07]**.

4.8. In response to a query from the meeting, the use of "ii" in the VONA bulletin header was discussed. The meeting considered potential improvements to the guidance provided in Appendix D, paragraph 2.1.3.2 of the ROBEX Handbook, including adding a reference to the Handbook on the International Airways Volcano Watch (Doc 9766), which will soon include extended information on the content of VONA bulletin headers.

WP/12 – UPDATES TO THE ASIA/PACIFIC AIR NAVIGATION PLAN VOLUME II AND THE ROBEX HANDBOOK (Japan)

4.9. Japan presented updates to the APAC ANP, Volume II and the ROBEX Handbook to reflect recent changes in aerodrome operations and meteorological services. Key updates include the inclusion of Shimojishima Airport (RORS) in METAR and TAF bulletins, renaming "New Ishigaki" to "Ishigaki" (ROIG), and expanded 24-hour METAR/SPECI reporting for several airports including Aomori, Kumamoto, Oita, and Toyama. The ROBEX Handbook's Table A and B were proposed to be updated to align with current operational practices, including updated availability times for Sendai Airport.

4.10. The meeting appreciated these updates and requested the Secretariat to incorporate them into the next amendment of the APAC ANP and the ROBEX Handbook **[ACTION 29/08]**.

4.11. The Secretariat reminded the meeting that (well-formed) ANP PfAs can be submitted directly to the ICAO APAC Office for processing, and those received in time will be incorporated with the next amendment of the APAC ANP **[ACTION 29/09]**.

WP/16 – OPTIMIZING IWXXM MESSAGE DISSEMINATION FOR HONG KONG, CHINA (Hong Kong, China)

4.12. Hong Kong, China presented enhancements to its IWXXM message dissemination workflow, aimed at improving the availability and timeliness of METAR and TAF messages for Hong Kong International Airport (VHHH). Key changes include restructuring METAR bulletins into three series to align with existing TAF groupings, enabling independent and timely dissemination of VHHH METARs. Additionally, the time format for TAF validity ending was adjusted from 24:00Z to 00:00Z

to ensure compatibility with IWXXM schema and avoid data rejection.

4.13. Performance statistics from June 2025 show marked improvements, with both availability and timeliness reaching 1.00 across RODB Bangkok and Singapore. Further optimization was applied to METAR bulletins for other aerodromes, introducing earlier cut-off times to meet APAC performance criteria, with delayed reports handled via retarded bulletins.

4.14. The paper highlighted discrepancies in METAR timeliness definitions—specifically, the use of HH:(MM - 5') ≤ RX-Time ≤ HH:(MM + 10') versus RX-Time ≤ HH:(MM + 6') and RX-Time ≤ HH:(MM + 10')—and raised concerns about ambiguity in using 24:00Z as the validity end time in IWXXM TAFs. The need for regional clarification was noted.

4.15. The meeting acknowledged these issues and agreed on the following actions:

4.15.1. METP members present will raise the applicability of 24:00Z in IWXXM TAFs with the METP for further consideration**.** The Secretariat will share the meeting report internally to seek METP support on the same issue. The Secretariat will inform States, via the MET Deficiencies Review State Letter, how IWXXM monitoring handles the 24:00Z validity time **[Action 29/10]**.

4.15.2. The Chair of MET/IE WG will seek clarification on the EUR Region's practices regarding METAR timeliness definitions and the use of HH:(MM - 5') ≤ RX-Time ≤ HH:(MM + 10') versus RX-Time ≤ HH:(MM + 6') and RX-Time ≤ HH:(MM + 10'). In the interim, the current monitoring practice will be maintained and will be highlighted in the upcoming State Letter mentioned in Action 29/04 above **[Action 29/11]**.

WP/17 – UPDATES TO NEW ZEALAND AERODOME MET INFORMATION IN APAC ROBEX HANDBOOK (New Zealand)

4.16. New Zealand will begin disseminating METAR and TAF for Ōhakea (NZOH), Dunedin (NZDN), and Hamilton (NZHN) Airports via the ROBEX system starting 2 October 2025. These updates reflect the resumption of international flights to regional airports and align with amendments proposed to the APAC Air Navigation Plan. TAFs for NZDN and NZHN will be issued four times daily with 24-hour validity and included in FTNZ32 NZKL, alongside Queenstown (NZQN), which will also see an increase in TAF issuance frequency. METAR-AUTO reports for these aerodromes will be included in SANZ32 NZKL.

4.17. Ōhakea's inclusion in new bulletins (FT/SANZ33 NZKL) is pending final confirmation of observation requirements. Draft updates to Tables A and B of the ROBEX Handbook were provided, with further updates for NZOH to be submitted to the next MET/IE WG meeting.

4.18. The meeting supported the inclusion of these updates in Appendices A and B of the ROBEX Handbook **[ACTION 29/12]**. It encouraged continued coordination with Bangkok RODB and the MET/IE WG to finalize the integration of Ōhakea Airport bulletins.

IP/28 – DISSEMINATION OF UNITED STATES METAR AND TAF (United States)

4.19. The United States presented a proposal to update the APAC ROBEX Handbook to include METAR and TAF dissemination details for United States aerodromes located within the APAC region. These reports are routed through the Washington IROG/RODB (KWBC) and disseminated via bulletins FTUS25, SAUS25, and SPUS25. The update aims to improve accessibility and monitoring of United States OPMET data by APAC stakeholders.

4.20. Aerodromes in territories such as American Samoa, Guam, Northern Mariana Islands,

Palau, and Micronesia are listed, along with several in Alaska and Hawaii. While data is currently routed to Nadi, it is not yet reaching Tokyo IROG; coordination is underway to resolve this. Inclusion of these aerodromes in the ROBEX Handbook will support regional performance monitoring and operational planning.

4.21. The meeting endorsed the inclusion of the listed aerodromes in the upcoming update of the ROBEX Handbook **[Action 29/13]**. It also supported coordination between the Washington and Tokyo IROGs to resolve the current routing gap. It encouraged confirmation on whether the United States should share METAR and TAF data with other APAC RODBs to enhance regional data availability.

WP/11 – UPDATES OF ASIA/PACIFIC REGIONAL GUIDANCE FOR TAILORED METEOROLOGICAL INFORMATION AND SERVICES TO SUPPORT AIR TRAFFIC MANAGEMENT OPERATIONS (Ad-hoc group)

4.22. The MET/R WG Ad Hoc Group proposed updates to the Asia/Pacific Regional Guidance for Tailored MET Information and Services to Support ATM, incorporating an implementation example from the Republic of Korea. Republic of Korea's Aviation Meteorological Office (AMO) collaborates closely with the Air Traffic Control Center (ATCC), providing 24/7 tailored MET support for ATFM, including participation in daily and ad hoc Collaborative Decision-Making (CDM) meetings.

4.23. The example highlighted Republic of Korea's operational practices such as weather briefings for ATCC and Area Control Centre (ACC), scenario-based analysis for typhoons, snow, and low visibility, and terminal area services including convection monitoring and aviation-specific typhoon forecasts. These services are delivered via the Flow Management Terminal (FMT) system and AMO websites.

4.24. The meeting adopted the following Decision in support of the proposed update and requested the Secretariat to publish the revised version on the ICAO APAC eDocuments website **[ACTION 29/14]**.

<table>
<tr><td colspan="2">Decision MET SG/29/10 – Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations</td></tr>
<tr><td>What: That, the MET SG approves the proposed updates i.e. include the example from Republic of Korea under Appendix 1 of the Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To provide States with more examples in the guidance material and make the updated version available on the ICAO APAC eDocuments website.</td><td>Follow-up:
☐ Required from States</td></tr>
<tr><td>When: As soon as practicable</td><td>Status: Adopted by Subgroup</td></tr>
<tr><td colspan="2">Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT</td></tr>
</table>

4.25. States were also encouraged to continue contributing examples to promote regional harmonization and strengthen capacity-building efforts.

WP/13 – UPDATES TO APAC REGIONAL SIGMET GUIDE (Ad-hoc group)

4.26. The MET SG Ad Hoc Group presented proposed updates to the APAC Regional SIGMET Guide to align with Amendment 82 of ICAO Annex 3 and the newly approved PANS-MET (Doc 10157), effective 27 November 2025. These updates aim to enhance the standardisation and harmonisation of SIGMET procedures and formats across the region.

4.27. Key revisions included updated references, expanded guidance on SIGMET structure and formatting, and the addition of new WMO headers for Tropical Cyclone Advisories from Tropical Cyclone Advisory Centre (TCAC) Darwin. Indonesia's local volcanic ash SIGMET practices were reviewed but not included due to regional applicability concerns. Editorial corrections and clarifications were also incorporated.

4.28. The meeting endorsed the proposed updates, adopting the following Decision with the condition that the ad hoc group removes the aviation colour code element and updates 'summit elevation' to 'source elevation' in the VAA examples—in line with the template in PANS-MET—and excludes the SWX examples. The Secretariat was requested to publish the 12th Edition of the SIGMET Guide on the ICAO APAC eDocuments website in November 2025, ensuring consistency with the current versions of Annex 3 and PANS-MET **[ACTION 29/15]**. States were also encouraged to apply the revised guidance to improve the quality, coordination, and dissemination of SIGMETs, thereby enhancing flight safety across the region.

<table>
<tr><td colspan="2">Decision MET SG/29/11 – Updates to Regional SIGMET Guide</td></tr>
<tr><td>What: That, the MET SG approves the updates proposed under Appendix A of MET SG/29–WP/13, subject to editorial improvements agreed by the meeting, publish the 12th Edition of the APAC Regional SIGMET Guide and make the guide available on the ICAO APAC website.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To make the latest updates to the Regional SIGMET Guide available for use by the States.</td><td>Follow-up:
☐ Required from States</td></tr>
<tr><td>When: August 2025</td><td>Status: Adopted by MET SG</td></tr>
<tr><td colspan="2">Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:</td></tr>
</table>

WP/14 – UPDATES TO DOCUMENT ON "APAC USE CASES AND USER REQUIREMENTS FOR SWIM-BASED MET INFORMATION SERVICES SUPPORTING ATFM" (Ad-hoc group)

4.29. The MET/R WG Ad Hoc Group proposed updates to the document "APAC Use Cases and User Requirements for SWIM-Based MET Information Services Supporting ATFM," incorporating a new use case and editorial improvements. The new use case, derived from a SWIM demonstration by Hong Kong China, illustrates how integrated MET and surveillance data via SWIM can optimize slot allocation during convective weather, enhancing ATFM decision-making and situational awareness.

4.30. Editorial enhancements further clarify the document's purpose and structure. These updates support the development of SWIM-enabled MET applications tailored to regional ATFM needs. The revised document, proposed as the Second Edition, is recommended for publication on the ICAO APAC eDocuments website.

4.31. The meeting endorsed the adoption of the Second Edition of the reference document, subject to the ad hoc group implementing the following revisions:

- Remove "and user requirements" from the title to avoid confusion with the companion Business Functionalities document.
- Delete Section 4 to prevent duplication and potential misalignment with similar content in the Business Functionalities document.
- Eliminate references to the legacy MET-SWIM Plan document.

4.32. The meeting adopted the following Decision:

Decision MET SG/29/12 – Updating the APAC Use Cases for SWIM-based Meteorological Information Services Supporting ATFM	
What: That, the MET SG approves the Second Edition of the *APAC Use Cases for SWIM-based Meteorological Information Services Supporting ATFM*, subject to editorial improvements agreed by the meeting, for publication on the ICAO APAC eDocument website (WP/14, Attachment A).	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To enhance the document with a new use case demonstrating potential operational benefits and the editorial improvements proposed by the ad hoc group, supporting the development of appropriate MET information services and the associated SWIM-enabled MET applications to meet ATFM needs in the APAC Region.	Follow-up: ☐ Required from States
When: 22-Aug-25	Status: Draft to be adopted by Subgroup
Who: ☒Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

4.33. The meeting requested the Secretariat to publish the Second Edition on the ICAO APAC eDocuments website **[ACTION 29/16]**. States were also encouraged to utilize the updated use cases to guide the development of SWIM-enabled MET services tailored to regional ATFM needs.

