

*International Civil Aviation Organization*



ICAO

**WORKING PAPER**

**ICAO Asia and Pacific (APAC)**  
Twenty-Sixth Meeting of the Meteorology Sub-Group  
(MET SG/26)

Online, 1 to 5 August 2022

---

**Agenda Item 2: Review outcomes from previous meetings**

**REVIEW OUTCOMES FROM MET/S WG/12**

(Presented by Chair of MET/S WG)

**SUMMARY**

This paper presents the outcomes of the MET/S WG/12 meeting, including developments in SIGMET co-ordination among the States in the region and activities around both identifying new potential meteorological deficiencies and resolving existing ones.

**1. INTRODUCTION**

1.1 The ICAO Asia and Pacific (APAC) Regional Office hosted the Twelfth Meeting of the Meteorological Services Working Group (MET/S WG/12) as a virtual meeting from 30 March to 1 April 2022. The first day of the meeting, 30 March 2022, was a conjoint session with the Twentieth Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/20) to jointly discuss agenda items of relevance to both the MET/IE WG and MET/S WG.

1.2 Mr Chan Pak Wai, Assistant Director, Hong Kong Observatory, Hong Kong China, and Chair of the Meteorology Sub-Group (MET SG) presided as Chair of the Meeting from the opening session of MET/S WG/12 until the election of the new Chair in agenda item 1 – being Ms. Paula Acethorp, Chief Meteorological Officer, Civil Aviation Authority of New Zealand. Mr. Peter Dunda, Regional Officer Aeronautical Meteorology, ICAO Asia and Pacific Office, acted as Secretary. During the conjoint session Mr. Tim Hailes, National Manager Transport Customer Engagement, Bureau of Meteorology, Australia and Chair of the MET/IE, presided as Chair. 138 participants from 25 States, Administrations and International Organisations registered their attendance at the Meeting.

1.3 The meeting considered three WPs and two IPs in the conjoint session between MET/IE WG/20 and MET/S WG/12 on the first day, and nine Working Papers (WPs) and twelve Information Papers (IPs) in the final two days of the Meeting. This paper will focus on the outcomes of MET/S WG. A separate paper (Review Outcomes From MET/IE WG/20) details the outcomes of the conjoint session of the MET/IE and MET/S meeting.

**2. DISCUSSION**

2.1 A copy of the full MET/S WG/12 meeting report, and all related meeting documentation,

is available at:

[https://www.icao.int/APAC/Meetings/2022METS%20WG12/MET-S-WG-12\\_Report\(Final\).pdf](https://www.icao.int/APAC/Meetings/2022METS%20WG12/MET-S-WG-12_Report(Final).pdf)

2.2 The meeting adopted the following agenda:

MET/IE WG/20 and MET/S WG/12 (Conjoint session – 30 March 2022)

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

Agenda Item 2: SIGMET tests

MET/S WG/11 (31 March – 1 April 2022)

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

#### Review of follow-up from previous meetings

2.3 The reviewed the status of the actions from MET/S WG/11, including the unresolved action items from the MET/S WG previous meetings.

2.4 Six unresolved action items, arising from the conjoint meeting of MET/IE WG/18 and MET/S WG/10, were removed from the list of unresolved actions as these were already being monitored by the MET/IE WG. Fourteen (14) actions from previous meetings remain in the list of unresolved actions.

2.5 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.

2.6 The meeting reviewed the outcomes from the Twenty-Fifth Meeting of the Meteorology Sub-group (MET SG/25). The meeting noted the following MET/S work related Decisions and Conclusion:

- MET SG Decision 25/04 amending the TOR of the MET Deficiencies ad hoc group to reflect the work the ad hoc group can reasonably carry out.
- MET SG Decision 25/05 endorsing the *MET Deficiency Report Guide* and *MET Deficiency Identification Guide*.
- MET SG Decision 25/06 supporting continual improvement of SIGMET coordination through communication, reviewing lessons learnt in coordination activities, organising user surveys and updating guidance.
- MET SG Conclusion 25/11 approving updates to the SIGMET Guide in Appendix H to harmonise with the ICAO EUR region and the inclusion of IWXXM format SIGMET information.

