

*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**

**MET SERVICES IN SUPPORT OF ATFM**

(Presented by the Republic Of Korea)

**SUMMARY**

This paper presents the Meteorological Services in support of Air Traffic Flow Management (ATFM) in the Republic of Korea.

**1. Introduction**

1.1 The roles and responsibility of meteorological authorities are expanding to actively cope with recent changes in air navigation policy and ensure efficient Air Traffic Flow Management (ATFM) and safety. The Aviation Meteorological Office (AMO) aims to provide the meteorological services that increase the efficiency of aircraft operations.

1.2 In Korea, the Ministry of Land, Infrastructure and Transport (MOLIT) has established the Air Traffic Flow Management Center (ATFMC) to perform ATFM and achieve efficient use of airspace to quickly and actively respond to abnormal situations. In this sense, the need to provide useful MET information (in support to ATFM) on efficient and reliable ATFM has emerged.

1.3 Current MET information provided is mainly focused on airports in the form of a text or picture, so it is a little difficult to understand the weather phenomena at the airports and en-route airspace at a glance. In addition, it is difficult to predict how much the observed or forecast weather phenomenon affects ATFM. Therefore, AMO plans to implement a system that can help us easily understand the hazardous weather phenomena which may affect the safety of aircraft operations, and to provide new types of weather information regarding hazardous weather affecting air traffic flow.

**2. MET Information to Support ATFM**

2.1 AMO is implementing a new type of meteorological service to ensure seamless ATFM in response to users (in the support of ATFMC that was established by the MOLIT). This service provides information on the occurrence of hazardous weather phenomena within the Incheon FIR comprehensively and visibly, as well as information on the impact of hazardous weather

phenomena occurred on the capacity, that is likely to influence the airport and airspace capacity potentially. The main service information is as follows:

- **General aviation weather information**
- **Significant weather information in en-route**
- **Weather briefing service**
- **Overlay function of weather information**

2.2 **General aviation weather information** is produced based on the METAR and TAF. And it comprehensively provides detailed information on the occurrence of hazardous weather forecast with a valid WARNING, SIGMET, and AIRMET information. The probability information on weather conditions that impact on the capacity is provided with a color code divided into four steps (RED > PURPLE > YELLOW > BLUE), depending on the weather condition reference. As it is possible to comprehensively monitor the weather information of all the airports, it was also configured to check the detailed information for each airport.

2.3 **Significant weather information in en-route** provides information on the degree of the hazardous weather (i.e., TS, CBs etc.) that affects a particular route. Including the information of occurrence of hazardous weather, it will provide the current weather conditions affecting the en-route by stage.

2.4 **Weather briefing service** provides radar and satellite images in real time. Against the significant meteorological factors (convective clouds, thunderstorm, etc.) it has a function to present an additional explanation that has been analyzed by a meteorological analyst. If the weather briefing via a whiteboard could directly present on the screen, it can effectively deliver weather information and improve understanding of the weather information. Also, these features will be more efficiently used to conduct the MET Collaborative Decision Making (CDM).

2.5 **Overlay function of weather information** is a function to overlay radar/satellite images of airspace over the map to perform the actual traffic flow management. The radar image may be selected for the desired elevation (per 1,000ft) of radar images including composite images, and it can show whether convective clouds and thunderstorms exist at a certain altitude of flight. It can check the information on convective clouds and thunderstorms in the flight path suggested by vertical distribution of precipitation echoes on specific flight route.

### 3. **Future Plans**

3.1 AMO plans to provide the impact of CBs on the airports and en-routes. Through the analysis of the moving direction and speed of convective clouds in Radar, AMO produces information about how long the convective clouds impact on a specific airport and en-route. And it will be configured to modify to reflect actual situations by meteorological experts. If it provides information about the moving direction and speed of CBs, it will be able to give greater help to establish operation plans of ATFM.

3.2 In addition, AMO plans to set up criteria of meteorological factors which affect the capacity of an airport and en-route. During the test operation, the validity of the criteria will be analyzed by using it in actual traffic flow management. Each criterion of weather factors will continue to improve for each airport. Through these procedures, if the criteria of meteorological factors apply to situations at the airport, it will be possible to predict the capacity of the airport and airspace. Through continuous improvement of the criteria, AMO will improve the accuracy of capacity prediction.