WP/18 – SITING, CALIBRATION AND MAINTENANCE OF AVIATION METEROLOGY INSTRUMENTS (India)

4.34. India presented its new guidance material (ANSS AC 1 of 2024) outlining best practices for the siting, calibration, and maintenance of aviation meteorological instruments. This initiative supports the reliability and accuracy of MET observations critical to aviation safety and efficiency. The guidance addresses diverse meteorological conditions across India's extensive network of airports and emphasizes the importance of representative siting for instruments such as anemometers, barometers, and RVR sensors.

4.35. It also details calibration schedules—ranging from biannual checks for wind and RVR instruments to annual inspections for temperature, pressure, and cloud base sensors—and mandates coordination between MET service providers and aerodrome operators for access and maintenance. Notably, the guidance assigns clear accountability to MET officers and airport operators to ensure continuous operational integrity.

4.36. The meeting acknowledged India's efforts and encouraged other APAC States to share similar best practices and consider adopting harmonized procedures to ensure consistent performance

of MET instruments across the region. Such efforts contribute to regional interoperability and strengthen the foundation of aviation safety. The meeting referred India to the WMO guidance on Regional Instrument Centres[1].

5. Planning and monitoring

WP/26 – UPDATE ON THE SURVEY OF STATE MET INFORMATION SUPPORTING ATM AND DEVELOPMENT OF FUTURE ACTIVITIES (Ad-hoc group)

5.1. The MET/R WG Ad Hoc Group presented progress on refining the 2021 ICAO APAC Regional Survey on MET services supporting ATM and ATFM. Following MET SG/28 actions, the group addressed data sensitivity, clarified intended use, and proposed dissemination via the ICAO APAC eDocuments site. The joint plenary of MET/R WG/14 and ATFM SG/15 endorsed finalizing the report and preparing a summary for ATM SG/13.

5.2. The group also initiated ongoing work to evaluate the feasibility and value of conducting a future survey, planning for a future survey, incorporating lessons learned, stakeholder input, and emerging priorities such as SWIM and MET-ATM integration. Key findings from the 2021 survey highlighted the importance of timely, accurate MET data and the need for improved collaboration, system integration, and decision support tools.

5.3. The meeting noted the updates and supported the proposal to publish the refined report, engage ATM stakeholders, and develop a framework for a follow-up survey—ensuring that future MET services are responsive to evolving operational needs, including SWIM and CDM integration. The meeting adopted the Decision below and requested the Secretariat to publish the report on the ICAO APAC eDocuments website **[ACTION 29/17]**.

<table>
<tr><td colspan="2">Decision MET SG/29/13 – Publication of 2021 Survey of State Meteorological Information Supporting Air Traffic Management Report</td></tr>
<tr><td>What: That, the MET SG approves the publication of the refined report '2021 Survey of State Meteorological Information Supporting Air Traffic Management' on the ICAO APAC eDocuments website</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: To make the survey findings accessible to relevant stakeholders via the ICAO APAC eDocuments website</td><td>Follow-up:
☐ Required from States</td></tr>
<tr><td>When: As soon as practicable</td><td>Status: Adopted by Subgroup</td></tr>
<tr><td colspan="2">Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT</td></tr>
</table>

WP/19 – PROPOSAL FOR AMENDMENT OF THE ICAO ASIA AND PACIFIC REGIONS (APAC) AIR NAVIGATION PLAN (ANP), VOLUME II (Australia)

5.4. This paper was withdrawn as its content was already addressed in Flimsy/02.

[1] https://community.wmo.int/en/activity-areas/imop/Regional_Instrument_Centres

WP/20 – UPDATES TO THE ASIA/PACIFIC AIR NAVIGATION PLAN (Thailand)

5.5. Thailand proposed updates to Table MET II-3 of the Asia/Pacific Air Navigation Plan (ANP) Volume II to reflect the current operational status of meteorological services provided by the Bangkok VOLMET station. The updates include revised broadcast schedules and aerodrome coverage, incorporating METAR/SPECI with TREND forecasts and SIGMETs for Bangkok and Yangon FIRs, as well as TAF for Bangkok.

5.6. These changes aim to ensure the ANP accurately represents Thailand's operational capabilities and supports regional harmonization of VOLMET services. The meeting supported the proposal and requested the Secretariat to incorporate these updates into the next amendment of the APAC ANP **[ACTION 29/18]** and encouraged continued collaboration to maintain the accuracy and relevance of regional planning documents.

WP/25 – TECHO INTERNATIONAL AIRPORT (VDTI) TO JOIN ROBEX NETWORK FOR INTERNATIONAL OPMET DATA EXCHANGE (Cambodia)

5.7. On behalf of Cambodia, the Secretariat informed the meeting of the upcoming operational launch of Techo International Airport (VDTI), located south of Phnom Penh, scheduled for 04 September 2025. VDTI will replace Phnom Penh International Airport (VDPP), which will officially close on 08 September 2025. Meteorological services at VDTI will fully comply with ICAO Annex 3 standards, including provision of METAR/SPECI, TAF, TREND forecasts, and aerodrome warnings.

5.8. To support international flight operations, Cambodia proposed incorporating VDTI into the ROBEX scheme for OPMET data exchange. Updates to relevant tables in the APAC ANP Volumes I and II, as well as the APAC ROBEX Handbook, are being coordinated. Cambodia also requested assistance from the Bangkok ROC and RODB to facilitate the integration of VDTI into the ROBEX network.

5.9. The meeting acknowledged the information and supported the inclusion of VDTI in the international OPMET exchange system, requesting the Secretariat to incorporate these updates into the next amendment of the APAC ANP and the ROBEX Handbook **[ACTION 29/19]**. This integration is a critical step in maintaining regional interoperability and ensuring continuity of meteorological support for air navigation in Cambodia.

5.10. Australia queried whether notification of the changes had been promulgated as recommended using the METNO procedure. Further coordination with representatives from RODB Bangkok resulted in a plan for two METNOs for the introduction of VDTI and removal of VDPP from the ROBEX scheme.

IP/06 – UPDATING UNITED STATES INTERNATIONAL COLLECTIVES (United States)

5.11. The United States presented plans to replace legacy, non-ICAO-compliant TAF and METAR collectives with ICAO-compliant formats to enhance international OPMET data exchange. These outdated collectives, originally designed for low-bandwidth systems, have posed challenges for decoding and interoperability.

5.12. The Washington IROG will phase out approximately 26 non-compliant collectives and introduce around 380 ICAO-compliant native collectives. This transition, scheduled to begin in late 2025, will be gradual to ensure continuity of data and minimize disruption for users.

5.13. The updated collectives will be reviewed against the APAC ROBEX Handbook to ensure proper routing and avoid duplication. The meeting supported the phased approach to ensure

continuity of service and encouraged coordination with regional ROBEX handbooks to avoid routing conflicts.

5.14. The meeting commended the United States for its leadership in advancing the modernization of meteorological data exchange and encouraged other States to consider similar initiatives to support global interoperability.

5.15. Given the scope of the changes, the meeting recommended that the United States inform States through the METNO process and consider broader notification measures to ensure user awareness and preparedness.

5.16. The meeting noted the presence of multiple bulletins for some aerodromes and requested MET/IE WG to coordinate a review of the issue **[ACTION 29/20]**.

IP/27 – CHANGES IN THE OPMET DATA BULLETIN SYSTEM AND TRANSMISSION IN INDONESIA (Indonesia)

5.17. Indonesia presented updates on its efforts to improve OPMET data exchange following performance deficiencies identified in 2024. Challenges included outdated systems, limited AFTN integration at meteorological stations, and the implementation of new ROBEX Handbook requirements. To address these, BMKG developed a new in-house system—BMKGsatu and INA-Switching—for data collection and dissemination.

5.18. Two successful trials were conducted in November 2024 and August 2025, demonstrating improved transmission of METAR, TAF, SIGMET, and amended data to RODBs and ROCs. Feedback from ROC Hong Kong highlighted a minor formatting issue, which has since been resolved.

5.19. Indonesia plans to implement the new scheme by November 2025, enabling direct control and monitoring of international OPMET exchange. The meeting encouraged continued coordination with RODBs and supported Indonesia's request for access to monitoring tools to ensure sustained compliance with ICAO standards.

WP/21 – INCLUSION OF VONA IN THE APAC REGIONAL SIGMET TEST PROCEDURES (New Zealand)

5.20. New Zealand proposed the inclusion of Volcano Observatory Notice to Aviation (VONA) in the ICAO APAC Regional SIGMET Test Procedures starting in 2026, following its elevation to Recommended Practice under Amendment 82 to Annex 3. VONA plays a critical role in supporting aviation safety during volcanic eruptions by informing Meteorological Watch Offices (MWOs) and Volcanic Ash Advisory Centres (VAACs).

5.21. The proposal outlines draft updates to the SIGMET test procedures, enabling designated State volcano observatories (SVOs) to issue VONA test messages alongside existing SIGMET, VAA, and TCA tests. The draft includes guidance on message formatting, dissemination, and monitoring, with integration into IWXXM standards.

5.22. The meeting supported the inclusion of VONA in the annual SIGMET test. It encouraged States to review the draft procedures and provide feedback to ensure they are practical and usable by State volcano observatories. Several minor issues were identified during the meeting, including:

- Need for alignment with the latest list of State volcano observatories (Ref: Flimsy/02), when

confirmed

- Duplication of content in Sections 7.6.1 and 3.6.3
- Omission of the VONA header code in Section 2.7
- Typographical error: "VAAC" used instead of "VONA" in Section 7.6

5.23. The meeting requested an ad hoc group of New Zealand, Australia, and the United States to investigate and document appropriate methods for disseminating VONA messages from the APAC Region to ensure global accessibility **[ACTION 29/21]**.

5.24. To further support regional coordination, enhance message exchange, and strengthen aviation safety during volcanic events, the meeting also requested that the Secretariat provide the ad hoc group on the SIGMET Guide with the finalized updates for inclusion into the Regional SIGMET Guide, scheduled for publication in November 2025 **[ACTION 29/22]**.

IP/07 – VONA UPDATES BY THE UNITED STATES IN NOVEMBER 2025 (United States)

5.25. The United States presented its implementation plan for VONA, aligning with Amendment 82 to ICAO Annex 3, which elevates VONA to a Recommended Practice effective November 2025. VONA provides timely alerts on volcanic activity that may impact aviation, supporting meteorological and air traffic services.

5.26. The United States Geological Survey (USGS) operates five designated State Volcano Observatories (SVOs) and will oversee VONA issuance. As these SVOs lack direct Aeronautical Fixed Service connectivity, VONAs will be transmitted via a dedicated email tool to the Washington Inter-regional OPMET Gateway (IROG) for global dissemination.

5.27. The paper includes examples of VONA in abbreviated plain language format and proposed World Meteorological Organization (WMO) identifiers for both TAC and IWXXM formats. The meeting is invited to note the United States readiness and coordination efforts to meet ICAO requirements for VONA dissemination.

5.28. The meeting encouraged continued collaboration between State volcano observatories and VAACs to support effective implementation and monitoring of volcanic hazard information. In response to a query regarding the issuance of green aviation colour code VONA—specifically whether States should issue them simultaneously or sequentially—and how users can access the latest VONA for volcanoes that have not been updated for an extended period, the meeting requested METP members to seek guidance from the METP **[ACTION 29/23]**.

IP/15 – NEW ZEALAND VONA INPUT SYSTEM (VIS) (New Zealand)

5.29. New Zealand presented the development of the VONA Input System (VIS), a web-based tool designed to support Pacific State volcano observatories (SVOs) in issuing VONA. This initiative responds to Amendment 82 to ICAO Annex 3, which elevates VONA to a Recommended Practice effective November 2025.

5.30. VIS will enable designated Pacific SVOs to create and submit VONAs via a secure portal, with automated dissemination through the Aeronautical Fixed Service in both alphanumeric and IWXXM formats. Coordination with APAC RODBs is underway to ensure proper routing and receipt.

