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| **World Meteorological Organization** | **CAeM-MG/2016/INF. 4** |
| **COMMISSION FOR AERONAUTICAL METEOROLOGY** |  | 31.X.2016 |
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| **MANAGEMENT GROUP 2016**Hall (Innsbruck), Austria8-10 November 2016 |  | ITEM 7.3 |
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**COOPERATION WITH OTHER WMO BODIES
AND INTERNATIONAL ORGANIZATIONS**

Scientific Event 2017

*Inter-Commission Aviation Research Project*

*(Submitted by the WMO Secretariat)*

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| **Summary and Purpose of Document**This document provides Decision 44 (EC-68), together with its accompanying (annexed) *Research and Development for Future Aviation Meteorological Services Envisaged in the ICAO GANP and ASBU (General principles)*, to provide context for the consideration of CAeM-MG/2016/Doc. 7.3. |

**ACTION PROPOSED**

The Management Group (MG) is invited to note this information.

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## Decision 44 (EC-68)

### INTER-COMMISSION AVIATION RESEARCH PROJECT

THE EXECUTIVE COUNCIL,

**Recalls** Resolution 44 (Cg-17) that established the Aviation Research and Development Project (AvRDP) and Resolution 66 (Cg-17) that endorsed the engagement of WMO, in close collaboration with the International Civil Aviation Organization (ICAO), in supporting the meteorological components of the Global Air Navigation Plan (GANP) and the Aviation System Block Upgrades (ASBU);

**Recalls further** that, according to the Working Arrangements with the International Civil Aviation Organization “the World Meteorological Organization is responsible for specifying the technical methods and practices recommended for use in providing required meteorological services, and for furthering generally the application of meteorology for human activities, including aviation”;

**Recognizes** the need for development of advanced methods for provision of meteorological information and services to international air navigation to support the evolving needs of aviation stakeholders envisaged in the ICAO GANP and ASBU;

**Recognizes further** the importance of aeronautical meteorology as one of the WMO strategic priorities in the seventeenth financial period and the need for WMO to position itself better in the research and development underpinning the enhanced meteorological services to aviation required by the industry;

**Appreciates** the participation of five WMO Members in the on-going research activities of the “Phase 1” of the AvRDP and the plans for its continuation with “Phase 2” focusing on translating of MET information into air traffic management (ATM) impacts;

**Having considered** the recommendation of the 8th session of the Scientific Steering Committee (SSC) of the World Weather Research Programme (WWRP) for the expansion of the WWRP AvRDP into an Inter-Commission Aviation Research Project with the participation of CAeM, CBS and CAS;

**Agrees** with the proposed general principles for extended research activities coordinated by the WMO, as described in the Annex, building on the progress of the current AvRDP and taking into consideration the envisaged performance improvements in the ASBU blocks with focus on the transfer of the results into operational practice;

**Requests** the presidents of the CAS, CAeM and CBS, to prepare a coordinated roadmap for the extended aviation meteorology research and development project, in support of future operational solutions for Air Traffic Management (ATM), for consideration by the PTC-2017;

**Endorses** the proposal for organizing in 2017 a WMO scientific event (conference or symposium or workshop) with broad participation of research, operations and user communities, with the objective to identify needs and plan the research activities during the ASBU Block 1 and Block 2 (2018-2028);

**Requests** the Secretary-General to provide support for the transition from WWRP AvRDP to extended aviation meteorology research and development activities, facilitate respective resource mobilization, and foster partnerships with ICAO, other organizations and stakeholders in the transfer from research to operations.

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Annex: 1

## Annex to Decision 44 (EC-68)

### reseArch and development FOR future aviation meteorological services envisaged 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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