CIVIL AVIATION BUREAU of JAPAN

TSUNAMI

~The Great East Japan Earthquake~

ICAO ATFM Global symposium,Singapore

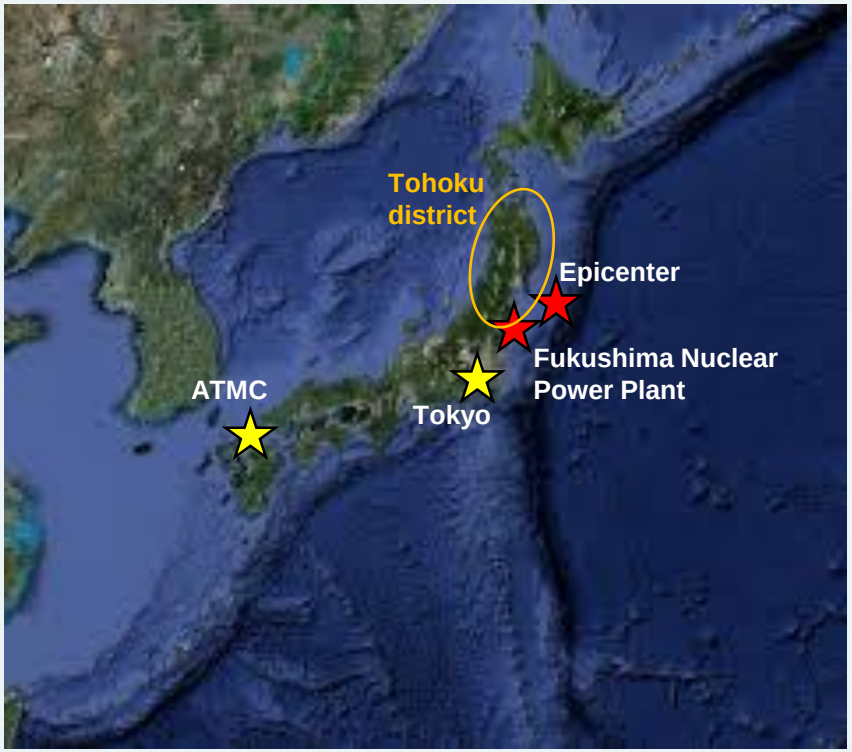
20－22 November　2017

Japan Civil Aviation Bureau (JCAB)