5.31. Funded by New Zealand's Ministry of Transport, the system will be available to ICAO-designated Pacific SVOs, with training provided.

5.32. The meeting acknowledged the initiative and supported ICAO's coordination with

States to finalize State volcano observatory (SVO) designations in the APAC Air Navigation Plan (ANP), thereby enabling broader access to the Volcano Information System (VIS). ICAO commended New Zealand for its leadership and reaffirmed its commitment to supporting regional capacity-building and operational readiness.

5.33. In response to a query regarding the potential availability of VIS to other States, New Zealand clarified that the current funding allocation specifically supports Pacific Small Island Developing States (PSIDS). However, it will explore options for expanding access to the system more broadly **[ACTION 29/24]**

IP/08 – COMBINED APAC VAAC MANAGEMENT REPORT (Australia, Japan and New Zealand)

5.34. Australia, Japan, and New Zealand presented a consolidated management report for the APAC Volcanic Ash Advisory Centres (VAACs)—Darwin, Tokyo, and Wellington—covering operations from January 2024 to June 2025. The report highlights significant volcanic events, including high-level eruptions at Lewotobi and Ruang, and outlines VAAC responses, coordination efforts, and satellite-based monitoring.

5.35. Operational improvements included enhanced modelling, upgraded systems, and increased training. VAACs conducted successful backup tests and strengthened collaboration through workshops and joint exercises. The report also details progress toward implementing QVA services, with several VAACs preparing for operational rollout by late 2025 or early 2026.

5.36. A user satisfaction survey revealed strong support for VAAC services but identified areas for improvement in coordination and product accuracy. The meeting is invited to note the report and ongoing efforts to enhance volcanic ash monitoring and advisory capabilities across the region.

5.37. ICAO encouraged continued coordination among VAACs and State volcano observatories to ensure harmonized messaging and readiness for the implementation of QVA. The meeting also invited VAAC Washington to consider contributing to future annual VAAC management reporting. **[ACTION 29/25]**.

IP/05 – CONSOLIDATED SPACE WEATHER INFORMATION SERVICE MANAGEMENT REPORT FOR 2024 (Australia)

5.38. Australia presented the first consolidated management report for the ICAO Space Weather Information Service (SWIS), covering operations from January to December 2024. The report compiles input from the four global and one regional space weather centres (SWXCs), detailing advisory issuance, operational performance, and service continuity.

5.39. In 2024, 1,040 advisories were issued, primarily for impacts on GNSS[1] and HF communications[2], with no valid radiation advisories. Key findings included inconsistencies in advisory numbering and limited forecast content, prompting efforts to improve harmonization and usability. Performance metrics showed 90% of advisories met latency targets, though some formatting issues affected compliance.

5.40. The report highlights future developments, including enhanced data exchange, model

[1] Global Navigation Satellite System (GNSS)-based navigation and surveillance
[2] High frequency (HF) radio communications

standardization, and proposed amendments to ICAO Annex 3 and PANS-MET. SWXCs also reported on training, outreach, and research activities. This milestone report supports ongoing improvements to SWIS and its value to aviation safety.

WP/22 – STATUS AND PLANS FOR IWXXM IMPLEMENTATION IN INDONESIA (Indonesia)

5.41. Indonesia reported continued progress in implementing IWXXM for OPMET data exchange, in line with ICAO Annex 3 requirements. An in-house IWXXM converter has been developed and successfully validated using the latest IWXXM versions (2025-2RC1 and 2RC2), with support from Météo-France and Hong Kong Observatory.

5.42. Despite technical success, dissemination to RODBs remains pending due to limitations in the current AMHS system, which cannot handle the required message size. A new AMHS system has been procured and is scheduled for installation by the end of 2025.

5.43. Subject to successful deployment, Indonesia plans to begin IWXXM data exchange with RODBs and ROCs in Q1 2026.

5.44. The meeting noted this update and supported Indonesia's efforts, particularly in validating and facilitating regional data exchange.

IP/29 – LATEST DEVELOPMENTS OF IWXXM (Hong Kong China)

5.45. Hong Kong, China, on behalf of the WMO Task Team on Aviation Data, presented the latest developments in the ICAO Meteorological Information Exchange Model (IWXXM). The upcoming version, IWXXM 2025-2RC2, incorporates changes aligned with Amendment 82 to ICAO Annex 3 and the new ICAO PANS-MET (Doc 10157).

5.46. Key enhancements include the introduction of packages for Quantitative Volcanic Ash Concentration Information (QVACI) and VONA, along with updates to METAR/SPECI, Volcanic Ash Advisory, and Space Weather Advisory formats. Improvements also allow for more detailed reporting, such as unlimited RVR and temperature precision.

5.47. IWXXM documentation has been revised to reflect the transition from WMO Technical Regulations to PANS-MET. Subject to WMO approval, IWXXM 2025-2 is expected to be published by mid-November 2025.

5.48. The meeting acknowledged the updates and emphasized the need to prepare for future implementation. In light of the significant changes introduced by Amendment 82 to Annex 3 and the new PANS-MET, the meeting requested the Secretariat to organize a webinar during October or November 2025 for MET personnel and relevant stakeholders to facilitate a better understanding of the updates **[ACTION 29/26]**.

6. Research, development and other initiatives

WP/24 – BUSINESS FUNCTIONALITY OF APAC COMMON SWIM INFORMATION SERVICES (SWIM TF)

*[**Editorial Note:** Paragraphs 6.1 to 6.3 replace previously duplicated content from the preceding section to ensure clarity and avoid redundancy.]*

6.1. The paper presented by the SWIM TF Task Lead outlines progress in defining business

functionalities for APAC Common SWIM Information Services, based on regional consultations and expert group inputs. The initial list covers flight, aeronautical, meteorological, and surveillance domains, with emphasis on aligning regional services with global standards and templates.

6.2. SWIM TF/10 agreed to publish only services with complete information, while retaining incomplete entries for future refinement. Meteorological information services such as those related to METAR/SPECI, TAF, SIGMET, and QVACI were prioritized, with updates reflecting ICAO Annex 3 amendments and PANS-MET developments.

6.3. The finalized list will be submitted to APANPIRG/36 by CNS SG for adoption and subsequently uploaded to the ICAO APAC e-documents portal as a living document. It will be included in the APAC SWIM Implementation Guidance Document being developed in the future. States are encouraged to use the list as a planning tool and provide feedback through expert groups for future updates.

6.4. The meeting acknowledged the updates and the need to prepare for future implementation. It discussed the appropriate ownership and process for managing future revisions of the document, including whether the MET SG should be responsible. As a result, the meeting agreed to the following Decision:

<table>
<tr><td colspan="2">Decision MET SG/29/14 – MET Contributions to SWIM TF for MET SWIM Information Services</td></tr>
<tr><td>What: That, MET SG empowers an ad hoc group, consisting of Chairs of MET/IE WG, MET/R WG and MET SG, to develop and maintain meteorological components of the ‘Business Functionality of APAC Common SWIM Information Services’ for submission to SWIM TF.</td><td>Expected impact:
☐ Political / Global
☐ Inter-regional
☐ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The CNS SG has endorsed version 1 of the ‘Business Functionality of APAC Common SWIM Information Services’ and has sought formal advice from the MET SG for subsequent meteorological updates to this document. An ad hoc group is formed to provide timely advice from across MET SG and its subsidiary groups.</td><td>Follow-up:
☐ Required from States</td></tr>
<tr><td>When: As soon as practicable</td><td>Status: Adopted by Subgroup</td></tr>
<tr><td colspan="2">Who: ☒Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT</td></tr>
</table>

6.5 The meeting discussed how regional specific requirements for the MET-SWIM services would be incorporated in IWXXM. The meeting requested the ICAO Secretariat to seek clarification from ICAO and WMO on how the APAC requirements could be implemented in IWXXM schemas **[ACTION 29/27].**

IP/14 – NEW ZEALAND AVIATION SPACE WEATHER EXERCISE (New Zealand)

6.5. New Zealand conducted a multi-agency aviation-focused space weather exercise on 20 February 2025, simulating a severe coronal mass ejection event. Coordinated by the Civil Aviation Authority of New Zealand (CAANZ), the exercise followed the National Space Weather Response Plan and involved key aviation, scientific, and emergency management stakeholders.

6.6. Participants received real-time updates based on their existing information channels, mimicking realistic communication delays. The scenario progressed through escalating space weather impacts, highlighting critical decision-making windows and operational vulnerabilities, particularly

post-event recovery challenges. Key lessons included the importance of timely communication, preparedness, and international collaboration. The exercise successfully fostered a shared understanding of response actions and underscored the need for aviation-specific guidance in New Zealand.

6.7. The meeting was informed that there would be another national multi-agency SWX exercise in November 2025, with an aviation-focused exercise planned to be conducted alongside.

IP/22 – SPACE WEATHER USER WORKSHOP (United States)

6.8. The United States presented plans for the upcoming Space Weather User Workshop, organized by the ICAO Meteorology Panel's Working Group on Meteorological Operations Groups Space Weather Work Stream. Scheduled for 20 October 2025 in Rome, Italy, the workshop aims to engage aviation stakeholders in discussions on the ICAO Space Weather Information Service (SWIS).

6.9. Key objectives include sharing updates on SWIS, clarifying its benefits and limitations, presenting draft guidance materials, gathering stakeholder requirements, and soliciting feedback for service improvement. Participation is encouraged from airlines, air navigation service providers, pilot groups, flight planning and electronic flight bag providers, and national regulators.

6.10. The meeting noted the information and the invitation to share the invitation broadly, with confirmations requested by 22 September 2025.

6.11. The meeting discussed the benefits of the usefulness of both workshops and exercises to enable the aviation system to prepare for significant space weather events. To promote capacity-building in the APAC Region, the meeting requested the Secretariat to engage with the ICAO APAC Air Traffic Management Sub-Group (ATM/SG) to explore potential collaboration on a regional space weather exercise **[ACTION 29/28]**.

IP/17 – MET EXERCISES IN THE EUR/NAT REGION (New Zealand)

6.12. New Zealand presented insights from two European and North Atlantic (EUR/NAT) region volcanic ash exercises (VOLCEX23 and VOLCEX24) and a planned North Atlantic space weather exercise (NAT SWX2025). VOLCEX23 simulated an Icelandic eruption, highlighting SIGMET formatting issues, cross-border coordination gaps, and the need for clearer guidance. VOLCEX24 focused on QVA products and emphasized regulatory readiness, communication improvements, and enhanced collaboration.

6.13. Both exercises underscored the value of Dynamic Airborne Reroute Procedures (DARP), EVITA[1], and harmonized contingency planning. The upcoming NAT SWX2025 tabletop exercise will simulate solar flare impacts on North Atlantic traffic, involving ICAO SWXCs and key aviation stakeholders. These initiatives offer valuable lessons for APAC States to strengthen volcanic ash and space weather preparedness.

IP/21 – VOLCANIC ASH EXERCISE IN THE PACIFIC (United States)

6.14. The United States presented an overview of VOLPAC25, a multinational volcanic ash

[1] European Crisis Visualisation Interactive Tool for ATFCM (Air Traffic Flow and Capacity Management)

exercise held virtually on 4–5 March 2025. Coordinated by JCAB[1], NAV CANADA[2], and FAA[3], the exercise simulated eruptions from Mount Fuji, Raikoke, Shishaldin, and Mount Baker, involving air traffic management, meteorological agencies, and airspace operators across Japan, Canada, and the United States.

6.15. Each scenario tested the issuance and coordination of volcanic ash products, including VONAs, VA SIGMETs, VAAs, and VAGs[4], with Scenario 3 introducing QVA graphics. The exercise highlighted operational decision-making, cross-border coordination, and future transitions to QVA-based products.

6.16. A brief space weather scenario was also included. Key takeaways emphasized the value of multiple short scenarios and the need for improved coordination and operator readiness for evolving volcanic ash information formats.

