

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/IE WG/20

(Presented by the Chair of MET/IE WG)

SUMMARY

This paper presents a summary of the 20th meeting of the Meteorological Information Exchange Working Group (MET/IE WG), including a conjoint session with Meteorological Services Working Group, held 28 -30 March 2022. It includes an updated action list, revised terms of reference and work plan of the MET/IE WG.

1. INTRODUCTION

1.1 The ICAO Asia and Pacific (APAC) Regional Office hosted the Twentieth Meeting of the Meteorological Information Exchange Working Group (MET/IE WG/20) and Twelfth Meeting of the Meteorological Services Working Group (MET/S WG/12), conjointly, by web-conference from 28 to 30 March 2022.

1.2 The meeting was attended by 120 participants from 22 States and Administrations and 2 international organisations. Mr. Tim Hailes, National Manager, Transport Customer Engagement, Bureau of Meteorology, Australia presided over the meeting in the role as chairperson and was assisted by Mr Peter Dunda, Regional Officer Aeronautical Meteorology, ICAO Asia and Pacific Office, as secretariat. During the conjoint session Mr. Chan Pak Wai, Assistant Director, Hong Kong Observatory, Hong Kong China, chairperson of the MET/S WG, and Mr. Hailes were co-chairs.

1.3 The meeting considered 9 Working Papers (WPs) and 11 Information Papers on the first two days of the meeting. The conjoint session between MET/IE WG/20 and MET/S WG/12 considered an additional 3 WPs and 2 IPs. This paper will focus on the outcomes of MET/IE WG and the conjoint session of the MET/IE and MET/S. A separate paper details the outcomes of the MET/S meeting.

1.4 The Meeting did not record any Draft Conclusions, Draft Decisions or Decisions but did record 18 new actions, including 4 within the conjoint session.

2. DISCUSSION

A copy of the full meeting report, and all related meeting documentation, is available at the following website:

<https://www.icao.int/APAC/Meetings/Pages/2022-MET-IE-WG20.aspx>

2.1 The meeting adopted the following agenda:

MET/IE WG/20

Agenda Item 1: Organizational matters

Agenda Item 2: Review of follow-up from previous meetings

Agenda Item 3: Meteorological information exchange schemes

Agenda Item 4: Meteorological information exchange in digital form

Agenda Item 5: Quality control, monitoring and management of meteorological information exchange

Agenda Item 6: Guidance material related to meteorological information exchange

Agenda Item 7: Future work programme and terms of reference

Agenda Item 8: Any other business

Agenda Item 9: Next meeting

Conjoint MET/IE WG/20 and MET/S WG/12

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

Agenda Item 2: SIGMET tests

Review of follow-up from previous meetings

2.2 The meeting reviewed the status of actions from the previous MET/IE WG/20 and MET/S WG/12. Several of the actions were considered completed by the recent publishing of APAC Regional OPMET Bulletin Exchange (ROBEX) Handbook, 14th Edition. The Secretariat advised the Meeting that ICAO would send a State Letter advertising the publication of the ROBEX Handbook, as soon as possible after the end of the Meeting.

2.3 The Meeting noted that there is a growing list of actions and resolution against the intended schedule isn't often met. It was agreed that the quarterly MET/IE WG Interim Progress Report meetings (the Secretariat and Chair) would assign due dates to unresolved action items to maintain achievable

and relevant timeframes in the List of Actions and identify an individual lead for each action item (where this is not already included in the List).

2.4 The consolidated updates to the status of follow-up on action items as agreed by the meeting is presented in the Task List in **Appendix A** to this paper.

2.5 The meeting reviewed the outcomes from the Twenty-Fifth Meeting of the Meteorology Sub-group (MET SG/25), including the Conclusions and Decisions adopted by MET SG/25. Regarding MET SG action item 25/13: *Coordinate possible space weather (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, Australia advised the Meeting that it, in collaboration with New Zealand, was developing a plan to run a Space Weather Exercise in 2022. There may be opportunities to combine the ICAO and Australian activities.

2.6 The meeting also reviewed outcomes of relevance to MET/IE WG from Thirty-Second Meeting of the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/32), including:

- Conclusion APANPIRG/32/11: *Updating Online Register of IWXXM Exchange Status* (based on Draft Conclusion MET SG/25-03), the Meeting noted that this would be discussed under agenda item 4.
- Decision APANPIRG/32/12: *Meteorological expert contribution to SWIM TF* (based on Draft Decision MET SG/25-08) invited the Meeting members to encourage their States to nominate relevant meteorological (MET) experts for SWIM TF/6, scheduled online from 17 – 20 May 2022.

The Meeting also agreed to consider the possibility of including, at future MET/IE WG meetings, an agenda item dedicated to APAC SWIM MET aspects.

- Draft-Conclusion MET SG/25-07: *SWIM architecture to enable the cost-effective and efficient provision and consumption of MET information services*. The WG-MIE Chair noted that this was not included in the Secretariat paper and he was disappointed with the APANPIRG/32 handling of Draft-Conclusion MET SG/25-07.

2.7 To address the concerns reported by MET SG/25 (to APANPIRG/32) about the negative impact of delayed Secretariat actions on the MET SG work plan, the Secretariat informed APANPIRG/32 it is considering the possibility of advertising for the secondment of an Aviation Meteorology subject matter expert to supplement the Secretariat support for the APANPIRG MET-related work.

2.8 The Chair advised the Meeting that he was disappointed that the Secretariat had again not published the Secretariat's working papers fourteen days or more before the Meeting, as stipulated in the updated MET/IE WG terms of reference. The Meeting recalled that MET/IE WG had requested the updates (in the terms of reference) to support the participants' effective consideration of information and proposals submitted in meeting papers.

Meteorological information exchange schemes

2.9 In 2019, Vietnam commenced international flight operations at QUANG NINH/Van Don International Airport (with ICAO location indicator VVVD), including providing MET services. To facilitate the global availability of the MET information, details of these new services need to be incorporated into the ROBEX scheme.

2.10 The Meeting requested the Secretariat coordinate with Vietnam on the consequential amendments to reflect the requirements for MET service at QUANG NINH/Van Don International Airport in the ANP (Volume II, Table MET II-2 – Aerodrome Meteorological Offices) and the ROBEX Handbook.

Meteorological information exchange in digital form

2.11 Australia advised that in compliance with ICAO Annex 3, Australia disseminates aerodrome forecasts (TAFs) in traditional alphanumeric code (TAC) and IWXXM forms. To meet the local users' specific needs for flight planning and fuel-related flight regulations, the TAFs disseminated in TAC form contain additional parameters (of which Australia has notified ICAO).

2.12 Given the significant benefits of the additional TAF parameters to users, Australia has developed the capability to disseminate these additional parameters in its IWXXM-formatted TAFs using a TAF IWXXM extension.

2.13 Australia sought any concerns with the above proposal. The meeting recommended that Australia consider sending test messages (with TAF IWXXM extensions) to other States to help identify any concerns or risks. Members from Hong Kong, China and New Zealand agreed to participate in the test and any additional States willing to participate should contact the Member from Australia.

