

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



**REPORT OF THE
TWENTY-SEVENTH MEETING OF THE ASIA/PACIFIC METEOROLOGY SUB-GROUP
(MET SG/27)**

Bangkok, Thailand, 4-8 September 2023

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

Approved by the Meeting
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HISTORY OF THE MEETING

1. Introduction

1.1. The ICAO Asia and Pacific (APAC) Office hosted the Twenty-Seventh Meeting of the Meteorology Sub-group (MET SG/27) of the APAC Air Navigation Planning and Implementation Regional Group (APANPIRG) in Bangkok, Thailand, from 4-8 September 2023. The first day of the Meeting included a Seminar on recent developments in meteorological service for international civil aviation.

2. Attendance

2.1. Sixty-seven (67) participants from twenty-three (23) States and Special Administrative Regions and ICAO participated in the Meeting. An additional nine (9) virtual participants joined the Seminar session online. The list of Meeting participants is provided in **Appendix D** of this Report.

3. Chair and Secretariat

3.1. Ms Nguyen Lan Oanh, Vice-Chair of the MET SG, chaired the Meeting on the first, second and third days, and Mr Pak-wai Chan, Chair of the MET SG, chaired the Meeting on the fourth and fifth days. Mr Tim Hailes, Chair of the Meteorological Information Exchange Working Group (MET/IE WG), moderated the Seminar session on the first day. Mr Peter Dunda, ICAO Regional Officer, Aeronautical Meteorology and Environment, acted as Meeting Secretary.

4. 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-five (25) Working Papers (WPs), eighteen (18) Information Papers (IPs), two (2) Discussion Papers and one (1) Flimsy. In addition, the Meeting reviewed four (4) Slide Presentations (SP) in the Seminar session and one (1) SP in the discussion on agenda items. The list of papers and presentations is in **Appendix C** of this Report.

5. Draft Conclusions, Conclusions, Draft Decisions and Decisions

5.1. The Meeting recorded outcomes in the form of Draft Conclusions, Conclusions, Draft Decisions and Decisions 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) **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;
- c) **Draft Decisions** (formulated by the Sub-group for further consideration by APANPIRG) deal with matters of concern only to the APANPIRG and its contributory bodies;
- d) **Decisions** (adopted by the Sub-group) relate solely to matters dealing with the internal working arrangements of the Sub-group.

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

Draft Conclusions and Draft Decisions

Draft Conclusion MET SG/27-01: IWXXM version compatibility		
What:	That, States are requested to ensure that MET service providers, air navigation service providers (ANSPs), airlines and other end users do the following: a) make the necessary system upgrades to support the IWXXM version, which complies with the latest amendment to Annex 3 as stated in	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional

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the IWXXM compatibility table*; and b) prepare for future system upgrades to support future IWXXM versions driven by further amendments to Annex 3. (*Link to the IWXXM capability table: https://github.com/wmo-im/iwxxm/wiki/Package-Compatibility)	<input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Most States generate and exchange IWXXM OPMET data in version 3.0. With the evolution of ICAO Annex 3, IWXXM version 3.0, which complied with Amendments 78 to Annex 3, is no longer compliant with Amendments 80 to ICAO Annex 3. To avoid the potential impact 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: <input checked="" type="checkbox"/> Required from States
When: 8-Sep-23	Status: Draft to be adopted by PIRG
Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Draft Conclusion MET SG/27-03: Global dissemination of IWXXM

What: Expedite the implementation of network circuits and communication services necessary to enable the required global dissemination of meteorological information in the ICAO Meteorological Information Exchange Model (IWXXM) form, both intra-regionally and inter-regionally between APAC Inter-regional OPMET Gateways (IROGs) and IROGs in the ICAO AFI, MID, NAM and SAM Regions (through inter-regional consultation), including support for the Air Traffic Services Message Handling System (AMHS) with File Transfer Body Part (FTBP) and Interpersonal Message Heading Extension (IHE), and backup paths for redundancy purposes.	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Following the provisions of ICAO Annex 3 – Meteorological Service for International Air Navigation, States shall ensure that certain meteorological information is disseminated to users in the IWXXM form. However, without suitable communication network connections to support the necessary intra- and inter-regional exchange of IWXXM messages, global dissemination of meteorological information in IWXXM form will not be possible. Consequently, the migration of user and supplier systems from meteorological information in the traditional alphanumeric code (TAC) form to the IWXXM form, as envisaged in the Global Air Navigation Plan (GANP), will remain inhibited.	Follow-up: <input checked="" type="checkbox"/> Required from States
When: 13-Dec-23	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: PIRGs in other ICAO Regions	

Draft Decision MET SG 27-06: Replacement of the VOLCEX Steering Group by the MET Exercises Advisory Group

What: That, the Volcanic Ash Exercises Steering Group (VOLCEX SG) be disestablished, and instead, MET SG includes in its work plan the establishment of a Meteorological Exercises Advisory Group to provide advice and guidance to States undertaking exercises on volcanic ash, space weather and other aeronautical meteorological hazards, reporting back (as necessary) under a new MET SG agenda item for MET exercises. Further, States are encouraged to report on their aviation-focused MET exercises activities under this agenda item.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
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Why: There is a need for conducting exercises for various meteorological hazards, including space weather (SWX ¹), volcanic ash and tropical cyclones. Since the creation of VOLCEX SG in 2014, numerous exercises have been conducted under the remit of the VOLCEX SG. Recently, many exercises have been undertaken by States outside of the governance of VOLCEX SG but based on procedures developed by the VOLCEX SG. It is agreed that the VOLCEX SG has served its intended function and is no longer required in its original format. It would still be helpful to utilise the experience of those who have conducted exercises previously, along with experts from agencies hosting VAACs, SWX Centres, and other experts in the Region, to form a new Advisory Group to provide guidance material and advice to assist States in developing their exercises. States are further encouraged to report beneficial exercise outcomes to the MET SG (and any other interested APANPIRG WG) on their results.	Follow-up: <input type="checkbox"/> Required from States
When: September 2023	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: ROs	

Conclusions and Decisions

Conclusion MET SG/27-02: Provision of quality meteorological information	
What: That, States are reminded that the provision of specified meteorological information in IWXXM form has been an ICAO Annex 3 standard requirement since 2020. Where a State provides or arranges the provision of IWXXM information through translation services (from traditional alphanumeric code (TAC)-formatted information), the TAC-formatted information must be ICAO compliant; otherwise, translation errors occur, resulting in higher costs for users and preventing the benefits of IWXXM being obtained.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Most States are now producing meteorological information in IWXXM. However, users will only consider transitioning from TAC to IWXXM forms when they can reliably access quality IWXXM information from all the required States.	Follow-up: <input checked="" type="checkbox"/> Required from States
When: 8-Sep-23	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Conclusion MET SG 27-04: Meteorological seminars	
What: That, MET SG coordinates the provision of meteorological seminars, covering topics related to ICAO changes, new procedures and policies, future services and information exchange to support States implementing ICAO Annex 3 requirements and education.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Only a subset of APAC States currently attend ICAO meteorological-related meetings. Attendance (virtually) at ICAO meetings during COVID-19 demonstrated significant demand from States for further	Follow-up: <input type="checkbox"/> Required from States

¹ The abbreviation SWX is used in ICAO Annex 3, Table A7-3: Template for advisory message for space weather information

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information. Attendance at ICAO meetings comes at an environmental and financial cost. The Meteorological Seminars will enable a wider group of stakeholders from more States to receive advice and stay informed of the latest ICAO developments, offering financial and environmental benefits.	
When: 8-Sep-23	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Decision MET SG/27-05: Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations	
What: That, the MET SG approves the proposed updates to the <i>Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations, including the example from Australia as an Appendix.</i>	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To provide States with up-to-date guidance material and make the updated version available on the ICAO APAC eDocuments website	Follow-up: <input type="checkbox"/> Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Decision MET SG 27-07: Dissolution of MET/S WG	
What: That the MET SG: a) Dissolves the MET/S WG as a distinct contributory body; b) Realigns reporting of the VOLCEX SG (or its proposed replacement group, the MET Exercises Advisory Group); c) Retains the two expert ad hoc groups that will report to MET SG on: i. Rectification and Identification of Deficiencies; and ii. Regional SIGMET Guide updates. d) Retains the expert ad hoc group on SIGMET coordination, which will report to MET/R WG; and e) Task the ad hoc group leads to report progress, as necessary, to the MET SG and WG Chairs Quarterly Meetings.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: 1. To avoid duplication of effort at MET SG and WGs and unnecessary travel for participants; 2. To make more effective use of participants' and ICAO's resources; and 3. To improve the coordination and outreach with States, especially in the context of ICAO's No Country Left Behind initiative.	Follow-up: <input type="checkbox"/> Required from States
When: 8-Sep-23	Status: Adopted by Subgroup
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

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

Draft Conclusions

- Draft Conclusion MET SG/27-01: IWXXM version compatibility
- Draft Conclusion MET SG/27-03: *Global dissemination of IWXXM*

Draft Decisions

- Draft Decision MET SG 27-06: Replacement of the VOLCEX Steering Group by *the MET Exercise Advisory Group*

Conclusions

- Conclusion MET SG/27-02: Provision of quality meteorological information
- Conclusion MET SG 27-04: *Meteorological seminars*

Decisions

- Decision MET SG/27-05: *Update the Regional Guidance for Tailored MET Information and Services to Support ATM Operations*
- Decision MET SG 27-07: *Restructure of MET work plan*

7. List of Actions

7.1. In addition, the Meeting agreed to thirteen (13) actions, as indicated within the Report on Agenda Items and reproduced in the MET SG List of Actions in **Appendix A** of this Report.

REPORT ON AGENDA ITEMS

1. Organisational Matters

Opening of the Meeting

1.1. The Secretary, Mr Peter Dunda, and the Meeting Chairperson, Ms Nguyen Lan Oanh, opened the Meeting and welcomed all participants.

Seminar session: Recent developments in MET service for international air navigation

1.2. The moderator of the Seminar session, Mr Tim Hailes, opened the Seminar and invited the speakers to provide presentations on the following topics:

ICAO APAC MET SG/27 – Seminar session on recent developments in MET		
Monday, 4 September 2023, ICAO APAC Office, Bangkok, Thailand		
Time	Topic	Presenter
09:00-09:15	Opening of the MET SG/27 Meeting and introduction of the Seminar session	Secretariat and Chair MET SG
09:15-09:45	Volcanological Notice for Aviation (VONA)	Paula Acethorp, Civil Aviation Authority of New Zealand
09:45-10:15	Quantitative Volcanic Ash Information	Nicole Ranger, Meteorological Service of New Zealand
10:15-10:30	Break	
10:30-11:00	Improvements to the World Area Forecast System (WAFS) – 2023 and 2024	Karen Shorey, Met Office, UK
11:00-11:30	Space Weather Information Services	Ashwin Naidu, Australian Bureau of Meteorology
	End of Seminar Session	

1.3. The Seminar provided an opportunity to share recent developments concerning the ICAO provisions for meteorological (MET) service for international air navigation.

