



AEROTHAI Aeronautical Radio of Thailand

บริษัท วิทยุการบินแห่งประเทศไทย จำกัด

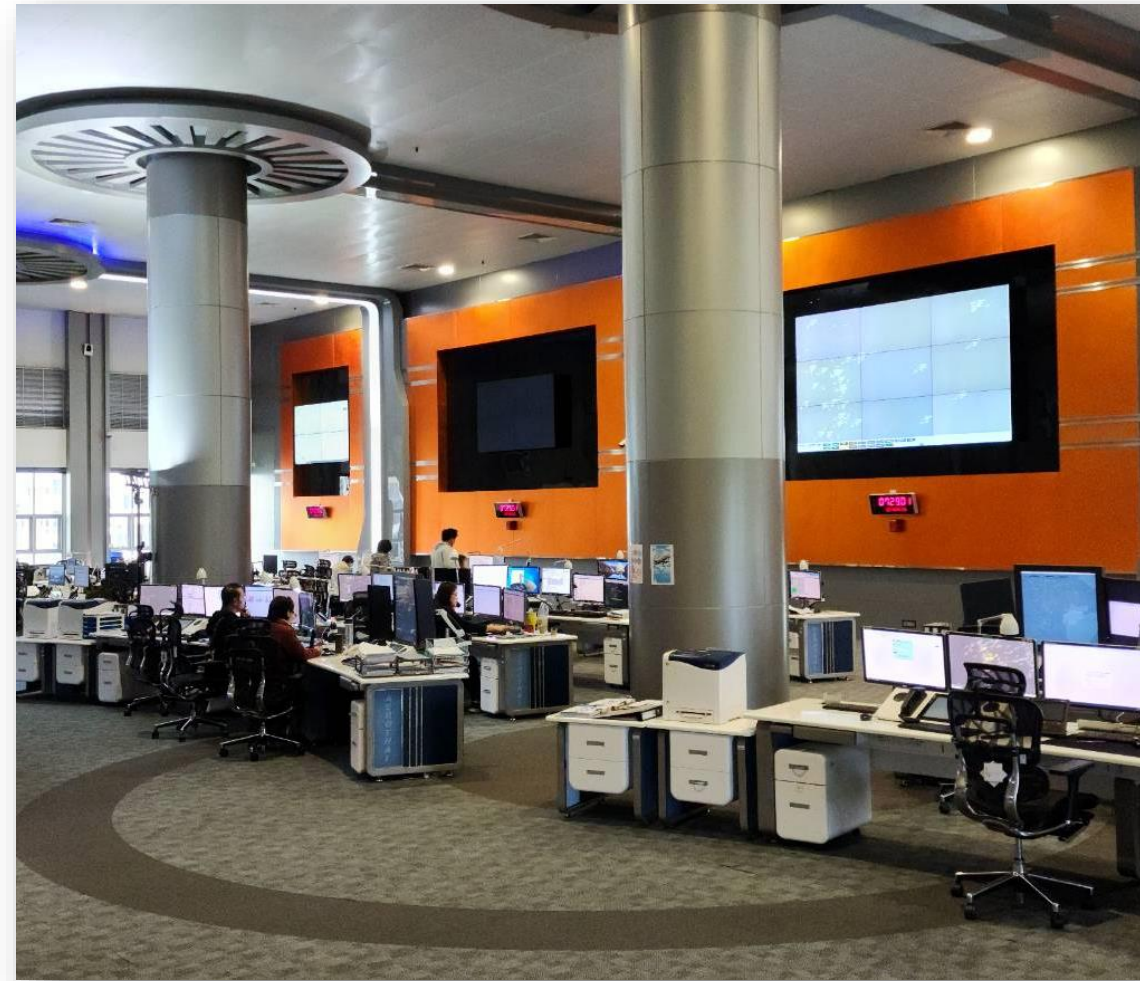
Use of Meteorology Information in Bangkok ATFMU