2.7 Regarding the MET SG action item 25/13: *Coordinate possible SWX advisory exercise/s and training workshop/s with the appropriate body under METP*, the Secretariat informed the Meeting that ICAO would include in its 2022 program an APAC webinar on space weather information service (date to be decided in Q3/Q4 2022). In addition, the Meeting noted that MET/IE WG/20 agreed on action for the Secretariat to follow up with Australia concerning possible opportunities to combine the above ICAO event with Australia's plan to run a space weather exercise in 2022.

2.8 The reviewed the status of follow-up action on the Conclusions and Decision of the Thirty-Second Meeting of the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/32), which related to the work plan of MET SG and MET/S WG. Of relevance to the MET/S WG was Conclusion APANPIRG/32/14: *Update of Information in APANPIRG Air Navigation Deficiencies Reporting Form* which urged States/Administrations with deficiencies to establish action plans with defined target dates for resolution of deficiencies, update the status on the corrective action taken and report progress on this work.

#### Planning and implementation of meteorological services

2.9 The meeting reviewed the management reports of the Darwin, Tokyo and Wellington VAACs, noting that VAAC Darwin, in collaboration with VAAC Montreal, is now providing, as necessary, a backup service for VAAC Washington.

2.10 The Meeting noted the progress made by the multiple SIGMET coordination schemes and congratulated the participant MWOs on their continuing work to harmonise SIGMET issuance. The ad hoc group on SIGMET Coordination reported to the meeting on the development of an online repository of SIGMET coordination activities and the development of the document *Consolidation of SIGMET Coordination Practices in the APAC Region*, for which the meeting commended them. The meeting formed the following draft conclusion:

**Draft Conclusion MET/S WG/12/01:** *Updating the online repository on SIGMET Coordination and the consolidation document on SIGMET Coordination Practices in the APAC region*

That, States be invited to provide regular updates to the online repository on SIGMET Coordination and the consolidation document on SIGMET Coordination practices in the APAC region (using the contact details provided in the documents) to contribute to the ad-hoc group on SIGMET coordination in developing further guidance for enhancement of SIGMET coordination in the Region by gathering lessons learnt from existing SIGMET coordination activities to facilitate more efficient and better coordinated SIGMET service to meet aviation users' expectations and operational requirements in the Region.

#### Quality management of meteorological services

2.11 No papers were provided to the meeting under this item.

#### Deficiencies in the provision of meteorological services

2.12 The meeting reviewed the current list of air navigation deficiencies, containing thirteen open deficiencies in the MET field related to facilities and services in seven APAC States,

2.13 The meeting reviewed the information provided by the Solomon Islands on AP-MET-23, concerning the provision of SIGMET information for Honiara FIR and noted the excellent continued work being undertaken, in coordination with RODB Brisbane and ROC Wellington.

2.14 The meeting was informed by the Chair, who also serves as the vice Chair of the Pacific Island Aviation Weather Services (PIAWS) Panel, that the PIAWS Panel has continued to work with other Pacific States concerned and that some States, including Tonga, were now at the stage of gathering evidence to support resolution of their deficiency.

2.15 As part of the conjoint session of the MET/IE WG/20 and MET/S WG/12 meetings, the MET/S WG ad hoc group on deficiencies presented an [\*Application of MET Deficiency Identification Methodology to 2021 Annual SIGMET Tests\*](#), making recommendations for both States involved in participating in the tests and for enhancements to the SIGMET test procedures and reporting. See the MET/IE WG/20 Outcomes working paper for further discussion on the conjoint session.

2.16 Similarly, the ad hoc group on deficiencies considered the outcomes of the annual OPMET Monitoring exercise and how the MET Deficiency Identification Methodology could be applied to it – again, making recommendations for enhancements to the OPMET monitoring process to provide more targeted information to identify specific deficiencies in OPMET provision – see MET/IE WG/20 outcomes for further discussion.

