

International Civil Aviation Organization

ICAO

WORKING PAPER**ICAO Asia and Pacific (APAC)**Twenty-Seventh Meeting of the Meteorology Sub-Group
(MET SG/27)

Bangkok, Thailand, 04 to 08 September 2023

Agenda Item 2: Review outcomes from previous meetings**REVIEW OF OUTCOMES FROM MET/S WG/13**

(Presented by the Chair of MET/S WG)

SUMMARY

This paper presents the outcomes of the MET/S WG/13 meeting, including further developments in SIGMET co-ordination among the States in the region, activities on the resolution of meteorological deficiencies, the organisation of regular MET Webinars, and discussion on the future format of the VOLCEX SG.

1. INTRODUCTION

1.1 The ICAO Asia and Pacific (APAC) Office hosted the Thirteenth Meeting of the Meteorological Services Working Group (MET/S WG/13) in Bangkok, Thailand, from 29 to 31 March 2023. The first day of the meeting, 29 March 2023, included a conjoint session with the Twenty-first Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/21) to jointly discuss agenda items relevant to both the MET/IE WG and MET/S WG.

1.2 Ms. Paula Acethorp, Chief Meteorological Officer, Civil Aviation Authority of New Zealand, presided as Chair of the Meeting, and as co-Chair for the conjoint session with MET/IE WG/21 alongside Mr Tim Hailes (Chair MET/IE) and Mr Marco Mang-Hin Kok (vice Chair MET/IE).

1.3 The meeting considered three Working Papers (WPs) in the conjoint session between MET/IE WG/21 and MET/S WG/13 on the first day, and 13 WPs, 10 Information Papers (IPs), plus one Flimsy in the MET/S WG/13 meeting sessions. This paper will focus on the outcomes of MET/S WG/13. A separate paper (Review Outcomes From MET/IE WG/21) details the outcomes of the conjoint session of the MET/IE and MET/S meeting.

1.4 A copy of the full MET/S WG/13 meeting report (including agenda), and all related meeting documentation is available at <https://www.icao.int/APAC/Meetings/Pages/2023-MET-S-WG-13.aspx>.

2. DISCUSSION

Review of follow-up from previous meetings

2.1 The meeting reviewed the status of the actions from MET/S WG/12, including the unresolved action items from the MET/S WG previous meetings, and was pleased to note one action item completed and 8 closed, due to the action being integrated into the work plan or superseded by other activities.

2.2 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.

2.3 The meeting reviewed the outcomes from the Twenty-Sixth Meeting of the Meteorology Sub-group (MET SG/26). The meeting noted the following MET/S work related Conclusion and Decision:

- Conclusion MET SG/26/05 – *Encourage States to provide input on the online repository on SIGMET Coordination and the consolidation document on SIGMET Coordination Practices in the APAC region*
- Decision MET SG/26/01 – *Updates to Regional SIGMET Guide*

2.4 Related to these, the meeting noted that the Online repository for APAC SIGMET Coordination activities and APAC Regional SIGMET Guide, Tenth Edition — October 2022, published on the ICAO APAC website at: <https://www.icao.int/APAC/Pages/eDocs.aspx>.

Planning and implementation of meteorological services

2.5 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.

2.6 The meeting noted the work of the ad hoc group on SIGMET Coordination and were pleased to note that SIGMET coordination was now being undertaken for 20 Flight Information Regions (FIRs) in the APAC region. Further, the meeting noted the further development of the document *Cases of SIGMET Coordination practices in the APAC Region* and agreed the following draft conclusion:

Draft Conclusion MET SG 27/xx: PUBLICATION AND FURTHER DEVELOPMENT OF THE DOCUMENT ON CASES OF SIGMET COORDINATION PRACTICES IN THE APAC REGION

That, the MET SG approves publishing the document *Cases of SIGMET Coordination Practices in the APAC Region* on the ICAO APAC Office website as a living document and States are invited to provide further input to facilitate more efficient and better coordinated SIGMET service to meet aviation user expectations and operational requirements in the Region.

