

**COOPERATION WITH OTHER WMO BODIES  
AND INTERNATIONAL ORGANIZATIONS**

*(Submitted by the WMO Secretariat)*

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**Summary and Purpose of Document**

This document provides an outline of cooperation by and with other WMO bodies and international organizations in the context of the CAeM and AeMP.

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**ACTION PROPOSED**

The Management Group (MG) is invited to note the information contained in this paper and to consider the points raised in the context of future work.

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## 1. EXECUTIVE SUMMARY

<Text to be included in the Final Report of the meeting>

### ICAO

1.1 The MG was informed that there had been no meetings of ICAO's Meteorology Panel (METP) since November 2016 but that, as alluded to in [Doc. 4](#), there had been a series of METP Working Group (WG) meetings. In addition there had been periodic meetings of the METP Management Group.

1.2 In the context of the METP WG meetings held, the MG was apprised of some of the highlights of recent work stream progress (as given at the [Annex](#) to this paper).

1.3 The MG noted that a number of METP WG meetings as well as a 3<sup>rd</sup> Meeting of the METP (METP/3) were expected to be held before the end of 2018 as follows:

| Upcoming meeting                                        | Date                            |
|---------------------------------------------------------|---------------------------------|
| WG-MOG (SADIS) and WG-MOG (WAFS)                        | 10-13 April 2018, Frankfurt     |
| METP Ext. (SWx) [ <i>Unconfirmed</i> ]                  | 27-28 April 2018, Montreal      |
| WG-MIE                                                  | 1-4 May 2018, Boulder           |
| WG-MISD (SWx, RRM and RHWAC), WG-MRI and WG-MCRGG       | 7-11 May 2018, Washington DC    |
| METP/3                                                  | 10-14 September 2018, Montreal  |
| WG-MOG (IAVW) and WG-MISD (VASD) [ <i>Unconfirmed</i> ] | 12-14 November 2018, Wellington |

1.4 In addition to the foregoing, the MG appreciated that several regional ICAO meetings addressing meteorology were to be expected in 2018, including the Asia-Pacific Meteorology Subgroup from 18 to 21 June 2018 in Bangkok and the European/North Atlantic Meteorology Group from 18 to 21 September 2018 in Paris.

### IATA

1.5 The MG was apprised that the WMO Secretariat continued to liaise with IATA on aeronautical meteorological matters, including through participation in periodic meetings of the IATA Flight Operations Support Task Force (FOSTF) typically held once or twice per year. The MG noted that the FOSTF offers airline representatives, air navigation service providers and others concerned the opportunity to discuss a range of meteorology-specific matters, particularly those being addressed by the ICAO METP and WG mechanism, and enables IATA to formulate position statements.

1.6 The MG was pleased to note that WMO involvement in a March 2017 meeting of the FOSTF had given the opportunity to brief IATA on the latest developments within the CAeM/AeMP, including (at the time) early highlights of the 2016/17 CAeM global survey on aeronautical meteorological service provision as well as promotion of the WMO Aeronautical Meteorology Scientific Conference (AeroMetSci-2017). In addition, the MG was pleased to note that Sharon Lau of Hong Kong Observatory (HKO) had given an informative presentation to the FOSTF on HKO's MET-ATM collaboration with Cathay Pacific.

1.7 The MG was further apprised that dialogue had recently been initiated by the WMO Secretariat with IATA's Accident Classification Technical Group (ACTG). The ACTG is a group charged with reviewing and analyzing accidents, identifying contributing factors, determining trends and areas of concern relating to operational safety, and developing prevention strategies. Safety reports issued by IATA on an annual basis (Safety Report 2016, 53<sup>rd</sup> Edition, issued in April 2017, is [available here](#)) demonstrate that

meteorology/weather conditions continue to be a significant threat and factor in aviation incidents and accidents, on the ground and in the air. For example, weather is a key contributing factor to loss of control in-flight (LOC-I) accidents, with more than one-third of LOC-I accidents occurring during degraded meteorological conditions, in most cases involving thunderstorms and icing. Improved dialogue with IATA in this regard, through involvement in the ACTG, is intended to better quantify these threats and factors with a view to seeking opportunities to further improve the aeronautical meteorological service provision. The MG noted that the ACTG convenes typically once or twice per year and that WMO Secretariat was now a member of the group.

1.8 In the context of aircraft-derived meteorological observations and WMO partnership with IATA, the MG was pleased to note that in July 2017 the two organizations had entered into a new working arrangements relating to the operation of the global AMDAR (aircraft meteorological data relay) system, administered under WMO's AMDAR Programme. While the AMDAR observing system is a mature system, having existed for 30 years or so and today involving more than 40 airlines, 4,000 aircraft and 700,000 daily observations, as a critical component of the WMO Global Observing System (GOS) there is recognition of the mutual benefits to be gained from expanding the AMDAR network – in terms of the number of airlines involved, the number of suitably equipped aircraft and the number of daily observations. The MG was pleased to note that further information on this new WMO-IATA partnership was [available here](#).