#### Guidance and education related to the provision of meteorological services

2.17 The meeting was informed that Indonesia, responsible for the Jakarta and Ujung Pandang Flight Information Regions (FIRs), recently changed the location indicator in ICAO Doc. 7910/182 however the original location indicators remained in the Regional SIGMET Guide and the APAC Air Navigation Plan Volume II, Table MET II-1. The meeting requested the Secretariat to include the location indicator change in the SIGMET Guide and noted that the Secretariat would coordinate with Indonesia on an update to Table MET II-1.

2.18 New Zealand informed the meeting of a recent exercise held to assess the potential of a GNSS disruption to air navigation. An outcome of the exercise was the determination that awareness of space weather, including the use of space weather advisories, was poor – despite multiple education activities. As a result, the meeting requested delegation of an ad hoc group to investigate further possible education opportunities for the APAC region.

#### Future work programme and terms of reference

2.19 The meeting briefly reviewed the MET/S WG Terms of Reference and Work Program. 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 paper.

#### Any other business

2.20 There was no discussion under this agenda item.

#### Next meeting

2.21 Following the MET/IE WG/20 proposals, the Meeting proposed two tentative dates (TBC) for the next Meeting of the MET/S WG:

- 22 or 29 March 2023 – Conjoint session of MET/IE WG/21 and MET/S WG/13
- 23-24 or 30-31 March 2023 – MET/S WG/13

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) Note the information in this paper;
- b) Consider the Draft Conclusion in paragraph 2.10; and
- c) Propose further updates to the terms of reference and work programme of MET/S WG, as necessary.

-----

**APPENDIX A**

**MET/S WG – LIST OF ACTIONS**

(Note: Proposed updates are indicated with ~~strike through~~ and **highlighted text**)

**New action items recorded by MET/S WG/12**

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/S WG/12 01	Prepare and disseminate the ICAO letter advising States of SIGMET test deficiencies. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.25.]</i>	Before the next SIGMET test	Secretariat, in coordination with the ad hoc group (on AN deficiencies)	
MET/S WG/12 02	Publish the link to the online repository of SIGMET coordination activities on the ICAO APAC Office website. <i>[Ref: Report of MET/S WG/12, para. 3.22.]</i>	Before MET SG/26	Secretariat	
MET/S WG/12 03	Prepare and process proposals for amendment to the ANP and other Regional Guidance to reflect the change in Phnom Penh FIR's location indicator from VDPP to VDPF. <i>[Ref: Report of MET/S WG/12, para. 3.34.]</i>	Before MET SG/26	Secretariat, in coordination with participants from Cambodia	
MET/S WG/12 04	Prepare and process proposals for amendment to the ANP (Table MET II-1 – Meteorological Watch Offices) and the APAC Regional SIGMET Guide, Appendix D, to reflect the changes in Jakarta and Ujung Pandang FIR's location indicators from WIIZ to WIIF and WAAZ to WAAF, respectively. <i>[Ref: Report of MET/S WG/12, para. 6.4.]</i>	Before MET SG/26	Secretariat, in coordination with participants from Indonesia	
MET/S WG/12 05	Delegate an ad hoc group to investigate further opportunities for educating users on the ICAO SWX service (e.g., education material or activities). <i>[Ref: Report of MET/S WG/12, para. 6.8.]</i>	Before MET SG/26	Secretariat and Chair	

**Unresolved action items recorded by the conjoint session of MET/IE WG/19 and MET/S WG/11**

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. <i>[Ref: para. 1.1.-1.3., MET/IE WG/19 and MET/S WG/11 conjoint session]</i>	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). <i>[Ref: para. 2.16., MET/IE WG/19 and MET/S WG/11 conjoint session]</i>	Before next scheduled test	SIGMET test Focal Points, Secretariat	TO COMMENCE

**Unresolved action items recorded by MET/S WG/11**

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
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. <i>[Ref: para. 2.15., MET/S WG/11]</i>	Before MET SG/26 <del>MET SG/25</del>	Australia, New Zealand, Secretariat	IN PROGRESS; Ref: Decision MET SG/24-07
03	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	Before MET SG/26	Ad hoc group	IN PROGRESS

