

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF THE
ELEVENTH MEETING OF THE METEOROLOGICAL
SERVICES WORKING GROUP (MET/S WG/11)**

(Online, 24 – 26 March 2021)

The views expressed in this Report are those of the Meeting
and not the Organization

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

MET/S WG/11
CONTENTS

INTRODUCTION

1.	Meeting	ii
2.	Attendance	ii
3.	Officers and Secretariat.....	ii
4.	Language and Documentation	ii
5.	Outcome from the meeting	ii

REPORT ON AGENDA ITEMS

	MET/IE WG/19 and MET/S WG/11 Conjoint Session	1
1.	Organizational matters	4
2.	Review of follow-up from previous meetings	4
3.	Planning and implementation of meteorological services	6
4.	Quality management of meteorological services	8
5.	Deficiencies in the provision of meteorological services	8
6.	Guidance and education related to the provision of meteorological services	9
7.	Future work programme and terms of reference.....	10
8.	Any other business.....	10
9.	Next meeting	10

APPENDIX A – TASK LIST

APPENDIX B – TERMS OF REFERENCE AND WORK PLAN

APPENDIX C – LIST OF PARTICIPANTS

APPENDIX D – LIST OF PAPERS

APPENDIX E – LIST OF AIR NAVIGATION DEFICIENCIES IN THE MET FIELD

INTRODUCTION

1. Meeting

1.1. The ICAO Asia and Pacific (APAC) Regional Office hosted the Eleventh Meeting of the Meteorological Services Working Group (MET/S WG/11) as a virtual meeting on 24 to 26 March 2021.

1.2. The first day of the meeting, 24 March 2021, was a conjoint session with the Nineteenth Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/19) to jointly discuss agenda items of relevance to both the MET/IE WG and MET/S WG.

2. Attendance

2.1. One hundred and twenty-one (121) participants registered their attendance at the meeting from twenty-one (21) States/Administrative Regions and three (3) International Organizations, including: Afghanistan, Australia, Brunei Darussalam, Cambodia, China, Hong Kong China, Fiji, India, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Nepal, New Zealand, Philippines, Republic of Korea, Singapore, Thailand, United States, Viet Nam and the IATA, IFATCA and ICAO. The list of participants is at **Appendix C** to this Report.

3. Officers and Secretariat

3.1. Mr. Chan Pak Wai, Assistant Director, Hong Kong Observatory, Hong Kong China, presided as Chair of the meeting (Note: Mr. Tim Hailes, National Manager, Aviation Service Development, Bureau of Meteorology, Australia, presided as Chair of the MET/IE WG/19 and MET/S WG/11 conjoint session on 24 March 2021).

3.2. Mr. Peter Dunda, Regional Officer Aeronautical Meteorology and Environment, ICAO APAC Office, acted as Secretary for the meeting.

4. Language and Documentation

4.1. The working language of the meeting was English, inclusive of all documentation and this Report. The meeting considered eight (8) Working Papers (WPs) and eleven (11) Information Papers (IPs). In addition, the MET/IE WG/19 and MET/S WG/11 conjoint session considered two (2) WPs and two (2) IPs. The list of papers is at **Appendix D** to this Report.

5. Outcomes from the meeting

5.1. The Meeting normally records outcomes of its discussions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

- a) **Draft Conclusions:** formulated by the MET/S WG for further consideration by the Meteorology Sub-group (MET SG), deal with matters of a technical nature and of regional applicability that, according to the MET SG's terms of reference, require the attention of States, or action by the ICAO, in accordance with established APANPIRG procedures;
- b) **Draft Decisions:** formulated by the MET/S WG for further consideration by the MET SG, relate solely to matters dealing with the internal working arrangements of APANPIRG and its contributory bodies; and

- c) **Decisions:** adopted by the MET/S WG, relate solely to matters dealing with the internal working arrangements of the MET/S WG.

5.2. The Meeting did not record any outcomes in the form of Draft Conclusions, Draft Decisions and Decisions. However, the meeting agreed to six (6) new action items, including two (2) action items in the conjoint session, as indicated throughout the *Report on Agenda Items*, below, and presented in the *Task List* at the **Appendix A** to this Report.

REPORT ON AGENDA ITEMS

MET/IE WG/19 and MET/S WG/11 Conjoint Session

1. Volcanic ash advisory centre (VAAC) back-up tests

IP/C01 – VAAC Darwin and Wellington Backup Test (New Zealand)

1.1. VAAC Wellington and VAAC Darwin conducted a scheduled mutual VAAC back-up test on 18 December 2020. The test demonstrated the routine back-up arrangements for the VAACs including the requirements of VAAC Wellington to enable issuance of the VAA message with the VAAC Darwin VAA bulletin header, FVAU04 ADRM (as agreed by the METP, WG-MOG IAVW work stream).

1.2. A lower than expected number of VAA users participated in the test by confirming receipt of the back-up test VAA messages. Therefore, the VAACs recommended a review of the AFTN address list used for dissemination of the VAA messages (as presented in Attachment A to IP/C01).

1.3. In order to increase the participation of end users, i.e., confirming receipt of the VAA sent by VAAC Wellington and VAAC Darwin, in future back-up tests, the meeting requested that ICAO distribute via State letter a request to user States to ensure the relevant operational units participate in the tests and provide the VAACs with their current, valid AFTN addresses for receipt of the VAA messages. [Action Item 01 – MET/IE WG/19 and MET/S WG/11 conjoint session]

2. SIGMET tests

WP/C01 – Review of WS SIGMET Test 2020 (Singapore)

2.1. The WS SIGMET test focal point presented an analysis of results from the ICAO APAC WS SIGMET test conducted on 16 December 2020.

2.2. Fiji informed the meeting that, due to the activation of emergency operations at MWO Nadi in response to severe tropical cyclone Yasa, Fiji did not participate in the SIGMET test. The meeting noted that, for the special case of non-issuance of (WC/WV) SIGMET test message, the SIGMET test procedures (para. 3.6) state that the MWO should notify the SIGMET test focal point in order to be excluded, accordingly, from the analysis of the SIGMET test messages.

2.3. The meeting agreed that in the above case, the non-issuance of the WS SIGMET test message by Nadi MWO (on 16 December 2020) should likewise be excluded from the analysis of the SIGMET test messages and, therefore, should not signify a SIGMET deficiency.

2.4. SIGMET test messages were not received from six (6) of the twenty-nine (29) expected participant States, namely: Afghanistan, DPR Korea, Papua New Guinea, Maldives and Nauru. The rate of State participation was 79% in 2020, compared with 83% in 2019.

2.5. Taking into account the discussion above, SIGMET test messages were received from forty-eight (48) of the fifty-four (53) expected participant MWOs. The overall level of receipt of expected SIGMET test messages was 89% in 2020, compared with 91% in 2019.

2.6. The average rate of reception of the available SIGMET test messages at the five APAC RODBs and ROC London was 96% in 2020, which was the same level as 2019.

2.7. RODB Brisbane informed the meeting that it did receive the SIGMET test messages from United States, which was contrary to the SIGMET test summary table it sent to the focal point indicating non-receipt of the WS SIGMET test messages from Honolulu, Anchorage and Kansas City MWOs, United States.

2.8. The meeting noted that the above issue did not significantly impact the analysis of the SIGMET test results and, therefore, in this instance would be of no real consequence to follow-up activities concerning the identification of SIGMET deficiencies.

WP/C02 – Results of SIGMET Tests 2020 – WC and WV (Japan)

2.9. The WC/WV SIGMET test focal point presented an analysis of results from the ICAO APAC WC/WV SIGMET tests conducted on 02/09 December 2020.

2.10. WC SIGMET test messages were received from forty (40) of the forty-nine (49) expected participant MWOs. The overall level of receipt of expected SIGMET test messages was 82% in 2020, compared with 72% in 2019.

2.11. WV SIGMET test messages were received from fifty-one (51) of the fifty-six (56) expected participant MWOs. The overall level of receipt of expected SIGMET test messages was 91% in 2020, compared with 85% in 2019.

2.12. Some WC/WV SIGMET test and VAA test messages demonstrated the incorrect use of the message priority indicator GG (for SIGMET and VAA, it should be FF) and typographical errors. Some WC/WV test messages were disseminated in duplicate, with identical or different Date Time Group (DTG).

2.13. RODB Brisbane informed the meeting that it did receive the SIGMET test messages from Indonesia and United States, which was contrary to the SIGMET test summary table it sent to the focal point indicating non-receipt of the WC SIGMET test message from MWO Makassar, Indonesia, and non-receipt of the WV SIGMET test messages from Honolulu, Anchorage and Kansas City MWOs, United States.

2.14. The meeting noted that the above issue did not significantly impact the analysis of the SIGMET test results and, therefore, in this instance would be of no real consequence to follow-up activities concerning the identification of SIGMET deficiencies.

