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**COOPERATION WITH OTHER WMO BODIES**

**AND INTERNATIONAL ORGANIZATIONS**

WMO Scientific Event 2017

*(Submitted by the WMO Secretariat)*

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| **Summary and Purpose of Document**  This document provides the background, concept and organizational needs of a WMO scientific event to be convened in 2017. The document includes a draft Concept Note to serve as a basis for discussion on the planning, preparation and conducting of the event. |

**ACTION PROPOSED**

The Management Group (MG) is invited to review and, as necessary, update a draft Concept Note pertaining to the convening of a WMO scientific event in 2017, agree to the establishment of an organizing committee and, as necessary, to formulate actions accordingly.

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1. **EXECUTIVE SUMMARY**

***Background***

1.1 The MG recalled Resolution 44 (Cg-17) established an Aviation Research Demonstration Project (AvRDP) and Resolution 66 (Cg-17) endorsed the engagement of WMO, in close collaboration with ICAO, in supporting the meteorological components of the Global Air Navigation Plan (GANP) and aviation system block upgrades (ASBU). The MG was aware that a special session on AvRDP was held in Hong Kong, China, in July 2016 during the WMO/WWRP 4th International Symposium on Nowcasting and Very-short-range Forecast (WNS-16), also in response to Resolution 44 (Cg-17).

1.2 In addition, the MG was apprised that Decision 44 (EC-68) inter alia agreed with proposed general principles for extended research activities coordinated by WMO, building on the progress of the current AvRDP and taking into consideration the envisaged performance improvements in the ASBU blocks with focus on transfer of the results into operational practice, and also that the presidents of CAS, CAeM and CBS were requested to prepare a coordinated roadmap for extended aviation meteorology research and development project, in support of future operational solutions for air traffic management (ATM) for consideration by the PTC-2017. Moreover, Decision 44 (EC-68) endorsed the proposed organizing in 2017 of a WMO scientific event (conference or symposium or workshop) with broad participation of research, operation and user communities, with the objective to identify needs and plan the research activities during the ASBU Block 1 and Block 2 (2018-2028)[[1]](#footnote-1). (INF. 4 refers)

***Concept development***

1.3 The MG reviewed a draft Concept Note for the WMO scientific event in 2017 that presented the background and rationale, objective and theme, expected outcome and outputs, stakeholders and partners, format and responsibility for the event. The MG <text based on MG discussion>.

1.4 Having completed its review of the draft Concept Note, making suggestions for improvement where needed, the MG agreed that the Concept Note as shown in Annex should be finalized and used during the subsequent planning and preparations for the event by the organizing committee (see below).

1.5 In respect of the timing, duration and location of the event, the MG discussed <options, budget and other relevant considerations> and agreed <text based on MG discussion>.

***Event organizing committee***

1.6 Acknowledging the extensive planning, preparation and coordination required to organize the WMO scientific event in 2017, the MG agreed to establish an informal organizing committee (OC) – comprising members of the MG and WMO Secretariat (with CAeM, CAS and CBS representation), plus others as necessary – to oversee and assist with all of the necessary arrangements, including logistics and outreach, up to and including the conducting of the event.

1.7 The MG requested that the OC should conduct the bulk of its coordination for WMO scientific event through correspondence and tele-/video-conference as appropriate, and that the OC should initiate its coordination not later than 31 January 2017. **Action xx**

**WMO SCIENTIFIC EVENT 2017**

**Draft Concept Note**

1. **Background and rationale**

1.1 Cg-17 (2015) established an Aviation Research Demonstration project (AvRDP) and endorsed the engagement of WMO, in close collaboration with ICAO, in supporting the meteorological components of ICAO’s GANP and ASBU methodology. EC-68 (2016) agreed with general principles (refer to **Attachment**) for extended research activities coordinated by WMO, building on the progress of the current AvRDP and taking into consideration the envisaged performance improvements in the ASBU blocks with focus on transfer of the results into operational practice. EC-68 also endorsed the organizing of a WMO scientific event (conference or symposium or workshop) in 2017 with broad participation of research, operation and user communities, with the objective to identify needs and plan the research activities during the ASBU Block 1 and Block 2 timeframe.