2.14 The Chair informed the Meeting that the ICAO Meteorology Panel (METP), Working Group on Meteorological Information Exchange (WG MIE), is developing a process for managing IWXXM extensions, including an approach for reporting changes to users and possibly a global repository for IWXXM extension information of the APAC region, including participants of the ROBEX scheme. The Chair also informed the Meeting that the METP was developing a process to evaluate IWXXM extensions and consider whether an extension's content should be integrated into the core global IWXXM schema as optional content.

2.15 Japan informed the Meeting of its current status on IWXXM implementation and Air Traffic Services (ATS) Message Handling System/File Transfer Body Part (AMHS/FTBP) connection with other States. The Meeting noted Japan started dissemination and receipt of IWXXM information in March 2022 and this exchange had revealed that its IWXXM messages were exchanged with multiple body parts. Japan was investigating this problem.

2.16 Thailand informed the Meeting that its National OPMET Centre (NOC) translates Thailand's OPMET from TAC to IWXXM (Version 3.0). The Bangkok Regional OPMET Centre (ROC) also translates Vietnam's METAR/SPECI and TAF from TAC to IWXXM (Version 3.0).

2.17 Thailand plans to establish its AMSs, AMOs and MWO as "IWXXM Producers" during 2023-2027. It also plans to establish bilateral agreements to provide translation services for other States in ROC Bangkok's area of responsibility under the ROBEX scheme.

2.18 Thailand also advised the Meeting of plans to test the exchange of IWXXM with Inter-Regional OPMET Gateways (IROGs) from other regions, in particular IROG Jeddah (Saudi Arabia) and IROG Johannesburg (South Africa). Thailand sought contact details from the Secretariat for these IROGs to support this initiative.

2.19 China has established a real-time IWXXM exchange between ROC Beijing and ROC Hong Kong and has successfully demonstrated the international exchange of IWXXM bulletins between ROC Beijing and RODB Bangkok

2.20 ROC Beijing performs translation of national METAR/SPECI and TAF bulletins from TAC to IWXXM (Version 3.0 and plans to upgrade to Version 3.1). The translation of national SIGMET bulletins from TAC to IWXXM (Version 3.1) is under development and expected to be completed this year. China is also establishing some of its AMOs and MWOs as “IWXXM Producers”, which it expects to be operational in 2023.

2.21 The communication links between Beijing and Hong Kong and Beijing and Tokyo have been transferred to the CRV network. In addition, the establishment of CRV links with Thailand, Republic of Korea and Mongolia is in progress

2.22 Hong Kong, China’s meteorological service provider, the Hong Kong Observatory (HKO), is an “IWXXM Producer” and generates OPMET data in IWXXM (Version 3.0 currently and is upgrading generation and translation to Version 2021-2¹). HKO is also developing web service interfaces for local airline users to retrieve IWXXM reports.

2.23 Hong Kong, China can also offer translation service capability and provides translation services on behalf of NOC Manila and NOC Macao. To ensure the quality of IWXXM messages, ROC Hong Kong validates the IWXXM messages before aggregation and dissemination and monitors the validation results. ROC Hong Kong has established an automatic email notification (to the originating centre) if an IWXXM report fails IWXXM validation. As a result, the validation success rate (for METAR/SPECI) increased following the automatic notification, which facilitated the rectification of IWXXM validation issues.

2.24 The Meeting requested the Member from Hong Kong, China, with assistance from the member from New Zealand, to develop updates to the document *IWXXM implementation in APAC Region – FAQs* based on lessons learnt from the monitoring of IWXXM validation conducted by ROC Hong Kong.

2.25 Singapore is currently using translation as the primary mode of IWXXM message generation; however, generation from source will be progressively implemented when the respective systems generating the data are upgraded. Singapore exchanges IWXXM messages with the other ROCs, including Bangkok, Brisbane, Hong Kong, Kuala Lumpur, Tokyo and Wellington.

2.26 Singapore and London IROGs have successfully conducted IWXXM message exchange tests. The inter-regional exchange of IWXXM messages between IROG Singapore and IROG London will commence when the integrated diversion/alternate path between APAC and EUR is ready.

2.27 Mongolia advised that it has worked with an IT company to implement IWXXM, however, unfortunately, during tests, many errors have occurred in the translation of OPMET from TAC to IWXXM. Mongolia expects to establish the necessary communication links to support the international exchange of IWXXM messages by December 2022.

2.28 The member from China agreed to provide Mongolia examples of IWXXM-formatted messages to assist Mongolia with resolving its problems concerning the translation of OPMET from TAC- to IWXXM-form.

2.29 The Online Register of APAC IWXXM Exchange Status allows ROCs to share up-to-date information on the status of IWXXM exchange, including the readiness to receive IWXXM, supported

¹ IWXXM version 2021-2, published in Nov 2021, which supports the information and reporting requirements in Amendments 79 and 80 to ICAO Annex 3. Refer to WMO schema repository (<https://schemas.wmo.int/iwxxm/2021-2/>)

AMHS capability, and dissemination of IWXXM reports to other ROCs and NOCs. APANPIRG/32 adopted Conclusion APANPIRG/32/11: *Updating Online Register of IWXXM Exchange Status*, based on Draft Conclusion MET SG/25-03, to urge States to provide timely updates to the Online Register.

2.30 Since October 2021, the following States have updated the information in the online register: Australia, China, Hong Kong, China, Japan, New Caledonia, New Zealand, Singapore, Thailand, Vietnam and USA. As of March 2022, eight ROCs are currently capable of routinely receiving and disseminating IWXXM messages in the APAC Region.

2.31 Some States had indicated the capability to generate IWXXM reports but could not disseminate IWXXM data internationally to other ROCs because AMHS with FTPB and IHE is not yet implemented.

2.32 METSG Member States are reminded to update the register with their latest capabilities: <https://docs.google.com/spreadsheets/d/1WEcGfMRZq2dgHsfdpFhiefJEcA8OeMhfbCJHTqA7NX0/edit#gid=0>

2.33 The meeting discussed issuing a State Letter informing States of the relevant reference material, including the *Guidelines for the implementation of OPMET data exchange using IWXXM and IWXXM implementation in APAC Region – FAQs*. In addition, the State Letter should encourage States further to implement the AMHS functionality necessary to support the dissemination of IWXXM formatted messages (e.g. as urged by APANPIRG in its Conclusion APANPIRG/30/17: *Implementation of IWXXM* and Conclusion APANPIRG/31/18: *Implementation of IWXXM*).

Quality control, monitoring and management of meteorological information exchange

2.34 IROGs Singapore and Bangkok conducted their fourth IROG backup exercises on 15 and 29 September 2021. During the first exercise, where IROG Bangkok over IROG Singapore, IROG Bangkok routes 99.64% of METAR bulletins and 100% TAF bulletins to IROG London during the test. During the second exercise, where IROG Singapore took over IROG Bangkok, IROG Singapore successfully routed 100% METAR bulletins and 100% TAF bulletins to MID/AFI during the exercise.