2.7 Further information on the activities of the ad hoc group on SIGMET Coordination, including the document *Cases of SIGMET Coordination Practices in the APAC Region*, can be reviewed under WP/11.

2.8 The meeting reviewed the combined management report of the Darwin, Tokyo and Wellington VAACs, and noted that in the future, the combined management report would include information on the activities of all nine global VAACs.

Quality management of meteorological services

2.9 Following the formation of the MET SG/26 action 26/02 on the request of papers concerning the implementation and monitoring the implementation of quality management systems (QMS) in the Region, three papers on QMS for aeronautical meteorology, and one paper on competency qualifications and training for aeronautical meteorology personnel were presented.

2.10 The Meeting noted progress by Solomon Islands and other Pacific Island States on implementing a QMS for MET information, the evolution of the Hong Kong Observatory's ISO 9001 certificated QMS over two decades, and Indonesia's experience in QMS as well as the benefits realised and future plans. An overview of Vietnam's competency assessment program for aeronautical forecasters and observers was also provided, contributing to improving the quality of meteorological services for aviation.

Deficiencies in the provision of meteorological services

2.11 The meeting reviewed the current list of air navigation deficiencies, containing 12 open deficiencies in the MET field related to facilities and services in seven APAC States – one less deficiency than the previous year. The meeting congratulated the Solomon Islands on the resolution of deficiency AP-MET-23, concerning the provision of SIGMET information for Honiara FIR.

2.12 Regarding the open MET deficiencies, the Meeting was informed that the designated ad hoc group on air navigation deficiencies had noted significant progress towards rectifying the deficiencies AP-MET-02, -17 and -04 by Kiribati, Tonga and Papua New Guinea.

2.13 The meeting was pleased to note significant progress by Nepal on AP-MET-14 concerning issuing and disseminating SIGMET information for Kathmandu FIR, noting evidence of SIGMET issuance, coordination with neighbouring FIRs, and participating in the 2022 APAC Regional SIGMET tests. The meeting noted the further actions being undertaken by Nepal in confirming receipt of SIGMETs from aviation stakeholders and the implementation of an AMHS connection for dissemination of the IWXXM form SIGMET.

Guidance and education related to the provision of meteorological services

2.14 Indonesia informed the meeting of the outcomes of the volcanic ash exercise, APAC VOLCEX 22/01, conducted in coordination with Sri Lanka, and noted the issue of inconsistent guidance on identifying the MET information exchanged for volcanic ash exercises – in particular, the use of the status indicator 'EXER' not mentioned in the *Handbook on the International Airways Volcano Watch* (ICAO Doc 9766). The meeting was however pleased to note this has been rectified in a new update to ICAO Doc 9766, awaiting publication.

2.15 The ad hoc group designated to reviewing and updating the APAC Regional SIGMET Guide advised the meeting of planned changes for the next version, including updates of VAAC backup procedures, guidance on SIGMET for volcanic ash crossing FIR borders, and further alignment with the European region SIGMET Guide. An update in membership of the ad hoc group was also undertaken.

2.16 The meeting heard of the activities of Australia, in coordination with New Zealand, on an aviation focused space weather exercise conducted in October 2022 focusing on impacts on HF

communication. The exercise was conducted over two sessions – the first focusing space weather education, the second session collaboratively working through a specific space weather event.

2.17 Plans for a future two-session exercise focusing on the impacts of space weather on GNSS were endorsed by the meeting and a request was made to extend participation to APAC States – this was agreed for the education session, but Australia noted this would require further consideration for the second exercise session.

2.18 The Meeting also discussed the possibility of creating a space weather exercise steering-group to develop educational materials and conduct exercises. This could either be a separate dedicated group or a modification of the name and terms of reference of the Volcanic Ash Exercises Steering Group (VOLCEX SG). Refer to WP/19 for further discussion from the MET/S WG/13 on this item.