1.2 In the context of the foregoing, there is an identified need for WMO to lead a consolidated scientific evaluation of the (present and expected future) meteorological capabilities required to support the (present and expected future) aeronautical requirements aligned with the evolving GANP and ASBU methodology, in particular to support ICAO’s vision of a globally interoperable, harmonized air traffic management (ATM) system. In addition, there is an awareness of the need for WMO to assist ICAO in determining the potential impacts of climate change and variability on aviation.

1.3 From a WMO perspective, the event will be a cross-cutting collaborative endeavour involving, as a minimum, CAS, CAeM and CBS in areas including observations and data processing, nowcasting, very-short-range forecasting and verification.

1. **Objective and theme**

2.1 With broad participation from research, operations and user communities, the objective of the event is to identify common aeronautical user needs and expectations over the next 15 years and to plan scientific research activities consistent with these.

2.2 The event will embrace and strengthen community partnerships that already exist at a national and sub-regional level and will establish new partnerships fostering regional and global collaboration.

* 1. The theme (working title) of the event will be:

*“Aviation, science and climate: Turning research into operations in a changing world.”*

1. **Expected outcome and outputs**

3.1 The expected outcome of the event will be a common vision for scientific research and development activities over the next 15 years aligned with the evolving needs and expectations of international civil aviation together with an increased awareness of the potential impacts of climate change and variability on aviation operations now and into the future.

3.2 Outputs of the event will include the production of a WMO Publication (comprising full scientific articles/presentations) and other relevant, related materials to be used to report the outcomes of the event to ICAO and other interested parties.

1. **Stakeholders and partners**

4.1 A broad suite of scientific research partners, aviation stakeholders and other parties is expected to express interest in and support to the conducting of the event as follows:

1. WMO Member States and Territories (NMHSs), Technical Commissions and Regional Associations;
2. Scientific research institutes, universities and other academia;
3. Aviation community such as: standardization bodies (ICAO, Eurocae, RTCA, SAE); regulators (national civil aviation authorities/administrations); airlines (IATA); air navigation service providers (CANSO); air traffic control (IFATCA); pilots (IFALPA); airports (ACI); aerospace industries (ICCAIA); national or regional ATM modernization programmes (e.g. SESAR, NextGen, Carats); flight dispatch (IFALDA); business aviation (IBAC); and general aviation (IAOPA);
4. Meteorological instrumentation systems, data processing and display providers; and
5. Commercial meteorological service providers and other private enterprise.
6. **Format and responsibilities**

5.1 The event will conducted in the form of a global <conference>. The <conference> will comprise Plenary keynote presentations, national and regional case studies/best practices and breakout group discussions (reporting back to Plenary) as well as the formulation of recommendations and a statement.

5.2 The basic programme structure for the event will focus on:

1. Scientific challenges in observing, nowcasting and very-short-range forecasting for time scales of 0-20 minutes, 20-120 minutes and 3-30 hours;
2. The future phenomenon-based hazard information system as a successor to the current provision of SIGMET information by meteorological watch offices on an flight information region (FIR)-basis;
3. Tools for strategic planning with time scales of 1 to 7 days; and,
4. Potential impacts of climate change and variability on aviation operations in the context of long-term (years/months), medium-term (weeks/days) and short-term (hours/minutes/seconds) needs.

5.3 An organizing committee (OC) will be responsible for overseeing and assisting WMO with all of the necessary arrangements up to and including the conducting of the event. The OC will, in particular, assist and oversee logistics and outreach for the event including dates/duration, location and host, funding, sponsorship and exhibiting, hospitality, agenda and programme schedule, keynote and other supporting presentations, invitations, communications and other related publicity.