2.35 These exercises also validated the dissemination process for notification between IROG Singapore and IROG Bangkok, and the procedures for handover and takeover of responsibilities in the event of technical problems.

2.36 ROdB Bangkok computed OPMET Performance Indices (PIs) on OPMET data from the five RODBs: Bangkok, Brisbane, Nadi, Singapore and Tokyo in January 2022. The monitoring was based on the ROBEX Handbook Thirteenth Edition — March 2019.

2.37 The three PIs calculated for the monitoring period were the Compliance Index, Availability Index and Regularity Index, as described in the ROBEX Handbook Thirteenth Edition – March 2019, Appendix F. A summary of the PIs follows:

- 11 of 301 (3.6%) aerodromes with Availability Index for METAR = 0 (nil report)
- 12 of 284 (4.22%) aerodromes with Availability Index for TAF = 0 (nil report)
- 5 of 301 (1.66%) aerodromes with low Availability Index for METAR > 0.0 and < 0.9
- 2 of 284 (0.70%) aerodromes with low Availability Index for TAF > 0.0 and < 0.9
- 92 of 301 (30.56%) aerodromes with low Compliance Index for METAR > 0.0 and < 0.9
- 14 of 301 (0.04%) aerodromes with Compliance index for METAR > 0.0 and < 0.5
- 16 of 301 (5.31%) aerodromes with low Compliance index for TAF > 0.0 and < 0.9

2.38 Based on the results above, the paper invited the Meeting to use the results to improve the OPMET data exchange in general and investigate unavailable data from the highlighted aerodromes.

2.39 The meeting discussed the impacts of using older ROBEX Handbook service definitions to perform the analysis and requested Thailand to use as the benchmark for OPMET monitoring the latest available ROBEX data provided by the Secretariat (rather than the published ROBEX Handbook information).

2.40 The Meeting also assigned an ad hoc group to review the Performance Indices (PIs) and the methodology used to ensure the OPMET monitoring provides States with targeted information necessary to identify specific deficiencies in OPMET provision.

2.41 To support OPMET monitoring in IWXXM format, RODB Bangkok is currently developing a new web application capable of analysing OPMET data in both TAC and IWXXM forms. The new application will enable RODB users to upload TAC and IWXXM files to generate RODB reports for OPMET data monitoring. RODB Bangkok expects to launch the application for testing by RODBs in November 2022. Use of the application for OPMET PIs for TAC and IWXXM data is expected from January 2023 onwards.

Guidance material related to meteorological information exchange

2.42 The Secretariat presented the latest version of the APAC ROBEX Handbook (Fourteenth Edition – March 2022). The changes include updates endorsed by the MET/IE WG/17, MET/IE WG/19 and MET SG/24 meetings, and updates provided directly to the Secretariat by the Civil Aviation Authority of Mongolia and ROC Hong Kong.

2.43 The meeting discussed and agreed to a range of subsequent updates to the ROBEX Handbook including:

- updates to focal point information;
- Updates to the ROC Jakarta bulletin & changes at Chinggis Khaan International Airport;
- Airport names and location indicators to align with ANP Tables AOP I-1 and MET II-2;
- adding ROC Beijing to the dissemination list of some additional bulletins;
- changes to airport operating hours;
- removal of area designators from the ROBEX Handbook in Appendix D, 2.1.2. c), which replicated part of the WMO No. 386, Table C1, Part II – Area Designators; and
- need to clarify the procedures concerning the general area designator in the METNO Header.

2.44 The Meeting also requested the Secretariat document the steps States should take to a) effect changes to the ROBEX scheme and b) notify States of changes to MET service.

Future work programme and terms of reference

2.45 The meeting briefly reviewed the MET/IE WG Terms of Reference and Work Program. The meeting proposed several updates to the MET/IE WG Terms of Reference and Work Plan, including removing TAC in OPMET monitoring, merging of Activities 1 & 2, and updates to the template.

2.46 The Meeting requested the Chair and Secretariat convene a quarterly meeting of the MET/IE WG (core) members to progress updates to the work plan and terms of reference, including assigning specific dates and responsibilities and merging Activities 1 and 2 in the work plan. The Meeting further identified that identifying a lead and supporting resources for activities was also desirable. The quarterly Meeting should occur after the Secretariat and Chairs of MET SG and WGs have prepared the integrated reporting template and ideally before MET SG.

2.47 Unfortunately, this quarterly meeting has been arranged, and then cancelled, and remains outstanding. The current workplan is contained in **Appendix B** to this paper.

Any other business

2.48 No discussion under this item.

Conjoint session of the MET/IE WG and the MET/S WG

Volcanic Ash Advisory Centre (VAAC) Backup tests

2.49 On 01 November 2021, VAAC Washington changed its backup procedures such that VAACs Montreal and Darwin are now the primary backup centres for VAAC Washington. If the VAACs Montreal or Darwin could not provide backup support, the U.S. Air Force 557th Weather Wing (557WW) would take over backup operations for VAAC Washington.

2.50 Considering the *Handbook on the International Airways Volcano Watch (IAVW)* (Guidelines) recommend that VAACs test the backup arrangements annually, the Meeting requested VAAC Darwin to coordinate a proposal to supplement the VAAC Backup Test Procedures in the Appendices of the APAC Regional SIGMET Guide with information on the backup arrangement with VAACs Washington and Montreal.

2.51 VAAC Wellington and VAAC Darwin conducted a scheduled mutual VAAC back-up test on 1 December 2021. Airways New Zealand assisted with disseminating the test message from VAAC Wellington as an interim solution pending required system changes at VAAC Wellington. The VAACs coordinated the backup test using the Microsoft Teams chat application which, in operational scenarios, had proved to be a helpful tool.

2.52 Confirmation emails were received from only a limited number of the expected backup test message recipient operational units. These included the VAAC Washington, Regional OPMET Data Bank (RODB) Bangkok, and Meteorological Watch Offices (MWOs) located in Fiji, Sri Lanka and Vietnam.

SIGMET Tests

2.53 The meeting reviewed results of a WS SIGMET test that was performed on 22 December 2021.

2.54 The meeting noted that WS SIGMET test messages:

- were not received from 6 of the 29 expected participant States, namely: Afghanistan, Maldives, Myanmar, Nauru, Papua New Guinea and Philippines. The rate of State participation was 79% in 2021, the same as 2020.

- were received from 42 of the 49 expected participant MWOs. The overall level of receipt of expected SIGMET test messages was 86% in 2021, compared with 89% in 2020.
- the average rate of reception of the available SIGMET test messages at the five APAC RODBs and ROC London was 97% in 2021, which is slightly higher than 96% in 2020.

2.55 The meeting also reviewed results of a WC/WV SIGMET test that was performed on 8/15 December 2021.

2.56 The meeting noted that WC SIGMET test messages were received from 38 of the 50 expected participant MWOs. The overall level of receipt of expected SIGMET test messages was 76% in 2021, lower than 82% in 2020.