Future work programme and terms of reference

2.19 The meeting discussed a request by the Chair to consider ducting the WG activities by virtual rather than in-person meetings, to further progress the activities of the working group and to facilitate participation – where possible – by members who are unable to travel to in-person meetings. The Meeting further noted the benefits from in-person meetings.

2.20 However, the Meeting also discussed that seminars in virtual mode can have broader attendance of participants from more States/Administrations and from different aviation communities, so formulated the following conclusion for consideration by the MET SG:

| Draft Conclusion MET SG 27/xx – METEOROLOGICAL SEMINARS | |
|---|--|
| What: That, MET SG coordinate the provision of meteorological seminars, covering topics related to ICAO changes, new procedures and policies, future services and information exchange to support States implementing ICAO Annex 3 requirements and education. | Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input checked="" type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical |
| Why: Currently only a subset of APAC States attend ICAO meteorological related meetings. Attendance (virtually) at ICAO meetings during COVID demonstrated that there is significant demand from States for further information. Attendance at ICAO meetings comes at an environmental and financial cost. The provision of Meteorological Seminars will enable a wider group of stakeholders, from more States, to receive advice and stay informed of the latest ICAO developments, offering both financial and environmental benefits. | Follow-up: <input type="checkbox"/> Required from States |
| When: September 2023 | Status: Adopted by Sub group |
| Who: <input type="checkbox"/> Sub groups <input checked="" type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: ROs | |

2.21 The meeting further requested the Chair MET/S WG, in coordination with the Chair MET/IE WG, to develop a proposal for the MET/S WG work plan, balancing the advantages of virtual and in-person activities and to consider the role of VOLCEX SG going forward to be presented at a virtual meeting of the MET/S WG members before MET SG/27. This action has been placed on hold until a review of the MET SG work plan is undertaken, to ensure that the MET/S WG work plan reflects the requirements of the MET SG.

2.22 Minor updates to the Terms of Reference and Work Plan were agreed, as outlined in in **Appendix B** to this paper. Note – contact details for the working group members for Japan and USA have been updated for the purposes of presenting this paper to the MET SG.

Next meeting

2.23 Following the MET/IE WG/21 proposals, the Meeting proposed the following (tentative) dates for the next Meeting of the MET/S WG:

- 20-22 March 2024 (potentially aligned with MET/IE WG)

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information in this paper;
- b) Consider the Draft Conclusions in paragraphs 2.6 and 2.19; and
- c) Propose further updates to the terms of reference and work programme of MET/S WG, as necessary – noting that a full review will occur after MET SG/27.

APPENDIX A

MET/S WG – LIST OF ACTIONS

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

New action items recorded by MET/S WG/13

| ACTION ITEM | DESCRIPTION | BY DATE | RESPONSIBILITY | STATUS/REMARKS |
|----------------|---|-----------|---|----------------|
| MET/S WG/13 01 | Ensure that the APAC Regional SIGMET Guide be updated to include MWO Ulaan Baatar in the MWO list and to include the additional headers used by MWO Tahiti for their SIGMETs. [Ref: MET/IE WG/21 and MET/S WG/13 Conjoint Session Report, para 2.13] | MET SG/27 | Secretariat and Chair in coordination with the ad hoc group on the APAC Regional SIGMET Guide | TO COMMENCE |
| MET/S WG/13 02 | Present explanatory information to help inform the APAC States on the proposed new provisions for quantitative volcanic ash concentration information. [Ref: MET/IE WG/21 and MET/S WG/13 Conjoint Session Report, para 3.10] | MET SG/27 | VAACs Darwin, Tokyo and Wellington | TO COMMENCE |
| MET/S WG/13 03 | Share information on the update of the IAVW Handbook (due to be published in approx. 3 months) which would realign the guidance on exercise messages with Annex 3. [Ref: MET/S WG/13 Report, para 6.5] | MET SG/27 | Secretariat | TO COMMENCE |
| MET/S WG/13 04 | Develop a proposal for the MET/S WG work plan, balancing the advantages of virtual and in-person activities and to consider the role of VOLCEX SG going forward to be presented at a virtual meeting of the MET/S WG members before MET SG/27 [Ref: MET/S WG/13 Report, para 7.4] | MET SG/27 | Chair MET/S WG, in coordination with the Chair MET/IE WG | TO COMMENCE |

