



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**TWENTY NINTH MEETING OF THE ASIA/PACIFIC
AIR NAVIGATION PLANNING AND IMPLEMENTATION
REGIONAL GROUP (APANPIRG/29)**

Bangkok, Thailand, 3 to 5 September 2018

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation
3.5 MET
METEOROLOGY SUB-GROUP REPORT

(Presented by MET SG Chairperson)

SUMMARY

This paper presents the outcomes of the Twenty-Second Meeting of the Meteorology Sub-group (MET SG/22) of the Asia/Pacific (APAC) Air Navigation Planning and Implementation Regional Group (APANPIRG), held at the International Civil Aviation Organization (ICAO) APAC Regional Office in Bangkok, Thailand, from 18 to 21 June 2018.

Strategic Objectives:

- A: **Safety** – Enhance global civil aviation safety
- B: **Air Navigation Capacity and Efficiency**—Increase the capacity and improve the efficiency of the global aviation system
- E: **Environmental Protection** — minimize the adverse environment effects of civil aviation activities.

1. INTRODUCTION

1.1 The meeting was attended by 58 experts from Australia, Cambodia, China, Hong Kong-China, Macao-China, Indonesia, Japan, Lao (Peoples Democratic Republic), Malaysia, Mongolia, New Zealand, Philippines, Republic of Korea, Singapore, Thailand, United States, Viet Nam, IFALPA and the ICAO.

1.2 Mr. Jun Ryuzaki presided over the meeting in the role as Chairperson. The Vice Chairperson, Ms. Sharon Lau, assisted him. Mr. Peter Dunda, ICAO Regional Officer, Aeronautical Meteorology, acted as Secretary of the meeting.

2. DISCUSSION
ORGANIZATIONAL MATTERS

2.1 The meeting met as a single body to discuss all agenda items. The meeting considered 19 working papers (WPs), 24 information papers (IPs), 1 slide presentation (SP) and 4 discussion papers (DPs). A side meeting addressed issues including planning for an IWXXM workshop.

2.2 MET SG/22 formulated one Draft Conclusion and three Draft Decisions (requiring the attention of APANPIRG), and an additional four Conclusions and four Decisions (of a technical nature requiring the attention of MET SG, States or ICAO), as listed in the **Attachment A** to this paper.

REVIEW OUTCOMES FROM PREVIOUS MEETINGS

2.3 The meeting reviewed outcomes from MET SG/21, including the status of follow-up on the five Decisions (for MET SG), three Draft Conclusions (for APANPIRG) and the sixteen related tasks, and the ones from the Working Groups and a Steering Group. The meeting also reviewed outcomes from APANPIRG/28, including the status of follow up on six Conclusions of direct relevance to the MET SG.

2.4 The meeting noted that MET/IE WG/16 considered how to promote participation by the user groups (e.g., IATA, IFALPA, IFATCA) and the Pacific Islands Aviation Weather Services (PIAWS) Panel, on behalf of the Pacific Island States, and progress on the review of and proposed update to the ROBEX Handbook, including the recommendation to integrate information from the Interface Control Document (ICD) and to decommission the ICD.

2.5 The meeting noted that MET/S WG was investigating the implications for meteorological (MET) service providers of the different formats for transmission of special air-reports described in ICAO publications. According to the discussion during the meeting, a proposal to review the format for special air-reports in the ICAO documentation, i.e., Annex 3, Doc 8896 and Doc 4444; will be discussed at the 4th meeting of ICAO MET Panel in September 2018.

2.6 The meeting noted that MET/R WG/7 elected a new Chairperson, Mr. Ashwin Naidu (from the Australian Bureau of Meteorology), and Vice-Chairperson, Ms. Naoko Komatsu (from the Japan Meteorological Agency), after the resigning of the former Chairperson, Mr. Jun Ryuzaki. The meeting noted that MET/R WG/7 reported progress on the development of regional guidance materials including the *ASIA/PACIFIC Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations* and the *Draft Guidelines for Operational SIGMET Coordination*.

PLANNING AND MONITORING

2.7 The meeting recalled that the Council of ICAO, at the fifth meeting of its 213th Session on 7 March 2018, adopted Amendment 78 to ICAO Annex 3 [State letter Ref.: AN 10/1.1-18/32, dated 3 April 2018 refers], in which the introduction of Standards and Recommended Practices (SARPs) for a space weather information service will be supported by the *Manual on Space Weather Information in Support of International Air Navigation* (Doc 10100). The manual is being developed by the ICAO Meteorology Panel (METP) Working Group for Meteorological Information and Services Development (WG-MISD), which envisages to provide the manual prior to November 2018.

