



International Civil Aviation Organization

ICAO

Fourteenth Meeting of the Air Traffic Management Sub-Group (ATM/SG/14) of APANPIRG

Bangkok, Thailand, 3 – 7 August 2026

Agenda Item 7: AOP, AIM, MET, SAR

OUTCOMES OF MET SG/30 RELEVANT TO ATM/SG

(Presented by the Secretariat)

SUMMARY

This paper presents selected outcomes of the Thirtieth Meeting of the APAC Meteorology Sub-group (MET SG/30) that are relevant to the work of the ATM Sub-Group (ATM/SG). The paper highlights outcomes related to meteorological support for ATM operations, IWXXM and SWIM implementation, air navigation deficiency management, aviation hazard information, and APAC Air Navigation Plan (ANP) development. It also draws attention to matters for ATM/SG consideration, including VONA dissemination, clarification of APANPIRG deficiency identification procedures, and feedback from MET SG/30 on the draft APAC ANP Volume III. Relevant MET SG/30 outcomes are provided in the appendices.

1. INTRODUCTION

1.1 The Thirtieth Meeting of the APAC Meteorology Sub-group (MET SG/30) was held in Bangkok, Thailand, from 20 to 24 July 2026. The meeting reviewed progress in the implementation of aeronautical meteorological services in the APAC Region, including meteorological information exchange, air navigation deficiencies, regional planning and monitoring activities, guidance material, and initiatives supporting the safety, regularity and efficiency of international air navigation.

1.2 In accordance with its Terms of Reference, MET SG/30 considered matters related to the development, implementation, monitoring and continuous improvement of aeronautical meteorological services, including APAC ANP development, air navigation deficiency management, meteorological information exchange, SWIM-enabled services, regional guidance material, MET–ATM collaboration and environmental initiatives. Several outcomes are of direct relevance to ATM/SG, particularly those concerning meteorological support for ATM operations, IWXXM and SWIM implementation, aviation hazard information, APAC ANP development and implementation planning, inter-regional coordination, and operational efficiency initiatives.

2. DISCUSSION

MET Support to ATM Operations

2.1 MET SG/30 reviewed outcomes of MET/R WG/15, including activities supporting operational integration between meteorology and ATM stakeholders. The meeting noted continuing work on operationally focused meteorological services supporting ATM decision-making, future MET/ATM seminars, surveys on MET information supporting ATM, SWIM-based MET information

service use cases, and regional guidance for tailored meteorological information and services supporting ATM operations.

2.2 The meeting noted that MET/R WG/15 established a task group to further develop proposals for a future MET/ATM Seminar intended to strengthen MET-ATM operational integration and support future operational requirements. The meeting also endorsed updates to the MET/R WG Terms of Reference to continue work on operational requirements relating to MET support for ATM, ATFM and SWIM activities. Further information on ATM-related MET SG/30 outcomes is provided in **Appendix A**.

Regional Guidance for MET Information Supporting ATM

2.3 MET SG/30 approved updates to the *APAC Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations*. The updates include additional guidance on verification and evaluation of impact-based meteorological information used in ATM decision-making and further implementation examples from States.

2.4 To support ATM implementation, MET SG/30 adopted **Decision MET SG/30-08 – Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations**. A summary of the approved updates and their relevance to ATM stakeholders is provided in **Appendix C**.

MET Information Exchange, IWXXM and SWIM

2.5 The meeting reviewed regional implementation of the ICAO Meteorological Information Exchange Model (IWXXM) and noted uneven implementation across the Region. The meeting identified concerns regarding IWXXM version compatibility, regional dissemination capability, and communication infrastructure needed to support international exchange of IWXXM information.

2.6 To address regional implementation issues, MET SG/30 formulated **Draft Conclusion MET SG/30-01 – IWXXM Version Compatibility**, requesting States and stakeholders to support implementation of IWXXM Version 2025-2 and future compliant versions.

2.7 MET SG/30 also formulated **Draft Conclusion MET SG/30-02 – Dissemination of IWXXM**, requesting Regional OPMET Centres, Inter-Regional OPMET Gateways and States to expedite implementation of communications capabilities necessary to support regional and global exchange of meteorological information in IWXXM form, including AMHS capabilities required for international exchange.