2.57 The meeting noted that WV SIGMET test messages were received from 48 of the 56 expected participant MWOs. The overall level of receipt of expected SIGMET test messages was 86% in 2021, lower than 91% in 2020.

2.58 In 2021, the following 5 APAC States did not issue WC SIGMET test messages: Maldives, Myanmar, Nauru, Papua New Guinea and Philippines. In addition, the following 8 APAC States did not issue WV SIGMET test messages: Afghanistan, Bangladesh, Maldives, Mongolia, Myanmar, Nauru, Papua New Guinea and Philippines.

2.59 In 2021, 13 of the WC or WV SIGMET test messages (issued by MWOs with areas of responsibility within the APAC Region) contained errors. The errors occurred in the SIGMET test message “priority indicator” or in specific elements of the “(WMO) abbreviated heading”.

2.60 The Member from Philippines informed the Meeting that MWO Manila could not participate in the 2021 SIGMET tests due to an internal technical issue that Philippines was still resolving. Philippines sent an email about the above problem to ICAO. Furthermore, OPMET data from Philippines were temporarily disseminated internationally through an arrangement with the Hong Kong Observatory; thus, the OPMET data were disseminated without interruption.

2.61 In discussing the inclusion of MWOs not located in the APAC Region, the Meeting requested the Secretariat to cross-check the ICAO APAC SIGMET Test Procedures against the information in the legacy FASID Tables MET 3A – *Tropical Cyclone Advisory Centres* and 3B – *Volcanic Ash Advisory Centres*.

2.62 The Meeting requested that MET/IE WG and MET/S WG designate an ad hoc group to develop a proposal to incorporate the dissemination of SIGMET and advisory messages in the ICAO Meteorological Information Exchange Model (IWXXM) form within the SIGMET Test Procedures.

2.63 New Zealand presented a paper titled "Application of Met Deficiency Identification Methodology To 2021 Annual SIGMET Tests". This paper follows discussion at MET SG/25 on air-navigation deficiencies in the MET field, and the application of a methodology to the 2021 ICAO APAC SIGMET test results to identify issues in SIGMET information. The method helped identify issues concerning the coding and dissemination of SIGMET- and advisory- test messages and opportunities for MWOs, TCACs and VAACs concerned to resolve the deficiencies in SIGMET test messages and where applicable, operational SIGMET messages.

2.64

2.65 The paper reaffirmed the value of SIGMET tests, either periodically or whenever SIGMET issuance systems are upgraded or changed, in helping to identify and eliminate errors in SIGMET service.

2.66 Additional outcomes from the above activity included suggestions for improving (a) the SIGMET test procedures; regarding the SIGMET heading time group (GGgg) and the association between MWOs and TCACs/VAACs, and (b) the presentation of SIGMET test results; regarding MWOs not in the APAC region and MWOs associated with more than one TCAC or VAAC.

2.67 The Meeting requested the Secretariat:

- follow up with Myanmar on the appropriate addressing of letters from ICAO inviting participation in SIGMET tests.
- to submit a paper to MET SG requesting States to provide up to date contact information for letters from ICAO requesting the States to participate in SIGMET tests.
- coordinate with the MET/S Deficiencies ad hoc group to prepare the ICAO letter advising States of SIGMET test deficiencies.

2.68 The Meeting considered that the MET/IE WG and MET/S WG should continue to monitor the non-participation of States in the APAC Region SIGMET tests as part of the WG’s post-analysis activities that support the States’ corrective actions.

Next meeting

2.69 The meeting proposed the following (tentative) dates for the next meeting of the MET/IE WG:

- 20-21 or 27-28 March 2023 – MET/IE WG/21
- 22 or 29 March 2023 – Conjoint Session of MET/IE WG/21 and MET/S WG/13

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information in this paper;
- b) Propose further updates (as necessary) to the
 1. Action/task list (Appendix A); and
 2. terms of reference and work programme of MET/IE WG (refer Appendix B).

APPENDIX A

MET/IE WG – LIST OF ACTIONS

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

New action items recorded by MET/IE WG/20

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/20 01	Follow up with Australia on opportunities to combine the ICAO APAC 2022 Webinar on Space Weather and Australia and New Zealand’s 2022 Space Weather Exercise. [Ref: Report of MET/IE WG/20, para. 2.10.]	Before MET SG/26	Secretariat, in coordination with participants from Australia	
MET/IE WG/20 02	Coordinate the consequential amendments to the ANP (Volume II, Table MET II-2 – Aerodrome Meteorological Offices) and the ROBEX Handbook to reflect the requirements for MET service at QUANG BINH/Van Don International Airport (ICAO location indicator VVVD). [Ref: Report of MET/IE WG/20, para. 3.5.]	Before MET SG/26	Secretariat, in coordination with participants from Vietnam	
MET/IE WG/20 03	Provide contact details for IROG Jeddah (Saudi Arabia) and IROG Johannesburg (South Africa) to the members from Thailand to discuss their support for IWXXM and AMHS/FTBP and the timing for the testing and implementation of the inter-regional IWXXM exchange. [Ref: Report of MET/IE WG/20, para. 4.15.]	Before MET SG/26	Secretariat, in coordination with participants from Thailand	
MET/IE WG/20 04	Develop updates to the document <i>IWXXM implementation in APAC Region – FAQs</i> based on lessons learnt from monitoring IWXXM validation conducted by ROC Hong Kong. [Ref: Report of MET/IE WG/20, para. 4.31.]	Before MET SG/26	Members from Hong Kong, China, assisted by members from New Zealand	
MET/IE WG/20 05	Invite interested WG members to form an ad hoc group to review the Performance Indices (PIs) used in APAC OPMET monitoring. [Ref: Report of MET/IE WG/20, para. 5.13.]	Before MET/IE WG/21	Secretariat and Chair MET/IE WG and designated ad hoc group, including Members from Thailand and TBD	
MET/IE WG/20 06	Use as the benchmark for OPMET monitoring the latest available ROBEX data provided by the Secretariat (rather than by the published ROBEX Handbook). [Ref: Report of MET/IE WG/20, para. 5.15.]	Before MET/IE WG/21	Thailand, in coordination with the Secretariat	
MET/IE WG/20 07	Update the ROBEX Handbook, Appendix I, to reflect changes in the focal point information for Thailand and Malaysia. [Ref: Report of MET/IE WG/20, para. 6.2.]	Before MET SG/26	Secretariat, in coordination with participants from Thailand and Malaysia	
MET/IE WG/20 08	Delete the list of area designators in the ROBEX Handbook, Appendix D, 2.1.2. c), which replicates WMO No. 386, Table C1, Part II – Area Designators and, therefore, is unnecessary in the ROBEX Handbook. [Ref: Report of MET/IE WG/20, para. 6.3.]	Next ROBEX Handbook update	Secretariat	
MET/IE WG/20 09	Develop updates to the ROBEX Handbook, Appendix E – <i>Procedure and Format of METNO bulletin for APAC ROBEX Bulletins</i> to clarify the procedures concerning the general area designator in the METNO Header (in paragraph 2.2.) and the responsibilities for issuing METNO messages. [Ref: Report of MET/IE WG/20, para. 6.4.]	Before MET SG/26	Secretariat and ROBEX Focal Points from Australia, Hong Kong, China, Japan and Singapore	
MET/IE WG/20 10	Coordinate with Indonesia to: a) Validate the proposed updates in WP/08, which concerned aerodrome names that were not reflected in the ANP, Table AOP I-1 – <i>International Aerodromes Required in the APAC Regions</i> ; and b) Include the validated proposals in the next update of the ROBEX Handbook. [Ref: Report of MET/IE WG/20, para. 6.9.]	Next ROBEX Handbook update	Secretariat, in coordination with participants from Indonesia	