2.15. In relation to the problem with dissemination of the tropical cyclone advisory test message reported by TCAC Tokyo, the meeting discussed the backup arrangements for TCACs and noted that the WMO Tropical Cyclone Operational Plans formal backup procedures existed between TCWC Nadi and TCWC Wellington, which included TCAC functions, whereas Australia and Japan have established internal back-up arrangements for their TCACs.

2.16. To further assist States with the analysis of their performance in the SIGMET tests, the meeting recommended an investigation of possible improvements to the template for the SIGMET test summary table. The proposed improvements should enable a more detailed analysis of the SIGMET tests, including analysis of more than one WC and/or WV SIGMET test message issued by the same MWO for the same FIR (which receives TCA and/or VAA from more than one TCAC and/or VAAC). [**Action Item 02** – MET/IE WG/19 and MET/S WG/11 conjoint session]

IP/C02 – The SIGMET Test Results of MWOs in China (China)

2.17. China informed the meeting that it was following up on issues it attributed to the impact of the COVID-19 pandemic and internal operational problems, which affected the ability of two of its designated MWOs to participate successfully in the WC and WV SIGMET tests. MWO Beijing (ZBAA) could not send the WC SIGMET test message as expected and MWO Shenyang (ZYTXX) sent the WV SIGMET test message outside of the designated time frame for the test.

2.18. The meeting acknowledged the measures presented by China to improve the participation of its MWOs in the regional SIGMET tests. The meeting also recalled that States are enabled (through the ICAO provisions at Annex 3, Appendix 2, Table A2-2) to issue SIGMET test messages, as necessary, e.g., to test their systems. When doing so, the meeting recommended that States should consider requesting the support of one or more RODBs to assist with monitoring the receipt of the test message/s.

REPORT ON AGENDA ITEMS

MET/S WG/11

1. Opening of the meeting and organizational matters

WP/01 – Provisional Agenda (Secretariat)

1.1. The meeting adopted the agenda as listed below:

MET/IE WG/19 and MET/S WG/11 (Conjoint session – 24 March 2021)

Agenda Item 1: Volcanic ash advisory centre (VAAC) backup tests
Agenda Item 2: SIGMET tests

MET/S WG/11 (25 – 26 March 2021)

Agenda Item 1: Organizational matters
Agenda Item 2: Review of follow-up from previous meetings
Agenda Item 3: Planning and implementation of meteorological services
Agenda Item 4: Quality management of meteorological services
Agenda Item 5: Deficiencies in the provision of meteorological services
Agenda Item 6: Guidance and education related to the provision of meteorological services
Agenda Item 7: Future work programme and terms of reference
Agenda Item 8: Any other business
Agenda Item 9: Next meeting

2. Review of follow-up from previous meetings

WP/02 – Follow-up Action from MET/S WG/10 (Secretariat)

2.1. Outcomes from the Tenth Meeting of the Meteorological Services Working Group (MET/S WG/10) held in conjunction with the Eighteenth Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/18) included thirty-three (33) new action items in the (combined meetings') Task List, which required follow-up action by members of the MET/S WG, MET/IE WG and/or the Secretariat. In addition, follow-up action on four (4) action items from previous meetings of the MET/S WG was yet to be completed.

2.2. The meeting agreed to the proposed updates to the status of follow-up on action items in the MET/S WG Task List, as presented in the Appendix A and Appendix B to WP/02, and proposed further updates to reflect additional follow-up reported by members of the meeting related to several of the action items. The consolidated updates to the status of follow-up on action items as agreed by the meeting is presented in the *Task List* at the **Appendix A** to this Report.

IP/10 – Proposed ANP Update – State Volcano Observatories (New Zealand)

2.3. The meeting recalled that MET/IE WG/18 and MET/S WG/10 (July 2020) designated an ad-hoc group to coordinate the development of a comprehensive proposal for amendment of the ANP to reflect APAC States' current requirements for State volcano observatories.

2.4. The meeting acknowledged the significant progress of the ad hoc group and noted that the remaining components of the action item included ICAO's processing of the proposal for amendment of the ANP, Table MET I-1 (as presented at the Attachment B to IP/10), further consultation with the

States identified with active volcanoes and no designated State volcano observatories (as presented at the Attachment A to IP/10) and recommendations concerning the States with volcanoes of undetermined “active or potentially active” status and Australia’s remote island volcanoes (as presented at the Attachment A to IP/10).

WP/03 – Follow-up Action from MET SG/24 (Secretariat)

2.5. Outcomes from the Twenty-Fourth Meeting of the Meteorology Sub-group (MET SG/24), which were of direct relevance to the MET/S WG, included one (1) Conclusion, for the attention of States or action by the ICAO, five (5) Decisions, related to the internal working arrangements of the MET SG, and three (3) new actions in the MET SG Task List, as listed below:

- Decision MET SG/24-01: *Updates to legacy FASID Table information*
- Decision MET SG/24-05: *MET Deficiencies*
- Decision MET SG/24-07: *November 2023 WAFS and SADIS Upgrades*
- Decision MET SG/24-14: *Updates to Regional SIGMET Guide*
- Decision MET SG/24-18: *Updates to terms of reference and work plan of and MET/R WG, MET/IE WG and MET/S WG*
- Conclusion MET SG/24-19: *Amendments to Regional Guidance to reflect changes to location indicators for Hanoi FIR and Ho Chi Minh FIR*
- Action item 24/02 – *Follow-up on Decision MET SG/23-3: Improved Regional guidance for SIGMET for volcanic ash forecast to cross FIR boundaries*
- Action item 24/04 – *Operational MWO Phnom Penh – Consequential updates to the Regional guidance material*
- Action item 24/05 – *SIGMET Guide updates*

2.6. With respect to necessary follow-up to Decision MET SG/24-01, Decision MET SG/24-14, Conclusion MET SG/24-19 and Action item 24/04, the meeting noted that the designated MET/S WG ad-hoc group had already developed and published the required updates in the latest version of the ICAO APAC Regional SIGMET Guide.

2.7. In response to Decision MET SG/24-05, MET/S WG formed an ad hoc group to assist the ICAO Secretariat with the process of identifying, reporting and supporting the resolution of air navigation deficiencies in the field of aeronautical meteorology in the APAC Region. Accordingly, the meeting proposed updates to incorporate the specific actions (a to g) from Decision MET SG/24-05 at activity 6.1 in the MET/S WG work plan, as indicated in the proposed updates at the **Appendix B** to this Report.

2.8. The designated ad hoc group (rapporteur) provided the meeting with further updates on the current status of progress, which included the development of a template for use by States to report to MET/S WG and/or MET SG progress on resolving air navigation deficiencies. The ad hoc group made the template available to a number of States that might be ready to report on their deficiency resolution work and requested feedback concerning any further improvements to the template.

2.9. In response to Decision MET SG/24-07, the meeting requested the Secretariat to disseminate a State letter to inform States of the need to prepare for the proposed WAFS and SADIS changes planned for November 2023 and to invite States to inform ICAO of any need for related technical assistance. [**Action Item 01** – MET/S WG/11]

2.10. With respect to Decision MET SG/24-18, the meeting noted the MET SG/24-approved updated terms of reference and work plan for the MET/S WG (as presented at Appendix A to the WP/08).

2.11. In relation to Action item 24/02, the meeting considered a proposal for improved Regional guidance for SIGMET for volcanic ash forecast to cross FIR boundaries presented in a separate paper (WP/07) under agenda item 6 in this Report (para. 6.1.-6.3. refers).

2.12. In response to Action item 24/05, the meeting proposed updates at activity 4.1 and 4.2 in the MET/S WG work plan to ensure that proposals for SIGMET Guide updates are coordinated, as necessary, with the other ICAO Regions and include guidance relevant to SIGMET information in IWXXM form, as indicated in the proposed updates at the **Appendix B** to this Report.

WP/04 – Follow-up Action from APANPIRG/31 (Secretariat)

2.13. Outcomes from APANPIRG/31, which are of most relevance to the MET/S WG, included one (1) Conclusion, which deals with matters that require the attention of States or actions by ICAO, and two (2) Decisions, which deal with matters of concern only to the APANPIRG and its contributory bodies, as listed below:

- APANPIRG/31 Decision 31/16 – *Updates to Terms of Reference and Work Plan of MET SG*
- APANPIRG/31 Conclusion 31/17 – *0.25 Degree WAFS Hazard Data*
- APANPIRG/31 Conclusion 31/19 – *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form*

2.14. In response to APANPIRG/31 Decision 31/16, the meeting proposed to update the MET/S WG terms of reference to reflect the requirement for quarterly coordination meetings for the Chairs of MET SG and its contributory working groups (including MET/S WG), as indicated in the proposed updates at the **Appendix B** to this Report.

