

International Civil Aviation Organization

ICAO

WORKING PAPER (WP/11)
**ICAO Asia and Pacific (APAC)
Twenty-Ninth Meeting of the Meteorology Sub-Group
(MET SG/29)**

Bangkok, Thailand, 18 - 22 August 2025

Agenda Item 4: Regional guidance material
**UPDATES OF ASIA/PACIFIC REGIONAL GUIDANCE FOR TAILORED
METEOROLOGICAL INFORMATION AND SERVICES TO SUPPORT AIR TRAFFIC
MANAGEMENT OPERATIONS**

(Presented by Presented by MET/R WG Ad Hoc Group)

SUMMARY

This paper proposes updates on the Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations to include the implementation example of Republic of Korea.

1. INTRODUCTION

1.1 The Asia/Pacific regional guidance for tailored meteorological information and services to support Air Traffic Management operations is aimed at fostering States' implementation and enhancement of meteorological (MET) information and services for air traffic management (ATM) in the Region. It captures necessary processes from preparatory to operational phases. The stepwise (process-wise) structure of the guidance is expected to allow each State to refer to suitable chapters, sections or subsections depending on its status of implementation of MET information and services to support ATM, including commencement, implementation or improvement. Furthermore, it provides details of operational service practices with some examples and operational scenarios in its Appendices.

1.2 This regional guidance is maintained by the Ad-hoc group of the MET/R WG consisting of Australia, China, Hong Kong, China, Japan (rapporteur), Republic of Korea, Singapore, Thailand, Vietnam and IATA, and available on the ICAO APAC eDocuments website (<https://www.icao.int/APAC/Pages/eDocs.aspx>). States are encouraged to provide updates on their MET services in support of ATM such as the latest examples of the services and operational scenarios to enrich the cases included in the Appendices. The maintenance procedures and means of publication of the guidance are provided in the Guidance as "Note for Appendix 1 and 2".

2. DISCUSSION

2.1 At the MET/R WG/14 meeting, the Republic of Korea presented the latest developments in its implementation example of MET and ATM integration ([MET R/14 WP/07](#)). The working group reviewed the information and requested the ad hoc group to incorporate it into an update to the regional guidance. [DECISION MET/R WG/14/04]

2.2 The ad-hoc group has reviewed the material and included new examples from the Republic of Korea in Appendix 1 of the Regional Guidance. The draft example proposed for inclusion is provided in Attachment A to this paper.

2.3 Noting the discussion above, it is recommended that the MET SG adopt the following Decision:

Decision MET SG/29-xx: Update the Regional Guidance for Tailored Meteorological Information and Services to Support ATM Operations	
What: That, the MET SG approves the proposed updates i.e. include the example from Republic of Korea under Appendix 1 of the <i>Asia/Pacific Regional Guidance for Tailored Meteorological Information and Services to Support Air Traffic Management Operations</i> .	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: To provide States with more examples in the guidance material and make the updated version available on the ICAO APAC eDocuments website.	Follow-up: <input type="checkbox"/> Required from States
When: As soon as practicable	Status: Adopted by Subgroup
Who: <input type="checkbox"/> Subgroups <input type="checkbox"/> APAC States <input checked="" type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input type="checkbox"/> Other: TEXT	

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this paper; and
- b) adopt the Decision in paragraph 2.3.

ATTACHMENT A

Republic of Korea

1. ATM-tailored MET Information and Services

The Ministry of Land, Infrastructure, and Transport (MOLIT) has been operating the Air Traffic Control Center (ATCC) since July 2017 to enhance flight safety and improve air traffic flow efficiency. The Aviation Meteorological Office (AMO) works 24/7 in cooperation with the ATCC, providing decision-making support for Air Traffic Flow Management (ATFM) affected by weather. The AMO also participates in Collaborative Decision-Making (CDM) meetings, offering weather information for both domestic and international airports, airspaces, and air routes, and highlighting potential hazardous weather conditions.

