Montréal, 7 to 18 July 2014

DRAFT REPORT OF THE COMMITTEE
ON AGENDA ITEM 3.2

The attached draft report on Agenda Item 3.2 is presented for approval by the Committee for submission to the Plenary.
Agenda Item 3: Integrating meteorological information exchange developments into the future system wide information management environment

3.2: Integration of meteorological information in the future system-wide information management (SWIM) environment through the development of new forms of data representation

3.2.1 The Committee noted an expectation that existing information exchange systems would constrain the implementation of operational improvements to the global air traffic management (ATM) system. The limitations of the systems include the lack of harmonization of information (including aeronautical information, meteorological information and flight information), proprietary interfaces and data formats, message-size limitations and a non-scalable approach to information exchange within the present infrastructure.

3.2.2 The Committee agreed that a careful migration of meteorological information into a system-wide information management (SWIM) environment is required in order to allow the ATM system to develop along with the expectations of the Global Air Navigation Plan (Doc 9750). It was also noted that such a migration would need to consider various significant issues including the potential separation between the service provider and the user due to increased levels of automation; the quality of service which would necessitate an increased use of metadata to enable a user assessment of the data usability; the integration of the “human in the loop” in an automated or semi-automated environment; the move from a product-centric to a data-centric environment; an information interoperability framework; information exchange services and models; determination of authoritative sources; local information integration; and governance. Due to the complexity of this undertaking, the Committee agreed to a set of tasks (as provided in the appendix) to be used as a basis for the development of requirements to integrate meteorological information into the SWIM environment.

3.2.3 The Committee noted the need to coordinate the work done in this area with other related information domains contributing to SWIM and to consider the principles of transparent governance and risk mitigation during the development of aeronautical meteorological information requirements and services. The Committee formulated the following recommendation accordingly:

**Recommendation 3/x — Inclusion of aeronautical meteorological information in the future SWIM-enabled environment**

That ICAO through an appropriate expert group, in close coordination with WMO, develop provisions to enable the inclusion of aeronautical meteorological information in the future system-wide information management (SWIM) environment consistent with the Global Air Navigation Plan (Doc 9750), by adhering to the following principles:

a) the outline provided in the Appendix forms the initial basis for foreseen implementation milestones, and where this outline and associated milestones are reviewed on a regular basis (every 12 months) to reflect changes in the alignment between, and the priorities of, the SWIM related ASBU modules and operational improvement areas;
b) ongoing coordination with (an) appropriate ICAO expert group(s) tasked with developing the SWIM concept to ensure that the meteorological elements of SWIM meet the GANP objectives;

c) any duly justified meteorological consideration on the future development of the physical infrastructure layer (network connectivity), the messaging infrastructure, the information exchange models and the information exchange services should be made based on the core architectural principle of service orientation and in coordination with the SWIM GANP objectives alongside other information exchange models;

d) the evolution towards an information management environment should be guided by a roadmap including a transparent system of governance and risk mitigation actions and the foreseen role of existing ICAO information exchange functions for aeronautical meteorology such as regional OPMET databanks (RODB), inter-regional OPMET gateways (IROG) and internet based services.
APPENDIX

METEOROLOGICAL INFORMATION INTEGRATION
FOR TRAJECTORY-BASED OPERATIONS TASKS

1. TRANSITION

The main principles and considerations for the evolution of MET information exchange provisions explained in paragraphs 2.2 and 2.3 are expressed in a foreseen end-state of this evolution by 2025. Intermediate steps are defined in line with the regular amendment cycle of Annex 3 to support the transition towards this full migration by 2025.*

1) Amendment 77 to Annex 3 (with intended applicability in November 2016)

— Introduction of an updated IWXXM (logical level) to reflect additional aeronautical meteorological information elements currently contained in the defined Annex 3/Technical Regulations [C.3.1] products or templates (evolution of IWXXM version 2013)

— Introduction of recommended practice for XML/GML-based exchange format for METAR, SPECI, TREND, TAF and SIGMET (upgrade of IWXXM version 2013)

2) Amendment 78 to Annex 3 (with intended applicability in November 2019)

— Introduction of an updated IWXXM (logical level) to reflect all aeronautical meteorological information elements contained in the products, templates and services that Annex 3/Technical Regulations [C.3.1] supports

— Introduction of a separate chapter on information exchange services including:

• the general principles and in some cases recommended practices to provide all gridded data products currently part of Annex 3/Technical Regulations [C.3.1] as an information exchange service in a recommended exchange format;

• recommended practices to provide all gridded data products as an information exchange service in a recommended exchange format; and

• introduce newly defined and agreed services.

3) Amendment 79 to Annex 3 (with intended applicability in November 2022)

— Restructuring to reflect that Annex 3/Technical Regulations [C.3.1] described core aeronautical meteorological information elements and aeronautical meteorological information exchange services at the logical level to support international air navigation, including:

* It should be recognized that at the time of writing, the SWIM concept and globally applicable AIRM is under development. The content of the paper is based on the concepts, notions and principles discussed by the 12th Air Navigation Conference, reflected in the GANP and ASBUs, endorsed by the 38th Assembly. The details of implementing the defined intermediate steps can therefore slightly change in content or time.
3.2-A2 Draft Report on Agenda Item 3.2

- an updated IWXXM (logical level) to reflect all meteorological information elements and services contained in Annex 3/Technical Regulations [C.3.1]; and

- recommended practices for the physical exchange formats of these services

4) Amendment 80 to Annex 3 (with intended applicability in November 2025)

- Modifications required by emerging services needs; and

- Removal of product requirements.

2. EXPERT GROUP TO SUPPORT DEVELOPMENT

2.1 Considering the complexity and multidisciplinary aspects of the proposed transition, it is proposed to set up an expert group to support the development of provisions for aeronautical meteorological information exchange as integral component of SWIM.

2.2 This expert group should:

   a) identify aeronautical meteorological information services to include in subsequent versions of IWXXM;

   b) support the development of subsequent versions of the IWXXM logical data model;

   c) support the development of the physical data models and exchange formats to support the information services defined in the IWXXM logical data model;

   d) identify implementation considerations for States for implementing aeronautical meteorological information services, for providers and users, and

   e) identify potential training needs for the users of aeronautical meteorological information services by SWIM-enabled applications.

   — END —