6.17. The meeting acknowledged the outcomes and lessons learned, and suggested exploring the possibility of conducting a space weather exercise or workshop for the APAC Region. New Zealand informed the meeting of its plan to organize a volcanic ash exercise for Papua New Guinea in 2026.

6.18. In a related update, New Zealand informed the meeting that presentation recordings from the 2024 Paris QVA Workshop are available on the CAANZ YouTube channel[5] and committed to providing the QVA Workshop Summary of Proceedings link on the ICAO APAC eDocuments website, when published by ICAO MET Panel Secretariat **[ACTION 29/29]**.

IP/09 – WMO ACTIVITIES OF RELEVANCE TO ICAO (WMO)

6.19. The World Meteorological Organization (WMO) presented a comprehensive overview of its recent and ongoing activities supporting ICAO, particularly in aeronautical meteorology. Central to this collaboration is the Standing Committee on Services for Aviation (SC-AVI), which works alongside ICAO's Meteorology Panel (METP) to advance global standards and practices. WMO contributes to key ICAO initiatives, including the development of IWXXM schemas, hazardous weather services, and cost recovery frameworks. The Joint Aviation Forum (JAF), launched in 2023, further strengthens strategic coordination between WMO and ICAO.

6.20. Regionally, WMO supports capacity building through expert teams in Asia and the South-West Pacific, and has hosted training seminars and workshops across Africa, Asia, and Europe. The organization also leads research efforts such as the Aviation Research and Development Project (AvRDP2), and has published a Climate Change Compendium detailing aviation impacts.

6.21. WMO is updating its Long-term Plan for Aeronautical Meteorology and advancing gender and youth inclusion through dedicated action plans. Resources including technical regulations, training portals, and newsletters are available to support Member States. The meeting is invited to note this information.

6.22. The meeting noted with interest the new publication of the Business Continuity Management: Guidelines for WMO Members (WMO-No. 1361), and encouraged States to ensure their

[1] Japan Civil Aviation Bureau
[2] Canada's national Air Navigation Service Provider (ANSP)
[3] United States Federal Aviation Administration (FAA)
[4] Volcanic ash advisory information in graphical format
[5] https://www.youtube.com/@CivilAviationAuthorityNZ

MET providers business continuity plans are in place, given the severe weather and other natural hazards that impact the Asia and Pacific region.

IP/10 – SATELLITE BASED ANALYSIS FOR IDENTIFYING, TRACKING AND FORECASTING THUNDERSTORMS; A CASE STUDY OVER THE IGI AIRPORT, NEW DELHI, INDIA (India)

6.23. India presented a case study on a satellite-based algorithm developed to detect, track, and forecast thunderstorms near Indira Gandhi International Airport (IGIA), New Delhi. Using INSAT-3D[1] thermal infrared data, the algorithm identifies thunderstorm pixels based on brightness temperature thresholds and projects their movement using polynomial analysis. Applied to a thunderstorm event on 23 May 2022, the algorithm demonstrated high accuracy, with a correlation of 0.98 between predicted and observed distances from IGIA, validated against METAR reports.

6.24. The system successfully forecasted the storm's arrival at IGIA, enabling timely aerodrome warnings. The algorithm updates every 10 minutes and is adaptable to other locations with appropriate geographic inputs. Its integration into aviation weather support systems could significantly enhance operational safety and efficiency during convective weather events.

6.25. The meeting noted the information and encouraged continued sharing of information on the development and integration of such tools into aviation weather decision support systems across the APAC region.

IP/25 – SHORT-RANGE LIDAR APPLICATIONS FOR LOW-LEVEL WIND SHEAR AND WAKE VORTEX MONITORING AT HONG KONG INTERNATIONAL AIRPORT (Hong Kong, China)

6.26. Hong Kong, China presented its deployment of Short-Range Lidar (SRL) systems at Hong Kong International Airport (HKIA) to enhance detection of low-level wind shear, turbulence, and wake vortices. Strategically installed near runways, SRLs provide high-resolution wind data with rapid update cycles, enabling timely alerts for building-induced wind effects under varying wind conditions. These systems support the Windshear and Turbulence Warning System (WTWS) and are being evaluated for automated alerting criteria.

6.27. SRLs also contribute to wake turbulence monitoring, with preliminary studies demonstrating successful near real-time detection of wake vortices. Additionally, SRLs generate vertical wind profiles up to 500 m AMSL[2], aiding runway configuration decisions by identifying sea breeze fronts, low-level jets, and terrain-induced disturbances. This integrated approach significantly enhances aviation safety and operational efficiency in HKIA's complex meteorological environment.

6.28. The meeting acknowledged the updates and encouraged the continued sharing of best practices, as well as further development of automated alerting criteria, to enhance aviation safety at both regional and global levels.

IP/26 – PREDICTING PROLONGED LIGHTNING ALERTS FOR THE HONG KONG INTERNATIONAL AIRPORT (Hong Kong, China)

6.29. Hong Kong China introduced a trial nowcasting service aimed at predicting prolonged

[1] An advanced meteorological satellite operated by India
[2] Above Mean Sea Level

lightning activity at Hong Kong International Airport (HKIA). Building on the existing Airport Thunderstorm and Lightning Alerting System (ATLAS), the new tool—Instant Duration Evaluation for ATLAS (IDEA)—provides minute-by-minute forecasts of lightning duration, particularly for events exceeding 20 minutes, which pose significant operational risks.

6.30. IDEA uses lightning location data and motion tracking algorithms to assess and project lightning impacts up to 40 minutes ahead, offering users a 15–20-minute lead time for precautionary actions. The system smooths predictions to balance accuracy and operational relevance. Launched in February 2025, IDEA is undergoing performance monitoring and refinement through comparison with forecaster input. This initiative reflects strong collaboration between meteorological services and aviation stakeholders to enhance safety and operational resilience.

6.31. The meeting acknowledged the information and encouraged continued innovation, along with regional sharing of best practices, to strengthen aviation resilience.

IP/11 – HAZARDOUS WEATHER INFORMATION SERVICE (HWIS) TRIAL ORGANIZED BY CHINA (China)

6.32. China presented plans to organize a regional Hazardous Weather Information Service (HWIS) trial in the Asia-Pacific, aligned with ICAO's global initiative under the Meteorology Panel's Working Group on Meteorological Requirements and Development (WG-MRAD). The trial aims to enhance en-route hazardous weather information, focusing on cumulonimbus clouds (CB), turbulence, and icing. To address latitudinal differences in weather patterns, the trial is divided into northern and southern segments—led by the Aviation Meteorological Center (AMC) of the Civil Aviation Administration of China (CAAC) and the Hong Kong Observatory (HKO), respectively.

6.33. Key objectives include data sharing, SWIM-based user exchange, standardized formats, and forecast validation. China has also developed the Asian Hazardous Weather Coordination Platform to support real-time collaboration and SIGMET coordination. All interested MWOs in the region are invited to participate and engage with AMC or HKO.

6.34. The meeting acknowledged the information and sought further clarification regarding the coordination between the trial and ICAO METP developments on HWIS. Noting that China is a member of the METP HWIS initiative, the meeting encouraged China to continue the coordination and collaboration with the ICAO METP HWIS workstream when conducting the HWIS trials.

IP/13 – PROGRESS IN QUANTITATIVE OBSERVATION AND IMPLEMENTATION OF MODERATE OR HEAVY PRECIPITATION IN EAST CHINA (China)

6.35. China presented advancements in quantitative rainfall observation for civil aviation operations in East China. Recognizing the limitations of traditional hourly rainfall standards, the East China Air Traffic Control Bureau developed a refined "minute-level" rainfall intensity judgment standard using data from automatic rain gauges, laser raindrop spectrometers, and phased array radar. Verified through operational trials across multiple airports and in collaboration with airlines, the new criteria improve time, spatial, and intensity accuracy.

6.36. The updated thresholds—particularly for heavy rainfall—were adjusted based on real-world flight impacts, such as go-arounds, enhancing relevance to aviation safety. A practical guidance manual has been compiled to support implementation. Ongoing trials aim to further validate and optimize the standard using operational data during thunderstorm seasons. This initiative marks a significant step toward more precise and responsive meteorological support for flight operations.

6.37. The meeting noted the information and encouraged continued information sharing on

trials and regional collaboration that support harmonized implementation of standards.

IP/12 – METEOROLOGICAL SERVICES IN SUPPORT OF ASIA-PACIFIC AIR TRAFFIC FLOW MANAGEMENT BY CHINA (China)

6.38. China presented its meteorological service capabilities in support of regional ATFM across the Asia-Pacific. Emphasizing the importance of harmonized meteorological information, China has led regional SIGMET coordination since 2018 via the Hazardous Weather Coordination Platform. To further support ATFM, China developed Collaborative Convective Forecast Products (CCFP), issued three times daily, providing +2-to-+8-hour forecasts for convective activity.

6.39. These forecasts are integrated into China's domestic ATFM system and developed collaboratively with regional meteorological centres, ATFM units, and airlines. Additional meteorological data—including typhoon tracking, thunderstorm forecasts, turbulence, icing, and space weather—are used across ATFM phases. Historical analyses also support service evaluation and optimization. China encourages broader data sharing and cooperation among Asia-Pacific meteorological service agencies to strengthen regional ATFM operations.

6.40. The meeting acknowledged the information and encouraged continued regional collaboration and data sharing to support harmonization and enhance operational safety and efficiency. In this context, the United States invited participants to revisit similar developments it had presented previously, as part of its ongoing efforts to promote best practices.

IP/16 – TROPICAL CYCLONE SIGMET AND TCA BACK-UP (New Zealand)

6.41. New Zealand's MetService, under an MoU with Fiji Meteorological Service (FMS), provides back-up tropical cyclone aviation products when FMS is unable to do so. Following recent tool upgrades, MetService conducted two successful tests in May and July 2025 to validate its ability to issue TC SIGMETs and Tropical Cyclone Advisories (TCAs) for the Nadi FIR. Both tests involved coordination with FMS, stakeholder notifications, and confirmation of message dissemination via AFTN and RODB Brisbane.

6.42. The exercises confirmed operational readiness and highlighted areas for improvement, including updating AFTN contact lists and resolving IWXXM dissemination issues. These tests have now been incorporated into MetService's annual schedule, reinforcing the importance of regular validation.

6.43. The meeting acknowledged the information and commended the collaborative efforts between MetService and the FMS in maintaining regional aviation safety during tropical cyclone events. It highlighted the importance of annual testing and the value of lessons learned, as demonstrated by New Zealand. It strongly encouraged States to utilize the test capabilities outlined in Annex 3 to support continuous improvement of their systems.

IP/20 – VAAC LONDON QVA API (United Kingdom (WAFC London))

6.44. VAAC London has launched its QVA API as part of a soft rollout ahead of operational use from 27 November 2025. The QVA service provides high-resolution volcanic ash forecasts, including gridded ash concentration data, probabilistic thresholds, and IWXXM-formatted features. Forecasts span up to 24 hours, updated every six hours during significant eruptions, and cover altitudes from ground level to FL600.

6.45. Built in alignment with ICAO SWIM and EUROCONTROL standards, the API enables aviation users to integrate QVA data into flight planning based on certified engine susceptibility

thresholds. A notification service alerts users when new data is published. Registrations are open globally, including to APAC stakeholders. VAAC London will host webinars in November to support user onboarding and engagement.

6.46. The meeting acknowledged the information and encouraged regional participation. In response to a participant's query, the meeting noted the need for clarification regarding the statement in paragraph 1.2 of the paper, which indicates that while the QVA API will be available for use, it is not intended for operational use until 27 November 2025.