2.15. With respect to APANPIRG/31 Conclusion 31/17, the meeting requested the Secretariat to disseminate a State letter to inform SADIS user States of the need to make necessary systems changes to integrate the new 0.25 degree WAFS hazard data into their SADIS user systems and software. The meeting noted that this could be done in concert with informing States of the need to prepare for the proposed WAFS and SADIS changes planned for November 2023 and inviting States to inform ICAO of any need for related technical assistance. [**Action Item 02** – MET/S WG/11]

2.16. With respect to APANPIRG/31 Conclusion 31/19, the meeting noted the proposed updates to the MET/S WG work plan to further support States with the resolution of APANPIRG air navigation deficiencies in the MET field, as indicated in the proposed updates at the **Appendix B** to this Report.

2.17. In addition, the meeting noted that APANPIRG/31 did not adopt a specific Conclusion based on the MET SG/24 Draft Conclusion MET SG/24-02: *APAC Regional Air Navigation Plan (ANP), Volume III*. Rather, APANPIRG/31 suggested that MET SG should progress with its development of a proposal for amendment to the ANP, Volume III, to deal with the MET-specific requirements and to continue to coordinate this work, as necessary, with the other (APANPIRG) Sub-Groups.

2.18. With respect to the above, the meeting noted that the MET SG/24-approved update to the MET/S WG work plan (as presented at Appendix A to the WP/08) already included a specific new activity (4.5) to develop a proposal to amend the ANP Volume III to clarify the MET-related implementation planning guidance.

3. Planning and implementation of meteorological services

WP/05 – New Space Weather Advisory Headers (Australia)

3.1. On 5 November 2020, the World Meteorological Organization (WMO) updated the designated message header for space weather advisory information from a single, common message header for all space weather impacts to one message header per space weather impact (i.e., impacts on high frequency communications (HF COM), global navigation satellite system (GNSS)-based navigation and

surveillance, satellite communications (SATCOM) and increased radiation on board aircraft (RADIATION)).

3.2. In order to further support States with necessary implementation or system adjustments for the changes to WMO headers and to ensure the required dissemination of the space weather advisory information to users, the meeting proposed the development of a working paper and Draft Conclusion (for submission to MET SG/25) highlighting to States the requirements for dissemination of the space weather advisory information and requesting information from States (possibly in coordination with the survey being developed by MET/R WG) on the status of implementation of the dissemination of the space weather advisory information. [**Action Item 03** – MET/S WG/11]

IP/02 – MET Services During the Thunderstorm Season in South China (China)

3.3. China has demonstrated an effective, collaborative (MET/ATM) decision making system, incorporating tailored meteorological forecasts and face-to-face MET/ATM consultation, to minimize the negative impacts of adverse weather, in particular thunderstorms, on air traffic flow along specific ATS routes and in specific terminal control areas.

IP/03 – Full Operation of GHSV SIGMET Coordination Project for Phenomena Occurring in the Area of FIRs' Boundaries (Cambodia, China, Hong Kong, China and Vietnam)

3.4. The SIGMET Coordination project between the MWOs Guangzhou, Hong Kong, Kunming, Phnom-Penh, Sanya and VATM in Vietnam transitioned to full operational status from 1 November 2020. There were a total number of 296 coordination cases carried out in 2020, with 89% of the coordination achieving consensus. Regular teleconferences were held to review coordination cases and attain mutual understanding between MWOs. Ad hoc meetings on tropical cyclones and other hazardous weather phenomenon were set up to raise situational awareness and for better coordination.

IP/04 – South and South-Eastern Asia SIGMET Coordination Project (Hong Kong, China, Indonesia and Sri Lanka)

3.5. The South and South-Eastern Asia (SSEA) SIGMET Coordination project between the MWOs of Indonesia and Sri Lanka, supported by Hong Kong, China, transitioned to full operational status on 1 February 2021. Trial long-term forecasting was also discussed in regular review meetings, assisting the MWOs to assess the forecast trend of thunderstorm activity over the area in the season ahead. The project looks forward to expanding the coordination with neighbouring FIRs on SIGMET coordination.

IP/05 – Recent Progress of International Cooperation Scheme On Collaborative SIGMET Issuance (CSI) (Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam)

3.6. Progress on the international cooperation scheme of the Collaborative SIGMET Issuance (CSI) among six member States: Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam, included the CSI Workshop (held online in January 2021 to discuss further enhancement and expansion of SIGMET coordination in the Region) and development of a WC SIGMET handover procedure and new SIGMET coordination trials (between Myanmar/Malaysia and Philippines/Malaysia/Singapore).

IP/11 – SIGMET Collaboration – New Zealand and Australia (New Zealand)

3.7. Australia and New Zealand have utilized social media as a means to conduct the Annex 3 (Amendment 79) recommended practice (para. 3.4.4) for neighbouring MWOs to coordinate to ensure the provision of harmonized SIGMET information. The MWOs concerned demonstrated the efficacy of the social media coordination of SIGMET information for turbulence and thunderstorms in the delivery of improved meteorological service for operators. New Zealand has also recently set up a

similar coordination system with Fiji, and agreed to explore extending that system to also include Australia.

4. Quality management of meteorological services

IP/06 – Introduction to TAF Verification Method (Republic of Korea)

4.1. Republic of Korea verifies its aerodrome forecasts (TAF) based on the operationally desirable accuracy of forecasts published in ICAO Annex 3, Attachment B. The TAF verification method facilitates the provision of detailed forecasts to users to support efficient and safe aircraft operations.

5. Deficiencies in the provision of meteorological services

WP/06 – Review of Air Navigation Deficiencies in the MET Field (Secretariat)

5.1. APANPIRG/31 (December 2020) endorsed the current list of APANPIRG air navigation deficiencies as detailed in the APANPIRG *Reporting Form on Air Navigation Deficiencies* in the MET field at the **Appendix E** to this Report (Conclusion APANPIRG/31/19 – *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form*, refers).

5.2. The meeting recalled that APANPIRG/31 (Conclusion 31/19) endorsed the removal from the open list the APANPIRG air navigation deficiency, AP-MET-01, concerning aerodrome meteorological observations or reports at Honiara (AGGH), Solomon Islands.

5.3. In addition, APANPIRG Conclusion 31/19 urged States/Administrations to establish action plans with defined target dates for resolution of air navigation deficiencies, update the status of the corrective action taken and report progress in the *Reporting Form of Air Navigation Deficiencies*, and update contact details of a Focal Point to coordinate actions to resolve the APANPIRG air navigation deficiencies.

5.4. The meeting noted that the Focal Point to coordinate actions to resolve the APANPIRG air navigation deficiencies should be designated by each State to coordinate with ICAO and stakeholders concerning air navigation deficiencies in all air navigation fields.

5.5. The current list of air navigation deficiencies, as endorsed by APANPIRG/31, contains thirteen (13) open deficiencies in the MET field related to facilities and services in seven (7) APAC States. These are listed in **Table 1**, below:

Table 1: Summary of APANPIRG air navigation deficiencies in the MET field (endorsed by APANPIRG/31)

MET facilities and services	Asia/Pacific States	Def. ID	Status
Aerodrome meteorological observations or reports	Kiribati	AP-MET-02	open
	Nauru	AP-MET-21	open
Meteorological watch office (MWO) or SIGMET information	Democratic Peoples’ Republic of Korea	AP-MET-16	open
	Nauru	AP-MET-24	open
	Nepal	AP-MET-14	open
	Papua New Guinea	AP-MET-08	open
	Papua New Guinea	AP-MET-22	open
	Solomon Islands	AP-MET-23	open
Volcanic ash/activity information	Papua New Guinea	AP-MET-04	open
	Tonga	AP-MET-17	open
WAFS forecasts and/or flight briefings	Kiribati	AP-MET-18	open
	Nauru	AP-MET-19	open
	Solomon Islands	AP-MET-20	open

5.6. The meeting noted the work of the Pacific Island Aviation Weather Services (PIAWS) Panel task team on assisting Pacific Island States in resolving their MET deficiencies. The PIAWS Panel task team provided States concerned with suggested plans for the open deficiencies AP-MET-02, AP-MET-21 (meteorological observations), AP-MET-04, AP-MET-17 (volcanic activity information), AP-MET-18, AP-MET-19 and AP-MET-20 (WAFS forecast information).

5.7. In view of the above, the meeting noted that the PIAWS Panel task team (and MET/S WG, air navigation deficiencies ad hoc group) anticipated further significant progress towards the resolution of the above deficiencies during 2021.

