



Ministry of Land Infrastructure Transport and Tourism  
**CIVIL AVIATION BUREAU OF JAPAN**



# Sharing of Experience from implementing the Japan ATFM and CDM meeting at ATM center

Tomoko ISHIKAWA

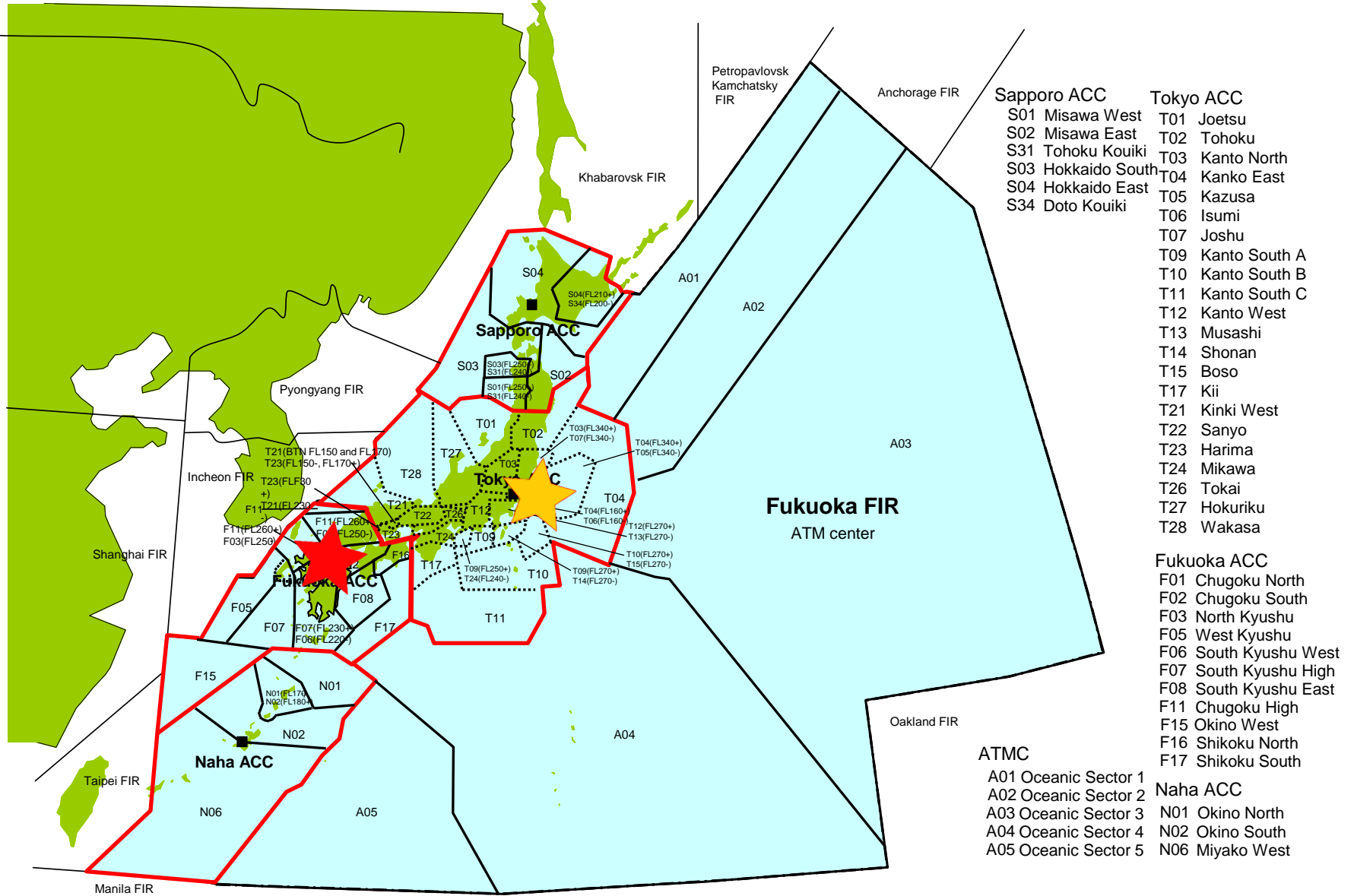
Civil Aviation Bureau, JAPAN



# OVERVIEW

- JCAB Outline of Fukuoka FIR( RJJJ )
- ATM center and TMU(branch of ATMC)
- Counterparts : weather, military
- CDM meeting / twice a day at ATMC
- CDM conference / twice a day on the web
- CDM commission / twice a year







