International Civil Aviation Organization

INFORMATION PAPER

Twenty-fifth Meeting of the Meteorology Sub-group (MET SG/25)

Online, 18 – 22 October 2021

Agenda Item 8: Any other business

AIRCRAFT-BASED OBSERVATION OPERATION STATUS

(Presented by the Republic of Korea)

SUMMARY

This paper introduces the current operational status of aircraft-based observation in Republic of Korea in relation to observation on air routes.

1. INTRODUCTION

1.1 In the field of meteoroloy, observing meteorological phenomena in air routes is a very challenging task.

1.2 The Aviation Meteorological Office (AMO) of the Republic of Korea collaborates with Korean Air and Asiana Airlines to collect AMDAR data to observe meteorological phenomena in air routes.

1.3 However, as AMDAR data can be received only from a small number (11) of aircraft and the range of collection is mainly limited to the vicinity of the airports, AMO has installed ADS-B to collect more data even from air routes.

1.4 This paper introduces the current operational status of aircraft-based observations in the Republic of Korea.

2. DISCUSSION

2.1 Section 2.2.2 of the WMO No. 1200 Guide to Aircraft-based Observations (ABO) shows the derivation of meteorological data from ADS-B messages.

2.2 Based on the guide, AMO installed ADS-B receivers at eight locations covering Incheon FIR.

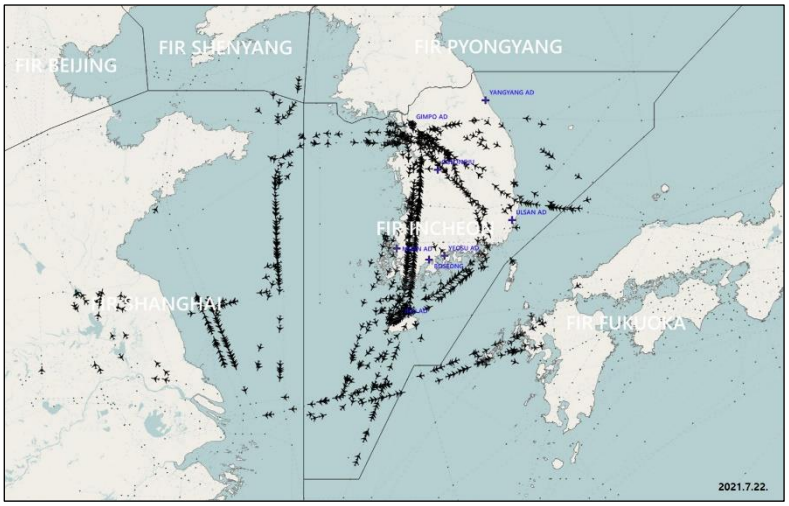

Figure 1. Status of ADS-B data collection at Incheon FIR

2.3 We developed a program that derives meteorological data from ADS-B messages received from each point, and the program extracts data on wind directions, wind speeds and temperatures.

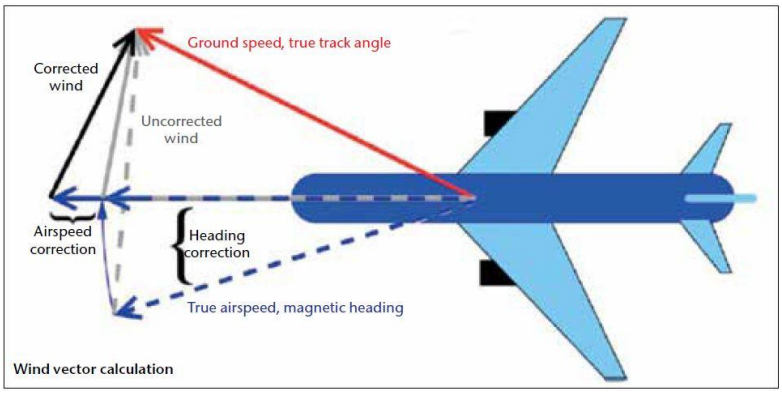

Figure 2. Wind vector calculation (presented in the WMO-No. 1200)

2.4 Currently, the average number of data collected per day is around 150,000. Simple quality control (range test for each variable presented in the ABO) is applied to the data extraction process, but more detailed and extensive quality control is required to increase the reliability of the data.

2.5 These data are being tested to improve the quality so that they can be used as basic data for numerical models of the Korea Meteorological Administration(KMA).

2.6 In addition, a study is underway at Seoul National University on turbulence observation using ADS-B.

3 ACTION BY THE MEETING

3.3 Note the information contained in this paper.

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