International Civil Aviation Organization

Fifteenth Meeting of the Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/15)

Bangkok, Thailand, 28 April – 02 May 2025

Agenda Item 4: Review of Current ATFM Operations and Problem Areas

CTO TRIAL UPDATE AND SEASONAL ANALYSIS

(Presented by JAPAN)

SUMMARY

This paper provides an updated analysis of the CTO (Calculated Time Over) Trial conducted in Japan. It includes a performance evaluation highlighting seasonal trends in air traffic flow, the impact of CTO implementation, and an overview of cancellation reasons along with their seasonal distribution.

1. INTRODUCTION

1.1 The initial CTO trial at Fukuoka FIR was launched in 2011 but was suspended due to system limitations. Trial operations resumed 2023 following the deployment of a new ATFM system. The objective of this trial is to facilitate smoother traffic management within Fukuoka FIR by designating FIX crossing times and to assess the feasibility of harmonized ATFM for both international and domestic flights.

1.2 This information paper outlines the 2024 CTO trial operations within the Fukuoka FIR and presents a seasonal statistical analysis based on the 2024 evaluation data.

1.3 Overview of the CTO Trial

a) Trial Period: March 28, 2023, onward

b) Target flights: International flights arriving at Tokyo International Airport (RJTT), at or above FL335

c) Methodology: Air Traffic Control (ATC) issues Mach number instructions in accordance with CTO

d) Exclusion Criteria: Adverse weather conditions, flights below the designated altitude, or inability to comply with instructed Mach number

1.4 Analysis method

a) The analysis is based on CTO operational data collected during 2024, including monthly trends, DONE/FAIL outcomes, and cancellation reasons classified by season:

- Spring: March–May
- Summer: June–August
- Autumn: September–November
- Winter: December–February

2. DISCUSSION

2.1 Evaluation of CTO trial data and seasonal analysis of the distribution and trend of the number of aircraft subject to CTO, and the reasons for CTO cancellations by season are as follows.

Monthly CTO flights in 2024

2.2 The number of CTO flights increased from spring to summer, then decreased toward winter, reflecting seasonal patterns of the ATFM measures for the flights to RJTT.

2.3 ATFM measures for flights to RJTT are implemented due to increased traffic caused by airport capacity constraints due to bad weather and thunderstorms, as well as flight schedule delays due to capacity constraints at other airports, especially during the summer.

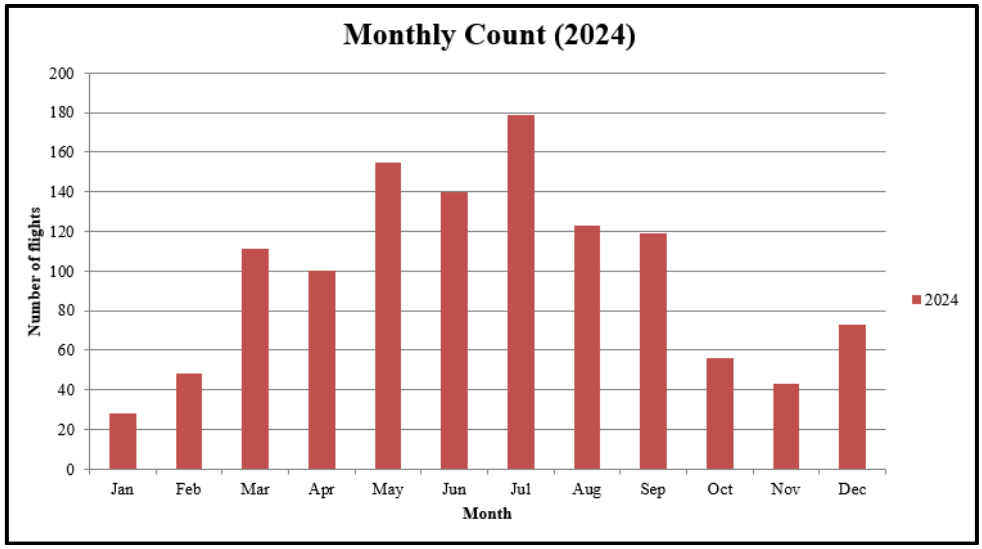

Figure 1: Monthly CTO flights in 2024

Seasonal Cancellation Patterns

2.4 The cancellation rate is low in spring and winter but increases in summer due to adverse weather. Seasonal trends by cancellation reason are as follows:

Table 1: DONE/FAIL Ratio per Season

SEASON	DONE	FAIL	Total	DONE Ratio (%)
Autumn	544	196	740	73.5
Spring	351	145	496	70.8
Summer	683	437	1120	61.0
Winter	180	56	236	76.3
Total	1758	834	2592	67.8