2.8 The meeting further noted continuing work on SWIM-enabled MET information services, APAC Common SWIM Information Services, communication infrastructure requirements and planning for the transition from TAC-based exchange towards IWXXM and future information service environments. Additional ATM-relevant MET SG/30 Conclusions, Draft Conclusions and Decisions related to IWXXM implementation, SWIM, regional information exchange and air navigation deficiency monitoring are summarized in **Appendix A**.

Air Navigation Deficiencies and ATM-Related Matters

2.9 MET SG/30 reviewed APANPIRG MET air navigation deficiencies and noted that twelve open MET deficiencies affecting seven States remain recorded in the APANPIRG Air Navigation Deficiency Database. These deficiencies relate to aerodrome meteorological observations and reports, SIGMET services, volcanic ash and volcanic activity information, and WAFS-related services.

2.10 The meeting further reviewed outcomes from regional SIGMET tests and OPMET monitoring activities and adopted conclusions requesting ICAO assessment of potential deficiencies related to:

- Lack of IWXXM SIGMET provision;
- Lack of IWXXM advisory provision; and
- Potential deficiencies in METAR and TAF provision.

2.11 Following review of regional monitoring activities, MET SG/30 adopted:

- **Conclusion MET SG/30-03 – Lack of Provision of IWXXM Format SIGMET;**
- **Conclusion MET SG/30-04 – Lack of Provision of IWXXM Format Advisories;** and
- **Conclusion MET SG/30-05 – Potential Deficiencies in Provision of METAR and/or TAF.**

2.12 These conclusions request ICAO review of information identifying potential deficiencies related to the provision and exchange of operational meteorological information required for international air navigation. The outcomes are relevant to ATM stakeholders because they may affect the availability and quality of meteorological information supporting operational decision-making, flight planning and air traffic services.

2.13 A summary of the MET SG/30 outcomes relevant to ATM-related deficiency management is contained in **Appendix A**.

Air Navigation Deficiency Management

2.14 MET SG/30 reviewed the application of the APANPIRG air navigation deficiency management process and discussed the identification of potential deficiencies arising from regional monitoring activities. The meeting noted concerns regarding differing interpretations and application of deficiency management procedures between APANPIRG Sub-groups and potentially between ICAO regions. The meeting observed that consistent interpretation and application of deficiency identification procedures are important to support effective monitoring, reporting and resolution of air navigation deficiencies.

2.15 The meeting agreed that clarification would be beneficial and recorded **Action Item MET SG/30-02**, requesting the Secretariat to seek clarification on the interpretation and application of APANPIRG deficiency identification procedures, including consistency of application between APANPIRG Sub-groups and, where appropriate, other ICAO regions, and to report the outcome for further consideration by MET SG and APANPIRG.

2.16 The outcome may be relevant to ATM/SG activities relating to the identification, assessment, reporting and resolution of ATM-related air navigation deficiencies, as well as the consistent application of APANPIRG deficiency management processes across APANPIRG subsidiary bodies.

Volcanic Activity Information and ATM Considerations

2.17 The meeting reviewed progress related to deficiency AP-MET-17 concerning volcanic activity information and noted that Volcano Observatory Notice for Aviation (VONA) information is currently disseminated by e-mail rather than through the Aeronautical Fixed Service (AFS).

2.18 Recognizing the operational implications for aviation operations and air traffic management, the meeting agreed that the matter should be brought to the attention of the ATM Sub-

Group for further consideration through **Action Item MET SG/30-01**. Additional information is provided in **Appendix B**.

APAC ANP and Future ATM-Related MET Implementation

2.19 MET SG/30 reviewed ongoing APAC Air Navigation Plan (ANP) activities, including recent amendments to APAC ANP Volumes I and II and the development of the revised APAC ANP Volume III. The meeting noted that the draft Volume III incorporates implementation planning elements, priorities and performance expectations derived from the Global Air Navigation Plan (GANP) and the APAC Seamless ANS Plan.

2.20 The meeting was informed that the updated APAC ANP Volume III would integrate APSAP content into a single planning framework and that comments received from States and Administrations had been incorporated into the draft under consideration by APANPIRG.

2.21 During the review of the draft MET provisions, MET SG members expressed concern that the draft Volume III was not sufficiently explicit regarding MET implementation expectations. The meeting noted that some proposed targets and implementation indicators relied heavily on references to ASBU elements and GANP material and may require further refinement to clearly identify the meteorological services, products and capabilities expected to be implemented by States.

