

WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR AERONAUTICAL METEOROLOGY

**MANAGEMENT GROUP
2019**

Melbourne, Australia

12-15 February 2019

FINAL REPORT



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GROUP PHOTO



Pictured (left to right): Peter Lechner, Sue O'Rourke, Robert Rutledge, Kathy-Ann Caesar, Gaborekwe Khambule, Raúl Romero, Olga Petrova, Matt Strahan, Stéphanie Desbios, Michael Berechree, Ian Lisk, Jun Ryuzaki, Marina Petrova, Yong Wang, Sharon Sum Yee Lau, Lei Gu, Greg Brock and Claudia Ribero.

Not pictured: Andrea Henderson, Andrew Tupper and Beth Ebert.

1. ORGANIZATION OF THE MEETING

1.1. Opening of the meeting

1.1.1. The opening of the meeting took place at 09.00 a.m. on Tuesday 12 February 2019.

1.1.2. Dr Brett Anderson, General Manager of Aviation, Land and Maritime Transport extended a warm welcome to all participants on behalf of the hosting organization – the Australian Bureau of Meteorology. He acknowledged the important role of WMO, its Members and the Commission for Aeronautical Meteorology (CAeM) in the customer-focussed delivery of meteorological service for international air navigation, particularly at a time of rapid change within the meteorological and aviation sectors.

1.1.3. Mr Ian Lisk, president of the Commission for Aeronautical Meteorology (P/CAeM), also warmly welcomed participants to Australia, with special thanks extended to the Bureau of Meteorology for hosting the meeting in Melbourne and to WMO for providing financial assistance to support the attendance of all the CAeM Management Group (MG) members. He outlined that lots of flexibility had been built into the programme of work for the meeting to ensure that the MG would arrive at a set of solid, tangible outcomes (deliverables) before the close of business on Friday 15 February 2019. P/CAeM highlighted, in particular, topics to be addressed would include the long-term plan for aeronautical meteorology, work plans of the CAeM expert team and expert networks, and the implications of WMO Constituent Bodies Reform ('WMO Reform'). In addition to the presence of all CAeM MG Members, Mr Lisk also welcomed the presence of the Secretariat of the International Civil Aviation Organization (ICAO) and two members of the ICAO Meteorology Panel (METP) Management Group (MG) as Observers.

1.1.4. Ms Stéphanie Desbios, vice-president of the Commission (VP/CAeM), seconded the remarks of P/CAeM.

1.1.5. Mr Yong Wang, Chief of the Airport Operations and Infrastructure (AOI) Section of ICAO and Mr Peter Lechner, Chair of the ICAO METP, noted the important and special nature of relationship between WMO and ICAO, and welcomed the opportunity to coordinate the respective work programmes of the two organizations.

1.1.6. On behalf of the WMO Secretary-General, Prof Petteri Taalas, Mr Greg Brock, Acting Chief of the Aeronautical Meteorology (AEM) Division of WMO extended a warm welcome to all participants and thanked the Bureau of Meteorology for their generous hosting and logistical support.

1.1.7. The meeting was chaired by Mr Lisk with the assistance of Ms Desbios. Mr Brock served as Secretary of the meeting assisted by Mr Robert Rutledge, Seconded Expert, AEM Division.

1.1.8. Upon the conclusion of the opening formalities, participants were invited to attend a daily weather briefing given in the National Operations Centre (NOC) of the Bureau of Meteorology. Dr Andrew Tupper, State Manager, Victoria, served as host of the visit to the NOC.

1.2. Adoption of the agenda ([Doc. 1.2](#))

1.2.1. The Management Group (MG) adopted the agenda as shown at [Annex 1](#) to this report. The list of participants was as shown at [Annex 2](#) to this report.

1.3. Working arrangements

1.3.1. The MG adopted appropriate working arrangements for the meeting, including an order of business. Mr Michael Berechree, with the assistance of Ms Andrea Henderson, gave information on the local logistical arrangements.

2. REVIEW OF ACTION LIST

2.1. Review of carry-over/outstanding action items from CAeM-MG-2018 ([Doc. 2.1 rev](#)) and [INF. 2.1](#))

2.1.1. The MG undertook a review of the carry-over/outstanding action items arising from last the CAeM Management Group meeting (CAeM-MG-2018) held from 22 to 24 January 2018 in Geneva, Switzerland. The full listing of the 12 action items formulated by CAeM-MG-2018 is given at [Annex 3](#) to this report, together with an update on their status as at this meeting (CAeM-MG-2019).

2.1.2. The meeting was pleased to note that all 12 actions arising from CAeM-MG-2018 could be considered complete insofar as the MG was concerned.

2.1.3. In respect specifically of the follow-up to Action A05-2018 concerning the capturing of competency and qualification, education and training aspects in the ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) Protocol Questions (PQs), and taking into account a status update supplied by ICAO ([INF. 2.1](#) refers), the MG expressed that the CAeM Expert Team on Education, Training and Competency (ET-ETC) could play a key role in supporting ICAO in any subsequent review/update of the PQs, and that this could be a consideration of the ET-ETC work plan to be addressed under Agenda Item 4.1 of this meeting.

3. REPORT OF THE PRESIDENT OF CAeM AND MATTERS OF RELEVANCE TO THE COMMISSION

3.1. Follow-up to outcomes of CAeM-16 and TECO ([Doc. 3.1](#))

3.1.1. The MG recalled that the sixteenth session of the Commission for Aeronautical Meteorology (CAeM-16) was held from 24 to 27 July 2018 in Exeter, United Kingdom, preceded by a Technical Conference (TECO) held on 23 July 2018 with the theme "*The future is now: Meteorology enabling aviation decision support*".

3.1.2. The MG recalled CAeM-16 had formulated a total of six (6) resolutions, six (6) decisions and seven (7) recommendations. In respect of the CAeM-16 recommendations, the MG appreciated that these were subject to review and endorsement by the Eighteenth World Meteorological Congress (Cg-18) to be held in June 2019.

3.1.3. The MG undertook a review of all of the outcomes of CAeM-16 with a view to determining the need for and scope of follow-up actions on the part of the Commission or its subsidiary bodies (i.e. MG, expert team and/or expert networks).

3.1.4. The outcomes of this review are reflected at [Annex 4](#) to this report (final column of the table therein).

3.1.5. The MG was pleased to note that the abridged final report (Part I) and progress report (Part II) of the CAeM-16 session were [available here](#), as WMO-No. 1222, with Part I in all official languages and Part II in English only.

3.1.6. In respect of the presentations given during the TECO, as well as side events during the CAeM-16 session, the MG was informed that, in view of the very recent decommissioning of the CAeM-16 session website, the WMO Secretariat would undertake steps necessary to make the presentation materials available via the [AeMP website](#). **ACTION A01-2019**

3.2. **Outcomes of recent WMO TC, RA and other meetings/events, including ICAO and IATA ([Doc. 3.2](#))**

3.2.1. The MG undertook a review of outcomes considered to be of direct or indirect relevance to the Commission arising from recent sessions¹ of WMO technical commissions and regional associations as well as global meetings/events and related collaboration with ICAO and IATA. Specifically, the MG discussed relevant outcomes of the following meetings/events:

- CIMO-17 session held 12 to 16 October 2018, Amsterdam, Netherlands
- RA V-17 session (SW Pacific) held 15 to 17 October 2018, Nuku'alofa, Tonga
- RA III-17 session (South America) held 21 to 23 November 2018, Santiago, Chile
- RA I (Africa) African Conference on Meteorology for Aviation (ACMA-2018) – held 28 to 30 November 2018, Saly (near Dakar), Senegal
- ICAO METP/3, METP/4 and METP WGs meetings (multiple) held throughout 2018, various locations
- ICAO CAEP and AEP/ANSEP engagement
- IATA FOSTF and ACTG meetings

3.2.2. In respect of the CIMO-17 session, the MG noted, *inter alia*, Decision 14 (CIMO-17) which had requested the president of CIMO to consult with the P/CAeM to ensure appropriate and necessary coordination and collaboration on meteorological instruments and methods of observation in support of international air navigation.

3.2.3. In respect of the RA V-17 and RA III-17 sessions, the MG noted, *inter alia*, calls for P/CAeM to assist Members in these two regions in the follow-up to the outcomes of the 2016/2017 CAeM global survey on aeronautical meteorology, the 2017 WMO Aeronautical Meteorology Scientific Conference and the CAeM-16 session.

3.2.4. In addition, the MG noted that the RA V-17 session had, specifically, called for the organizing of a regional conference on the future of aeronautical meteorological service provision. In this connection, the MG was informed that the WMO Secretariat and P/CAeM had recently initiated dialogue with the president of RA V to help determine aspects including the potential scope, timing, venue and sponsoring of the event.

3.2.5. In respect of the RA I ACMA-2018 conference, the MG appreciated the active contributions made by the P/CAeM, Ms Gaborekwe Khambule (ET-ETC co-lead) and the WMO Secretariat in the conducting of the conference. It was noted that the outcomes of ACMA-2018 would be considered during the RA I-17 session being held in Cairo, Egypt from 21 to 23 February 2019.

3.2.6. In respect of the ICAO METP/3 and METP/4 meetings as well as multiple METP WGs meetings held in 2018, the MG remarked that such meetings and their associated intersessional work activities – which benefit from direct WMO involvement – were a continued demonstration of the strong cooperation, coordination and collaboration that exists between ICAO and WMO on all aeronautical meteorology matters, and that it was imperative that such engagement be sustained well into the future through the availability of sufficient Secretariat and other resources.

3.2.7. On other ICAO-related matters, the MG was apprised of a recent unsuccessful attempt within the WMO Secretariat (AEM Division) to obtain WMO Executive Management approval to seek a reinstatement of WMO's membership as an Observer on the ICAO Committee on Aviation Environmental Protection (CAEP). The MG noted the relevance of the work of WMO to the ICAO CAEP but that, given the elapsing of WMO's membership in CAEP in 2012 due to a lack of engagement, there was currently no formal mechanism for WMO to engage with ICAO on matters such as the impacts of aviation on the environment and the impacts of climate change and variability on aviation. Given an outcome of the thirteenth Air Navigation

¹ i.e. those held since the CAeM-MG-2018 meeting in January 2018.

Conference (AN-Conf/13) in October 2018, the MG questioned whether ICAO may look to pursue the climate change impacts issue through the METP. Since WMO is already a member of the ICAO METP this may be a potential opportunity for ICAO to explore given the relevance of the work of CAeM and its subsidiary bodies, notably EN-CCV, and the outcomes of the 2017 WMO Aeronautical Meteorology Scientific Conference. ICAO was requested to explore this further in consultation with WMO. **ACTION A02-2019**

3.2.8. The MG was pleased to note a recent renewal of WMO's membership as an Observer on the ICAO Air Navigation Services Economics Panel (ANSEP). In this connection, it was noted that the WMO Secretariat (AEM Division) was expected to attend an upcoming joint seventh meeting of the Airport Economics Panel (AEP) and ANSEP to be held in Montreal from 26 to 28 March 2019 (AEP-ANSEP/7). The MG was informed that a paper jointly prepared by WMO and IATA on cost recovery arrangements for the provision of aeronautical meteorological services was currently under development for AEP-ANSEP/7 and that the subject matter had linkage also with ICAO METP WG-MCRGG and CAeM EN-ISG work plans.

3.2.9. In respect of engagement with the IATA Flight Operations Support Task Force (FOSTF) and Accident Classification Technical Group (ACTG), the MG remarked that these were excellent opportunities to sustain direct engagement with aviation stakeholders and that such engagement should continue where resources allow.