1. Outline of The Great East Japan Earthquake

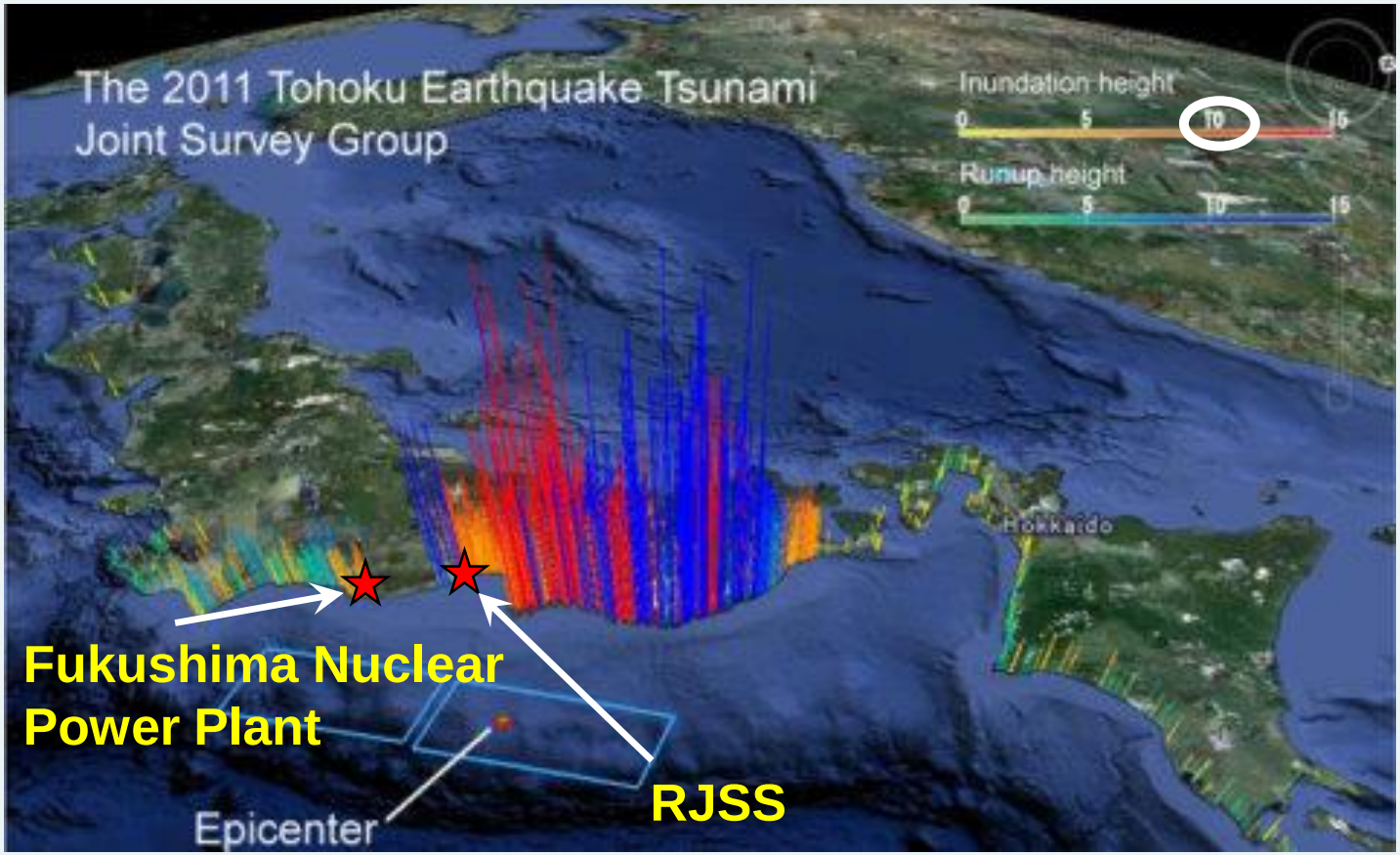
What's The Great East Japan Earthquake

- Date & Time : 14:46 (0546UTC) on 11th Mar. 2011
- Epicenter Location : 380612N1425136E
- Depth : 24km
- Magnitude: 9.0
  (biggest earthquake in recorded history in Japan)



- Tsunami, created by earthquake, mostly affected Tohoku district.
- Fukushima Nuclear Power Plant, damage by tsunami, released radioactive materials.

Map of the Height of Tsunami



The source: Tohoku earthquake tsunami joint survey group

Photo (Tsunami)

The source: DAYS JAPAN 2012/05

Photo (Sendai Airport)

