

International Civil Aviation Organization



ICAO

INFORMATION PAPER (IP/14)

ICAO Asia and Pacific (APAC)
Twenty-Eighth Meeting of the Meteorology Sub-Group
(MET SG/28)

Bangkok, Thailand, 8 to 12 July 2024

Agenda Item 6: Research, development, and other initiatives

AERODROME WEATHER NOWCASTS

(Presented by Japan)

SUMMARY

This paper presents Aerodrome Weather Nowcasts, a new service of the Japan Meteorological Agency (JMA).

1. INTRODUCTION

1.1 The aviation industry is gaining momentum right now after COVID-19, with the International Civil Aviation Organization (ICAO) predicting a 2% boost as compared to the same period in 2019 ([report: 27 February 2024](#)).

1.2 In this context, the Japan Meteorological Agency (JMA) starts providing Aerodrome Weather Nowcasts for efficient operations at major aviation hubs like the Tokyo International Airport (230,000 landings in 2019).

2. DISCUSSION

2.1 JMA provides aerodrome weather observation data with a six-second periodicity for airlines handling Japan routes.

2.2 30-hour Aerodrome Forecasts (TAFs) are issued four times a day, along with JMA's own Aerodrome Sequential Forecasts. The Sequential Forecasts give hourly predictions of wind direction/speed, visibility, ceiling, weather, temperature, atmospheric pressure, and TS probability for coming 12 hours, and 3-hourly forecasts of them for the subsequent 18 hours (**Figure 1**).

2.3 The Aerodrome Weather Nowcasts were released in March 2024 for seven key airports to cover the gap between the real-time observation data and Aerodrome Sequential Forecasts. This information is automatically issued every half hour based on observations and JMA numerical weather prediction (NWP), providing 10-minute-interval forecasts of wind direction/speed, visibility, ceiling, and weathers up to three hours ahead (**Figure 2**).

2.4 JMA’s TAF and Aerodrome Sequential Forecasts are semi-automated. The Aerodrome Sequential Forecasts are drafted based on NWP, and finalized by forecasters in consideration of actual weather conditions and meteorological characteristics of the airports. TAF is automatically produced from the finalized Sequential Forecasts.

2.5 The Aerodrome Weather Nowcasts are fully automated, with separate derivation as below.

Element		Source
Wind direction/speed		NWP (MSM or LFM) data with half-hourly analysis ¹ and TAF guidance ² , and Meteorological Reports (METAR/SPECI) of the aerodrome
Visibility		NWP (LFM) data with TAF guidance ² , Precipitation Nowcasts ³ , and METAR/SPECI of the aerodrome
Ceiling		TAF guidance ² and METAR/SPECI of the aerodrome
Weather	Thunder	Thunder Nowcasts and Precipitation Nowcasts ³
	Precipitation	Type: TAF guidance ² (categorized weathers and temperatures) Intensity: Precipitation Nowcasts ³
	Fog and mist	TAF guidance ² and Aerodrome Weather Nowcast visibility

1, 2 4.5 and 4.7.1, [Outline of the Operational Numerical Weather Prediction at the Japan Meteorological Agency \(January 2024\)](#)

3 [Techniques of Precipitation Analysis and Prediction for High-resolution Precipitation Nowcasts](#)

2.6 The trial before the formal introduction has illustrated dependence of the Nowcasts on recent observation outcomes. Despite knowing such a characteristic, the aircraft operators were eager for the Nowcasts to be formally introduced. They use the Nowcasts (mostly up to around T+1 hr) along with actual observations and semi-automatic forecasts for a longer horizon with reduced update frequency (as with Aerodrome Sequential Forecasts).

There have been strong requests from the aircraft operators to expand the provision of this Nowcasts to other aerodromes. The development team is tuning the programme for some other aerodromes, as well as to improve accuracy of the forecasts.