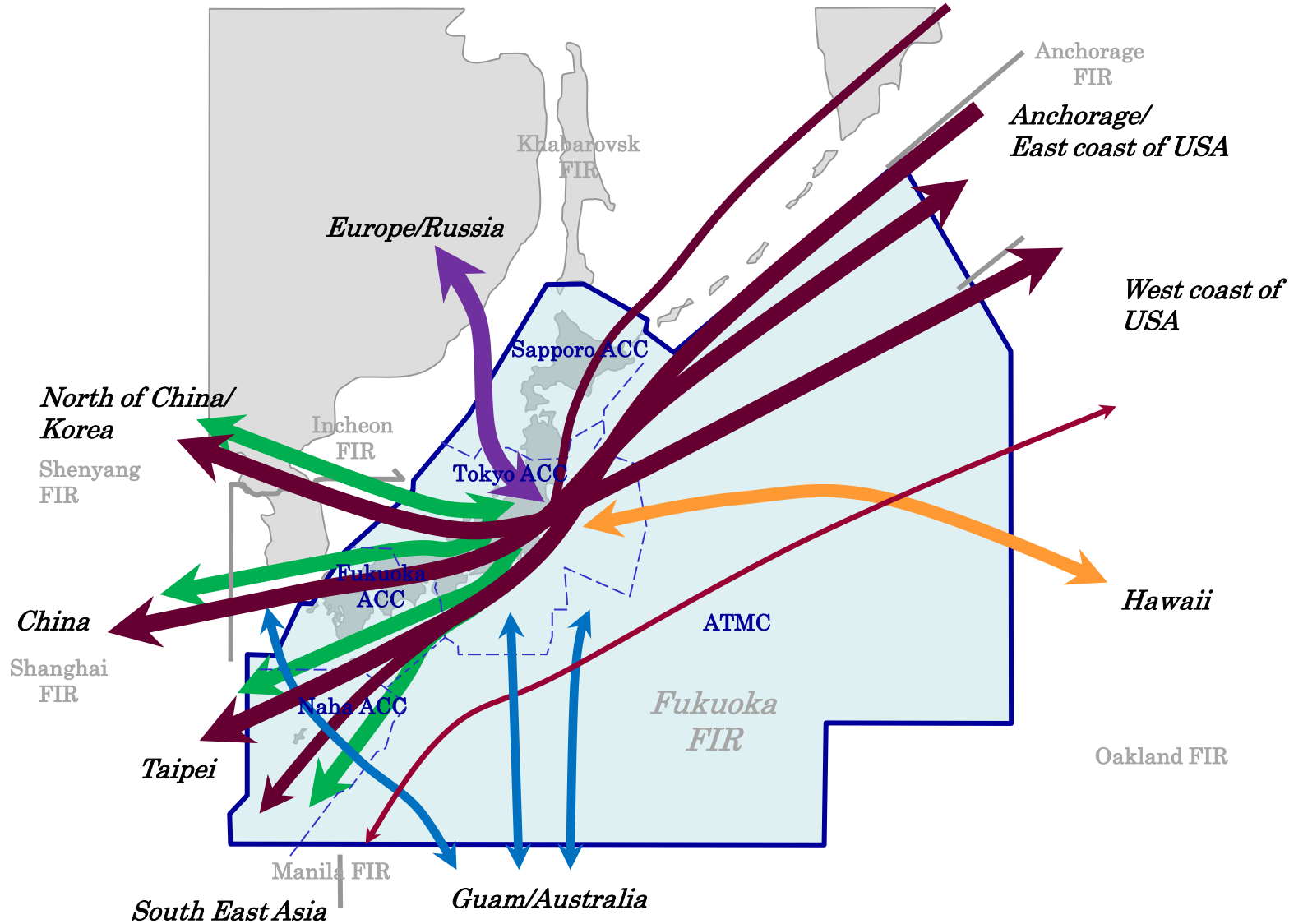
# Background of ATMC in JAPAN

- In 1991: The new CNS/ATM concept was approved at the 10<sup>th</sup> ICAO ANC.
- In 1994: Establishment of the air traffic service system based on a new CNS/ATM design concept of ICAO is proposed by the 23rd Civil Aviation Council report.
- In 1994: JCAB launched ATFMC  
**(Air Traffic Flow Management Center)**
- In 2003: ATM operational concept was recognized as a foundational concept for introducing CNS/ATM at the 11<sup>th</sup> ICAO ANC.
- In 2005: JCAB extended ATFMC to  
**ATMC (Air Traffic Management Center)**





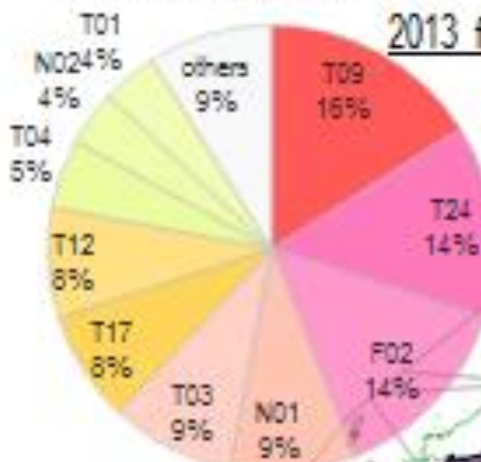
# Traffic flow around Fukuoka FIR



# Traffic congestion in Japan

## flow control initiatives (en-route)

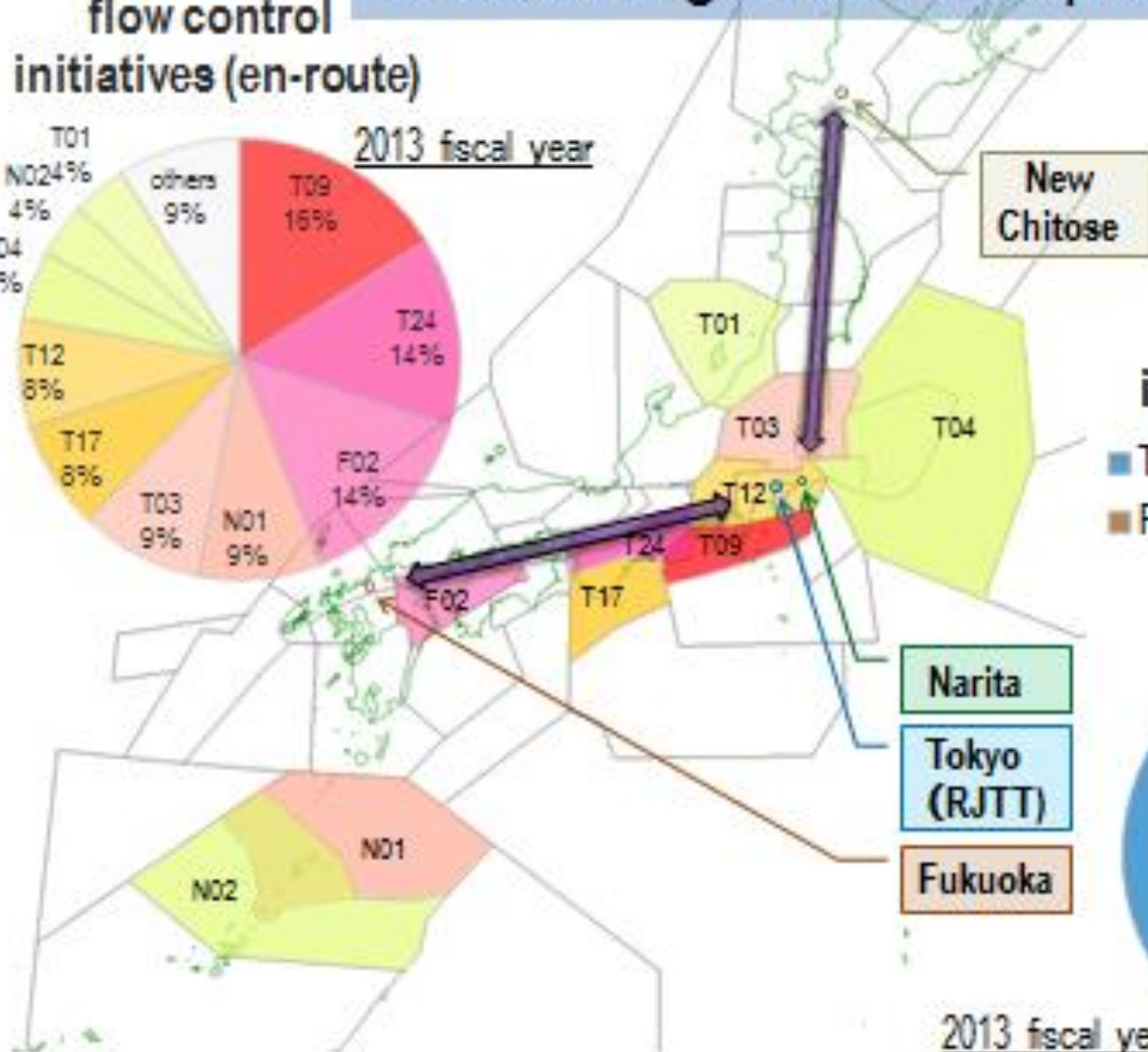
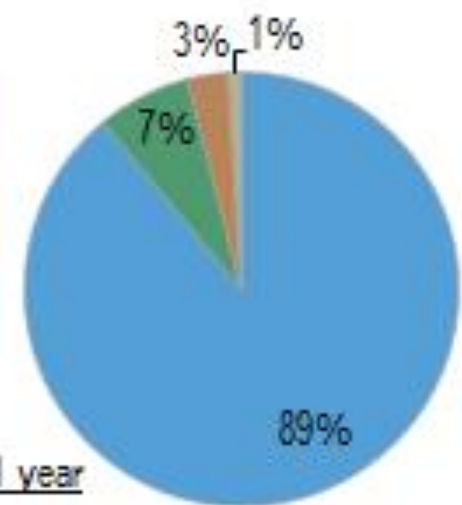
2013 fiscal year