2. Impact on Airports and Air Traffic

The Impact of the Earthquake on airports

RJSS ・・・ Complete loss of function of airport

RJAA ・・・ RWY closed +

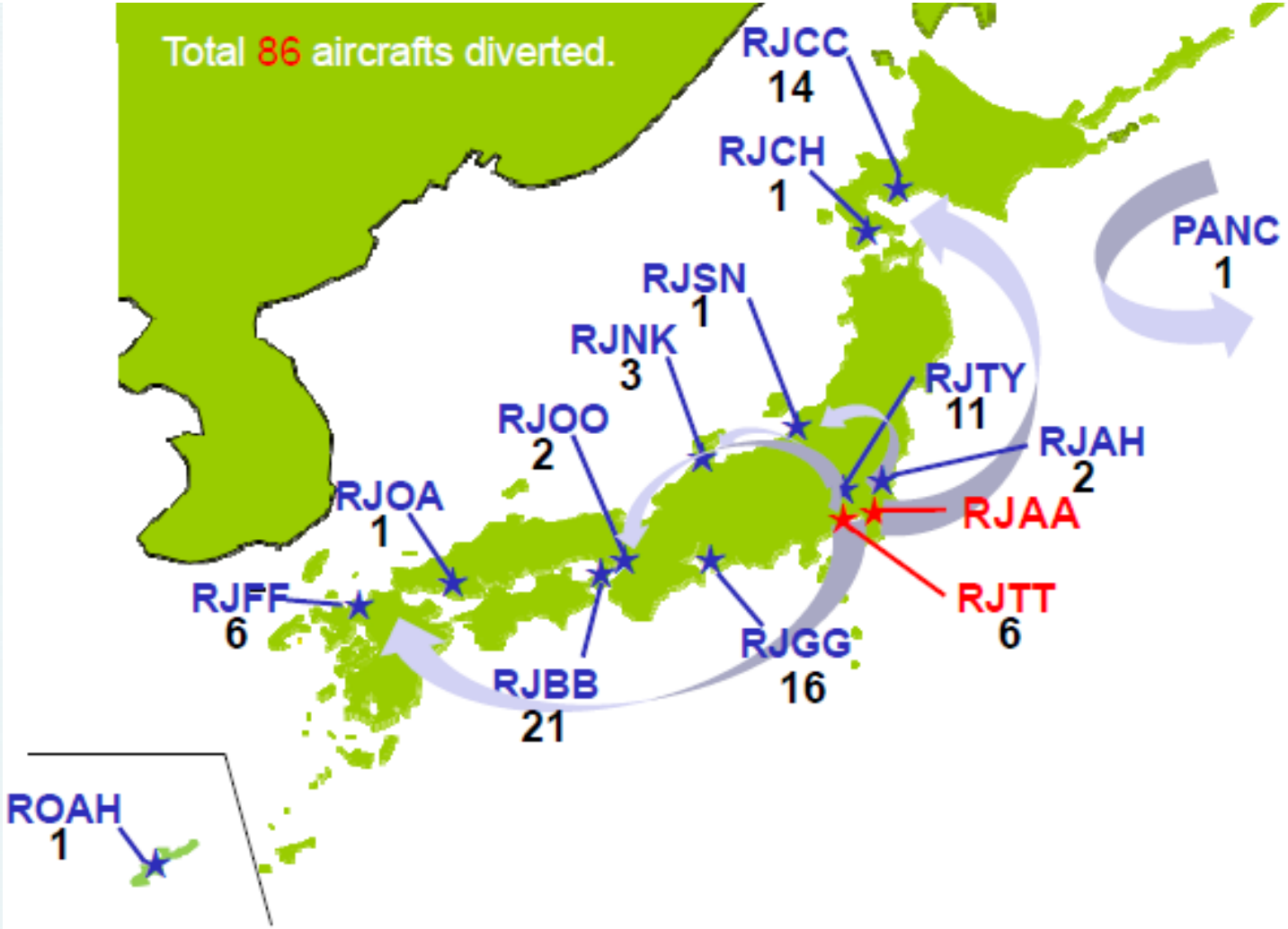
Immediate evacuation needed from the tower after the earthquake except aeronautical information officers who are in charge of the oceanic area.