6. Guidance and education related to the provision of meteorological services

WP/07 – SIGMET Guidance for Volcanic Ash Forecast to Cross FIR Boundaries (Ad hoc group)

6.1. MET SG/24 designated the MET/SG WG (i.e., by way of an ad hoc group) to consider developing examples for improved Regional guidance for SIGMET for volcanic ash cloud that is forecast to cross FIR boundaries (MET SG/24 Action/Task 24/02, refers). The designated ad hoc group proposed two examples of how neighbouring MWOs might coordinate the issuance of SIGMET information for their respective areas of responsibility when the advisory information (on which the SIGMET should be based) includes forecasts of the volcanic ash cloud to cross the boundary separating the MWOs' areas of responsibility (WP/07, Attachment 1, refers).

6.2. The meeting did not concur on the adoption of the proposed guidance material (examples) in Attachment 1, in its current form, for possible inclusion in Regional SIGMET Guide. Rather, the meeting requested the ad hoc group to continue to develop the proposal taking into consideration the need for input from the end user community and consider global coordination with ICAO regions. [**Action Item 04** – MET/S WG/11]

6.3. In particular, the meeting expressed some concern related to the procedure illustrated by the second example in the Attachment and recommended the ad hoc group reconsiders the first example in the Appendix with a view to the efficiency of the proposed procedure and human factors issues. [**Action Item 04** – MET/S WG/11]

IP/07 – VAAC Darwin Management Report (Australia)

6.4. In the period from 1 July 2020 to 31 January 2021, VAAC Darwin disseminated 1313 volcanic ash advisory messages. This number indicates that 2020/2021 has been a comparatively quiet period for high impact eruptions within its area of responsibility. In each of the previous five years, during the period from 1 July to 30 June, Darwin VAAC had disseminated in excess of 2500 volcanic ash advisory messages.

IP/08 – VAAC Tokyo Management Report (Japan)

6.5. This paper presents the VAAC Tokyo IAVW Management Report for the period 1 July 2020 through 31 January 2021.

IP/09 – VAAC Wellington Management Report (New Zealand)

6.6. This paper presents an International Airways Volcano Watch (IAVW) focussed management report describing activities for the Volcanic Ash Advisory Centre (VAAC) Wellington, covering the period 1 July 2020 to 31 January 2021.

7. Future work program and terms of reference

WP/08 – Review MET/S WG Work Program and Terms of Reference (Secretariat)

7.1. This paper presents the terms of reference and work program of the Meteorological Services Working Group (MET/S WG) and invites the meeting to review and propose updates as necessary to the terms of reference and work programme of the MET/S WG for possible approval by the Meteorology Subgroup (MET SG).

7.2. Based on the outcomes of the discussion on the agenda items, the meeting proposed several updates to the MET/S WG terms of reference and work plan as highlighted at the **Appendix B** to this Report.

8. Any other business

9. Next meeting

9.1. The meeting proposed the following (tentative) dates for the next meeting of the MET/S WG:

30 March 2022 – conjoint session of MET/S WG/12 and MET/IE WG/20

30 March to 01 April 2022 – MET/S WG/12

MET/S WG/11
Appendix A to the Report

TASK LIST – MET/IE WG/19 and MET/S WG/11 conjoint session

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
01	State letter request to user States to ensure the relevant operational units participate in the VAAC back-up tests and provide the VAACs with their current, valid AFTN addresses for receipt of the VAA messages. [Ref: para. 1.1.-1.3., MET/IE WG/19 and MET/S WG/11 conjoint session]	Before next scheduled test	Australia, New Zealand, Secretariat	To commence
02	Investigate possible improvements to the template for the SIGMET test summary table to enable a more detailed analysis of the SIGMET tests, including analysis of more than one WC and/or WV SIGMET test message issued by the same MWO (which receives TCA and/or VAA from more than one TCAC and/or VAAC). [Ref: para. 2.16., MET/IE WG/19 and MET/S WG/11 conjoint session]	Before next scheduled test	SIGMET test Focal Points, Secretariat	To commence

TASK LIST – MET/S WG/11

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
01	State letter to: a) Inform SADIS user States of the need to make necessary systems changes to integrate the new 0.25 degree WAFS hazard data into their SADIS user systems and software; b) Invite States to inform ICAO of any need for related technical assistance. [Ref: para. 2.9., MET/S WG/11]	MET SG/25	Secretariat	To commence
02	State letter to: a) Inform States of the need to prepare for the proposed WAFS and SADIS changes planned for November 2023; and b) Invite States to inform ICAO of any need for related technical assistance. [Ref: para. 2.15., MET/S WG/11]	MET SG/25	Secretariat	To commence
03	Working paper and Draft Conclusion (for submission to MET SG/25) highlighting to States the requirements for dissemination of the space weather advisory information and requesting information from States (possibly in coordination with the survey being developed by MET/R WG) on the status of implementation of the dissemination of the space weather advisory information. [Ref: para. 3.2., MET/S WG/11]	MET SG/25	Australia, China, Japan, Secretariat	To commence
04	Continue to develop the proposed guidance for possible inclusion in the APAC Regional SIGMET Guide on SIGMET issuance where volcanic ash is forecast to cross FIR boundaries, taking into consideration the need for input from the end user community and consider global coordination with ICAO regions. [Ref: para. 6.2.-6.3., MET/S WG/11]	MET SG/25	Ad hoc group	In progress

TASK LIST – MET/IE WG/18 and MET/S WG/10

Reproduced from Appendix A to the Report of MET/IE WG/18 and MET/S WG/10

(Note: Proposed updates to the Task List are indicated with ~~strikethrough~~ and highlighted text)

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
Terms of Reference and Work Program				
01	Terms of Reference and Work Program – online coordination: Make use of regular online coordination meetings to facilitate progress on follow-up on the action items in the Task List/s [ref: para. 2.3. and 7.3.]	As necessary	Secretariat and WG Chairs and members	IN PROGRESS 13 August 2020, 10 December 2020 Work in progress
02	Terms of Reference and Work Program – meeting documentation deadlines: Propose updates to the terms of reference documents to reflect the desirable deadlines, as adopted by the MET SG, for submission and publication of meeting papers and reports (i.e., submit papers >=28-days before the meeting, publish papers >=14-days before the meeting and publish reports <=21-days after the meeting) [ref: para. 2.4. and 11.5.]	At MET SG/24	Secretariat and WG Chairs	COMPLETED Ref: MET/IE WG and MET/S WG, 3. Communication Strategies

MET/S WG/11
Appendix A to the Report

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
03	Terms of Reference updates – MET/IE WG: Include the proposed updates (at para. 5.1-5.4 of the report) in the terms of reference document for inclusion in the meeting report for further review and approval by MET SG/24 [ref: para. 5.5.]	Before MET SG/24	Secretariat	COMPLETED Ref: MET/IE WG, 1. Membership and 2. Description
04	Terms of Reference updates – MET/S WG: Include the proposed updates (at para. 11.1-11.3 of the report) in the terms of reference document for inclusion in the meeting report for further review and approval by MET SG/24 [ref: para. 11.4.]	Before MET SG/24	Secretariat	COMPLETED Ref: MET/S WG, 1. Membership and 2. Description
05	Work Program – MET/IE WG: Update the work program document to reflect the outcomes of the meeting discussions and for inclusion in the meeting report for further review and approval by MET SG/24 [ref: para. 5.6.]	Before MET SG/24	Secretariat and MET/IE WG	COMPLETED Work in progress
06	Work Program – MET/S WG: Update the work program document to reflect the outcomes of the meeting discussions and for inclusion in the meeting report for further review and approval by MET SG/24 [ref: para. 11.6.]	Before MET SG/24	Secretariat and MET/S WG	COMPLETED Work in progress
OPMET Monitoring				
07	OPMET performance indices – States’ follow-up: Inform States concerned of the locations with low performance indices and advise the States to take appropriate corrective actions; address the above communication also the Regional OPMET Centres (ROCs) responsible for the collection of OPMET messages from the originating stations [ref: para. 3.4. and 3.5.]	Sep 2020	Secretariat	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 1 and Activity 2
08	OPMET performance indices – RODBs’ review: Review and propose update/s to the MET/IE WG work program as necessary to ensure the APAC RODBs review the results of the OPMET monitoring activities prior to submission of the results to the MET/IE WG meetings [ref: para. 3.6.]	Before MET SG/24	MET/IE WG	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 1 (1.4) and Activity 2 (2.3)
IWXXM implementation				
09	IWXXM implementation – registering testing activities: Proposal on how best to support APAC States with coordinating and sharing information on their IWXXM exchange testing activities [ref: para. 3.12.]	At IWXXM Webinar	MET/IE WG	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 7 IWXXM Webinar Presentation #17
10	IWXXM implementation – survey: Respond to the online survey questionnaire at the link provided in WP/07 (and in State Letter Ref: T 4/3.2.5- AP155/20 (MET)) [ref: para. 3.26.]	7 Aug 2020	Meeting participants’ States	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 7 IWXXM Webinar Presentation #01
11	IWXXM implementation – FAQs: Prepare and publish an “FAQ”-type resource taking into consideration the IWXXM-related matters discussed in the meeting and the considerable information collated from previous IWXXM workshops and related activities [ref: para. 3.28.]	Before and (update) after IWXXM Webinar	Secretariat and MET/IE WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 7
Regional Guidance Materials				
12	ROBEX Handbook updates – Focal Points: Prepare the proposal to update the ROBEX Handbook based on the proposed updates to the Focal Point information (Appendix I), as presented in WP/08 and proposed by Australia, China and New Zealand [ref: para. 4.2.]	Before MET SG/24	Secretariat	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 6
13	ROBEX Handbook updates – Update process: Propose options for a more streamlined process for updating the ROBEX Handbook data, such as through the development of a more dynamic, online repository for ROBEX data [ref: para. 4.4.]	Before MET SG/24	MET/IE WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6