1.4. Unfortunately, because the invitation link to join the Seminar session online was sent late and may not have been received by all the intended recipients, there were few online participants.

1.5. A recording of the Seminar presentations and the questions and answers transcript will be made available on the MET SG/27 Meeting website:

<https://www.icao.int/APAC/Meetings/Pages/2023-MET-SG-27.aspx>.

WP/01 – Adoption of the agenda (Secretariat)

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

Agenda Item 1: Organisational matters

Seminar session: Recent developments in MET service for international air navigation

Agenda Item 2: Review outcomes from previous meetings

Agenda Item 3: Air navigation deficiencies

Agenda Item 4: Regional guidance material

Agenda Item 5: Planning and monitoring

Agenda Item 6: Research, development and other initiatives

Agenda Item 7: Future work program

Agenda Item 8: Any other business

2. Review outcomes from previous Meetings

WP/02 – Review Outcomes from MET SG/26 (Secretariat)

2.1. Outcomes from the Twenty-sixth Meeting of the Meteorology Sub-group (MET SG/26), held online from 1 to 5 August 2022, included the following: formulation of two (2) Draft Conclusions for further consideration by APANPIRG; adoption of one (1) Conclusion and two (2) Decisions, for action under the MET SG's terms of reference; and agreement on nine (9) new action items, recorded in the MET SG List of Actions.

2.2. The Thirty-third Meeting of APANPIRG (APANPIRG/33) subsequently considered the Draft Conclusions formulated by MET SG/26. The outcomes from APANPIRG/33 are discussed further under WP/03.

2.3. Follow-up action on the Conclusion and Decisions adopted by MET SG/26 was completed as follows:

Conclusion MET SG/26/05 – <i>Encourage States to provide input on the online repository on SIGMET Coordination and the consolidation document on SIGMET Coordination Practices in the APAC region</i>		
Follow-up action on Conclusion MET SG/26/05	Responsibility	Status
i) Issued State letter (Ref.: T 4/3.2 – AP128/23 (MET), dated 30 August 2023)	Secretariat	Completed
ii) Published 'Online repository on SIGMET Coordination' on the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx		

Decision MET SG/26/01 – <i>Updates to Regional SIGMET Guide</i>		
Follow-up action on Decision MET SG/26/01	Responsibility	Status
Published 'APAC Regional SIGMET Guide, Tenth Edition — October 2022' on the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx .	Secretariat	Completed

Decision MET SG/26/02 – <i>Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations</i>		
Follow-up action on Decision MET SG/26/02	Responsibility	Status
Published 'APAC Regional Guidance for Tailored Meteorological Information and Services to support Air Traffic Management Operations, Third Edition — August 2022' on the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx .	Secretariat	Completed

2.4. The status of follow-up action on the action items agreed by MET SG/26 and the unresolved action items in the MET SG List of Actions was reviewed and updated by the Meeting as recorded in **Appendix A** of this Report.

2.5. In addition to the proposed updates set out in WP/02, the Meeting agreed that MET SG action item 25/05 was superseded by the ongoing activities on the rectification of air navigation deficiencies (MET/S WG work plan, activities No. 2 and 6, refer) and that MET SG action item 25/12 was closed due to the Meeting being informed that ICAO had been provided with updates to the contact lists in ICAO Doc 9766 (which was pending publication by ICAO).

WP/03 – Review of APANPIRG/33 (Secretariat)

2.6. Outcomes from APANPIRG/33, held in Bali, Indonesia, from 22 to 24 November 2022, included, in total, thirteen (13) Conclusions requiring the attention of States or actions by ICAO and one (1) Decision for APANPIRG and its contributory bodies. Three (3) Conclusions were of direct relevance to the work plan of the MET SG, including two (2) based on the Draft Conclusions formulated by MET SG/26.

2.7. The APANPIRG/33 Conclusions relevant to MET SG are listed below:

- Conclusion APANPIRG/33/12 – *WAFS, SADIS and WIFS upgrades*;
- Conclusion APANPIRG/33/13 – *0.25-degree WAFS hazard data*; and
- Conclusion APANPIRG/33/14 – *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form*

2.8. The Meeting noted that, with the adoption of Conclusion APANPIRG/33/14, the air navigation deficiency AP-MET-23, concerning the lack of SIGMET issued for the Honiara FIR, was removed from the Open List of APANPIRG Air Navigation Deficiencies.

2.9. In addition, APANPIRG/33 adopted Conclusion APANPIRG/33/12 and Conclusion APANPIRG/33/13 based on the Draft Conclusions formulated and submitted by MET SG/26, as discussed under WP/02.

2.10. The status of follow-up action on the above Conclusions, as presented in the APANPIRG/33 Conclusions/Decisions – Action Plan (in WP/03, Appendix B), indicated that the Secretariat's required follow-up action was completed with the dissemination of ICAO State letters Ref.: AP126/23 (MET) dated 22 August 2023, Ref.: AP127/23 (MET) dated 22 August 2023, and Ref.: AN 3/3 – AP015/23 (AGA) dated 24 January 2023, which invited or urged users to take appropriate actions concerning the WAFS, SADIS and WIFS, and urged States and Administrations to progress actions on the rectification of air navigation deficiencies.

2.11. The APANPIRG/33 Action Plan also indicated that APAC States and Administrations were required to take "action in accordance with the Conclusions, as soon as practicable". However, in response to a query from the Meeting, the Secretariat confirmed that APANPIRG did not utilise the Action Plan as a tool to monitor the progress of the States and Administrations.

2.12. Therefore, noting that the Air Navigation Plan (ANP), Volume III, is required to detail the status of implementation of SADIS and WIFS by States in the Asia and Pacific Regions, the Meeting considered the potential role of the ANP, Volume III, in monitoring progress of the States' and Administrations' (WAFS, SADIS and WIFS related) actions following Conclusions APANPIRG/33/12 and APANPIRG/33/13.

2.13. In addition, the Meeting noted that the WAFS, SADIS and WIFS updates presented in the Seminar provided States/Administrations and users with information to facilitate the actions per Conclusions APANPIRG/33/12 and APANPIRG/33/13. The Meeting suggested promoting the WAFS updates, particularly the SIGWX information, at future Meetings and Seminars.

2.14. Regarding supplementing the Secretariat resourcing for APANPIRG MET-related work, APANPIRG/33 noted that ICAO was still advertising a secondment opportunity for an Aviation Meteorology Officer, which was yet to be filled. Members of the Meeting, including the Chairs of the MET/IE WG, MET/S WG and MET/R WG, were concerned that the continuing lack of progress in

resolving the Secretariat resourcing issues was continuing to negatively impact the Secretariat support for the MET SG meetings and progress on the MET-related work plan.

2.15. The terms of reference of the MET SG and its contributory working groups require working papers to be submitted at least 28 days before the meeting so that the Secretariat can publish them 14 days before the meeting. Unfortunately, some Secretariat working papers were published less than one business day before the meeting. This short time did not allow meeting members sufficient time to prepare, including seeking their State's view on these essential matters. The late arrival of papers reduces the effectiveness of the meeting and its outcomes.

2.16. On a related matter, the meeting agenda included a Meteorological Seminar for the first time. The Seminar aimed to increase APAC States' knowledge and awareness of several significant meteorological service changes being implemented in the coming few years. The Seminar was planned to be in a hybrid format so that we could significantly increase the number of stakeholders in each APAC State. Unfortunately, the details of the Seminar were only distributed to States less than two business days before the meeting, and as a result, the online attendance was less than 20 people.

2.17. The lack of capacity of the ICAO Meteorological Secretariat has now been raised at meetings for several years, and a timely resolution needs to be implemented.

WP/04 – Review outcomes from MET/IE WG/21 (Chairs of MET/IE WG)

2.18. Outcomes from the Twenty-first Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/21), held in Bangkok, Thailand, from 27 to 29 March 2023, including the conjoint session with the Thirteenth Meeting of the Meteorological Services Working Group (MET/S WG/13) on 29 March 2023, included the following: formulation of three (3) Draft Conclusions for further consideration by the MET SG; adoption of one (1) Decision dealing with the internal working arrangements of the MET/IE WG; and agreement on seventeen (17) new action items, recorded in the MET/IE WG List of Actions.

2.19. The MET/IE WG/21 Draft Conclusions and Decision are listed below:

- Draft Conclusion MET/IE WG/21-01: *IWXXM version compatibility*
- Draft Conclusion MET/IE WG/21-03: *Global exchange of IWXXM*
- Draft Conclusion MET/IE WG/21-04: *Provision of quality meteorological information*
- Decision MET/IE WG/21-02: *Updates to IWXXM FAQs*

2.20. Considering the MET/IE WG/21 outcomes related to meteorological information exchange in digital form, and in particular that IWXXM messages issued in Version 3.0 will not comply with the latest amendment (Amendment 80) to ICAO Annex 3, and that the producers of IWXXM reports should implement or upgrade their systems to support at least IWXXM Version 2021-2, the Meeting adopted the following Conclusion (based on Draft Conclusion MET/IE WG/21-01):

Draft Conclusion MET SG/27-01: IWXXM version compatibility		
What:	That, States are requested to ensure that MET service providers, air navigation service providers (ANSPs), airlines and other end users do the following: a) make the necessary system upgrades to support the IWXXM version, which complies with the latest amendment to Annex 3 as stated in the IWXXM compatibility table*; and b) prepare for future system upgrades to support future IWXXM versions driven by further amendments to Annex 3. (*Link to the IWXXM capability table: https://github.com/wmo-im/iwxxm/wiki/Package-Compatibility)	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical

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Why: Most States generate and exchange IWXXM OPMET data in version 3.0. With the evolution of ICAO Annex 3, IWXXM version 3.0, which complied with Amendments 78 to Annex 3, is no longer compliant with Amendments 80 to ICAO Annex 3. To avoid the potential impact 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: <input checked="" type="checkbox"/> Required from States
When: 8-Sep-23	Status: Draft to be adopted by PIRG
Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.21. In addition, the Meeting noted that MET/IE WG/21 had endorsed updates to the regional document titled IWXXM Implementation in APAC Region – FAQs (IWXXM FAQs) to incorporate lessons learnt and common issues identified during the implementation and monitoring of IWXXM exchange via the Air Traffic Services Message Handling System (AMHS) and that the IWXXM FAQs document was published on the ICAO APAC Office website as an information resource on IWXXM implementation in the APAC Region (Decision MET/IE WG/21-02: UPDATES TO IWXXM FAQs, refers).

2.22. MET/IE WG/21 outcomes on the development of the Online Register of APAC IWXXM Exchange Status, which included a new table to reflect the progress of the inter-regional exchange of IWXXM OPMET data by Inter-Regional OPMET Gateways (IROGs), indicated that only eight Regional OPMET Centres (ROCs) were capable of routinely receiving and disseminating IWXXM messages in the APAC Region and the inter-regional exchange of IWXXM was only enabled between the IROGs in Singapore and London.