2.8 The meeting reviewed recent and proposed amendments to the APAC ANP, and discussed the requirement for further proposals to align the ANP with the current agreed regional requirements. The meeting also noted that the work plan included development of a draft amendment proposal to fill the missing data in the APAC ANP, Tables MET.

AIR NAVIGATION DEFICIENCIES

2.9 Cambodia presented information on corrective actions taken to rectify the deficiencies Index No. AP-MET-09 and AP-MET-11. The meeting considered that the implementation of Secure Aviation Data Information System (SADIS) reception facilities and

associated training of relevant meteorological personnel in Cambodia represents validation of the corrective action to rectify deficiency Index No. AP-MET-09.

2.10 The meeting considered that the corrective action implemented by Cambodia to rectify deficiency Index No. AP-MET-09, in which Cambodia has arranged for the provision of SIGMET service on its behalf by China, since 2010, represents validation of the corrective action to rectify deficiency Index No. AP-MET-11. And, taking into account that Cambodia informed the meeting that the continuance of stable provision of the required SIGMET service for its area of responsibility has been achieved under the current arrangement with China, the meeting agreed that the deficiency Index No. AP-MET-11 can be removed, while Cambodia presented their plan to start their own SIGMET issuance in the near future.

2.11 The meeting agreed to support the removal of the deficiencies Index No. AP-MET-09 and AP-MET-11 from the APANPIRG (open) list and formulated the following Draft Decision:

Draft Decision MET/SG/22/01: Removal of deficiencies Index No. AP-MET-09 and AP-MET-11 from the APANPIRG (open) list	
What: That, APANPIRG removes the deficiencies Index No. AP-MET-09 and AP-MET-11 from the APANPIRG (open) list.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: MET SG/22 considered that the corrective actions implemented by Cambodia, including the implementation of SADIS reception facilities and associated training of relevant meteorological personnel, and the provision of SIGMET service by China on behalf of Cambodia, since 2010, validates rectification of the deficiencies.	
When: On approval by APANPIRG	Status: Draft to be adopted by APANPIRG
Who: <input type="checkbox"/> Sub Groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.12 The meeting noted that VAAC Wellington was coordinating with Tonga on the validation of corrective action taken to resolve the deficiency Index No. AP-MET-17 and VAAC Tokyo was coordinating with Philippines on the validation of corrective action taken to resolve the deficiency Index No. AP-MET-07.

2.13 Lao PDR discussed corrective actions taken to rectify the deficiency Index No. AP-MET-12, and proposed the removal of the deficiency from the open list. Japan informed the meeting that it had received SIGMET information, provided by Lao PDR for Lao PDR's area of responsibility, during international SIGMET coordination activities and considered the SIGMET information was appropriate.

2.14 The meeting considered that the statistics on the SIGMET information issued for the Vientiane Flight Information Region (FIR), provided by Hong Kong, China and RODB Bangkok, supported the validation of the corrective action implemented by Lao PDR to rectify the deficiency Index No. AP-MET-12, and therefore formulated the following Draft Decision:

Draft Decision MET/SG/22/10: Removal of deficiency Index No. AP-MET-12 from the APANPIRG (open) list	
What: That, APANPIRG removes the deficiency Index No. AP-MET-12 from the APANPIRG (open) list.	Expected impact: <input type="checkbox"/> Political / Global

		<input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: MET SG/22 considered that the corrective action implemented by Lao PDR, including the establishment of agreements by relevant authorities, implementation of procedures for SIGMET issuance, training of personnel for SIGMET preparation, participation in ICAO APAC SIGMET tests and exercises and the issuance of SIGMET information in accordance with Annex 3, validates rectification of the deficiencies.		
When:	On approval by APANPIRG	Status: Draft to be adopted by APANPIRG
Who:	<input checked="" 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:	

RESEARCH, DEVELOPMENT AND OTHER INITIATIVES

WAFS and SADIS update

2.15 The United Kingdom (SADIS Provider State) provided an update on changes to the World Area Forecast System (WAFS) and changes in the operation of the World Area Forecast Centre (WAFS) London-operated SADIS since the last meeting (MET SG/21, May 2017) and discussed planned changes or developments during the next 12-month period.