3.2.10. On other IATA-related matters, the MG welcomed a brief update on the developments taking place in respect of IATA and WMO collaboration on AMDAR. The MG was also apprised of a recent development concerning the convening, in the October 2019 timeframe, of an IATA-WMO 'Aviation Weather Forum' [working title]. Noting that WMO's involvement in the forum was being led by the Secretariat of the OBS Department (as custodians of the AMDAR Programme), and that the forum was expected to address a broad range of aeronautical meteorology-related topics, not just AMDAR, the MG agreed that it was essential to request the OBS Department to ensure that the P/CAeM, the CAeM focal point on AMDAR (Mr Michael Berechree, see agenda item 4.4) and the ICAO Secretariat were kept apprised of developments. **ACTION A03-2019**

3.3. Outcomes of PRA/PTC-2019 and EC CBR-TF (PPT. 3.3)

3.3.1. The MG was given an overview, by P/CAeM, of the main discussions and outcomes of a joint PRA/PTC-2019 meeting (presidents of regional associations and presidents of technical commissions) and EC CBR-TF meeting (Executive Council Constituent Bodies Reform Task Force) held from 29 to 31 January 2019 in Geneva, Switzerland.

3.3.2. P/CAeM emphasized that WMO Constituent Bodies Reform, a main focus of WMO at present, represented a real opportunity for WMO to become more efficient and more effective – not only within the Organization and across its Members but also with partners such as ICAO – but that the proposed pace of change (WMO Reform is expected to be complete by Q2 2020 if endorsed by Cg-18 in June 2019) represented challenges and risks unless mitigation strategies and appropriate governance were put in place. The MG unanimously supported the sentiments of P/CAeM. The MG was also reminded by P/CAeM and the WMO Secretariat that although the WMO Constituent Bodies Reform process was being led mainly by WMO Executive Management and the above-mentioned EC CBR-TF, it nonetheless remained a Member-driven process and that any concerns that MG members may have regarding the reform and its implications on the AEM Division, say, could/should be raised at Cg-18 by their respective Permanent Representative.

3.3.3. Furthermore, appreciating the importance of communication through times of change, and recognizing that WMO Reform will have major ramifications not only on how WMO conducts its business but also on how its Members and partners interact with the Organization and how data is exchanged amongst Members, the MG sought a clarification as to whether ICAO had been officially notified of the WMO Reform proposals. Accepting information on WMO Reform and its implications had been presented by the WMO-nominated expert to the ICAO METP/4 meeting in September 2018, the MG nonetheless requested clarification as to whether

the WMO Secretary-General had officially notified the ICAO Secretary General of the reform aspirations. The WMO Secretariat agreed to seek the requested clarification. **ACTION A04-2019**

3.4. Expected outcomes of Cg-18, including WMO CB Reform, and WMO SP and OP (2020-2023) (PPT. 3.4)

3.4.1. The MG was apprised of the expected outcomes of the Eighteenth World Meteorological Congress (Cg-18) taking place from 3 to 14 (or 15) June 2019 in Geneva, Switzerland. Of particular interest to the Commission, the MG noted the expectations insofar as the following were concerned:

- WMO Strategic Plan, Operating Plan and Results-based Budget for 2020-2023;
- Governance review, including WMO Constituent Bodies Reform;
- Weather, climate, hydrological and related environmental services, including aeronautical meteorological services;
- Earth systems observations and predictions, including WIGOS, WIS and GDPFS developments;
- Earth systems research, including science for service and science for policy; and
- Capacity development, including core competencies and development partnerships.

3.4.2. The MG was also informed that Congress would undertake the election of officers of the Organization, including President of WMO, and that on an exceptional basis and subject to the outcomes of the discussion on WMO Reform, Congress was expected to elect presidents of the proposed two (new) technical commissions – namely the Commission for Observation, Infrastructure and Information Systems (COIIS) and the Commission for Weather, Climate and related Environmental Services and Applications (CSA) [working titles and acronyms].

3.4.3. The MG noted that all working documentation and other information pertaining to Cg-18 were becoming [available here](#).

4. WORK PROGRAMME REPORTING, REVIEW AND COORDINATION

4.1. Expert Team and Expert Network reports and coordination of tasks

4.1.1. The MG undertook a review of progress reports addressing the composition, terms of reference and work plans of the following CAeM expert team and expert networks as well as proposed working methodology, coordination needs and other considerations:

- Expert Team on Education, Training and Competency (ET-ETC) ([Doc 4.1\(1\)](#))
- Expert Network on Aeronautical Meteorological Information Services and Governance (EN-ISG) ([Doc 4.1\(2\)](#))
- Expert Network on Aeronautical Meteorological Hazards Science (EN-MHS) ([Doc 4.1\(3\)](#))
- Expert Network on Impacts of Climate Change and Variability on Aviation (EN-CCV) ([Doc 4.1\(4\)](#))
- Expert Network on Communications and Outreach (EN-COM) ([Doc 4.1\(5\)](#))

4.1.2. In respect of the differentiation between the CAeM expert team and expert networks, P/CAeM advised that ET-ETC was (re)established following the CAeM-16 session given the formal responsibility of WMO to respond specifically to the ICAO Annex 3, Chapter 2, 2.1.5 prescriptive regulatory requirement, while EN-ISG, EN-MHS, EN-CCV and EN-COM were established to provide a more open, networked approach and one that is, for the most part, flexible enough respond to the emerging requirements of ICAO whenever and wherever these may impact WMO Members with aeronautical meteorological service responsibilities. To the extent practicable therefore, the ENs will conduct their business via correspondence (email, video/teleconferences) thereby minimising or eliminating entirely a need for face-to-face meetings. It is also an expectation of the P/CAeM and VP/CAeM and the WMO Secretariat that

this networked approach would allow the CAeM (or its successor) to adapt well and smoothly to the new structure following the WMO Constituent Bodies Reform.

4.1.3. During the meeting, the lead/co-leads of the expert team and expert networks developed updates of their respective draft work plans to cover the remaining period of 2019 *plus* a look-ahead for 2020-2023, taking into account feedback given by the MG. The lead/co-leads were tasked to finalize the work plans in coordination with their respective expert team/network core members. **ACTION A05-2019**

4.1.4. To facilitate the future maintenance of the work plans, the WMO Secretariat was requested to explore the possibilities to make them available online, perhaps as part of a common platform that enables online editing (e.g. Google sheets, Alfresco or suchlike). **ACTION A06-2019**

4.1.5. In respect of the lead and co-lead responsibilities across the ET and ENs, P/CAeM in consultation with and the agreement of the MG decided to re-assign Ms Claudia Ribero from EN-COM to EN-CCV. The lead and co-leads of the CAeM ET and ENs therefore became:

Expert team/network	Lead or Co-lead (as at 15 February 2019)	
ET-ETC	Kathy-Ann CEASAR	Gaborekwe KHAMBULE
EN-ISG	Michael BERECHREE	Jun RYUZAKI
EN-MHS	Sharon Sum Yee LAU	Matt STRAHAN
EN-CCV	Lei GU	Claudia RIBERO
EN-COM	Marina PETROVA	Claudia RIBERO

The WMO Secretariat was requested to update the AeMP website (and any other associated expert database records) accordingly and P/CAeM agreed to communicate this change to the Permanent Representative of Argentina with WMO. **ACTION A07-2019**

4.1.6. Noting challenges that some of the lead/co-leads had faced recently in securing responses from some core members within their team/network, P/CAeM agreed to monitor the situation with the MG and to take further action as and when required, including the potential replacement of any core member who fails to make an active contribution.

4.1.7. In respect of the biannual CAeM newsletters, the MG reviewed feedback obtained and recommendations arising from a newsletter satisfaction survey conducted by ET-CCP (predecessor of EN-COM) in 2018 ([INF 4.1\(5\)](#) refers). Having completed its review, EN-COM was requested to implement the recommendations, as necessary, as part of future newsletters. In addition, the WMO Secretariat was requested to explore the feasibility and costs associated with translating the CAeM newsletters into other official WMO languages (i.e. Arabic, Chinese, French, Russian and/or Spanish). **ACTION A08-2019**

4.2. Volcanic ash-related activities ([Doc. 4.2](#))

4.2.1. The MG was apprised of recent activities relating to volcanic ash, including the outcomes of a conjoint WMO VAAC Best Practices workshop and WMO/IUGG Volcanic Ash Scientific Advisory Group meeting held in Wellington, New Zealand in November 2018. The MG also considered a proposal for how to address volcanic sciences and applications in the future

4.2.2. In respect of the conjoint VAAC BP/VASAG, the MG was afforded an executive summary of the 20 issues addressed by the session and their outcomes. The MG was pleased to note the significant progress being made in number of areas, including the revisiting of quantitative volcanic ash information. The MG appreciated the involvement of CAeM ET-ETC in assisting the volcanic ash community undertake the development of a competency framework for VAAC personnel. In respect of areas for improvement, the MG noted concerns that the lack of capacity amongst State volcano observatories in some parts of the world continued to be an

impediment to the efficient and effective functioning of VAAC operations and the international airways volcano watch (IAVW) in general.

4.2.3. In respect of how to address volcanic sciences and applications in the future, the MG was highly supportive of a proposal to transition from the existing VAAC BP and VASAG arrangements towards an Expert Network on Volcanic Sciences and Applications (EN-VSA) [working title and acronym] residing under the CAeM (or its successor). In this regard, the MG requested P/CAeM, at his discretion and with the assistance of the WMO Secretariat, to undertake the steps necessary to enable such as transition. **ACTION A09-2019**

4.3. Space weather-related activities (Doc. 4.3)

4.3.1. The MG was given an overview of recent and ongoing activities relating to space weather, including a summary of the developments taking place within the CBS/CAeM Inter-Programme Team on Space Weather Information, Systems and Services (IPT-SWeISS), in particular as they relate to the development of a four-year plan for the period 2020 to 2023 and the recent contribution made by WMO to ICAO towards the establishment of an operational space weather information service for international civil aviation.

4.3.2. In respect of the four-year plan for space weather, the MG appreciated the recent opportunity MG members had been given to review and comment on the plan, which had subsequently been reported to IPT-SWeISS to facilitate the continued iterative improvement of the plan in advance of its consideration at Cg-18 in June 2019. The MG also noted that, similar to the foregoing discussion on a competency framework for VAAC personnel, it was possible that CAeM ET-ETC may be requested to assist IPT-SWeISS in the development of a competency framework for space weather personnel in the 2020-2023 timeframe.

4.3.3. In respect of the establishment of an operational space weather information service for international air navigation, the MG noted that the ICAO Council had designated space weather information providers in November 2018 and that, through its METP WG-MISD, ICAO had embarked on the design of the operational system taking into account the number of providers (States and consortia) designated by ICAO with global or regional responsibility. In view of the recent (2018) outcomes of ICAO METP and Council deliberations on space weather matters, the MG noted that WMO may, conceivably, be requested by ICAO to undertake further site assessments and audits of existing or prospective space weather information service providers not later than 2027. If this request was to be forthcoming, WMO would have to seek necessary and appropriate resources to fulfil the request. The WMO Secretariat advised that this is a development that would have to be monitored.

4.4. Focal point identification and coordination mechanisms (Doc. 4.4)

4.4.1. The MG reviewed a status report on the identification of experts contributing to the work of the Commission through an extended family of focal points. The MG also considered coordination mechanisms associated with the aeronautical meteorology community of expertise.