MET/ATM Seminar



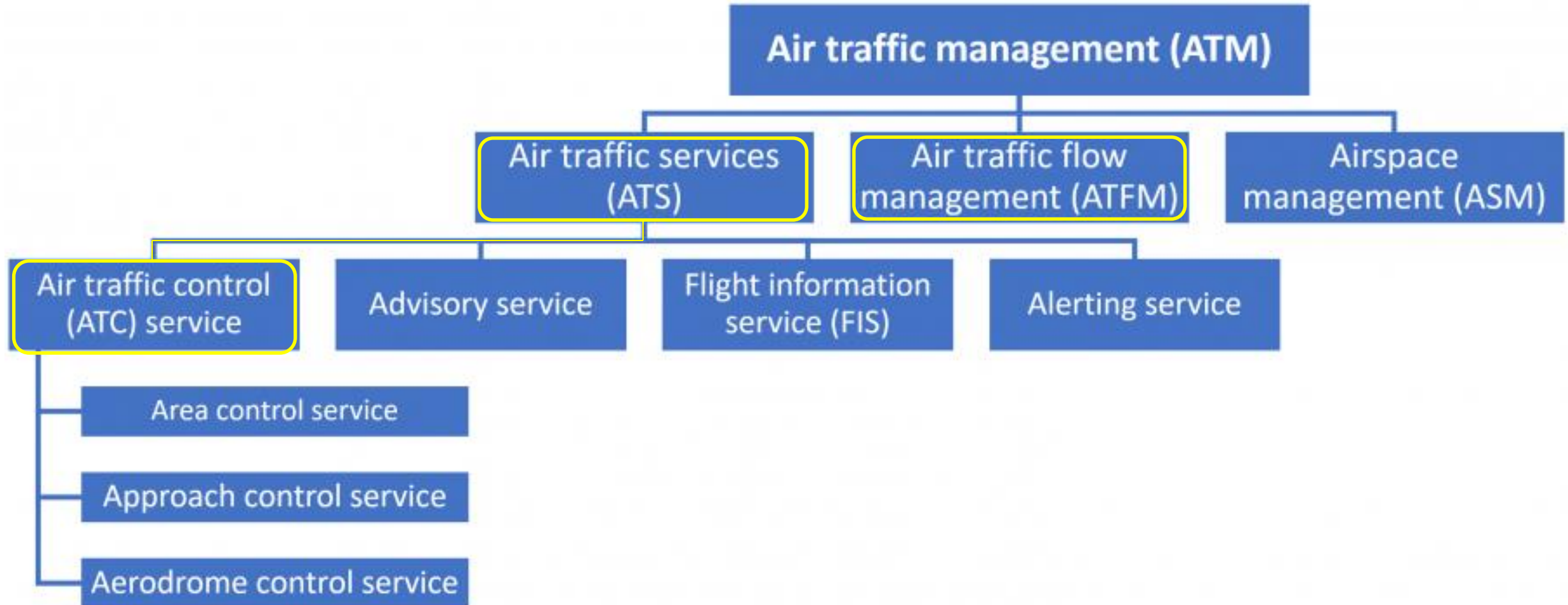


1. Brief introduction to Bangkok ATFMU Operations
2. Use of Meteorology information in Bangkok ATFMU
3. MET Information to improve ATFM Operations