2.16 The meeting noted preliminary information on the next generation WAFS SIGWX forecast products, which may be introduced from November 2022, next generation WAFS gridded forecast products, which would be introduced in the next 10 years, and next generation SADIS, under development to handle the larger and higher resolution WAFS data sets in November 2022.

IWXXM implementation

2.17 Australia, China, New Zealand and Singapore provided the meeting with information on the States' progress and plans on the implementation of extensible mark-up language (XML)-based OPMET exchange using IWXXM.

2.18 To facilitate the planning and implementation by States/Administrations of IWXXM, the meeting decided to include in the terms of reference of the MET/IE WG the preparation of a status report on IWXXM and Air Traffic Service Message Handling System (AMHS) implementation in each State/Administration in the APAC Region [Conclusion MET/SG/22/02 refers].

Development of MET to support ATM

2.19 Australia, China, Japan and United States provided information on initiatives and experiences in research, development and implementation of tailored aviation weather products and services to support air traffic management (ATM) and reduce the impact of weather on aviation systems.

2.20 In view of the discussions (in particular regarding IP/14), the meeting noted that (under the Convention) the obligation of States/Administrations is to supply users with the meteorological information necessary for the performance of the users' functions. Towards this end, the experience discussed by United States highlights the importance of close liaison between the suppliers and users of meteorological information on matters that affect the provision of meteorological service for international air navigation.

VAAC activities

2.21 Australia, Japan and New Zealand presented the VAAC Darwin, VAAC Tokyo and VAAC Wellington Management Reports, providing highlights of the VAAC operations during the previous 12 to 18 months.

2.22 The meeting noted the increase in the provision of volcanic ash advisory information issued by VACCs over the previous three years, in particular by Wellington, because of the improved capabilities to identify volcanic ash using data from the latest generation of meteorological satellite, Himawari-8, made available to States/Administrations by JMA in 2015, as well as the increased utilization of social media channels and improved communication with State Volcano Observatories.

SIGMET coordination

2.23 The meeting was informed of the development and progress of multiple international projects supporting collaboration and coordination on SIGMET issuance by the members who have been involved, including Hong Kong, China, Japan, Lao PDR, Myanmar, Philippines, Singapore, Thailand, United States and Vietnam, which can benefit both the service providers and the service users in the aviation community.

2.24 The meeting noted that the MET/R WG/7, taking into account that the meeting on Operational SIGMET Coordination in South East Asia, held in 27-29 March in Singapore, had discussed on future expansion and integration of the SIGMET coordination initiatives, agreed to ask Japan and Singapore to update the MET/R WG and MET/S WG at the next meetings on progress of the discussion towards the expansion and integration of existing operational SIGMET coordination projects. The meeting also noted that there were more than one computer-based platforms for sharing relevant meteorological and other necessary information and supporting coordination among multiple MWOs had been developed, which could lead to additional workload and unintended confusion for forecasters in those MWOs.

2.25 The meeting decided to include in the terms of reference of MET/R WG and MET/S WG coordination on the next steps to promote integration and expansion of SIGMET coordination activities among States/Administrations [Conclusion MET/SG/22/03 refers].

2.26 The meeting was informed that the development of the Asian Aviation Meteorological Centre (AAMC) by China and Hong Kong, China, aiming at promoting sharing of data to facilitate cross-FIR SIGMET coordination through the provision of guidance products. Recalling the discussion at MET SG/21, some members of the Meeting expressed concerns that, unless coordinated with the responsible authorities for ICAO Annex 3-compliant MET information for each area of responsibility, guidance information from the AAMC could lead to human factors issues amongst aeronautical users of the Annex 3-compliant MET information. In order to address the meeting's concerns, the meeting concluded that States concerned should take steps to ensure such guidance products are coordinated with the responsible authorities for ICAO Annex 3-compliant MET information for each area of responsibility [Conclusion MET/SG/22/04 refers].

Other

2.27 New Zealand presented an overview of the Safety Management System (SMS) implemented at MetService, New Zealand and the benefits realized in the first six months. The meeting viewed a short promotional video on the benefits of SMS in MetService, New Zealand.