4.4.2. In respect of the identification of focal points, acknowledging a need to ensure that experts identified are well-known in their field and already nominated by Permanent Representatives of WMO Members to contribute to the work of WMO, the MG supported the following designations:

Specialist area	Name of focal point (affiliation)	Status or follow-up action
WMO Integrated Global Observing System (WIGOS) and instruments and methods of observation	Jitze van der Meulen (KNMI)	Confirmed
AMDAR and aircraft-based observations	Mike Berechree (BoM)	Confirmed

Specialist area	Name of focal point (affiliation)	Status or follow-up action
WMO Information System (WIS) and system-wide information management (SWIM)	Patrick Simon (Météo-France)	<i>Confirmed</i>
WMO METCE and ICAO Meteorological Information Exchange Model (IWXXM)	Mark Hedley (UKMO)	<i>Confirmed</i>
Space weather	Xiaoxin Zhang (CMA)	<i>Confirmed</i>
Gender equality and the empowerment of women in aeronautical meteorology	Claudia Ribero (SMN)	<i>Confirmed</i>
Disaster Risk Reduction (DRR)	Ian Lisk (UKMO)	<i>Confirmed</i>
Emergency Response Activities (ERA) / Releases of Radioactive Material (RRM)	Rene Servranckx (Env. Canada (Ret.))	<i>Confirmed</i>
Global Atmosphere Watch (GAW)	Matt Hort (UKMO)	<i>Confirmed</i>
Education and Training Programme (ETRP)	Kathy-Ann Caesar (CIMH)	<i>Confirmed</i>
Data-processing and Forecasting System (DPFS)	<i>To be confirmed</i>	ACTION A10-2019 a) P/CAeM to consult with Paul Davies (cc: P/CBS)
Aviation Research and Development Project (AvRDP)	<i>To be confirmed</i>	ACTION A10-2019 b) P/CAeM to consult with PW (Peter) Li (cc: P/CAS)
Tropical Cyclone Programme (TCP)	<i>To be confirmed</i>	ACTION A10-2019 c) WMO Secretariat – AEM Division to consult with TCP Division (cc: P/CAeM)

4.4.3. In respect of gender equality and the empowerment of women on aeronautical meteorology, the MG noted a presentation prepared by Ms. Ribero as the focal point on this issue ([PPT. 4.4](#) refers).

4.4.4. The MG appreciated and emphasized that being identified as a focal point and keeping the CAeM apprised of developments in the respective specialist area as and when required should not be an onerous task for the individuals concerned.

4.4.5. In respect of coordination mechanisms associated with the aeronautical community of expertise, the MG appreciated that email, video/teleconferencing and/or face-to-face encounters at meetings/events offered ideal opportunities to ensure community coordination and collaboration is sustained.

5. FUTURE WORK PROGRAMME

5.1. WMO publications under CAeM responsibility ([Doc. 5.1](#))

5.1.1. The MG conducted a brief review of WMO publications under the lead or supporting responsibility of the Commission. The MG was pleased to note where actions had been taken or was being taken in respect of obsolete publications – in particular WMO-No. 770, 842 and 1001 as discussed at the CAeM-MG-2018 meeting and CAeM-16 session.

5.1.2. The MG recalled Recommendation 5 (CAeM-16), which had stemmed from deliberations at CAeM-MG-2018, requesting WMO, in coordination with ICAO, to undertake steps necessary to discontinue Technical Regulations (WMO-No. 49), Volume II. In this regard, while noting that this recommendation is subject to endorsement at Cg-18 in June 2019, the MG agreed that support to this activity would be given by EN-ISG as part of their work plan. The MG also noted that Recommendation 5 (CAeM-16) requested an exploration of means to enable free access, by WMO Members that their NMHS, to ICAO regulatory and guidance material.

5.1.3. In respect of WMO guides/guidance material for which CAeM has lead or supporting responsibility, the MG agreed that updates related to WMO-Nos. 731 and 732 and WMO-No. 904 should also form part of the EN-ISG work plan, while a review of WMO-Nos. 930 and 1038 should form part of the ET-ETC work plan. These aspects were duly addressed as part of the Agenda Item 4.1 considerations.

5.1.4. In respect of legacy WMO guides/guidance material on aeronautical meteorology, especially those which have not been updated within the past 5 years, the MG questioned whether there was any statistical evidence available on the frequency with which hard- and/or soft-copies were obtained, since this could be an indicator of whether the material was of a continuing relevance. The WMO Secretariat agreed to discuss this matter with the publications department. **ACTION A11-2019**

5.1.5. In addition, the WMO Secretariat was requested to confirm the status of WMO-No. 782 – specifically the department or body responsible for its maintenance to ensure continuing alignment with WMO Technical Regulations and ICAO provisions addressing the METAR/SPECI and TAF code forms. **ACTION A12-2019**

5.1.6. Lastly, in response to a question concerning the preparation of guidance material by WMO and ICAO and, more specifically, the determination of responsibilities – i.e. who is responsible for what and why – it was agreed that this could be a consideration of a future MG meeting.

5.2. Long-term plan for aeronautical meteorology (Doc. 5.2 incl. Annex A plus Annex B)

5.2.1. The MG recalled that Congress in 2015 and Executive Council in 2016, through Resolution 3 (Cg-17) and Decision 43 (EC-68) respectively, had requested the president of the CAeM to prepare, in coordination with the Secretary-General, regional associations and technical commissions, a draft long-term plan for aeronautical meteorology for consideration at EC-69 in 2017. The long-term plan was to be aligned with the ICAO Global Air Navigation Plan (GANP) and its aviation system block upgrades (ASBU) methodology. A methodology for the draft long-term plan for the aeronautical meteorology programme (LTP-AeMP) was consequently prepared and endorsed by EC-69. The draft LTP-AeMP essentially proposed a methodology for step-wise performance improvements to the observing and forecasting of microscale, topocscale, mesoscale, large-scale and planetary scale meteorological phenomena over the coming 15 years and beyond in support of aviation operations at the aerodrome, in the terminal area and in enroute airspace.

5.2.2. At the CAeM-MG-2018 meeting, the MG was of the view that much effort was still required before the LTP-AeMP would be sufficiently mature for consideration by CAeM, Executive Council and/or Congress in the 2018 to 2019 timeframe. Moreover, the MG questioned whether the draft LTP-AeMP structure submitted to EC-69, which had taken inspiration from the ICAO GANP/ASBU, might be too extensive for CAeM/AeMP purposes. The MG proposed a re-evaluation of the entire proposed structure of the LTP as well as a strategy that would ensure its maintenance, owing to the fact that the LTP would be a 'living document' under constant review and periodic update. As a consequence, Action A10-2018 formulated at the last CAeM-MG meeting led to a 'straw man' and a strategy for the development and maintenance of the LTP-AeMP being presented to and endorsed by the CAeM-16 session in July

2018. Through Recommendation 4 (CAeM-16), P/CAeM had been requested to, *inter alia*, establish mechanisms for the development of a first edition LTP-AeMP for approval by Cg-18 and mechanisms to support the future maintenance and development of subsequent editions.

5.2.3. Accordingly, the MG reviewed a first draft of a first edition of the long-term plan which had been recently prepared by the WMO Secretariat (AEM Division) at the request of and in coordination with the president and vice-president of the CAeM. The MG appreciated that the draft long-term plan paid due regard, to the extent necessary, to the WMO strategic and operating plans for 2020-2023, outcomes of the EC-69 special dialogue on the future of aeronautical meteorological services, outcomes of a CAeM global survey on aeronautical meteorological service provision in 2016/2017 and a CAeM/CAS/CBS Aeronautical Meteorology Scientific Conference in 2017, CAeM-16 priority themes for 2018 onwards, ICAO GANP/ASBU for the period 2019-2033, and an ICAO Meteorology Panel (METP) 'White Paper' on future aeronautical meteorological information service delivery.

5.2.4. Having completed its review of the first draft of the first edition of the long-term plan, the MG was of the view that the long-term plan was more suitable compared with previous draft iterations, but that there were still several areas for improvement which should be incorporated before or after the first edition is submitted to Cg-18 in June 2019 for endorsement. The feedback from the MG can be summarized as follows (in no particular order):

- Inclusion of graphics to enhance the look-and-feel of the plan and to appropriately support the narrative. For example, a simplified diagram illustrating the timelines associated with the ICAO GANP/ASBU methodology.
- Updates to the top-level priorities taking into account the priority themes established at the CAeM-16 session.
- Inclusion of risks and risk mitigation strategies, possibly as part of the next (second) edition.
- Inclusion in the drivers for change narrative of information on the safety, efficiency and/or economic benefits of meteorological service for international air navigation.
- Improved emphasis on what Members are already doing and what Members need to be doing over the next decade and beyond to respond to the evolving needs of aviation users.

5.2.5. The MG appreciated that, in respect of next steps, a major milestone was to invite Cg-18 in June 2019 to review and endorse the long-term plan and, subject to endorsement, to proceed with the publication of the first edition and preparation of the draft second edition. In this context, the WMO Secretariat was requested to finalize the long-term plan taking into account the foregoing feedback, in coordination with the president and vice-president of the CAeM, prior to its inclusion as part of the working documentation for Cg-18. **ACTION A13-2019**

5.3. WMO CAeM/AeMP Operating Plan preparation ([Doc. 5.3](#))

5.3.1. The MG was familiarized with the structure and draft content of the WMO Operating Plan (OP) 2020-2023 which would be reviewed by Cg-18 in June 2019. The MG noted that insofar as aeronautical meteorological services were concerned these were mainly addressed under Long-term Goal 1 (*Better serve societal needs: Delivering authoritative, accessible, user-oriented and fit-for-purposed information and services*) and Strategic Objective 1.4 (*Enhance the value and innovate the provision of decision-supporting weather information and services*). An excerpt of the WMO OP 2020-2023 in this regard was reviewed by the MG.

5.3.2. Taking the WMO OP 2020-2023 into consideration, and notwithstanding the potential implications of WMO Reform, the MG acknowledged there was a need to consider the operating plan of the CAeM in support of the Aeronautical Meteorology Programme (AeMP) for this final year of the current WMO financial period (2019) as well as a look-ahead of the needs of the CAeM (or its successor) for the next WMO financial period (2020 to 2023). In this connection, it was noted that as part of WMO Reform it was probable that all references to WMO

Programmes, such as the AeMP, would be replaced by references to activities in support of the long-term goals and strategic objectives contained in the WMO OP 2020-2023.

5.3.3. Appreciating that the CAeM expert team and expert networks were in the final stages of development of their respective terms of reference and work plans – see 4.1 above – the MG agreed that, once finalised and consolidated, these materials would suitably serve as the CAeM Operating Plan for 2019 and, moreover, as a basis for the operating plan of the CAeM (or its successor) in the next WMO financial period (2020 to 2023).

5.4. Upcoming meetings/events of relevance to CAeM (PPT. 5.4)

5.4.1. The MG undertook a review of upcoming meetings/events of relevance to the Commission, as known, in the 2019 and 2020 timeframe, most notably those of WMO constituent bodies and those of ICAO and IATA, at a global and a regional level. The MG supplied updated information on several additional known meetings/events.

5.4.2. In respect of the next meeting of the CAeM Management Group, the MG gave some consideration to convening in the 2020 timeframe but acknowledged that the outcomes of WMO Reform in 2019 would play a major role in determining when, where and in what form a future MG meeting would take place. Notwithstanding the prevailing uncertainty, the MG agreed in principle that its next meeting (or the next meeting of its successor) should be held not later than Q3 or Q4 2020. The MG was informed that WMO had received a kind offer from the Permanent Representative of Argentina with WMO to host a future CAeM MG meeting in Buenos Aires. The MG also considered whether there would be benefit of convening its next meeting back-to-back with the ICAO METP/5 meeting (September 2020) or conjointly with the ICAO METP MG. It was agreed to leave these as open options for now.

6. ANY OTHER BUSINESS

6.1. Dr Andrew Tupper, State Manager, Victoria based at the Bureau of Meteorology in Melbourne delivered a retrospective presentation on developments in volcanic ash observation and forecasting and the international airways volcano watch. The MG expressed its thanks to Dr Tupper for his enlightening presentation.

