Thirty First Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/31)

Video Teleconference - Bangkok, Thailand, 14 to 16 December 2020

Schedule: 10:00 – 13:15 Bangkok Time [UTC+7hrs]

Agenda Item 3: **Performance Framework for Regional Air Navigation Planning and Implementation**

3.5 **MET**

METEOROLOGY SUB-GROUP REPORT

(Presented by Chair of MET SG)

SUMMARY

This paper presents a progress report from the Twenty-fourth Meeting of the Meteorology Sub-group (MET SG/24) and invites the meeting to adopt four Draft Conclusions concerning updates to the APAC ANP, APANPIRG AN deficiencies and WAFS and compliance with Annex 3 standards for IWXXM, and one Draft Decision concerning updates to the MET SG terms of reference.

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 Meteorology Sub-Group convened online for its Twenty-fourth meeting (MET SG/24) from 16 to 20 November 2020. MET SG/24 reviewed the status of progress on its work plan, including its contributory bodies: Meteorological Requirements Working Group (MET/R WG); Meteorological Information Exchange Working Group (MET/IE WG); and Meteorological Services Working Group (MET/S WG).

1.2 This paper presents a progress report on the main activities of MET SG and its contributory working groups. All documentation and reports from MET SG/24 and the meetings of MET/S WG, MET/IE WG and MET/S WG is available at the ICAO APAC Office website at: www.icao.int/apac > Meetings > Meeting List – 2020. The full report from MET SG/24 is at the following link:

https://www.icao.int/APAC/Meetings/Pages/2020-MET-SG24.aspx.

1.3 This paper invites the meeting to adopt a Draft Decision on updates to the terms of reference of the MET SG and Draft Conclusions on the following: action on the development of a proposal for amendment to the APAC ANP, Volume III; the resolution of an air navigation deficiency in Solomon Islands; action by SADIS user States to integrate new 0.25 degree WAFS hazard data; and urgent action by States to support implementation of IWXXM.

2. DISCUSSION

Terms of reference and work plan

2.1 MET SG/24 noted that its contributory MET-related Working Groups (WGs) were still progressing the realignment of their respective work plans with the MET SG. Nevertheless, based on developments reported by the WGs, MET SG/24 adopted the proposed updates to terms of reference and work plan documents of the MET/R WG, MET/IE WG and MET/S WG (**Decision MET SG/24-18:** *Updates to terms of reference and work plan of MET/R WG, MET/IE WG and MET/S WG*, refers).

2.2 MET SG also proposed updates to its work plan based on outcomes from MET SG/24 discussions, as well as minor changes to the MET SG terms of reference document to help ensure the timely availability of MET SG meeting papers (Note: the proposed updates to the MET SG terms of reference and work plan are at the **Appendix** to this paper).

2.3 In view of the above, MET SG/24 formulated the following Draft Decision for further consideration and possible adoption by APANPIRG:

Draft Decision MET SG/24-17: *Updates to terms of reference and work plan of MET SG*	
What: That, APANPIRG approve the updated terms of reference and work plan document for MET SG at the **Appendix 1** to the Report of MET SG/24.	
Why: To ensure alignment of the work of the MET SG and it's contributory bodies.	
Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical	
Follow-up: ☐Required from States	
When: November 2020	**Status:** Adopted by Subgroup
Who: ☐Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☒Other: MET WGs	

APAC ANP, Volume III

2.4 Necessary development work on amendments to MET-specific content of the APAC ANP, Volume III, is on hold pending outcomes from the ICAO electronic ANP (eANP) project. However, due to the complexities involved, the eANP project is unlikely to deliver any near-term developments on the ANP, Volume III.

2.5 Noting that the necessary amendments to the APAC ANP, Volume III, are not necessarily limited to the MET-specific content only, MET SG/24 proposed that APANPIRG develop the appropriate proposal for amendment to the APAC ANP, Volume III, through a cross-cutting initiative involving each relevant air navigation field (i.e., involving each relevant APANPIRG Sub-Group).