Haneda A/P

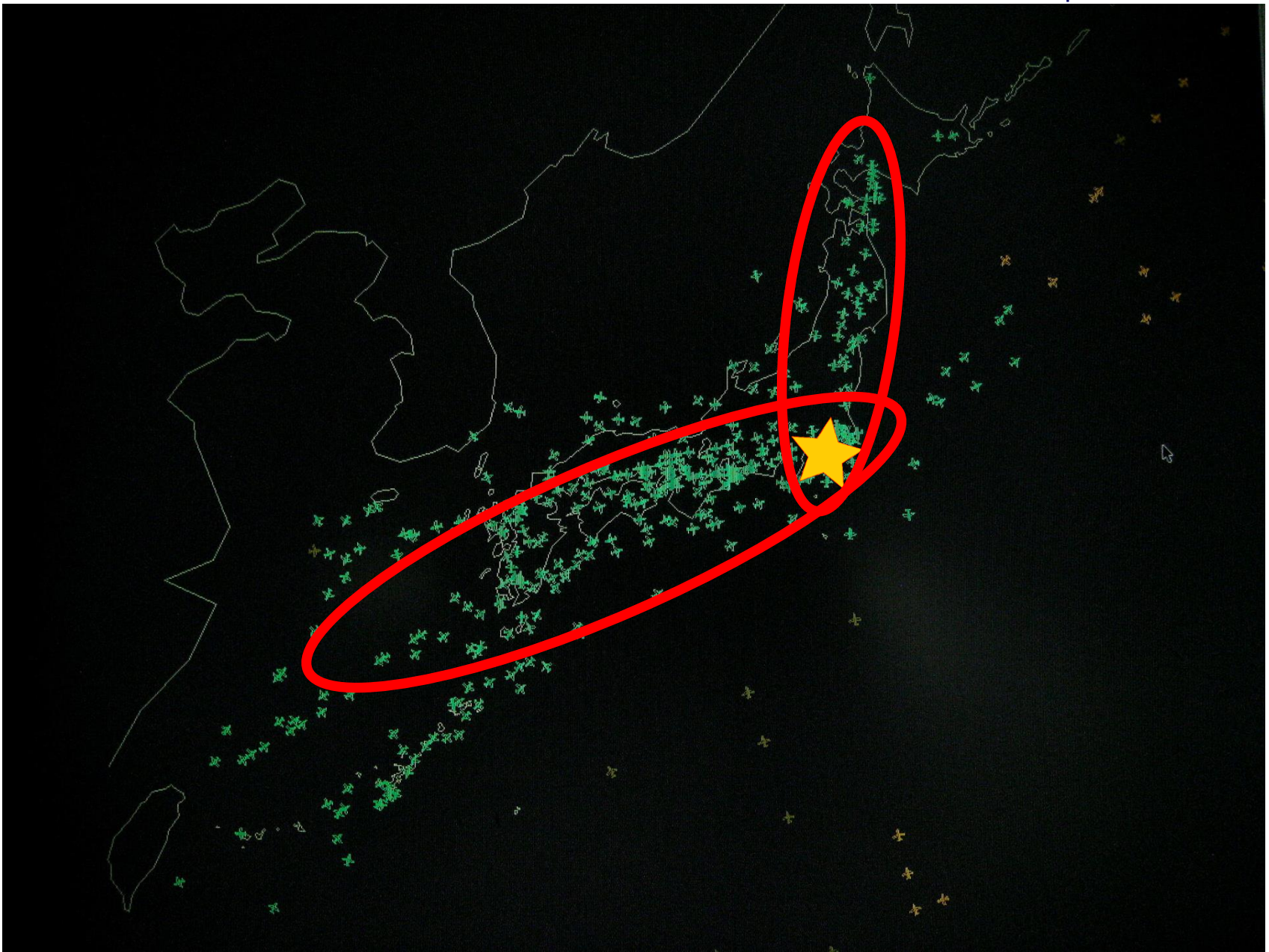
## flow control initiatives (airports)

- Tokyo (RJTT)
- Narita
- Fukuoka
- others



2013 fiscal year





# Role of TMU (Traffic Management Unit)

- Monitor traffic volume and situation
  - \*high density area around Tokyo
- Coordination with TMU in other facilities
- Coordination with ATMC
- Conduct flow control initiatives

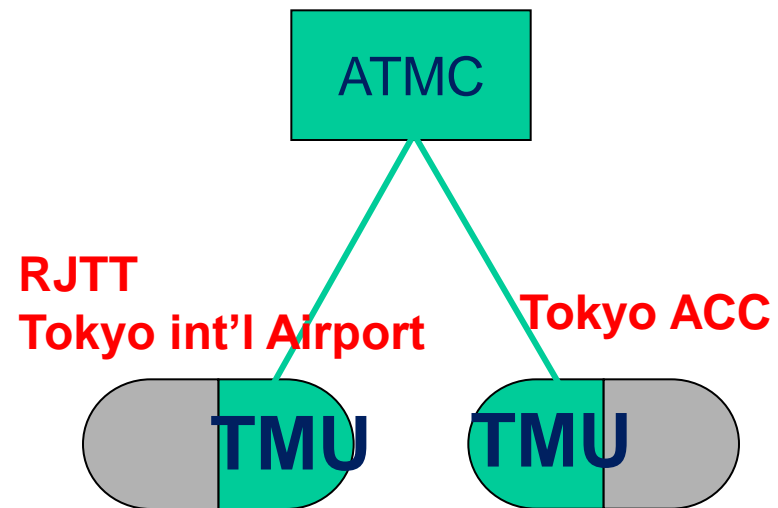
ALTITUDE RESTRICTIONS / REROUTES

MILES-IN-TRAIL

SPEED CONTROL

AIRBORNE HOLDING

GROUND STOP





# ATM system -Monitoring (Sectors)-





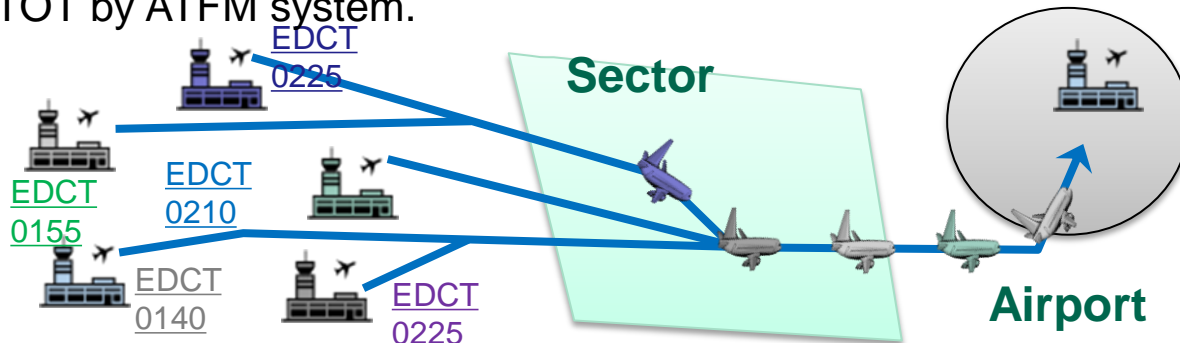
# Ground Delay Program

Flow control initiatives ①

Departure aircraft are assigned EDCT(Expected Departure Clearance Time)=CTOT by ATFM system.

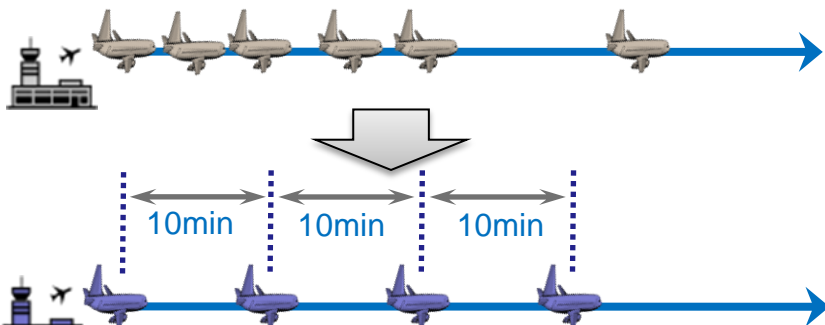
## On the Ground

Departure aircraft which bound for congested airport or are going to pass the crowded sectors, are assigned ground delay if necessary.