6.2. The Mr Yong Wang of the ICAO Secretariat emphasized the important role WMO and its Members play in supporting ICAO and its States in responding to the needs and expectations of aviation users worldwide. He highlighted that while WMO Constituent Bodies Reform was likely to yield significant changes within WMO over the coming year or more, it also presented a potential opportunity for WMO and ICAO to work more closely together.

6.3. Ms Marina Petrova, lead of EN-COM, reminded the MG that articles for the next issue of the CAeM newsletter (March 2019 timeframe) should be submitted to EN-COM as soon as possible.

6.4. The WMO Secretariat gave a brief overview of the following matters:

- *On-going improvements to a WMO Country Profile Database (CPDB):* CPDB will become a primary tool of the Organization, its Members and partners. Appreciating the nature of information on experts/focal points to be included in the CPDB, the president of CAeM remarked on the need for WMO to ensure adherence to all applicable data protection and privacy laws (e.g. GDPR – General Data Protection Regulation – of the European Union).
- *On-going sensitivity analysis serving as a 2019 CAeM global survey:* An online survey was launched by WMO with its Members on 1 February 2019 in response to a request of EC-69 in 2017. The outcomes of the survey will be coordinated with EN-ISG.
- *CAeM Moodle website:* Recent modifications to the website URL of the CAeM Moodle platform and a broader suite of on-going improvements to WMO's web-based architecture will, in due course, result in changes to the WMO AeMP website.

- *WMO staffing of the AEM Division:* Mr Greg Brock currently serves as Acting Chief, AEM Division (recurrent basis). Mr Robert Rutledge currently serves as a seconded expert (until 30 June 2019). Ms Helena Campos Benitez currently serves as Senior Secretary on a 50:50 shared based with MMO Division (until 30 June 2019). WMO Executive Management yet to announce a decision on the longer-term staffing of the AEM Division. Decision may be taken after Cg-18 in June 2019.

7. CLOSURE OF THE MEETING

7.1. After the customary exchange of courtesies, the meeting closed at 12.30 p.m. on Friday 15 February 2019.

7.2. A list of the actions arising from the CAeM-MG-2019 meeting is given at [Annex 5](#) to this report.

**CAeM MANAGEMENT GROUP 2019****MELBOURNE, AUSTRALIA****12-15 FEBRUARY 2019****AGENDA****1. ORGANIZATION OF THE MEETING**

- 1.1 Opening of the meeting
- 1.2 Adoption of the agenda
- 1.3 Working arrangements

2. REVIEW OF THE ACTION LIST

- 2.1 Review of carry-over/outstanding action items from CAeM-MG-2018

3. REPORT OF THE PRESIDENT OF CAeM AND MATTERS OF RELEVANCE TO THE COMMISSION

- 3.1 Follow-up to outcomes of CAeM-16 and TECO
- 3.2 Outcomes of recent WMO TC, RA and other meetings/events, including ICAO and IATA
- 3.3 Outcomes of PRA/PTC-2019 and EC CBR-TF
- 3.4 Expected outcomes of Cg-18, including WMO CB Reform, and WMO SP and OP (2020-2023)

4. WORK PROGRAMME REPORTING, REVIEW AND COORDINATION

- 4.1 Expert Team and Expert Network reports and coordination of tasks
- 4.2 Volcanic ash-related activities
- 4.3 Space weather-related activities
- 4.4 Focal point identification and coordination mechanisms

5. FUTURE WORK PROGRAMME

- 5.1 WMO publications under CAeM responsibility
- 5.2 Long-Term Plan for the AeMP
- 5.3 WMO CAeM/AeMP Operating Plan preparation
- 5.4 Upcoming meetings/events of relevance to the CAeM

6. ANY OTHER BUSINESS**7. CLOSURE OF THE MEETING**

**CAem MANAGEMENT GROUP 2019****MELBOURNE, AUSTRALIA****12-15 FEBRUARY 2019****LIST OF PARTICIPANTS****1. MANAGEMENT GROUP MEMBERS**

COUNTRY	NAME	E-MAIL
ARGENTINA	RIBERO, Claudia	cribero@smn.gov.ar
AUSTRALIA	BERECHREE, Michael	michael.berechree@bom.gov.au
BRITISH CARRIBEAN TERRITORIES	CAESAR, Kathy-Ann	kacaesar@cimh.edu.bb
CHINA	GU, Lei	gulei@mail.iap.ac.cn
FRANCE	DESBIOS, Stéphanie	stephanie.desbios@meteo.fr
HONG KONG, CHINA	LAU, Sum Yee (Sharon)	sylau@hko.gov.hk
JAPAN	RYUZAKI, Jun	jryuzaki@met.kishou.go.jp
RUSSIAN FEDERATION	PETROVA, Marina	aviamarina.petrova@mail.ru
SOUTH AFRICA	KHAMBULE, Gaborekwe	gaborekwe.khambule@weathersa.co.za
UNITED KINGDOM	LISK, Ian	ian.lisk@metoffice.gov.uk
UNITED STATES	STRAHAN, Matt	matt.strahan@noaa.gov

2. OTHER PARTICIPANTS (OBSERVERS)

COUNTRY / ORGANIZATION	NAME	E-MAIL
AUSTRALIA	EBERT, Beth*	e.ebert@bom.gov.au
AUSTRALIA	HENDERSON, Andrea	andrea.henderson@bom.gov.au
AUSTRALIA	O'ROURKE, Sue	sue.orourke@bom.gov.au
AUSTRALIA	TUPPER, Andrew*	andrew.tupper@bom.gov.au
NEW ZEALAND	LECHNER, Peter	peter.lechner@caa.govt.nz
RUSSIAN FEDERATION	PETROVA, Olga	olpetrova2004@yandex.ru
ICAO	ROMERO, Raul	rromero@icao.int
ICAO	WANG, Yong	yongwang@icao.int

* Part-time attendance only

3. WMO SECRETARIAT

NAME	TITLE	E-MAIL
BROCK, Greg	Acting Chief, Aeronautical Meteorology Division, WDS	gbrock@wmo.int
RUTLEDGE, Robert (Bob)	Seconded Expert, Aeronautical Meteorology Division, WDS	rrutledge@wmo.int

ACTION LIST**Status of follow-up key:**

Not started <i>Work on the task has not begun and is not underway.</i>	On hold <i>Work on the task has begun but is not finished and is not being actively worked on.</i>	On-going <i>Work on the task has begun and is actively underway.</i>	Completed <i>Work on the task has been completed.</i>	Deferred <i>Work on starting or completing the task has been deferred to a later date.</i>	Cancelled <i>Work on the task has stopped without being started or completed and is no longer required.</i>
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Action identifier key:

A[nn]- [yyyy]	For actions arising from CAeM Management Group meetings, where A[nn] denotes the action number and [yyyy] denotes the year
<i>Example: A01-2018</i>	<i>Action 01 arising from the CAeM Management Group meeting in 2018</i>

**STATUS OF ACTIONS ARISING FROM CAeM-MG-2018
(AS UPDATED BY CAeM-MG-2019)**

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status at 12 Jan 19	Note
A01-2018	2.1 and 6.8	Undertake action to retire WMO-Nos. 770 and 842 and, where applicable, address any associated consequential amendments to WMO or other publications	WMO Secretariat (in coordination with ICAO Secretariat if required)	a) Obsolete WMO-Nos. 770 and 842; and b) Where applicable, amendment/removal of cross-references in WMO or other publications	31 Dec. 2018	Complete insofar as CAeM-MG is concerned (see Note)	Check if cross-referenced in any ICAO publications. Dec. 5 (CAeM-16) endorsed discontinuation of 770 and 842. WMO LCP/DPM undertaking the steps necessary to withdraw these publications.

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status at 12 Jan 19	Note
A02-2018	2.1 and 6.8	Undertake action to retire WMO-No. 1001 and ICAO Doc 9873 and address associated consequential amendments to WMO and ICAO publications (including ICAO Annex 3/WMO-No. 49, Volume II). Replace all references to 1001/9873 with WMO-No. 1100	WMO Secretariat in coordination with ICAO Secretariat	a) Study Note for METP/3; b) Obsolete WMO-No. 1001 and Doc. 9873; and c) Amendment of ICAO Annex 3/WMO-No. 49, Volume II and other publications (reference to WMO-No. 1100 instead)	a) 10 Sept. 2018 b) and c) Nov. 2020	Complete insofar as CAeM-MG is concerned (see Note)	Amendment 79 (2020). Dec. 5 (CAeM-16) endorsed discontinuation of 1001. WP/6101 to METP/4 (Sept. 2018). METP/4 Dec. 8/1 endorsed discontinuation of 1001/9873. METP/4 Rec. 8/1 proposes amendment to ICAO Annex 3 to replace references by WMO-No. 1100
A03-2018	5.1.1	Investigate with WWRP the possibilities for a formal report on AvRDP Phase I implementation and the strategy for Phase II	Herbert Puempel	(Possible) AvRDP report for CAeM-16	24 April 2018*	Complete	Refer to CAeM-16 outcomes (WMO-No. 1222).
A04-2018	5.1.2	a) Check feasibility of gathering satisfaction survey feedback from newsletter recipients using	a) Secretariat; b) ET-CCP	Satisfaction survey	a) 28 February 2018;	a) Complete	Satisfaction survey conducted in Q1 2018.

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status at 12 Jan 19	Note
		MailChimp or other platform (e.g. SurveyMonkey); and b) If feasible, conduct satisfaction survey with newsletter recipients			b) 31 March 2018	b) Complete	Recommendations given in CAeM-MG-2019/INF. 4.5
A05-2018	5.1.3	Review the ICAO USOAP CMA Protocol Questions (PQs) to determine whether they adequately address competency and qualification, education and training requirements	ICAO	Review of PQs	31 Dec. 2018	Complete insofar as CAeM-MG is concerned	Ref: ICAO Annex 3/WMO-No. 49, Vol. II, §2.1.5 See CAeM-MG-2019/INF. 2.1 for latest developments
A06-2018	5.1.4	Develop a communication strategy and supporting materials on the global and region-specific outcomes of the CAeM global survey for use at CAeM-16, WMO and ICAO meetings or other events	ET-GOV in coordination with ET-CCP	Communications strategy and supporting materials	31 May 2018	Complete	E.g. reports, presentations, graphics. Overview given by ET-GOV co-chair to CAeM-MG via email in mid-2018.
A07-2018	5.1.4	Develop an overview of the methodologies and techniques used to communicate and collect feedback on the survey that led to such a high response rate (92%) for future use by the MG or other interested parties	ET-GOV in coordination with ET-CCP	Overview of the methodologies and techniques	31 March 2018	Complete	Overview given by ET-GOV co-chair to CAeM-MG via email in mid-2018.
A08-2018	6.2	Develop a draft provisional agenda for the CAeM-16 session	WMO Secretariat in coordination with president and vice-president of CAeM	Draft provisional agenda for CAeM-16	7 February 2018	Complete	Refer to CAeM-16 outcomes (WMO-No. 1222).

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status at 12 Jan 19	Note
A09-2018	6.3	Develop a draft concept note for the 2018 TECO	Kent Johnson and Matt Strahan (as lead) assisted by WMO Secretariat and in coordination with CAeM-16/TECO OC	Concept note for TECO 2018	7 February 2018	Complete	Refer to CAeM-16 outcomes (WMO-No. 1222).
A10-2018	6.5	Develop a strawman and a strategy for the development and maintenance respectively of the LTP-AeMP for 2019-2033	Secretariat in coordination with the MG	Strawman and strategy proposal for CAeM-16	24 April 2018	Complete	Refer to CAeM-16 outcomes (WMO-No. 1222).
A11-2018	6.7	Develop a proposal for the future working structures of WMO/CAeM in support of the AeMP	President and vice-president of CAeM in coordination with the MG	Working structure proposal for CAeM-16	24 April 2018	Complete	Refer to CAeM-16 outcomes (WMO-No. 1222).
A12-2018	7.1	Consult with ATB (ICAO) to assist in establishing the status of WMO's membership of the Committee on Aviation Environmental Protection (CAEP)	ICAO Secretariat (Yong Wang)	Clarity on WMO membership of ICAO CAEP	30 Sept. 2018	Complete insofar as CAeM MG is concerned.	ICAO ATB confirmed (9 Jan 2019) that WMO lost CAEP Observer status in 2012 due to lack of participation. Status discussed further at CAeM-MG-2019 meeting.