1.1 CDM Meetings

The ATCC holds regular CDM meetings once a day at 0010 UTC for ATFM purposes. During these meetings, the AMO provides weather briefings to all participants. In addition, if severe weather events that could significantly impact flight operations are expected within a few hours, the AMO joins irregular CDM meetings to deliver updated weather briefings.

1.1.1 CDM on Snow Events at Incheon Airport

Snowfall can lead to anti-icing/de-icing procedures and runway snow removal operations, which can affect airport capacity and air traffic flow. To prevent large-scale delays and ground congestion due to snowfall at Incheon International Airport, CDM meetings are held with participation from the ATCC, AMO, air traffic control agencies, Incheon International Airport Corporation, and airlines. During these meetings, weather analysis is shared, including updates on the likelihood of intensifying snowfall and hourly snowfall forecasts, along with an analysis of the impacts on air traffic flow.

1.1.2 CDM for Departures from Southeast Asia

When hazardous weather reduces airspace capacity over the southern region of Jeju, MET-CDM meetings are held to manage the traffic flow for flights departing from Southeast Asia and entering the Incheon FIR. Participants in these meetings include the ATCC, AMO, and air traffic control agencies, with an aviation weather analyst from the AMO providing convection forecasts and briefing on the expected hazardous weather in the Jeju sector.

1.2 Weather Briefings

1.2.1 Weather briefings for ATCC

The AMO provides weather briefings for the ATCC twice a day at 0000 UTC and 0820 UTC. The weather briefing is given during the shift change for air traffic flow managers and covers expected weather conditions at domestic and foreign airports and airspace that could affect ATFM during on their shifts.

1.2.2 Weather briefings for ACC

The AMO provides weather briefings for the Incheon and Daegu Area Control Centers (ACC) twice a day at 2300 UTC and 0800 UTC. The briefing is given during the shift change of air traffic controllers and covers expected weather conditions, such as upper-level winds and convective clouds, at domestic airports and airspace during their shifts (Figure 1).