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
MET/IE WG/20 11	Coordinate with Mongolia to: a) Notify the regional focal point and team for management of the METNO process of the changes in IP/11; and b) Include the proposals in IP/11 in the next update of the ROBEX Handbook. <i>[Ref: Report of MET/IE WG/20, para. 6.14.]</i>	Next ROBEX Handbook update	Secretariat, in coordination with participants from Mongolia	
MET/IE WG/20 12	Document the steps States should take to: a) Effect changes to the ROBEX scheme; and b) Notify States of changes to MET service. <i>[Ref: Report of MET/IE WG/20, para. 6.15.]</i>	Before MET SG/26	Secretariat	
MET/IE WG/20 13	Convene a quarterly meeting of the MET/IE WG (core) members to progress updates to the work plan and terms of reference, including assigning specific dates and responsibilities (incl. identifying a lead and supporting resources for activities) and merging Activities 1 and 2 in the work plan. After the Secretariat and Chairs of MET SG and WGs have prepared the integrated reporting template. <i>[Ref: Report of MET/IE WG/20, para. 7.5.]</i>	Before MET SG/26	Chair MET/IE WG and Secretariat	
MET/IE WG/20 14	Coordinate a proposal to supplement the VAAC Backup Test Procedures in the Appendices of the APAC Regional SIGMET Guide with information on the backup arrangement with VAACs Washington and Montreal. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 1.4.]</i>	Before MET/IE WG/21	Members from VAAC Darwin	
MET/IE WG/20 15	Concerning the inclusion of MWOs not located in the APAC Region, perform a cross-check of the ICAO APAC SIGMET Test Procedures against the legacy FASID Tables MET 3A – Tropical Cyclone Advisory Centres and 3B – Volcanic Ash Advisory Centres. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.17.]</i>	Before MET SG/26	Secretariat	
MET/IE WG/20 16	Develop a proposal to update the SIGMET Test Procedures to include disseminating SIGMET and advisory messages in IWXXM form. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.18.]</i>	Before MET SG/26	MET/IE WG and MET/S WG designated ad hoc group	
MET/IE WG/20 17	Follow up with Myanmar on the appropriate addressing of letters from ICAO inviting participation in SIGMET tests. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.23.]</i>	Before MET SG/26	Secretariat, in coordination with participants from Myanmar	
MET/IE WG/20 18	Submit a paper to MET SG requesting States to provide up to date contact information for letters from ICAO requesting the States to participate in SIGMET tests. <i>[Ref: Report of Conjoint Session of MET/IE WG/20 and MET/S WG/12, para. 2.24.]</i>	Before MET SG/26	Secretariat	

Unresolved action items recorded by MET/IE WG/19

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
01	Propose updates to the ROBEX Handbook: to ensure clarity of the guidance concerning the ROCs' responsibilities for the distribution of IWXXM formatted OPMET data [ref: para. 2.5.]	May 2021	WG	To commence
02	Propose updates to the ROBEX Handbook: to ensure the availability of the AFTN addresses for the designated APAC ROCs [ref: para. 2.6.]	May 2021	WG	To commence
03	Propose appropriate updates to the ROBEX scheme and ROBEX Handbook: to include the requirement for ROBEX centres to send OPMET bulletins to all RODBs (Including updates to Tables A and B) [ref: para. 3.5.]	May 2021	WG	To commence Completed; ROBEX HB 14 th Ed.

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
04	Propose updates to the ROBEX Handbook: to include the WMO message headers (TTAAii CCCC) for each type of space weather advisory information (GNSS, HF COM, Radiation and SATCOM) in Traditional Alphanumerical Code (TAC)- and ICAO Meteorological Information Exchange Model (IWXXM)-form [ref: para. 3.8.]	May 2021	Secretariat	To commence Completed; ROBEX HB 14 th Ed.
05	Propose updates to the ROBEX Handbook: to include the necessary consequential changes to OPMET bulletins described in WP/08 (SAPS31 NFFN, SAPS32 NWWW, SAPS33 NTAA, SANG31 YBBN, FTSP31 NFFN, FTSP32 NWWW, FTSP33 NTAA, FTNG31 YBBN) and presented in Attachment A to WP/08 and to include information on the (KWBC) bulletins containing Pago Pago METAR and TAF [ref: para. 4.3.]	May 2021	Secretariat	To commence Part completed; ROBEX HB 14 th Ed.; updates pending concerning Pago Pago
06	Propose updates to the ROBEX Handbook: to include a link to the online register provided by the APAC ROCs for IWXXM-exchange-capability (in accordance with MET SG/24, Decision MET SG/24-15: <i>Updates to ROBEX Handbook</i> , and Conclusion MET SG/24-12: <i>Development of Online Register of the status of IWXXM Exchange</i>) [ref: para. 4.6.]	May 2021	Marco, Tim	To commence Completed; ROBEX HB 14 th Ed.
07	a) Provide additional feedback on the draft “ FAQs of IWXXM implementation ” (MET/IE WG/19, WP/17); and b) Present a proposal for MET SG/25 to possibly approve the publication of the FAQs (as either a standalone document or incorporated in another document) for use by States [ref: para. 4.11.]	a) Apr 2021 b) May 2021	a) WG members, b) Marco, Tim, Secretariat, IATA	To commence Completed; Conclusion MET SG/25-01
08	Publish the MET SG/24-approved updates to the ROBEX Handbook: as presented at Appendix 10 to the MET/SG/24 Report, including the corrections to AFTN addresses provided by Fiji and presented at Appendix A to MET/IE WP/19, WP/12 – <i>ROBEX Handbook Updates</i> [ref: para. 6.2.]	Mar 2021	Secretariat	To commence Completed; ROBEX HB 14 th Ed.
09	Propose updates to the ROBEX Handbook: to include the changes to data in Appendix A, Appendix B and Appendix I of the ROBEX Handbook, as advised by Japan and presented in MET/IE WG/19, WP/13 – <i>Updates to ROBEX Handbook</i> . [ref: para. 6.5.]	May 2021	Secretariat	To commence Completed; ROBEX HB 14 th Ed.
10	Propose updates to the ROBEX Handbook: to include the changes to data in Appendix A of the ROBEX Handbook, as advised by Republic of Korea and presented in MET/IE WG/19, WP/14 – <i>Update to ROBEX Handbook</i> . [ref: para. 6.8.]	May 2021	Secretariat	To commence Completed; ROBEX HB 14 th Ed.
11	Propose updates to the ROBEX Handbook: to include the OPMET exchange information for Van Don International Airport (VVVD), as advised by Viet Nam and presented in MET/IE WG/19, WP/15 – <i>A new international airport (VVVD) to join ROBEX network for international OPMET data exchange</i> . [ref: para. 6.11.]	May 2021	Viet Nam and Secretariat	To commence In progress; MET/IE WG/20, IP/02
12	Propose updates to the ROBEX Handbook: to include the Space Weather Advisory dissemination scheme (MET/IE WG/19, Flimsy/01) [ref: para. 6.14.]	May 2021	Secretariat	Completed; ROBEX HB 14 th Ed.