2.6 In view of the above, MET SG/24 formulated the following Draft Conclusion for further consideration and possible adoption by APANPIRG:

Draft Conclusion MET SG/24-02: *APAC Regional Air Navigation Plan (ANP), Volume III*	
What: That, APANPIRG establish a cross-cutting, ANP Volume III Task Force, with representation from each APANPIRG SG, to develop a proposal for amendment to the APAC ANP, Volume III, to realign Volume III with Volume I (and II) and the requirements of States.	
Why: The APAC ANP, Volume III, does not detail the status of implementation of SADIS and WIFS, volcanic ash advisory information, Volcano Observatory Notice for Aviation (VONA) and tropical cyclone advisory information – as specifically required by the text of the ANP, Volume I, Part V – MET, General Regional Requirements. In addition, much of the information in Volume III, which pertains to APAC air navigation priorities and objectives and ASBU modules, has already passed the end of its validity period in 2019.	
Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical	
Follow-up: ☐Required from States	
When: As soon as practicable	**Status:** Adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

Survey of state MET information supporting ATM

2.7 MET SG approved the terms of reference and questionnaire for a survey on the provision of current and future meteorological information services by States to support air traffic management and, in particular, air traffic flow management, which MET SG will circulate for input from States in early 2021 (**Conclusion MET SG/24-03:** *Survey of State Meteorological Information Supporting Air Traffic Management*, refers).

APANPIRG air navigation deficiencies

2.8 MET SG/24 acknowledged Solomon Islands' report indicating completion of corrective action to resolve the air navigation deficiency AP-MET-01, concerning the provision of aerodrome meteorological observations or reports, and that users and OPMET monitoring results had validated the resolution of the deficiency.

2.9 In view of the above, the meeting formulated the following Draft Conclusion for further consideration and possible adoption by APANPIRG:

Note: *The Meeting might consider that the following Draft Conclusion be subsumed under the comprehensive Draft Conclusion proposed in WP/14, under Agenda Item 4.*

Draft Conclusion MET SG/24-04: *Resolution of Air Navigation Deficiency AP-MET-01*	
What: That APANPIRG removes the Air Navigation Deficiency AP-MET-01, concerning aerodrome meteorological observations or reports at Honiara (AGGH), Solomon Islands, from the open list.	
Why: Solomon Islands completed corrective action to ensure provision of aerodrome meteorological observations or reports is in compliance with ICAO SARPs. Resolution of the deficiency is validated by users and OPMET monitoring results.	
Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical	
Follow-up: ☐Required from States	
When: As soon as practicable	**Status:** Adopted by Subgroup
Who: ☒Sub groups ☐APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

2.10 To optimize the assistance provided by MET SG to APANPIRG, MET SG agreed to further develop the systematic process for the identification and resolution of specific air navigation deficiencies in the field of aeronautical meteorological services (**Decision MET SG/24-05:** *MET Deficiencies*, refers).

SADIS and WAFS

2.11 Recent and upcoming changes to the World Area Forecast System (WAFS), including the introduction (5 November 2020) of improved, higher resolution, 0.25-degree WAFS hazard data and the retirement (November 2022) of existing 1.25-degree data, will necessitate changes by the international civil aviation users concerned to the Secure Aviation Data Information System (SADIS) user systems and software, which are implemented to deliver the WAFS products.

2.12 In view of the above, MET SG/24 formulated the following Draft Conclusion for further consideration and possible adoption by APANPIRG:

Draft Conclusion MET SG/24-06: *0.25 degree WAFS hazard data*	
What: That SADIS user States urgently make the necessary systems changes to integrate the new 0.25 degree WAFS hazard data into their SADIS user systems and software	
Why: To benefit from the new 0.25 degree WAFS data and prepare for the retirement of the existing Turbulence Potential, Icing Potential and 1.25 degree cumulonimbus fields (not before November 2022) and the in-cloud turbulence field	
Expected impact: ☐ Political / Global ☐ Inter-regional ☐ Economic ☐ Environmental ☒ Ops/Technical	
Follow-up: ☐Required from States	
When: As soon as practicable	**Status:** Adopted by Subgroup
Who: ☒Sub groups ☒APAC States ☒ICAO APAC RO ☐ICAO HQ ☐Other:	

2.13 The future introduction (November 2023) of significant WAFS and SADIS upgrades will have a huge impact on the volume of data available to international civil aviation users and, therefore, will require an upgraded delivery mechanism (which is yet to be determined). MET SG/24 agreed to develop appropriate actions to facilitate WAFS and SADIS user States with necessary preparations (**Decision MET SG/24-07:** *November 2023 WAFS and SADIS Upgrades*, refers).

Volcanic ash exercises

2.14 The recent ICAO volcanic ash exercise, VOLCEX 20/02, conducted in the South Pacific on 17 July 2020, demonstrated that a lapse of coordination between the operational units involved can lead to an undesirable situation where the different sources of information provide the international civil aviation users with conflicting information on volcanic ash.

2.15 MET SG/24 supported a proposal by the Informal South Pacific ATS Coordination Group (ISPACG), in conjunction with the MET/S WG, to arrange a dedicated workshop aimed at minimising the likelihood of disseminating conflicting information on volcanic ash (**Conclusion MET SG/24-08:** *Volcanic Ash Information Conflict Reduction*, refers).