	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]	MET SG/25		
--	--	--------------	--	--

**Unresolved action items recorded by MET/IE WG/18 and MET/S WG/10**

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
01	Terms of Reference and Work Program – online coordination: Make use of regular online coordination meetings to facilitate progress on followup 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
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.]	Before MET SG/26 Sep 2020	Secretariat	IN PROGRESS; Ref: MET/IE WG, 5. Work Plan, Activity 1 and Activity 2
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/2624	MET/S WG and Secretariat	IN PROGRESS; Amendment of ANP still pending
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/2624	MET/IE WG	IN PROGRESS; Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3
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/2624	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 airreports between airlines, ATS units and MWOs (and aerodrome meteorological offices) [Ref: para. 7.2. and 8.21.]	Before MET SG/2624	Secretariat	IN PROGRESS; Ref: Action Item MET/R WG 9/1; Webinar on Special Air-Reports, 17 June 2021
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/2624	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/2624	MET/S WG	IN PROGRESS

**Unresolved action items recorded by MET/IE WG/18 and MET/S WG/10**

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
5	<p>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:</p> <ul style="list-style-type: none"><li>i. Development of MWO Phnom Penh in Cambodia (MET/IE WG/17 – WP/03, Appendix II, refers);</li><li>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</li><li>iii. Introduction of space weather advisory information (MET/IE WG/17 – WP/05, para. 3.1 (c), refers).</li></ul> <p><i>[Report of MET/S WG/9, para. 6.8 – 6.9, refers]</i></p>	<p>Before MET SG/26</p> <p>17 June 2019</p>	<p>Designated SIGMET Guide ad-hoc group and Secretariat</p>	<p>IN PROGRESS; Amendment of ANP Vol. II still pending</p>

**APPENDIX B**

**MET/S WG – TERMS OF REFERENCE AND WORK PLAN**

(Note: Proposed updates are indicated with ~~strike through~~ and highlighted text)

