Case Study
MET/ATM Coordination in Adverse Weather at Airports

Japan Meteorological Agency (JMA)

Japan Civil Aviation Bureau (JCAB)

気象庁
Japan Meteorological Agency

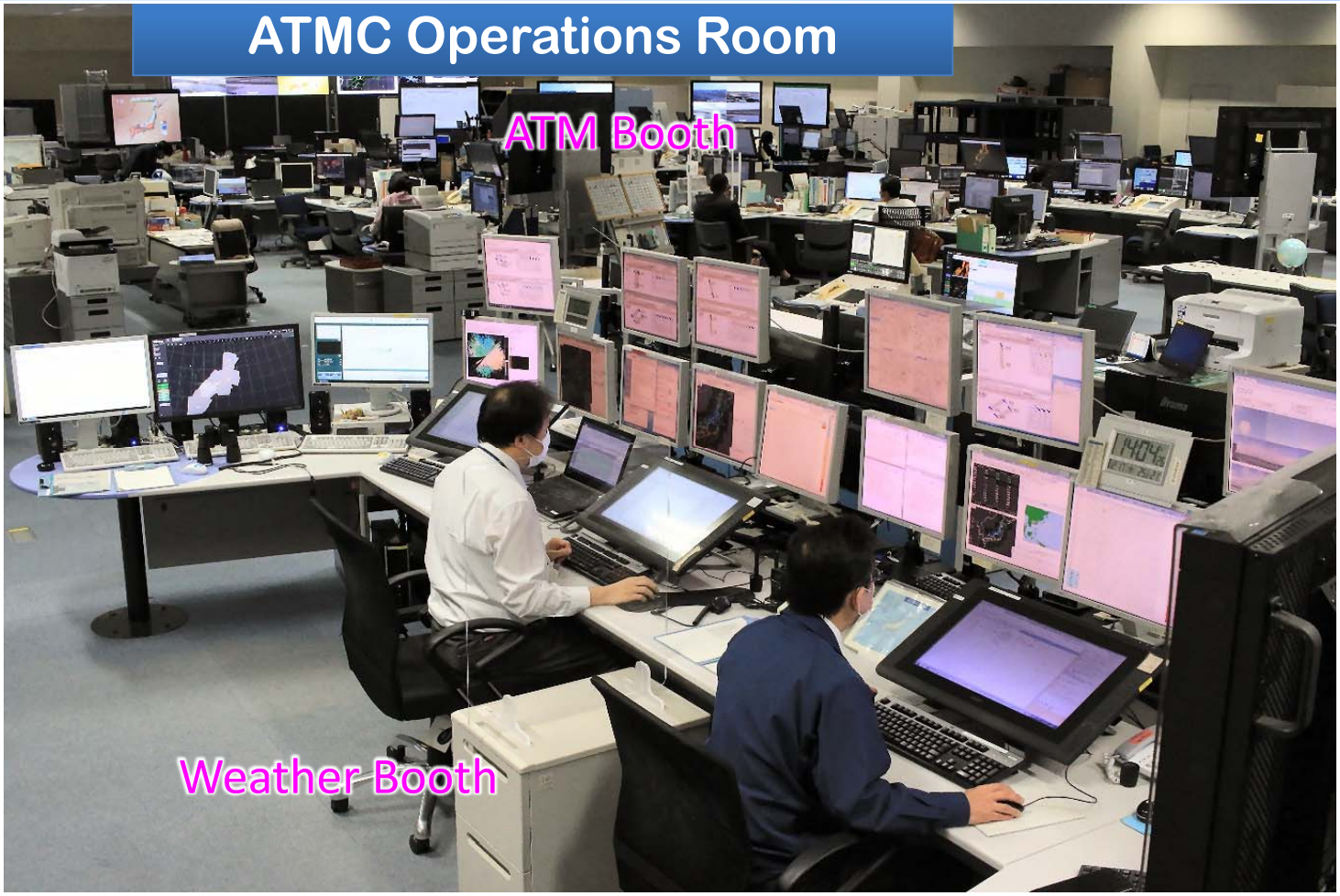
国土交通省
Ministry of Land, Infrastructure, Transport and Tourism

ICAO APAC MET/ATM Seminar, 22 April 2024

Contents

1. Introduction
   - Importance of Cooperation Between ATM and MET
   - ATM and MET structures in Japan
   - Airport CDM (A-CDM) at the New Chitose Airport (RJCC)
2. Case Studies
   - Heavy Snow at RJCC
   - Thunderstorm at RJTT
3. Conclusion
   - Lessons Learnt / Mission Solutions

1. Introduction: Importance of Cooperation Between ATM and MET



Work together in a big operations room
- ATMC Air Traffic Manager
- ATMC Information Officer
- ATMC Engineering Officer
- Japan Air Self-Defense Force Liaison
- US AirSpace Liaison Office
- ATMetC Forecaster

CDM conferences (online meetings)
Connect this operations room and
- Airlines
- TMUs (ATMC branches)
- Area Control Centers (ACCs)
- Airport offices
- TMAT and NCAT (ATMetC branches)

1. Introduction: Importance of Cooperation Between ATM and MET

ATM and MET work together in a BIG operations room brings a great benefit.

Face to face communications

Several stakeholders work together in ONE operations room. This is really a BIG advantage.

- Easy to grasp customer needs both through verbal communications and atmosphere in the room
- Enable efficient and timely decision making
- Daily cooperation (e.g., jointly review past critical SIGWX events that caused air traffic flow disruption, have casual study sessions to improve services consciously, ...)