3. ACTION BY THE MEETING

3.1 Note the information contained in this paper.

MET SG/28
Attachment to IP/14

ATTACHMENT

RJTT AERODROME SEQUENTIAL FORECAST Part1

ISSUED TIME 2307UTC 03 JUN 2021
TOKYO AVIATION WEATHER SERVICE CENTER

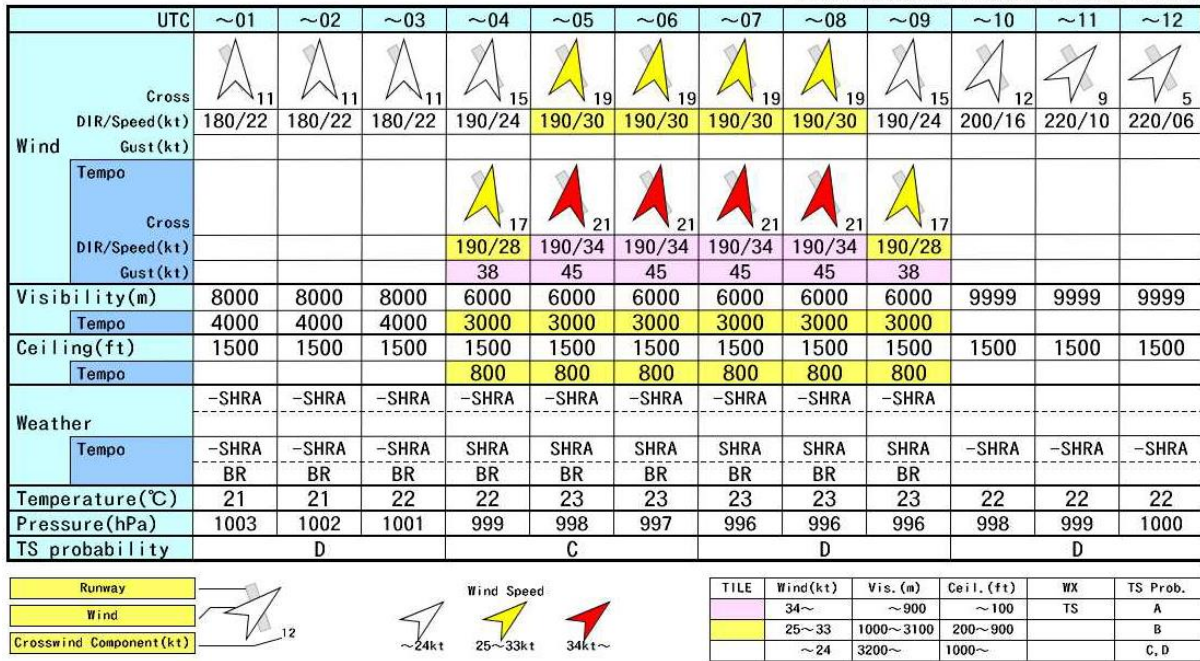


Figure 1. Aerodrome Sequential Forecast for the Tokyo International Airport

Issued at 23:07 UTC on 3rd June 2021, for 00:00 UTC on 4th June to 06:00 UTC on 5th June 2021. The part 1 provides hourly forecasts for coming 12 hours while the part 2 (not shown) provides 3-hourly forecasts for the subsequent 18 hours.

RJTT Aerodrome Weather Nowcasts

Issued at 1600UTC 24 Apr 2024
Japan Meteorological Agency

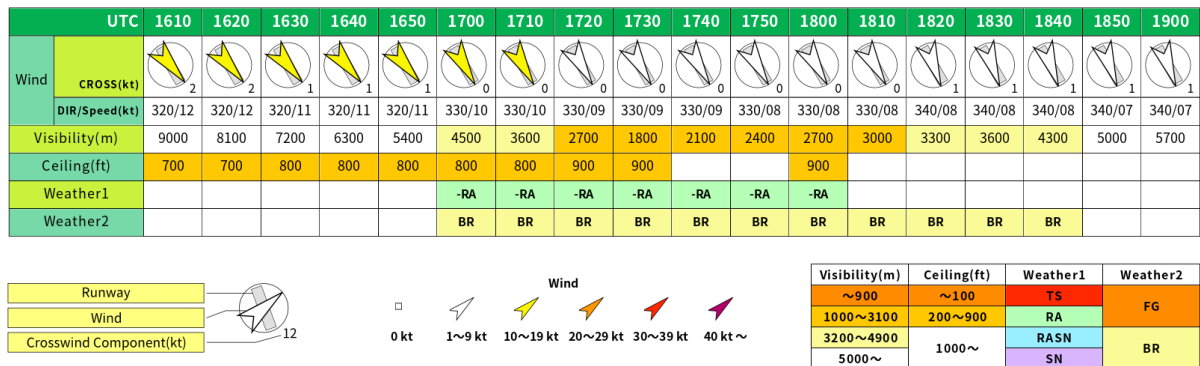


Figure 2. Aerodrome Weather Nowcasts for the Tokyo International Airport

Issued at 16:00 UTC on 24th April 2024, for 16:00 to 19:00 UTC.