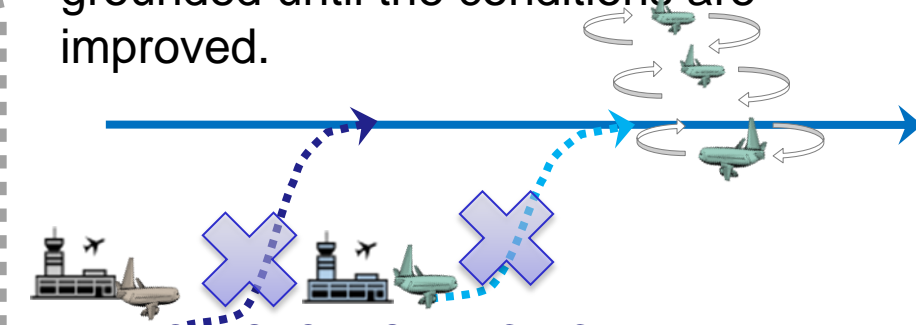
## Departure Interval

ATM officer instructs airport controller to keep departure interval (minutes or miles).



## Ground Stop

If the heavy congestion is expected (e.g. sever WX, airport closure, ATC system failure), departure aircraft are grounded until the conditions are improved.



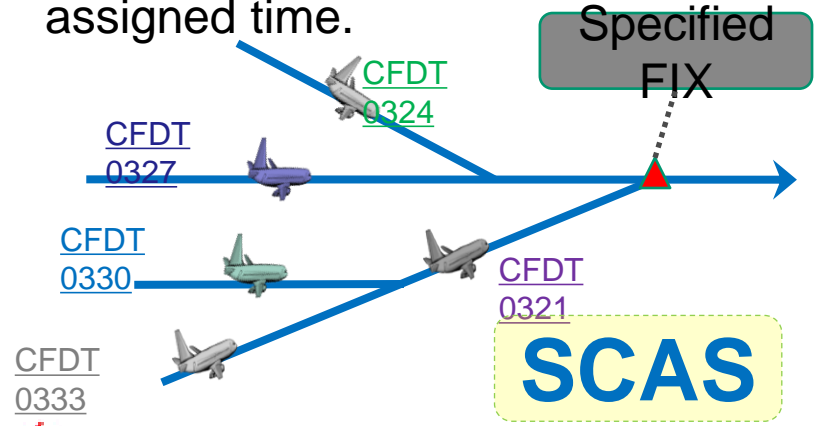


# Flow control initiatives ②

In-Flight

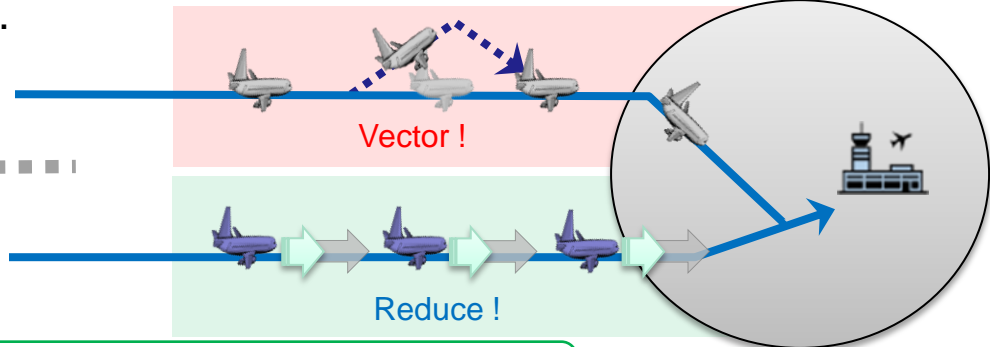
## Specifying CFDT for Arrival Spacing Program

ATFM system calculates CFDTs (Calculated Fix Departure Time), and ACC issues CFDTs to aircraft so that they pass the specified fix at assigned time.



## Expanded Miles in-trail

To expand separations before entering crowded control area.

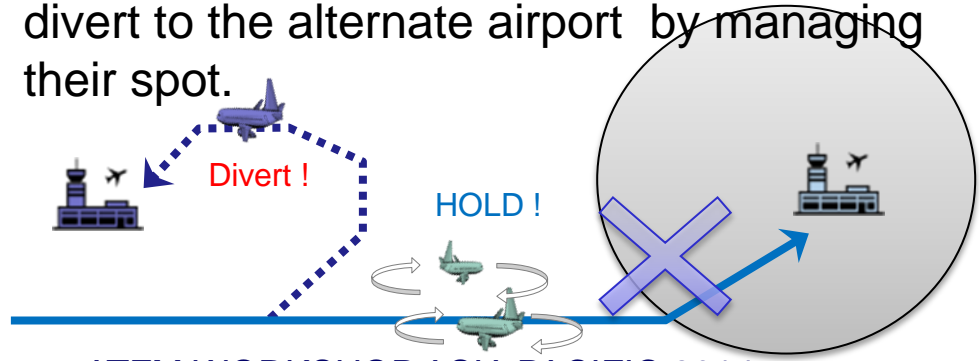


## Speed Adjustment

To reduce and align aircraft speed at entry fix.

## Entry Suspension

In case of happening at the airport, ATMC stops the inflow of aircraft, and helps them to divert to the alternate airport by managing their spot.



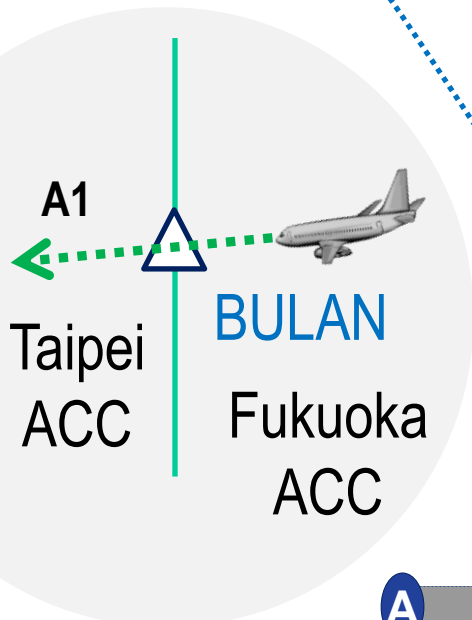
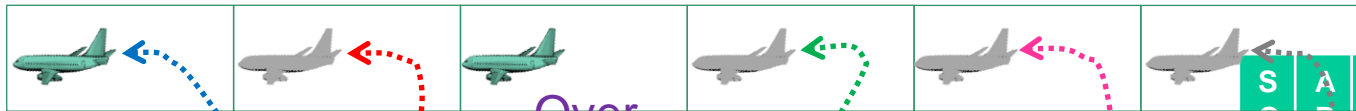
# Separation management of FIR boundary

## In case of airway A1 between Taipei and Fukuoka

Taipei ACC requires 15min interval regardless altitude from 0200z.  
( at 2340z )