MET/S WG/11
Appendix A to the Report

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
14	ROBEX Handbook updates – IWXXM-related data: Investigate the development of an online repository for ROBEX data in which States would share and maintain up to date information on the IWXXM-capabilities of the ROBEX scheme and the AMHS addresses to support the required dissemination of IWXXM messages [ref: para. 4.6.]	Before MET SG/24	MET/IE WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
15	ROBEX Handbook updates – IWXXM-related flexibility: Propose updates, as necessary, to reflect APAC States' requirement for flexibility of the ROBEX scheme structure during the transition to Region-wide implementation of IWXXM exchange [ref: para. 4.7.]	Before MET SG/24	MET/IE WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
16	ROBEX Handbook updates – METAR and TAF bulletins: Prepare the updates to the Appendices A and B, concerning Thailand and Australia, as presented in WP/09 and WP/15 [ref: para. 4.8.]	Before MET SG/24	Secretariat	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 6
17	ROBEX Handbook updates – METNO procedures: Coordinate further development of the METNO procedures (wording and mechanisms) as proposed in WP/10, including the scheduled time for implementing OPMET Bulletin changes in the APAC Region, and develop the associated proposal to update the ROBEX Handbook [ref: para. 4.12.]	Before MET SG/24	Chair MET/IE WG and Secretariat	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 6
18	ROBEX Handbook and SIGMET Guide updates – Legacy FASID information: Prepare the consequential updates of the required information from the legacy FASID Tables relating to meteorology, apart from Table MET 1A, Table MET 1B and Table MET 3C, and the existing ICAO APAC regional guidance documentation, according to the proposal in WP/11 and the Draft Decision [ref: para. 4.16.]	Before MET SG/24	Secretariat and States	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
19	ANP and ROBEX Handbook updates – Vietnam NOC: Coordinate on the implementation of the Vietnam NOC, including development of proposed updates to the APAC ANP and ROBEX Handbook [ref: para. 3.7.]	As necessary	Vietnam and Thailand	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
20	ANP and ROBEX Handbook updates – Indonesia new aerodromes: Determine any requirement (based on IP/09) to update the ICAO APAC ANP and/or ROBEX Handbook [ref: para. 8.27.]	Before MET SG/24	Secretariat and Indonesia	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 6
21	ANP updates – State Volcano Observatories: Designate an ad-hoc group consisting of the Secretariat and members from the VAACs and RODBs to identify the APAC States with active or potential active volcanoes, which do not have a designated State volcano observatory listed in the APAC ANP, Vol I, Table MET I-1; conduct the necessary coordination to facilitate the States concerned with the designation of a State volcano observatory and listing it in the APAC ANP; coordinate the action above with the development of a comprehensive proposal for amendment of the ANP to reflect APAC States' current requirements for State volcano observatories [ref: para. 4.17., 8.3. and 8.4.]	Before MET SG/24	MET/S WG and Secretariat	IN PROGRESS Ref: Report of MET/S WG/11, para. Ref: MET/IE WG, Work Plan, Activity 6
22	SIGMET Guide updates – MWOs in Australia: Incorporate the required changes related to MWOs in Australia in the APAC Regional SIGMET Guide, Appendices C, D and E, and in the legacy FASID Table MET 3A and 3B information, as proposed in WP/12 [ref: para. 4.22.]	Before MET SG/24	Secretariat	COMPLETED Ref: MET/S WG, 5. Work Plan, Activity 4
23	SIGMET pamphlets – requirements for updates: Consider the States' requirements for, and the viability of producing further updated versions of the SIGMET pamphlets; remove the outdated SIGMET pamphlets from the ICAO APAC Office website [ref: para. 7.5. and 7.6.]	Before MET SG/24	MET/S WG and Secretariat	COMPLETED Ref: MET/S WG, 5. Work Plan, Activity 4
SIGMET test				
24	SIGMET test – notification to States: Disseminate the invitation letter to States two-months in advance of the annual SIGMET test and a follow-up reminder email message approx. two-weeks prior to the first day of the test; request Sri Lanka to provide ICAO with the appropriate contact details to ensure the SIGMET test invitation is received by the participating MWO [ref: para. 6.2. and 6.13.]	Prior to SIGMET test	Secretariat	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 3 Invitation letter [Ref.: T 4/7.5-AP218/20(MET), 04 Nov 2020] Reminder Email [02 Dec 2020]

MET/S WG/11
Appendix A to the Report

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
25	SIGMET test results – corrective action plan: Develop an action plan to assist States concerned with rectification of the (WP/14 and WP/27) identified SIGMET-related errors and deficiencies; the action plan referred should utilize the (Annex 3) SIGMET “TEST” provision to conduct state-specific SIGMET test to assess whether the corrective actions have been successful [ref: para. 6.3., 6.6. and 6.11.]	Before MET SG/24	MET/IE WG in conjunction with MET/S WG	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3 [Ref.: T 4/7.5 - AP226/20 and AP227/20 (MET), 10 Nov 2020]
26	SIGMET test results – follow-up with States: Inform, by ICAO State letter, the States concerned of the SIGMET-related errors and deficiencies identified by the annual SIGMET test as presented in WP/14 and WP/27 and urge the States concerned to take the proposed corrective actions; inform Fiji, by ICAO State letter, of the incomplete data provided by RODB Nadi to the SIGMET test focal point in Singapore and lack of participation in the OPMET monitoring activities [ref: para. 6.4., 6.9. and 6.14.]	Before MET SG/24	Secretariat	COMPLETED Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3 [Ref.: T 4/7.5 - AP226/20 and AP227/20 (MET), 10 Nov 2020]
27	SIGMET test results – corrective action plan: Support Mongolia with conducting a follow-up SIGMET test to facilitate rectification of the SIGMET-related dissemination deficiency as identified in the SIGMET test results in WP/27 and share with the MET/IE WG and MET/S WG the results of Mongolia’s follow-up SIGMET test [ref: para. 6.10.]	Before MET SG/24	Singapore	CLOSED Mongolia successfully participated in 2020 SIGMET tests Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3
28	SIGMET test results – corrective action plan: Investigate the reason for the reduced reception of SIGMET test messages at Regional OPMET Centre (ROC) London compared to APAC RODB’s and share the results with MET/S for potential corrective action [ref: para. 6.12.]	Before MET SG/24	MET/IE WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3
SIGMET Coordination activities				
29	SIGMET Coordination activities – integration and expansion: Consider the proposals presented in WP/19 and the results of the SIGMET coordination project presented in WP/20 when developing the work program on coordinating the next steps to promote integration and expansion of SIGMET coordination activities in the APAC Region [ref: para. 8.8. and 8.11.]	Before MET SG/24	MET/S WG	COMPLETED Ref: MET/S WG, 5. Work Plan, Activity 8
Other				
30	VAAC back-up test procedures – review and update: Refer to the pertinent information from IP/08 and determine appropriate action for the next review and update of the VAAC back-up test procedures [ref: para. 8.25.]	Before MET SG/24	MET/IE WG and MET/S WG	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 4
31	Special air-reports – promoting issuance of: Continue to coordinate the required follow-up action (outstanding action item no. 8) concerning promoting the issuance of special air-reports; publicise by way of State letter (and/or other channels) the importance of exchanging special air-reports between airlines, ATS units and MWOs (and aerodrome meteorological offices) [ref: para. 7.2. and 8.21.]	Before MET SG/24	Secretariat	IN PROGRESS Not in MET/IE WG or MET/S WG Work Program [Action Item MET/R WG 9/1]

MET/S WG/11
Appendix A to the Report

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
32	Air navigation deficiencies – resolution of: Continue to support States, as necessary, such as Nepal, with developing and implementing their corrective action plans for the resolution of air navigation deficiencies [ref: para. 9.4.]	Before MET SG/24	Secretariat	IN PROGRESS Ref: MET/S WG, 5. Work Plan, Activity 6
33	WAFS and SADIS – preparation for proposed changes: Develop appropriate actions in the work program to facilitate States' awareness of and planning for the proposed (WP/25) WAFS and SADIS changes in November 2023 [ref: para. 10.5.]	Before MET SG/24	MET/S WG	IN PROGRESS Not in MET/IE WG or MET/S WG Work Program