**Attachment to Concept Note**

**Annex to Decision 44 (EC-86)**

**RESEARCH AND DEVELOPMENT FOR FUTURE AVIATION METEOROLOGICAL SERVICES ENVISAGES IN THE ICAO GANP AND ASBU**

*(General principles)*

1. Alignment with ASBU time blocks and planned performance improvements

(a) AvMET research should be planned in accordance with the ASBU time blocks, as follows:

* Block 0 - 2013-2018
* Block 1 - 2018-2023
* Block 2 - 2023-2028
* Block 3 - 2028+

(b) Research should be focused on the four performance improvement areas defined by the ASBU:

* Airport Operations
* Globally Interoperable Systems and Data
* Optimum Capacity and Flexible Flights
* Efficient Flight Path

2. Areas of research. The planning of future projects should consider the already established ASBU MET modules and contribute to achieving the planned outcomes. The following areas of research activities should be considered:

(a) Improved observations, forecasting and warnings:

* Enhanced global MET data – further development of the WAFS
* Enhanced 4-dimensional information for meteorological hazards of any type – further development and integration of warning and advisory systems
* Enhanced high resolution 4-dimensional MET information for airports and terminal areas

(b) Integration, use cases, fitness for purpose, delivery:

* Integration of MET information in the digital information management through the ICAO System-Wide Information Management (SWIM)
* MET information to support collaborative decision making (CDM)
* MET information to support trajectory-based operations (TBO)
* MET information representation and delivery for enhanced situational awareness and decision making support to different ATM decision horizons – from “immediate” (0-20 minutes) to several days ahead

(c) Climate change impacts on aviation industry.

3. Coordination between technical commissions and WMO Programmes

(a) Research activities should be planned in close coordination between CAeM, CAS and CBS. Other Commissions like CCl should be involved in some specific activities;

(b) Technical commissions should participate through their relevant expert subsidiary bodies whose work programmes should be aligned with the agreed inter-commission tasks and projects;

(c) The overall coordination of the aviation-oriented research and development projects should be done by the AeMP. Support to such projects should be provided by relevant Programmes, such as WWRP, GAW, WIGOS, WIS, GDPFS, WCRP.

4. External coordination and partnership

(a) Research and development activities on enhanced meteorological information and services in support of the future ATM are being conducted by many research institutions, consortia and private companies. Large scale ATM projects (NextGen (USA), SESAR (Europe), CARATS (Japan), etc.) include comprehensive research programmes with substantial funding. A number of Members’ NMHSs are engaged in such projects. The current WMO AvRDP and future projects on MET support to GANP and ASBU performance improvement areas should be well coordinated with existing research efforts and partnerships with ICAO, other relevant organizations and stakeholders should be fostered;

(b) Engagement of service providers and stakeholders should be sought in order to ensure the “fitness for purpose” and accelerate the transfer from research to operations;

(c) Research and development of systems to improve nowcasting for aviation purposes should be of such a nature that developing countries can also benefit from this initiative to enhance aviation safety in areas where highly sophisticated instruments and computer resources are not always available.

5. Format of project activities and funding

(a) WMO research projects should be based mostly on voluntary cooperation between WMO Members and their NMHSs or other aeronautical meteorological service providers (AMSP), and relevant research institutions. Jointly planed research activities and information sharing are among the main drivers that would bring collective benefits;

(b) WMO Secretariat should facilitate the research activities through secretarial support, in particular organization of project events, editing and publishing project outcomes, communication and outreach;

(c) WMO should also play an important role in organizing dedicated scientific events that would demonstrate the importance of the coordinated research and development for the enhancement of the MET information and services to aviation that would bring the desired benefits to the aviation safety, efficiency and regulatory, and address the related environmental issues;

(d) In view of (c) above, a dedicated scientific WMO event should be organized in coordination with relevant partners, preferably in 2017, to ensure the appropriate WMO positioning in the global research activities related to aeronautical meteorology during the time period of ASBU Block 1 and Block 2 (2018-2028);

(e) Funding of research activities through the WMO regular budget would not be sufficient, therefore, appropriate resource mobilization actions should be envisaged.

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1. Note, the ASBU Blocks described in the GANP have been revised as part of the fifth edition (2016) of the GANP. ASBU Block 1 now covers 2019 to 2024, while ASBU Block 2 covers 2025 to 2030. Collectively therefore, ASBU Block 1 and Block 2 now covers the 2019-2030 timeframe. [↑](#footnote-ref-1)