#### ***Other WMO technical commissions***

1.9 The MG appreciated that the Commission for Basic Systems (CBS) continued to support the CAeM and the AeMP in a number of key areas including the continued development of the IWXXM (ICAO Meteorological Information Exchange Model) schema, the maintenance of aeronautical code forms and data representations, the further improvement in the observation and prediction of volcanic ash clouds and gases, and in the establishment of a global space weather information service to serve international air navigation.

1.10 In addition, the MG was pleased to note that the governance and evolution of the WMO Information System (WIS) was a key area for CBS and that other technical commissions, including CAeM, would be tasked to provide input into the operation and development of the WIS through an Inter-Commission Task Team on WIS (ITT-WIS) established through CBS-16 (2016) and EC-69 (2017). It was noted that the terms of reference of ITT-WIS were [available here](#) with a first meeting of the team expected in February or March 2018.

1.11 Further to the foregoing, the MG was updated on the progress being made as part of WMO's Rolling Review of Requirements (RRR) and Observing Systems Capability Analysis and Review tool (OSCAR) to further improve a Statement of Guidance on Observations for Aeronautical Meteorology (SoG-Aero). In this connection the MG was pleased to note that co-chairs from ET-ASC and ET-ETC had recently provided input to an update to the SoG-Aero which would be next reviewed at an upcoming meeting of a CBS IPET-OSDE (Inter-Programme Expert Team on Observing System Design and Evolution).

1.12 In the context of the Commission for Atmospheric Sciences (CAS), the MG was pleased to note that representatives of CAS had been directly involved in assisting the WMO Aeronautical Meteorology Scientific Conference (AeroMetSci-2017) held in November 2017 and, additionally, that there continued to be support from the atmospheric research community in progressing volcanic ash issues, including through support to the discussions and activities of the WMO-IUGG Volcanic Ash Scientific Advisory Group (VASAG).

1.13 In the context of the Commission for Instruments and Methods of Observation (CIMO), and akin to remarks made during the last MG meeting in November 2016, the MG considered that there would be benefit of improved coordination and collaboration between CAeM and CIMO to ensure, for example, that guidance on meteorological observations at aerodromes and (increasingly) in the terminal area could be improved or developed and to ensure that there was an appropriate outlet (body) to which to direct periodic aviation-specific enquiries on instruments and methods of observation.

1.14 In the context of the Commission for Climatology (CCI), the MG appreciated that, with the exception of some limited engagement in support of AeroMetSci-2017, there had been little or no interaction between CCI and the CAeM. This said, it was appreciated however that if/when the climate change and variability impacts on aviation issue garners more attention amongst both the aviation user community and the service provider community there may be a need to increased interaction across the two technical commissions.

### ***WMO regional activities***

1.15 The MG noted with appreciation that the report of ET-CCP, [Doc 5.1\(2\)](#), provided a comprehensive outline of recent WMO regional activities in the context of aeronautical meteorology.

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**Highlights of recent (2017) progress within the Working Groups  
of the ICAO Meteorology Panel**