6.47. Furthermore, given this represents the first MET/SWIM service implementation, the meeting considered how the APAC Region will inform States and users as the service comes online as expected in 2026. The meeting requested the Chair and Secretariat to arrange for the preparation of an appropriate proposal for the next meeting **[ACTION 29/30]**. In addition, the meeting formulated the following Draft Conclusion:

<table>
<tr><td colspan="2">Draft Conclusion MET SG/29/15 – Enabling the use of QVA by airlines</td></tr>
<tr><td>What: That, State Aviation Authorities are requested to consider and plan for the use of quantitative volcanic ash concentration information (QVA).</td><td>Expected impact:
☐ Political / Global
☒ Inter-regional
☒ Economic
☐ Environmental
☒ Ops/Technical</td></tr>
<tr><td>Why: The provision of QVA by volcanic ash advisory centres (VAACs) is a Recommended Practice in Amendment 82 to Annex 3, applicable from 27 November 2025. Airlines can use QVA for enhanced safety decision-making and improved efficiency, resulting in fewer flight cancellations and diversions.</td><td>Follow-up:
☒ Required from States</td></tr>
<tr><td>When: As soon as practicable</td><td>Status: Adopted by Subgroup</td></tr>
<tr><td colspan="2">Who: ☐Subgroups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT</td></tr>
</table>

IP/18 – WORLD AREA FORECAST SYSTEM (WAFS) UPDATE (United Kingdom (WAFC London))

6.48. WAFC London provided an update on recent and upcoming enhancements to the WAFS. Key developments include the introduction of higher-resolution gridded data sets and multi-timestep SIGWX forecasts, spanning FL100 to FL600 and covering T+6 to T+48 at 3-hour intervals. These upgrades, aligned with ICAO Amendment 82 and PANS-MET Doc 10157, will become operational in November 2025.

6.49. Access to the new data is available via the SWIM-compliant Secure Aviation Data Information Service (SADIS) and WAFS Internet File Service (WIFS) APIs, which replace legacy systems scheduled for retirement in November 2028. Users are encouraged to begin migration to benefit from improved forecast accuracy. Future enhancements planned for 2028 include probabilistic forecasts for turbulence, icing, and cumulonimbus cloud tops, as well as turbulence type differentiation.

6.50. The meeting acknowledged the information and encouraged States and users to begin transitioning to the new SADIS and WIFS APIs to fully leverage the benefits of these advancements.

6.51. In response to Australia's query, the meeting noted the need for clarification regarding the status of the multi-timestep SIGWX development referenced in paragraph 2.3 of the paper. Specifically, it was questioned whether the development is considered complete with no further updates

planned, or if additional enhancements are anticipated.

IP/19 – SADIS (United Kingdom (WAFC London))

6.52. WAFC London provided an update on the Secure Aviation Data Information Service (SADIS) since MET SG/28. The new SADIS API is now fully operational, offering access to higher-resolution WAFS gridded datasets and multi-timestep SIGWX forecasts. Users of the legacy SADIS FTP[1] service are encouraged to begin migration ahead of its planned retirement in November 2028.

6.53. The 2025 SADIS efficacy survey is underway, with responses requested by 31 December 2025. A new METAR and TAF data catalogue has been published to help users identify missing data. SADIS workstation evaluation guides and backup access via WIFS are also available.

6.54. States using SADIS are reminded to accede to the SADIS Agreement and participate in the SADIS Cost Recovery Administrative Group (SCRAG). Additional regional representation from Asia is sought for SCRAG's annual meeting.

6.55. The meeting noted the information and encouraged continued engagement of States with SADIS developments. Australia informed the meeting that it is considering nominating for the vacant SCRAG role.

7. Environmental-related initiatives and impacts

IP/23 – CLIMATE CHANGE OUTREACH IN NEW ZEALAND (New Zealand)

7.1. New Zealand highlighted its climate change outreach efforts through the Aviation Meteorology (MET) Symposium, organized by the Civil Aviation Authority of New Zealand. The 2022 and 2025 symposiums featured presentations from MetService NZ, Earth Sciences NZ (formerly NIWA), and Air New Zealand, focusing on climate projections and aviation impacts.

7.2. The 2025 symposium emphasized current and future climate-related aviation hazards, including aircraft performance and infrastructure resilience. A joint presentation by MetService and NIWA underscored observed climate effects and regulatory implications, while a second presentation by Dr Jonny Williams explored climate impacts on aircraft take-off performance, sparking interest among airport operators and regulators.

7.3. These discussions have informed long-term planning and risk management across the aviation sector. The meeting noted the information and considered the benefit of such outreach initiatives to support climate resilience in aviation.

8. Future work program

WP/23 – REVIEW THE TERMS OF REFERENCE AND WORK PLAN (Secretariat)

8.1. The Secretariat presented a review of the Terms of Reference (ToR) and Work Plan of the MET SG to ensure alignment with evolving regional and global aviation meteorological needs. The MET SG supports APANPIRG's objectives by guiding the planning and implementation of MET services in the APAC Region, consistent with ICAO SARPs and the Regional ANP.

[1] Secure Aviation Data Information Service File Transfer Protocol

8.2. The current ToR and Work Plan, last updated at MET SG/28, include deliverables such as enhancing SIGMET coordination, supporting SWIM-based MET services, addressing MET-related deficiencies, and promoting climate resilience. Tasks are actively progressing under MET SG, MET/R WG, MET/IE WG, and the Secretariat.

8.3. The meeting further reviewed and proposed updates to the ToR and Work Plan to maintain responsiveness to operational priorities and technological advancements, and ensure continued support for safe, efficient, and sustainable international air navigation in the region. Proposed updates to the ToR and Work Plan are presented in **Appendix D** of this Report.

8.4. The meeting noted that the METSG ToR define the Meeting report should be made within 21 days, Invitations should be available not less than 3 months prior to the meeting, papers should be available 14 days before the meeting. Neither MET SG, or subsidiary working groups are meetings these requirements and this is likely due to a symptom of a lack of Secretariat capacity. The meeting again emphasized that further dedicated support, especially for the MET programme administration—per APANPIRG Decision 35/11—remains essential to meet regional needs effectively.

8.5. Recalling the discussion under IP/29 on the requested seminar or webinar to facilitate a better understanding of the significant changes introduced by Amendment 82 to Annex 3 and the new PANS-MET, the meeting further proposed that the event be organized for October or November 2025 [ACTION 29/26 refers].

8.6. The meeting recalled the importance of advancing previous requests to increase the involvement of user groups—such as IATA and International Federation of Air Line Pilots' Associations (IFALPA)—in the activities of the MET SG, including participation in future MET Seminars. This aligns with Action Item 28/28 and supports broader engagement and collaboration across the aviation community.

9. Any other Business

IP/24 – PROPOSED SCHEDULE FOR ICAO APAC MET MEETINGS IN 2026 (Secretariat)

9.1. The Secretariat presented the proposed schedule for ICAO APAC MET meetings in 2026, aiming to enhance coordination and participation across related groups. The meeting agreed to a schedule of key meetings as follows:

- **MET/R WG/15** – 6-10 April 2026, Bangkok, Thailand, in conjunction with the MET/ATM Seminar and ATFM/SG/16.
- **MET/IE WG/24** – 20-24 April 2026, Fiji, in conjunction with ACSICG/13, allowing for a joint session to address common topics such as IWXXM, AMHS, and SWIM.
- **MET SG/30** – 20-24 July 2026, Bangkok, Thailand, continuing the tradition of mid-year MET SG meetings.

9.2. These alignments support efficient resource use and collaborative progress on regional MET priorities such as IWXXM, AMHS, SWIM, and MET/ATM integration.

9.3. The Chair of MET/IE WG noted that holding MET/IE WG/24 in Fiji may result in some members of MET/IE WG being unable to attend due to higher travel costs; however, it is anticipated that by holding the meeting in Fiji, more participation from Pacific States who require assistance with

implementing IWXXM and AMHS/FTBP[1] will attend.

9.4. The MET/R WG Chair raised an issue concerning the coordination between the ad hoc groups working on SIGMET coordination and SIGMET Guide, which are currently reporting to different parent groups. The meeting suggested this could be further discussed at MET/R WG/15.

— END OF SECTION —

[1] AMHS provides a mechanism for the exchange of IWXXM information as attachments by utilising the AMHS File Transfer Body Part (FTBP) feature over the AFS.

Appendix A – Draft Conclusions, Draft Decisions, Conclusions and Decisions

Draft Conclusions

Draft Conclusion MET SG/29/01 – Publishing MET Seminar Presentation Recordings	
What: That ICAO be requested to make available the MET Seminar presentation recordings.	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To provide Member States and stakeholders with access to valuable technical and operational information shared during the MET Seminars, thereby supporting capacity building, knowledge sharing, and regional collaboration in aeronautical meteorology.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Draft to be adopted by MET SG
Who: ☐ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

Draft Conclusion MET SG/29/02 – Management of obsolete planning and implementation guidance documents on the ICAO APAC Office website	
What: That, ICAO take appropriate action to manage (clearly identified as obsolete or remove) the archive of obsolete and historic planning and implementation guidance documents on its website, including those related to MET and other AN fields.	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Obsolete OPMET- and ANS-related documents (e.g., FASID Tables) that are accessible on the ICAO APAC Office website are not clearly identified as obsolete and non-operational information for historic reference purposes only. Therefore, they could be understood by readers to represent the current operational requirements.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Draft to be adopted by APANPIRG
Who: ☐ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

Draft Conclusion MET SG/29/03 – IWXXM update notification process	
What: That, ICAO in coordination with WMO take appropriate action to initiate an IWXXM update notification process for all relevant stakeholders, including IWXXM consumers and system vendors.	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: WMO develops new versions of IWXXM to affect improvements and support the evolution of ICAO Annex 3 SARPs. To avoid the potential impact on operations due to IWXXM version compatibility issues, States must upgrade the systems for generating, exchanging and consuming IWXXM reports to support the IWXXM version that complies with the latest amendment to Annex 3.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Draft to be adopted by APANPIRG
Who: ☐ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☒ ICAO HQ ☐ Other:	

Draft Conclusion MET SG/29/05 – Sharing of Turbulence Reports with Meteorological Service Providers	
What: That States be urged to: a) In accordance with Annex 3, share special air-reports, with meteorological service providers, including turbulence reports, to support enhanced forecasting and situational awareness; and b) Provide information on the number of special air-reports received each calendar year.	Expected impact: ☒ Political / Global ☒ Inter -Regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: To address DGCA/60 Action Item 60/9 and improve aviation safety through better access to turbulence data, recognizing the critical role of timely meteorological information in emergency response planning, turbulence forecasting, and regional collaboration—particularly during high-risk weather periods such as the monsoon season.	Follow-up: ☒ Required from States
When: As soon as practicable	Status: Draft to be adopted by APANPIRG
Who: ☐ Sub Groups ☐ RASG-APAC ☒ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

Draft Conclusion MET SG/29/08 – Establishment of a Group to Address Long-Standing Air Navigation Deficiencies	
What: That APANPIRG establish a multi-disciplinary group comprising experts from the ATM, AOP, and MET domains to propose practical and sustainable options for resolving long-standing air navigation deficiencies in the Asia/Pacific region.	Expected impact: ☒ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒Ops/Technical

Why: To accelerate progress on deficiencies—many of which have persisted for over a decade—by fostering coordinated, multi-disciplinary approaches that reflect the interconnected nature of air navigation services and support States in overcoming systemic and resource-related challenges, particularly in the Pacific Small Island Developing States (PSIDS).	Follow-up: ☒ Secretariat
When: 18-Aug-25	Status: Draft to be adopted by PIRG
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Draft Conclusion MET SG/29/15 – Enabling the use of QVA by airlines	
What: That, State Aviation Authorities are requested to consider and plan for the use of quantitative volcanic ash concentration information (QVA).	Expected impact: ☐ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical
Why: The provision of QVA by volcanic ash advisory centres (VAACs) is a Recommended Practice in Amendment 82 to Annex 3, applicable from 27 November 2025. Airlines can use QVA for enhanced safety decision-making and improved efficiency, resulting in fewer flight cancellations and diversions.	Follow-up: ☒ Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: ☐Subgroups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Draft Decisions