IWXXM

2.16 Outcomes from the ICAO APAC 2020 *Webinar on the Implementation of the ICAO Meteorological Information Exchange Model (IWXXM)* and *Regional Survey on the Implementation of IWXXM and Extended Air Traffic Services Message Handling System (AMHS)* indicated that only half (or less) of APAC States had implemented, or had planned for, the ICAO Annex 3 standards concerning IWXXM, which became applicable on 5 November 2020.

2.17 To continue to monitor and facilitate States' progress with the required planning and implementation for dissemination of meteorological information in IWXXM GML form, MET SG/24 agreed to conduct a follow-up Regional survey, which would also help to identify States' needs for additional technical assistance, including another Regional IWXXM-specific seminar or workshop during 2021 (**Conclusion MET SG/24-09:** *IWXXM Survey and Online Workshop*, refers).

2.18 Recalling that APANPIRG had previously adopted Conclusion APANPIRG/30/17 and 30/18 to facilitate the planning and implementation by APAC States of the dissemination of meteorological information in IWXXM GML form, and taking into account the need for urgent progress by States, MET SG/24 formulated the following Draft Conclusion for further consideration and possible adoption by APANPIRG:

Draft Conclusion MET SG/24-10: *Implementation of IWXXM*

What: That, to support the dissemination by States of the required meteorological information in IWXXM GML form, in accordance with Amendment 79 to Annex 3, Member States/Special Administrative Regions, in particular those which host the designated APAC Regional OPMET Centres (ROCs) and Regional OPMET Databanks (RODBs), that have not already done so, urgently complete the necessary steps including the following:

a) For the generation and dissemination of required meteorological information in IWXXM GML form to the local ROC to manage the onward dissemination within the Region, use only IWXXM Version 3 (or a later version);

b) To support the exchange of IWXXM formatted data, implement the Air Traffic Services Message Handling System (AMHS) with File Transfer Body Part (FTBP) and the Interpersonal Message Heading Extension (IHE) and include support for AMHS message exchange of a maximum size of 4-MB for IWXXM formatted messages with maximum size of 2-MB for FTBP;

c) To support the exchange of the required meteorological information in both IWXXM GML form and traditional alphanumeric code (TAC) form, ensure there is adequate capacity in the operational Aeronautical Fixed Service (AFS) links;

d) When ingesting FTBP messages, as a minimum, utilize appropriate malware and anti-virus precautions; and

e) For any requirements States have for further technical assistance to achieve compliance with the Annex 3 requirements for disseminating meteorological information in IWXXM GML form and/or differences that exist between the national regulations or practices and the above Annex 3 provisions, inform ICAO via the appropriate channels.

Why:

a) Amendment 79 to Annex 3 specifies that, applicable 5 November 2020, States shall disseminate specific meteorological information (i.e., METAR/SPECI, TAF, SIGMET, AIRMET and volcanic ash, tropical cyclone and space weather advisory information) in IWXXM GML form;

b) ICAO Doc 10003 – *Manual on the Digital Exchange of Aeronautical Meteorological Information*, stipulates that, to meet the requirements of Amendment 79 to Annex 3, only Version 3 of IWXXM formatted data, or later, shall be exchanged on operational networks from 5 November 2020;

c) IWXXM GML form is far more verbose than the existing TAC format and, as a result, compression is required. However, to support the exchange of compressed IWXXM files, AMHS links with FTBP and IHE are required;

d) In accordance with Annex 3, States shall disseminate both IWXXM and TAC data over the AFS in parallel and, given the significant increase in data volumes, operational links will, therefore, require adequate capacity to support both data sets; and

e) The regional and global exchange of the required meteorological information in IWXXM GML form depends on the ROCs and RODBs being capable of exchanging IWXXM formatted messages.

Expected impact: ☐ Political / Global ☒ Inter-regional ☒ Economic ☐ Environmental ☒ Ops/Technical	
Follow-up: ☒Required from States	
When: Now	**Status:** Draft to be adopted by PIRG
Who: ☐Sub groups ☒APAC States ☐ICAO APAC RO ☐ICAO HQ ☐Other:	

2.19 Due to technical differences that prevent OPMET information in IWXXM GML form from being transmitted in the same way as it is in Traditional Alphanumeric Code (TAC) form via the Aeronautical Fixed Telecommunication Network (AFTN), the transmission of IWXXM messages requires States to implement AMHS (with FTBP) and the management of IWXXM exchange requires States to use unique addresses.