REGIONAL GUIDANCE MATERIAL

2.28 On behalf of the ad-hoc group, the Secretary presented the outcome of the review the ROBEX Handbook and the Asia/Pacific OPMET Data Banks Interface Control Document (ICD), including the proposal to adopt a new ROBEX Handbook and decommission the ICD. The meeting agreed to support the proposal [Decision MET/SG/22/05 refers].

2.29 New Zealand presented a proposed amendment to the *APAC Regional SIGMET Guide* (Sixth Edition, May 2017), Appendix H, Wellington/Darwin VAAC Backup Test Procedures, for review and possible adoption by the meeting. The meeting agreed to adopt the proposed update [Decision MET/SG/22/06 refers].

2.30 The ad-hoc group, consisting of Australia, China, Hong Kong, China, Japan (rapporteur), New Zealand, Republic of Korea, Singapore, Thailand, Vietnam and IATA, presented the proposed updates on the draft *Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management (ATM) Operations* for review and endorsement by the meeting. The meeting identified the need for further editorial improvements to the draft guidance and, noting the outcome from ATM/SG/52, concerning availability of the above document as a reference for the provision of Meteorological Information to ATM, the meeting requested the ad-hoc group to address the editorial changes above and the Secretariat to upload the document, as a ‘working draft’ until formal approval by APANPIRG, on the ICAO website [Conclusion MET/SG/22/07 refers].

2.31 The meeting supported the adoption of the above document by APANPIRG as a form of regional guidance material and therefore formulated the following Draft Conclusion:

Draft Conclusion MET/SG/22/08: APAC Regional Guidance for MET Information Supporting ATM		
What: That, APANPIRG approves the <i>Asia/Pacific Regional Guidance For Tailored Meteorological Information And Services To Support Air Traffic Management Operations</i> as a reference for States and Organizations concerned.		Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: 1) To assist States in developing and implementing tailored meteorological information and services to support effective air traffic management; and 2) To support follow-up action on Conclusion ATM/SG/5-2: <i>Asia/Pacific Regional Guidance for Meteorological Information Supporting ATM</i> .		
When:	On approval by APANPIRG	Status: Draft to be adopted by APANPIRG
Who:	<input checked="" type="checkbox"/> Sub Groups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

2.32 Japan and Singapore presented the draft regional guidance for the alignment of cross-FIR-boundary SIGMET information, developed under the work plan of the MET/R WG, to assist States in aligning SIGMET information across adjacent FIR boundaries. The guidance was intended as supplementary information to the Regional SIGMET Guide, in view of the need for consistency in such information for ATM. The meeting considered the need for a more thorough review of the draft guidelines by States and therefore requested the Secretariat to upload the document on the ICAO website as a ‘working draft’ until the MET SG formally adopts it as an Appendix to the SIGMET Guide.

2.33 The meeting also requested the Secretariat to coordinate with the other ICAO Regions to receive feedback on the working draft. Members of the METP informed the meeting that METP would review a draft update to the SIGMET Guide common template, including changes related to Amendment 78 of ICAO Annex 3. Beyond that, the meeting noted that inter-regional coordination would be required to facilitate alignment of the SIGMET Guide common template with future amendments of Annex 3. In view of the above, the meeting agreed that the working draft of the *Guidelines for Operational SIGMET Coordination* remain as a separate document to the SIGMET Guide until the MET SG formally adopts it as an Appendix to the SIGMET Guide [Decision MET/SG/22/09 refers].

2.34 The meeting supported the development of a comprehensive draft amendment proposal to fill the missing data in the APAC ANP, Tables MET [Decision MET SG/22/11 refers].

FUTURE WORK PROGRAMME OF THE METEOROLOGY SUB-GROUP

2.35 During discussion under *Agenda Item 2: Review outcomes from previous meetings*, the Secretariat presented proposed updates to the terms of reference, which included additional reference information derived from the APANPIRG Procedural Handbook. The meeting noted that improvements to the terms of reference might also benefit the other Sub Groups and therefore the Secretary would share the outcome of this discussion for further consideration by the other Sub Groups of APANPIRG.