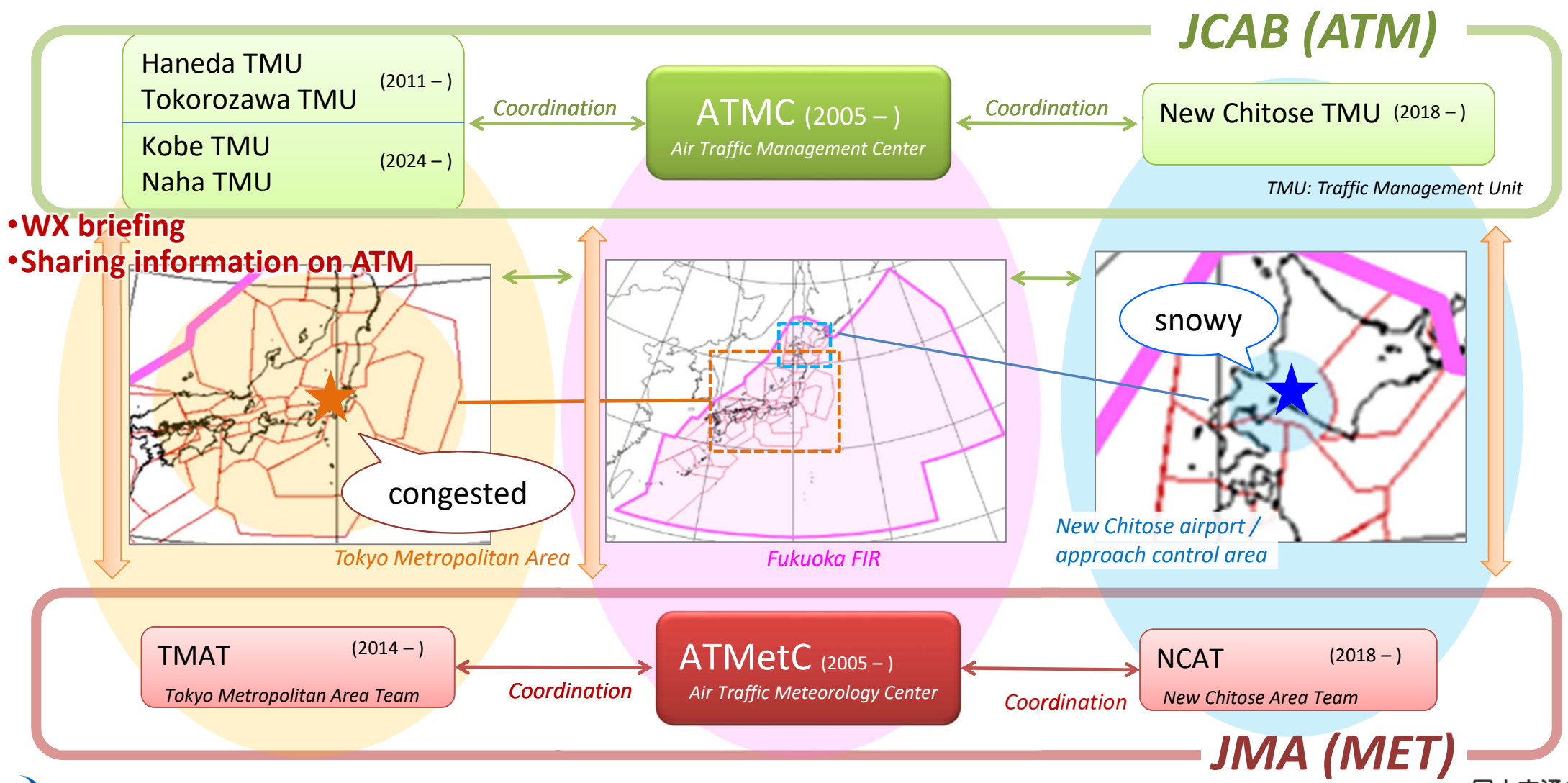
ATM officers' expectation to ATMetC

- Not only conveying NWP products and TAF but also providing comments as ATM-learned MET experts

For more effective CDM

- Enhancing the good relationship each other through the face-to-face communication
- Improving ATM working frame with cooperation of the stakeholders in the room

1. Introduction: ATM and MET structures in Japan



気象庁 Japan Meteorological Agency

国土交通省 Ministry of Land, Infrastructure, Transport and Tourism

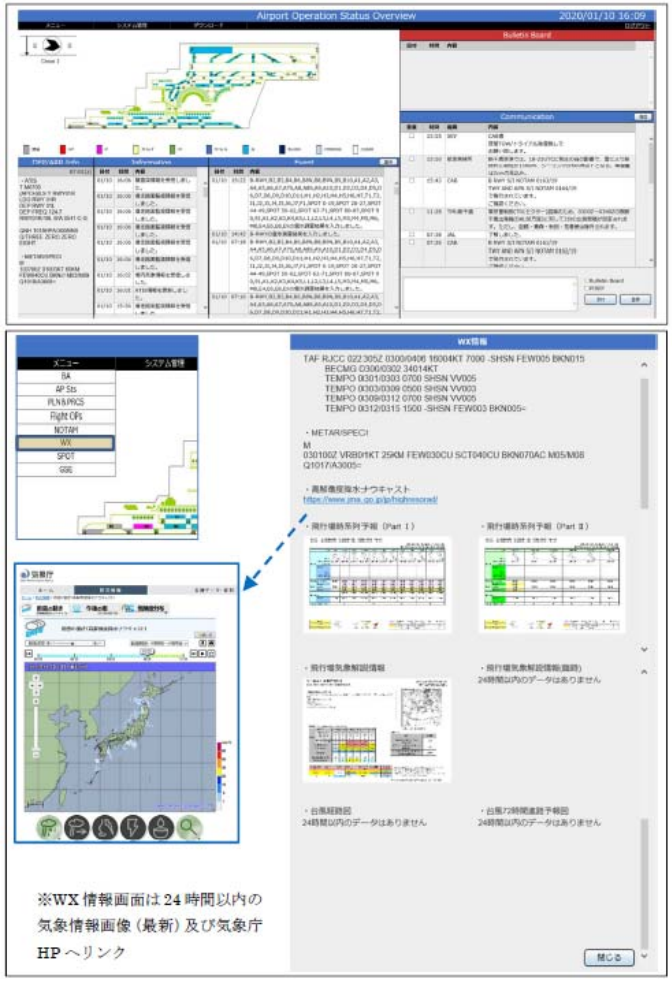
1. Introduction: A-CDM in the New Chitose Airport (RJCC)

- What is A-CDM?