Timeline

0200      0215      0230      0245      0300      0315      0330



S Q	A P	Org. ETD	Org. BULAN
1	B	0100	0200
2	C	0035	0205
3	C	0040	0210
4	B	0120	0220
5	A	0155	0225

**A** 30min to BULAN

**B** 60min to BULAN

**C** 90min to BULAN

EDCT0245

EDCT0100

EDCT0200

EDCT0115

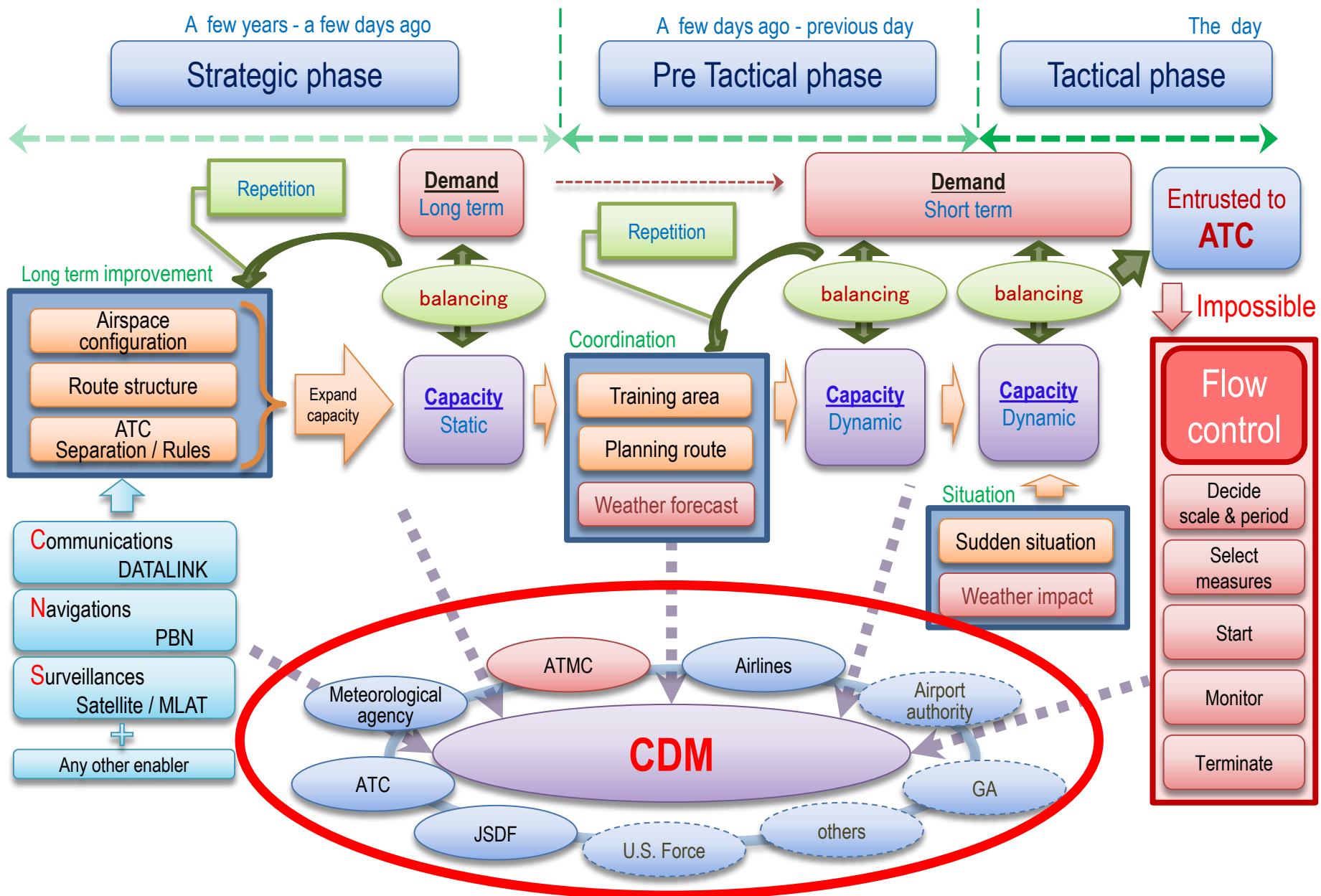
EDCT0045



- CDM concept in JAPAN



# CDM process for ATM in Japan





- CDM counterparts at ATM center
  - \* Weather specialists
  - \* Military liaison officers





# ATM center operation room

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45m

30m

Large information monitor

Oceanic  
ATS

ATM officers  
ATFM / ASM

AIM specialist

Flight Data

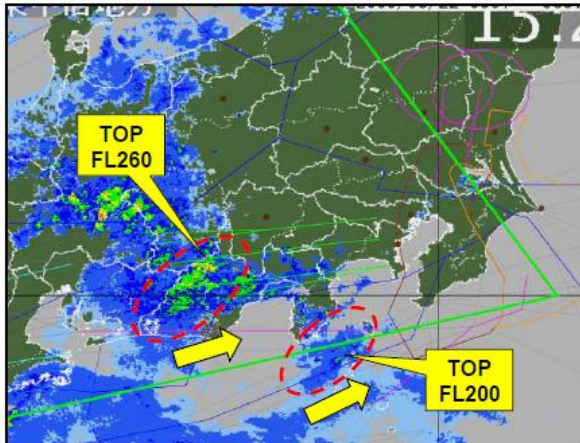
JSDF liaison

Engineering specialist

Met  
Agency



# Air Traffic Meteorology Center

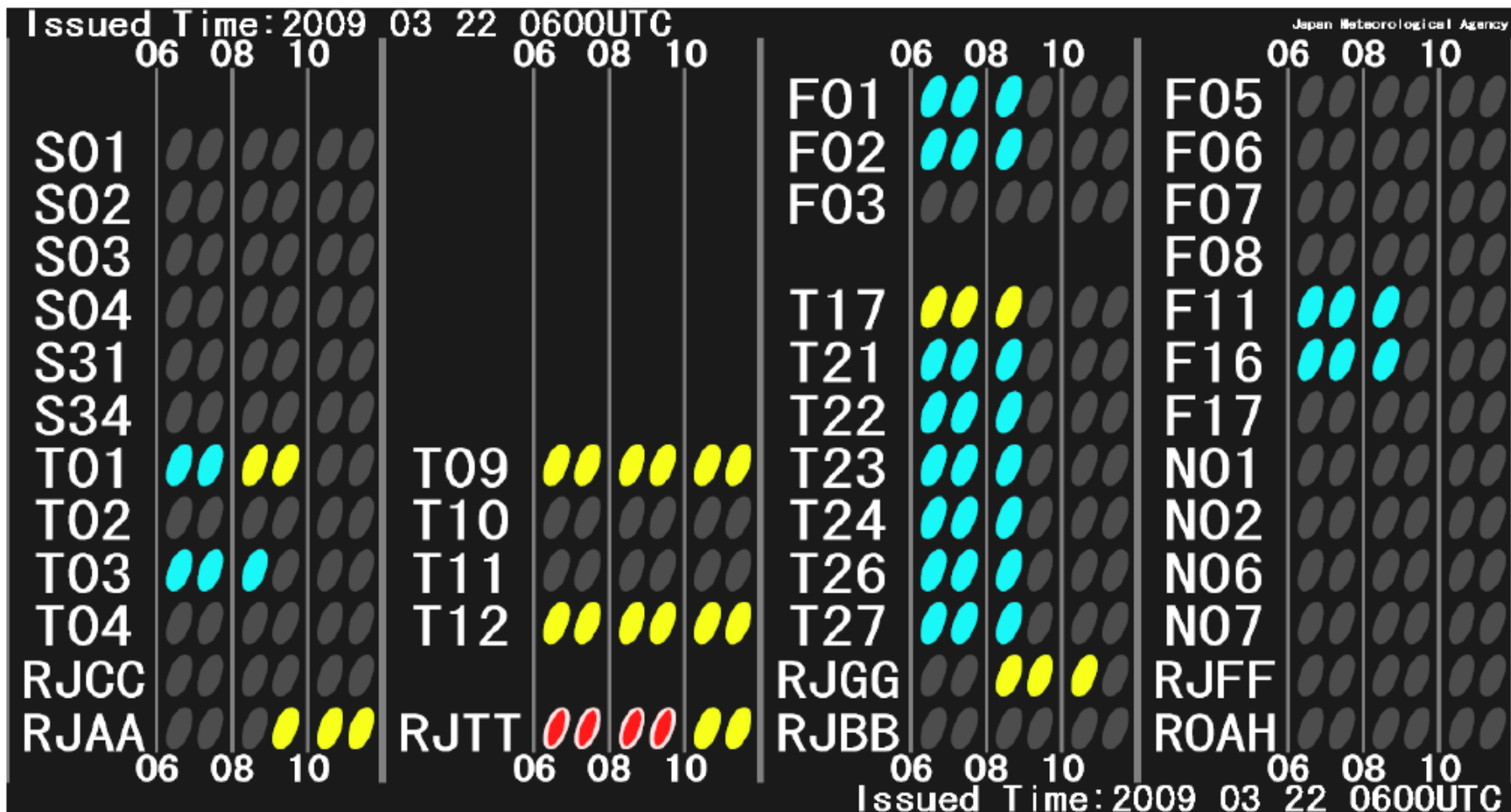


## ◆ Japan Meteorological Agency

- Description of weather conditions
- Explanation of weather charts
- Forecast in time –line form
- Timely comment
- Display the latest weather situations on the screen
- Weather forecast and analysis for CDM meeting



