

International Civil Aviation Organization



FIFTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL REQUIREMENTS WORKING GROUP (MET/R WG/5) OF THE ASIA/PACIFIC AIR NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL GROUP (APANPIRG)

Bangkok, Thailand, 19 – 21 April 2016

Agenda Item 5: Coordination between MET and ATM services

UPDATE ON THE WMO AVIATION RESEARCH DEMONSTRATION PROJECT INITIATIVE

(Presented by Hong Kong, China)

SUMMARY

In support of the recommendation of the ICAO Meteorology Divisional Meeting (2014) (MET/14) to include meteorological services for the terminal area in the next update of GANP, WMO is undertaking an Aviation Research Demonstration Project (AvRDP) initiative to demonstrate the capability of nowcasting and mesoscale modelling techniques in support of ATM. The Project has started in 2015 and this paper updates the progress of the Project.

1. Introduction

1.1 The Aviation Research Demonstration Project (AvRDP) now undertaken by WMO Commission for Aeronautical Meteorology (CAeM) and its sister commissions aims at demonstrating the capability of nowcasting and mesoscale modelling techniques in support of the Meteorological Services to ATM (MSTA) around the terminal area of an airport, and to providing a ‘fast-track’ transfer of the research results into operational applications to facilitate the national meteorological services under WMO to enhance their aviation weather services to meet the ASBU initiative.

1.2 The initiative of the AvRDP was presented during the MET/ATM Seminar held in Tokyo, Japan, 29 June – 1 July 2015 (MET/ATM Seminar 2015 – IP/04). This paper provides an update of the AvRDP since ~~IP-04~~ MET/ATM Seminar 2015 – IP/04.

2. Discussion

2.1 A kickoff meeting was held in Shanghai, China, 24-25 June 2015 to kick-started the Project and to adopt the following objectives in 4-year term (2015-2018):

- to conduct research in nowcasting and mesoscale modelling at a few selected international airports located in Northern and Southern Hemisphere with a view to demonstrating the MET capabilities in supporting the development of MSTA;
- to collaborate with the respective ATM to demonstrate the benefits of the MET information to ATM;
- to transfer the knowledge gained in AvRDP to other national meteorological services under WMO who need to enhance their aviation MET services so as to meet the ASBU initiative.

2.2 The Project is implemented in two phases:

- (i) Phase I – MET capability research (2015 – 2017), focusing on MET research and development; and
- (ii) Phase II – MET-ATM impact translation and validation (2016 – 2018), focusing on translating MET information into ATM impact

2.3 Six airports from different climatological regimes in Northern and Southern Hemisphere impacted by different weather participate in AvRDP: CDG (Paris), HKG (Hong Kong, China), JNB (Johannesburg), SHA (Shanghai), YYZ (Toronto) and YFB (Iqaluit), with the following progresses:

- (i) 1st Intensive Observing Period (IOP) for convective weather for airport in Northern Hemisphere has completed at HKG. MET data including nowcast, mesoscale modelling data and ATM data for HKG and within Hong Kong Flight Information Region (HKFIR) have been collected and uploaded onto the AvRDP data server. HKG is preparing for the 2nd IOP for convective weather in the coming summer season. SHG has started collecting convective cases using its radar-based nowcasting systems for evaluating its performance. The MET Services in Shanghai and ATM has partnered to move forward the Project over SHG.
- (ii) 1st IOP for winter weather for airports in Northern Hemisphere has started at CDG as well as YYZ to collected data and cases using nowcasting system based on remote-sensing data and high resolution mesoscale modelling systems. Verification will also be undertaken following the IOPs
- (iii) Setting up of MET instrument for preparing the 2nd IOP for winter weather over YFB has also started.
- (iv) 2nd IOP for convective weather for airport in Southern Hemisphere has also started. A radar-based nowcasting system in collaboration with HKO has been implemented at JNB for testing the capability of nowcasting convective weather over the airport and its air space. Contacts with aviation clients on possible collaboration to provide better MET information for better decision making and raise awareness of the project with ATM client has also commenced.

2.4 Some preliminary results from the 1st and 2nd IOPs will be presented in the coming WMO 4th International Symposium on Nowcasting and Very-short-range Forecast (WSN16, <https://wsn16.hk>). To train up some MWOs who might need to improve their aviation meteorological

technologies for MSTA purposes, an AvRDP Training Workshop will be held on 20-22 July 20152016 in Hong Kong back-to-back with the Symposium.

2.5 A dedicated website (<https://avrdp.hko.gov.hk>) has been established for providing background information of the project, progress, meetings, documentation and forum. A related AvRDP data server has also been established for facilitating data exchange.

2.6 As mentioned in ~~IP-04~~ MET/ATM Seminar 2015 – IP/04, the next Phase of the Project is the research on Integration of MET and ATM information and to demonstrate the benefits of the enhanced MET services via evaluating the ATM-impact parameters, such as airport capacity, air traffic delay, etc. Close collaboration between the MET and ATM community would be required. Support from ATM community, airlines and pilots, in particular in the form of advices in the evaluation methodology and the provision of necessary ATM and flight data for evaluation and validation, would be the key for the success of the AvRDP.

2.7 To better support the integration of MSTA with information for Trajectory Based Operation information, WMO has plan to upgrade the AvRDP into a core project. A proposal to expand the project scope and extend the project period to study the integration and extension of MSTA information to become part of TBO to support multiple decision horizon including tactical, pre-tactical as well as strategic needs and allow for more airports to participate in the project is going to be submitted. The proposal would be discussed at the upcoming WMO Executive Committee meeting.

2.8 For more information about the AvRDP, the WSN16 as well the AvRDP Training Workshop, the meeting can contact Dr Peter Ping-wah LI, pwli@hko.gov.hk, the lead of the Project.

3. Action by the Meeting

3.1 The meeting is invited to:

- (a) note the information contained in this Paper;
- (b) lend its support to the AvRDP initiative; and
- (c) consider attendance at WSN16 and Training Workshop.
