International Civil Aviation Organization

INFORMATION PAPER

ASIA AND PACIFIC (APAC) FIFTEENTH MEETING OF THE METEOROLOGICAL REQUIREMENTS WORKING GROUP (MET/R WG/15)

Bangkok, Thailand 07 April – 10 April 2026

Agenda Item 3: Collaboration between MET and ATM stakeholders

INTEGRATED WIND SHEAR INFORMATION SERVICE AT JEJU INTERNATIONAL AIRPORT

(Presented by the Republic of Korea)

SUMMARY

The integrated use of various observational data is becoming increasingly important for the early detection of hazardous aviation weather and improved situational awareness. In this context, the Republic of Korea has established and is operating an integrated low-level wind shear (LLWS) information service that utilizes various observational data sources around Jeju International Airport, to support safe flight operations and decision-making of air traffic control and airport operators.

1. INTRODUCTION

1.1 Due to the complex terrain surrounding Jeju International Airport, localized low-level wind shear and wind speed variability frequently occur under specific wind conditions. These phenomena increase operational risks during aircraft approach and departure phases and directly influence the decision-making of pilots and air traffic controllers.

1.2 ICAO Annex 3 specifies the importance of meteorological information, as well as the detection, assessment, and timely provision of aerodrome weather warnings and wind shear information, which are closely linked to the safety of airport operations. Enhancing the operational use of meteorological information based on MET-ATM collaboration framework is consistent with the concept of Tailored Meteorological (MET) services.

1.3 Previously, observation systems such as LIDAR, LLWAS, Wind Profiler and AMOS were operated independently, resulting in dispersed data and time constraints in integrating multiple observational data sources. Consequently, comprehensive assessment of potential wind shear events was difficult.

1.4 In response, the Aviation Meteorological Office (AMO) of the Korea Meteorological Administration (KMA) has established a monitoring and alerting system that integrates observational data around Jeju International Airport to more effectively support safe aircraft operations and ATC decision-making.

2. DISCUSSION

2.1 The AMO has progressively developed an integrated analysis system that combines observational data from LLWAS, LIDAR, Wind Profiler and AMOS and provides real-time visualization. The system has undergone system design, trial operations and validation phases and is currently in operational use, with further improvements being implemented based on operational experience.

2.2 Since the implementation of the integrated analysis system, situational awareness of wind shear conditions has improved, and information sharing between MET and ATM has become more timely and structured. The system also provides a foundation for the early identification of potential hazards during the approach phase, enabling meteorological information to better support ATM operations in a manner aligned with the Tailored MET concept.

2.3 Once TDWR is installed and Jeju International Airport, its observational data will be incorporated into previously developed wind shear display system.

2.4 The system configuration and operational details are provided in **Appendix A**, and are also available on the AMO website (https://global.amo.go.kr/control/jeju-wims.do).

3. ACTION BY THE MEETING

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

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APPENDIX A

Integrated Wind Shear Information Service System at Jeju International Airport

Overview

- The system is an integrated monitoring framework that consolidates observation data from LIDAR, LLWAS, Wind Profiler and AMOS installed at Jeju International Airport and provides real-time visualization of low-level wind shear and vertical wind structure.

- It is utilized as an operational support tool to assist safe flight operations and ATC decision-making. It is accessible through the AMO website and a restricted access environment, and supports operational judgement through information sharing with relevant air traffic control authorities.

Data Update and Display Principles

- Observation data are collected and processed at intervals ranging from 10 seconds to 5 minutes and are updated in near real-time.

- Wind shear information is displayed based on predefined internal assessment criteria derived from existing observation standards, including LLWAS.

- When predefined threshold conditions are met, the information is visually distinguished using an established color-coding scheme.

Main Types of Displayed Information

- Graphical Display
  - ○ It provides an integrated GIS-based display of the following information:
    - ◎ LIDAR observation data (including SNR and radial velocity)
    - ◎ Altitude-based Eddy Dissipation Rate (EDR) information
    - ◎ Wind observations from LLWAS, AMOS and Wind Profiler systems
    - ◎ Altitude-based horizontal wind field derived from synthesized LIDAR data

- This configuration enables intuitive identification of areas with potential wind shear and vertical wind structures. (Figure 1)

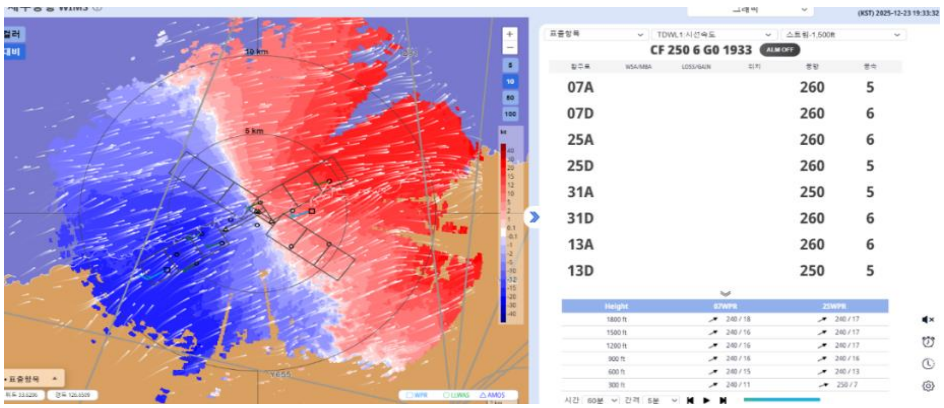

Figure 1. Graphical display of integrated wind shear information at Jeju International Airport

- Textual and Numerical Display

- ○ It provides the following information on the screen:
  - ◎ Wind data by distance from the runway and by altitude
  - ◎ Numerical display of wind shear-related information
  - ◎ Vertical wind structure aligned with runway orientation

- The provision of quantitative information supports objective situational assessment by ATC and operational personnel. (Figure 2)

Figure 2. Textual and numerical display of wind and wind shear information at Jeju International Airport

- Wind Shear Information Display
  - ○ It provides the following information on the screen:
    - ◎ Integrated LLWAS Center Field information
    - ◎ Runway-specific wind shear information
    - ◎ Visual distinction according to alert status

- This configuration enables prompt recognition of wind shear conditions during approach and departure phases. (Figure 3)

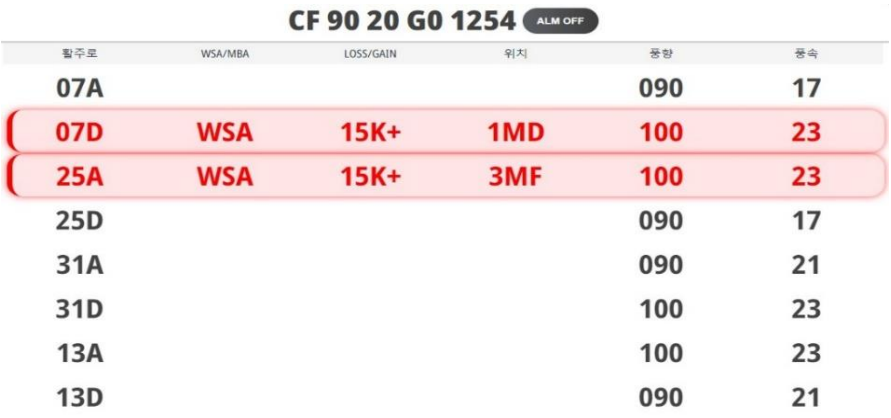

Figure 3. Integrated low-level wind shear information display for all runways at Jeju International Airport