# Forecast in time –line form



気象による航空交通流への影響が発生する可能性

- 非常に高い (Red)
- 高い (Yellow)
- やや高い (Light Blue)
- 低い (White)





# Forecast in time –line form

	UTC	06:00実況	~07	~08	~09	~10	~11	~12
<b>RJTT</b>								
風向		210	190	200	200	200	220	220
風速(kt)		18	35G45	32G45	32G45	32G45	25G35	25G35
視程(m)		3000	4000	4000	4000	4000	3000	3000
シーリング(ft)		3000	2500	2500	2500	2500	1200	1200
天気		SHRA	SHRA	SHRA	SHRA	SHRA	TSRA	TSRA
	UTC	06:00実況	~07	~08	~09	~10	~11	~12
<b>RJAA</b>								
風向		170	190	190	190	190	190	190
風速(kt)		17G27	22G33	22G33	22G33	22G33	22G33	22G33
視程(m)		9999	9999	9999	9999	9999	9999	8000
シーリング(ft)		3000+	3000	3000	3000	3000	2000	2000
天気						-SHRA	-SHRA	-SHRA



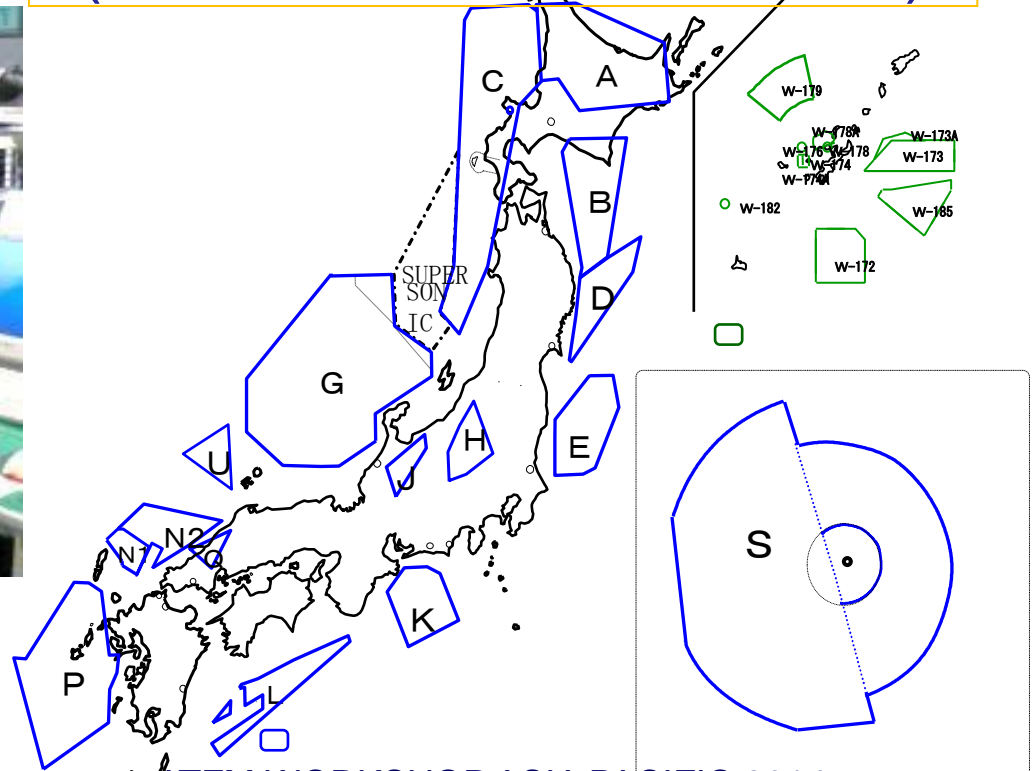
# Japan self defense forces Liaison

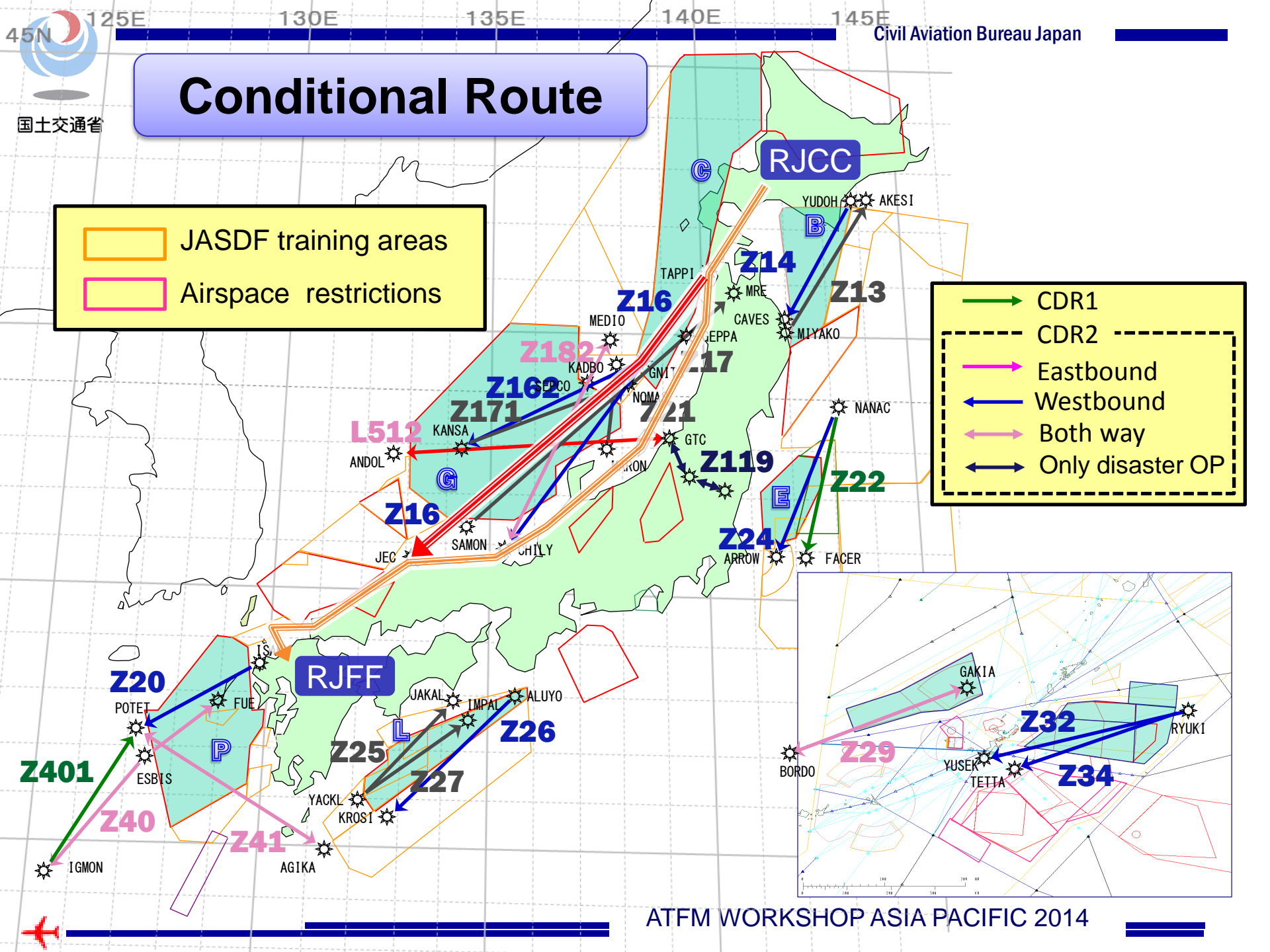
- ◆ coordinates collaboratively with JCAB to optimize effective use of military airspace.