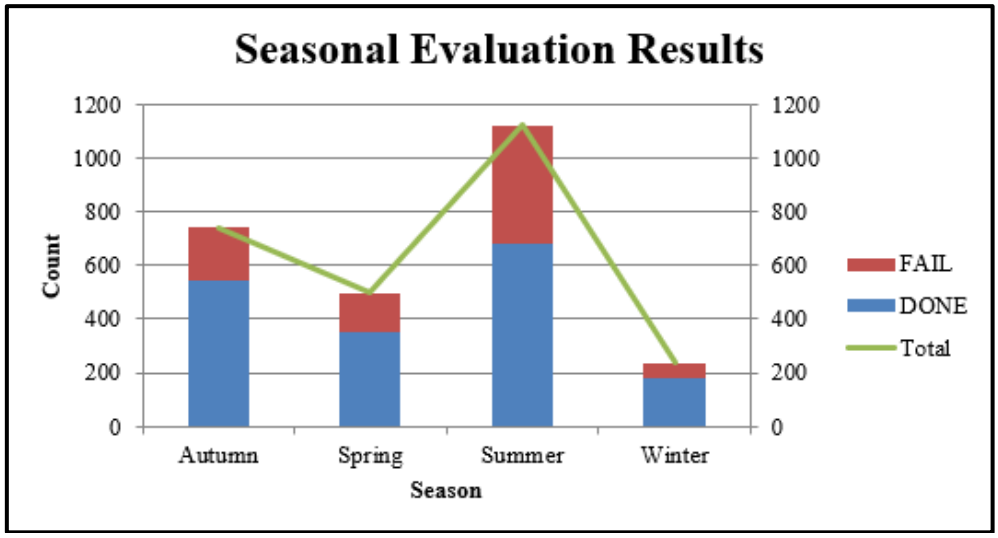

Figure 2: DONE/FAIL per Season

2.5 CTO cancellations increase significantly in the summer. This is due to operational reasons, such as changing routes and altitudes to avoid bad weather, and air traffic control reasons, such as the increased need to use radar vector and speed adjustments to avoid bad weather.

a) Summer: Adverse Weather is major factor.

b) Spring and Autumn: Flow Control Cancelled is major factor.

c) Winter: Altitude and Flow Control Cancelled are major factors.

Table 2: Cancellation Reasons by Season

Season	ATC's Spacing (%)	Altitude Below FL335 (%)	Flow Control Cancelled (%)	Adverse Weather (%)	Mach Number (%)
Spring	0.0	21.4	50.3	26.9	1.4
Summer	0.2	23.8	25.4	48.1	2.5
Autumn	1.5	23.0	41.8	32.1	1.5
Winter	3.6	28.6	58.9	3.6	5.4

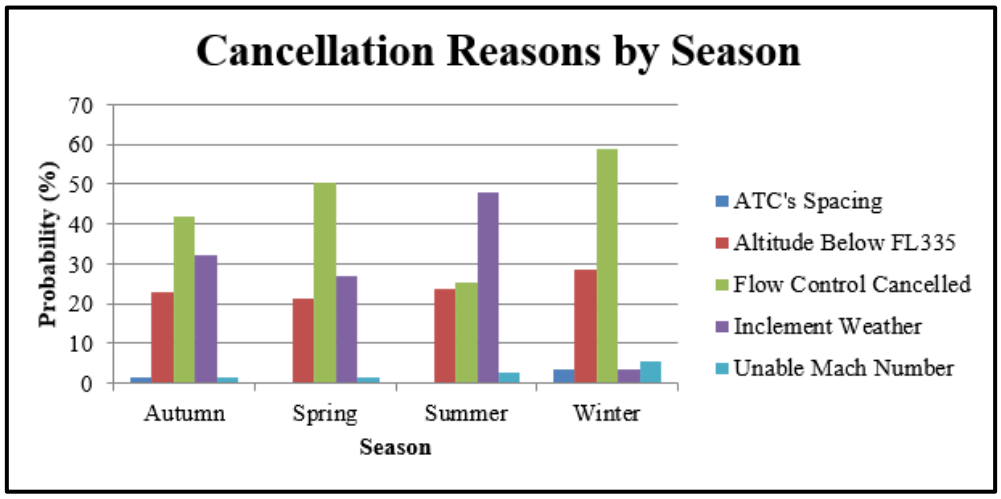

Figure 3: Cancellation Reasons by Season

Operational evaluation and improvement plan

2.6 Approximately 68% of flights complied with CTO, and CTOT was applied to domestic flights, achieving traffic flow control through ATFM measures. On the other hand, the scope of flight time adjustments through speed adjustments for CTO was limited and shorter than CTOT.

2.7 CTO cancellation by Flow Control Cancelled include cases where ATFM was no longer necessary, meaning that unnecessary in-flight delays were cancelled in response to changing traffic volume or airport capacity.

2.8 CTO cancellation by Adverse Weather or Altitude change cannot be predicted. If it is predicted by the MET product, an ATFM plan that predicts the cancellation in advance is required.

2.9 As traffic in the Asia-Pacific region continues to grow, and with expected increases in international flights at Kansai (RJBB) and Narita (RJAA) International Airports, Japan aims to enhance ATFM performance by integrating CTO and CTOT operations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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