RJTT ・・・ RWY closed +

Almost all transportation stopped. The terminal buildings were heavily congested, no aircraft was accepted during this period.

86 aircraft bound for RJAA or RJTT were required to divert to other airports.

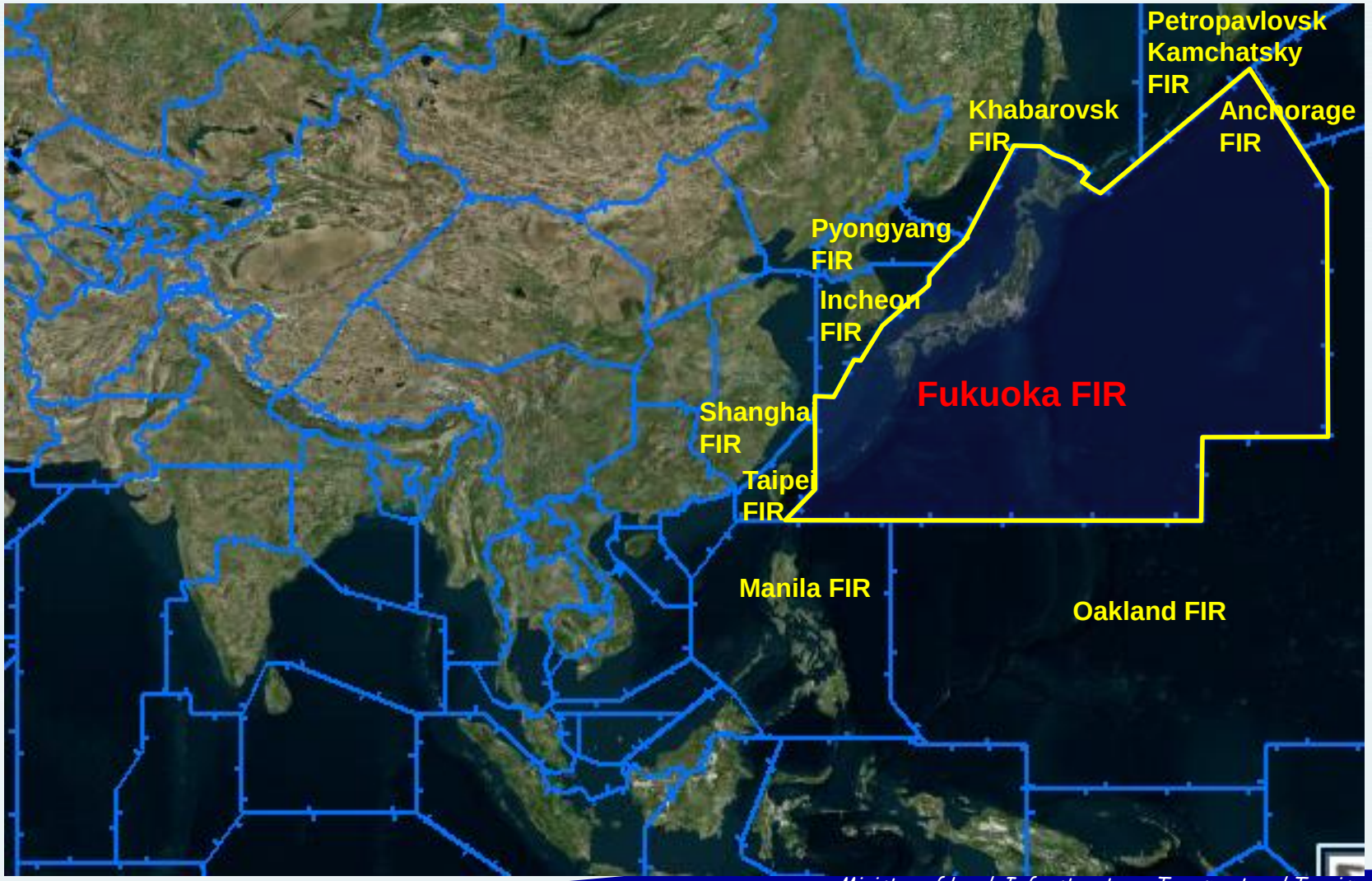
The Number of Aircraft Diverted from RJAA and RJTT (TOTAL)