JASDF  
Liaison

## High Altitude Training/Testing Areas & Restricted Areas (Air-Self-Defense Forces / U.S. Forces)





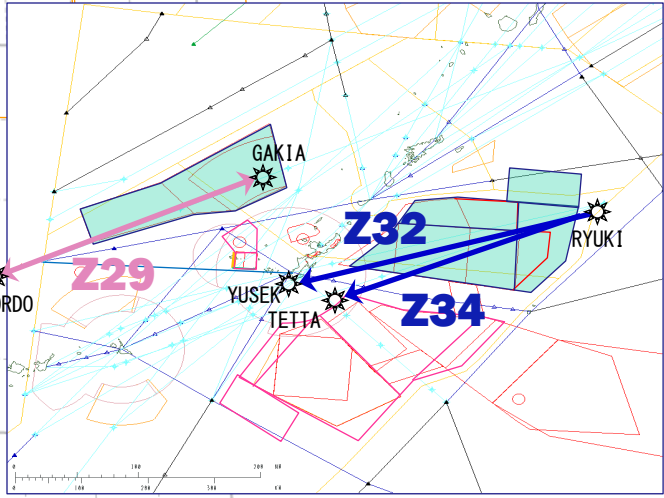
国土交通省

# Conditional Route

Civil Aviation Bureau Japan

- JASDF training areas
- Airspace restrictions

- CDR1
- CDR2
- Eastbound
- ← Westbound
- ↔ Both way
- ↔ Only disaster OP



- CDM meeting / twice a day at ATMC

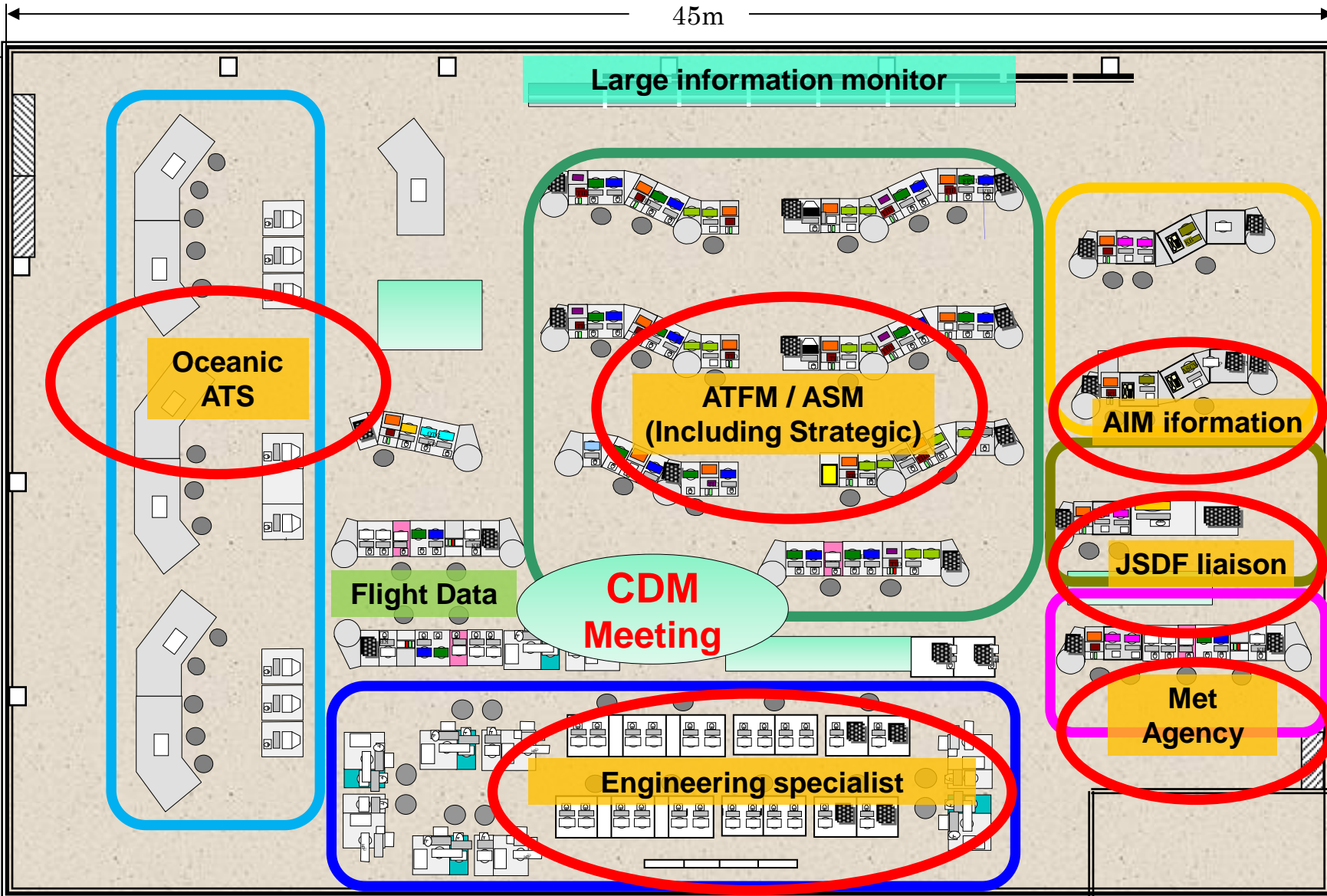


# CDM meeting at ATMC / twice a day

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45m

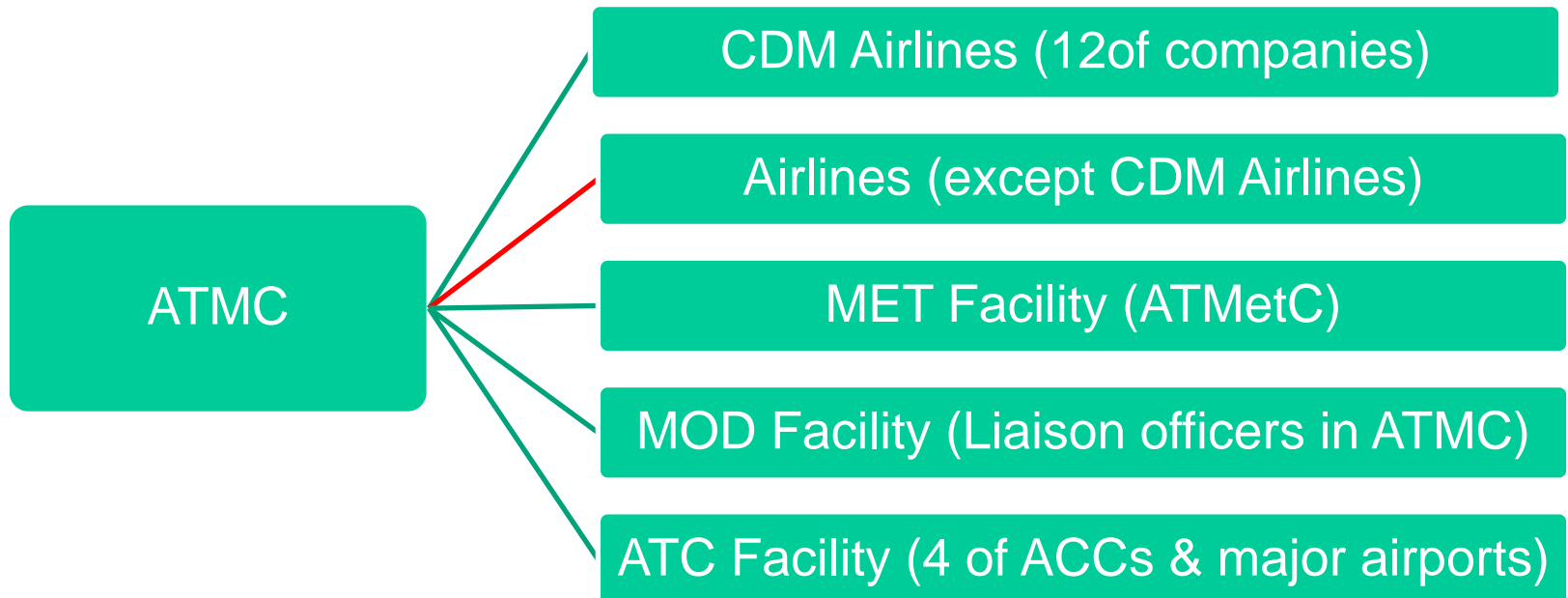
30m



- CDM web conference / twice a day  
with Airline operators, ACCs, APPs,  
TMUs, Weather specialists

## System structure for CDM

Providing web based CDM system for stakeholders since 2006.  
Supporting information sharing in the manner of CDM.





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# CDM web conference / twice a day + $\alpha$

\* $\alpha$ : whenever required

【OP: ATFM daily plan】



**\*\*\*ATM OPERATIONS PLAN\*\*\***  
 VALID 2014/0701/2345 THRU 0545

**-CAPACITY(CAPA) & CONSTRAINTS-**  
 RJCC : 2100-0300 CAPA=04-06 $\Delta$  LOW VIS  
 RJTT : 0200-0300 CAPA=10  
           RWY 34L/16R CLSD (0200-0245 CONST)  
           0300-//// CAPA=14     FLTCK (ILS RWY22)  
 T01 : 0130-//// CAPA=92-97   DEV (CB)

**-INITIATIVE-**  
 RJCC : 0010-0150 5MINIT DEP FM RJTT  
 RJTT : 2330-0140 EDCT  
 T12 : 2300-0005 3MINIT DEP FM RJAA/RJTT  
 G585 : 0130-UFN 8MINIT @ SAPRA RGDLS OF ALT  
           WB FOR MONGOLIA, RUSSIA, EUROPE

**<POSSIBLE>**  
 RJAA : 0330-0500 15MIT, 250KT @ MELON, MAMAS  
 RJTT : 0300-//// EDCT

**-OTHER-**

Participants: ATMC, ATC facilities, Airlines, Meteorological agency





\*\*\*ATM OPERATIONS PLAN\*\*\*

VALID 2014/0701/2345 THRU 0545

**-CAPACITY(CAPA) & CONSTRAINTS-**

RJCC : 2100-0300 CAPA=04-06△ LOW VIS

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RWY 34L/16R CLSD (0200-0245 CONST)

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G585 : 0130-UFN 8MINIT @ SAPRA RGDLS OF ALT  
WB FOR MONGOLIA, RUSSIA, EUROPE

**<POSSIBLE>**

RJAA : 0330-0500 15MIT, 250KT @ MELON, MAMAS

RJTT : 0300-//// EDCT





**ATM MESSAGE LIST**

**TACTICAL ATFM**

- ▶ TRAFFIC VOLUME (OVERVIEW)
- ▶ TRAFFIC VOLUME (DETAIL)
- ▶ ATFM INFORMATION
- ▶ REROUTING PROGRAM
- ▶ TIME FRAME PROGRAM
- ▶ TRAFFIC SITUATION
- ▶ TRAFFIC SITUATION (OCEANIC)
- ▶ FLIGHT PLAN LIST
- ▶ FLIGHT PLAN (DETAIL)
- ▶ DIVERSION SPOT
- ▶ DIVERSION MANAGEMENT

**STRATEGIC ATFM**

- ▶ TRAFFIC VOLUME PREDICTION
- ▶ FLIGHT PLAN REFERENCE
- ▶ GATE FIX TRAFFIC SITUATION

# Information sharing on the web with stakeholders

**[04:47 UTC]UPDATE**

```