Nil

Conclusions

Conclusion MET SG/29/06 – Lack of Provision of IWXXM Format SIGMET	
What: The MET Sub-group recommends to the ICAO APAC Office, in its role assessing potential deficiencies, that it reviews the information provided in this paper on the lack of IWXXM implementation for SIGMET issuance: Afghanistan, Bangladesh, Cambodia, DPR Korea, India, Indonesia, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nauru, Nepal, Pakistan, Papua New Guinea, Republic of Korea, Sri Lanka, Viet Nam	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: SIGMET information in IWXXM format is a Standard in ICAO Annex 3 and therefore non-compliance should be considered as a potential deficiency.	Follow-up: ☒ Secretariat
When: 18-Aug-25	Status: Draft to be adopted by Subgroup
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Conclusion MET SG/29/07 – Lack of Provision of IWXXM Format Advisories

What: The MET Sub-group recommends to the ICAO APAC Office, in its role assessing potential deficiencies, that it reviews the information provided in this paper on the lack of IWXXM implementation for advisory issuance: Volcanic ash advisory (VAA): United States, France Tropical cyclone advisory (TCA): Australia, United States, India, Fiji	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: Tropical cyclone and volcanic ash advisory information in IWXXM format is a requirement in ICAO Annex 3 and therefore non-compliance should be considered as a potential deficiency.	Follow-up: ☒ Secretariat
When: 18-Aug-25	Status: Draft to be adopted by Subgroup
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Decisions

Decision MET SG/29/04 – MET information elements of the APAC Seamless ANS Plan (ASAP)	
What: That, the MET SG approves the publication of the mapping document (MET SG/29 WP/03, Appendix D) as an appendix to the APAC Seamless ANS Plan (ASAP).	Expected impact: ☐ Political / Global ☐ Inter -Regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The mapping document provides the MET information required to support the Priority 1 and 2 elements of the ASAP via a mapping analysis. These elements are critical and recommended upgrades that would bring potential benefits to the region. To ensure effective document management and user awareness, this appendix will be updated in the next edition of ASAP.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Adopted by Sub Group
Who: ☒ Sub Groups ☐ RASG-APAC ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:	

Decision MET SG/29/09 – Approval of Guidance for Updating APAC MET Documentation	
What: That the "Guidance for Updating APAC MET Documentation" be approved for publication on the ICAO APAC eDocuments website, following incorporation of editorial improvements as suggested by the meeting.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒Ops/Technical
Why: To provide States with a clear and streamlined reference for initiating updates to MET-related regional guidance documents, ensuring consistency across related materials and facilitating timely and accurate amendments through established ICAO procedures.	Follow-up: ☒ Secretariat
When: 18-Aug-25	Status: Draft to be adopted by PIRG

Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT

Decision MET SG/29/10 – Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations	
What: That, the MET SG approves the proposed updates i.e. include the example from Republic of Korea under Appendix 1 of the *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations*.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ 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: ☐ Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Decision MET SG/29/11 – Updates to Regional SIGMET Guide	
What: That, the MET SG approves the updates proposed under Appendix A of MET SG/29─WP/13, subject to editorial improvements agreed by the meeting, publish the 12th Edition of the APAC Regional SIGMET Guide and make the guide available on the ICAO APAC website.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To make the latest updates to the Regional SIGMET Guide available for use by the States.	Follow-up: ☐ Required from States
When: August 2025	Status: Adopted by MET SG
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Decision MET SG/29/12 – Updating the APAC Use Cases for SWIM-based Meteorological Information Services Supporting ATFM	
What: That, the MET SG approves the Second Edition of the *APAC Use Cases for SWIM-based Meteorological Information Services Supporting ATFM*, subject to editorial improvements agreed by the meeting, for publication on the ICAO APAC eDocument website (WP/14, Attachment A).	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To enhance the document with a new use case demonstrating potential operational benefits and the editorial improvements proposed by the ad hoc group, supporting the development of appropriate MET information services and the associated SWIM-enabled MET applications to meet ATFM needs in the APAC Region.	Follow-up: ☐ Required from States
When: 22-Aug-25	Status: Draft to be adopted by Subgroup

Who: ☒Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT

Decision MET SG/29/13 – Publication of 2021 Survey of State Meteorological Information Supporting Air Traffic Management Report	
What: That, the MET SG approves the publication of the refined report ***'2021 Survey of State Meteorological Information Supporting Air Traffic Management'*** on the ICAO APAC eDocuments website	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: To make the survey findings accessible to relevant stakeholders via the ICAO APAC eDocuments website	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: ☐Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

Decision MET SG/29/14 – MET Contributions to SWIM TF for MET SWIM Information Services	
What: That, MET SG empowers an ad hoc group, consisting of Chairs of MET/IE WG, MET/R WG and MET SG, to develop and maintain meteorological components of the 'Business Functionality of APAC Common SWIM Information Services' for submission to SWIM TF.	Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical
Why: The CNS SG has endorsed version 1 of the 'Business Functionality of APAC Common SWIM Information Services' and has sought formal advice from the MET SG for subsequent meteorological updates to this document. An ad hoc group is formed to provide timely advice from across MET SG and its subsidiary groups.	Follow-up: ☐ Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: ☒Subgroups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other: TEXT	

— END OF SECTION —

Appendix B – List of Actions

New action items recorded by MET SG/29

MET SG/29 – LIST OF ACTIONS			
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**
29/01	**PfA APAC ANP** Process the PfA in Flimsy/02, and incorporate updates from WP/12, WP/20, and WP/25 [Ref: MET SG/29 Report, para. 2.11 and Flimsy/02]	Secretariat	September 2025
29/02	**Update MET-SWIM Docs** Update ICAO APAC eDocuments to reflect MET-SWIM Roadmap (V3) and new MET-SWIM Implementation Guidelines [Ref: para. 2.39 and IP/02]	Secretariat	September 2025
29/03	**SIGMET Test Follow-up** Identify advisory test messages not received to support targeted resolution [Ref: para. 3.10 and WP/07]	SIGMET-test focal points	MET/IE WG/24
29/04	**Share SIGMET Results** Share SIGMET test results with relevant States [Ref: para. 3.12 and WP/07]	Secretariat	August 2025
29/05	**Publish MET Update Guide** Publish "Guidance for Updating APAC MET Documentation" [Ref: MET SG/29 Report, para. 4.4 and WP/15]	Secretariat	September 2025
29/06	**Improve MET Update Guide** Present proposals for further improvements to the guidance document [Ref: MET SG/29 Report, para. 4.5 and WP/15]	MET SG Chairs	MET SG/30
29/07	**ROBEX Update – Hong Kong** Incorporate Hong Kong updates into ROBEX Handbook 18th Edition [Ref: MET SG/29 Report, para. 4.7 and WP/10]	Secretariat	September 2025
29/08	**ROBEX Update – Japan** Incorporate Japan's updates into APAC ANP and ROBEX Handbook [Ref: MET SG/29 Report, para. 4.10 and WP/12]	Secretariat	September 2025
29/09	**Process ANP PfAs** Process well-formed ANP PfAs received in time for next amendment [Ref: MET SG/29 Report, para. 4.11 and WP/12]	Secretariat	September 2025
29/10	**IWXXM Validity Time** Inform States how IWXXM monitoring handles 24:00Z validity time [Ref: MET SG/29 Report, para. 4.15.1 and WP/16]	Secretariat	September 2025
29/11	**METAR Timeliness Clarification** Seek clarification on EUR Region's METAR timeliness definitions [Ref: MET SG/29 Report, para. 4.15.2 and WP/16]	MET/IE WG Chair	MET/IE WG/24
29/12	**NZ Aerodrome Updates** Include NZOH, NZDN, NZHN updates in ROBEX Handbook [Ref: MET SG/29 Report, para. 4.18 and WP/17]	Secretariat	October 2025
29/13	**US Aerodrome Inclusion** Include US aerodromes in ROBEX Handbook and coordinate routing gaps [Ref: MET SG/29 Report, para. 4.21 and IP/28]	Secretariat	September 2025
29/14	**Tailored MET Guidance** Publish updated Regional Guidance for Tailored MET Information and Services [Ref: MET SG/29 Report, para. 4.24 and WP/11]	Secretariat	September 2025
29/15	**SIGMET Guide Update** Publish 12th Edition of APAC Regional SIGMET Guide [Ref: MET SG/29 Report, para. 4.28 and WP/13]	Secretariat	November 2025
29/16	**SWIM Use Cases Update** Publish Second Edition of APAC Use Cases for SWIM-based MET Services [Ref: MET SG/29 Report, para. 4.33 and WP/14]	Secretariat	September 2025

MET SG/29 – LIST OF ACTIONS			
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**
29/17	**MET/ATM Survey Report** Publish refined 2021 MET/ATM Survey Report [Ref: MET SG/29 Report, para. 5.3 and WP/26]	Secretariat	September 2025
29/18	**VOLMET Update – Thailand** Incorporate Thailand's VOLMET updates into APAC ANP [Ref: MET SG/29 Report, para. 5.6 and WP/20]	Secretariat	September 2025
29/19	**VDTI Integration** Incorporate VDTI updates into APAC ANP and ROBEX Handbook [Ref: MET SG/29 Report, para. 5.9 and WP/25]	Secretariat	September 2025
29/20	**ROBEX HB Bulletin Review** Coordinate review of multiple ROBEX Handbook (TAF/METAR) bulletins for aerodromes [Ref: MET SG/29 Report, para. 5.16 and IP/06]	MET/IE WG	MET/IE WG/24
29/21	**VONA Dissemination** Investigate VONA dissemination methods for global accessibility [Ref: MET SG/29 Report, para. 5.23 and WP/21]	Ad hoc group (NZ, AU, US)	November 2025
29/22	**VONA Guide Update** Provide finalized VONA updates to SIGMET Guide ad hoc group [Ref: MET SG/29 Report, para. 5.24 and WP/21]	Secretariat	November 2025
29/23	**VONA Colour Code Guidance** Seek METP guidance on green aviation colour code VONA issuance [Ref: MET SG/29 Report, para. 5.28 and IP/07]	METP members	MET/IE WG/24
29/24	**VONA Input System (VIS) Expansion** Explore expansion of VIS access beyond PSIDS [Ref: MET SG/29 Report, para. 5.33 and IP/15]	New Zealand	MET SG/30
29/25	**VAAC Washington Inclusion** Invite VAAC Washington to contribute to future VAAC reports [Ref: MET SG/29 Report, para. 5.37 and IP/08]	Secretariat	MET SG/30
29/26	**Amendment 82 Webinar** Organize webinar on Amendment 82 and PANS-MET updates [Ref: MET SG/29 Report, para. 5.48 and IP/29]	Secretariat	Oct–Nov 2025
29/27	**IWXXM Schema Clarification** Seek ICAO/WMO clarification on APAC-specific IWXXM schema implementation [Ref: MET SG/29 Report, para. 6.5 and WP/24]	Secretariat	MET SG/30
29/28	**SWX Exercise Collaboration** Engage ATM/SG to explore regional space weather exercise collaboration [Ref: MET SG/29 Report, para. 6.11 and IP/22]	Secretariat	MET SG/30
29/29	**QVA Workshop Summary** Publish QVA Workshop Summary link on ICAO APAC eDocuments [Ref: MET SG/29 Report, para. 6.18 and IP/21]	Secretariat	November 2025
29/30	**QVA Rollout Proposal** Prepare proposal for informing States about QVA service rollout [Ref: MET SG/29 Report, para. 6.47 and IP/20]	Chair and Secretariat	MET SG/30

Action items recorded by MET SG/28
(Note: Proposed updates are indicated with ~~strikethrough~~ and highlighted text)

MET SG/28 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
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.	Secretariat	MET SG/28 final report	**IN PROGRESS** [Ref: MET/IE WG/23-WP/03]