2.23. Therefore, to facilitate the global exchange of IWXXM messages, MET/IE WG/21 formulated a Draft Conclusion requesting the ICAO Aeronautical Communication Services Implementation Coordination Group (ACSICG) to prioritise the implementation of the required network connections with other ICAO regions (Draft Conclusion MET/IE WG/21-03: GLOBAL EXCHANGE OF IWXXM, refers). The Meeting noted that after the MET/IE WG/21, the Tenth Meeting of the Aeronautical Communication Services Implementation Coordination Group (ACSICG/10) had considered the above Draft Conclusion and supported it in a modified form proposing that States and ICAO take further action to support the global dissemination of meteorological information in IWXXM form (Draft Conclusion ACSICG/10/05: GLOBAL DISSEMINATION OF IWXXM, refers).

2.24. In addition to the discussion above, the Meeting noted that WP/25 discussed the outcomes of the CNS SG/27 consideration of Draft Conclusion ACSICG/10/05 and, therefore, the Meeting deferred its consideration of the two versions of the Draft Conclusion on global dissemination of IWXXM to the discussion under WP/25.

2.25. The Meeting noted that a link to the Online Register of APAC IWXXM Exchange Status was included on the ICAO APAC Office "eDocuments" website to encourage States to share updates on their IWXXM capabilities and increase the awareness of other enabling ICAO APAC groups on the latest IWXXM exchange status. Member States were reminded to update the register with their IWXXM exchange capabilities.

2.26. Considering the MET/IE WG/21 outcomes related to monitoring of meteorological information exchange, in which the development of IWXXM-specific OPMET monitoring statistics demonstrated that several States were disseminating IWXXM messages generated through translation, and recognising that generating IWXXM messages through translation depends on the quality of the source traditional alphanumeric code (TAC)-form messages, the Meeting adopted the following Conclusion (based on Draft Conclusion MET/IE WG/21-04):

Conclusion MET SG/27-02: PROVISION OF QUALITY METEOROLOGICAL INFORMATION	
What: That, States are reminded that the provision of specified meteorological information in IWXXM form has been an ICAO Annex 3 standard requirement since 2020. Where a State provides or arranges the provision of IWXXM information through translation services (from traditional alphanumeric code (TAC)-formatted information), the TAC-formatted information must be ICAO compliant; otherwise, translation errors occur, resulting in higher costs for users and preventing the benefits of IWXXM being obtained.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Most States are now producing meteorological information in IWXXM. However, users will only consider transitioning from TAC to IWXXM forms when they can reliably access quality IWXXM information from all the required States.	Follow-up: <input checked="" type="checkbox"/> Required from States
When: 8-Sep-23	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.27. The Meeting noted that MET/IE WG/21 had progressed unresolved necessary updates to the guidance material related to meteorological information exchange, resulting in the publication of the Asia Pacific ROBEX Handbook, Fifteenth Edition, dated March 2023, which resolved several issues identified in previous meetings and during MET/IE WG/21. In addition, MET/IE WG/21 identified new opportunities to improve the ROBEX Handbook in its next edition.

2.28. China informed the Meeting that the updated ROBEX Handbook above did not fully reflect the changes required by China to remove two aerodromes (ZBSJ and ZWSH) from METAR Bulletin SACI31 and add the same two aerodromes to METAR Bulletin SACI32. The Meeting requested the Secretariat to include the above changes in the next update to the ROBEX Handbook.

2.29. The Meeting noted outcomes from the conjoint session of MET/IE WG/21 and MET/S WG/13 review of the APAC SIGMET tests, conducted on 9, 16 and 23 November 2022, which, among other things, prompted a request to include IWXXM-specific statistics, such as IWXXM versions, in future SIGMET test results.

2.30. The meeting noted that MET/IE WG/21 proposed the following potential dates for MET/IE WG/22:

- 18-20 March 2024 (including a conjoint session with MET/S WG/14); or
- April 2024 (including a conjoint session with ACSICG/12).

2.31. Following discussions with the ACSICG secretariat, the MET/IE WG will likely meet on 18-20 March 2024, including a conjoint session with the ACSICG. Following the discussions later under agenda item 7, in which the Meeting agreed to the dissolution of MET/S WG, there would no longer be the intention to conduct a conjoint session in conjunction with the MET/S WG in March 2024.

WP/25 – Outcomes of CNS SG/27 (Secretariat)

2.32. The Meeting discussed a summary of relevant outcomes from the Twenty Seventh Meeting of the Communications, Navigation and Surveillance Sub-group (CNS SG/27), held in Bangkok, Thailand, from 28 August to 1 September 2023.

2.33. Outcomes from (CNS SG/27) review of the ACSICG/10 included the CNS SG/27 sharing its support for the proposed action in Draft Conclusion ACSICG/10/05: GLOBAL DISSEMINATION OF IWXXM, which was a revised version of the MET/IE WG/21 Draft Conclusion with the same title (also discussed under WP/04, above). The Meeting also noted that CNS SG/27 agreed to withdraw the proposed Draft Conclusion CNS SG/27/03 (which was based on the Draft

Conclusion ACSICG/10/05) to avoid confusion caused by the CNS SG and MET SG submitting two Draft Conclusions (to ANAPNPIRG) with the same title but different contents. Furthermore, CNS SG/27 confirmed its support for MET SG/27 to follow up with presenting the Draft Conclusion on global dissemination of IWXXM to APANPIRG/34.

2.34. Based on the outcomes from CNS SG/27 discussed above, including the CNS SG's support for the Draft Conclusion on global dissemination of IWXXM and following additional editorial changes by the Meeting to the proposed action's wording to clarify the need for inter-regional exchange between IROGs in APAC and IROGs in the ICAO AFI, MID, NAM and SAM Regions, the Meeting formulated the following Draft Conclusion:

Draft Conclusion MET SG/27-03: GLOBAL DISSEMINATION OF IWXXM	
What: Expedite the implementation of network circuits and communication services necessary to enable the required global dissemination of meteorological information in the ICAO Meteorological Information Exchange Model (IWXXM) form, both intra-regionally and inter-regionally between APAC Inter-regional OPMET Gateways (IROGs) and IROGs in the ICAO AFI, MID, NAM and SAM Regions (through inter-regional consultation), including support for the Air Traffic Services Message Handling System (AMHS) with File Transfer Body Part (FTBP) and Interpersonal Message Heading Extension (IHE), and backup paths for redundancy purposes..	Expected impact: <input type="checkbox"/> Political / Global <input checked="" type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: Following the provisions of ICAO Annex 3 – Meteorological Service for International Air Navigation, States shall ensure that certain meteorological information is disseminated to users in the IWXXM form. However, without suitable communication network connections to support the necessary intra- and inter-regional exchange of IWXXM messages, global dissemination of meteorological information in IWXXM form will not be possible. Consequently, the migration of user and supplier systems from meteorological information in the traditional alphanumeric code (TAC) form to the IWXXM form, as envisaged in the Global Air Navigation Plan (GANP), will remain inhibited.	Follow-up: <input checked="" type="checkbox"/> Required from States
When: 13-Dec-23	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: PIRGs in other ICAO Regions	

WP/05 – Review of outcomes from MET/S WG/13 (Chair MET/S WG)

2.35. Outcomes from the Thirteenth Meeting of the Meteorological Services Working Group (MET/S WG/13), held in Bangkok, Thailand, from 29 to 31 March 2023, including the conjoint session with MET/IE WG/21 on 29 March 2023, included the following: formulation of three (3) Draft Conclusions for further consideration by the MET SG; and agreement on four (4) new action items, recorded in the MET/S WG List of Actions.

2.36. The MET/S WG/13 Draft Conclusions are listed below:

- Draft Conclusion MET/S WG/13-01: Publication and further development of the *Document on Cases of SIGMET Coordination Practices in the APAC Region*
- Draft Conclusion MET/S WG/13-02: *Disestablishment of the VOLCEX SG and proposed MET Exercise Planning*
- Draft Conclusion MET/S WG/13-03: *Meteorological seminars*

2.37. The Meeting noted that MET/S WG/13 outcomes related to planning and

implementation of meteorological services included the development of the document titled Cases of SIGMET Coordination practices in the APAC Region, which shares information on the practices adopted by MWOs in the APAC States to coordinate SIGMET with neighbouring MWO(s) to ensure the provision of harmonised SIGMET. MET/S WG/13 formulated Draft Conclusion MET/S WG/13-01 on the above matter, which is also discussed in more detail in WP/11 and, therefore, the Meeting deferred its consideration of the Draft Conclusion on the above document to the discussion under WP/11.

2.38. The Meeting noted MET/S WG/13 outcomes on deficiencies in the provision of meteorological services, including significant progress by Nepal towards rectifying the deficiency AP-MET-14 concerning issuing and disseminating SIGMET information for Kathmandu FIR. The Meeting noted Nepal had reported it was confirming receipt of SIGMET information by users and implementing the AMHS connection necessary for disseminating the SIGMET messages in the IWXXM form. Further details from Nepal on the rectification of the deficiency are discussed under WP/08.

2.39. The Meeting noted MET/S WG/13 outcomes on guidance and education related to the provision of meteorological services, including an aviation space weather exercise conducted by Australia and New Zealand in October 2022 focusing on HF communication impacts, plans for a future, two-part exercise focusing on GNSS impacts, and discussion on the possibility of creating a space weather exercise steering-group to develop educational materials and conduct exercises, which could be a separate group or a modification of the VOLCEX SG (Draft Conclusion MET/S WG/13-02, refers). The Meeting considered the above proposal further in discussion under WP/19.

2.40. Considering the MET/S WG/13 outcomes on the group's future work programme and terms of reference, in particular, outcomes related to the use of virtual meeting technology to facilitate the progress of the work and increase participation by States, the Meeting adopted the following Conclusion (based on Draft Conclusion MET/S WG/13-03: METEOROLOGICAL SEMINARS):

Conclusion MET SG 27-04: Meteorological seminars		
What:	That, MET SG coordinates the provision of meteorological seminars, covering topics related to ICAO changes, new procedures and policies, future services and information exchange to support States implementing ICAO Annex 3 requirements and education.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why:	Only a subset of APAC States currently attend ICAO meteorological-related meetings. Attendance (virtually) at ICAO meetings during COVID-19 demonstrated significant demand from States for further information. Attendance at ICAO meetings comes at an environmental and financial cost. The Meteorological Seminars will enable a wider group of stakeholders from more States to receive advice and stay informed of the latest ICAO developments, offering financial and environmental benefits.	Follow-up: <input type="checkbox"/> Required from States
When:	8-Sep-23	Status: Adopted by Subgroup
Who:	<input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

WP/06 – Review of outcomes from MET/R WG/12 (Chair MET/R WG)

2.41. Outcomes from the Twelfth Meeting of the Meteorological Requirements Working Group (MET/R WG/12), held in Bangkok, Thailand, from 1 to 5 May 2023, in conjunction with the ICAO APAC Seminar on Meteorology/Air Traffic Management (MET/ATM Seminar), included the following: adoption of two (2) Decisions dealing with the internal working arrangements of the MET/R

WG.