Unresolved 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. [Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.25.] | Before the next SIGMET test | Secretariat, in coordination with the ad hoc group (on AN deficiencies) | IN PROGRESS |
| MET/S WG/12 02 | Publish the link to the online repository of SIGMET coordination activities on the ICAO APAC Office website. [Ref: Report of MET/S WG/12, para. 3.22.] | Before MET SG/26 | Secretariat | COMPLETED https://www.icao.int/APAC/Pages/eDocs.aspx |
| 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. [Ref: Report of MET/S WG/12, para. 3.34.] | Before MET SG/26 27 | Secretariat, in coordination with participants from Cambodia | IN PROGRESS |
| 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. [Ref: Report of MET/S WG/12, para. 6.4.] | Before MET SG/26 27 | Secretariat, in coordination with participants from Indonesia | IN PROGRESS The ANP amendment is still pending |
| 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). [Ref: Report of MET/S WG/12, para. 6.8.] | Before MET SG/26 27 | Secretariat and Chair | IN PROGRESS |

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. [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 | Before next scheduled test | SIGMET test Focal Points, Secretariat | TO COMMENCE |

| | | | | |
|--|---|--|--|--|
| | 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] | | | |
|--|---|--|--|--|

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. [Ref: para. 2.15., MET/S WG/11] | Before MET SG/2627 | 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 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 MET SG/2627 | Ad hoc group | IN PROGRESS |

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 CLOSED Superseded by other activities |
| 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 | Secretariat | IN PROGRESS; Ref: MET/IE WG, 5. Work Plan, Activity 1 and Activity 2 CLOSED Superseded by other activities |
| 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/2627 | 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/26 | MET/IE WG | IN PROGRESS; Ref: MET/IE WG, 5. Work Plan, Activity 3 AND Ref: MET/S WG, 5. Work Plan, Activity 3 CLOSED Superseded by other activities |
| 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/2627 | 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 | Before MET SG/26 | Secretariat | IN PROGRESS; Ref: Action Item MET/R WG 9/1; Webinar on |

| | | | | |
|----|--|------------------|-------------|---|
| | 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.] | | | Special Air Reports, 17 June 2021 CLOSED Superseded by other activities |
| 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/26 | Secretariat | IN PROGRESS; Ref: MET/S WG, 5, Work Plan, Activity 6 CLOSED Superseded by other activities |
| 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/26 | MET/S WG | IN PROGRESS CLOSED Superseded by other activities |

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

| ACTION ITEM | DESCRIPTION | BY DATE | RESPONSIBILITY | STATUS/REMARKS |
|-------------|---|------------------|--|---|
| 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: <ul style="list-style-type: none"> 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> | Before MET SG/26 | Designated SIGMET Guide ad-hoc group and Secretariat | IN PROGRESS; Amendment of ANP Vol. II still pending CLOSED Superseded by other activities |

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

| 1. MEMBERSHIP – The MET/S WG comprises experts provided by States, International Organizations and bodies and organizations having experience in the provision of aeronautical meteorological services. | | |
|---|---|--|
| State or Org. and Name | Title/Organization | Contact information |
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| 1. MEMBERSHIP – The MET/S WG comprises experts provided by States, International Organizations and bodies and organizations having experience in the provision of aeronautical meteorological services. | | |
|--|--|--|
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| 2. DESCRIPTION | |
|------------------------|---|
| 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 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"> 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.; b) Promote the requirement for, and benefits of, QMS for MET services and competency of aeronautical meteorological personnel; c) Maintain awareness of and identify new meteorological deficiencies and formulate strategies to resolve these deficiencies; 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); e) Monitor the relevant activities of the MET Panel and appropriate bodies; f) Monitor the relevant activities of VOLCEX/SG; and 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. |