2013/03/18 03:30 CTFM010 REROUTING PROGRAM REQUEST ACCEPT (0002:JTA277 )
2013/03/18 03:28 CTFM001 ATFM INFORMATION REGISTRATION(F05 :0320-0714)
2013/03/18 02:27 CTFM010 REROUTING PROGRAM REQUEST ACCEPT (0001:JTA36 )
2013/03/18 02:04 CTFM002 ATFM INFORMATION CHANGE(G585 :0120-0800)
2013/03/18 01:52 CTFM001 ATFM INFORMATION REGISTRATION(ROAH :0145-0230)
2013/03/18 01:35 CTFM005 TIME FRAME PROGRAM END (AIRPORT:RJTT-S)
2013/03/18 01:13 CTFM002 ATFM INFORMATION CHANGE(RJTTS:2140-0135)
2013/03/18 00:46 CTFM001 ATFM INFORMATION REGISTRATION(G585 :0120-0800)
2013/03/18 00:02 CTFM001 ATFM INFORMATION REGISTRATION(OP :2345-2346)
2013/03/17 23:12 CTFM001 ATFM INFORMATION REGISTRATION(G585 :2320-0220)
2013/03/17 21:46 CTFM001 ATFM INFORMATION REGISTRATION(OP :2130-2345)
2013/03/17 21:40 CTFM004 TIME FRAME PROGRAM START (AIRPORT:RJTT-S)
2013/03/17 21:12 CTFM001 ATFM INFORMATION REGISTRATION(RJTTS:2140-0150)
2013/03/17 10:02 CSFM004 STRATEGIC AIR TRAFFIC VOLUME RELEASE (DATE:2013/03/18)
2013/03/17 10:02 CSFM002 STRATEGIC COORDINATION DISCONTINUANCE (DATE:2013/03/18)
2013/03/17 09:38 CTFM001 ATFM INFORMATION REGISTRATION(ADV :0945-2130)
2013/03/17 08:19 CSFM101 AIRSPACE STRUCTURE PLANNING START (DATE:2013/03/18)
2013/03/17 08:19 CSFM102 AIRSPACE STRUCTURE PLANNING END
2013/03/17 07:52 CSFM006 STRATEGIC AIR TRAFFIC VOLUME OFFER END
2013/03/17 06:40 CTFM001 ATFM INFORMATION REGISTRATION(OP :0620-0625)

```

- CDM commission / twice a year

# ANNUAL REPORT for Post operational analysis

航空交通管理業務運用評価報告書  
年次報告  
平成24年4月～平成25年3月

平成25年6月  
国土交通省  
航空交通管理センター



The collage includes several key visualizations:

- Top Left:** Title page of the report.
- Top Middle:** A bar chart showing performance metrics over time.
- Top Right:** A stacked bar chart titled '飛行(DFQ) 運用時間' (Flight (DFQ) Operation Time) showing data from 2012 to 2014.
- Middle Left:** A bar chart comparing performance across different categories.
- Middle Right:** A line graph showing trends over time.
- Bottom Left:** A large data table with multiple columns and rows, likely detailing operational statistics.
- Bottom Middle:** A bar chart showing performance metrics.
- Bottom Right:** A data table with multiple columns and rows.



## CDM commission / twice a year

ATMC promote ATM operations on the basis of consensus of all stakeholders. ATMC show results and analysis of ATM or traffic statistic details. Post operational analysis and case studies are conducted among the stakeholders.



**Thank you**  
**Any questions?**



**JCAB Air Traffic Management Center**

**Fukuoka**