2.42. The MET/ATM Seminar allowed States and Organizations to share information, experiences and ideas on planning and implementing MET services to support ATM and air traffic flow management (ATFM) operations, focusing on collaborative arrangements and integrating MET information into ATM. Thirteen (13) presentations were made under three (3) topics covering ICAO provisions and MET/ATM collaboration within States and on a bilateral or multilateral basis between States.

2.43. The MET/R WG/12 Decisions are listed below:

- Decision MET/R WG/12-01: *Update on Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations*
- Decision MET/R WG/12-02: *APAC Use Cases and User Requirements for SWIM-based MET Information Services Supporting ATFM*

2.44. The Meeting noted the MET/R WG/12 outcomes related to updates of the document titled APAC Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations, which included a review, further inputs and finalisation of the draft updates in preparation for review and possible approval by MET SG/27 (Decision MET/R WG/12-01, refers). Further details of the draft updates to the above document are provided in the discussion under WP/20.

2.45. The Meeting noted the MET/R WG/12 outcomes related to updates of the document titled APAC use cases and user requirements for SWIM-based MET information services supporting ATFM, which included a review, further inputs and finalisation of the draft updates in preparation for review and possible approval by MET SG/27 (Decision MET/R WG/12-02, refers). Further details of the draft updates to the above document are provided in the discussion under WP/12.

2.46. The Meeting noted the MET/R WG/12 outcomes related to the MET/R WG work program and terms of reference, including proposed updates to the work plan on i) the survey of state MET information supporting ATM; ii) the Regional guidance material for tailored MET information supporting ATM operations; iii) strengthening the collaboration and relationship between MET, ATM and Airspace Users; iv) a coordinated review of the APAC ANP Volume III; and iv) APAC Use Case and User Requirements for SWIM-based MET Information Services Supporting ATFM.

2.47. The meeting noted the plans to conduct MET/R WG/13 in conjunction with ATFM/SG/14 and a Seminar on MET/ATM in late April 2024.

2.48. The Chair would consider conducting the MET/ATM Seminar in a hybrid (in-person and online) format to promote greater participation.

3. Air navigation deficiencies

WP/07 – Review APANPIRG Air Navigation Deficiencies (Secretariat)

3.1. The Meeting noted that outcomes from the APANPIRG/33 review of (open) air navigation deficiencies included the removal of deficiency AP-MET-23, concerning the lack of SIGMET issued for the Honiara FIR, from the open list (of APANPIRG air navigation deficiencies).

3.2. In addition, APANPIRG/33 noted significant progress (reported at MET SG/26) towards rectifying the deficiencies AP-MET-04 and AP-MET-17 (concerning information on volcanic activity not provided regularly to ATS units, MWOs and VAACs in Papua New Guinea and Tonga) and that, subject to additional corrective actions, confirmation from the recipient operational units, and evidence of relevant, established procedures, Papua New Guinea and Tonga could report the rectification of the deficiencies to ICAO.

3.3. The APANPIRG Reporting Form on Air Navigation Deficiencies in the MET field includes twelve (12) (open) deficiencies concerning MET facilities and services provided in seven (7)

APAC States, as summarised in **Table 1** below:

Table 1: Summary of APANPIRG air navigation deficiencies in the MET field

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

3.4. New Zealand informed the Meeting that work continued to assist States with rectifying deficiencies through the activities of the MET/S WG ad hoc group on deficiencies and the Pacific Island Aviation Weather Services Panel (PIAWS Panel). Tonga is developing an MOU between organisations involved in providing and sharing volcanic activity information, which includes the procedures to be followed. Kiribati is now delivering observations regularly but is continuing work on upgrading its observing facility before providing resolution information. Kiribati, Nauru and Solomon Islands are working with their local users to determine whether there is any requirement for local WAFS information provision. 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).

WP/08 – Resolution of air navigation deficiency (Nepal)

3.5. The Meeting noted work done by Nepal towards rectification of the deficiency AP-MET-14 concerning the requirements for issuance and dissemination of SIGMET information for Kathmandu FIR not being fully implemented and that Nepal provided the information to support the removal of deficiency AP-MET-14 from the APANPIRG (open) list of deficiencies.

3.6. The Meeting congratulated Nepal on its 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.

3.7. However, the Meeting noted that Nepal indicated it 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.

3.8. Considering that Nepal also indicated it was in the process of procuring a solution to provide SIGMET in IWXXM form, that Nepal had submitted the report providing complete details of the action taken to rectify the deficiency, and that Thailand had supplemented the evidence by confirming the Kathmandu FIR SIGMET TAC messages were regularly received at the RODB Bangkok, the Meeting agreed to inform APANPIRG to 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.

3.9. As a consequence of the discussion above, the Meeting also considered the need to seek further advice from APANPIRG concerning identifying air navigation deficiencies in other States due

to the lack of implementation of the Annex 3 standards for disseminating meteorological information in the IWXXM form.[ACTION MET SG/27-01]

4. Regional guidance material

WP/09 – Updates to the ICAO APAC ROBEX Handbook (Secretariat)

4.1. The Meeting reviewed and provided additional proposals for updates to be published in the ROBEX Handbook, Sixteenth Edition. The proposed updates include changes to the aerodromes listed in the METAR and TAF bulletins in Table A and Table B to realign with the aerodromes where meteorological service is required, as set out in the APAC Regional Air Navigation Plan (ANP), Volume II, Table MET II-2 (MET SG/25 – action item 07, MET/IE WG/20 – action item 10, MET/IE WG/19 – action item 05, and MET/IE WG/18-MET/S WG/10 – action item 20, refer).

4.2. The proposed updates include (1) the use of italics to indicate aerodromes not listed in the APAC ANP, Volume I, Table AOP 1-1, and (2) inclusion in the ROBEX Handbook Tables A and B, METAR and TAF bulletins, of aerodromes which were listed in the METAR bulletins but not the TAF bulletins, and vice-versa.

4.3. In addition, the updates included aerodromes where meteorological service is required, according to the APAC ANP and the aerodromes were not yet included in the ROBEX Handbook Tables A and B, METAR and TAF bulletins, and aerodromes where meteorological service will be required, subject to the approval of proposals for amendment of the APAC ANP (which are under development; ref: MET SG/27, WP/14 - Review of the APAC ANP), and the aerodromes are not yet included in the ROBEX Handbook Tables A and B, METAR and TAF bulletins.

4.4. The Meeting noted that several States, including China, advised of additional updates. The Secretariat would coordinate with all the States concerned to incorporate the updates in the ROBEX Handbook, Sixteenth Edition [ACTION MET SG/27-02].

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

4.5. The Meeting reviewed proposed updates to the Asia/Pacific Regional SIGMET Guide and noted ongoing discussions and activities on updates intended for inclusion in future editions of the Guide.

4.6. The proposed updates include: i) Addition of new VAAC Darwin/Washington backup arrangements (MET/IE WG/20 – ACTION 13, refers); ii) review of VAAC backup procedures; iii) guidance on SIGMET for volcanic ash crossing FIR boundaries; iv) guidance on SIGMET for volcanic ash not identifiable from satellite; and v) alignment of APAC and EUR SIGMET Guides.

4.7. The Meeting appreciated the ad hoc group's work and the proposed example on guidance on SIGMET for volcanic ash crossing FIR boundaries, Appendix A of WP/10, was endorsed by the meeting. [ACTION MET SG/27-03]

4.8. However, the Meeting requested the ad hoc group in collaboration with the VAACs to 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. [ACTION MET SG/27-04].

4.9. The Meeting was advised that the ICAO HQ secretariat has advised that line-break is required for all SIGMETs and not just TEST/EXER SIGMETs and that the ad hoc group would seek further input from the ICAO HQ secretariat before proceeding with the updates.

4.10. The proposed updates to the Regional SIGMET Guide on the VAAC backup arrangements procedures were presented in WP/13. The meeting deferred discussion on the update to the Regional SIGMET guide to WP/13.

WP/23 – Notification and guidance for SIGMET tests (Secretariat)

4.11. Noting that, in some cases, the operational units expected to participate in the annual SIGMET tests did not receive the SIGMET test schedule and guidance material disseminated by ICAO and, therefore, did not participate in the SIGMET tests, the Meeting considered taking action to ensure the Member States' Meteorological Authority, Meteorological Agency, and State letter Coordinator disseminate the ICAO APAC State letter on SIGMET tests to the relevant units within their State. In addition, Members of the Meeting who do not usually receive the SIGMET test information were requested to provide the ICAO APAC Office with SIGMET test focal point addresses by 20 September 2023.

WP/20 – Updates of APAC Regional Guidance for Tailored MET Information and Services to Support ATM Operations (Ad hoc group)

4.12. The Meeting reviewed proposed updates on the Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations to enhance the contents related to the improvement process of the meteorological (MET) information and services, including post-operational analysis on the effect of tailored MET information on air traffic management (ATM) decisions. The draft of the updates has been developed by the ad hoc group and discussed during the MET/R WG/12.

4.13. The Meeting was informed that the proposed updates were also reviewed and supported by the ATFM/SG. The Meeting supported the updates, including Australia's example in WP/20, Attachment B, being adopted in the Appendices of the Guidance, and therefore adopted the following Decision (based on Decision MET/R WG/12-01):

Decision MET SG/27-05: Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations		
What: That, the MET SG approves the proposed updates to the <i>Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations, including the example from Australia as an Appendix.</i>		Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To provide States with up-to-date guidance material and make the updated version available on the ICAO APAC eDocuments website	Follow-up: <input type="checkbox"/> Required from States	
When: As soon as practicable	Status: Adopted by Subgroup	
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:		

4.14. The Meeting also noted the importance of the awareness of the document by not only ATFM/SG but by wider communities. The Meeting recommended presenting a paper at ATM/SG/11 to promote the document further.

WP/11 – Document on cases of SIGMET coordination practices in the APAC Region (Ad hoc group)

4.15. The Meeting reviewed developments of the document on cases of SIGMET Coordination practices in the APAC Region, including recent progress on resolving issues related to SIGMET Coordination activities.

4.16. The Meeting considered that, in addition to the cases of SIGMET coordination, the document contained information of a procedural nature which could conflict with the agreed guidance in the Regional SIGMET Guide. Therefore, the Meeting considered it would be premature to adopt a Conclusion recommending publishing the document on the ICAO APAC Office website (Draft

Conclusion MET/S WG/13-01, refers) and instead invited the ad hoc group to identify common SIGMET coordination practices from the document of cases and develop further the document to separate the procedural information, which could potentially be used to supplement to the Asia/Pacific Regional SIGMET Guide. [ACTION MET SG/27-05]

WP/12 – APAC use cases and user requirements for SWIM-based MET information services supporting ATFM (Ad hoc group)

4.17. The Meeting reviewed recent updates on the work to identify and document use cases and user requirements for SWIM-based MET information services supporting ATFM in the APAC region. The Meeting noted that the ad hoc group would also present the use cases document to the ATFM/SG for review and agreed to forward the document with the MET SG/27 report to the upcoming ATM/SG/11 for review and feedback. [ACTION MET SG/27-06]

4.18. The Meeting provided inputs to improve the document and use cases further.

4.19. The Meeting also noted to present a paper at ATM/SG/11 for further review and feedback.

WP/13 – Update of VAAC backup procedures in APAC Regional SIGMET Guide (VAACs)

4.20. The Meeting reviewed proposed updates to the VAAC Backup Procedures (operational and test), noting that the purpose of the proposal was to update the existing procedures to reflect current practices and to simplify the information provided.