2.36 The meeting proposed updates to the work plan of MET SG based on outcomes of discussion throughout the meeting. The updated terms of reference and work plan of MET SG is at the **Attachment B** to this paper. In view of the discussion above, the meeting formulated the following Draft Decision:

Draft Decision MET/SG/22/12: Updated terms of reference of the MET SG (including work plan)		
What: That, APANPIRG approves the updated terms of reference of the MET SG (including work plan) provided at Appendix 3 to the Report on MET SG/22 (and at Attachment B to this paper).		Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: To improve the description of the working arrangements, procedures and limits of responsibility of the MET SG and to update the work plan to reflect the status of the MET SG's deliverables, including the responsible parties and target dates, and thus optimize the assistance provided by MET SG to APANPIRG.		
When:	On approval by APANPIRG	Status: Draft to be adopted by APANPIRG
Who:	<input checked="" 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:	

ANY OTHER BUSINESS

2.37 The meeting agreed to schedule the next meeting, MET SG/23, tentatively for the week commencing 17 June 2019.

2.38 The meeting also noted the tentative schedule for the WG's as follows:

- 18-20 March 2019 - MET/IE WG/17
- 20-22 March 2019 - MET/S WG/9
- 27 – 31 May 2019 - MET/R WG/8 and MET/ATM Seminar

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

- a) Note the information in this paper; and
- b) Review and adopt the Draft Conclusion and Draft Decisions formulated by MET SG/22.

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ATTACHMENT A

MET SG/22—DRAFT CONCLUSIONS, DRAFT DECISIONS, CONCLUSIONS, DECISIONS

DRAFT CONCLUSIONS

Draft Conclusion MET/SG/22/08: APAC Regional Guidance for MET Information Supporting ATM	
What: That, APANPIRG approves the <i>Asia/Pacific Regional Guidance For Tailored Meteorological Information And Services To Support Air Traffic Management Operations</i> as a reference for States and Organizations concerned.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: 1) To assist States in developing and implementing tailored meteorological information and services to support effective air traffic management; and 2) To support follow-up action on Conclusion ATM/SG/5-2: <i>Asia/Pacific Regional Guidance for Meteorological Information Supporting ATM</i> .	
When: On approval by APANPIRG	Status: Draft to be adopted by APANPIRG
Who: <input checked="" 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:	

DRAFT DECISIONS

Draft Decision MET/SG/22/01: Removal of deficiencies Index No. AP-MET-09 and AP-MET-11 from the APANPIRG (open) list	
What: That, APANPIRG removes the deficiencies Index No. AP-MET-09 and AP-MET-11 from the APANPIRG (open) list.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: MET SG/22 considered that the corrective actions implemented by Cambodia, including the implementation of SADIS reception facilities and associated training of relevant meteorological personnel, and the provision of SIGMET service by China on behalf of Cambodia, since 2010, validates rectification of the deficiencies.	
When: On approval by APANPIRG	Status: Draft to be adopted by APANPIRG
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:	

Draft Decision MET/SG/22/10: Removal of deficiency Index No. AP-MET-12 from the APANPIRG (open) list	
What: That, APANPIRG removes the deficiency Index No. AP-MET-12 from the APANPIRG (open) list.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: MET SG/22 considered that the corrective action implemented by Lao PDR, including the	

establishment of agreements by relevant authorities, implementation of procedures for SIGMET issuance, training of personnel for SIGMET preparation, participation in ICAO APAC SIGMET tests and exercises and the issuance of SIGMET information in accordance with Annex 3, validates rectification of the deficiencies.

When: On approval by APANPIRG **Status:** Draft to be adopted by APANPIRG

Who: ☒ Sub Groups ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:

Draft Decision MET/SG/22/12: Updated terms of reference of the MET SG (including work plan)

What: That, APANPIRG approves the updated terms of reference of the MET SG (including work plan) provided at **Appendix 3** to the Report on MET SG/22.

Expected impact:
☐ Political / Global
☐ Economic
☐ Environmental
☐ Inter -Regional
☒ Ops/Technical

Why: To improve the description of the working arrangements, procedures and limits of responsibility of the MET SG and to update the work plan to reflect the status of the MET SG's deliverables, including the responsible parties and target dates, and thus optimize the assistance provided by MET SG to APANPIRG.

When: On approval by APANPIRG **Status:** Draft to be adopted by APANPIRG

Who: ☒ Sub Groups ☐ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☐ Other:

CONCLUSIONS

Conclusion MET/SG/22/02: Status report on IWXXM and AMHS implementation

What: That, MET/IE WG in coordination with ICAO, prepares a status report on IWXXM and AMHS implementation in each State/Administration in the APAC Region.

Expected impact:
☐ Political / Global
☐ Economic
☐ Environmental
☐ Inter -Regional
☒ Ops/Technical

Why: To facilitate the planning and implementation by States/Administrations of IWXXM.