| 2. DESCRIPTION | |
|----------------|--|
| Work Programme | <p>The work to be addressed by the ASIA/PAC MET/S WG includes:</p> <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 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 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; • 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; • Investigate options for rectification of air navigation deficiencies in the field of meteorological services in the APAC States; • 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 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 | Ongoing | 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 | Ongoing | MET/S WG and MET/IE WG | In progress |
| Activity 3: Review WC, WV & WS SIGMET test results and implement improvements. | Ongoing | 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. | Ongoing | 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 | Ongoing | MET/S WG and MET/R WG | In progress |

| Activity | Time Frame | Responsibility | Status |
|--|------------|----------------|-------------|
| cloud, TC, Tsunami and Space Weather, with consideration to global ICAO groups and WMO developments. | | | |
| Activity 6: Investigate, and implement as appropriate, options to assist States in resolving air navigation deficiencies in the field of meteorological service. | Ongoing | MET/S WG | In progress |
| Activity 7: Cost recovery – assist the PMC with development of an effective cost recovery strategy for the Pacific SIDS. | 2023-2024 | MET/S WG | To commence |
| Activity 8: SIGMET coordination | 2023-2026 | MET/S WG | In progress |

| 5. WORK PLAN | | | | |
|--|---|--------------|---------------------------------|--------|
| Activity / Milestone | Accountability | Predecessors | Date | Status |
| Activity 1: Monitor and provide assistance to the regional implementation of meteorological observations, forecasts, warnings and advisories (details to be provided) | | | | |
| 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 (details to be provided) | | | | |
| 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 | |
| Milestone 3: Improved issuance and compliance of SIGMETs | MET/S WG | 3.4 | Annually | |
| Activity 4: GUIDANCE AND EDUCATIONAL MATERIAL | | | | |
| 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 | Goh Wee Poh (Singapore) (Rapporteur), David House (Australia), Christy Leung (Hong Kong China), Chan Ho Sun (Hong Kong China), Michiko Ikeda (Japan), Chiam Keng Oon (Singapore), Dang Duc Anh (Vietnam), Le Quang Hung (Vietnam) | | 2024 | |
| Activity 4.2: develop proposals for SIGMET Guide updates to include guidance relevant to SIGMET information in IWXXM form | Goh Wee Poh (Singapore) (Rapporteur), David House (Australia), Christy Leung (Hong Kong China), Chan Ho Sun (Hong Kong China), Michiko Ikeda (Japan), Chiam Keng Oon (Singapore), Dang Duc Anh (Vietnam), Le Quang Hung (Vietnam) | | 2023 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) | Secretariat | | 2023 2022 | |
| Activity 4.4: Develop proposal to amend the ROBEX Handbook to facilitate the exchange of | Chair, Secretariat and State/s concerned | | As advised by State/s concerned | |

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| 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]. | | | | |
| Activity 4.5: Develop proposal to amend ANP Volume III to clarify MET-related implementation planning guidance. | Chair, Secretariat | | 2023 2022 | |
| <i>Milestone 4: Guidance and educational material available</i> | MET/S WG | | TBD | |
| 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 (details to be provided) | | | | |
| Activity 6 – Air Navigation Deficiencies | | | | |
| 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 g) Report recommended updates to MET Deficiencies, through MET/S WG, to MET SG. | 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 | |
| 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 | | 2023 2022 | |
| 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 | | 2023 2022 | |
| 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 Update the online repository on SIGMET coordination activities in the APAC Region. | Christy Leung (Hong Kong China), Michiko Ikeda (Japan), Goh Wee Poh (Singapore) (Joint Rapporteurs), Lin Caiyan (China), Resa Pratikasari (Indonesia), Nurul Hidayati (Indonesia), Malaysia, India, Rassmee | | 2023-2026 2022 | |
| Activity 8.2 Update the living document on Cases 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. | | | | |

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| | Damrongkietwattana (Thailand), Vietnam, Fiji, and IFALPA, Coordinated by the Chairperson and Secretariat | | | |
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