4.21. The Meeting suggested that the ad hoc group consider some minor changes, such as removing unnecessary historical information on the first page and future-proofing the link to ICAO Doc 9766, but otherwise agreed to include the update in the SIGMET Guide.

4.22. The Meeting appreciated the significant work by the ad hoc group and the VAACs on supplementing examples of SIGMET issuance and the backup procedures. The Meeting endorsed the proposed updates for the example in Appendix A of WP/10 and the proposal in WP/13 to be incorporated in the eleventh edition of the Asia/Pacific Regional SIGMET guide [ACTION MET SG/27-07]

5. Planning and monitoring

WP/24 – Siem Reap Angkor International Airport (VDSA) (Cambodia)

5.1. A new international airport, Siem Reap Angkor International Airport (VDSA) will commence operation in Cambodia on 16 October 2023. Meteorological services for VDSA will be provided regularly in compliance with ICAO Annex 3.

5.2. The Meeting noted the requirement for VDSA to be incorporated into the ROBEX scheme for international OPMET data exchange to facilitate flights to and from VDSA. Therefore, the Meeting requested the Secretariat to coordinate the necessary updates to the ROBEX Handbook with Cambodia. [ACTION MET SG/27-08]

5.3. In addition, the Meeting noted that the responsible NOC is responsible for notifying the update to the ROBEX system by following the METNO process. [ACTION MET SG/27-09]

WP/14 – Review of the APAC Air Navigation Plan (Secretariat)

5.4. The Meeting reviewed proposals to amend the Asia/Pacific (APAC) Air Navigation Plan (ANP), Volume I and II. It provided additional information to reflect the current requirements for meteorological services.

5.5. To supplement the proposals in WP/14, several States in the Meeting indicated the need for additional proposals to amend the requirements in their States, including Australia, Hong Kong China, Thailand, Timor Leste (supported by Australia), the Republic of Korea, Maldives, China, Indonesia and Vietnam. Australia also identified required changes to the text in the ANP, which referred

to the SADIS 2G satellite broadcast. The Meeting was reminded of unresolved action to update the list of State volcano observatories in Table MET I-1.

5.6. The Secretariat would compile the changes above into a proposal for amendment and seek confirmation from the States concerned before circulating the proposal for amendment to States and Organizations for comments and Regional agreement. [ACTION MET SG/27-10]

5.7. The Meeting also noted the content of ANP Volume III as adopted by the ICAO EUR Region, which could be considered when developing a proposal to amend MET-specific material in the APAC ANP Volume III (MET SG/26, Action item 26/07 refers).

WP/17 – MET deficiencies review of 2022 SIGMET test and OPMET monitoring (Ad hoc group)

5.8. The Meeting reviewed outcomes of a review of the ICAO APAC Regional SIGMET Test 2022 by the MET/S MET Deficiencies ad hoc group, which included proposed actions and follow-up work with States.

5.9. The Meeting noted several States had advised that work was underway to address issues identified by the group and further requested the Secretariat to utilise the proposed actions in WP/17, Appendix A, when advising States of SIGMET corrective actions. [ACTION MET SG/27-11]

5.10. The ad hoc group's review indicated a need for improved OPMET monitoring, as proposed in MET/IE WG/20, action item 05.

5.11. Based on the ad hoc group's outcomes, the Meeting invited the MET/IE WG to consider aligning the OPMET Monitoring Activity methodology to that which is undertaken by the ICAO EUR Region, as outlined in Appendix F to the [EUR OPMET Data Management Handbook](#), which describes measuring the availability of aerodrome OPMET (not bulletins) and the timeliness of the reports getting to the monitoring centres, including creating State averages for each of these, for each aerodrome a State provides data for.

WP/15 – Proposed amendment to ICAO Annex 3 (Secretariat)

5.12. The Meeting was informed of proposals for the amendment of ICAO Annex 3, circulated in the ICAO State letters, Ref.: AN 10/1-23/1 dated 26 January 2023 and Ref.: AN 2/36-23/6 dated 13 February 2023, which are envisaged for applicability on 28 November 2024 or 27 November 2025, and reminded that States and appropriate international organisations have provided ICAO with comments they wished to make on the amendment proposals by the deadlines of 26 July 2023 and 14 August 2023.

5.13. The State letter, Ref.: AN 10/1-23/1, sets out details on the proposed development of the restructured Annex 3 and the new PANS-MET and the Annex 3 amendments related to the following services and information:

- a) space weather information services;
- b) quantitative volcanic ash information;
- c) the International Airways Volcano Watch (IAVW);
- d) the ICAO meteorological information exchange model (IWXXM);
- e) the World Area Forecast System (WAFS); and
- f) improved definition of meteorological authority and introduction of a new definition of meteorological service provider.

5.14. State letter Ref.: AN 2/36-23/6 sets out, among other proposals, details on the proposed amendment to Annex 3 concerning system-wide information management (SWIM) and a first edition of PANS-IM concerning aeronautical information management, SWIM and information security.

5.15. The Meeting was informed that the Secretariat was reviewing comments on the amendment proposals provided by States and appropriate international organisations by the deadlines of 26 July 2023 and 14 August 2023 in preparation for the Air Navigation Commission's (ANC's) final review during the ANC's 224th Session in early November 2023.

5.16. The Meeting was invited to consider appropriate actions to support the APAC States' implementation of the proposed amendment of Annex 3 (and the new PANS-MET) and noted activities underway, such as the presentations on VONA, QVA and WAFS in the Seminar session at the beginning of the MET SG/27 Meeting.

5.17. A suggestion from the Meeting was to survey States on their needs for implementation support for the proposed amendment. [ACTION MET SG/27-12]

WP/22 – APAC Seamless ANS Plan Update (Secretariat) [Discussed after Agenda Item 6]

5.18. ICAO presented information on the 2023 update of the Asia/Pacific Seamless ANS Plan, noting, in particular, the elements of its Section 7 Performance Improvement Plan that were relevant to the aviation meteorology community.

5.19. The meeting was informed of the origins of the Seamless ANS Plan in the Kansai Statement of the 46th Conference of Directors-General of the Asia/Pacific Region (DGCA/46, 2009) and the formation by APANPIRG of the Asia/Pacific Seamless ATM Planning Group (APSAPG), the APANPIRG Sub-group that developed version 1.0 of the Seamless ATM Plan in 2013.

5.20. The now re-named Seamless ANS Plan defined APANPIRG-agreed regional performance expectations arranged in implementation phases aligned with the Aviation System Block Upgrade (ASBU) scheme of the ICAO Global Air Navigation Plan (GANP). Many of the performance expectations of the Seamless ANS Plan reflected ASBU elements that had been prioritised by APANPIRG for regional implementation, thereby also serving the purpose of the Regional Air Navigation Plan (ANP) Volume III. Following its 2023 update, a separate project was intended to migrate the Seamless ANS Plan into ANP Volume III. The meeting was reminded that MET SG had an existing action item to improve ANP Volume III MET content.

5.21. The meeting was further informed of the revised update cycle of the Seamless ANS Plan as agreed by APANPIRG/33 (2022), with routine updates scheduled every three years commencing 2023. It was also noted that the Seamless ANS Plan was constituted of non-binding, regionally agreed guidance and harmonised ANS performance improvement planning that did not supersede or amend the ICAO Standards and Recommended Practices (SARPS) or Procedures for Air Navigation Services (PANS). The 2023 update will be presented to APANPIRG/34 in December 2023 for approval.

5.22. It was noted that there were inconsistencies in the wording of some MET-related pre-existing performance expectations and that some proposed new expectations were not aligned with the referenced ASBU elements. The meeting was invited to provide feedback, proposed corrections, additions and comments to the Secretariat by not later than 20 September 2023.

IP/02 – APAC VOLCEX 22/01 exercise outcomes (Indonesia)

5.23. This paper presented an outline of the ICAO volcanic ash exercise VOLCEX 22/01, which simulated the eruption of Sorik-Marapi Volcano located in North Sumatera on 27 October 2022 that allowed coordination and collaboration between Jakarta FIR and Colombo FIR.

6. Research, development and other initiatives

WP/18 – IWXXM planned release for amendment of ICAO Annex 3 (Hong Kong, China)

6.1. ICAO Meteorological Information Exchange Model (IWXXM) Version 2021-2, published in 2021, is compatible with Amendments 79 and 80 to ICAO Annex 3. To resolve issues identified in IWXXM Version 2021-2, a new version of IWXXM, Version 2023-1, was approved via the WMO Fast Track approval procedures on 2 June 2023 and implemented on 15 June 2023. The

meeting noted the [compatibility table](#), in Table 2 below, summarising the existing and planned IWXXM versions and the version number of the associated packages.

Table 2: Compatibility table showing IWXXM versions, associated report packages, and relevant ICAO Annex 3 requirements

IWXXM Version	METAR/SPECI	TAF	SIGMET	AIRMET	TCA	VAA	SWA	WAFS SIGWX F/C	VONA	QVA	Requirements
1.1	1.1.0	1.1.0	1.1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Am76
2.1	2.1.1	2.1.1	2.1.1	2.1.1	2.1.1	2.1.1	N/A	N/A	N/A	N/A	Am77
3.0	3.0.0	3.0.0	3.0.0	3.0.0	3.0.0	3.0.0	3.0.0	N/A	N/A	N/A	Am78
2021-2	3.1.0	3.0.1	4.0.0	3.1.0	3.1.0	3.1.0	3.0.1	1.0.0	N/A	N/A	Am79 + Am80
2023-1	3.1.0	3.0.1	4.0.1	3.1.1	3.1.0	3.1.0	3.0.1	1.1.0	N/A	N/A	Am79 + Am80
Planned release in 2024	3.1.0	3.0.1	4.0.1	3.1.1	3.1.0	3.2.0	3.1.0	1.1.0	1.0.0	1.0.0	Am81

6.2. The Meeting also noted the planned new version of IWXXM for Amendment 81 to be released in 2024, which would include revised Space Weather Advisory and Volcanic Ash Advisory packages and the introduction of new IWXXM messages on Volcano Observatory Notice for Aviation (VONA) and Quantitative Volcanic Ash Concentration Information (QVA). It is expected that there will be no major or minor changes for METAR/SPECI, TAF, SIGMET, AIRMET, TCA and WAFS SIGWX forecast. Updates to the existing MET products in future IWXXM versions are expected to be less frequent as they become more mature.

IP/04 – Updates on the implementation of IWXXM in China (China)

6.3. This paper presents the recent updates from China on implementing OPMET exchange in the ICAO Meteorological Information Exchange Model (IWXXM) form.