| <b>MET<br/>Working<br/>Group</b> | <b><i>Highlights of recent progress (non-exhaustive)</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>WG-MRI</b>                    | <p><b><i>MET for ATM requirements:</i></b> Generally progressing in line with Job Card and in coordination with the GANP update (see next). Validation of functional and performance MET requirements ongoing.</p> <p><b><i>GANP update:</i></b> Good progress being made for the 2019 GANP in line with Job Card, in particular expert support to improvements to B1-AMET module and development of new B2-AMET module.</p> <p><b><i>PANS-MET:</i></b> After limited progress, a two-stepped approach has been started. Step 1 entails splitting 'requirements' and 'means of compliance' based on Annex 3, Amendment 78 (2018) while Step 2 entails equivalent activity for Amendment 79 (2020). Intention is to have PANS-MET publication in 2022 coincident with Annex 3 Amendment 80.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>WG-MISD</b>                   | <p><b><i>Release of radioactive material (RRM):</i></b> Concept of operations essentially on hold pending further discussion on the practicality of applying atmospheric transport dispersion modelling. Prevailing issues with respect to source term estimation, uncertainties etc. Differing scientific opinions on the reference levels for the 'effective dose' (1mSv and 100mSv).</p> <p><b><i>Regional Hazardous Weather Advisory Centre (RHWAC) concept:</i></b> Completion of guidance for inclusion in ICAO Doc 8896 on MWO coordination of SIGMET issuance. Ongoing development of functional and performance requirements for hazardous weather information in the enroute phase of flight. Continued maturation of a concept for a globally-harmonized, multi-hazard information service to integrate into the future SWIM environment.</p> <p><b><i>Space weather (SWx):</i></b> Recommendations formulated by WG-MISD on the optimal number of centres – two global centres by November 2018 augmented by four regional centres by November 2022. Proviso that the optimum number of space weather centres be reassessed within 10 years. Amendment of the Annex 3 provisions required to accommodate the latter. Proposals on the 'optimal number' subject to METP endorsement in Q2 2018 – virtual meeting or possible extraordinary face-to-face meeting.</p> <p><b><i>Volcanic ash sulphur dioxide (VASD):</i></b> Open issues on the detection of SO<sub>2</sub> in the atmosphere, the impacts of SO<sub>2</sub> on aircraft, and the levels of SO<sub>2</sub> concentration that could pose a hazard to the health of aircraft occupants. Further studies and tests required. Support by VASAG.</p> |
| <b>WG-MIE</b>                    | <p><b><i>IWXXM requirements:</i></b> Extensive activities in respect of IWXXM validation, IWXXM translation centres, handling of partially translated IWXXM messages, IWXXM schema for WAFS SIGWX elements, IWXXM schema versioning and release schedule, and IWXXM status indicators.</p> <p><b><i>MET-SWIM Plan and Roadmap:</i></b> Ongoing development, in coordination with IMP, to supplement ICAO Doc 10039 (Manual on SWIM) and ICAO Doc 10003 (Manual on the Digital Exchange of Aeronautical Meteorological</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| <b>MET Working Group</b> | <b>Highlights of recent progress (non-exhaustive)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                          | <p>Information). Other MET in SWIM-related issues being addressed include transition timelines, policies on data representation and data usage (including by non-aviation users), fidelity of data/information, and data dissemination architectures.</p> <p><b>IWXXM Documentation:</b> Guidance developed in respect of IWXXM message status indicators, exchange testing and AMHS profiles for inclusion in 'Guidelines for the Implementation of OPMET Data Exchange using IWXXM'. Review of Annex 3 provisions with respect to AFTN and AMHS references to be conducted.</p> <p><b>Support and Coordination:</b> Information sharing between experts in respect of IWXXM testing – successes, failures, issues to be addressed. Working arrangements between TT-AvXML (WMO) and WG-MIE (ICAO) to be developed. Review of IWXXM change process initiated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>WG-MOG</b>            | <p><b>SADIS and WIFS:</b> Continued efforts to align the OPMET content of SADIS and WIFS. Review of the SADIS approval and cost recovery process initiated in light of technological advances. Improvements to SADIS FTP bandwidth allocation (to improve user download experience). Trial of graphical low-level area forecasts on SADIS FTP. Updates to SADIS User Guide and SADIS Gateway Operations Handbook.</p> <p><b>WAFS:</b> Review initiated of WAFC backup arrangements in view of SWIM-related developments. Improvements proposed to the temporal and spatial resolution of WAFS upper-air gridded forecasts. Improvements to the WAFC Management Report in respect of verification data. Development of a proposal for automated generation of WAFS SIGWX forecasts. Consideration of the WAFS medium term strategy. Review of the EDR values in Annex 3 with a view to proposing improvements thereto. Review and update of Regional SIGMET Guide template planned.</p> <p><b>IAVW:</b> Introduction of initial set of KPIs for VAAC-generated products. Discontinuation of inclusion of confidence levels in VAA/VAG and discontinuation of T+24 VAG trial. Update to Model VAG and Model SVA to be developed. Review of aircraft encounters with volcanic ash with a view to improving ICAO Doc 9691, including severity index. Introduction of re-suspended ash qualifier in VAA. Extensive discussions on aviation colour codes and related VAA/VAG and VONA issues. Continued development of IAVW roadmap and concept of operation. State of science review relating to provision of quantitative volcanic ash information to be undertaken. Consolidated VAAC Management Report to be devised. Support by VASAG.</p> |
| <b>WG-MCRGG</b>          | <p><b>White Paper:</b> Extensive expert and user input to last iteration of the White paper ('Aviation Met Information Delivery in 2030'). WMO requested to provide additional input for next iteration in respect of the Met technology and science outlook.</p> <p><b>Other issues:</b> Liaison with ICAO Air Transport Bureau in respect of Met cost recovery, charging principles, funding models, etc. Definition and interpretation of 'Meteorological Authority' under review (taking into account the findings of the 2016/17 CAeM global survey on aeronautical meteorological service provision).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |