*International Civil Aviation Organization*

**INFORMATION PAPER**

**Twenty-fourth Meeting of the Meteorology Sub-group (MET SG/24) of the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG)**

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Agenda Item 5: Research, development and other initiatives

# THE PROGRESS OF COORDINATION BETWEEN MET AND ATM

(Presented by China)

**SUMMARY**

This paper presents the improvement of meteorological services for CDM (Collaborative Decision Making System) and MDRS (Massive Delay Response System) in China. In order to minimize air traffic capacity loss caused by adverse weather, MET and ATM experts make or update ATM decision together through face-to-face consultation. Besides, case study and quick reviews can improve MET and ATM skills, conjoint reviews can promote MET-ATM coordination and optimize CDM.

## 1. INTRODUCTION

1.1 With the increase of flights, air capacity always tends to be saturated. In order to reduce air traffic congestion and flight delays caused by the adverse weather, CAAC (Civil Aviation Administration of China) has built CDM (Collaborative Decision Making) system since 2012, and developed a MDRS (Massive Delay Response System) since 2014, calling for closer coordination and cooperation between MET and ATM departments. After years of coordination, now meteorologist can concentrate on crucial points for ATM operation, and ATM experts can understand weather forecasts better, thus promoting the degree of MET-ATM integration.

1.2 Under the rules of CDM and MDRS, MET and ATM experts make strategic and preliminary tactics decisions together through face-to-face consultation (Table 1) to ensure that the air traffic flow matches the air capacity especially during adverse weather.

Table 1 Daily Schedule of MET-ATM Consultation Meetings (CST)

| | Morning rush hours | Daytime Operation | Next day Operation | Evening rush hours | Next day Operation (Update) | Nighttime Operation |
|---|---|---|---|---|---|---|
| Routine Service | 07:00am | 09:00am<br>02:00pm | 04:00pm | 06:00pm | 08:00pm | 10:00pm |
| MDRS Service | When unexpected adverse weather happens or former forecast needs to be amended, temporary meetings will be held to update former ATM decisions, or even adjust the level of MDRS. | | | | | |

1.3 Quick reviews and conjoint reviews help to evaluate MET service more comprehensively.

1.3.1 Quick reviews should be held by MET and ATM departments respectively for the latest adverse weather. MET experts assess the leading time and accuracy of forecasts, while ATM experts estimate the air traffic capacity loss.

1.3.2 Conjoint reviews between MET and ATM are often conducted aimed at high level MDRS cases (when air traffic flow suffers a reduction up to 50%) to review the MET service during MDRS operation and evaluate the MET contribution in minimizing air traffic capacity loss. Sharing of analysis and experience can improve the efficiency of MET-ATM coordination.

1.4 Case Study

On July 6th 2020, Shanghai terminal area, one of the busiest terminal areas in China, was attacked by severe thunderstorms and heavy rain for more than 10 hours. According to the forecast, MET and ATM experts drew a conclusion that the air capacity in Shanghai terminal area in the morning of 6th would suffer a loss, and air traffic flow would decrease by 50% in Shanghai terminal area, so ATM issued MDRS warning. As Figure 1 shows, first thunderstorm warning was issued at 16:00pm on 5th (CST), and meteorologists kept monitoring the weather variation and giving weather briefing to support ATM experts to make or update collaborative decisions.

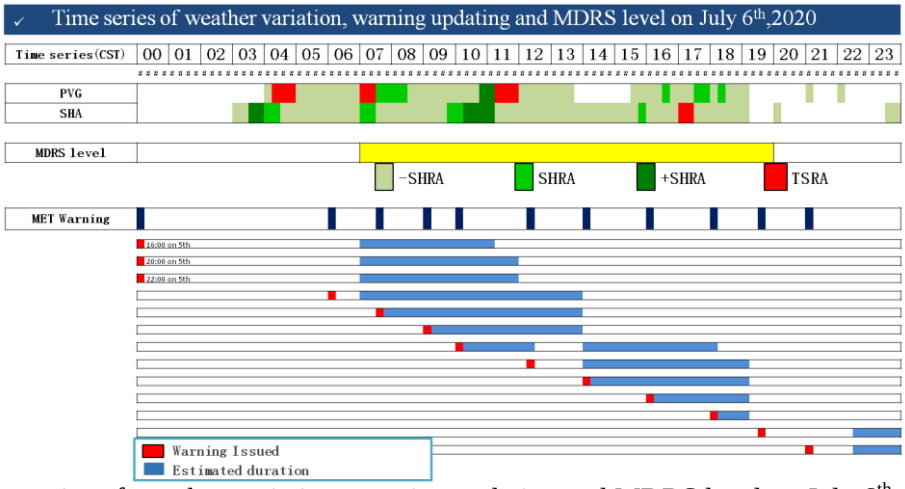


Figure 1 Time series of weather variation, warning updating and MDRS level on July 6th, 2020

The thunderstorm led to severe air capacity block in Shanghai terminal area on July 6th. The capacity of SHA and PVG both decreased by over 50% during the morning rush hours. With the help of MET service and MET-ATM collaboration, the air capacity recovered rapidly in the gap period of the thunderstorm. Despite the heavy rain and severe thunderstorm attack, with over 300 flights delayed, the average delayed time was minimized to within merely 30 minutes (Table 2).

Table 2 Flight delays in SHA and PVG airports on July 6th , 2020

| | Normality | Flights delayed | Average delayed time | Flights cancelled |
|---|---|---|---|---|
| SHA | 81.2% | 115 | 21min | 0 |
| PVG | 61% | 206 | 29min | 3 |

## 2. DISCUSSION

2.1 MET service is an important foundation of strategic and preliminary tactic ATM management.

2.2 Case study and review is helpful to improve the meteorological service, improve ATM efficiency, and therefore optimize CDM.

2.3 MET-ATM integration and CDM benefits flight safety, normality and efficiency.

## 3. ACTION BY THE MEETING

3.1 Note the information contained in this paper.