When: Ongoing **Status:** Adopted by MET SG

Who: ☒ Sub Groups ☒ APAC States ☐ ICAO APAC RO ☐ ICAO HQ ☐ Other:

Conclusion MET/SG/22/03: Next steps to promote integration and expansion of SIGMET coordination

What: That, MET/R WG and MET/S WG coordinate on the next steps to promote integration and expansion of SIGMET coordination activities among States/Administrations taking into account the use of computer-based platforms for sharing relevant meteorological and other necessary information.

Expected impact:
☐ Political / Global
☐ Economic
☐ Environmental
☐ Inter -Regional
☒ Ops/Technical

Why: To support Regional integration and expansion of SIGMET coordination activities

When: Ongoing **Status:** Adopted by MET SG

Who: ☒ Sub Groups ☒ APAC States ☐ ICAO APAC RO ☐ ICAO HQ ☐ Other:

Conclusion MET/SG/22/04: Coordination of guidance products with the responsible authorities for ICAO Annex 3-compliant MET information	
What: That, States take all reasonable steps to ensure that: 1. Guidance products are clearly identified as non-ICAO products and are supplementary information; 2. Guidance products are non-contradictory with ICAO products as far as possible; 3. Users are reminded to always refer to ICAO Annex 3 products which should take precedence over the guidance products; and 4. Governance of service provision does not deviate from the framework set by ICAO Annex 3, including the implementation of a quality management system (e.g. ISO or equivalent), and the establishment of a formal understanding with users in receipt of such products.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: To ensure that guidance products provided by States are coordinated with the responsible authorities for ICAO Annex 3-compliant MET information for each area of responsibility.	
When: Ongoing	Status: Adopted by MET SG
Who: <input checked="" 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/22/07: APAC Regional Guidance for MET Information Supporting ATM	
What: That, the Secretariat uploads the document provided in WP/14 to MET SG/22 as a ‘working draft’ to the ICAO website to obtain feedback from States and the ad-hoc group presents the revised document for review by the ATM/SG/6 before submission for possible approval by APANPIRG/29.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: To provide States with up to date guidance material.	
When: As soon as practicable	Status: Adopted by MET SG
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:	

DECISIONS

Decision MET/SG/22/05: Updated ROBEX Handbook	
What: That, on completion of the editorial changes requested by MET SG/22, ICAO publish the new version of the ROBEX Handbook and circulate to States as guidance material providing detail on the procedures for OPMET exchange under the ROBEX scheme.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: To provide States with up to date guidance material.	
When: As soon as practicable	Status: Adopted by MET SG
Who: <input checked="" type="checkbox"/> Sub Groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Decision MET/SG/22/06: Update of VAAC Wellington/Darwin Backup Test Procedures	
What: That, the proposed update of Appendix H of the APAC Regional SIGMET Guide (Sixth Edition, May 2017) concerning the format of the VAAC Wellington/Darwin Backup Test Procedures, as given in the Appendix to WP/16 be included in the	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic

APAC Regional SIGMET Guide.	<input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: To provide States with up to date guidance material.	
When: As soon as practicable	Status: Adopted by MET SG
Who: <input checked="" type="checkbox"/> Sub Groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other:	

Decision MET/SG/22/09: Regional Guidelines for Operational SIGMET Coordination	
What: That, ICAO makes the <i>Draft Guidelines for Operational SIGMET Coordination</i> available as a ‘working draft’ on the Regional Office website for feedback from States prior to possible integration, by MET SG, as an Appendix in the SIGMET Guide.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
Why: 1) To assist States with implementation of procedures supporting harmonised SIGMET information across FIR boundaries; and 2) To support follow-up action on Conclusion APANPIRG/26/62 — <i>Cross-border MET Collaboration and Coordination</i> .	
When: As soon as practicable	Status: Adopted by MET Sub-group
Who: <input checked="" 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/22/11: Draft proposal for amendment of the Asia and Pacific Air Navigation Plan, Volume I and Volume II	
What: That, ICAO initiates a comprehensive draft proposal for amendment of the Asia/Pacific Air Navigation Plan, Volume I and Volume II, and invites States/Administrations to provide the Regional Office with necessary data**.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Inter -Regional <input checked="" type="checkbox"/> Ops/Technical
**Necessary data is the data required to fill gaps or update the information in Table MET I-1 – <i>State Volcano Observatories</i> , Table MET II-1 – <i>Meteorological Watch Offices</i> , Table MET II-2 – <i>Aerodrome Meteorological Offices</i> and Table MET II-3 – <i>VOLMET Broadcasts</i> to reflect the current requirements for the services and facilities assigned to the responsibility of States/Administrations.	
Why: To facilitate the continuous and coherent development of the MET parts of the Asia/Pacific Regional Air Navigation Plan.	
When: As soon as practicable	Status: Adopted by MET SG
Who: <input checked="" 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:	