  Airport CDM is a concept and method in which airport stakeholders make decisions and take actions in a coordinated manner.

Conceptual scheme of A-CDM in RJCC

1. Introduction: A-CDM in the New Chitose Airport (RJCC)



Principle of New Chitose Airport CDM

<<Share information and have communication on A-CDM web portal>>

- Status of runway and taxiway operations
- Snow and ice condition and removal progress
- Airport operation status
- Weather information
- Status of departing and approaching flights
- Spot usage status
- Airport information

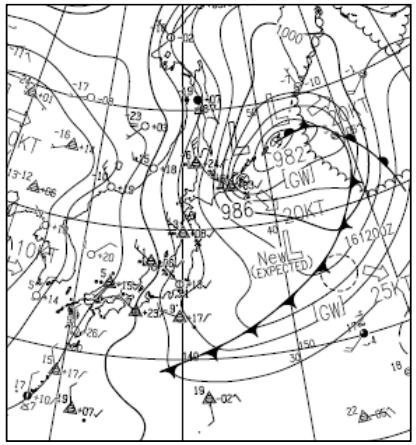
A-CDM in RJCC information sharing web site

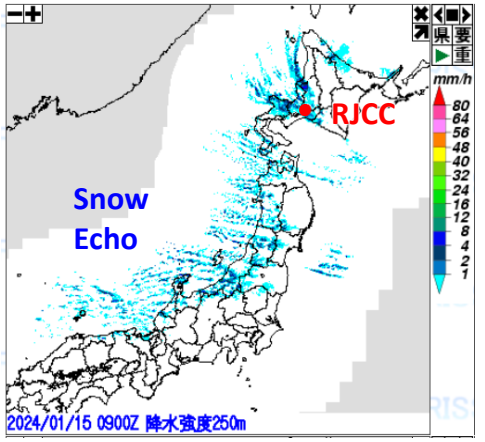
2. Case Study: Heavy Snow at RJCC

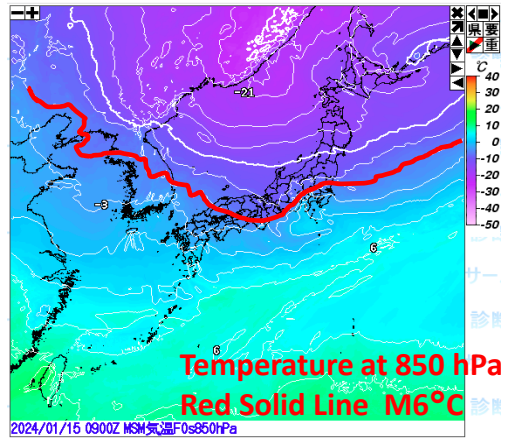
Case: 15th JAN 2024

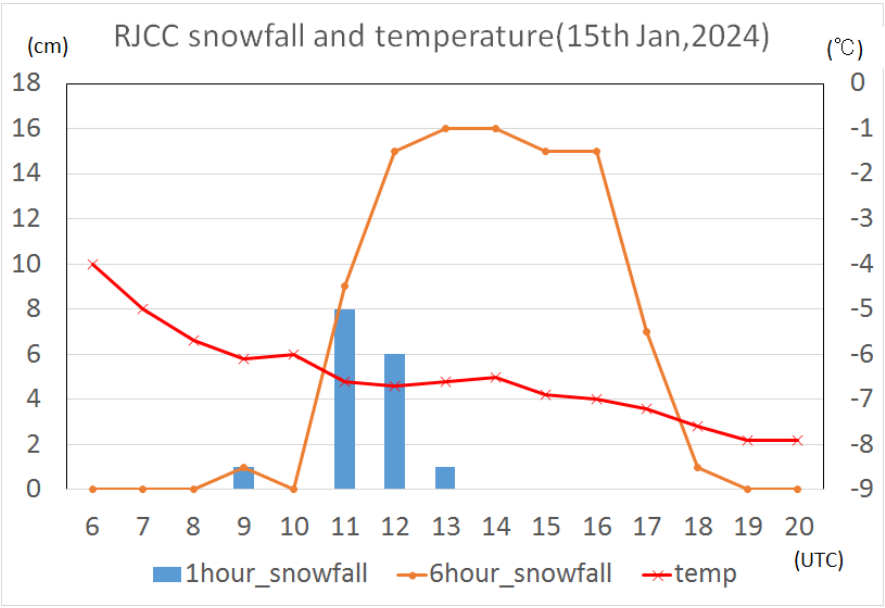
Summary

Due to the cold airmass outbreak, strong snow clouds intermittently drifted over the New Chitose Airport area. The airport observed 16 cm of snow fall in 6 hours from 07 to 13 UTC. Because of this heavy snow, 85 flights scheduled to depart from or arrive at the airport around this times were cancelled and about 200 passengers spent the night at the airport.









Number of scheduled flights on the day (in JST = UTC + 9)

396

Number of cancelled flights

85

Number of diverts

0

Number of returns

0

気象庁
Japan Meteorological Agency

Transport and Tourism

2. Case Study: Heavy Snow at RJCC

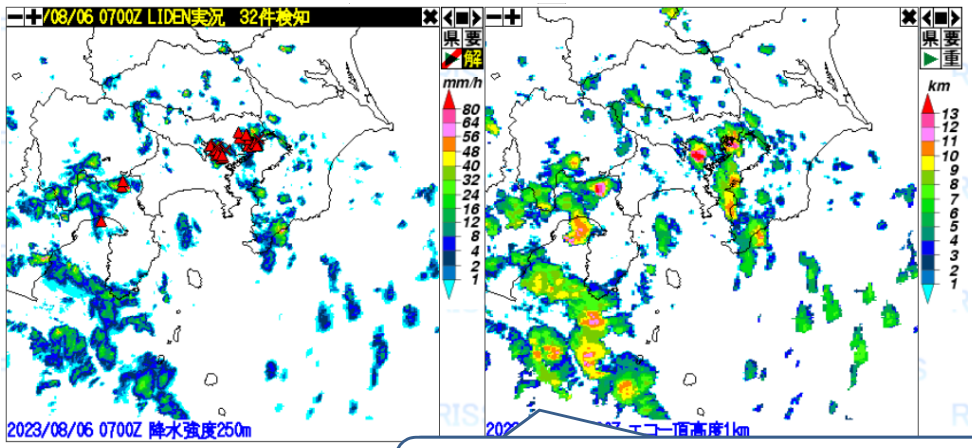
Highlights of the chat communication on the A-CDM web portal

Time	Organization	Chat Comment(excerpt)
0619UTC	MET OFFICE	Snowfall is expected to intensify around 07UTC and continue until around 15UTC, with visibility below 500-700m. Snowfall amounts are expected to be 14 cm by 21 UTC.
0748UTC	TMU	Due to expected snowfall at New Chitose Airport, EDCT control will be in effect for aircraft bound for New Chitose Airport. The hours are 0750-0930 UTC and aircraft are expected to arrive between 0950-1030 UTC. The number of aircraft expected is approximately 5 and delays are expected to be less than 15 minutes.
0816UTC	AIRLINE	Do you have any plans for runway checks?
0907UTC	AirPort Company	After coordinating with ATC（Japan Self-Defense Forces), Runway inspections will now be done from B-RWY due to traffic. After that, A-RWY will be used.
1040UTC	AIRLINE	Do you have any plans for future snow removal?
1041UTC	AirPort Company	I would like to remove snow, but We cannot start removing snow until the planes in B-RWY are moving.
1049UTC	AirPort Company	Aircraft in B-RWY started to prepare for towing.
1052UTC	MET OFFICE	10 cm of snowfall is expected between 11 UTC and 18 UTC. (For details, please check the airfield description information (snowfall temperature) on the CDM shared website "Menu => WX").
1135UTC	Railway Company	New Chitose Airport Station. Here is today's operation information. Due to the snow storm, trains departing from the airport will be cancelled.
1147UTC	AIRLINE	Do you have any plans for future snow removal?
1151UTC	AirPort Company	After this, snow removal work will begin.
1602UTC		The last flight was at 16UTC(midnight 1am JST)