ATM Operations





Demand and Capacity

Demand

Amount of air traffic at an ATM resource

Capacity

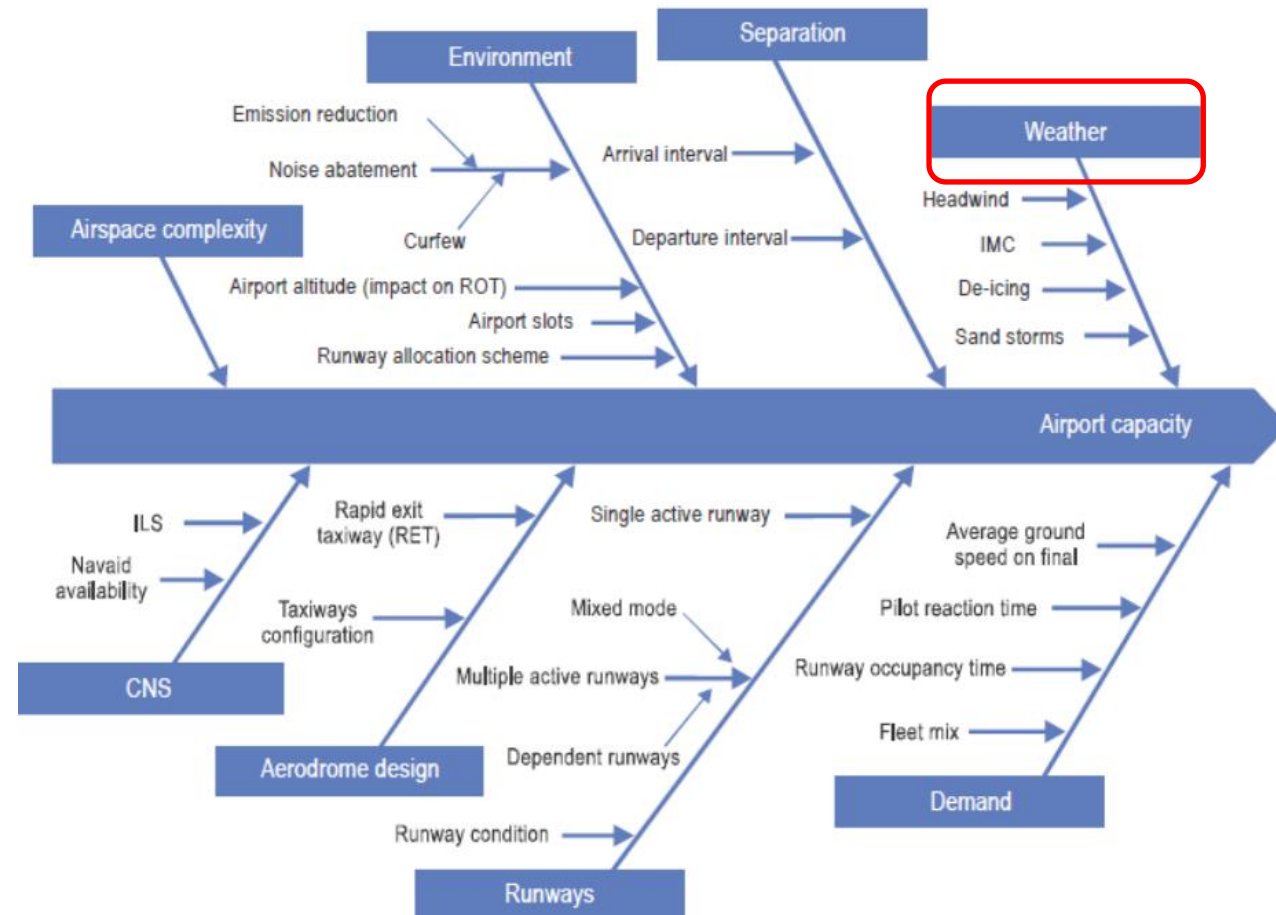
Maximum number of aircraft that can be accepted over a given period at an ATM resource