ATTACHMENT B

Proposed updates to the terms of reference and work plan of the METEOROLOGY SUB GROUP (MET SG)

Updates proposed by MET SG/22

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 the Asia/Pacific Seamless ATM Plan elements, with due observance to the primacy of air safety, regularity and efficiency using the project management principles where appropriate; and
- c) Review, identify and address specific air navigation deficiencies in the field of that impede the implementation or provision of effective and efficient aeronautical meteorological (MET) services in the Asia and Pacific Regions.

2. Functions of the MET SG Deliverables to meet the Objectives:

~~1) Progress report to be submitted to APANPIRG, addressing the MET SG deliverables (listed in 2 to 9 below);~~

- a) Review MET parts of the APAC ANP to be reviewed and, as necessary, prepare amendment proposals prepared as necessary to update the APAC ANP 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 be monitored and, as necessary, facilitated to support the effective implementation of ASBU priority modules and the Asia/Pacific Seamless ATM Plan elements;
- c) Identify Air navigation deficiencies in the field of aeronautical meteorology MET to be identified (which may require any necessary e.g., through systems performance monitoring to be facilitated) and, where necessary, propose appropriate corrective action proposed and facilitate the development and implementation of action plans by States to resolve identified deficiencies facilitated;
- d) Review and update the APANPIRG list of Air navigation deficiencies in the field of aeronautical meteorology MET (as listed in the APANPIRG database) to be reviewed and, as necessary, updated to reflect the current situation;
- e) Monitor Research and development, and trials and demonstrations in the field of aeronautical meteorology MET and other relevant areas to be monitored and, as necessary, facilitate the transfer of this information and expertise, as necessary, between States facilitated;

- f) ~~Make~~ ~~Specific recommendations to be made~~, and ~~develop~~ guidance materials ~~developed~~, aimed at improving aeronautical meteorological services ~~by~~ ~~through~~ the use of existing and/or new procedures, facilities and technologies;
- g) ~~Review and identify~~ ~~Inter-regional and intra-regional co-ordination issues in the field of aeronautical meteorology~~ ~~MET to be reviewed and identified~~ and, as necessary, ~~recommend~~ ~~actions recommended~~ to addressing those issues; and
- h) Identify and progress ~~MET~~ environmental initiatives ~~related to aeronautical meteorology~~ ~~are consistently identified and progressed~~; and

10) ~~Draft Conclusions and Draft Decisions to be formulated relating to matters in the field of MET that come within the scope of the APANPIRG work plan.~~

3. Establishment of the MET SG

3.1. The Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) established the MET SG to assist in its planning and implementation work, charging MET SG with preparatory work on specifically defined problems in the field of aeronautical meteorology requiring expert advice for their resolution. APANPIRG also appointed MET SG as the ‘parent’ group for other contributory bodies working in the field of aeronautical meteorology for APANPIRG (ICAO, 2016).

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 (ICAO, 2016).

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 (ICAO, 2016).

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 (ICAO, 2016).

7. 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 (ICAO, 2016).

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 (ICAO, 2016).

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 (ICAO, 2016).