MET SG/28 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
	[Ref: Report of MET SG/28, para. 2.8.]			
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	**COMPLETED** [Ref: IWXXM Package Compatibility Table-external link (https://www.icao.int/APAC/Pages/eDocs.aspx)]
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/28-043]	Secretariat	MET SG/28 final report	**IN PROGRESS** [Ref: MET/IE WG/23-WP/03]
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.] [Ref: Report of MET SG/29, para. 2.6.]	Secretariat, with support from the ad hoc group on deficiencies	APANPIRG/36 ~~APANPIRG/35~~	**IN PROGRESS**
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.] [Ref: Report of MET SG/29, para. 2.6.]	Secretariat	MET SG/28 final report	**IN PROGRESS**
28/06	Consider the feasibility of including WIFS in the annual SIGMET tests. [Ref: Report of MET SG/28, para. 2.8.] [Ref: Report of MET SG/29, para. 2.6.]	MET/IE WG	MET/IE WG/23	**CLOSED**
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	**IN PROGRESS**
28/08	Publish the *MET Deficiency Identification Guide* and *MET Deficiency Report Guide*, (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/28-054]	Secretariat	MET SG/28 final report	**COMPLETED** [Ref: MET Deficiency Report and Identification Guide, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
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	**COMPLETED** [Ref: APAC ROBEX Handbook, Seventeenth Edition, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
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	**COMPLETED** [Ref: MET/IE WG/23–WP/11]
28/11	Prepare a proposal to include VONA in the SIGMET test procedures for 2026. [Ref: Report of MET SG/28, para. 4.5.] [Ref: Report of MET SG/29, para. 2.6.; MET SG/29, WP/21]	New Zealand	MET SG/29	**COMPLETED**

MET SG/28 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
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	**COMPLETED** [Ref.: T 4/7.5 – AP128/24 (MET) 29 October 2024]
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	**COMPLETED** [Ref: APAC Regional SIGMET Guide, Eleventh Edition, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
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	**IN PROGRESS**
28/15	Publish the *Guidance for Developing and Coordinating Aviation Exercises for Meteorological Events*, 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. [Ref: Report of MET SG/28, para. 4.16.] [Ref: Decision MET SG/28-065]	Secretariat	MET SG/28 final report	**COMPLETED** [Ref: Guidance for Developing and Coordinating Aviation Exercises for Meteorological Events, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
28/16	Publish the example from China, as presented in Attachment A of WP/14, in Appendix 1 of the *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations*. [Ref: Report of MET SG/28, para. 4.19.] [Ref: Decision MET SG/28-076]	Secretariat	MET SG/28 final report	**COMPLETED** [Ref: APAC Regional Guidance for Tailored MET Information and Services to Support ATM Operations, Appendix 1 – China, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
28/17	Publish the *APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM*, 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. [Ref: Report of MET SG/28, para. 4.20. – 4.22.] [Ref: Decision MET SG/28-087]	Secretariat	MET SG/28 final report	**COMPLETED** [Ref: APAC Use Cases and User Requirements for SWIM-based Meteorological Information Services Supporting ATFM, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
28/18	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. [Ref: Report of MET SG/28, para. 4.32.] [Ref: Report of MET SG/29, para. 2.6]	Secretariat	ATM/SG/13 ~~ATM/SG/12~~	**IN PROGRESS**
28/19	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.	Secretariat	MET SG/28 final report	**COMPLETED** [Ref: APAC ROBEX Handbook,

MET SG/28 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
	[Ref: Report of MET SG/28, para. 4.35. and 5.7.] [Ref: Decision MET SG/28-098]			Seventeenth Edition, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
28/20	Publish the SIGMET Guide updates, as presented in Flimsy/01, WP/10, WP/11 and Flimsy/03. [Ref: Report of MET SG/28, para. 4.39.] [Ref: Decision MET SG/28-109]	Secretariat	MET SG/28 final report	**COMPLETED** [Ref: APAC Regional SIGMET Guide, Eleventh Edition, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)]
28/21	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. [Ref: Report of MET SG/28, para. 5.2., 5.4., 5.5. and 5.9.] [Ref: Report of MET SG/29, para. 2.6.; Ref: MET SG/29, Flimsy2]	Secretariat	Sep 2025 ~~Aug 2024~~	**IN PROGRESS**
28/22	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. [Ref: Report of MET SG/28, para. 5.11.] [Ref: Report of MET SG/29, para. 2.6.; Ref: MET SG/29, Flimsy2]	Secretariat	Sep 2025 ~~Aug 2024~~	**IN PROGRESS**
28/23	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. [Ref: Report of MET SG/28, para. 5.13.] [Ref: Report of MET SG/29, para. 2.6.; Ref: MET SG/29, WP/26]	MET/R WG	MET SG/29	**COMPLETED**
28/24	Review and report on the outcomes and lessons learned from *2021 ICAO APAC Regional Survey on the provision of MET services to support ATM and ATFM*; 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. [Ref: Report of MET SG/28, para. 5.14.] [Ref: Report of MET SG/29, para. 2.6.]	MET/R WG	MET SG/29	**IN PROGRESS**
28/25	Present a paper to the ATM/SG informing the ATM community of the *Report on 2021 ICAO APAC Regional Survey on the provision of MET services to support ATM and ATFM* that was presented to ATFM/SG/14 and summarising the main outcomes from the report. [Ref: Report of MET SG/28, para. 5.15.] [Ref: Report of MET SG/29, para. 2.6.]	Secretariat, with support from the MET/R WG Chair	ATM/SG/13 ~~ATM/SG/12~~	**IN PROGRESS**
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	**COMPLETED** [Ref: ATM/SG/12 −WP/37; and ATM/SG/12 Report, 7.14-7.16]

MET SG/28 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
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	**IN PROGRESS** [Ref: AOP/SG/8–WP/27; and AOP/SG/8 Report, 9.9-9.15]
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.] [Ref: Report of MET SG/29, para. 2.6.]	Secretariat	MET SG/30 ~~MET SG/29~~	**IN PROGRESS**
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.] [Ref: Report of MET SG/29, para. 2.6.]	Secretariat and Chair	MET SG/30 ~~MET SG/29~~	**IN PROGRESS**
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	**IN PROGRESS**
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	**COMPLETED** [Ref: ATM/SG/12 –WP/36; and ATM/SG/12 Report, 7.9-7.13]
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	**COMPLETED** [Ref: https://www.icao.int/APAC/Pages/eDocs.aspx; and https://www.icao.int/APAC/Meetings/Pages/APANPIRG.aspx]

Unresolved action items recorded by MET SG/27
(Note: Proposed updates are indicated with ~~strikethrough~~ and highlighted text)

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.] 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	Secretariat	MET SG/29 ~~Dec 2023~~	**IN PROGRESS** [Updates **completed** from MET SG/27-WP/09, Appx. A]
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.]	Secretariat	Dec 2023	**COMPLETED** [Ref: APAC Regional SIGMET Guide, Eleventh Edition, July

MET SG/27 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
	Ref: MET/R WG/13 Report, para. 2.9., and MET/R WG/13 action item 03.			2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)] ~~**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)	**COMPLETED** [Ref: APAC Regional SIGMET Guide, Eleventh Edition, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)] ~~**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	MET/R WG/14 ~~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	**COMPLETED** [Ref: APAC Regional SIGMET Guide, Eleventh Edition, July 2024 (https://www.icao.int/APAC/Pages/eDocs.aspx)] ~~**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	MET SG/29 ~~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.] [Ref: Report of MET SG/29, para. 2.6.; MET SG/29, Flimsy2]	Secretariat	Sep 2025 ~~Dec 2023~~	**IN PROGRESS** ~~**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. [Ref: Report of MET SG/27, para. 5.9.]	Secretariat	MET SG/29 ~~Dec 2023~~	**TO COMMENCE**
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	MET SG/29 ~~Dec 2023~~	**TO COMMENCE**

Unresolved action items recorded by MET SG/26

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

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	MET SG/29 ~~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	MET SG/29 ~~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 [Ref: Report of MET SG/29, para. 2.6.; MET SG/29, Flimsy2]	Secretariat and Nepal	Sep 2025 ~~Nov 2022~~	**IN PROGRESS**

Unresolved action items recorded by MET SG/25

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

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 [Ref: Report of MET SG/29, para. 2.6.; MET SG/29, Flimsy2]	Secretariat	Sep 2025 ~~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	Sep 2025 ~~Nov 2021~~	**IN PROGRESS** ANP amendment pending; SIGMET Guide amended, 9th Ed.
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	MET SG/29 ~~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	MET SG/29 ~~Mar 2022~~	**CLOSED** ~~**TO COMMENCE**~~

MET SG/25 – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
	[Ref: Report of MET SG/29, para. 2.6.]			
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	MET SG/29 ~~Nov 2021~~	**IN PROGRESS**

Unresolved action items recorded by (the former) MET/S WG
(Note: Proposed updates are indicated with ~~strikethrough~~ and highlighted text)

(Former) MET/S WG – LIST OF ACTIONS				
Action No.	**Detailed description of actions**	**Responsibility**	**Target date**	**Status**
MET/S WG/13-03	Share information on the update of the IAVW Handbook (due to be published in approx. 3 months) which would realign the guidance on exercise messages with Annex 3.	Secretariat	MET SG/29 ~~MET SG/27~~	**Outstanding** – IAVW Handbook yet to be published.
MET/S WG/10-21	ANP updates – State Volcano Observatories: Designate an ad-hoc group consisting of the Secretariat and members from the VAACs and RODBs to identify the APAC States with active or potential active volcanoes, which do not have a designated State volcano observatory listed in the APAC ANP, Vol I, Table MET I-1; conduct the necessary coordination to facilitate the States concerned with the designation of a State volcano observatory and listing it in the APAC ANP; coordinate the action above with the development of a comprehensive proposal for amendment of the ANP to reflect APAC States' current requirements for State volcano observatories [Ref: Report of MET/S WG/10, para. 4.17., 8.3. and 8.4.] [Ref: Report of MET SG/29, para. 2.6.; MET SG/29, Flimsy2]	MET/S WG and Secretariat	Sep 2025 ~~Before MET SG/27~~	**IN PROGRESS** First part of action complete, **second part of action remains outstanding.**

— END OF SECTION —

Appendix C – APANPIRG Reporting Form on Air Navigation Deficiencies in the MET Field

(extracted from Appendix D to the APANPIRG/35 Report on Agenda Item 4)

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

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

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)	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
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: • 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: • 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: • 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: • 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.	

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: • 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: • 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: • 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: • 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: • 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.	

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: • 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: • 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: • 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: • 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: • 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: • 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: • 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: • 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: • 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: • Kiribati, Nauru and Solomon Islands are working with their local users to determine whether there is any requirement for local WAFS information provision.	**Open**

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 Nauru should: • 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	MET SG/27 was informed that: • 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 Solomon Islands should: • 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	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.	
AP-MET-21	Nauru	September 2017	APANPIRG/28 noted that Nauru should: • 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	MET SG/27 was informed that: • 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: • 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	Removed from the open List; refer to: • Conclusion APANPIRG/33/14 – *Update of information in APANPIRG Air Navigation Deficiencies Reporting Form*; • APANPIRG/33 WP/14 – *STATUS OF AIR NAVIGATION DEFICIENCIES IN THE ASIA/PAC REGION*; • APANPIRG/33 WP/13 – *METEOROLOGY SUB-GROUP (MET SG/26) REPORT*; and • APANPIRG/33 IP/08 – *RECTIFICATION OF APANPIRG AN DEFICIENCY AP-MET-23*	Closed
		October 2021	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].	
		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.	