FOLLOW-UP TO OUTCOMES OF THE CAeM-16 SESSION

Note. — Where action is considered to be required by the Commission (or its subsidiary bodies) these are **highlighted in yellow**.

RESOLUTION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
1	Report by the president of the Commission for Aeronautical Meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Recalling:</p> <p>(1) Resolution 1 (CAeM-15) – Management Group of the Commission for Aeronautical Meteorology,</p> <p>(2) Resolution 2 (CAeM-15) – Establishment of subsidiary bodies of the Commission for Aeronautical Meteorology,</p> <p>Noting Regulation 186 of the WMO General Regulations concerning the duties of the president of a commission,</p> <p>Noting also the report of the president of the Commission for Aeronautical Meteorology (CAeM) (CAeM-16/INF. 2), which provides an overview of the progress of the work of the Commission since its fifteenth session,</p> <p>Mindful of the current and foreseen issues facing aeronautical meteorological service provision, strategic and operational planning, as well as WMO reform considerations relevant to CAeM as highlighted in the president’s report,</p> <p>Appreciates the dedicated efforts of the president, vice-president, expert team co-chairpersons and core members with respect to their individual contributions and collective achievements, as manifested in the outputs of CAeM during the intersessional period;</p> <p>Decides to endorse the report of the president as submitted to CAeM at its sixteenth session;</p>	<p>Multiple opportunities exist to ensure that the future outputs of the CAeM (or its successor) continue to be well documented and well communicated to WMO Members and aviation stakeholders, including but not limited to:</p> <ul style="list-style-type: none"> • Regular WMO AeMP website updates. • Biannual CAeM newsletters. • Occasional WMO Meteoworld and Bulletin articles. • Outreach events including global and regional meetings, conferences and workshops. • Working documentation for meetings such as those of WMO, ICAO and IATA.

		<p>Requests the president of CAeM to ensure that the future outputs of CAeM, which are a fundamental contribution to the ability of National Meteorological and Hydrological Services to provide high-quality meteorological services for international air navigation, continue to be well documented and well communicated to WMO Members and aviation stakeholders;</p> <p>Requests the Secretary-General to make available the necessary resources to support and sustain the future work of the Commission (or its successor).</p>	
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RESOLUTION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
2	Strategic planning considerations	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting:</p> <p>(1) Recommendation 20 (EC-70) – WMO Strategic Plan,</p> <p>(2) Recommendation 21 (EC-70) – Maximum expenditure for the eighteenth financial period (2020–2023),</p> <p>Having been informed of the main components of the draft WMO Strategic Plan, draft Operating Plan and draft Results-based Budget for the next WMO financial period (2020–2023),</p> <p>Taking note that the activities of the Organization in respect of aeronautical meteorological services are reflected in several long-term goals and strategic objectives of the WMO Strategic Plan, in particular:</p> <p>(1) Long-term goal 1 – Better serve societal needs: delivering authoritative, accessible, user-oriented and fit-for-purpose information and services,</p> <p>(2) Strategic objective 1.1 – Strengthen national multi-hazard early warning/alert systems and extend reach to better enable effective response to the associated risks,</p> <p>(3) Strategic objective 1.4 – Enhance the value and innovate the provision of decision-supporting weather information and services,</p> <p>Mindful that, through Recommendation 6 (CAeM-16), it was agreed that the Commission for Aeronautical Meteorology (CAeM) (or its successor) should progress work in the context of a number of priority themes during the eighteenth financial period (2020–2023),</p>	<p>Action complete.</p> <p>Recent contribution to the finalization of the WMO Operating Plan 2020–2023, specifically in respect of the Aeronautical Meteorological Services components under LTG 1 and SO 1.4.</p> <p>Work plans of the CAeM expert team and expert networks serve, effectively, as the CAeM (or its successor) Operating Plans in support of the overarching WMO Operating Plan.</p>

		<p>Agrees that the WMO Operating Plan 2020–2023 should reflect the expected outcomes and benefits for Members, use the agreed performance indicators, and detail outputs and milestones, activities, risks and mitigation measures. This should be done at a global level and cover any associated regional aspects. In addition, current programmes, working bodies and partners should be included;</p> <p>Requests the president of CAeM to assist the Secretary-General in the strengthening and finalization of the WMO Operating Plan 2020–2023 in respect of aeronautical meteorological services related to all relevant strategic objectives, prior to its submission to the Eighteenth World Meteorological Congress in 2019.</p>	
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RESOLUTION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
3	2018 Technical Conference of the Commission for Aeronautical Meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting with satisfaction that a one-day Technical Conference (TECO-2018) was conducted with the theme “The future is now: Meteorology enabling aviation decision support” (University of Exeter, United Kingdom of Great Britain and Northern Ireland, 23 July) held immediately prior to the sixteenth session of the Commission for Aeronautical Meteorology (CAeM),</p> <p>Appreciating the efforts of the organizing committee, chaired by the president of CAeM and assisted by members of the CAeM Management Group, in the preparation, conducting and reporting of TECO-2018,</p> <p>Noting the blend of keynote and other oral presentations, panel discussions including interactive question/answer sessions with audience participation, and wrap-up summaries during TECO-2018 on topics that addressed past, present and future aeronautical meteorological service provision aligned with the evolving needs of aviation users, as well as an innovation showcase of examples of existing and emerging uses of aeronautical meteorology,</p> <p>Welcoming the participation in TECO-2018 of National Meteorological and Hydrological Services of WMO Members; other aeronautical meteorological service providers, including from the private sector; representatives of international organizations, including the International Civil Aviation Organization; and other aviation industry users and stakeholders,</p> <p>Endorses the outcomes of TECO-2018 as provided in the annex to the present resolution;</p> <p>Invites the president of CAeM to consider the outcomes of</p>	<p>Action complete.</p> <p>The outcomes of TECO-2018 are fully reflected in the objectives and priorities of the CAeM, particularly but not exclusively those aspects addressing information services, meteorological hazards science and climate change and variability impacts on aviation.</p>

		<p>TECO-2018 in the context of establishing the objectives and priorities of CAeM during the next intersessional period;</p> <p>Requests the Secretary-General to assist the president of CAeM in the follow-up to the outcomes of TECO-2018, including by making available the necessary resources.</p> <p>The annex to this resolution can be found in WMO-No. 1222 on pages 7 and 8 of the English version</p>	
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RESOLUTION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
4	Management Group of the Commission for Aeronautical Meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting:</p> <p>(1) The positive experience of the Commission for Aeronautical Meteorology (CAeM) Management Group regarding its role of coordination and governance in the activities of CAeM during the intersessional period 2014–2018,</p> <p>(2) The report by the president of CAeM and the reports by the co-chairpersons of the CAeM expert teams detailing the accomplishments of the Commission since its fifteenth session,</p> <p>(3) The established working arrangements and responsibilities among the members of the Management Group and expert teams in implementing the work of CAeM in support of the Aeronautical Meteorology Programme,</p> <p>Recognizing:</p> <p>(1) That the effectiveness of CAeM depends to a large extent on the effective management and coordination of its activities during the intersessional periods,</p> <p>(2) That a Management Group is required to ensure the integrity of all activities of CAeM and the alignment of its work programme with the priorities and expected results of the WMO Strategic and Operating Plans,</p> <p>(3) The need, in close coordination with the regional associations, for systematic monitoring and evaluation of the progress achieved by CAeM concerning the implementation of the established work programme and</p>	<p>Action complete.</p> <p>The CAeM MG continues to dedicate necessary and appropriate consideration of the implications of WMO Constituent Bodies Reform, through discussion at its quarterly teleconferences, annual face-to-face meetings and other intersessional communication activities.</p> <p>Given the outcomes of CAeM-16 and subsequent developments (e.g. expert team and expert network structures and work plan developments), CAeM MG believes that the Commission is well positioned to respond to WMO Reform needs and expectations, and awaits the outcomes of Cg-18 in June 2019.</p> <p>The ICAO Secretariat and members of the ICAO METP Management Group were invited to participate in the CAeM-MG-2019 meeting, serving as just one example, amongst several, of where P/CAeM is exercising a right to ensure necessary and appropriate expertise is available to the CAeM MG.</p>

		<p>appropriate adjustments during the intersessional period,</p> <p>(4) The need to respond promptly to matters of urgency, including crisis situations, affecting air transport and service provision by Members,</p> <p>Mindful of the outcomes of the seventieth session of the Executive Council regarding WMO constituent body reform that, subject to adoption by the Eighteenth World Meteorological Congress in 2019 and upon the completion of a transition period, would result in the disbanding of previous technical commissions, including CAeM, that have been active during the seventeenth financial period (2016–2019),</p> <p>Convinced:</p> <p>(1) That Members and their experts will continue to play a crucial role in shaping and enacting WMO reform aspirations,</p> <p>(2) That the core values of strong scientific expertise, professionalism, close user engagement and partnership, agility, proactiveness and inclusiveness should guide CAeM (or its successor), thereby allowing aeronautical meteorological services worldwide to reach new heights,</p> <p>Decides to re-establish a CAeM Management Group with the terms of reference as provided in the annex to the present resolution;</p> <p>Encourages the CAeM Management Group to actively contribute to the implementation of the WMO Constituent Bodies Reform Transition Plan adopted through Resolution 36 (EC-70) – WMO Constituent Bodies Reform Transition Plan and Communication Strategy, that will, subject to consideration by the Eighteenth World Meteorological Congress in 2019, result in a restructuring of the technical</p>	
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		<p>commissions, including CAeM;</p> <p>Requests presidents of the regional associations to designate experts or to reconfirm the designation of experts to liaise with the CAeM Management Group on regional aspects of aeronautical meteorology;</p> <p>Requests the presidents of other technical commissions to ensure coordination with CAeM regarding scientific and technological issues related to aeronautical meteorology and designate liaison experts to support the CAeM Management Group as appropriate;</p> <p>Requests the Secretary-General to invite the International Civil Aviation Organization and, as necessary, other relevant international organizations, by agreement with the president of CAeM, to participate in the work of the CAeM Management Group as observers;</p> <p>Authorizes the president of CAeM to invite such additional experts as are necessary, resources permitting, to participate in the work of the CAeM Management Group.</p> <hr/> <p>Note: This resolution replaces Resolution 1 (CAeM-15) and Resolution 2 (CAeM-15), which are no longer in force.</p> <p>The annex to this resolution can be found in WMO-No. 1222 on pages 10 and 11 of the English version.</p>	
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RESOLUTION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
5	Review of previous resolutions and recommendations of the Commission for Aeronautical Meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Having been informed of the relevant resolutions and recommendations of the Commission (see CAeM-16/INF. 9(1)),</p> <p>Noting the actions taken on the resolutions and recommendations adopted by the Commission prior to its sixteenth session,</p> <p>Decides:</p> <p>(1) To replace Resolution 5 (CAeM-XIII) – Participation of women in the work of the Commission, by Resolution 6 (CAeM-16) – Gender equality and empowerment of women;</p> <p>(2) Not to keep in force other resolutions and recommendations adopted prior to its sixteenth session.</p> <p>Note: This resolution replaces Resolution 3 (CAeM-15), which is no longer in force.</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Resolution 6 (CAeM-16) referenced in 'Decides (1)' is addressed below.</p>