**TERMS OF REFERENCE**

<b>1. MEMBERSHIP</b> – The MET/S WG comprises experts provided by States, International Organizations and bodies and organizations having experience in the provision of aeronautical meteorological services.		
<b>State or Org. and Name</b>	<b>Title/Organization</b>	<b>Contact information</b>
<b>AUSTRALIA</b> Ms. Elizabeth HEBA	Aviation Quality Assurance Lead Australian Bureau of Meteorology GPO Box 1289, Melbourne VIC 3001, AUSTRALIA	Tel: +61 3 9669 4313 E-mail: <a href="mailto:elizabeth.heba@bom.gov.au">elizabeth.heba@bom.gov.au</a>
<b>AUSTRALIA</b> Mr. Domenic PANUCCIO	Senior Aviation Meteorologist Australian Bureau of Meteorology GPO Box 1289, Melbourne VIC 3001, AUSTRALIA	Tel: +61 3 9669 4379 E-mail: <a href="mailto:domenic.panuccio@bom.gov.au">domenic.panuccio@bom.gov.au</a>
<b>CHINA</b> Mr. WANG Fengyun	Engineer, MET Office, Air Traffic Management Bureau of East China Shanghai 200335, CHINA	Ph: +86 (21) 2232 7505 Fax: +86 (21) 6268 3667 Em: <a href="mailto:wangfy@atmb.cn">wangfy@atmb.cn</a>
<b>CHINA</b> Mr. Ji Pengfei	Meteorologist, Meteorology Division Air Traffic Management Bureau 12 East Sanhuan Road Middle Chaoyang District Beijing 100022 PEOPLE'S REPUBLIC OF CHINA	Tel: +86 (10) 8778 6033 Fax: +86 (10) 8778 6820 Email: <a href="mailto:jipengfei@atmb.net.cn">jipengfei@atmb.net.cn</a>
<b>HONG KONG, CHINA</b> <del>(Chair)</del> Mr. PAK-WAI Chan	Assistant Director, Hong Kong Observatory, 134A Nathan Road, Tsim Sha Tsui, HONG KONG CHINA	Ph: +852 2926 8435 Fax: +852 2375 2645 Em: <a href="mailto:pwchan@hko.gov.hk">pwchan@hko.gov.hk</a>
<b>HONG KONG, CHINA</b> Dr. Chi-Wai Jeffrey LEE	Scientific Officer, Hong Kong Observatory, 134A Nathan Road, Tsim Sha Tsui, HONG KONG CHINA	Ph: +852 2926 8642 Fax: +852 2375 2645 Em: <a href="mailto:jeffreylee@hko.gov.hk">jeffreylee@hko.gov.hk</a>
<b>INDIA</b> (TBC)		
<b>INDONESIA</b> (TBC)		
<b>JAPAN</b> Ms. Michiko Ikeda	Scientific Officer, Office of Aviation Weather Forecasting Forecast Division, Forecast Department, Japan Meteorological Agency (JMA), 1-3-4 Otemachi, Chiyoda-ku, Tokyo 1008122	Tel: +81 3 3212 8341 (ex. 3524) Fax: +81 3 3212 8377 Email: <a href="mailto:michi-ikeda@met.kishou.go.jp">michi-ikeda@met.kishou.go.jp</a>
<b>JAPAN</b> MATSUURA Yuu (Mr)	Assistant Scientific Officer, Office of Aeronautical Meteorology, Planning Division, Administration Department, Japan Meteorological Agency (JMA)	E-mail: <a href="mailto:yuu_matsuura@met.kishou.go.jp">yuu_matsuura@met.kishou.go.jp</a>
<b>JAPAN</b> Mr. Tatsuya Yabe	<del>Assistant Scientific Officer, Aeronautical Meteorology Division, Administration Department, Japan Meteorological Agency (JMA), 1-3-4 Otemachi, Chiyoda-ku Tokyo 1008122</del>	Tel: +81 3 3212 8968 Fax: +81 3 3212 8968 Email: <a href="mailto:tatsuyabe@met.kishou.go.jp">tatsuyabe@met.kishou.go.jp</a>
<b>MALAYSIA</b> Mr. Mr. Muhammad Helmi bin Abdullah	Senior Director, National Meteorological Aviation Centre, Kuala Lumpur International Airport, 1 <sup>st</sup> Floor, Airport Management Centre, 64000 Sepang Selangor Darul Ehsan, MALAYSIA	Ph: +603 8787 2360 Fax: +603 8787 1019 Email: <a href="mailto:helmi@met.gov.my">helmi@met.gov.my</a>
<b>MALDIVES</b> Mr. Ali SHAREEF	Deputy Director General, Maldives Meteorological Service, Hulhule, 22000 MALDIVES	Ph: +960 332 6200 Fax: +960 334 1797, 332 0021 Em: <a href="mailto:ali.shareef@met.gov.mv">ali.shareef@met.gov.mv</a>
<b>NEW ZEALAND</b> <del>(Chair)</del> Ms Paula ACETHORP	Chief Meteorological Officer Civil Aviation Authority of New Zealand P.O. Box 3555, Wellington 6140 NEW ZEALAND	Ph: +64 4 830 2611 Em: <a href="mailto:paula.acethorp@caa.govt.nz">paula.acethorp@caa.govt.nz</a>
<b>REPUBLIC OF KOREA</b> Ms. Ka-Young Byen	Assistant Director, Aviation Meteorological Office (AMO) of Korea Meteorological Administration (KMA) 272 Gonghang-ro, Jung-gu, Incheon, REPUBLIC OF KOREA 22382	Tel: +82 (32) 740 2855 Fax: +82 (32) 740 2817 E-mail: <a href="mailto:bky2012@korea.kr">bky2012@korea.kr</a>