2.22 The meeting further noted that feedback from MET SG on MET-related ASBU elements, priorities, targets, indicators, definitions and document structure would be considered during further development of the draft APAC ANP Volume III. The Secretariat advised that comments from the MET community were important to ensure that implementation planning guidance appropriately reflects meteorological requirements and regional implementation priorities.

2.23 The meeting also discussed future maintenance arrangements for APAC ANP Volume III and noted that further proposals and refinements may continue to be developed through APANPIRG subsidiary bodies following APANPIRG consideration. The Chair and Secretariat agreed that additional review and refinement of MET-related provisions would continue through the MET/R WG work programme and future MET SG meetings (**Action Item MET SG/30-10**).

2.24 MET SG/30 also formulated **Draft Conclusion MET SG/30-11 – Improvements to APAC ANP MET Information**, proposing amendments to APAC ANP Volumes I and II to improve alignment with current ICAO provisions and strengthen monitoring of meteorological service implementation. In addition, the meeting formulated **Draft Conclusion MET SG/30-12 – Amendment of the APAC ANP for the Provision of OPMET Information in IWXXM Form**, proposing explicit ANP provisions supporting digital meteorological information exchange and implementation monitoring. These outcomes are summarized in **Appendix A**.

2.25 The outcomes of MET SG/30 are relevant to ATM/SG because the development of APAC ANP Volume III, associated implementation indicators, SWIM-related activities, meteorological information services and modernization planning are closely linked to ATM/SG responsibilities for reviewing and maintaining ATM-related elements of the APAC ANP and supporting implementation of regional air navigation improvements.

Environmental and Operational Efficiency Initiatives

2.26 MET SG/30 reviewed information describing how meteorological services support operational efficiency, flight planning, route optimization and other initiatives contributing to environmental objectives.

2.27 The meeting also reviewed operational examples of impact-based meteorological services and decision-support tools used to support airport and ATM operational decision-making, including tailored meteorological information, runway and surface-condition forecasting, and weather services designed to improve operational efficiency while supporting broader environmental objectives.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) note the outcomes of MET SG/30 relevant to ATM/SG activities, including meteorological support for ATM operations, IWXXM and SWIM implementation, air navigation deficiency management, aviation hazard information, APAC ANP development, and environmental initiatives;
- c) support continued coordination between ATM and MET stakeholders to facilitate the implementation of IWXXM, SWIM-enabled meteorological information services, and operational meteorological information supporting ATM decision-making;
- d) consider the MET SG/30 request regarding the dissemination of Volcano Observatory Notice for Aviation (VONA) information, including its relationship with aviation situational awareness, NOTAM processes, and ATM operations;
- e) note **Decision MET SG/30-08** and encourage the use of the updated APAC Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations, as appropriate;
- f) consider the implications of **Draft Conclusions MET SG/30-01, MET SG/30-02, MET SG/30-11 and MET SG/30-12, and Conclusions MET SG/30-03, MET SG/30-04 and MET SG/30-05**, for ATM modernization, SWIM implementation, meteorological information exchange, and air navigation deficiency management;
- g) note the feedback provided by MET SG/30 on the draft APAC ANP Volume III, particularly the need for clearer identification of MET-related implementation expectations, capabilities, targets and indicators, and take this feedback into account during future ATM/SG and APANPIRG discussions on APAC ANP Volume III development; and
- h) note **Action Item MET SG/30-02** regarding clarification of APANPIRG deficiency identification procedures and consider any implications for ATM/SG activities related to air navigation deficiency identification, monitoring and resolution.

3.2 Supporting information is provided in:

- **Appendix A** – ATM-Relevant MET SG/30 Outcomes;
- **Appendix B** – VONA Dissemination and ATM Considerations; and
- **Appendix C** – Decision MET SG/30-08: Update to the APAC Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations.