IP/05 – CSI project progress (Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam)

6.4. This paper outlines recent CSI Project progress, including follow-up discussions on SIGMET issuance for convective systems over multiple FIRs as presented at MET/S WG/13 in March 2023.

IP/06 – Updates on SIGMET coordination activities supported by HKO (Hong Kong, China)

6.5. Hong Kong, China presented the latest updates on the GHKPSV, HMSU, South and South-eastern Asia (SSEA) and Oceanic SIGMET Coordination supported by Hong Kong Observatory. The GHKPSV participants praised the ad hoc Tropical Cyclone briefings in place as being very useful for their operations, allowing them to provide early alerts on upcoming high-impact weather. The training was arranged for new participants in the SSEA and Oceanic SIGMET coordination group and assisted the relevant MWOs in building capacity in SIGMET preparation and coordination as part of the corrective action plan to remove SIGMET deficiency.

IP/07 – Progress in SIGMET coordination work between China and adjacent countries (China)

6.6. This paper presents the progress in SIGMET coordination between China and adjacent countries. The Meeting requested the ad hoc group of SIGMET coordination to update the online repository with the new SIGMET coordination activities [ACTION MET SG/27-13]

IP/08 – Outcome of HKO workshop on forecasting aviation hazardous weather (Hong Kong, China)

6.7. Hong Kong, China presented the outcome of the HKO Workshop on forecasting aviation hazardous weather organised by HKO from 4 to 6 July 2023. The Workshop aimed to facilitate discussion on improving forecasting aviation hazardous weather for both the aerodrome and the flight

information Region. Aviation experts were invited to lectures on a wide range of topics on the first two days of the Workshop, while there was a hands-on training session for the HKO Regional SIGMET Coordination platform on day 3. The Workshop was well received and introduced the latest development and forecasting techniques of aviation hazardous weather.

IP/09 – Development of reconstructed radar reflectivity for convective storm monitoring over India (India)

6.8. This information paper describes the development of reconstructed radar reflectivity by integrating Dual-frequency Precipitation Radar (DPR) observations on-board Global Precipitation Mission (GPM) with the storm index from INSAT3D. The performance of the derived product was tested against the independent DPR observations. A correlation coefficient of 0.81 is reported between the reconstructed radar reflectivity and the radar reflectivity from DPR observations. Derived reconstructed reflectivity is an excellent aviation product for storm monitoring over regions without radar coverage.

IP/10 – Deriving and using wind and temperature data from Mode S DAP and ADS-B data in Hong Kong, China (Hong Kong, China)

6.9. Hong Kong, China presented the work of the Hong Kong Observatory (HKO) on deriving wind and temperature data from Mode S Downlink Aircraft Parameter (DAP) and ADS-B data in real-time and its potential applications in supporting air navigation.

6.10. The meeting noted that Mode S DAP-derived and AMDAR data are being used to combine with wind and temperature data from NWP models and serve as input to Hong Kong CAD's new Approach Spacing Management System (ASMS) to manage approaching aircraft spacing.

IP/11 – Implementation of TAF3 for international airports (Solomon Islands)

6.11. This paper outlines the information on the three-hourly updated and responsive TAF to replace the Trend Forecast service, known as TAF3, implementation by Solomon Islands on the Services provision development initiatives implementation of the ICAO provisions for MET service for international air navigation.

IP/12 – The implementation and new developments of MET-ATM integration in the middle-south region of China (China)

6.12. This paper presents the implementation and new developments of MET and ATM integration in the middle-south region of China. Various meteorological services and products for different operational stages are provided, and a full-time series of aviation meteorological services are developed step by step in the region.

6.13. The meeting suggested China report the implementation and new developments of MET-ATM integration to MET-R WG and invited China to provide a Chinese example to supplement the Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations.

IP/13 – SADIS FTP (WAFC London and SADIS Manager)

6.14. This paper reports on the Secure Aviation Data Information Service (SADIS) operation since the APANPIRG MET SG/26 meeting in August 2022.

IP/14 – WAFS and SADIS changes 2023 and 2024 (WAFC London and SADIS Manager)

6.15. This paper outlines upcoming changes to the World Area Forecast System (WAFS) data sets and the introduction of a SWIM-compliant version of SADIS and WIFS.

IP/15 – The development and progress of China/Russian Federation consortium space weather centre (China)

6.16. This paper mainly presents the establishment and operation status of the China/Russian Federation Consortium (CRC) for the designated space weather centre. With the support of ICAO and

the other three Global Space Weather Centres, CRC commenced operations on 16 November 2021 and carried out corresponding responsibilities in the rotation. China is undertaking further studies of space weather influence on Air Traffic Management (ATM) operations.

IP/16 – Combined APAC VAAC Management report (Australia, Japan and New Zealand)

6.17. This paper presents an International Airways Volcano Watch (IAVW) focused management report describing activities for three APAC Volcanic Ash Advisory Centres (VAAC), Darwin, Tokyo, and Wellington, covering 1 July 2022 to 30 June 2023.

IP/18 – Usage of quantitative volcanic ash concentration information in multi-regional trajectory-based-operation demonstration (Japan)

6.18. This paper overviews data usage from live flight demonstrations conducted by Japan, Thailand, Singapore and US ANSPs in June 2023. The activity included mock QVA issuance by VAAC Tokyo and pilot/flight dispatcher interaction for flight route decisions.

IP/17 – WMO activities of relevance to ICAO (WMO)

6.19. This information paper provides an overview of some of the recent activities of the World Meteorological Organization (WMO) of relevance to ICAO, particularly in the context of WMO's latest organisation structures, engagement with ICAO and other agencies at the global and regional levels, recent and upcoming events, and other noteworthy information including links to WMO resources.

IP/03 – Automated take-off forecasts in the Republic of Korea (Republic of Korea)

6.20. The Republic of Korea is preparing to automatically produce and provide take-off forecasts based on multiple numerical weather prediction models to prepare for the remotely piloted and automated future aviation system.

7. Future work programme

WP/19 – Future of VOLCEX SG (Chair MET/S WG)

7.1. The Meeting reviewed options for encouraging the organisation of – and sharing outcomes of – exercises simulating high-impact, low-probability events in the aeronautical meteorology field, including the role of VOLCEX Steering Group.

7.2. The Meeting discussed options to disestablish the Steering Group and establish ad hoc groups to undertake specific exercises on either volcanic ash or space weather scenarios and to modify the Steering Group to cover not only exercises relevant to volcanic ash but also space weather exercises and exercises for other high impact, low probability meteorological phenomena.

7.3. The Meeting expressed support for expanding VOLCEX SG to include exercises for other aeronautical hazards but stressed the importance of having a group with points of contact or leads for States to approach, offering guidance and monitoring the outcome. An advisory group was considered a more appropriate forum than an ad hoc group or task force with a limited timeframe.

7.4. After considerable deliberation on the pros and cons of each option, the Meeting formulated the following Draft Decision:

Draft Decision MET SG 27-06: Replacement of the VOLCEX Steering Group by the MET Exercise Advisory Group	
What: That, the Volcanic Ash Exercises Steering Group (VOLCEX SG) be disestablished, and instead, MET SG includes in its work plan the establishment of a Meteorological Exercises Advisory Group to provide advice and guidance to States undertaking exercises on volcanic ash, space weather and other aeronautical meteorological hazards, reporting back (as necessary) under a new MET SG agenda item for MET exercises. Further, States are encouraged to report on their aviation-	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical

focused MET exercises activities under this agenda item.	
Why: There is a need for conducting exercises for various meteorological hazards, including space weather (SWX ¹), volcanic ash and tropical cyclones. Since the creation of VOLCEX SG in 2014, numerous exercises have been conducted under the remit of the VOLCEX SG. Recently, many exercises have been undertaken by States outside of the governance of VOLCEX SG but based on procedures developed by the VOLCEX SG. It is agreed that the VOLCEX SG has served its intended function and is no longer required in its original format. It would still be helpful to utilise the experience of those who have conducted exercises previously, along with experts from agencies hosting VAACs, SWX Centres, and other experts in the Region, to form a new Advisory Group to provide guidance material and advice to assist States in developing their exercises. States are further encouraged to report beneficial exercise outcomes to the MET SG (and any other interested APANPIRG WG) on their results.	Follow-up: <input type="checkbox"/> Required from States
When: September 2023	Status: Draft to be adopted by PIRG
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: ROs	

7.5. The Meeting identified Indonesia and New Zealand as co-leads for the above MET Exercise Advisory Group, with Members from Australia, China, Hong Kong China, India, the Republic of Korea, and the United States. In addition, Japan expressed interest in joining the group and would confirm later with the co-leads.

Flimsy/01 – Proposal for the dissolution of MET/S WG (Chair MET/S WG)

7.6. The Meeting considered a proposal for the dissolution of the MET/S WG, noting the pros and cons set out in the Flimsy/01. The Meeting noted that the ad hoc group on deficiencies would continue to review the results of SIGMET tests.

7.7. China and Hong Kong China expressed concerns about the dissolution of MET/S WG without a dedicated working group to oversee the service implementation of aeronautical meteorological services in the APAC Region. They suggested changing the mode of WG from face-to-face meetings to hybrid or virtual instead of dissolving the WG, for allowing a wider participation of States and more effective use of travel times.

7.8. The Meeting discussed the benefits and disadvantages of the proposed dissolution of the MET/S WG, and agreed that wider participation was already being addressed by the newly agreed meteorological seminars. Furthermore, hybrid meetings would not address the unnecessary duplication of effort of the MET/S WG and the MET SG and the resulting additional financial, time and environmental burden on the limited resources of the Secretariat and Member States. The Meeting adopted the following Decision:

Decision MET SG 27-07: Dissolution of MET/S WG	
What: That the MET SG: f) Dissolves the MET/S WG as a distinct contributory body; g) Realigns reporting of the VOLCEX SG (or its proposed replacement group, the MET Exercises Advisory Group); h) Retains the two expert ad hoc groups that will report to MET SG on:	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental

¹ The abbreviation SWX is used in ICAO Annex 3, Table A7-3: Template for advisory message for space weather information

MET SG/27
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<ul style="list-style-type: none"> i. Rectification and Identification of Deficiencies; and ii. Regional SIGMET Guide updates. <ul style="list-style-type: none"> i) Retains the expert ad hoc group on SIGMET coordination, which will report to MET/R WG; and j) Task the ad hoc group leads to report progress, as necessary, to the MET SG and WG Chairs Quarterly Meetings. 	<input checked="" type="checkbox"/> Ops/Technical
Why: <ul style="list-style-type: none"> 4. To avoid duplication of effort at MET SG and WGs and unnecessary travel for participants; 5. To make more effective use of participants' and ICAO's resources; and 6. To improve the coordination and outreach with States, especially in the context of ICAO's No Country Left Behind initiative. 	Follow-up: <input type="checkbox"/> Required from States
When: 8-Sep-23	Status: Adopted by Subgroup
Who: <input checked="" type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

WP/16 – Review the Terms of Reference and Work Plan (Secretariat)

7.9. The Meeting reviewed the terms of reference, which describe the objectives, functions, establishment, membership, Chairing and Secretary, meetings, reporting, and delegated authority of the MET SG and proposed some minor updates to the functions of the group and the meeting documentation, including delegating functions of MET/S WG to the MET SG or its other working groups, along with expanding the review of any exercise outcomes that are relevant to the work of the MET SG, as indicated in **Appendix B** of this Report.