Airline	Number of Aircraft
AAL	5
ACA	2
ADO	1
AFR	1
AJX	1
ANA	21
ANZ	1
CES	1
COA	2
CPA	3
CSN	1
DAL	9
GEC	1
IBX	1
JAL	23
KLM	1
NCA	2
SIA	2
THA	1
UAE	1
UAL	6
TOTAL	86

3. ATFM's Response to the Disaster

Fukuoka FIR and Adjacent FIRs

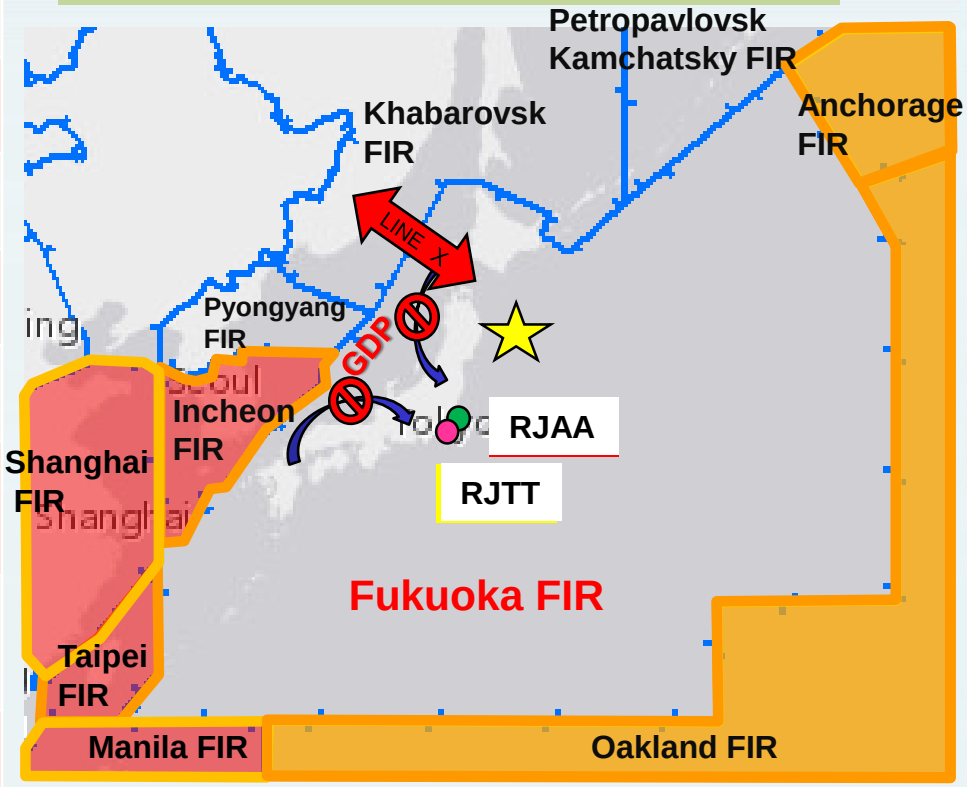


3.11 Time Sequence (1)

Time(z)	ATFM	Other Events
0546	**The earthquake occurred.**	
0551	Ground Stop(**GS**) for RJAA/RJTT from dom. AP.	**RJAA/RJTT (All RWY) CLOSED.**
0600	For RJAA/RJTT from **Incheon/Taipei suspended.**	RJTT B/D RWY opened.
0605	For RJAA/RJTT from **Shanghai suspended.**	
0617		**RJTT (All RWY) CLOSED. (aftershock)**
0627	For RJAA/RJTT from **Manila suspended.**	
0634	For RJAA/RJTT from **Oakland suspended.**	
0637		Sharing information with ATCSCC (Hot Line)
0638	For RJAA/RJTT from **Anchorage suspended.**	29 ACFT for RJAA 16 ACFT for RJTT In Fukuoka FIR
0649		Most staff in **RJAA** office **evacuated.**
0656		Comm. Lines between **Russia and Japan** out intermittently

Time(z)	ATFM	Other Events
0720	**GS** for RJTT cancelled. GDP (CTOT) implemented.	**RJTT (ALL RWY) OPENED.**
0720	Suspension for RJTT from **Anchorage/Oakland** cancelled.	

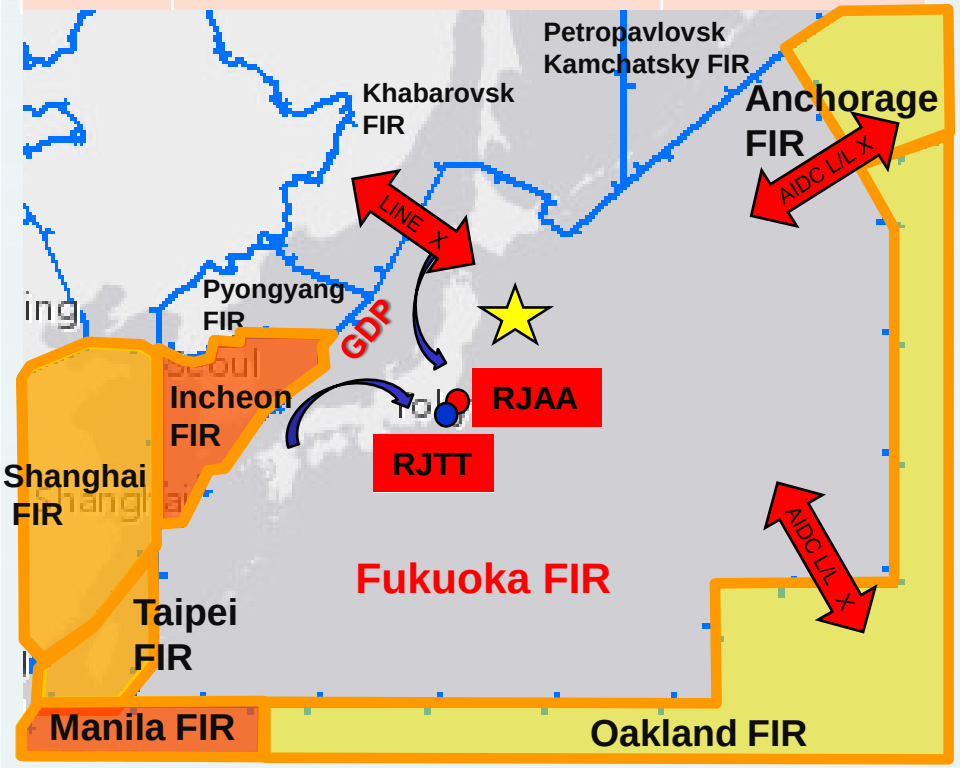
Highlighted by Green : Cross-Border ATFM



3.11 Time Sequence (2)

Time(z)	ATFM	Other Events
0730	Suspension for RJTT from Manila cancelled.	The number of flight in Fukuoka FIR : 231
0730	Suspension for RJTT from Shanghai Taipei Incheon cancelled. → 30MIN in Trail RALT.	
0749		AIDC and L/L between Anchorage/Oakland and Japan were out.
0952	GDP for RJTT terminated.	
1053		GS for RJTT by HQ (Due to congestion of Terminal Building)
1100	For RJTT from Taipei suspended again.	
1105	For RJTT from Shanghai suspended again.	
1204	Suspension for RJTT from Taipei and Shanghai cancelled.	@1155 Suspension for RJTT cancelled. (for only intl. ferry, cargo, goverment)
1455	GS for RJAA cancelled.	RJAA OPENED.