Factors that effect ATM Operations

**Airport
Capacity**

**Airspace
Capacity**

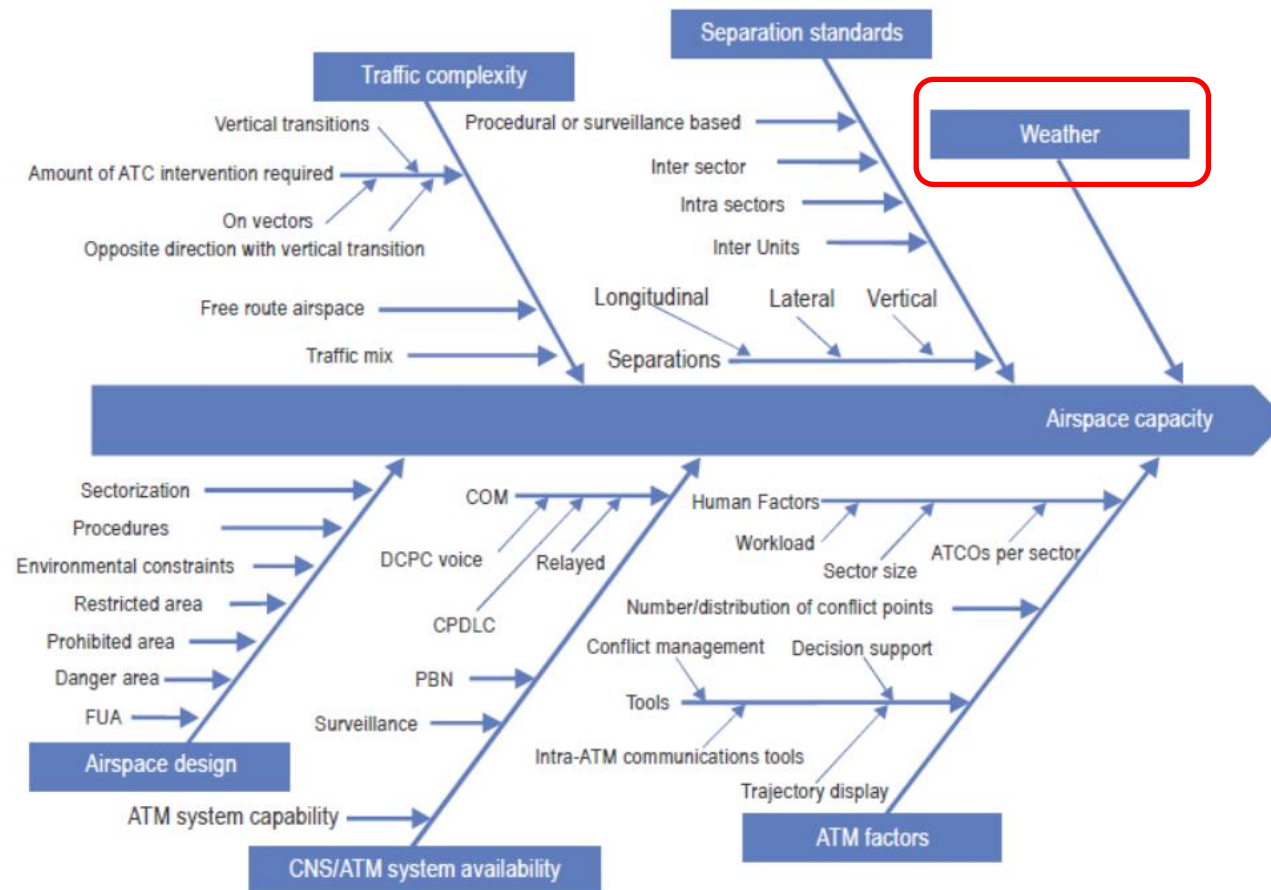




Factors that effect ATM Operations

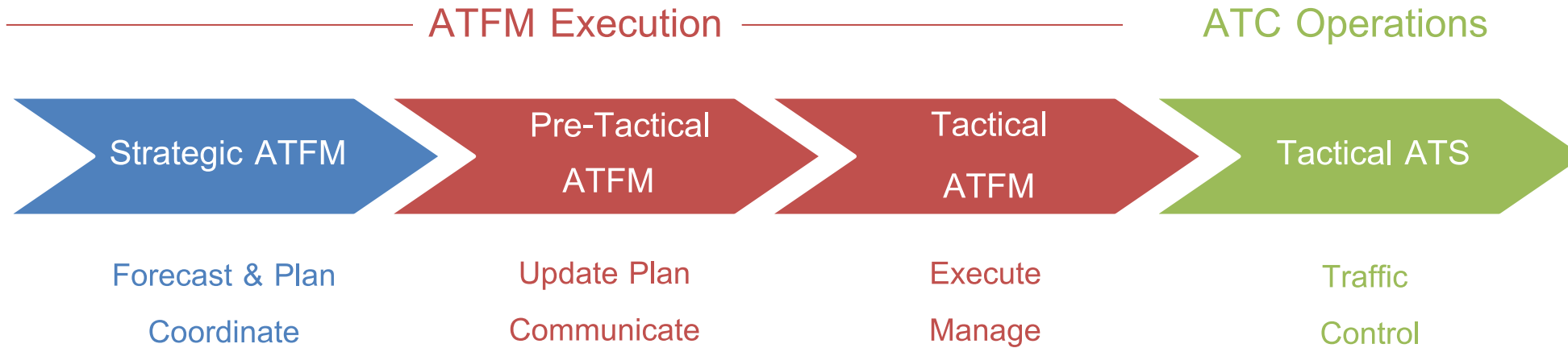
**Airport
Capacity**

**Airspace
Capacity**





Phases of ATFM Operations



Key Outputs:





Key ATFM measure

There are a lot of ATFM measures, the most effective one is the GDP.