8. Any other Business

WP/21 – Suggestions on non-regular OPMET exchange (China)

8.1. The Meeting reviewed suggestions by China to improve the non-regular OPMET exchange by the Guangzhou database of China (ZGGGYZYX), which has received many OPMET requests from Vietnam aerodrome meteorological offices since 2022.

8.2. The Meeting noted that OPMET request messages for China should be sent to ROC Beijing (ZBBBYPYX) rather than Guangzhou (ZGGGYZYX). Users may also contact ROC Beijing to develop regular OPMET exchange based on the operational demands.

8.3. The Meeting also recalled the RODB OPMET Interrogation Procedures in Appendix H of the Asia Pacific ROBEX Handbook, which set out the standard format for request messages.

Next Meeting

8.4. The Meeting noted the date for the Twenty-eighth Meeting of the Meteorology Sub Group would be in early July 2024 (TBC).

—END—

MET SG/27
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MET SG – LIST OF ACTIONS

Note: Proposed updates are indicated with ~~strikethrough~~ and **highlighted** text.

New action items recorded by MET SG/27

MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
27/01	MET Deficiencies related to IWXXM implementation: Seek further advice from APANPIRG concerning identifying air navigation deficiencies in other States due to the lack of implementation of the Annex 3 standards for disseminating meteorological information in the IWXXM form. [Ref: Report of MET SG/27, para. 3.9.]	Secretariat	Dec 2023	TO COMMENCE
27/02	Updates to the ICAO APAC ROBEX Handbook: Coordinate with all the States concerned (ref: MET SG/27, WP/09 and WP/14) to incorporate the proposed updates in the ROBEX Handbook, Sixteenth Edition [ACTION MET SG/27-02] [Ref: Report of MET SG/27, para. 4.4.]	Secretariat	Dec 2023	TO COMMENCE
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	TO COMMENCE
27/04	Volcanic ash advisory and SIGMET examples: Review and revise the volcanic ash advisory and SIGMET examples in WP/10, Appendix B, when the OBS (or EST) VA CLD on the Volcanic Ash Advisory (VAA) indicates “VA NOT IDENTIFIABLE FM SATELLITE DATA”, to ensure consistency between the SIGMET and advisory information. [Ref: Report of MET SG/27, para. 4.8.]	Ad hoc group in collaboration with the VAACs	Jul 2024 (MET SG/28)	TO COMMENCE
27/05	Document of cases of SIGMET coordination: Identify common SIGMET coordination practices from the document of cases of SIGMET coordination in WP/11 and develop further the document to separate the procedural information, which could potentially be used to supplement to the Asia/Pacific Regional SIGMET Guide. [Ref: Report of MET SG/27, para. 4.16.]	Ad hoc group	Jul 2024 (MET SG/28)	TO COMMENCE
27/06	Document on use cases and user requirements for SWIM-based MET information services supporting ATFM in the APAC region: Present the document on use cases and user requirements for SWIM-based MET information services supporting ATFM in the APAC region to the ATM/SG/11 for review and feedback. [Ref: Report of MET SG/27, para. 4.17.]	Ad hoc group	Oct 2023 (ATM/SG/11)	COMPLETED
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.]	Secretariat	Dec 2023	TO COMMENCE
27/08	Siem Reap Angkor International Airport (VDSA) – ROBEX Handbook update: Coordinate the necessary updates to incorporate VDSA in the ROBEX Handbook. [Ref: Report of MET SG/27, para. 5.2.]	Secretariat and Cambodia	Dec 2023	TO COMMENCE
27/09	Siem Reap Angkor International Airport (VDSA) – METNO process: Notify the update to the ROBEX system by following the METNO process. [Ref: Report of MET SG/27, para. 5.3.]	Responsible NOC	Dec 2023	TO COMMENCE
27/10	Proposal for amendment of the APAC Air Navigation Plan:	Secretariat	Dec 2023	TO COMMENCE

MET SG/27
Appendix A to the Report

MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
	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.]			
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	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	Dec 2023	TO COMMENCE
27/13	Proposed amendment to ICAO Annex 3: Update the online repository with the new SIGMET coordination activities between China and adjacent countries. [Ref: Report of MET SG/27, para. 6.6.]	Ad hoc group	Dec 2023	TO COMMENCE

Unresolved action items recorded by MET SG/26

MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
26/01	MET Deficiencies template and guidance documents: Finalise and publish the <i>MET Deficiencies template and guidance</i> documents (from Appendix F of the Report of MET SG/25) as stand-alone documents on the ICAO APAC Office “eDocuments” webpage. [Ref: Report of MET SG/26, para. 2.4.] Ref: ‘MET Deficiency Report and Identification Guide’, uploaded to the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx	Secretariat and ad hoc group on MET deficiencies	Nov 2022	COMPLETED
26/02	Papers for MET/S WG on QMS: Request papers for future meetings of the MET/S WG on issues concerning the implementation and monitoring the implementation of QMS in the Region. [Ref: Report of MET SG/26, para. 2.18.] Ref: MET/S WG/13; Agenda Item 4: Quality management of meteorological services; WP/05 – QMS Updates from Solomon Islands and Other Pacific Islands States (Solomon Islands); IP/07 – Quality Management System for Aviation Weather Services in Hong Kong, China (Hong Kong, China); and IP/08 – Implementation of QMS in Aeronautical Meteorology Service in Indonesia (Indonesia)	Secretariat and Chair of MET/S WG	Dec 2022	COMPLETED
26/03	Paper for CNS SG/26 on Draft Decision SWIM TF/06/01: Submit a paper to CNS SG/26 highlighting that the MET SG/26 noted the importance of CNS SG/26 adopting the proposal in Draft Decision SWIM TF/06/01. [Ref: Report of MET SG/26, para. 2.31.] Ref: CNS SG/26, WP/34 – REVIEW OUTCOMES FROM MET SG/26	Secretariat	Aug 2022	COMPLETED
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.]	Secretariat	Nov 2022	IN PROGRESS

MET SG/27
Appendix A to the Report

MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
	Ref: MET SG/27, WP/07 – Review APANPIRG Air Navigation Deficiencies			
26/05	<p>Location indicator for FIR Port Moresby in the SIGMET Guide: Include the correct location indicator for FIR Port Moresby (as previously identified in Action No. 25/07) in the approved ICAO APAC Regional SIGMET Guide, Tenth Edition. [Ref: Report of MET SG/26, para. 4.5.]</p> <p>Ref: APAC Regional SIGMET Guide, Tenth Edition, uploaded to the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx</p>	Secretariat	Nov 2022	COMPLETED
26/06	<p>ROBEX Handbook amendments for the regular exchange of OPMET bulletins to ROC Beijing: (a) Amend the ICAO APAC ROBEX Handbook as discussed in the Report of MET SG/26, para. 4.11.; (b) Assist China with consulting with India concerning India's agreement to regular exchange of OPMET bulletins to ROC Beijing; and (c) Subject to India's agreement, Amend the ROBEX Handbook as discussed in the Report of MET SG/26, para. 4.12. [Ref: Report of MET SG/26, para. 4.13.]</p> <p>Ref: APAC ROBEX Handbook, Fifteenth Edition, March 2023, uploaded to the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx</p>	Secretariat	Nov 2022	COMPLETED
26/07	<p>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.]</p> <p>Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan</p>	Secretariat and MET/R WG	Nov 2022	IN PROGRESS
26/08	<p>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.]</p> <p>Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan</p>	Secretariat and Nepal	Nov 2022	IN PROGRESS
26/09	<p>Outdated WAFS Service Document: Remove the WAFS Service Document, which dated back to 2012, from the ICAO APAC Office eDocuments webpage. [Ref: Report of MET SG/26, para. 8.3.]</p> <p>Ref: WAFS Service Document removed from the ICAO APAC Office eDocuments webpage</p>	Secretariat	Nov 2022	COMPLETED

Unresolved action items recorded by MET SG/25

MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
25/04	<p>Revise the Work Plan of MET/R to take the lead in developing the proposed amendment to ANP Volume III in coordination with MET/IE and MET/S [Ref: para. 2.5.]</p>	Secretariat and MET/R WG	Nov 2021	COMPLETED TO COMMENCE

MET SG/27
Appendix A to the Report

MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
	Ref: MET/R WG/12 Report, Appendix B, Terms of Reference and Work Program, Deliverable 5: Coordinated review of the APAC ANP Volume III, including proposals for improvements to the ANRF and other parts of Volume III, to clarify the MET-related implementation planning guidance			
25/05	Reach out to States concerned with air navigation deficiencies to identify and record target dates for resolving their respective air navigation deficiencies [Ref: para. 4.3.] Ref: MET/S WG work plan, activities No. 2 and 6	Secretariat	Nov 2021	SUPERSEDED IN PROGRESS
25/06	Finalise the proposals for amendment of the APAC ANP (Vol I and II) and ROBEX Handbook as agreed in previous meetings to ensure accuracy of the requirements specifications against which the OPMET monitoring is analysed [Ref: para. 4.6.-4.7.] Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan, and WP/09 – Updates to the ICAO APAC ROBEX Handbook	Secretariat	Nov 2021	IN PROGRESS
25/07	Finalise a proposal for amendment of the APAC ANP (Table MET II-1) and consequential amendment to the APAC Regional SIGMET Guide as necessary to ensure the correct use of FIR indicator for Port Moresby [Ref: para. 4.12.-4.14.] Ref: MET SG/27, WP/14 – Review of the Asia/Pacific Air Navigation Plan, and APAC Regional SIGMET Guide, Tenth Edition, uploaded to the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx	Secretariat	Nov 2021	IN PROGRESS ANP amendment pending; SIGMET Guide amended, 9 th Ed.
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.]	MET/S	Mar 2023	TO COMMENCE
25/10	Assist the Solomon Islands in aligning procedures with ICAO Annex 3, conducting SIGMET monitoring by RODBs and follow-up SIGMET tests to demonstrate ICAO-compliant content, format and timeliness of SIGMET information service and its sustainability [Ref: para. 4.15.-4.18.] Ref: APANPIRG/33, IP/08 – Rectification of APANPIRG AN Deficiency AP-MET-23	Solomon Islands, Secretariat, Australia and New Zealand	Feb 2022	COMPLETED IN PROGRESS Ref: MET/S WG/12 IP/11
25/11	Coordinate removal of AN deficiency AP-MET-23 from the open list with the relevant ICAO bodies (MET/S WG, MET SG and APANPIRG) after receipt of the additional evidence and report from Solomon Islands [Ref: para. 4.19.] Ref: APANPIRG/33 Report, paragraphs 3.5.8, 4.1.3-4, and Conclusion APANPIRG/33/14 – Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form	Secretariat	Mar 2022	COMPLETED 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, MET/S WG, MET/IE WG	Mar 2022	TO COMMENCE
25/13	Coordinate possible SWX advisory exercise/s and training workshop/s with the appropriate body under METP for [Ref: para. 5.28.] Ref: ICAO APAC webinar on space weather information service (TBD) Ref: Secretariat to coordinate with Australia [MET/IE WG/20 - ACTION 01] Ref: MET/R WG new deliverable #7 to promote user education on SWX service.	Secretariat MET/S WG, MET/IE WG	Nov 2021	IN PROGRESS

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MET SG – LIST OF ACTIONS				
Action No.	Detailed description of actions	Responsibility	Target date	Status
25/14	<p>Finalise the proposed amendment to the ROBEX Handbook, Table A, Appendix A, to reflect the requirement of China for regular exchange of OPMET bulletins with Sri Lanka, Indonesia, Malaysia and India in consultation with States concerned [Ref: para. 6.1.-6.2.]</p> <p>Ref: APAC ROBEX Handbook, Fifteenth Edition, March 2023, uploaded to the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx</p>	Secretariat	Nov 2021	IN PROGRESS COMPLETED

Terms of Reference and Work Plan for Meteorology Sub-Group (MET SG)

1. Objectives of the MET SG

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

2. Functions of the MET SG:

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

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

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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.