RESOLUTION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
6	Gender equality and empowerment of women	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Recalling Resolution 5 (CAeM-XIII) – Participation of women in the work of the Commission,</p> <p>Noting Resolution 59 (Cg-17) – Gender equality and empowerment of women, and the annex to Resolution 59 (Cg-17) – WMO Gender Equality Policy, and Decision 77 (EC-68) – WMO Gender Action Plan,</p> <p>Recognizing the impacts of weather, water and climate on gender roles, especially in the event of disasters, and their implications for the provision of aeronautical meteorological services,</p> <p>Having been informed of gender mainstreaming within WMO and the statistics on the participation of women and men in the activities of the Commission for Aeronautical Meteorology (CAeM) (see CAeM-16/INF. 9(1)),</p> <p>Appreciating a keynote address entitled “Women in meteorology – a personal perspective” given during the sixteenth session of CAeM by Professor Ellie Highwood, Dean of Diversity and Inclusion and Professor of Climate Physics at the Department of Meteorology, University of Reading, United Kingdom of Great Britain and Northern Ireland,</p> <p>Observing that women are underrepresented in the working structures of CAeM and that increased female participation is required, notably in order to meet the 30% target (minimum) set by the World Meteorological Congress at its seventeenth session in the WMO Gender Equality Policy,</p> <p>Encourages CAeM members to ensure that women are nominated to participate in the activities of CAeM and its subsidiary bodies;</p>	<p>Action on-going.</p> <p>A CAeM Gender Focal Point has been established by CAeM MG (CAeM-MG-2019 Agenda Item 4.4 refers).</p> <p>The focal point will lead discussions and activities during the intersessional period in response to items (1) and (2) of the Requests clause within Resolution 6 (CAeM-16).</p>

		<p>Requests the CAeM Management Group, in collaboration with the WMO gender focal point:</p> <p>(1) To devise strategies to increase the involvement of women in the work of CAeM, including:</p> <ul style="list-style-type: none">(a) The establishment of a mentoring programme to strengthen the capacity of female aeronautical meteorologists to engage in the work of CAeM;(b) The identification and addressing of barriers that hinder full and equal participation of female aeronautical meteorologists in the work of CAeM;(c) Fostering a network of professional women in aeronautical meteorology by providing follow-on mentoring and guidance as well as organizing relevant workshops prior to CAeM-related meetings; <p>(2) To undertake steps to implement the WMO Gender Action Plan by proposing mechanisms and partnerships that link relevant gender equality initiatives of WMO and major bilateral and multilateral donors and national governments to strengthen scientific investments that enhance the understanding of gender differences in access and use of aeronautical meteorological information and services that benefit end users;</p> <p>(3) To consider appointing a CAeM focal point for the empowerment of women in aeronautical meteorology who would be responsible for leading the foregoing activities.</p> <hr/> <p>Note: This resolution replaces Resolution 5 (CAeM-XIII), which is no longer in force.</p>	
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DECISION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
1	Organization of the session	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Having considered the provisional agenda proposed by the president of the Commission for Aeronautical Meteorology (CAeM),</p> <p>Approves the provisional agenda;</p> <p>Also approves the report of the representative of the Secretary-General on credentials in accordance with WMO General Regulations 21 to 24;</p> <p>Adopts the establishment of committees for the duration of the session as:</p> <p>(1) Coordination Committee:</p> <p>Chairperson: Mr C.M. Shun (president)</p> <p>Members: Mr I. Lisk (vice-president), Secretary-General's representative, Secretariat staff and representative of local organizing committee;</p> <p>(2) Nomination Committee:</p> <p>Chairperson: Ms X. Na (China)</p> <p>Members: Mr J. Nuottokari (Finland) and Mr J-W. Lee (Republic of Korea);</p> <p>(3) Selection Committee:</p> <p>Chairperson: Mr I. Lisk (vice-president)</p> <p>Members: Mr C.M. Shun (president), Ms S. Desbios (France), Mr K. Johnson (Canada) as co-rapporteur, Ms X. Na</p>	No follow-up action required by the Commission.

		<p>(China) as co-rapporteur, Mr Z. Zhang (China), Secretary- General’s representative and Secretariat staff;</p> <p>(4) TECO Outcomes Drafting Committee:</p> <p>Chairperson: Mr C.M. Shun (president)</p> <p>Members: Mr I. Lisk (vice-president), Ms S. Desbios (France), Mr K. Johnson (Canada) as co-rapporteur, Mr M. Strahan (United States of America) as co-rapporteur and Secretariat staff;</p> <p>Agrees to the programme of work of the session:</p> <p>(1) Working hours of the meetings: 9.30 a.m.–12.30 p.m. and 2.30 p.m.–5.30 p.m.;</p> <p>(2) Arrangements and allocation of agenda items for the session;</p> <p>Decides to suspend General Regulation 110 for the whole duration of the session to permit rapid processing of documents in accordance with General Regulation 3;</p> <p>Also decides that in conformance with General Regulation 112, summarized minutes are not required for the session.</p>	
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DECISION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
2	Reports on Commission for Aeronautical Meteorology expert team activities	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Endorses the reports of the Commission for Aeronautical Meteorology (CAeM) expert teams as submitted to CAeM at its sixteenth session;</p> <p>Requests the president of CAeM, in the context of the working structure of CAeM, to consider addressing any ongoing or incomplete activities of the CAeM expert teams arising from the last intersessional period as well as any new or emerging activities to be addressed during the next intersessional period.</p> <p>Decision justification:</p> <p>(1) Resolution 2 (CAeM-15) – Establishment of subsidiary bodies of the Commission for Aeronautical Meteorology, established subsidiary bodies of CAeM;</p> <p>(2) Regulation 186 of the WMO General Regulations describes the duties of the president of a commission, which include to guide and coordinate the activities of the commission and its working groups between sessions of the commission;</p> <p>(3) The reports on the activities of the CAeM expert teams (CAeM-16/INF. 3(1) to INF. 3(5) inclusive) – namely the Expert Team on Aviation, Science and Climate, the Expert Team on Communication, Coordination and Partnership, the Expert Team on Education, Training and Competency, the Expert Team on Governance and the Expert Team on Information and Services for Aviation – highlighted the progress made during the last intersessional period, ongoing activities and considerations for future work.</p>	<p>Action complete.</p> <p>The working structures of CAeM (i.e. MG, expert team and expert networks) are addressing legacy as well as new or emerging issues as and where necessary.</p>

DECISION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
3	Reports on volcanic ash and space weather activities	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting the progress made since the fifteenth session of the Commission for Aeronautical Meteorology (CAeM) in the areas of:</p> <p>(1) Volcanic ash science and operations through the activities of Volcanic Ash Advisory Centre best practices workshops, the WMO and International Union of Geodesy and Geophysics Volcanic Ash Scientific Advisory Group and the International Workshops on Volcanic Ash,</p> <p>(2) Space weather information services through the activities of the Commission for Basic Systems (CBS) and CAeM Inter-programme Team on Space Weather Information, Systems and Services, and its predecessor the Inter-commission Team on Space Weather,</p> <p>Requests the president of CAeM, in coordination with the presidents of CBS and the Commission for Atmospheric Science, as appropriate, to consider how volcanic ash and space weather issues in support of international civil aviation should be addressed during the next intersessional period.</p> <hr/> <p>Decision justification: A report on volcanic ash-related activities (see CAeM-16/INF. 3(6)) and a report on space weather-related activities (see CAeM-16/INF. 3(7)) highlight the progress made during the last intersessional period as well as ongoing activities.</p>	<p>Action on-going.</p> <p>P/CAeM continues to undertake dialogue with P/CBS and P/CAS, as necessary, in respect of addressing volcanic ash and space weather issues, paying due regard to the relevance and implications of WMO Constituent Bodies Reform in the 2019 and 2020 timeframe.</p>

DECISION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
4	Reports on outcomes of Commission for Aeronautical Meteorology global survey and scientific conference	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting the outcomes of the:</p> <p>(1) Commission for Aeronautical Meteorology (CAeM) 2016/2017 global survey on aeronautical meteorological service provision,</p> <p>(2) WMO Aeronautical Meteorology Scientific Conference 2017,</p> <p>Noting also Resolution 8 (EC-70) – Scientific research and development in aeronautical meteorology, and Resolution 9 (EC-70) – Global and regional landscape of aeronautical meteorological service provision,</p> <p>Requests the president of CAeM, in the context of the future activities of CAeM, to consider how these outcomes should be addressed further during the next intersessional period.</p> <hr/> <p>Decision justification: The outcomes of the 2016/2017 CAeM global survey on aeronautical meteorological service provision are contained in AeM SERIES No. 1 (see CAeM-16/INF. 3(8)) while the outcomes of the 2017 WMO Aeronautical Meteorology Scientific Conference are contained in AeM SERIES No. 2 (see CAeM-16/INF. 3(9)).</p>	<p>Action complete.</p> <p>The outcomes of the global survey and scientific conference are fully reflected in the objectives and priorities of the CAeM, particularly as they relate to education, training and competency, information services and governance, meteorological hazards science, climate change and variability impacts on aviation, and communications and outreach.</p> <p>In addition to the WMO publication of the reports on the outcomes of the global survey and scientific conference (AeM SERIES Nos. 1 and 2 respectively), communication has also been undertaken recently with WMO Regional Associations, notably through RA V-17 session, RA III-17 session and an RA I African Conference on Meteorology for Aviation (ACMA-2018).</p>

DECISION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
5	Obsolete World Meteorological Organization Guides	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Decides that the following WMO publications are now considered obsolete and should therefore be discontinued:</p> <p>(1) <i>Methods of Interpreting Numerical Weather Prediction Output for Aeronautical Meteorology</i> (WMO-No. 770);</p> <p>(2) <i>Guide to the Provision of Meteorological Service for International Helicopter Operations</i> (WMO-No. 842);</p> <p>(3) <i>Guide to the Quality Management System for the Provision of Meteorological Service for International Air Navigation</i> (WMO-No. 1001).</p> <hr/> <p>Decision justification:</p> <p>(1) The publication cited in (1) above: Last updated in 1992; contains outdated information; methods of interpreting numerical weather prediction output are sufficiently covered in other existing WMO publications such as “WMO Technical Progress Reports on the Global Data-processing and Forecasting System and Numerical Weather Prediction Research”;</p> <p>(2) The publication cited in (2) above: Last updated in 1996; all provisions relating to meteorological service to support international helicopter operations are already covered by International Civil Aviation Organization Annex 3 – Meteorological Service for International Air Navigation/<i>Technical Regulations</i> (WMO-No. 49), Volume II – Meteorological Service for International Air Navigation, and their associated guidance material;</p> <p>(3) The publication cited in (3) above: Last updated 2014;</p>	No follow-up action required on the part of the Commission.

		obsolete in view of the 2017 major update of <i>Guide to the Implementation of a Quality Management System for National Meteorological and Hydrological Services</i> (WMO-No. 1100).	
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DECISION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
6	Composition of the Commission for Aeronautical Meteorology Management Group lead experts	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Decides that the Commission for Aeronautical Meteorology (CAeM) Management Group, re-established under Resolution 4 (CAeM-16), shall comprise the following lead experts:</p> <p>(1) Ms Kathy-Ann Caesar (British Caribbean Territories) and Ms Gaborekwe Khambule (South Africa) for education, training and competency of aeronautical meteorological personnel;</p> <p>(2) Mr Michael Berechree (Australia) and Mr Jun Ryuzaki (Japan) for aeronautical meteorological information service and governance;</p> <p>(3) Ms Sharon Sum Yee Lau (Hong Kong, China) and Mr Matt Strahan (United States of America) for aeronautical meteorological hazards prediction;</p> <p>(4) Mr Lei Gu (China) for impacts of climate change and variability on aviation;</p> <p>(5) Ms Marina Petrova (Russian Federation) and Ms Claudia Ribero (Argentina) for communication and outreach.</p> <hr/> <p>Decision justification: This decision ensures that lead experts have been established by CAeM at its sixteenth session in respect of item (2) (c), sub-items (i)–(v) of the annex to Resolution 4 (CAeM-16). The following principles were applied by the Selection Committee in the determination of the experts:</p> <p>(1) The Management Group shall consist of a maximum of twelve members including the president and vice-</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Worthwhile to note however that CAeM-MG-2019 decided to re-assign Ms Claudia Ribero from EN-COM to EN-CCV.</p>