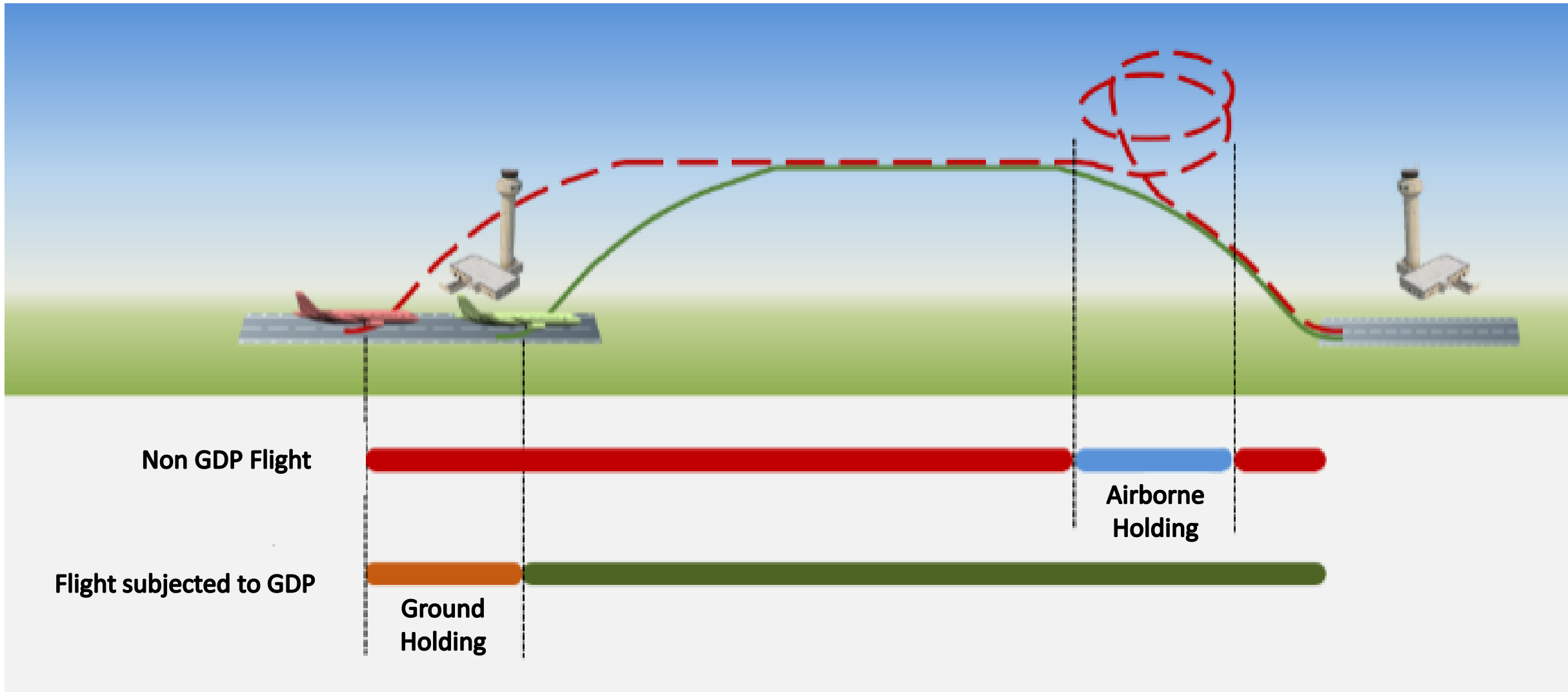
GDP provides predictability operations to all stakeholders with effective result, but it needs to know the constraint at least 2.5 - 3 hours to prepare for the measure.

