



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 2: Enabling the global air navigation system

2.3: Future provision of aeronautical meteorological service

**PROVISION OF GLOBALLY HARMONIZED, PHENOMENA-BASED HAZARDOUS
WEATHER INFORMATION**

(Presented by the United States)

EXECUTIVE SUMMARY

This paper presents the need for the provision of globally harmonized, phenomena-based, hazardous weather information to enable the full implementation of several aviation system block upgrades (ASBUs) described in the ICAO *Global Air Navigation Plan* (Doc 9750). It also presents the need for improved coordination between ICAO panels to ensure that ICAO develops the appropriate Standards and Recommended Practices (SARPs) for aeronautical meteorological information to support the future operational capabilities identified in Doc 9750.

Action: The Conference is invited to:

- a) note the information in this paper; and
- b) agree to the recommendation in paragraph 3.3.

1. INTRODUCTION

1.1 The Meteorology Divisional Meeting (MET/14, 7 to 18 July 2014) recognized that in large portions of the world there is a lack of information or incomplete information about the location and severity of hazardous weather conditions that affect international air navigation. The MET/14 meeting formulated a recommendation to develop and implement a regional hazardous weather advisory centre concept to mitigate the lack of meteorological information available to aviation decision-makers. The Meteorology Panel (METP) is the expert group assisting ICAO to address this shortcoming in the availability of aeronautical meteorological information.

1.2 Subsequently, the aviation user communities, such as the International Air Transport Association, the International Federation of Air Traffic Controllers' Associations, and the International Federation of Air Line Pilots' Associations, indicated to the METP a strong preference that any action to mitigate the lack of information or incomplete information about hazardous weather conditions be addressed through the provision of globally-harmonized, phenomena-based information that is not limited

to the boundaries of flight information regions (FIRs). The provision of globally harmonized, phenomena-based hazardous weather information will simultaneously address existing shortcomings in the provision of aeronautical meteorological services in some parts of the world while supporting the implementation of multiple ASBU modules in the GANP.

2. DISCUSSION

2.1 Hazardous meteorological phenomena often extend over large geographic areas affecting aviation operations in multiple FIRs. The current primary means of informing aviation decision-makers of the presence or expected presence of hazardous weather conditions is the SIGMET product, which, in accordance to Annex 3 — *Meteorological Information Service for International Air Navigation*, can only be issued within the boundaries of a single FIR. The limitations in the issuance of the SIGMET product lead to the provision of inconsistent information about the location and severity of hazardous meteorological phenomena in adjacent FIRs.

2.2 In several regions of the world, States do not provide information about hazardous weather conditions in an Annex 3-compliant SIGMET product for the FIRs under their control. In many cases, States that are unable to provide an Annex 3-compliant SIGMET to aviation users lack the technical capability to do so.

2.3 The lack of globally harmonized, phenomena-based information about hazardous meteorological conditions reduces the safety and efficiency of international civil aviation operations. Inconsistencies in the SIGMET products issued for adjacent FIRs, as well as the complete lack of information about hazardous weather conditions for some FIRs, inhibit the ability of aviation operators to maximize the safety and efficiency of operations through the use of sophisticated flight planning systems and processes.

2.4 The scientific and technical capabilities of national meteorological services are constantly improving which allows for the provision of more accurate, higher resolution and timely information about hazardous weather conditions than the SIGMET product. The world area forecast system (WAFS) Provider States are already producing and disseminating globally harmonized, phenomena-based hazardous weather information, such as convective weather and turbulence forecasts. In addition, other States possess improved global and regional forecast modelling capabilities that allow for the provision of more consistent, phenomena-based information sought by aviation users.

2.5 The current and planned WAFS information provides global-scale information that can be utilized by aviation operators in flight planning systems and processes. This information can also be used by States to produce regional and local scale information about hazardous weather conditions that is seamless and consistent across FIR boundaries or even extend across FIR boundaries.

2.6 As an enabling capability in the GANP, the functional and performance requirements for meteorological information must be developed based on the needs of future operational capabilities. The refinements of ASBU MET modules in the forthcoming version of the GANP only highlight the need to closely coordinate the development of meteorological information requirements to support the implementation of future operational capabilities.

2.7 Several ASBU modules must be enabled by improved meteorological information to achieve the full benefits of implementation. In particular, the ASBU modules related to continuous descent operations, continuous climb operations, trajectory based operations and wake turbulence are all enabled by meteorological information service.

2.8 Each ASBU module in the GANP is addressed by an ICAO Panel. In order to ensure that the ASBU modules related to meteorological information result in the provision of the aeronautical meteorological information required to support full implementation of the capabilities described in the operational ASBU modules, close coordination is needed between the METP and those ICAO Panels addressing the other ASBU modules.

2.9 The METP is developing Standards and Recommended Practices (SARPs) for the provision of globally harmonized, phenomena-based hazardous weather information. National meteorological service providers and/or ICAO-designated regional providers will soon begin providing information in accordance with the SARPs developed by the METP. Without adequate coordination between the METP and other ICAO panels, the SARPs in Annex 3 may not result in the provision of the meteorological information necessary to support full implementation of future operational capabilities. This may lead to a sub-optimized system in which the expected improvements in safety and efficiency are difficult to achieve.

3. CONCLUSION

3.1 The provision of improved meteorological information is recognized in the GANP as an enabling capability for several ASBU modules. The aviation user communities have articulated a clear need for information about hazardous meteorological conditions that is unconstrained by FIR boundaries to improve the safety and efficiency of international air navigation.

3.2 The continued development of functional and performance requirements for aeronautical meteorological information requires close coordination between ICAO panels to ensure that the requirements for hazardous weather information will support the full implementation of future operational capabilities described in the GANP.

3.3 In light of the above, the Conference is invited to agree to the following recommendation:

Recommendation 2.3/x – Provision of globally harmonized, phenomena-based, hazardous weather information

That the Conference:

- a) request ICAO to progress the work on the development of Standards and Recommended Practices (SARPs) and associated guidance material related to globally-consistent, phenomena-based hazardous meteorological information to support the specific modules in the *Global Air Navigation Plan* (Doc 9750); and
- b) request ICAO to facilitate the coordination amongst panels necessary to develop the SARPs, as well as the procedures for air navigation meteorology.

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