OUTSTANDING TASK LIST – MET/S WG/9

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
9/1	Performance additional SIGMET tests to address the issues identified during the course of the 2018 SIGMET tests and present interim results on the resolution of any SIGMET deficiencies to the Secretary/Chairperson MET/IE WG for presentation to the MET/SG/23. <i>[Report of conjoint session of MET/IE WG/17 and MET/S WG/9, para. 2.1 – 2.20, refers]</i>	17 Jun 2019	Secretariat and States concerned	IN PROGRESS Superseded by MET/S WG work plan Activity 6 TO COMMENCE
9/2	Propose updates to the SIGMET Guide to include a section encouraging States to utilize the provisions for issuance of a SIGMET test message following upgrades to operational SIGMET or dissemination systems. <i>[Report of conjoint session of MET/IE WG/17 and MET/S WG/9, para. 2.21 – 2.23, refers]</i>	17 Jun 2019	Designated ad-hoc group and Secretariat	COMPLETE
9/5	Submit a proposal to MET/SG/23 for further review and possible adoption of the proposed update to the Asia/Pacific Regional SIGMET Guide developed by the designated ad-hoc group, incorporating the consequential changes identified by the meeting arising from the following: i. Development of MWO Phnom Penh in Cambodia (MET/IE WG/17 – WP/03, Appendix II, refers); ii. Proposals made by Australia in relation to WV SIGMET (MET/IE WG/17 – MET/ S WG/9 – WP/C4, para. 3.1, (b) and (c), refers); and iii. Introduction of space weather advisory information (MET/IE WG/17 – WP/05, para. 3.1 (c), refers). <i>[Report of MET/S WG/9, para. 6.8 – 6.9, refers]</i>	17 Jun 2019	Designated ad-hoc group and Secretariat	IN PROGRESS: i. COMPLETED ii. IN PROGRESS pending ICAO follow-up on Australian MWO updates in ANP Vol. II iii. COMPLETED pending minor update to para. 2.7.1, to change 'Appendix K' to 'Appendix L'.

OUTSTANDING TASK LIST – MET/S WG/7

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
5/7	Confirm the MET/H TF membership contact details and invite IATA and IFALPA to nominate relevant experts for membership [Related to MET/H TF/5 Decision 5/4].	Jun 2016	Secretariat	CLOSED IN PROGRESS

MET/S WG/11
Appendix B to the Report

(Note: Proposed updates to the Terms of Reference and Work Program are indicated with ~~strikethrough~~ and highlighted text)

**ICAO ASIA AND PACIFIC METEOROLOGICAL SERVICES WORKING GROUP
(MET/S WG)**

TERMS OF REFERENCE

1. MEMBERSHIP
The MET/S WG comprises experts provided by States, International Organizations and/or bodies and Organizations having experience in the provision of aeronautical meteorological services.

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PHILIPPINES (TBC)	(TBC)	(TBC)

MET/S WG/11
Appendix B to the Report

State or Org./Name	Title/Organization	Contact information
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2. DESCRIPTION	
Objective	Improve the quality of meteorological services, in particular, observations, forecasts, advisories and warnings – including facilitating implementation of the International Airways Volcano Watch (IAVW) and International Tropical Cyclone Watch (ITCW) – in support of the global air navigation plan framework and the aviation system block upgrade (ASBUs) methodology.
Benefits	Improve the safety and efficiency of flight and ground operations.
Functions of the group	Under guidance from ICAO APAC MET Secretariat: <ol style="list-style-type: none"> Promote the implementation of meteorological services, in particular, observations, forecasts, advisories and warnings, in support of the aviation system block upgrades (ASBUs), System Wide Information Management (SWIM), MET support to Air Traffic Management, etc.; Promote the requirement for, and benefits of, QMS for MET services and competency of aeronautical meteorological personnel; Maintain awareness of, and identify new, meteorological deficiencies and formulate strategies to resolve these deficiencies; Continually seek ways to improve the quality, compliance against SARPs and operational effectiveness of the meteorological services; Monitor the implementation and use of products and services under the framework of the World Area Forecast System (WAFS), the International Airway Volcano Watch (IAVW) and the International Tropical Cyclone Watch (ITCW); Monitor the relevant activities of the MET Panel and appropriate bodies; Monitor the relevant activities of VOLCEX/SG; and Provide advice and report to the MET Sub-group on the above issues for further co-ordination through the ICAO Secretariat with other appropriate bodies.
Work Programme	The work to be addressed by the ASIA/PAC MET/S WG includes: <ul style="list-style-type: none"> Review procedures for the issuance of meteorological observations, forecasts, advisories and warnings in the region and propose actions for their improvement to related performance objectives; In conjunction with MET/IE WG, investigate the deficiencies in the format and dissemination of meteorological observations, forecasts, advisories and warnings and propose remediation plans; Respond to the needs of the guidance and/or training related to the implementation of meteorological observations, forecasts, advisories and warnings and inform MET/IE WG of changes required to the SIGMET guide; In conjunction with MET/R WG and in support of the ASBUs, provide meteorological input for operational planning for specific phenomenon including volcanic ash, radioactive cloud, tropical cyclone, tsunami and space weather; Follow the developments in the States related to the improvement of meteorological observations, forecasts, advisories and warnings and provide regional input on these matters to relevant ICAO and WMO groups and to gather user requirements from ANSPs, IATA, IFATCA and IFALPA; Investigate options for rectification of air navigation deficiencies in the field of meteorological services in APAC

MET/S WG/11
Appendix B to the Report

2. DESCRIPTION	
	States; <ul style="list-style-type: none"> • Provide support for the ICAO APAC volcanic ash exercises; • Report on its work to the MET Sub-group of APANPIRG; and • Maintain a link to the Regional ATM Contingency Plan through the ATM SG.

3. COMMUNICATION STRATEGIES				
Description	Target Audience	Delivery Method	Frequency/ Date	Responsibility
Interim Work Plan Programme Progress Report	MET/S WG Members	Email and web-conference	Quarterly/as determined by Chair	Chair and Secretariat
MET Chairs Coordination Meeting	Chairs of MET SG and its contributory working groups	Web-conference E-mail	Quarterly	Chair and Secretariat
Major Work Programme Progress Report	MET/S WG Members	Working Paper (MET/S WG meeting)	Annually/published 14-days or more before the meeting	Chair and Secretariat
General correspondence	MET/S WG Members	Email	As required	MET/S WG Members
New, specific proposal for action (WP)	MET/S WG Meeting	Working Paper (MET/S WG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	MET/S WG Members or States
New, specific information (IP)	MET/S WG Meeting	Information Paper (MET/S WG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	MET/S WG Members or States
Working Group Meeting Report	MET/S WG Members and all APAC States	MET/S WG Meeting Report	Annually/published 21-days or less after the meeting	Chair and Secretariat
Working Group Progress Report	MET SG Meeting	Working Paper (MET SG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	Chair and Secretariat

WORK PROGRAM

Activity	Time Frame	Responsibility	Status
Activity 1: Monitor and provide assistance to the regional implementation of meteorological observations, forecasts, warnings and advisories	2020-2021	MET/S WG	In progress
Activity 2: Track and investigate deficiencies in the format and dissemination of meteorological observations, forecasts, warnings and advisories and propose corrective action and provide information to ICAO and WMO groups for possible assistance	2020-2021	MET/S WG and MET/IE WG	In progress
Activity 3: Review WC, WV & WS SIGMET test results and implement improvements.	2020-2021	MET/S WG	In progress
Activity 4: Provide guidance and/or training related to the implementation of meteorological observations, forecasts, warnings and advisories, including input to the Regional SIGMET Guide as they relate to the Annex 3 amendment cycle and SIGMET tests.	2020-2021	R/O, MET/S WG and MET/IE WG	In progress
Activity 5: Provide input into regional-operational plans as required for specific phenomenon, including VA, radioactive cloud, TC, Tsunami and Space Weather, with consideration to global ICAO groups and WMO developments.	2020-2021	MET/S WG and MET/R WG	In progress
Activity 6: Investigate, and implement as appropriate, options to assist States in resolving air navigation deficiencies in the field of meteorological service.	2020-2021	MET/S WG	In progress
Activity 7: Cost recovery – assist the PMC with development of an effective cost recovery strategy for the Pacific SIDS.	2020-2021	MET/S WG	To commence
Activity 8: SIGMET coordination	2020-2021	MET/S WG	In progress