APPENDIX A

ATM RELEVANT MET SG/30 OUTCOMES

Outcome	Title	ATM Relevance
Action Item MET SG/30-01	Coordination with ATM SG on volcanic activity information dissemination	Direct ATM follow-up
Action Item MET SG/30-02	Clarification of APANPIRG Deficiency Identification Procedures	Potential implications for ATM deficiency identification, assessment and management processes
Action Item MET SG/30-10	Action Item MET SG/30-10 – Review and Refinement of MET Provisions in APAC ANP Volume III	Relevant to ATM/SG review of ANP Volume III
Decision MET SG/30-08	Regional Guidance for Tailored MET Information and Services to Support ATM Operations	ATM operational guidance
Draft Conclusion MET SG/30-01	IWXXM Version Compatibility	SWIM/digital information exchange
Draft Conclusion MET SG/30-02	Dissemination of IWXXM	Regional information exchange infrastructure
Draft Conclusion MET SG/30-11	Improvements to APAC ANP MET Information	ANP planning and monitoring
Draft Conclusion MET SG/30-12	APAC ANP amendment for IWXXM provision	ATM modernization and deficiency monitoring
Conclusion MET SG/30-03	Lack of IWXXM SIGMET provision	ATM hazard information
Conclusion MET SG/30-04	Lack of IWXXM advisories	ATM hazard information
Conclusion MET SG/30-05	Potential deficiencies in METAR/TAF provision	ATM operational information

APPENDIX B

VONA DISSEMINATION, NOTAM AND ATM CONSIDERATIONS

Background

MET SG/30 reviewed progress towards resolution of Deficiency AP-MET-17 and noted information presented by Tonga regarding the establishment of formal arrangements between the organizations responsible for meteorological, geological and aviation services to support the provision of volcanic activity and volcanic ash information. The meeting recognized this as a significant step towards addressing the deficiency.

Discussion

The meeting noted that Volcano Observatory Notice for Aviation (VONA) information is currently disseminated by e-mail rather than through the Aeronautical Fixed Service (AFS). The meeting considered that this may limit wider awareness of significant volcanic unrest by aviation stakeholders.

The meeting discussed:

- the dissemination of VONA information;
- the relationship between VONA dissemination and NOTAM issuance for significant volcanic activity; and
- the need to ensure that relevant volcanic activity information is available to aviation stakeholders.

Recognizing the operational implications for aviation operations and air traffic management, the meeting agreed that the matter should be brought to the attention of the ATM Sub-Group for further consideration.

MET SG/30 Outcome

Action Item MET SG/30-01 – Coordination with ATM SG on volcanic activity information dissemination

New Zealand, in coordination with Tonga and IATA, prepare information for consideration by the ATM SG regarding progress towards resolution of Tonga's volcanic activity information deficiency and the remaining issues associated with dissemination of VONA and related volcanic activity information to aviation users.

APPENDIX C

DECISION MET SG/30-08: UPDATE TO THE APAC REGIONAL GUIDANCE FOR TAILORED METEOROLOGICAL INFORMATION AND SERVICES TO SUPPORT ATM OPERATIONS

Background

MET SG/30 reviewed proposed updates to the *APAC Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations*. The updates were developed by the MET/R WG ad hoc group and were intended to enhance guidance related to verification and evaluation of impact-based meteorological information used to support ATM decision-making.

The guidance material is intended to support States in the implementation, enhancement and continuous improvement of meteorological information and services for ATM operations.

Main Enhancements

The approved updates include:

- additional guidance on verification and evaluation of impact-based meteorological information used in ATM operations;
- guidance on continuous improvement of meteorological information and services supporting ATM decision-making;
- information on verification methods, including case-study and statistical approaches;
- guidance on identifying and evaluating meteorological impacts on ATM operations;
- approaches to improve reliability of verification activities; and
- additional regional implementation examples, including collaborative activities between meteorological service providers and ATM organizations.

MET SG/30 Decision

Decision MET SG/30-08 – Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations

The MET SG approved the proposed updates to the *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations*.

Purpose

The decision was adopted:

- to provide States with additional guidance relating to verification and evaluation of meteorological information supporting ATM operations; and

- to make available additional implementation examples and supporting material that assist the development and continuous improvement of meteorological services used in ATM decision-making.

Follow-up Action

Action Item MET SG/30-05 – Publication of Updated ATM Meteorological Guidance

The Secretariat to publish the updated Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations on the APAC eDocuments website.

Relevance to ATM/SG

The updated guidance supports the ATM/SG objective of improving operational efficiency and inter-disciplinary coordination by promoting the effective use of tailored meteorological information and services in ATM decision-making processes, including collaborative and impact-based operational planning.

— END —