CTOT will be send out 90 minutes prior to EOBT

ATFM measure	Constraint			Control mechanism	Time frame	Requirements to be effective
	Airport arrivals	Airport departures	Airspace			
GDP	X	X	X	CTOT	Pre-tactical and tactical	Participation in percentage and distance
Re-route			X	Flight path change to avoid constraint	Pre-tactical and tactical	Access to airspace and published routes
Ground stop	X			Prevent departures from specific aerodromes to address existing tactical load on an arrival aerodrome	Tactical	
MIT/MINT	X		X	Time- or distance-based separation on a single stream of traffic	Tactical	
MDI	X		X	Time-based separation from departures from the same aerodrome	Tactical	
Fix balancing	X		X	Flight path change to avoid	Tactical	
Level capping			X	Flight path change to avoid	Tactical	



Understanding the GDP

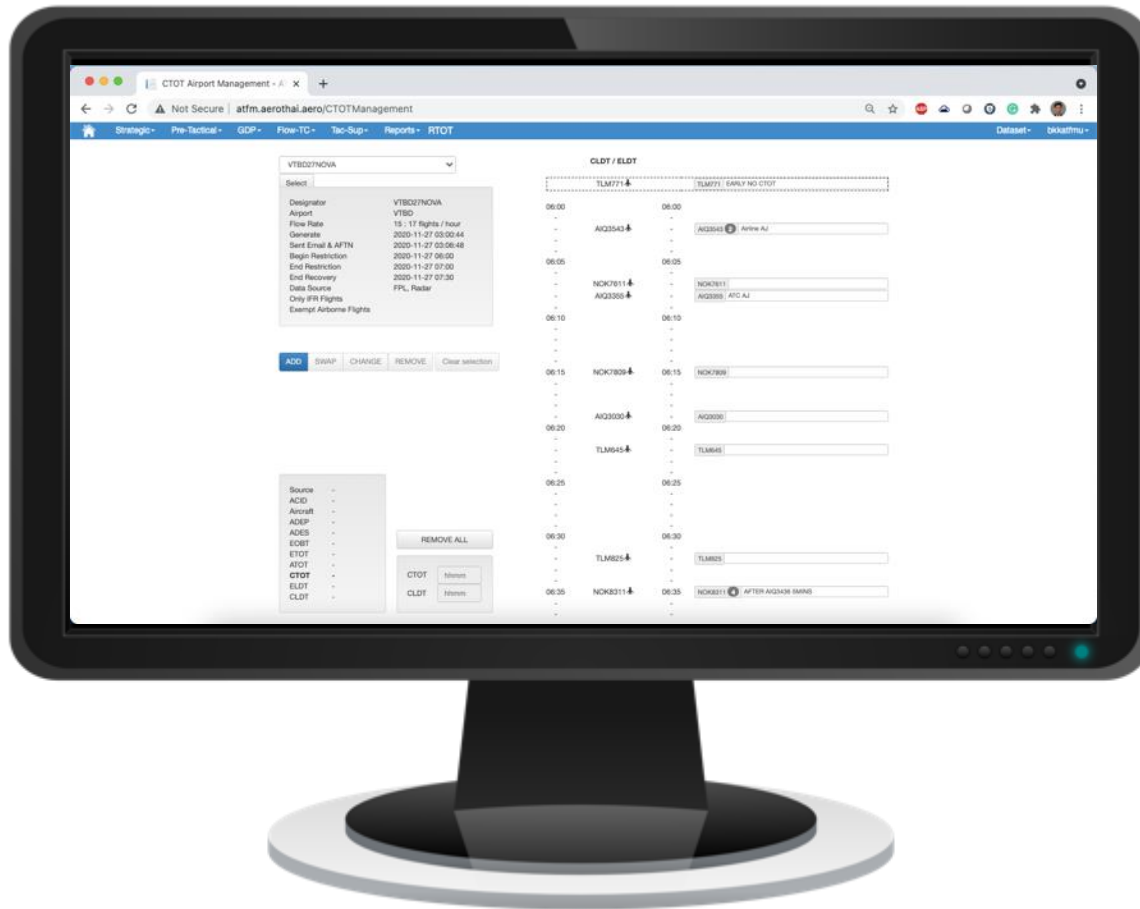




ATFM Support System

ATFAS

Air Traffic Flow Advisory System





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Use of Meteorology information in Bangkok ATFMU

Limited MET data resources

TMD is preparing the basic infrastructure to collect initial data and develop its forecast model for Nowcasting.