2. Case Study: Thunderstorm at RJTT

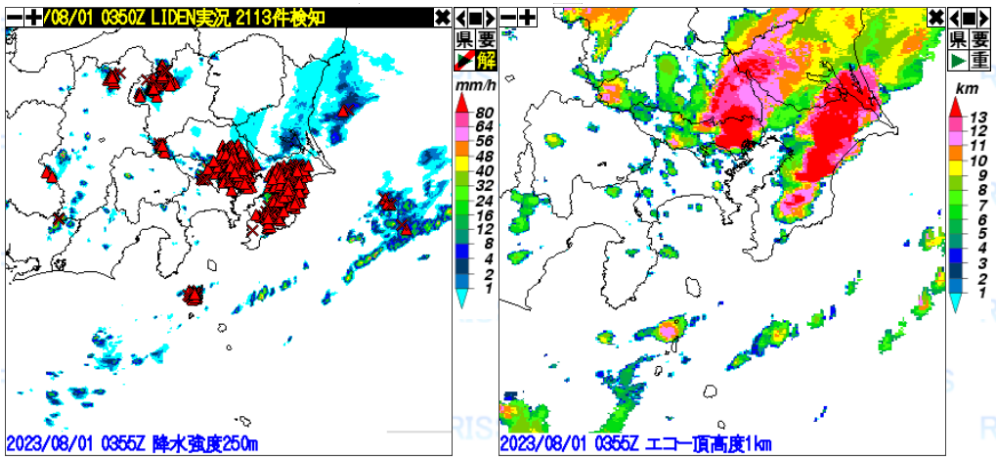
How does the thunderstorms affect to ATFM?