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 backup 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

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

The following action items are applicable to one or both of the MET/IE WG and MET/S WG

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
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.]	Before MET SG/26 Sep-2020	Secretariat	IN PROGRESS Ref: MET/IE WG, 5. Work Plan, Activity 1 and Activity 2
IWXXM implementation				
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 Completed; Conclusion MET SG/25-01
Regional Guidance Materials				
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
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
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
SIGMET test				

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
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 <u>AND</u> Ref: MET/S WG, 5. Work Plan, Activity 3
Other				
30	VAAC backup 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 backup 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

Unresolved action items recorded by MET/IE WG/17

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
17/1	Coordinate all necessary notifications concerning the planned handover of the provision of SIGMET service valid for Phnom Penh FIR from MWO Chengdu to MWO Phnom Penh, including the following: (a) changes to the routing of the SIGMET and advisory information at the responsible VAAC, TCAC and the RODBs; and (b) updates to the ANP, including the legacy FASID tables, and the Regional SIGMET Guide. <i>[Report of MET/IE WG/17, para. 3.1 – 3.4, refers]</i>	TBA	Cambodia and Secretariat	TO COMMENCE Action should be completed before handover of SIGMET service
17/3	Coordinate all necessary notifications concerning the planned provision by China of OPMET information for the new Beijing Daxing International Airport, from 15 August 2019, including the following: (a) updates to the ROBEX Handbook and notification to States via “METNO”; and (b) updates to the ICAO Doc. 7910 and APAC ANP, including AOP and MET tables. <i>[Report of MET/IE WG/17, para. 3.6 – 3.8, refers]</i>	17 Jun 2019	China and Secretariat	TO COMMENCE Action should be completed before commencement of new OPMET service
17/4	Coordinate a proposal to update the ROBEX Handbook to enable the regular exchange of several international OPMET bulletins to the ROBEX Centre Beijing and present it for further review and possible endorsement by MET/SG/23. <i>[Report of MET/IE WG/17, para. 3.9 – 3.12, refers]</i>	17 Jun 2019	Secretariat China	TO COMMENCE IN PROGRESS
17/10	Liaise with the SADIS Provider concerning obtaining OPMET availability statistics on SADIS for future meetings of the MET/IE WG. <i>[Report of MET/IE WG/17, para. 4.21, refers]</i>	Next meeting MET/IE WG	Secretariat	IN PROGRESS
17/11	Present a consolidated proposal for updates to the ROBEX Handbook, to reflect the establishment of an NOC (within the ROBEX scheme) in Vietnam, for further review and possible endorsement by MET/SG/23. <i>[Report of MET/IE WG/17, para. 5.9 – 5.10, refers]</i>	17 Jun 2019	Vietnam, Thailand and Secretariat	IN PROGRESS
17/12	Propose any necessary updates to the ROBEX Handbook to reflect the actual requirements for OPMET information. <i>[Report of MET/IE WG/17, para. 5.11 – 5.13, refers]</i>	17 Jun 2019	States with low PIs for OPMET	IN PROGRESS
17/13	In conjunction with the outstanding action item 16/5: (a) Prepare a checklist to assist States in systematically addressing the OPMET issues at locations with low PIs in the monitoring data; and (b) Provide the checklist as guidance to the States concerned. <i>[Report of MET/IE WG/17, para. 5.11 – 5.14, refers]</i>	Next meeting MET/IE WG	Secretariat and Thailand	IN PROGRESS Superseded; included in work plan, Activity 1.8 and 2.6

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
17/14	In order to ensure availability of OPMET bulletins at all RODBs: (a) Propose appropriate updates to the ROBEX scheme and ROBEX Handbook to include the requirement for ROBEX centres to send OPMET bulletins to all RODBs; and (b) Requested all ROBEX centres to send their associated OPMET bulletins to all RODBs. <i>[Report of MET/IE WG/17, para. 5.11 – 5.17, refers]</i>	17 Jun 2019	MET/IE WG	IN PROGRESS Completed; ROBEX HB 14 th Ed.
17/16	Coordinate the requirements for all additional, new updates to the ROBEX Handbook and consolidate these into an update proposal for further review and possible adoption by MET/SG/23. <i>[Report of MET/IE WG/17, para. 6.5, refers]</i>	17 Jun 2019	Secretariat	IN PROGRESS Related to action items: 17/3, 17/4, 17/11, 17/12 and 17/14
17/20	Propose updates to all required APAC documentation regarding the originating address of Australian WV SIGMETs (i.e., YMMC, rather than AMMC). <i>[Report of conjoint session of MET/IE WG/17 and MET/S WG/9, para. 2.24, refers]</i>	17 Jun 2019	Secretariat and Australia	IN PROGRESS ANP Table MET II-1 pending update

Unresolved action items recorded by MET/IE WG/16

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
16/4	Review the usage of the request-reply service provided and, where appropriate, arrange for the routine provision of OPMET bulletins as an alternative to the usage of the request-reply service for routine access to the stored OPMET data [Report of MET/IE WG/16, para. 5.8, refers].	Mar 2019	APAC RODBs	IN PROGRESS

Unresolved action items recorded by ROBEX WG/13

ACTION ITEM	DESCRIPTION	BY DATE	RESPONSIBILITY	STATUS/REMARKS
13/7	Investigate feasibility of including provisions in the regional guidance material related to the issuance of routine TAF at intervals of three (3) hours; present draft material to MET SG/21 [Ref: ROBEX WG/13 Decision 13/7].	June 2017	Secretariat and ROBEX WG	IN PROGRESS Coordinate necessary follow-up through the ICAO ANP working group [Ref: MET/IE WG/16 Report para. 2.9].

APPENDIX B**ICAO ASIA AND PACIFIC METEOROLOGICAL INFORMATION EXCHANGE
WORKING GROUP (MET/IE WG)****TERMS OF REFERENCE AND WORK PLAN**(Note: Proposed updates are indicated with ~~strikethrough~~ and **highlighted** text)**TERMS OF REFERENCE**

1. MEMBERSHIP
<p>The MET/IE WG is made up of experts from the following bodies:</p> <ul style="list-style-type: none"> • APAC Regional OPMET Data Banks (RODBs): Brisbane, Nadi, Tokyo, Singapore and Bangkok; • APAC Regional OPMET Centres (ROCs); • World Area Forecast Centres (WAFCs), London and Washington; • Secure Aviation Data Information Service (SADIS) and WAFS Internet File System (WIFS) Provider States, United Kingdom and United States; • APAC Volcanic Ash Advisory Centres (VAACs): Darwin, Tokyo and Wellington; • Designated focal points for SIGMET tests and regional OPMET bulletin exchange (ROBEX); • Pacific Islands Aviation Weather Services (PIAWS) Panel; and • International Air Transport Association (IATA).