2.20 Therefore, to simplify the implementation of Region-wide IWXXM exchange and increase the reliability of IWXXM exchange throughout the Region, MET SG/24 agreed to consolidate the IWXXM exchange in APAC, in accordance with the *Guidelines for the Implementation of OPMET Data Exchange using IWXXM*, through Regional OPMET Centres (ROCs) (**Conclusion MET SG/24-11:** *IWXXM Exchange Approach*, refers).

2.21 To facilitate the Regional exchange of OPMET in IWXXM form, MET SG/24 agreed to develop an online register for States to share IWXXM-related information including the unique addresses for receiving IWXXM messages and the capabilities of the ROBEX scheme for exchanging IWXXM messages (**Conclusion MET SG/24-12:** *Development of Online Register of the status of IWXXM Exchange*).

Regional Guidance Material

2.22 Information on certain requirements pertaining to the SADIS and WIFS, and TCACs and VAACs, is no longer provided by the ANP (since APAPNIRG adopted the common ANP template endorsed by ICAO Council in 2014). Therefore, to provide States with access to the required, up to date information, MET SG/24 decided to incorporate the relevant, legacy, ANP FASID Tables and Charts into the current APAC Regional Guidance Material; namely the ROBEX Handbook and SIGMET Guide (**Decision MET SG/24-01:** *Updates to legacy FASID Table information*, refers).

APAC user requirements for SWIM-based MET information services supporting ATFM

2.23 MET SG/24 supported a proposal, at the **Appendix 8** to the MET SG/24 Report, on the development of APAC use cases and user requirements for System-Wide Information Management (SWIM)-based MET information services supporting Air Traffic Flow Management (ATFM) (**Decision MET SG/24-13:** *Development of APAC User Requirements for SWIM-based MET Information Services Supporting ATFM*, refers).

Regional SIGMET Guide

2.24 MET SG/24 adopted updates, as presented at **Appendix 9** to the MET SG/24 Report, to the *APAC Regional SIGMET Guide* to align the guide with the latest Amendment (79) to Annex 3, replace the SIGMET test procedure, update the references to Australian MWOs, apply some minor corrections and incorporate the legacy ANP FASID Table (and Chart) information (as agreed in Decision MET SG/24-1: *Updates to legacy FASID Table information*) (**Decision MET SG/24-14:** *Updates to Regional SIGMET Guide*, refers).

ROBEX Handbook

2.25 MET SG/24 adopted updates, as presented at **Appendix 10** to the MET SG/24 Report, to the *Regional OPMET Bulletin Exchange (ROBEX) Handbook* to reflect changes made by Australia, Republic of Korea and Thailand to ROBEX Bulletins, align the METNO procedures with the EUR Region, update States' ROBEX Focal Point information, incorporate the legacy ANP FASID Table information (as agreed in Decision MET SG/24-1: *Updates to legacy FASID Table information*) and include a link to the online register of IWXXM-exchange-capability (as agreed in Conclusion MET SG/24-12: *Development of Online Register of the status of IWXXM Exchange*) (**Decision MET SG/24-15:** *Updates to ROBEX Handbook*, refers).

APAC Regional guidance for tailored MET to support ATM operations

2.26 MET SG/24 adopted updates, as presented at **Appendix 11** to the MET SG/24 Report, to the *APAC Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management (ATM) Operations* to include updated examples from Hong Kong, China, Republic of Korea and Singapore and a few improvements to the main part of document (**Decision MET SG/24-16:** *Updates to Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations*, refers).

Change of Hanoi and Ho Chi Minh FIR location indicator

2.27 MET SG/24 noted that Vietnam had changed the location indicators of its two FIRs, Hanoi FIR and Ho Chi Minh FIR, from VVVV to VVHN and VVTS to VVHM, respectively, and agreed to develop the proposals for consequential amendments to the regional guidance material and the APAC ANP (**Conclusion MET SG/24-19:** *Amendments to Regional Guidance to reflect changes to location indicators for Hanoi FIR and Ho Chi Minh FIR*, refers).

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

a) Note the progress of the MET SG and its contributory working groups;

b) Adopt the Draft Decision at paragraph 2.3, above; and

c) Adopt the Draft Conclusions at paragraphs 2.6, 2.9, 2.12 and 2.18, above.

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APPENDIX

METEOROLOGY SUB-GROUP (MET SG)
TERMS OF REFERENCE AND PLAN OF WORK

Editorial Note: Proposed updates endorsed by MET SG/24 shows deleted text using strikeout (~~text to be deleted~~), and added text with grey shading (text to be inserted).

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 ~~ATM~~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 ~~ATM~~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 co-ordination 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 MET SG with preparatory work on specifically defined problems in the field of aeronautical meteorology requiring expert advice for their resolution. APANPIRG also appointed MET SG as the 'parent' group for other contributory bodies working in the field of aeronautical meteorology for APANPIRG.

