International Civil Aviation Organization

INFORMATION PAPER

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Working Group (MET/S WG/12)

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Agenda Item 3: Planning and implementation of meteorological services

WIND SHEAR PREDICTION SYSTEM IN THE REPUBLIC OF KOREA

(Presented by the Republic of Korea)

SUMMARY

The Republic of Korea has developed a wind shear prediction system to support the safe operation of aircraft taking-off and landing at airports. This year it has expanded the system to 15 airports nationwide.

1.   INTRODUCTION

1.1   The Aviation Meteorological Office (AMO) of the Republic of Korea has developed a wind shear prediction system for the safe operation of aircraft taking-off and landing at airports.

1.2   This IP introduces the improvement status of the wind shear prediction system in the Republic of Korea.

2.   DISCUSSION

Background

2.1   Since 2020 the AMO of the Republic of Korea has operated a wind shear prediction system to support safe take-off and landing of aircraft, particularly for Jeju International Airport, which has the most delays and cancellations of flights in the Republic of Korea because of wind shears.

2.2   As airports without LLWAS (Low Level Windshear Alert System) are in growing need of wind shear prediction system, in February 2022 the AMO expanded the wind shear prediction system to airports across the country, in cooperation with the National Institute of Meteorological Sciences, a research institute of the Korea Meteorological Administration.