<b>PHILIPPINES</b> (TBC)	(TBC)	(TBC)
<b>SINGAPORE</b> Mr. <b>Cheong</b> Wee Kiong	Deputy Director (Forecast Operations Department), Meteorological Service Singapore, P.O. Box 8, Singapore Changi Airport, Singapore 918141 SINGAPORE	Tel: +65 6545 7196 Fax: +65 6542 5026 Email: <a href="mailto:cheong_wee_kiong@nea.gov.sg">cheong_wee_kiong@nea.gov.sg</a>
<b>1. MEMBERSHIP</b> – continued...		
<b>State or Org. and Name</b>	<b>Title/Organization</b>	<b>Contact information</b>
<b>SINGAPORE</b> Mr. <b>Tham</b> Yap Fung	Executive Meteorologist, Meteorological Service Singapore, P.O. Box 8, Singapore Changi Airport, Singapore 918141 SINGAPORE	Tel: +65 6542 5059 Fax: +65 6542 5026 Email: <a href="mailto:tham_yap_fung@nea.gov.sg">tham_yap_fung@nea.gov.sg</a>
<b>THAILAND</b> Ms Rassmee Damrongkietwattana	Director, Aeronautical Weather Monitoring Sub-Division, Aeronautical Meteorology Division, Thai Meteorological Department, 6 <sup>th</sup> Floor, ATC Complex Suvarnabhumi International Airport Bang Pli, Samut Prakarn, 10540 THAILAND	Ph: +66 (2) 1340011 Ext 213 Fax: +66 (2) 1340009 +66 (2) 1340010 Em: <a href="mailto:rassmee@hotmail.com">rassmee@hotmail.com</a>
<b>UNITED STATES</b> Mr. Pat MURPHY	Federal Aviation Administration, Senior Meteorologist, Programme Lead International, FAA Headquarters, 800 Independence Ave, S.W., Washington, D.C. 20591 UNITED STATES	Tel: +1 (202) 267 2788 Email: <a href="mailto:michael.murphy@faa.gov">michael.murphy@faa.gov</a>
<b>VIETNAM</b> Ms. Lan Oanh Nguyen (Lana)	Deputy Director, Air Navigation Department, Civil Aviation Authority of Vietnam, 119 Nguyen Son street, Long Bien district, Hanoi, VIET NAM	Ph: Fax: Email: <a href="mailto:lanoanh@caa.gov.vn">lanoanh@caa.gov.vn</a>
<b>ICAO (Secretariat)</b> Mr. Peter DUNDA	Regional Officer Aeronautical Meteorology/Environment International Civil Aviation Organization 252/1 Vibhavadi Rangsit Road Chatuchak, THAILAND	Ph: +66 (2) 537-8189 Ext. 153 Fax: +66 (2) 537-8199 Email: <a href="mailto:pdunda@icao.int">pdunda@icao.int</a>

<b>2. DESCRIPTION</b>	
Objective	Improve the availability, timeliness and quality of meteorological services, in particular, observations, forecasts, advisories and warnings, and facilitate the implementation of new meteorological services— <del>including facilitating implementation of the International Airways Volcano Watch (IAVW) and International Tropical Cyclone Watch (ITCW)</del> —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: <ul style="list-style-type: none"> <li>a) 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.;</li> <li>b) Promote the requirement for, and benefits of, QMS for MET services and competency of aeronautical meteorological personnel;</li> <li>c) Maintain awareness of and identify new meteorological deficiencies and formulate strategies to resolve these deficiencies;</li> <li>d) 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);</li> <li>e) Monitor the relevant activities of the MET Panel and appropriate bodies;</li> <li>f) Monitor the relevant activities of VOLCEX/SG; and</li> <li>g) Provide advice and report to the MET Sub-group on the above issues for further coordination through the ICAO Secretariat with other appropriate bodies.</li> </ul>