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2. DESCRIPTION	
Objective	Increase OPMET availability and reliability needed for flight planning (efficiency) and in-flight re-planning (safety) in support of the Global Air Navigation Plan (GANP) framework and the Aviation System Block Upgrade (ASBUs) methodology.
Benefits	Increase in safety and efficiency (time and fuel savings).

Functions of the group	<p>Under guidance from the ICAO APAC Secretariat:</p> <ul style="list-style-type: none"> a) Review the OPMET exchange schemes in the APAC and other regions and develop proposals for their optimization, taking into account the requirements by the aviation users and global OPMET exchange; b) Review and update of the procedures for inter-regional OPMET exchange and ensure the availability of the required APAC OPMET data for SADIS and WIFS; c) Report on deficiencies in the format and dissemination of OPMET messages; d) Monitor and participate in inter- and intra-regional trials of aeronautical meteorological information exchange in support of the implementation of IWXXM and SWIM; e) Conduct trials and develop standardized quality control, monitoring and management procedures related to exchange of IWXXM and TAC OPMET information; f) Participate in the implementation and promote awareness of the transition to digital exchange of OPMET (IWXXM) and System Wide Information Management (SWIM); g) Conduct regular regional VAAC back-up and SIGMET tests; h) Provide support for the APAC Volcanic Ash Exercises; i) Review and update the regional guidance material related to OPMET exchange, including relevant material on IWXXM, AMHS and SWIM; j) Liaise and consult with other appropriate bodies within ICAO and WMO dealing with communication and/or management aspects of the OPMET exchange; and k) 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.
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3. COMMUNICATION STRATEGIES

Description	Target Audience	Delivery Method	Frequency / Date	Responsibility
Interim Work Program Progress Report	MET/IE WG Members	Web-conference E-mail	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	reflect the requirement for an annual (quarterly) schedule of c	Chair and Secretariat
Major Work Program Progress Report	MET/IE WG Members	Working Paper (MET/IE WG meeting)	Annually/published 14-days or more before the meeting	Chair and Secretariat
General correspondence	MET/IE WG Members	E-mail	As required	MET/IE WG Members
New, specific proposal for action (WP)	MET/IE WG Meeting	Working Paper (MET/IE WG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	MET/IE WG Members or States
New, specific information (IP)	MET/IE WG Meeting	Information Paper (MET/IE WG meeting)	Annually/submitted 28-days or more before the meeting (published 14-days or more before the meeting)	MET/IE WG Members or States
Working Group Meeting Report	MET/IE WG Members and all APAC States	MET/IE 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: Availability of OPMET information	Ongoing	MET/IE WG	
Activity 2: Timeliness, compliance and regularity of OPMET exchange	Ongoing	MET/IE WG	
Activity 3: SIGMET and Advisory Tests	Ongoing	MET/IE WG	
Activity 4: VAAC Backup Tests	Ongoing	MET/IE WG	
Activity 5: IROG Backup Tests	Ongoing		
Activity 6: Regional guidance material related to data exchange	Ongoing	MET/IE WG	

Activity 7: IWXXM implementation	2021-2023	MET/IE WG	
Activity 8: MET information exchange scheme	2021-2026	MET/IE WG	
Activity 9: MET information in SWIM	2021-2026		

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 1: Availability of OPMET information				
Activity 1.1: Perform real time monitoring if required	IATA	-	If required	
Activity 1.2: Monitor and score SADIS/WIFS OPMET reception.	IATA	-	Annually Jan	
Activity 1.3: Capture OPMET monitoring,	RODBs	1.2	Annually Oct/Nov	
Activity 1.4: Assess TAC OPMET monitoring results and share results with RODBs	RODB Bangkok	1.3	Annually Oct/Nov	
Activity 1.6: Prepare paper reporting results and deficiencies to MET/IE WG meeting.	IATA and RODB Bangkok	1.4	Annually Feb	
Activity 1.7: Report summary of OPMET availability results to MET SG	Secretariat and Chair	1.5	Annually May	
Activity 1.8: Advise States of OPMET deficiencies and corrective actions.	Secretariat	1.6	Annually Jun	
Activity 1.9: Actively engage States with corrective against deficiencies.	ROCs	1.7	As required	
Milestone 1: Achieve 95% (90%) or greater OPMET availability for AOP (non-AOP) aerodromes at RODBs and WAFS.	MET/IE WG	1.8	Annually Jun	
Activity 2: Timeliness, compliance and regularity of OPMET exchange				
Activity 2.1: Monitor and collate OPMET data.	RODBs and IATA	-	Annually Dec	
Activity 2.2: Score RODB OPMET reception against PI thresholds.	RODB Bangkok	-	Annually Jan	
Activity 2.3: Analyse data and share results with RODBs	RODB Bangkok	2.2	Annually Jan	
Activity 2.4: Prepare paper report results to MET/IE WG meeting and identify corrective actions	RODB Bangkok	2.3	Annually Feb	
Activity 2.5: Report summary of OPMET timeliness, compliance and regularity results to METSG	Chair	2.4	Annually May	
Activity 2.6: Inform States of non-compliance and corrective actions.	Secretariat	2.5	Annually Jun	
Activity 2.7: Provide support for States to rectify deficiencies if requested.	RODBs	2.6	As required	
Milestone 2: Achieve 95% (90%) or greater OPMET timeliness, compliance and regularity for AOP (non-AOP) aerodromes at RODBs, SADIS and WIFS.	MET/IE WG	2.7	Annually Jun	
Activity 3: SIGMET and Advisory Tests				