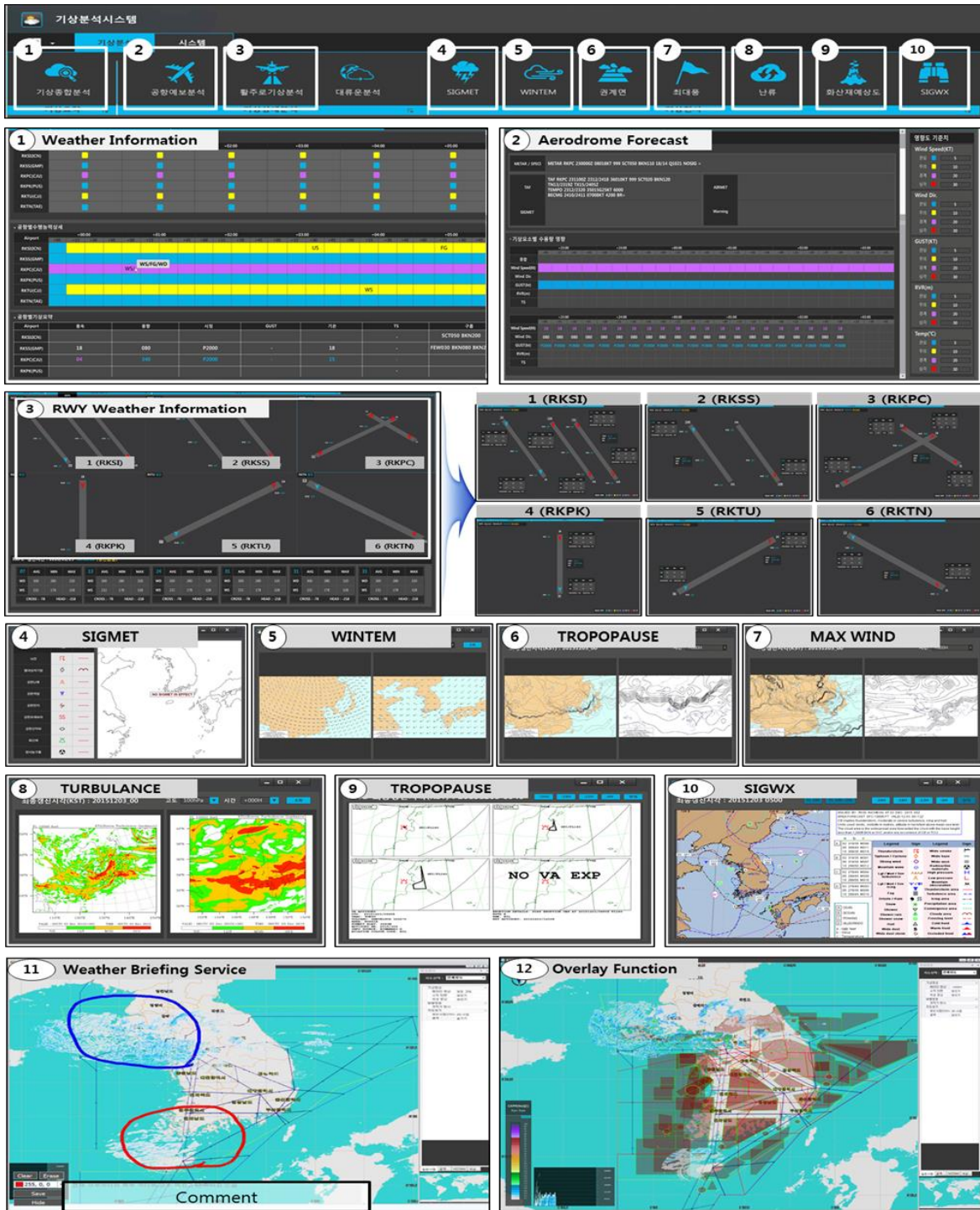


Fig 1. MET services in support of ATFM

4. Action by the Meeting

4.1 The meeting is invited to note the information contained in this paper.

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