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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.

Work Plan of the MET SG

ToR Ref*	Detailed description of deliverable	Responsibility	Target date	Status of progress
a) to h)	Coordination meeting for the Chairs of MET SG, MET/R WG, MET/IE WG, MET/S WG, VOLCEX/SG Online meetings conducted: 03/10/2022, 15/12/2022, 14/03/2023, 13/06/2023	Chair MET SG and Secretariat	Dec 2021 Mar 2022 Jun 2022 Sep 2022	Completed In progress
a)	Draft amendment proposal for APAC ANP to fulfil missing data in Tables MET	MET/S WG and Secretariat	Mar 2022	In progress
a)	Draft amendment proposal for APAC ANP to clarify the MET-related implementation planning guidance in the ANRF and other parts of Volume III	MET/R WG MET/IE WG MET/S WG with guidance from ICAO	May 2022	In progress
b) c) g)	Organization and Analysis of APAC Regional SIGMET test Ref: Report of Conjoint Session of MET/IE WG/21 and MET/S WG/13 Ref: MET SG/27, WP/04 – Review outcomes from MET/IE WG/21	MET/S WG (Activity 1 and 3) MET/IE WG (Activity 3)	Mar 2022	Completed In progress
b) c) g)	Analysis of APAC Regional OPMET-availability monitoring exercise Ref: Report of MET/IE WG/21 Ref: MET SG/27, WP/04 – Review outcomes from MET/IE WG/21	MET/IE WG (Activity 1)	Mar 2022	Completed In progress
b) c)	Analysis of APAC Regional OPMET-timeliness, -compliance and -regularity monitoring exercises Ref: Report of MET/IE WG/21 Ref: MET SG/27, WP/04 – Review outcomes from MET/IE WG/21	MET/IE WG (Activity 2)	Mar 2022	Completed In progress
b) g)	Analysis of APAC Regional VAAC backup tests Ref: MET/S WG/13, IP/09 – Combined APAC VAAC Management Report	MET/IE WG (Activity 4)	Mar 2022	Completed In progress
b) g)	Analysis of APAC Regional IROG backup tests Ref: Report of MET/IE WG/21 Ref: MET SG/27, WP/04 – Review outcomes from MET/IE WG/21	MET/IE WG (Activity 5)	Mar 2022	Completed In progress

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ToR Ref*	Detailed description of deliverable	Responsibility	Target date	Status of progress
b)	Revised draft regional guidance material on MET information needed to support the elements of the APAC Seamless ANS Plan	MET/R WG (Deliverable 3)	May 2022	In progress
b) c) g)	Final report on ICAO volcanic ash exercises (Papua New Guinea, North-east Asia, Philippines, etc.)	APAC VOLCEX/SG	TBD	Not started
c) d)	Update the reporting form on APANPIRG AN deficiencies to reflect progress to add/remove deficiencies in the MET field	MET SG Chair, Secretariat	Jun 2022	In progress
c) d)	Reporting form updates showing the status of implementation of corrective action for the resolution of AN deficiencies in the MET field	MET/S WG (Activity 2 and 6)	Mar 2022	In progress
f)	Progress report on implementation and testing of IWXXM exchange	MET/IE WG (Activity 7)	Jun 2022	In progress
g)	Information on ICAO provisions related to meteorological authority and quality assurance, cost recovery, competency, training and qualifications for meteorological service provision shared with States	MET SG Chair, Secretariat	Jun 2022	In progress
g)	Analysis of MET information used in the Region specifically to support ATM operations	MET/R WG (Deliverable 2)	May 2022	In progress
g)	Plan and organize a seminar on regional implementation of MET information to support ATM operations Ref: Report of MET/R WG/12 Ref: MET SG/27, WP/06 – Review outcomes from MET/R WG/12	MET/R WG (Deliverable 5)	May 2022	Completed In progress
h)	Environmental Issues Identify issues in the field of aeronautical meteorology related to environmental issues	MET SG Chair, Secretariat	Jun 2022	In progress
b) e) g)	Consideration of a MET-focused SWIM workshop	Secretariat, MET/IE WG Chair	TBD	Not started
e) f) g)	SIGMET coordination activities in APAC Region Coordinate on the next steps to promote integration and expansion of SIGMET coordination activities among States/Administrations.	MET/R WG (Deliverable 7) MET/S WG (Activity 8)	Jun 2022	In progress
	Update Regional Guidance for Tailored Met Information and Services to Support ATM Operations Ref: Published 'APAC Regional Guidance for Tailored Meteorological Information and Services to support Air Traffic Management Operations, Third Edition — August 2022' on the ICAO APAC website: https://www.icao.int/APAC/Pages/eDocs.aspx	MET/R WG	May 2022	Completed In progress
	Develop User Requirements for SWIM-based MET Information Services Supporting ATFM	MET/R WG	May 2022	In progress
	MET expert contribution to SWIM/TF – Identify meteorological expert/s to contribute to the APAC SWIM/TF to ensure meteorological aspects are fully considered	MET SG	Nov 2021	In progress

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

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LIST OF WORKING AND INFORMATION PAPERS

WORKING PAPERS			
WP No.	Agenda Item No.	Title	Presented by
WP/01	1	Provisional Agenda	Secretariat
WP/02	2	Review outcomes from MET SG/26	Secretariat
WP/03	2	Review outcomes from APANPIRG/33	Secretariat
WP/04	2	Review outcomes from MET/IE WG/21	Chairs of MET/IE WG
WP/05	2	Review outcomes from MET/S WG/13	Chair MET/S WG
WP/06	2	Review outcomes from MET/R WG/12	Chair MET/R WG
WP/07	3	Review APANPIRG Air Navigation Deficiencies	Secretariat
WP/08	3	Resolution of air navigation deficiency	Nepal
WP/09	4	Updates to the ICAO APAC ROBEX Handbook	Secretariat
WP/10	4	Update to Regional SIGMET Guide	Ad hoc group
WP/11	4	Document on Cases of SIGMET Coordination Practices in the APAC Region	MET/S WG ad hoc group on SIGMET Coordination
WP/12	4	APAC use cases and user requirements for SWIM-based MET information services supporting ATFM	MET/R WG Ad-hoc Group
WP/13	4	Update of VAAC backup procedures in APAC Regional SIGMET Guide	VAACs Wellington, Darwin and Tokyo
WP/14	5	Review of the Asia/Pacific Air Navigation Plan	Secretariat
WP/15	5	Proposed amendment to ICAO Annex 3	Secretariat
WP/16	7	Review the Terms of Reference and Work Plan	Secretariat
WP/17	5	MET deficiencies review of the 2022 annual SIGMET test outcomes and OPMET monitoring activities	MET/S MET Deficiencies Ad Hoc Group

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WP/18	6	IWXXM planned release for amendment of ICAO Annex 3	Hong Kong, China
WP/19	7	Future of VOLCEX SG	Chair MET/S WG
WP/20	4	Updates of Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations	Ad hoc group
WP/21	8	Suggestions on non-regular OPMET exchange	China
WP/22	5	Asia/Pacific Seamless ANS Plan Update	Secretariat
WP/23	4	Updates to the contact information for SIGMET tests	Secretariat
WP/24	5	Siem Reap Angkor International Airport (VDSA)	Cambodia
WP/25	2	Outcomes of the Twenty Seventh Meeting of Communication Navigation and Surveillance Sub Group	Secretariat

INFORMATION PAPERS			
IP No.	Agenda Item	Title	Presented by
IP/01	1	MEETING BULLETIN	Secretariat
IP/02	5	APAC VOLCEX 22/01 exercise outcomes	Indonesia
IP/03	5	Automated take-off forecasts in the Republic of Korea	Republic of Korea
IP/04	6	Updates on the implementation of IWXXM in China	China
IP/05	6	CSI PROJECT PROGRESS	Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam
IP/06	6	Updates on SIGMET coordination activities supported by HKO	Hong Kong, China
IP/07	6	Progress in SIGMET coordination work between China and adjacent countries	China
IP/08	6	Outcome of HKO workshop on forecasting aviation hazardous weather	Hong Kong, China
IP/09	6	Development of reconstructed radar reflectivity for convective storm monitoring over India	India
IP/10	6	Deriving and using wind and temperature data from Mode S DAP and ADS-B data in Hong Kong, China	Hong Kong, China

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INFORMATION PAPERS			
IP No.	Agenda Item	Title	Presented by
IP/11	6	Implementation of TAF3 for international airports	Solomon Islands
IP/12	6	The implementation and new developments of MET-ATM integration in the middle-south region of China	China
IP/13	6	SADIS FTP	WAFC London and SADIS Manager
IP/14	6	WAFS and SADIS changes 2023 and 2024	WAFC London and SADIS Manager
IP/15	6	The development and progress of China/Russian Federation consortium space weather centre	China
IP/16	6	Combined APAC VAAC Management report	Australia, Japan and New Zealand
IP/17	6	WMO activities of relevance to ICAO	WMO
IP/18	6	Usage of quantitative volcanic ash concentration information in multi-regional trajectory-based-operation demonstration	Japan

PRESENTATIONS		
SP No.	Title	Presented by
SP/01	Proposed Elevation of the Volcano Observatory Notice to Aviation (VONA)	Chair MET/S WG
SP/02	Quantitative Volcanic Ash (QVA) Concentration Information Service	New Zealand
SP/03	Improvements to the World Area Forecast System (WAFS) – 2023 and 2024	Meteorology Panel
SP/04	Space Weather Advisory Service for Aviation	Australia
SP/05	Asia Pacific Seamless ANS Plan	Secretariat

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List of Participants

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	STATE/NAME		TITLE/ORGANIZATION	E-MAIL
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	STATE/NAME		TITLE/ORGANIZATION	E-MAIL
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23.	VIET NAM (5)			

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