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 3.1: Review SIGMET Test procedures	MET/IE WG	-	Annually Aug	
Activity 3.2: State Letter regarding SIGMET Tests	Secretariat	3.1	Annually Sep	
Activity 3.3: Email States regarding SIGMET Tests	Secretariat	3.2	Annually	Last Wed in Oct
Activity 3.4: Conduct and collate data for WC SIGMET Tests	RODBs	3.2	Annually	2 nd Wed in Nov
Activity 3.5: Conduct and collate data for WV SIGMET Tests	RODBs	3.2	Annually	3 rd Wed in Nov
Activity 3.6: Conduct and collate data for WS SIGMET Tests	RODBs	3.2	Annually	4 th Wed in Nov
Activity 3.7: Analyse test data	RODB Singapore and Tokyo	3.4 - 3.6	Annually Jan	
Activity 3.8: Assess SIGMET test results to identify corrective actions from Nov tests	RODB Singapore and Tokyo	3.4 - 3.6	Annually Feb	
Activity 3.9: Report to MET/IE WG	RODB Singapore and Tokyo	3.8	Annually Mar	
Activity 3.10: Report on SIGMET Test Results to MET SG.	Chair	3.9	Annually May	
Activity 3.11: Advise States of SIGMET deficiencies	Secretariat	3.9	Annually Jun	
Milestone 3: Improved issuance and compliance of SIGMETs	MET/IE WG	3.11	Annually Jun	
Activity 4: VAAC Back-up Tests				
Activity 4.1: Review and Update VAAC Back-up Test procedures	MET/IE WG and VAACs		Annually	2 months prior to test
Activity 4.2: Issue Notice of VAAC Back-up Tests	Secretariat/VAACs	4.1	Annually Aug	
Activity 4.3: Conduct VAAC Back-up Test between Darwin and Tokyo	VAACs	4.2	Annually Oct – TBC	
Activity 4.4: Conduct VAAC Back-up Test between Darwin and Wellington	VAACs	4.2	Annually Oct – TBC	
Activity 4.5: Collect test results and send to VAAC Provider State members	RODBs	4.3	Annually Oct – TBC	
Activity 4.6: Analyse Test results	VAAC Back-up Focal Points Members	4.5	Annually Nov	
Activity 4.7: Report to MET/IE WG	VAAC Back-up Focal Points Members	4.6	Annually Feb	
Activity 4.8: Report to MET SG.	Chair	4.7	Annually May	
Activity 4.9: Advise relevant States, VAACs and RODBs of any deficiencies.	Secretariat	4.7	Annually Jun	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Milestone 4: VAAC Back-up Tests conducted, analysed and report complete.	VAAC Back-up Focal Points Members	4.8	Annually Jun	
Activity 5: IROG Back-up Tests				
Activity 5.1: Investigate the feasibility and benefits of back-up arrangements of IROG Tokyo, Nadi and Brisbane	IROG Nadi, Tokyo and Brisbane	-	Nov 2020	
Activity 5.2: Review IROG Back-up Test procedures to include all IROG.	IROG Bangkok and Singapore	-	Apr 2019, Annually Feb	
Activity 5.3: Updated IROG Back-up Procedures in ROBEX Handbook.	Secretariat	5.2	Annually May	
Activity 5.4: Identify list of MET Bulletins to monitor.	IROG Bangkok and Singapore	-	Annually Jan/Feb	
Activity 5.5: Conduct IROG Back-up Test of Bangkok and analyse results	IROG Bangkok and Singapore	5.4	Annually Sept/Oct	
Activity 5.6: Conduct IROG Back-up Test of Singapore and analyse results	IROG Bangkok and Singapore	5.4	Annually Jan/Feb	
Activity 5.8: Report to MET/IE WG	IROG Bangkok and Singapore	5.7	Annually Mar	
Milestone 5: IROG Back-up Tests conducted, analysed and report complete.	IROG Bangkok and Singapore	5.7	Annually Mar	
Activity 6: Regional guidance material related to data exchange				
Activity 6.1: Review monitoring procedure in ROBEX Handbook and update as necessary.	All RODBs	-	Annually Apr	
Activity 6.2: Changes to RODB monitoring procedures and updates to Appendix A and B in ROBEX Handbook.	Secretariat	6.1	Annually May	
Activity 6.3: Document roles for monitoring IWXXM performance in APAC	WG		Nov 2021	
Activity 6.4: Define quality threshold for translated data	IATA, Chair WG		Nov 2021	
Activity 6.5: Advise Secretariat of changes to ROBEX Handbook.	All States	-	Annually Apr	
Activity 6.6: Complete update of ROBEX Handbook including Table MET 2A.	Secretariat	-	Annually May	
Activity 6.7: Review ANP Tables (initially MET II-2) and ensure all necessary aerodromes are contained in OPMET bulletins	WG	-	May Annually	
Activity 6.8: Seek MET/SG endorsement of the updated ROBEX Handbook.	Secretariat	-	Annually Jun	
Activity 6.9: Support MET SG with development of MET-specific requirements in the ANP, Volume III	WG		As required	
Milestone 6: RODB Monitoring procedures published in ROBEX Handbook	Secretariat	6.7	Annually Sep	
Activity 7: IWXXM Implementation				
Activity 7.1: Monitor migration to IWXXM.	WG	-	As required	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Activity 7.2: Conduct survey to determine status of IWXXM Implementation.	Secretariat		May 2021	
Activity 7.3: Report to MET SG on APAC States' IWXXM implementation status and need/timing for another APAC IWXXM Workshop.	Secretariat/Chair, WG	7.2	Next meeting MET SG	
Activity 7.4: Increase awareness of the requirement for States to exchange of OPMET data in IWXXM format and the impact of inability to do so.	WG		As required	
Activity 7.5: Support States with the planning and implementation of the dissemination of the required meteorological information in IWXXM form, in particular at the designated APAC Regional OPMET Centres (ROCs) and Regional OPMET Databanks (RODBs).	WG		As required	
Activity 7.6: Conduct IWXXM tests and report to MET/IE WG and RODB Singapore on the status of the testing and implementation of digital OPMET exchange.	WG		Annually Mar	
Activity 7.7: Maintain a register of IWXXM tests conducted, detailing Met software, UAs and MTAs tested	RODB Singapore	7.5	As required	
Activity 7.8: Arrange provision for the next IWXXM Workshop in APAC	Secretariat/Chair, WG	7.2	Sep 2021	
Activity 7.9: Actively participate in the next APAC IWXXM Workshop	Secretariat/Chair, WG	7.7	Oct 2021	
Activity 7.10: Prepare information (e.g. issues, CONOPS) for MET/P WG-MIE	WG		As required	
Activity 7.11: Development and Publishing AMHS/FTBP network map	Pierre, Secretariat		Monthly	
Activity 7.12: State IWXXM status register	Secretariat		Monthly	
Milestone 7: Report to MET/IE WG and MET SG on IWXXM exchange and testing.	Secretariat and Chair	7.5, 7.6 and 7.8	Annually May	
Activity 8: MET Information Exchange Structure				
Activity 8.1: Review ROBEX Scheme diagram.	All RODBs, Secretariat		May Annually	
Activity 8.2: Review the structure of the ROBEX exchange in light of the introduction of SWIM.	WG		Annually Feb	
Activity 8.3: Review use of the Request/Reply service	RODBs	-	May 2021	
Activity 8.4: Improve the efficiency of Request/Reply service	RODBs	8.3	Sep 2021	
Milestone 8: Improved efficiency and effectiveness of ROBEX Scheme	MET/IE WG	-	2021	
Activity 9: MET information in SWIM				
Activity 9.1: Assist in the definition of the APAC SWIM Met service catalogue	WG	-	As required	
Activity 9.2: Assist in the definition of the APAC SWIM Met data catalogue	WG	-	As required	

5. WORK PLAN				
Activity / Milestone	Accountability	Predecessors	Date	Status
Milestone 9: Participated in the development of SWIM Meteorological services for APAC	MET/IE WG	-	2023	