Work Programme	<p>The work to be addressed by the ASIA/PAC MET/S WG includes:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• 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;</li> <li>• Respond to the needs of the guidance and training related to the implementation of meteorological observations, forecasts, advisories and warnings and inform MET/IE WG of changes required to the SIGMET guide;</li> <li>• In conjunction with MET/R WG and to support the ASBUs, provide meteorological input for operational planning for specific phenomena, including volcanic ash cloud, radioactive cloud, tropical cyclone, tsunami and space weather;</li> <li>• 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 gather user requirements from ANSPs, IATA, IFATCA and IFALPA;</li> <li>• Investigate options for rectification of air navigation deficiencies in the field of meteorological services in the APAC States;</li> <li>• Provide support for the ICAO APAC volcanic ash exercises;</li> <li>• Report on its work to the MET Sub-group of APANPIRG; and</li> <li>• Maintain a link to the Regional ATM Contingency Plan through the ATM SG.</li> </ul>
----------------	--

3. COMMUNICATION STRATEGIES				
Description	Target Audience	Delivery Method	Frequency/ Date	Responsibility
Interim Work 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	<del>2020-2021</del> 2022-2023	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	<del>2020-2021</del> 2022-2023	MET/S WG and MET/IE WG	In progress
Activity 3: Review WC, WV & WS SIGMET test results and implement improvements.	<del>2020-2021</del> 2022-2023	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.	<del>2020-2021</del> 2022-2023	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.	<del>2020-2021</del> 2022-2023	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.	<del>2020-2021</del> 2022-2023	MET/S WG	In progress
Activity 7: Cost recovery – assist the PMC with development of an effective cost recovery strategy for the Pacific SIDS.	<del>2020-2021</del> 2022-2023	MET/S WG	To commence
Activity 8: SIGMET coordination	<del>2020-2021</del> 2022-2023	MET/S WG	In progress

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
<b>Activity 3: Review SIGMET test results and implement improvements</b>				
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	
<b>Milestone 3: Improved issuance and compliance of SIGMETs</b>	MET/S WG	3.4	Annually	
<b>Activity 4: Guidance and Educational Material</b>				
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		<del>2023</del> 2024	
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		<del>2021</del> 2022	
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		<del>2021</del> 2022	
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		<del>2021</del> 2022	
<b>Milestone 4: Guidance and educational material available</b>	MET/S WG		TBD	
<b>Activity 6 – Air Navigation Deficiencies</b>				

<p>Activity 6.1: Assist the ICAO Secretariat 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;  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  Report recommended updates to MET Deficiencies, through MET/S WG, to MET SG.</p>	<p>Paula ACETHORP (Rapporteur) Secretariat  CHEONG Wee Kiong  Jarrad DENMAN  Mike GRAF  Keiko ITO  Christy Y.Y. LEUNG Sujin  PROMDUANG  THAM Yap Fung  Kentaro TSUBOI</p>	<p>4.1</p>	<p>Ongoing</p>	
<p>Activity 6.2: Monitor the implementation of the solution/s to remove deficiencies.</p>	<p>MET/S WG</p>	<p>4.2</p>	<p>Ongoing</p>	
<p>Activity 6.3: Monitor global development on the establishment of a hazardous weather information system.</p>	<p>MET/S WG</p>		<p>Ongoing</p>	
<p>Activity 6.4: Report progress to MET SG</p>	<p>Secretariat</p>	<p>4.3</p>	<p>Ongoing</p>	
<p><i>Milestone 6: Reduction in air navigation deficiencies.</i></p>	<p>MET/S WG</p>		<p>2022 2024</p>	
<p><b>Activity 7 – Cost recovery strategy</b></p>				
<p>Activity 7.1: Cost recovery – assist the PMC with development of an effective cost recovery strategy for the Pacific SIDS.</p>	<p>Secretariat</p>		<p>2022 2024</p>	
<p><b>Activity 8 – SIGMET coordination activities in APAC Region</b> Coordinate on the next steps to promote integration and expansion of SIGMET coordination activities among States/Administrations.</p>				
<p><del>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</del>  Activity 8.1 Update the online repository on SIGMET coordination activities in the APAC Region.   Activity 8.2 Enrich the consolidation document of SIGMET Coordination practices with further inputs from States and update the SIGMET coordination guidance in the Regional SIGMET Guide.   Activity 8.3 Review, organise and support surveys on user requirements of SIGMET coordination.</p>	<p>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</p>		<p>2022 – 2023</p>	