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 Solomon Islands should: • 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: • 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: • 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 *(in meteorological code)*
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 *(in meteorological code)*
TBC	— To be confirmed
TCB	— Technical Cooperation Bureau (of ICAO)
VAAC	— Volcanic ash advisory centre
WAFC	— World area forecast centre

— END OF SECTION —

Appendix D – Terms of Reference and Work Plan

(Note: Proposed updates are indicated with ~~strikethrough~~ 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 potential air navigation deficiencies in the field of aeronautical meteorology to the Regional Office, e.g., through systems performance monitoring. ~~and, w~~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) 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) Develop education materials to assist states in implementing aeronautical meteorological services.

h) 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

i) Share aeronautical meteorological initiatives being undertaken to reduce the environmental impact of aviation operations.

j) 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 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.	Secretariat	As required	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 with guidance from Secretariat	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 2)	As required	~~In progress~~ Delivered
b) c) ~~h)~~ ~~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**.**	MET SG	As required	In progress
c) d)	**Monitor** the regional implementation of meteorological observations, forecasts, warnings, and advisories, to identify potential deficiencies in the MET field.	MET SG Chair, Secretariat	Anually	In progress
c) d)	**Investigate**, and implement as appropriate, options to assist States in resolving AN deficiencies in the MET field.	MET SG	Anually	In progress
b) e) ~~f)~~	**Report on the Progress of** implementation and testing of IWXXM exchange.	MET/IE WG (Activity 7)	Anually	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	Anually	In progress
h) ~~g)~~	**Analysis** of MET information used in the Region specifically to support ATM operations.	MET/R WG (Deliverable 1)	MET SG/29	In progress

ToR Ref*	Detailed description of deliverable	Responsibility	Target date	Status of progress
~~h)~~ i) j)	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.	MET SG Chair, Secretariat	Annually	In progress
e) f) g) h)	**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 9)	MET SG/29	In progress
f)	**Develop** User Requirements for SWIM-based MET Information Services ~~Supporting ATFM~~.	MET/R WG (Deliverable 6)	MET SG/29	In progress
f)	**Develop** technical requirements and support the Region's implementation of SWIM-based MET Information Services.	MET/IE WG		
e) f) g)	**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
f) g)	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)

— END OF SECTION —

Appendix E – List of Papers

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/28 AND APANPIRG/35	Secretariat
WP/03	2	REVIEW OUTCOMES FROM MET/R WG/14	MET/R WG Chair
WP/04	2	REVIEW OUTCOMES FROM MET/IE WG/23	MET/IE WG Chairs
WP/05	2	OUTCOMES OF CNS SG/29	Secretariat
WP/06	3	REVIEW APANPIRG AIR NAVIGATION DEFICIENCIES	Secretariat
WP/07	3	MET DEFICIENCIES REVIEW OF THE 2024 ANNUAL SIGMET TEST OUTCOMES AND 2024 TAF AND METAR APAC PERFORMANCE INDICES	Ad-hoc group
WP/08	3	ACTION REQUIRED FOR ASIA AND PACIFIC MET DEFICIENCIES	New Zealand and Australia
WP/09	3	UPDATE ON MET DEFICIENCY AP-MET-20	Solomon Islands
WP/10	4	ROBEX HANDBOOK UPDATES	Secretariat
WP/11	4	UPDATES OF ASIA/PACIFIC REGIONAL GUIDANCE FOR TAILORED METEOROLOGICAL INFORMATION AND SERVICES TO SUPPORT AIR TRAFFIC MANAGEMENT OPERATIONS	Ad-hoc group
WP/12	4	UPDATES TO THE ASIA/PACIFIC AIR NAVIGATION PLAN VOLUME II AND THE ROBEX HANDBOOK	Japan
WP/13	4	UPDATES TO APAC REGIONAL SIGMET GUIDE	Ad-hoc group
WP/14	4	UPDATES TO DOCUMENT ON "APAC USE CASES AND USER REQUIREMENTS FOR SWIM-BASED MET INFORMATION SERVICES SUPPORTING ATFM"	Ad-hoc group
WP/15	4	UPDATING MET-RELATED REGIONAL GUIDANCE DOCUMENTS	New Zealand
WP/16	4	OPTIMIZING IWXXM MESSAGE DISSEMINATION FOR HONG KONG, CHINA	Hong Kong, China
WP/17	4	UPDATES TO NEW ZEALAND AERODROME MET INFORMATION IN APAC ROBEX HANDBOOK	New Zealand
WP/18	4	SITING, CALIBRATION AND MAINTENANCE OF AVIATION METEOROLOGY INSTRUMENTS	India
WP/19	5	PROPOSAL FOR AMENDMENT OF THE ICAO ASIA AND PACIFIC REGIONS (APAC) AIR NAVIGATION PLAN (ANP), VOLUME II	Australia
WP/20	5	UPDATES TO THE ASIA/PACIFIC AIR NAVIGATION PLAN	Thailand
WP/21	5	INCLUSION OF VONA IN THE APAC REGIONAL SIGMET TEST PROCEDURES	New Zealand
WP/22	5	STATUS AND PLANS FOR IWXXM IMPLEMENTATION IN INDONESIA	Indonesia
WP/23	8	REVIEW THE TERMS OF REFERENCE AND WORK PLAN	Secretariat
WP/24	6	BUSINESS FUNCTIONALITY OF APAC COMMON SWIM INFORMATION SERVICES	SWIM TF
WP/25	5	TECHO INTERNATIONAL AIRPORT (VDTI) TO JOIN ROBEX NETWORK FOR INTERNATIONAL OPMET DATA EXCHANGE	Cambodia
WP/26	5	UPDATE ON THE SURVEY OF STATE MET INFORMATION SUPPORTING ATM AND DEVELOPMENT OF FUTURE ACTIVITIES	Ad-hoc group

INFORMATION PAPERS			
IP No.	**Agenda Item No.**	**Title**	**Presented by**
IP/01	1	MEETING BULLETIN	Secretariat
IP/02	2	OUTCOMES OF THE SIXTH MEETING OF METEOROLOGY PANEL (METP/6)	Australia (METP member)
IP/03	3	ABOUT THE POTENTIAL DEFICIENCIES AND THE MODIFICATION PLAN	China
IP/04	3	ACHIEVEMENTS AND PLANS OF THE REPUBLIC OF KOREA FOR IWXXM IMPLEMENTATION	Republic of Korea
IP/05	5	CONSOLIDATED SPACE WEATHER INFORMATION SERVICE MANAGEMENT REPORT FOR 2024	Australia
IP/06	5	UPDATING UNITED STATES INTERNATIONAL COLLECTIVES	United States of America
IP/07	5	VONA UPDATES BY THE UNITED STATES IN NOVEMBER 2025	United States of America
IP/08	5	COMBINED APAC VAAC MANAGEMENT REPORT	Australia, Japan and New Zealand
IP/09	6	WMO ACTIVITIES OF RELEVANCE TO ICAO	WMO
IP/10	6	SATELLITE BASED ANALYSIS FOR IDENTIFYING, TRACKING AND FORECASTING THUNDERSTORMS; A CASE STUDY OVER THE IGI AIRPORT, NEW DELHI, INDIA	India
IP/11	6	HAZARDOUS WEATHER INFORMATION SERVICE (HWIS) TRIAL ORGANIZED BY CHINA	China
IP/12	6	METEOROLOGICAL SERVICES IN SUPPORT OF ASIA-PACIFIC AIR TRAFFIC FLOW MANAGEMENT BY CHINA	China
IP/13	6	PROGRESS IN QUANTITATIVE OBSERVATION AND IMPLEMENTATION OF MODERATE OR HEAVY PRECIPITATION IN EAST CHINA	China
IP/14	6	NEW ZEALAND AVIATION SPACE WEATHER EXERCISE	New Zealand
IP/15	6	NEW ZEALAND VONA INPUT SYSTEM (VIS)	New Zealand
IP/16	6	TROPICAL CYCLONE SIGMET AND TCA BACK-UP	New Zealand
IP/17	6	MET EXERCISES IN THE EUR/NAT REGION	New Zealand
IP/18	6	WORLD AREA FORECAST SYSTEM (WAFS) UPDATE	United Kingdom (WAFC London)
IP/19	6	SADIS	United Kingdom (WAFC London)
IP/20	6	VAAC LONDON QVA API	United Kingdom (WAFC London)
IP/21	6	VOLCANIC ASH EXERCISE IN THE PACIFIC	United States of America
IP/22	6	SPACE WEATHER USER WORKSHOP	United States of America
IP/23	7	CLIMATE CHANGE OUTREACH IN NEW ZEALAND	New Zealand
IP/24	9	PROPOSED SCHEDULE FOR ICAO APAC MET MEETINGS IN 2026	Secretariat
IP/25	6	SHORT-RANGE LIDAR APPLICATIONS FOR LOW-LEVEL WIND SHEAR AND WAKE VORTEX MONITORING AT HONG KONG INTERNATIONAL AIRPORT	Hong Kong, China
IP/26	6	PREDICTING PROLONGED LIGHTNING ALERTS FOR THE HONG KONG INTERNATIONAL AIRPORT	Hong Kong, China
IP/27	5	CHANGES IN THE OPMET DATA BULLETIN SYSTEM AND TRANSMISSION IN INDONESIA	Indonesia
IP/28	4	DISSEMINATION OF UNITED STATES METAR AND TAF	United States of America
IP/29	5	LATEST DEVELOPMENTS OF IWXXM	Hong Kong China

FLIMSIES			
FL No.	**Agenda Item No.**	**Title**	**Presented by**
FL/01	2	DGCA/60 DISCUSSION AND OUTCOMES ON TURBULENCE	Secretariat
FL/02	2	UPDATES TO APAC MET ANP	Secretariat
FL/03	3	UPDATE ON NEW ZEALAND STATUS OF TC SIGMET IN IWXXM	New Zealand

— END OF SECTION —

Appendix F – List of Participants

STATE/ORG	NAME	TITLE/ORGANIZATION
AUSTRALIA (4)	Mr. Ashwin Naidu	Aviation Customer Lead, Australian Bureau of Meteorology
	Ms. Amber Raman	Manager, Meteorological Authority Office, Australian Bureau of Meteorology
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	Ms. Jessica Neaves	Meteorological Technical Advisor, Australian Bureau of Meteorology
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	Ms. Wei Yuan	Engineer, Aviation Meteorological Center of Air Traffic Management Bureau, CAAC
	Ms. Jing Cong	Inspector, CAAC East China Regional Administration, Civil Aviation Administration of China
HONG KONG, CHINA (1)	Mr. Marco Mang-hin KOK	Acting Senior Scientific Officer, Hong Kong Observatory
MACAO, CHINA (1)	Mr. Lao Leng Wai	Chief of Aeronautical Meteorology and Climatology Division
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INDONESIA (2)	Mr. Bintoro Adi	Technician, Indonesia Meteorology, Climatology and Geophysics Agency, BMKG
	Ms. Resa Pratikasari	Aviation Meteorology Officer, BMKG Indonesia
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	Mr. Masato Fujimoto	Scientific Officer, Japan Meteorological Agency
LAO PEOPLE'S DEMOCRATIC REPUBLIC (2)	Mr. XAYYALATH VONGLATSMY	Officer, Department of Civil Aviation of Lao PDR
	Mr. Manivong DOUANGPHACHANH	Deputy Director, Department of Civil Aviation of Lao PDR
MALAYSIA (3)	Mr. Muhammad Firdaus Ismail	Deputy Director, Air Traffic Management, Civil Aviation Authority of Malaysia (CAAM)
	Ms. Freda Elizaberth Pendi	Air Traffic Controller, Civil Aviation Authority of Malaysia (CAAM)
	Mr. Muhammad Nazri Noordin	Principal Assistant Director, National Aviation Meteorological Center, Malaysian Meteorological Department
MONGOLIA (1)	Ms. Maasuren Dagva	Inspector of aviation meteorology, Civil Aviation Authority
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	Ms. Suralda Timmerman	General Manager Forecasting Strategy & Operations, MetService New Zealand Ltd
PAKISTAN (3)	Mr. KHALID BIN YOUSUF	DEPUTY DIRECTOR (AIS), PAKISTAN Civil Aviation Authority - DAAR
	Mr. MUHAMMAD ZAWAR	Deputy Director - MET, PAKISTAN Civil Aviation Authority - DAAR

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	Mr. Wajid Ali	Senior Joint Director (Air Traffic Services) Coordination, Pakistan Airports Authority
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	Mr. Keuno Park	Public official, Aviation Meteorological Office of Korea Meteorological Administration, Republic of Korea
SINGAPORE (4)	Mr. Yi Wei Yeoh	Principal Manager (CNS/MET regulation), Civil Aviation Authority of Singapore (CAAS)
	Mr. GOH Wee Poh	Head, Central Forecast Office, Forecast Operations Department, Meteorological Service Singapore
	Mr. Keng Oon CHIAM	Deputy Principal Meteorologist, National Environment Agency/Meteorological Service Singapore
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* Online Attendance

— END OF DOCUMENT —