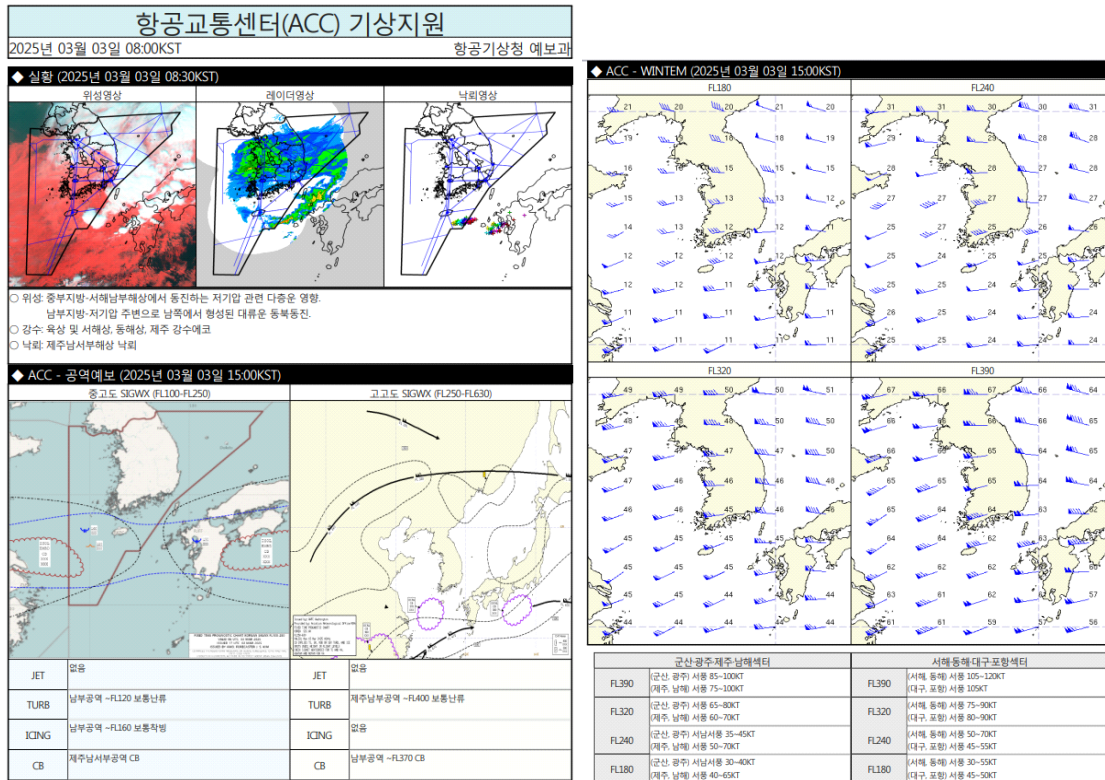


Figure 1. ACC Weather briefing

1.3 Weather Analysis (Meteorological Information) to Support ATFM

The AMO provides aviation weather analysis twice a day at 0000 UTC and 0700 UTC to assist air traffic flow management. These reports include quantitative data and graphics to enhance support for decision-making in ATFM (Figure 2).

- Target: Major domestic and foreign airports, Incheon FIR, and neighboring FIRs
- Issue Time: Twice a day at 0000 UTC and 0700 UTC.
- Modes of Provision: Flow Management Terminal (FMT) System (operated by MOLIT) and AMO website
- Content: Information on meteorological conditions expected to affect ATFM within 24 hours
 - 1) Detailed weather information for major airports (low visibility, strong winds, windshear, CB, precipitation/heavy snowfall, etc.)
 - 2) Satellite images, radar images, volcanic ash data, etc.
 - 3) Weather charts from numerical models, WITEM, etc.

Appendix A to WP/11

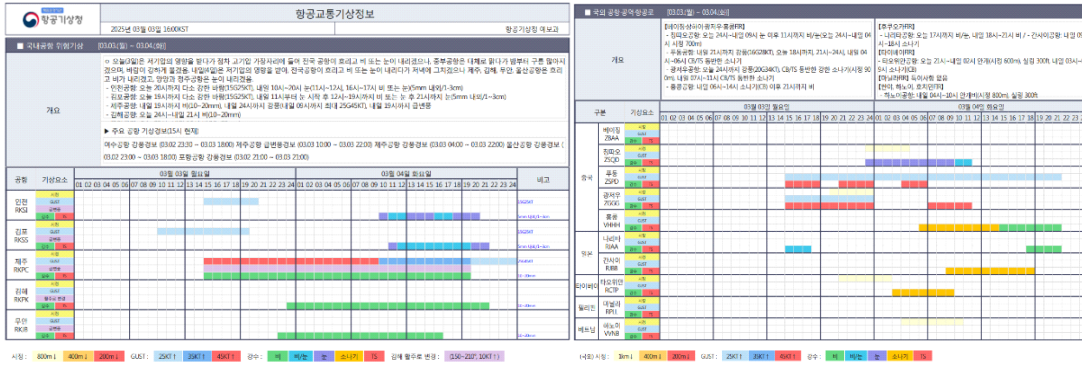


Figure 2. Weather analysis provided by AMO (twice a day) includes: i) significant weather forecasts for each airport, and ii) weather graphs

1.3.1 Significant Weather Scenarios

When a typhoon, heavy snow, or low visibility with a significant impact on ATFM is expected, the AMO provides weather scenarios to support not only ATFM but also airlines' flight decisions and airport operations.

1.3.1.1 For typhoons, historical data from similar typhoons and impact-based forecasts for airports and airspace (e.g., FIX, airways) are provided. These are used to manage air traffic volume based on decisions on detour routes and to determine whether aircraft should operate (Figure 3).