		<p>president;</p> <p>(2) At least half of the members of the Management Group should be women;</p> <p>(3) The Management Group shall include representation from all WMO regional associations;</p> <p>(4) Each WMO regional association shall be represented by a maximum of three members on the Management Group;</p> <p>(5) There shall not be more than one member of the Management Group from any one WMO Member;</p> <p>(6) There should be some continuity of membership from one Management Group to the next.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
1	Scientific and technological advancement in support of meteorological service for international air navigation	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting the relevance to the Commission for Aeronautical Meteorology (CAeM) and the wider aeronautical meteorology community of work undertaken by other WMO technical commissions and their subsidiary bodies through WMO programmes, including but not limited to the World Weather Watch (including the development of the International Civil Aviation Organization (ICAO) Meteorological Information Exchange Model (IWXXM) schema), the Global Atmosphere Watch, the World Weather Research Programme (including the Aviation Research and Development Project (AvRDP)), the Tropical Cyclone Programme and the Education and Training Programme,</p> <p>Having been informed of recent, ongoing and upcoming developments within WMO programmes of relevance to CAeM (see CAeM-16/INF. 4(1) to CAeM-16/INF. 4(4)),</p> <p>Being convinced that support from other WMO programmes is instrumental in the progression of the Aeronautical Meteorology Programme and the activities of CAeM in general and will ensure that WMO continues to provide authoritative scientific and technical advice on aeronautical meteorology matters to aviation stakeholders, including ICAO,</p> <p>Recommends that collaboration be sustained and improved between technical commissions and programmes responsible for scientific and technological advancement and the education, training and competency of aeronautical meteorological personnel consistent with the evolving needs of aviation users;</p> <p>Requests the Secretary-General:</p> <p>(1) To make the necessary resources available to foster the</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Nonetheless, the CAeM (or its successor and subsidiary bodies) is available to support, where necessary and desirable, the follow-up to Recommendation 1 (CAeM-16).</p>

		<p>collaborative development of interdependent initiatives such as IWXXM and AvRDP in cooperation with the relevant WMO bodies;</p> <p>(2) To ensure that the evolving qualification requirements in the provision of aeronautical meteorological services are reflected when reviewing and updating the Basic Instruction Packages.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
2	Cooperation with the International Civil Aviation Organization	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Recalling Recommendation 4/1 – Review of the working arrangements between ICAO and WMO, of the International Civil Aviation Organization (ICAO) Meteorology Divisional Meeting held in Montreal, Canada in July 2014 conjointly with the fifteenth session of the Commission for Aeronautical Meteorology (CAeM), which tasked ICAO and WMO to undertake a review of the working arrangements to ensure that the organizations’ respective roles and responsibilities, as well as their commitments, are appropriately aligned with the mandates of both organizations, taking into consideration evolving technological capabilities and aeronautical requirements,</p> <p>Noting the working arrangements between ICAO and WMO, which record the understanding reached between the two organizations in terms of their respective primary responsibilities in the development of international standards, recommended practices and procedures governing meteorological service for international air navigation,</p> <p>Noting with satisfaction the contribution, in an expert capacity, of the WMO Secretariat and members of CAeM where necessary to the activities of the ICAO Meteorology Panel and its working groups, and the need to ensure this contribution will be sustained,</p> <p>Noting also the contribution, in an expert capacity, of the WMO Secretariat and members of CAeM where necessary to the activities of the ICAO Committee on Aviation Environmental Protection and its working groups, and the need to ensure this contribution will be continued,</p> <p>Being convinced that efficient and effective cooperation between the two organizations is essential for supporting the</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Nonetheless, the CAeM (or its successor and subsidiary bodies) is available to support, where necessary and desirable, the follow-up to Recommendation 2 (CAeM-16).</p>

	<p>needs of WMO Members, ICAO Member States and the wider community in ensuring safe, efficient, economic and environmentally responsible international civil aviation operations worldwide,</p> <p>Having been informed of the outcomes of a bilateral meeting between the Secretary-General of WMO and the Secretary General of ICAO on 28 April 2017 that, inter alia, examined strengthening the cooperation between the two organizations in the field of aeronautical meteorology,</p> <p>Encourages Members to foster enhanced coordination and collaboration between national aeronautical meteorological authorities and service providers, as well as respective civil aviation administrations, with a view to improving aeronautical meteorological service delivery;</p> <p>Mindful of the growing demands placed on WMO Members responsible for the provision of aeronautical meteorological services associated with air transportation modernization over the next 15 years and beyond, as conveyed in the ICAO Global Air Navigation Plan and its aviation system block upgrades methodology,</p> <p>Recommends that, consistent with Regulation 181 of the WMO General Regulations, WMO should seek opportunities to further improve the efficiency and effectiveness in its cooperation with ICAO, including the development of more effective working relationships and/or methods of cooperation for respective expert bodies and the elimination of any existing duplication or redundancy that may exist;</p> <p>Requests the Secretary-General to make the necessary resources available to foster the recommended review and update of the working arrangements between WMO and ICAO.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
3	Cooperation with other international organizations of relevance to the Commission for Aeronautical Meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting with satisfaction the cooperation between WMO and other international organizations concerned with the provision of meteorological service for international air navigation, including the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), the Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA), the International Union of Geodesy and Geophysics (IUGG), the International Atomic Energy Agency (IAEA) and the International Federation of Air Line Pilots' Associations (IFALPA),</p> <p>Mindful of prevailing agreements or working arrangements between WMO and other international organizations, including ICAO, ASECNA, IUGG, IAEA and IFALPA, as contained in <i>Agreements and Working Arrangements with other International Organizations</i> (WMO-No. 60),</p> <p>Noting also an emerging working arrangement between WMO and IATA concerning the operation and development of the aircraft meteorological data relay (AMDAR) system and that some National Meteorological and Hydrological Services of WMO Members already have existing arrangements with airlines for the collection and exchange of AMDAR data,</p> <p>Recommends that WMO should seek opportunities to foster further cooperation with other international organizations relevant to the provision of meteorological service for international air navigation through new or improved agreements or other such working arrangements, as appropriate;</p> <p>Requests the Secretary-General:</p> <p>(1) To make the necessary resources available to foster the</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Nonetheless, the CAeM (or its successor and subsidiary bodies) is available to support, where necessary and desirable, the follow-up to Recommendation 3 (CAeM-16).</p> <p>For example, CAeM was an active contributor to the convening of an RA I African Conference on Meteorology for Aviation (ACMA-2018) held in November 2018.</p>

		<p>recommended operation and development of the AMDAR system arising from the emerging working arrangement between WMO and IATA with due emphasis that the cost framework should be fair, equitable and transparent;</p> <p>(2) To continue coordination with ASECNA for joint support of the African Conference on Aeronautical Meteorology in Regional Association I (Africa), with a view to the conference being organized in 2019.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
4	Long-term plan for the Aeronautical Meteorology Programme	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Recalling that Resolution 3 (Cg-17) – Aeronautical Meteorology Programme, requested the application of a longer-term planning approach to the Aeronautical Meteorology Programme of WMO, consistent with the International Civil Aviation Organization (ICAO) Global Air Navigation Plan (GANP) and its aviation system block upgrades (ASBU) methodology and timeline, with special consideration on building capacity of sub-regions and Members with long-standing deficiencies in their service provision to civil aviation,</p> <p>Recalling also that Resolution 66 (Cg-17) – WMO support to evolving aeronautical meteorological services, recognized that future developments at a global, regional and national level should be fully aligned with the ICAO GANP and its ASBU methodology,</p> <p>Noting that Decision 43 (EC-68) – Action Plan – Meteorological services for aviation, requested the development of a draft long-term plan for the WMO Aeronautical Meteorology Programme (LTP-AeMP) aligned with the ICAO GANP and its ASBU methodology,</p> <p>Noting also the relevance of LTP-AeMP with the WMO Strategic and Operating Plans as well as other long-term plans of WMO programmes,</p> <p>Mindful of Decision 42 (EC-69) – Future of aeronautical meteorological services, which noted the development of a draft LTP-AeMP,</p> <p>Having been informed that the Commission for Aeronautical Meteorology (CAeM) Management Group, at its January 2018 meeting, had called for a re-evaluation of the</p>	<p>Action on-going.</p> <p>The president and vice-president of CAeM and wider CAeM MG continue to be active contributors to the development of the long-term plan, as addressed under CAeM-MG-2019 Agenda Item 5.2.</p> <p>The MG expressed some concern on how the consultation process in the Requests clause, sub-clause 2), would be conducted ahead of Cg-18 given the limited time available prior to submission of the LTP-AeM document. Such consultation should therefore be at the discretion of P/CAeM.</p>

		<p>proposed structure of the draft LTP-AeMP as well as a strategy that would ensure its maintenance in the future,</p> <p>Recognizing that the objective of an LTP-AeMP should be to provide a foundation for continuing the advancement of meteorological services for international air navigation over a rolling 15-year planning horizon that takes account of existing and foreseen scientific and technological advancement, operational capabilities of aeronautical meteorological service providers and the evolving needs and expectations of aviation users and stakeholders,</p> <p>Observing that ICAO GANP and its ASBU methodology is continuously reviewed and periodically updated by ICAO (typically on a triennial basis), with the next update in 2019 covering the period through to 2033,</p> <p>Agreeing that LTP-AeMP should be a living document that, once established, is kept under regular review and periodic update to ensure a high degree of alignment with, inter alia, the WMO Strategic Plan and ICAO GANP,</p> <p>Having considered a “straw man” and strategy for the development and maintenance of LTP-AeMP (CAeM-16/INF. 6.3),</p> <p>Requests the president of CAeM:</p> <p>(1) To establish a mechanism, in the context of the working structure of CAeM, that will ensure the development of a first-edition LTP-AeMP (covering a period consistent with the 15-year rolling planning horizon of ICAO GANP) for approval by the Eighteenth World Meteorological Congress;</p> <p>(2) To ensure that presidents of other technical commissions and presidents of regional associations are kept informed of and consulted on developments in this regard as necessary;</p>	
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		<p>(3) To establish mechanisms to support the future maintenance and development of subsequent editions of LTP-AeMP;</p> <p>Requests the Secretary-General to make available the necessary resources to contribute to the development and maintenance of LTP-AeMP.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
5	World Meteorological Organization regulatory and guidance material addressing the provision of meteorological service for international air navigation	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting Resolution 1 (Cg-17) – Report of the fifteenth session of the Commission for Aeronautical Meteorology, including revised terms of reference of the Commission,</p> <p>Noting also that the terms of reference of the Commission for Aeronautical Meteorology include contributing, in collaboration with the International Civil Aviation Organization (ICAO), to furthering the international standardization of meteorological service provision to international air navigation and providing assistance to Members to achieve compliance with those standards,</p> <p>Having been informed of the outcomes of a bilateral meeting between the Secretary-General of WMO and the Secretary General of ICAO on 28 April 2017 during which were discussed, inter alia, measures to improve efficiency, including consideration that the publication of <i>Technical Regulations</i> (WMO-No. 49), Volume II – Meteorological Service for International Air Navigation, should be discontinued while maintaining ICAO Annex 3 – Meteorological Service for International Air Navigation, as the main regulatory document for all users and providers, including civil aviation administrations and National Meteorological and Hydrological Services (NMHSs),</p> <p>Mindful that ICAO is in the process of developing a new <i>Procedures for Air Navigation Services – Meteorology</i>, which will have major implications on the structure and content of ICAO Annex 3,</p> <p>Having examined the suite of WMO regulatory and guidance material addressing the provision of meteorological service for international air navigation (see CAeM-16/INF. 7),</p>	<p>Action on-going.</p> <p>The CAeM Expert Network on Aeronautical Meteorological Information Services and Governance (EN-ISG) will, in particular, actively contribute to assisting WMO in the discontinuation of WMO-No. 49, Volume II while also paying due regard to the wider implications on other WMO and ICAO publications.</p>