2023/08/06



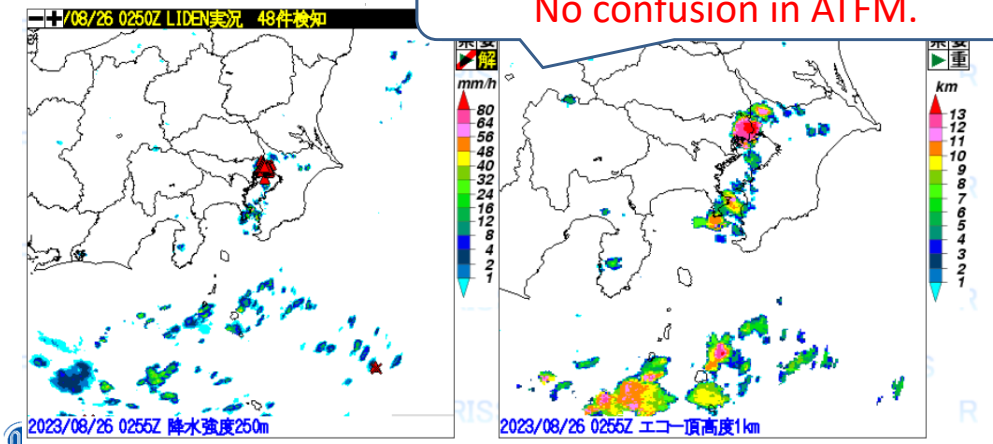
2023/08/01

Difficult to forecast

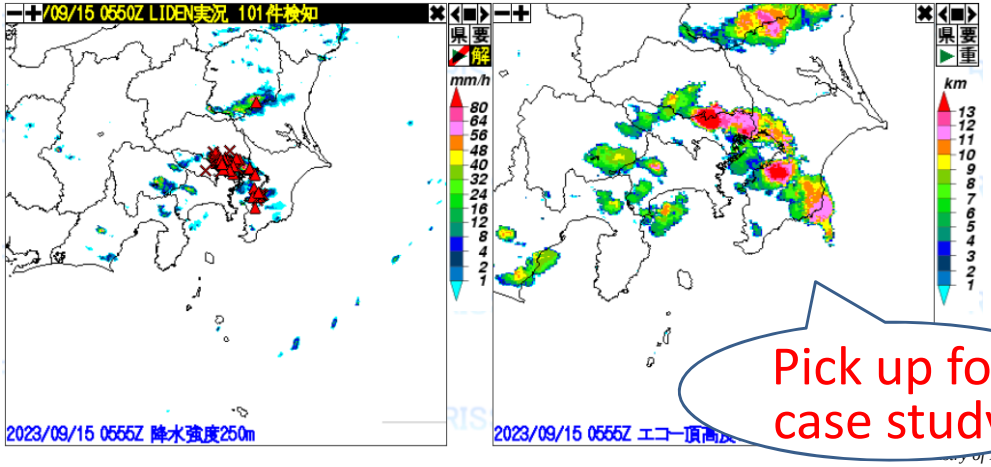


2023/08/26

Tailored MET service worked well.
No confusion in ATFM.