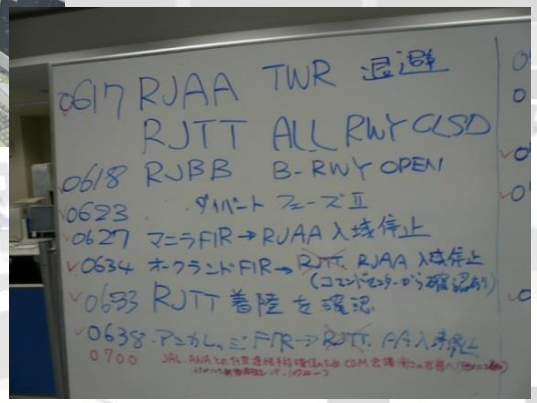
Time(z)	ATFM	Other Events
1500	Suspension for RJAA from Anchorage, Oakland, Manila, Taipei, Shanghai and cancelled.	
1523	Suspension for RJAA from Incheon cancelled	
1837		GS for RJTT by HQ cancelled.



The communication tools for CDM in the disaster

- **For Airlines and ATC facilities**
  CDM conference system (IP VPN)

- **For FAA** (ATCSCC)
  Hot Line
  Tele-Conference



- **For JCAB Headquarters**
  Commercial Line
  * remain connected

- **In ATMC**

Large-Screen Projectors
providing information on:
- Flow control and capacity
- Runway of major airports (wind factor)
- Live cameras in major airport ,etc.

And the white boards

4. Conclusion

How ATFM Assists with Disaster Recovery

11th Mar. (mainly response to earthquake)

14 of 86 diverted aircraft declared emergency. ⇒ **All landed safely.**

1. To Balance Demand and Capacity
   - Domestic ATFM
   - Cross-Border ATFM

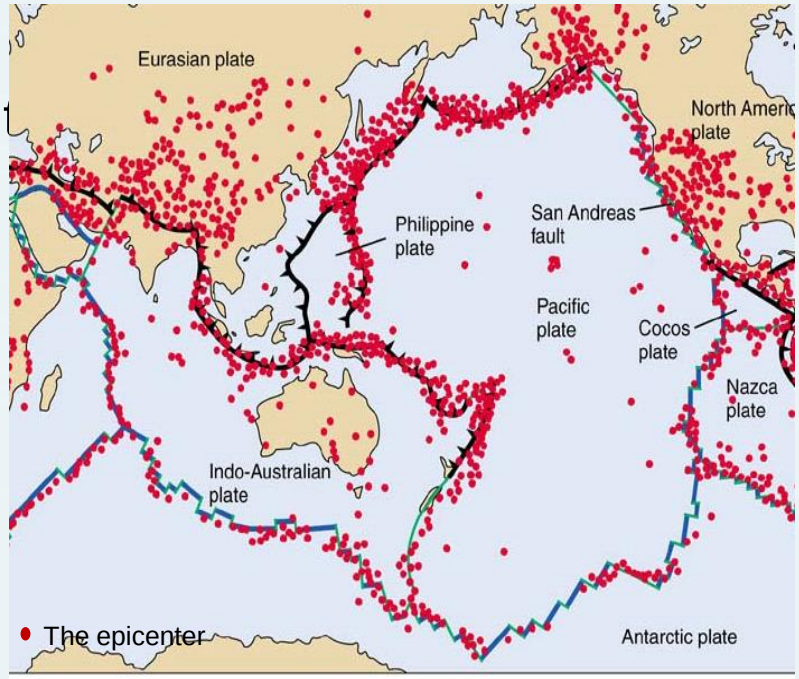
12th Mar.~

(mainly response to the radioactive accident and loss of various circuits)