4. Membership of the MET SG

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

5. Chairing and Secretary of the MET SG

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

6. Meetings of the MET SG

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

7. Documentation and Record of Meetings of the MET SG

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

a) Short introduction;

b) Summary of findings (presented in the order of discussion of the agenda items, including any proposals for action); and

c) Work plan and schedule for future Meetings.

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

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

7.4. Contributors should submit papers to the ICAO Secretariat as early as practicable, i.e., 28-days before the Meeting at which they are intended to be considered. The Secretary should publish papers, and send a notification of their availability, as early as practicable, i.e., 14-days before the Meeting at which they are intended to be considered.

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

8. Delegated authority of the MET SG

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

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

9. Work Plan of the MET SG

	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	Chair MET SG and Secretary	Dec 2020 Mar 2021 Jun 2021 Sep 2021	In progress
a)	**Draft amendment proposal** for APAC ANP to fulfil missing data in Tables MET	MET/S WG	Mar 2020	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/IE WG MET/S WG MET/R WG	Mar 2020	In progress
b) c)	**Analysis** of APAC Regional SIGMET test	MET/S WG (Task 1 and 3) MET/IE WG (Task 3)	Mar 2020	Completed
b) c)	**Analysis** of APAC Regional OPMET-availability monitoring exercise	MET/IE WG (Task 1)	Mar 2020	Completed
b) c)	**Analysis** of APAC Regional OPMET-timeliness, -compliance and -regularity monitoring exercises	MET/IE WG (Task 2)	Mar 2020	Completed
b) g)	**Analysis** of APAC Regional VAAC backup tests	MET/IE WG (Task 4)	Mar 2020	Completed
b) g)	**Analysis** of APAC Regional IROG backup tests	MET/IE WG (Task 5)	Mar 2020	Completed
b)	**Revised draft regional guidance material** on MET information needed to support the elements of the APAC Seamless ~~ATM~~ANS Plan	MET/R WG (Task 3)	Mar 2020	In progress
c)	**Analysis** of APAC Regional SIGMET monitoring exercises	MET/S WG (Task 1)	Mar 2020	Completed
b) c) g)	**Final report** on ICAO volcanic ash exercise APAC VOLCEX 18/01 (Papua New Guinea)	APAC VOLCEX/SG (Task 5)	TBD	Not started
b) c) g)	**Final report** on ICAO volcanic ash exercise APAC VOLCEX 18/02 (Indonesia/Sumatra)	APAC VOLCEX/SG (Task 6)	Completed	Completed
b) c) g)	**Final report** on ICAO volcanic ash exercise APAC VOLCEX 19/01 (Raoul Island, affecting Fiji's area of responsibility)	APAC VOLCEX/SG (Task 7)	Completed	Completed
b) c) g)	**Final report** on ICAO volcanic ash exercise APAC VOLCEX 20/01 (North-east Asia)	APAC VOLCEX/SG (Task 8)	Jun 2020	Not started

	Detailed description of deliverable	Responsibility	Target date	Status of progress
b) c) g)	**Final report** on ICAO volcanic ash exercise APAC VOLCEX 19/02 (Philippines)	APAC VOLCEX/SG (Task 9)	Jun 2020	Not Started
c) d)	**Proposal** to update the APANPIRG AN deficiencies database to add/remove deficiencies in the MET field	MET SG Chair, Secretariat	Aug 2019	Completed
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 2020	In progress
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)	Completed	Completed
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)	Completed	Completed
f)	**Progress report** on implementation and testing of IWXXM exchange	MET/IE WG (Task 5)	Jun 2020	Completed
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)	Mar 2020	Completed
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 2020	In progress
g)	**Analysis** of MET information used in the Region specifically to support ATM operations	MET/R WG (Task 2)	Jun 2020	In progress
g)	**Plan** for seminar on regional implementation of MET information to support ATM operations	MET/R WG (Task 5)	Jun 2020	In progress
h)	**Environmental Issues** Identify issues in the field of aeronautical meteorology related to environmental issues	MET SG Chair, Secretariat	Jun 2020	In progress
b) e) g)	**IWXXM workshop** Plan and conduct the IWWXM workshop	Secretariat, MET/IE Chair, MET SG Chair, Hong Kong China, Singapore	April/May 2020	Completed
f) g)	**SIGMET Guide update** Update the Regional SIGMET Guide to align with Annex 3, Amendment 79	MET/S WG (ad-hoc group)	Jun 2020	Completed
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)	Jun 2020	In progress

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