2023/09/15



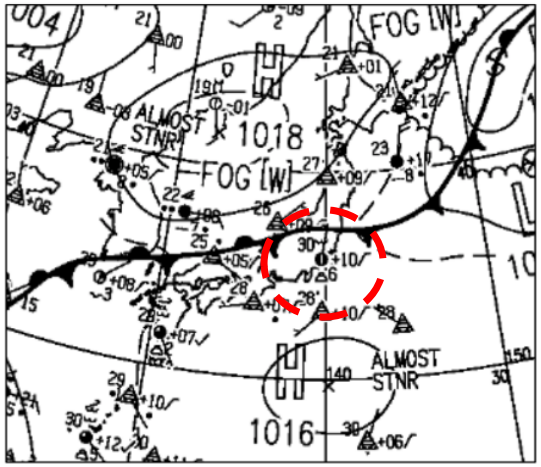
Pick up for case study

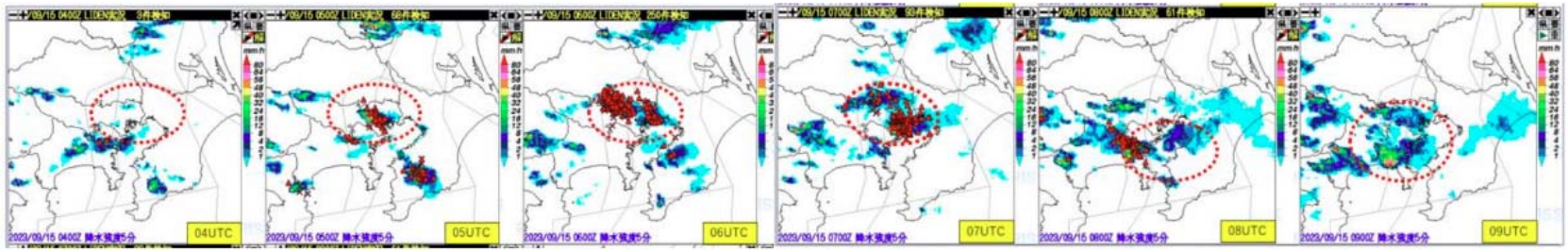
Japan Meteorological Agency

...y of Land, Infrastructure, Transport and Tourism

2. Case Study: Thunderstorm at RJTT

Case: 15th SEP 2023





TS near the airport
0347 – 0400 UTC

TS near the airport
0440 – 0745 UTC

TS overhead
0653 – 0745 UTC

Flow Control
- Ground Stop
- Extended GDP
- In-flight Flow Control

Single runway operation for arrival
0417 – 0436 UTC

In-flight Flow Control
0420 – 0500 UTC

Suspended ground handling
0640 – 0752 UTC

15th SEP. UTC		03	04	05	06	07	08	09	10	11	12
RJTTN	Capacity				0 0710-0720UTC		10 0720-0740UTC				
	GDP		0330-1200UTC								
RJTTS	Capacity				0 0710-0720UTC		10 0720-0740UTC				
	In-flight flow contorol			Speed adjustment 250kt@SPENS 0420-0500UTC			Speed adjustment 250kt@SPENS/SELNO 0820-1150UTC				
	GDP				0640-1320UTC						
RJTT	Ground Stop				0710-0735UTC						

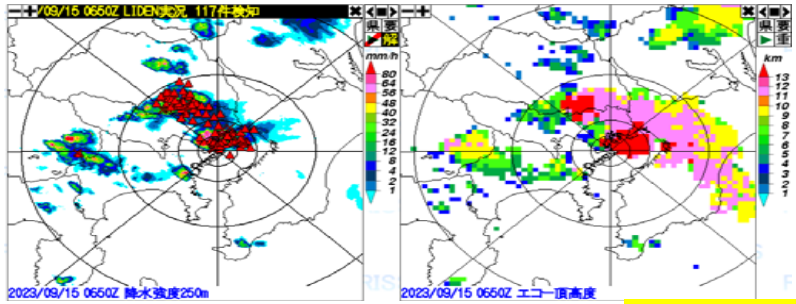
気象庁
Japan Meteorological Agency

2. Case Study: Thunderstorm at RJTT

- TAF and Briefing about the TS

NWP output showed unsettled atmospheric condition
Probability of Thunderstorm index was high from 03 to 09 UTC

Flow Control
0710 – 0735 UTC
Departure STOP for Haneda Airport



0650 UTC
- The peak of TS at RJTT
- Doppler Radar detected 47 microbursts around the airport.

<<Issued TAF on 15th SEP 2023>>

00UTC TAF issued at 2306 UTC
TEMPO 1506/1511 -TSRA

00UTC TAF AMD issued at 0304 UTC
TEMPO 1503/1505 3000 TSRA
TEMPO 1505/1511 -TSRA

06UTC TAF issued at 0507 UTC
TEMPO 1506/1508 3000 TSRA
TEMPO 1508/1511 -TSRA

06UTC TAF AMD issued at 0708 UTC
TEMPO 1507/1509 2000 +TSRA
TEMPO 1509/1511 -TSRA

12UTC TAF issued at 1105 UTC
nothing about TS

<<Briefing and Flow Control >> Yellow: MET; Red: ATM

0258 UTC TS overhead expected until 0500 UTC.
0335 UTC Set Spacing Time -2 min in arrival sector.
0405 UTC Set Capacity in 88 – 89% in departure sector.
0504 UTC Northly wind detected by Doppler-Radar.
A shear line will move south. Be careful TS-OHD and Microburst Alert.
0635 UTC Set CTOT for RJTTS from 0655 UTC.
Holding occurred. CTOT start from 0640 UTC.
0638 UTC TS expected to be overhead until 0800 UTC.
And wind will become northerly soon.
0700 UTC Runway change due to the north wind.
0710 UTC Departure for Haneda Airport are stopped.
0727 UTC TS overhead expected until 0830 UTC. After that, the TS cloud will move slowly to east in approach area until 1000 UTC.
0735 UTC Flow control of departure for Haneda airport canceled.

3. Conclusion

- This presentation highlighted the importance of MET/ATM collaboration through the case studies.
- In Japan, MET/ATM is making a concerted effort to improve effective air traffic control in adverse weather conditions.
- JCAB and JMA, in further collaboration with other stakeholders, continue their work to implement CDM by utilizing the A-CDM framework and other means to solve issues on a case-by-case basis.