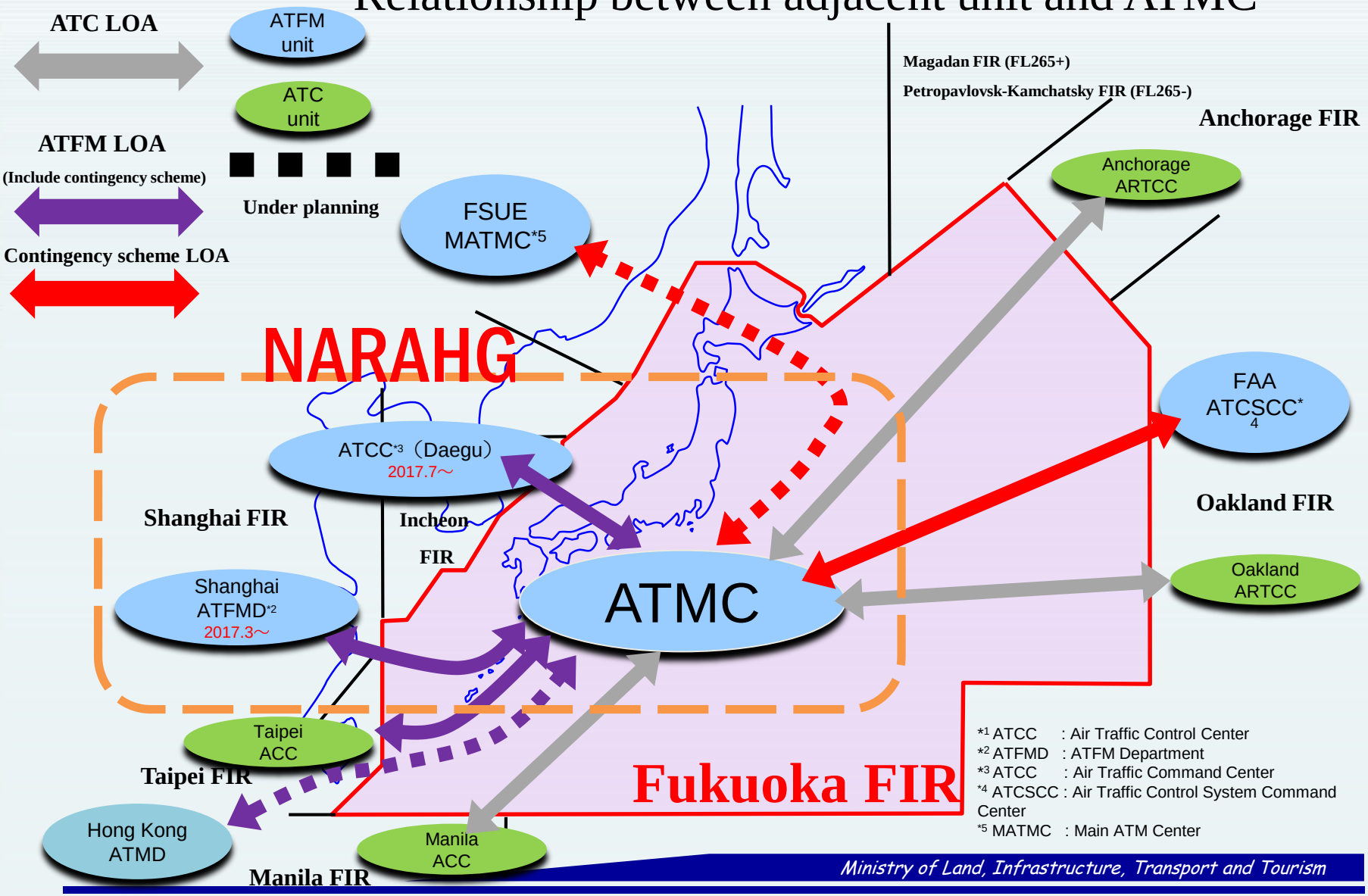
1. To establish detour routes and re-routing.
2. To Balance Demand and Capacity
   - Apply the appropriate capacity for related sectors.
   - Implement ATFM by the appropriate measures.

Lessons

- In such a disaster, unforeseen problems come about one after another. For instance, infrastructure was crippled, including many forms of communication. it is difficult to manage air traffic properly only by domestic ATFM. Cross-Border ATFM will adequately assist other ATFM.
- Between Japan and Republic of Korea, and between Japan and Taipei, there is a Letter of Agreement on ATFM to implement cross-border ATFM smoothly. It is necessary for us to make an arrangement from a contingency point of view.
- Since there are a great deal of earthquakes in the APAC region, it is important to develop cross-border ATFM even in non-emergency situations and prepare for any contingency.