1.3.1.2 For snow events, dry/wet snow information and hourly forecasts are provided to predict potential delays due to de-icing/anti-icing procedures, and these forecasts are utilized for ATFM.

1.3.1.3 For low visibility, the minimum visibility is additionally provided to minimize aircraft holding and to support low visibility operational procedures at airports.

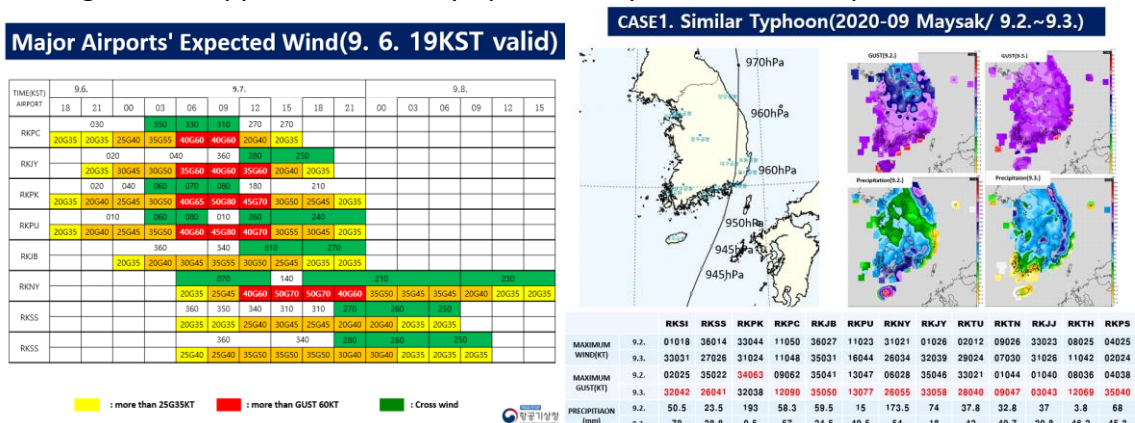


Figure 3. i) Significant Weather (Typhoon) Scenario and ii) Similar Typhoons from the Past

1.4 Terminal Area Weather Service

1.4.1 Monitoring and prediction of hazardous convection

The AMO provides real-time observation data for the Incheon International Airport terminal area, including precipitation echoes, lightning, vertical wind data, precipitation types, and hail observations. Short-term precipitation forecasts (for up to two hours), based on radar observations, are also provided (Figure 4).