MET/S WG/11
Appendix B to the Report

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 3: Review SIGMET test results and implement improvements				
Activity 3.1: Review SIGMET tests (conjoint session with MET/IE WG)	MET/S WG	-	Annually Mar	
Activity 3.2: Develop action plan to fix identified deficiencies	MET/S WG	3.1	Annually Mar	
Activity 3.3: Report back to MET SG on regional performance and action plan	Chair	3.2	Annually May	
Activity 3.4: Advise States of SIGMET deficiencies	Secretariat	3.3	Annually Jun	
<i>Milestone 3: Improved issuance and compliance of SIGMETs</i>	MET/S WG	3.4	Annually	
Activity 4: GUIDANCE AND EDUCATIONAL MATERIAL				
Activity 4.1: Review the regional SIGMET Guide to be in line with Amendment 79 to Annex 3	Australia (rapporteur), Hong Kong China, Japan, New Zealand and Singapore, in conjunction with Secretariat		2020	
Activity 4.1: Review the regional SIGMET Guide in coordination with the other ICAO Regions to be in line with Amendment 81 to Annex 3	MET/S WG Australia (rapporteur), Hong Kong China, Japan, and Singapore, in conjunction with Secretariat		2023	
Activity 4.2: develop proposals for SIGMET Guide updates to include guidance relevant to SIGMET information in IWXXM form	Australia (rapporteur), Hong Kong China, Japan, and Singapore, in conjunction with Secretariat		2021	
Activity 4.3: Develop and implement a plan to educate MET service providers and aviation users on the new ICAO SWX provisions – based on SWXC coordination group (METP)	Secretary		2021	
Activity 4.4: Develop proposal to amend the ROBEX Handbook to facilitate the exchange of routine TAF for locations where States issue routine TAF every three hours instead of the recommended practice of every six hours [Report of MET/S WG/8, paragraph 3.5 refers].	Chair, Secretariat and State/s concerned		As advised by State/s concerned	
Activity 4.5: Develop proposal to amend ANP Volume III to clarify MET-related implementation planning guidance.	Chair, Secretariat		2021	
<i>Milestone 4: Guidance and educational material available</i>	MET/S WG		TBD	
Activity 6 – Air Navigation Deficiencies				
Activity 6.1: Assist the ICAO Secretariat in the facilitation of discussion of viable options with relevant States, with the following: a) Define a process, based on the APANPIRG Procedural Handbook, for identifying, analysing, removing and proposing MET Deficiencies; b) Develop templates to be used for Deficiency Corrective Action Plans (CAP), Progress Reports and Final Reports; c) Develop thresholds for Deficiencies based on OPMET Monitoring performance indicators and SIGMET testing; d) Review the analysis of the annual, and any ad hoc, OPMET Monitoring, and SIGMET Tests against agreed thresholds;	Paula ACETHORP (Rapporteur) Secretariat CHEONG Wee Kiong Jarrad DENMAN Mike GRAF Keiko ITO Christy Y.Y. LEUNG Sujin PROMDUANG THAM Yap Fung Kentaro TSUBOI	4.1	Ongoing	

MET/S WG/11
Appendix B to the Report

e) Identify deficiencies from the OPMET Monitoring and SIGMET Test analysis, along with other tests and exercises, mission reports, analysis of differences against ICAO provisions, aircraft accident and incident reports and reports provided by users of air navigation services; f) Work with States concerned to develop a CAP, arrange for testing and monitoring and assist with the reporting to ICAO on the resolution of air navigation deficiencies; and g) Report recommended updates to MET Deficiencies, through MET/S WG, to MET SG.				
Activity 6.2: Monitor the implementation of the solution/s to remove deficiencies.	MET/S WG	4.2	Ongoing	
Activity 6.3: Monitor global development on the establishment of a hazardous weather information system.	MET/S WG		Ongoing	
Activity 6.4: Report progress to MET SG	Secretariat	4.3	Ongoing	
<i>Milestone 6: Reduction in air navigation deficiencies.</i>	MET/S WG		2021	
Activity 7 – Cost recovery strategy				
Activity 7.1: Cost recovery – assist the PMC with development of an effective cost recovery strategy for the Pacific SIDS.	Secretariat		2021	
Activity 8 – SIGMET coordination activities in APAC Region Coordinate on the next steps to promote integration and expansion of SIGMET coordination activities among States/Administrations.				
Activity 8.1 Consolidated progress report on SIGMET coordination activities in the APAC Region and recommendations based on lessons learnt: - new and existing SIGMET coordination activities - WP (MET/R WG) and SP (MET/ATM Seminar) MET/IE WG and MET/S WG - key lessons learnt/recommendations for regional guidance on SIGMET coordination - identify opportunities for integration and expansion of SIGMET coordination activities	Ad-hoc group: Japan, Singapore, Hong Kong China, (Joint Rapporteurs) China, Indonesia, Malaysia, India, Viet Nam, Thailand, Fiji and IFALPA, coordinated by the Chairperson and Secretary		MET/S WG	

Eleventh Meeting of the Meteorological Services Working Group (MET/S WG/11)

(Web-conference, 25 – 26 March 2021)

Appendix C to the Report

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LIST OF WORKING AND INFORMATION PAPERS

WORKING PAPERS			
Agenda Item	WP No.	Title	Presented by
1	WP/01	Provisional Agenda	Secretariat
2	WP/02	Follow-up Action from MET/S WG/10	Secretariat
2	WP/03	Follow-up Action from MET SG/24	Secretariat
2	WP/04	Follow-up Action from APANPIRG/31	Secretariat
3	WP/05	New Space Weather Advisory Headers	Australia
5	WP/06	Review of Air Navigation Deficiencies in the MET Field	Secretariat
6	WP/07	SIGMET Guidance for Volcanic Ash Forecast to Cross FIR Boundaries	Ad hoc group
7	WP/08	Review MET/S WG Work Program and Terms of Reference	Secretariat
<i>Conjoint session of MET/IE SG/19 and MET/S WG/11</i>			
2	WP/C01	Review of WS SIGMET Test 2020	Singapore
2	WP/C02	Results of SIGMET Tests 2020 – WC and WV	Japan

INFORMATION PAPERS			
Agenda Item	IP No.	Title	Presented by
1	IP/01	Meeting Bulletin	Secretariat
3	IP/02	MET Services During the Thunderstorm Season in South China	China
3	IP/03	Full Operation of GHSV SIGMET Coordination Project for Phenomena Occurring in the Area of FIRs' Boundaries	Cambodia, China, Hong Kong, China and Vietnam
3	IP/04	South and South-Eastern Asia SIGMET Coordination Project	Hong Kong, China, Indonesia and Sri Lanka
3	IP/05	Recent Progress of International Cooperation Scheme On Collaborative SIGMET Issuance (CSI)	Japan, Lao PDR, Myanmar, Philippines, Thailand and Vietnam
4	IP/06	Introduction to TAF Verification Method	Republic of Korea
6	IP/07	VAAC Darwin Management Report	Australia

MET/S WG/11
Appendix D to the Report

INFORMATION PAPERS			
Agenda Item	IP No.	Title	Presented by
6	IP/08	VAAC Tokyo Management Report	Japan
6	IP/09	VAAC Wellington Management Report	New Zealand
2	IP/10	Proposed ANP Update – State Volcano Observatories	New Zealand
3	IP/11	SIGMET Collaboration – New Zealand and Australia	New Zealand
<i>Conjoint session of MET/IE SG/19 and MET/S WG/11</i>			
1	IP/C01	VAAC Darwin and Wellington Backup Test	New Zealand
2	IP/C02	The SIGMET Test Results of MWOs in China	China

MET/S WG/11
Appendix E to the Report

(Adapted from APANPIRG/31, Appendix D to the Report on Agenda Item 4)

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
MWO and SIGMET service (Annex 3: Chapter 3, 3.4 and Chapter 7)	Democratic Peoples' Republic of Korea (DPRK) (AP-MET-16)	Requirements for MWO and SIGMET service not established for Pyongyang FIR	2008	Reported by ICAO Regional Office mission	Establish MWO to provide required service, including SIGMET information for Phnom Penh FIR. See notes below for more information.	GACA, Democratic Peoples' Republic of Korea	TBC	A
Meteorological observations and reports. (Annex 3: Chapter 4)	Kiribati (AP-MET-02)	METAR from Kiribati not available on regular basis.	1998	Reported by airlines	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. See notes below for more information.	State designated MET authority	TBC	A
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Kiribati (AP-MET-18)	WAFC forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. See notes below for more information.	State designated MET authority	TBC	U

MET/S WG/11
Appendix E to the Report

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Nauru (AP-MET-19)	WAFc forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. See notes below for more information.	State designated MET authority	TBC	U
Meteorological observations and reports. (Annex 3: Chapter 4)	Nauru (AP-MET-21)	METAR/SPECI service not provided	2008	Reported by TCB CAEMSA-SP Technical Expert	Equipment to be installed and arrangements to be made for regular observations and reports, including: training of personnel; maintenance of equipment; calibration and verification of meteorological observations; and proper/secure transmission of data. See notes below for more information.	State designated MET authority	TBC	U
Provision of SIGMET information (Annex 3, Chapter 7)	Nauru (AP-MET-24)	Lack of SIGMET issued for the Nauru FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U