Relationship between adjacent unit and ATMC



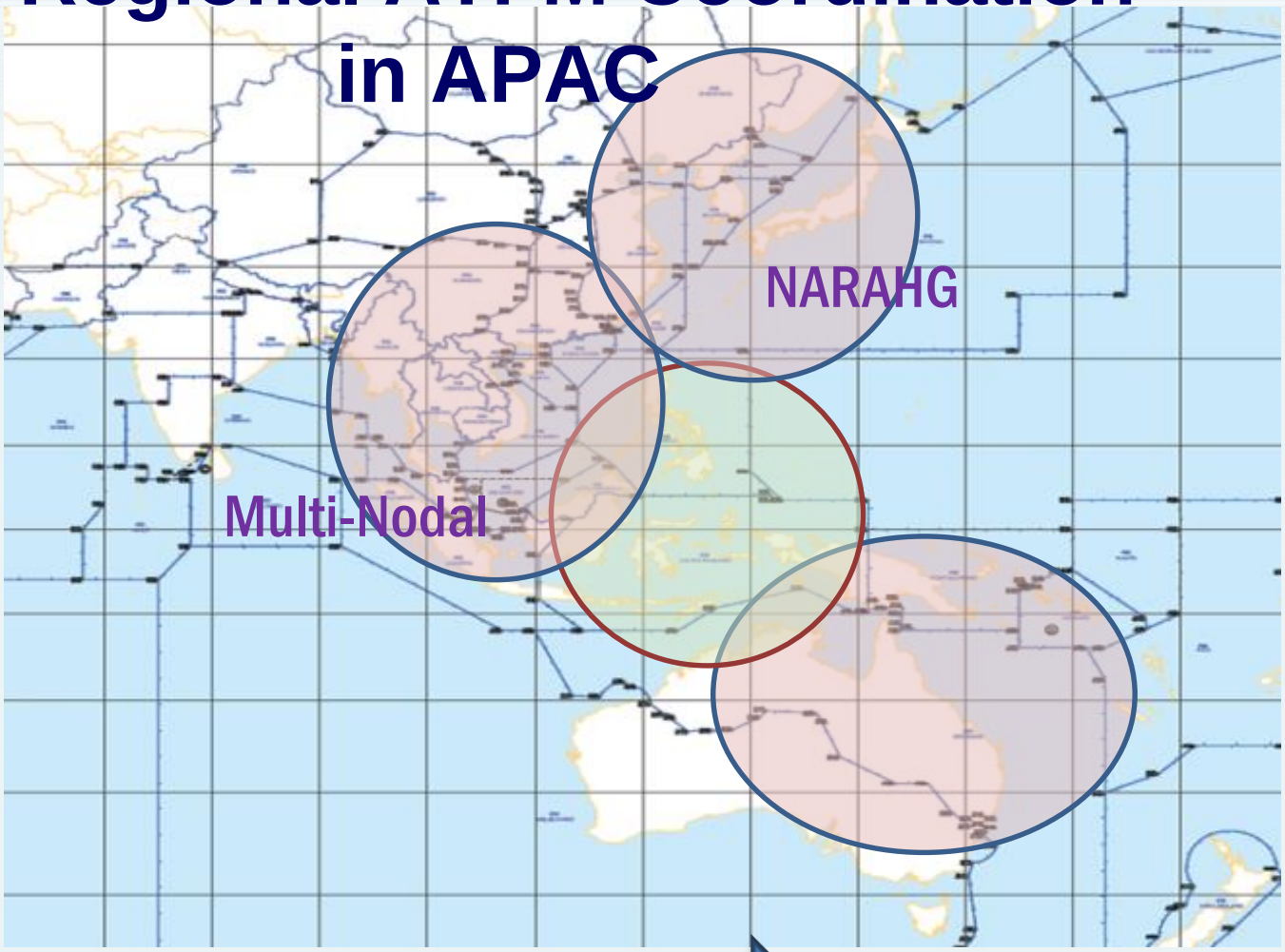
Northeast Asia Regional ATFM Harmonization Group (NARAHG)

- The ICAO Asia Pacific Regional Office founded Beijing Branch Office (RSO) in June 2013.RSO advocated the establishment of NARAHG as an effort dedicated to the Northeast Asia region (Japan, China, Republic of Korea), Japan, China and Republic of Korea authorities agree to participate.

  The Northeast Asia region (Japan, China, Republic of Korea) could discuss for stable ATFM through NARAHG.

- Shanghai ATCC and Fukuoka ATMC signed LOA in March 2017.
- Preparation for trial of CRACP（the Cross Region ATFM Collaborative Platform） and so on

Sub-Regional ATFM Coordination in APAC



Sub-Regional ATFM → **Regional ATFM**

THANK YOU VERY MUCH!!

Jun.2013
RJSS

Any questions?