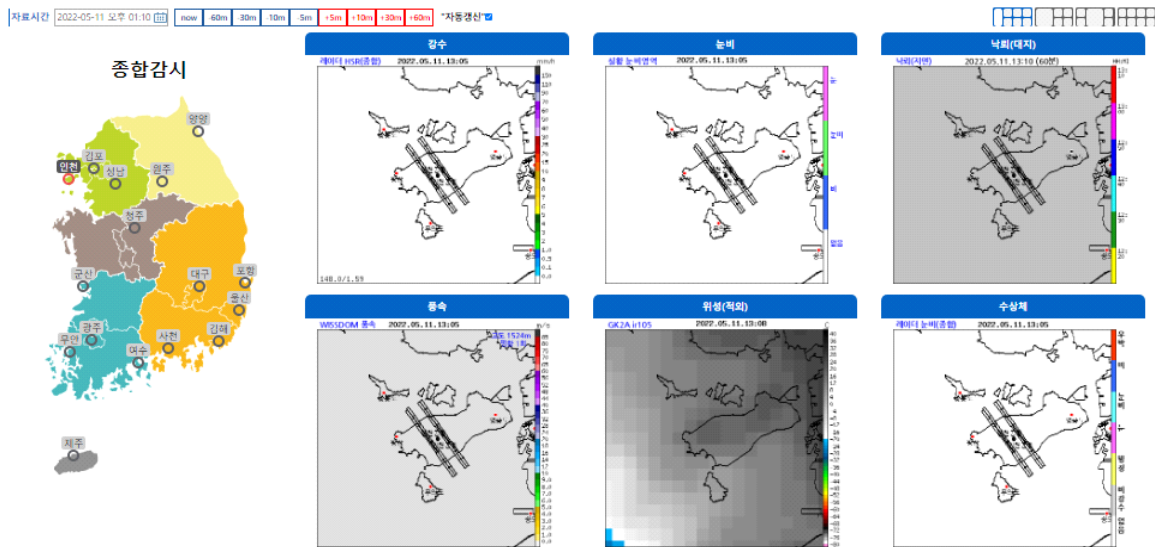


Figure 4. Interface for Monitoring and Forecasting Hazardous Convection

1.4.2 Aviation Typhoon Information Service

The AMO provides aviation-specific typhoon information to support decision-making for flight operations. Publicly available typhoon details, such as time, wind speed, and central location (latitude and longitude), are converted into units suitable for flight operations. When a typhoon is expected to enter the Incheon FIR, forecasted impacts on airports, sectors, FIX points, and air routes are provided on a time-step basis.

MET SG/29

Appendix A to WP/11

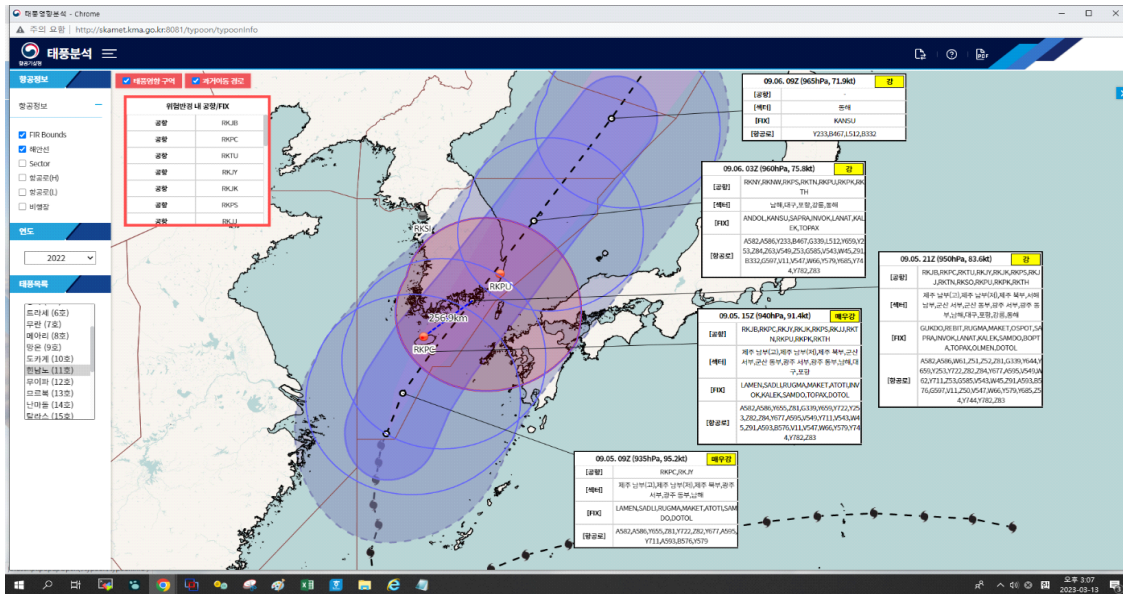


Figure 5. Interface for Aviation Typhoon Information Service

2. Modes of Provision

2.1. Flow Management Terminal (FMT) System

Aviation weather analysis reports supporting air traffic flow are provided through the FMT system operated by MOLIT.

2.2. Website

All aviation weather information issued by the AMO is available on the official AMO public website (amo.kma.go.kr) and the AMO website for aviation professionals (global.amo.go.kr).