		<p>Observing that duplication or redundancy exists between key WMO and ICAO publications,</p> <p>Noting further that <i>Technical Regulations</i> (WMO-No. 49), Volume II, Parts I and II are a duplication of ICAO Annex 3, Parts I and II, while Parts III and IV of the former publication are unique,</p> <p>Noting in addition that some NMHSs of WMO Members face challenges in gaining access to ICAO regulatory and guidance material,</p> <p>Convinced that the ongoing duplication or redundancy of key WMO and ICAO publications, including their disparate document controls, is not consistent with the principles of quality management and does not set a good example to international aeronautical meteorological service providers and the wider community,</p> <p>Recommends that WMO, in coordination with ICAO, should:</p> <p>(1) Undertake steps necessary to discontinue <i>Technical Regulations</i> (WMO-No. 49), Volume II, while ensuring that any material of continuing relevance is reviewed before being transferred to other (new or existing) regulatory or guidance material of WMO or ICAO;</p> <p>(2) Ensure, during the accomplishment of (1), that:</p> <p>(a) Any WMO or ICAO regulatory and/or guidance material that cross-references WMO <i>Technical Regulations</i> (WMO-No. 49), Volume II is appropriately amended;</p> <p>(b) Members are kept fully informed of the relevance and availability of this material as well as other relevant ICAO provisions;</p>	
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		<p>Requests the Secretary-General to keep ICAO informed of these developments and, in consultation with ICAO, to explore means to enable free access, preferably online, to relevant ICAO regulatory and guidance material by all WMO Members and their NMHSs providing meteorological service for international air navigation.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
6	Priority themes and continuity of World Meteorological Organization activities in aeronautical meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Noting:</p> <p>(1) The terms of reference of the Commission for Aeronautical Meteorology (CAeM) adopted through Resolution 1 (Cg-17) – Report of the fifteenth session of the Commission for Aeronautical Meteorology, including revised terms of reference for CAeM, and published in <i>Basic Documents No. 1</i> (WMO-No. 15), 2015 edition, under General Regulations of the World Meteorological Organization Annex III – Structure and terms of reference of technical commissions,</p> <p>(2) <i>WMO Strategic Plan 2016–2019</i> (WMO-No. 1161),</p> <p>(3) Recommendation 20 (EC-70) – WMO Strategic Plan,</p> <p>Noting also the outcomes of the seventieth session of the Executive Council in respect of WMO constituent body reform, in particular Recommendation 25 (EC-70) – WMO technical commissions and other bodies, concerning the establishment of a new WMO technical commission structure for the eighteenth financial period (2020–2023), which, subject to adoption by the Eighteenth World Meteorological Congress in 2019 and upon the completion of a transition period, would result in the disbanding of previous technical commissions, including CAeM, that have been active during the seventeenth financial period (2016–2019),</p> <p>Mindful of the importance of the work of WMO in:</p> <p>(1) Assisting Members to fulfil, through the Aeronautical Meteorology Programme (AeMP), the strategic priorities and expected results of the Organization as conveyed in the WMO Strategic Plan,</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Nonetheless, the president of CAeM, amongst others, continues to play an active role in the WMO Constituent Bodies Reform deliberations in advance of Cg-18 in June 2019.</p>

		<p>(2) Cooperating with the International Civil Aviation Organization (ICAO) in the field of aeronautical meteorology, particularly to support the implementation of a global interoperable, harmonized air traffic management system of the future as conveyed in the ICAO Global Air Navigation Plan and its aviation system block upgrade methodology,</p> <p>Considering that the existing terms of reference of CAeM, as contained in General Regulations of the World Meteorological Organization Annex III, suitably reflect the responsibilities of CAeM in the intersessional period immediately following its sixteenth session,</p> <p>Having agreed that CAeM (or its successor) should progress work in the context of the following priority themes during the eighteenth financial period (2020–2023):</p> <ul style="list-style-type: none">(1) Education, training and competency of aeronautical meteorological personnel,(2) Aeronautical meteorological information service and governance,(3) Aeronautical meteorological hazards prediction,(4) Impacts of climate change and variability on aviation,(5) Communication and outreach, <p>Requests Congress, in considering the establishment of a new WMO technical commission structure for the eighteenth financial period (2020–2023):</p> <ul style="list-style-type: none">(1) To ensure continuity of activities of AeMP corresponding to the foregoing priority themes;(2) To ensure continuity of cooperative arrangements with	
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		<p>ICAO and other relevant aviation stakeholders with appropriate positioning of WMO in the international civil aviation community.</p> <hr/> <p>Note: This recommendation replaces Recommendation 1 (CAeM-15), which is no longer in force.</p>	
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RECOMMENDATION			
No.	Title	Text	Remarks at CAeM-MG-2019 (February 2019)
7	Review of relevant resolutions and decisions of World Meteorological Organization governing bodies related to the Commission for Aeronautical Meteorology	<p>THE COMMISSION FOR AERONAUTICAL METEOROLOGY,</p> <p>Having been informed of the relevant resolutions and decisions of the World Meteorological Congress and Executive Council related to the Commission for Aeronautical Meteorology (CAeM) (see CAeM-16/INF 9(2)),</p> <p>Noting with satisfaction the action taken by Congress and the Executive Council on the previous recommendations of CAeM,</p> <p>Recommends that the following Congress and Executive Council resolutions be kept in force:</p> <p>(1) Resolution 3 (EC-65) – Steps to be undertaken to achieve compliance with the regulations of the World Meteorological Organization and the International Civil Aviation Organization;</p> <p>(2) Resolution 3 (Cg-17) – Aeronautical Meteorology Programme;</p> <p>(3) Resolution 44 (Cg-17) – Aviation Research and Development Project;</p> <p>(4) Resolution 66 (Cg-17) – WMO support to evolving aeronautical meteorological services;</p> <p>(5) Resolution 7 (EC-70) – Amendment to the <i>Technical Regulations</i> (WMO-No. 49), Volume II – Meteorological Service for International Air Navigation;</p> <p>(6) Resolution 8 (EC-70) – Scientific research and development in aeronautical meteorology;</p> <p>(7) Resolution 9 (EC-70) – Global and regional landscape of</p>	<p>No follow-up action required on the part of the Commission.</p> <p>Nonetheless, the CAeM (or its successor) will continue to contribute, where necessary and appropriate, to relevant resolutions and decisions of Congress and Executive Council that remain in force.</p>

		<p>aeronautical meteorological service provision;</p> <p>Recommends that the following Executive Council decisions be kept in force:</p> <ul style="list-style-type: none"> (1) Decision 33 (EC-68) – Four-year plan for WMO activities related to space weather; (2) Decision 42 (EC-68) – Implementation of the WMO Strategy for Service Delivery; (3) Decision 43 (EC-68) – Action Plan – Meteorological services for aviation; (4) Decision 44 (EC-68) – Intercommission Aviation Research Project; (5) Decision 42 (EC-69) – Future of aeronautical meteorological services; (6) Decision 41 (EC-70) – Space weather linkage with WMO Strategic Plan; <p>Also recommends that the following Congress resolutions no longer be kept in force:</p> <ul style="list-style-type: none"> (1) Resolution 1 (Cg-17) – Report of the fifteenth session of the Commission for Aeronautical Meteorology, including revised terms of reference of the Commission; (2) Resolution 8 (Cg-17) – Amendment of competency and qualification provisions in the <i>Technical Regulations</i> (WMO-No. 49), Volume I. <hr/> <p>Note: This recommendation replaces Recommendation 3 (CAeM-15), which is no longer in force.</p>	
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**Actions agreed by the CAeM Management Group meeting in February 2019
(CAeM-MG-2019)**

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status	Note
A01-2019	3.1	Upload the TECO and CAeM-16 side events presentations to the WMO AeMP website	WMO Secretariat	Updated website	31 March 2019	Complete	TECO presentations uploaded here (26/2/19) CAeM-16 side event presentations uploaded here (11/3/19)
A02-2019	3.2	Assess feasibility for the 'climate change and variability impacts on aviation' issue to be pursued through the ICAO METP	ICAO Secretariat in consultation with WMO Secretariat	Feasibility assessment	31 January 2020		
A03-2019	3.2	Request OBS Department to ensure that P/CAeM, CAeM focal point on AMDAR and ICAO Secretariat are kept apprised of developments in respect of an IATA-WMO Aviation Weather Forum (October 2019)	WMO Secretariat	Communication and coordination in respect of the Forum	31 March 2019	Complete	Coordination initiated.
A04-2019	3.3	Clarify whether the WMO SG has officially notified the ICAO SG in respect of the WMO constituent bodies reform aspirations.	WMO Secretariat	Clarification on official communication	31 March 2019	Complete	Email to ICAO (26/2/19)
A05-2019	4.1	Finalize respective ET and EN work plans (Parts A and B)	ET and EN lead/co-leads in coordination with respective core members	Up-to-date ET and EN work plans (first consolidated version of Parts B)	17 April 2019		Part A will be static, Part B will be dynamic.

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status	Note
A06-2019	4.1	Assess feasibility to make the ET and EN work plans available online, perhaps as part of a common platform that enables online editing	WMO Secretariat	Collaborative online platform for work plans (if feasible)	17 July 2019		
A07-2019	4.1	a) Update the WMO AeMP website in respect of the reassignment of Ms. Ribero from ET-COM to EN-CCV; b) Communicate this reassignment to PR of Argentina with WMO	a) WMO Secretariat b) P/CAeM	Updated website and correspondence with PR of Argentina	31 March 2019	a) Complete b) Complete	a) Updated website 26/2/19 b) Email of 26/2/19
A08-2019	4.1	Assess feasibility and costs associated with translating the CAeM newsletters into other official WMO languages (AR, ES, FR, RU, ZH)	WMO Secretariat	Feasibility assessment	17 July 2019		
A09-2019	4.2	Undertake steps to enable the transition from VAAC BP and VASAG towards an EN-VSA (working title)	P/CAeM assisted by WMO Secretariat	New expert network on volcanic sciences and applications	31 January 2020		
A10-2019	4.4	Identify focal points in the following specialist areas: a) DFPS b) AvRDP c) TCP	a) P/CAeM b) P/CAeM c) WMO Secretariat	Focal points identified	17 July 2019		
A11-2019	5.1	Establish whether statistical information/evidence is available on the frequency with which hard- and/or soft-copies of legacy WMO guides/guidelines on aeronautical meteorology are obtained	WMO Secretariat	Publications assessment	31 January 2020		

ID No.	Ag. Item	Action	Responsibility	Deliverables	Deadline	Status	Note
A12-2019	5.1	Confirm status of WMO-782 (department or body responsible for its maintenance)	WMO Secretariat	Publication status confirmation	31 March 2019		
A13-2019	5.2	Finalize the long-term plan taking into account the feedback given during CAeM-MG-2019	WMO Secretariat in coordination with P and VP/CAeM	Final draft of first edition of the long-term plan for aeronautical meteorology	31 March 2019	Complete	Deadline may be earlier depending on Cg-18 requirements