Prediction Elements

2.3   Probability of vertical wind shear – The system predicts the existence and probability of vertical wind shears at an altitude of 2,000 ft or below at Jeju International Airport and its surrounding areas. The prediction information is produced twice a day (00, 12 UTC) and provides 72-hour forecasts. The system was operated only at Jeju international airport, but it has been expanded to 15 airports in the Republic of Korea.
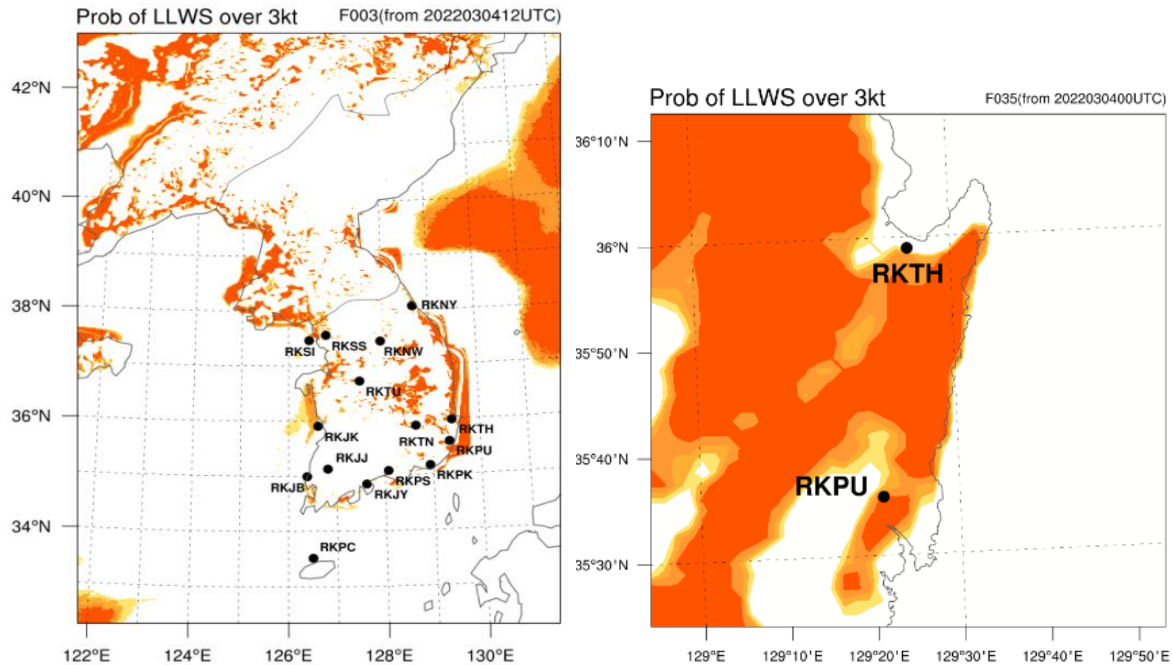
2.4   Horizontal wind shear – The system predicts the likely locations and intensity of horizontal wind shears on the runways and surrounding areas of Jeju International Airport. Based on the prediction data from 11 LLWASs observation points at Jeju International Airport, the system forecasts that a wind shear will occur when there is a difference of 15 kts or more between the points. The prediction information is produced four times a day (00, 06, 12, 18 UTC) and provides 48-hour forecasts. In addition to Jeju international airport, this year the horizontal wind shear prediction system was also applied to Incheon and Yangyang International Airport, which have LLWASs.
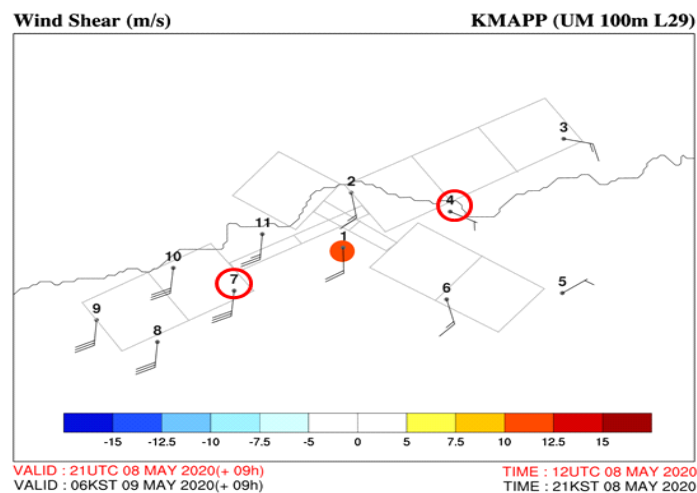
2.5   Vertical wind shear on the taking-off and landing route – The system predicts the altitude and intensity of wind shear for a fixed take-off and landing route at Jeju International Airport. When the difference of wind vector at intervals of 100 ft is 5 kts or more on the aircraft take-off and landing route, it is considered as a wind shear. The prediction information is produced four times a day (00, 06, 12, 18 UTC) and provides 48-hour forecasts. The system was operated only at Jeju international airport, but last year it was expanded to 15 airports in the Republic of Korea.
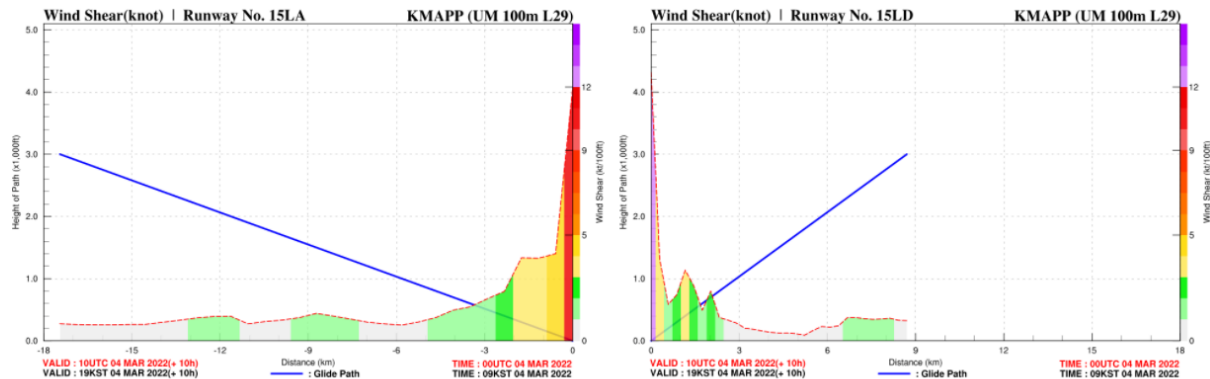
Future Plans

2.6   The AMO plans to evaluate the usability of the horizontal wind shear prediction system based on LLWAS and AIREP and of the vertical wind shear prediction system based on AMDAR and AIREP.

2.7   In addition, the AMO plans to analyse the LLWAS algorithm to allow even the airports without LLWAS to predict horizontal wind shears.

3.   ACTION BY THE MEETING

3.1   Note the information contained in this paper.