9. Work Plan of the MET SG

Function	Detailed description of deliverable	Responsibility	Target date
1, 10	Progress report on MET SG deliverables including Draft Conclusions and Draft Decisions relating to matters in the field of MET that come within the scope of the APANPIRG work plan (submitted to APANPIRG/28)	MET SG Chair	Aug 2017
a)	Amendment proposal for APAC ANP Volume I and Volume II (submitted to APANPIRG/28)	MET SG Chair, Secretariat	COMPLETED Aug 2017
a)	Draft amendment proposal for APAC ANP to fulfil missing data in Tables MET	MET/S WG	Mar 2019 Jun 2018
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/IE WG MET/S WG MET/R WG	May 2019 Jun 2018
a)	Amendment proposal for APAC ANP Volume II, Table MET II-2 to reflect current requirements for 30-hour validity TAF (submitted to APANPIRG/28)	MET/S WG (Task 7)	COMPLETED Aug 2017
a), f)	Version 2 of draft regional guidance material for tailored MET information supporting ATM operations	MET/R WG (Task 4)	COMPLETED Jun 2018
b), c)	Analysis of APAC Regional SIGMET test	MET/S WG (Task 1 and 3) MET/IE WG (Task 3)	Mar 2019 Jun 2018
b), c)	Analysis of APAC Regional OPMET-availability monitoring exercise	MET/IE WG (Task 1)	Mar 2019 Jun 2018
b), c)	Analysis of APAC Regional OPMET-timeliness, -compliance and -regularity monitoring exercises	MET/IE WG (Task 2)	Mar 2019 Jun 2018
b), g)	Analysis of APAC Regional VAAC backup tests	MET/IE WG (Task 4)	Mar 2019 Jun 2018
b), g)	Analysis of APAC Regional IROG backup tests	MET/IE WG (Task 5)	Mar 2019 Jun 2018

Function	Detailed description of deliverable	Responsibility	Target date
b)	Revised draft regional guidance material on MET information needed to support the elements of the APAC Seamless ATM Plan	MET/R WG (Task 3)	Jun 2018
c)	Analysis of APAC Regional SIGMET monitoring exercises	MET/S WG (Task 1)	Mar 2019 Jun 2018
b), c), g)	Final report on ICAO volcanic ash exercise APAC VOLCEX 18/01 (Papua New Guinea)	APAC VOLCEX/SG (Task 5)	TBD Jun 2018
b), c), g)	Final report on ICAO volcanic ash exercise APAC VOLCEX 18/02 (Indonesia/Sumatra)	APAC VOLCEX/SG (Task 6)	Jun 2019
b), c), g)	Final report on ICAO volcanic ash exercise APAC VOLCEX 19/01 (Solomon Islands, Tonga or Vanuatu)	APAC VOLCEX/SG (Task 7)	Jun 2019
b), c), g)	Final report on ICAO volcanic ash exercise APAC VOLCEX 19/02 (North-east Asia/affecting Republic of Korea)	APAC VOLCEX/SG (Task 8)	Jun 2020
b), c), g)	Final report on ICAO volcanic ash exercise APAC VOLCEX 20/01 (Philippines)	APAC VOLCEX/SG (Task 9)	Jun 2020
c), d)	Proposal to update the APANPIRG AN deficiencies database to add/remove deficiencies in the MET field	MET SG Chair, Secretariat	Aug 2018 Aug 2017
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 (Task 2 and 6)	Mar 2019 Mar 2018
e), f), g)	First draft of input to the Regional SIGMET Guide to assist States in aligning cross-FIR-boundary SIGMET information	MET/R WG (Task 1) MET/S WG (Task 4)	Jun 2018
f)	First draft of input to the Regional SIGMET Guide on the use of objective criteria supporting the issuance of SIGMET information for thunderstorm	MET/S WG (Task 4)	Mar 2019 Jun 2018
f)	Progress report on implementation and testing of IWXXM exchange	MET/IE WG (Task 5)	Jun 2018
f), g)	ROBEX Handbook updates to support improved efficiency and effectiveness of the ROBEX scheme; develop new table indicating COMM links and status	MET/IE WG (Task 6)	Jun 2018; Mar 2019
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 2018
g)	Analysis of MET information used in the Region specifically to support ATM operations	MET/R WG (Task 2)	Jun 2018
g)	Plan for seminar on regional implementation of MET information to support ATM operations	MET/R WG (Task 5)	Jun 2018
h)	Environmental Issues Identify issues in the field of aeronautical meteorology related to environmental issues	MET SG Chair, Secretariat	Jun 2018

Function	Detailed description of deliverable	Responsibility	Target date
b), e), g)	IWXXM workshop Plan and conduct the IWXXM workshop	Secretariat, MET/IE Chair, MET SG Chair, Hong Kong China, Singapore	Nov 2018
f), g)	SIGMET Guide update Update the Regional SIGMET Guide to align with Annex 3, Amendment 78	MET/S WG (ad-hoc group)	Oct 2018
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/S WG MET/R WG	May 2019