MET/S WG/11
Appendix E to the Report

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Provision of SIGMET information (Annex 3: Chapter 7)	Nepal (AP-MET-14)	Requirements for issuance and dissemination of SIGMET information for Kathmandu FIR have not been fully implemented	2000		Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	A
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3, 3.6, 4.8)	Papua New Guinea (AP-MET-04)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs.	1995	Observed by States concerned. Reported at the WMO/ICAO Workshop on Volcanic Ash Hazards (Darwin, 1995)	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. See notes below for more information.	Rabaul Volcano Observatory, NWS and ASL of Papua New Guinea	TBC	A
Provision of SIGMET for volcanic ash (Annex 3: Chapter 7)	Papua New Guinea (AP-MET-08)	Requirements for issuance and proper dissemination of SIGMET for volcanic ash have not been fully implemented	Dec 2003	Reported by airlines, noted by Volcanic Ash Advisory Centres and confirmed by ICAO mission	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of volcanic ash. See notes below for more information.	NWS of Papua New Guinea	TBC	U

MET/S WG/11
Appendix E to the Report

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Provision of SIGMET information (Annex 3, Chapter 7)	Papua New Guinea (AP-MET-22)	Lack of SIGMET issued for the Port Moresby FIR.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U
Meteorological information for operators and flight crew members, including forecasts provided by the WAFCs (Annex 3: Chapter 9)	Solomon Islands (AP-MET-20)	WAFc forecasts not available for inclusion in flight briefings and documentation	2008	Reported by TCB CAEMSA-SP Technical Expert	Implement procedures and systems for the required meteorological information to be supplied to operators and flight crew members, including forecasts generated from the digital forecasts provided by the WAFCs. See notes below for more information.	State designated MET authority	TBC	U
Provision of SIGMET information (Annex 3, Chapter 7)	Solomon Islands (AP-MET-23)	Lack of SIGMET issued for the Honiara FIRs.	Sep 2011	IATA deemed this situation unsafe and unacceptable to airline operations.	Implement procedures for SIGMET information to be issued by the designated meteorological watch office/s concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. See notes below for more information.	State designated MET authority	TBC	U

MET/S WG/11
Appendix E to the Report

REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE MET FIELD IN THE ASIA/PAC REGION								
Identification		Deficiencies			Corrective action			
Requirements	States/ Facilities (Index No.)	Description	Date first reported	Remarks	Description	Executing body	Target date for completion	Priority for action *
Reporting of information on volcanic eruptions to civil aviation units. (Annex 3: 3.6, 4.8)	Tonga (AP-MET-17)	Information on volcanic activity not provided regularly to ATS units, MWOs and VAACs	2008	Reported by TCB CAEMSA-SP technical expert	Establish arrangements for State volcano observatories to send the required volcano observation information as quickly as practicable to the associated ACC/FIC, MWO and VAAC. See notes below for more information.	MOI and MEIDECC	TBC	U

NOTES:

Index No.	State	Update Date	NOTES ON <u>OPEN</u> DEFICIENCIES
AP-MET-02	Kiribati	September 2017	APANPIRG/28 noted that Kiribati should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-04	Papua New Guinea	September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-08	Papua New Guinea	September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-14	Nepal	September 2017	APANPIRG/28 noted that Nepal should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-16	Democratic People's	September 2017	APANPIRG/28 noted that DPRK should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and

MET/S WG/11
Appendix E to the Report

Index No.	State	Update Date	NOTES ON <u>OPEN</u> DEFICIENCIES
	Republic of Korea		<ul style="list-style-type: none"> • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-17	Tonga	10 May 2013	Ministry of Infrastructure (MOI), Civil Aviation Division, advised that: <ul style="list-style-type: none"> • MOU established between the national authority providing volcano monitoring (Ministry of Lands, Environment, Climate Change and Natural Resources – MLECCNR) and the national authority providing meteorological service for international air navigation (MOI) for the reporting of volcanic activity to the associated ACCs, MWOs and VAACs in accordance with the relevant ICAO SARPs.
		29 May 2017	MOI, Civil Aviation Division, advised that: <ul style="list-style-type: none"> • Relevant operating procedures implemented in the units concerned and case studies of real volcanic events presented as evidence of the State volcano observatory's issuance of the required volcano observation information.
		September 2017	APANPIRG/28 noted that: <ul style="list-style-type: none"> • Removal of the deficiency from the open list is subject to the concurrence of the ATS units, MWOs and VAACs concerned that the deficiency is resolved.
		June 2018	MET SG/22 noted that: <ul style="list-style-type: none"> • VAAC Wellington was coordinating with Tonga on the validation of corrective action taken to resolve the deficiency.
AP-MET-18	Kiribati	September 2017	APANPIRG/28 noted that Kiribati should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-19	Nauru	September 2017	APANPIRG/28 noted that Nauru should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-20	Solomon Islands	September 2017	APANPIRG/28 noted that Solomon Islands should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
		June 2019	MET SG/23 requested the Secretary in conjunction with support from other States to provide Solomon Islands with assistance in preparing the full report on rectification of the deficiency.

MET/S WG/11
Appendix E to the Report

Index No.	State	Update Date	NOTES ON <u>OPEN</u> DEFICIENCIES
AP-MET-21	Nauru	September 2017	APANPIRG/28 noted that Nauru should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-22	Papua New Guinea	September 2017	APANPIRG/28 noted that Papua New Guinea should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.
AP-MET-23	Solomon Islands	September 2017 June 2019	APANPIRG/28 noted that Solomon Islands should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency. <p>MET SG/23 requested the Secretary in conjunction with support from other States to provide Solomon Islands with assistance in preparing the full report on rectification of the deficiency.</p>
AP-MET-24	Nauru	September 2017	APANPIRG/28 noted that Nauru should: <ul style="list-style-type: none"> • Verify the status of implementation of CAP; and • Work together with ICAO to develop and properly record the remaining steps of the CAP to resolve the deficiency.

Index No.	State	Update Date	NOTES ON <u>CLOSED</u> DEFICIENCIES
AP-MET-01	Solomon Islands	December 2020	Removed from the open list; APANPIRG/31 Conclusion 31/19, refers.
AP-MET-03	Indonesia	September 2017	Removed from the open list, APANPIRG/28 Conclusion 28/29 refers.
AP-MET-05	–	–	This Index No. is not used.
AP-MET-06	Indonesia	September 2017	Removed from the open list, APANPIRG/28 Conclusion 28/29 refers.
AP-MET-07	Philippines	November 2019	Removed from the open list, Conclusion APANPIRG/30/19, refers.

MET/S WG/11
Appendix E to the Report

Index No.	State	Update Date	NOTES ON <u>CLOSED</u> DEFICIENCIES
AP-MET-09	Cambodia	September 2018	Removed from the open list, APANPIRG/29 Decision 29/23 refers
AP-MET-10	–	–	This Index No. is not used.
AP-MET-11	Cambodia	September 2018	Removed from the open list, APANPIRG/29 Decision 29/24 refers
AP-MET-12	Lao PDR	September 2018	Removed from the open list, APANPIRG/29 Decision 29/24 refers
AP-MET-13	–	–	This Index No. is not used.
AP-MET-15	–	–	This Index No. is not used.

Acronyms/Abbreviations/Definitions

ACC	— Area control centre
ASL	— Air Services Ltd.
ATS	— Air traffic services
CAEMSA-SP	— Cooperative Agreement for the Enhancement of Meteorological Services to Aviation - South Pacific
CAAP	— Civil Aviation Authority Philippines
CAP	— Corrective action plan
FIC	— Flight information centre
FIR	— Flight information region
GACA	— General Administration of Civil Aviation
IATA	— International Air Transport Association
MEIDECC	— Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication
MET	— Meteorological
METAR	— Aerodrome routine meteorological report (<i>in meteorological code</i>)
MWO	— Meteorological watch office

Acronyms/Abbreviations/Definitions

NWS	— National Weather Service
PAGASA	— Philippine Atmospheric, Geophysical and Astronomical Services Administration
PHIVOLCS	— Philippine Institute of Volcanology and Seismology
SIGMET	— Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations
SPECI	— Aerodrome special meteorological report (<i>in meteorological code</i>)
SSCA	— State Secretariat of Civil Aviation
TBC	— To be confirmed
TCB	— Technical Cooperation Bureau (of ICAO)
VAAC	— Volcanic ash advisory centre
WAFC	— World area forecast centre
WMO	— World Meteorological Organization