While this process is ongoing, some collaborations are being held between TMD and AEROTHAI using the currently available resources.

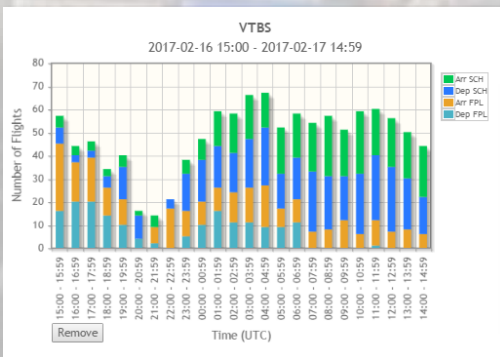


Use of Meteorology information in Bangkok ATFMU

AFTM Daily Web Conference



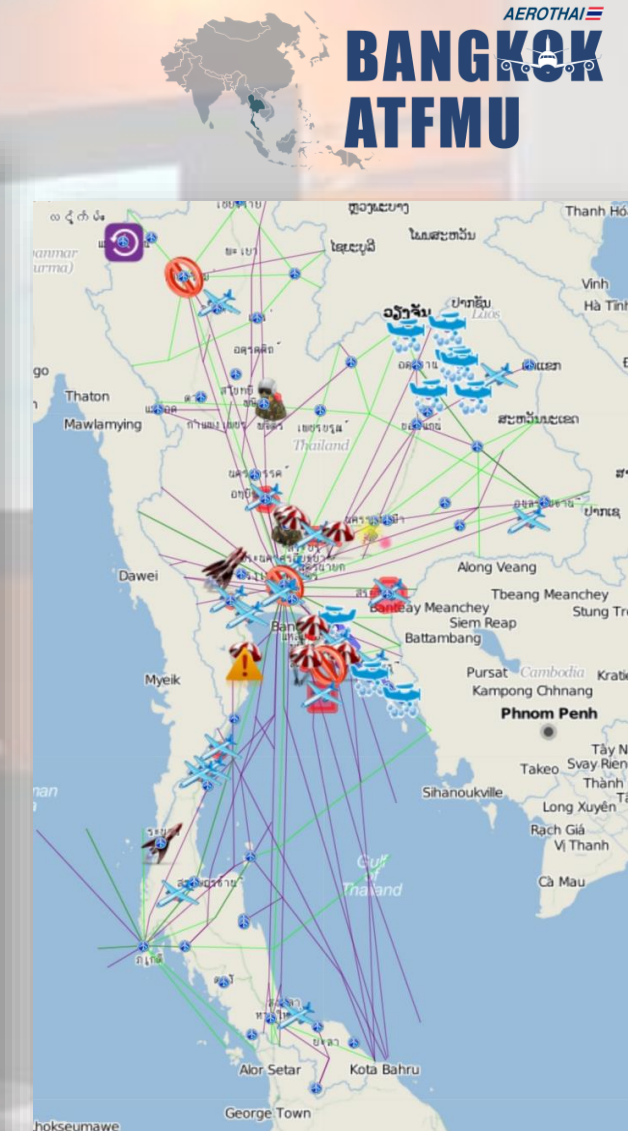
MET Briefing



Traffic demand and Capacity

ATFM DAILY PLAN (ADP)				
ORIGINATOR		VTBB		
DATE / TIME OF ISSUANCE		25 MAR 2025 / 0800 UTC		
VERSION		1		
CONSTRAINTS AND IMPACT				
LOCATION	APPLICABLE PERIOD (UTC)		DESCRIPTION	CAPACITY IMPACT
	START	END		
VTBS	26 MAR 2025 0200	26 MAR 2025 1500	TFC CONGESTION	AAR = 30
VTBS	26 MAR 2025 1900	26 MAR 2025 2330	RWY 02L/20R CLSD DUE TO WIP (NOTAM A0837/25)	(NIL)
VTBD	26 MAR 2025 0200	26 MAR 2025 1300	TFC CONGESTION	AAR = 26
VTBD	26 MAR 2025 1600	26 MAR 2025 2200	RWY 03R/21L CLSD DUE TO WIP (NOTAM A0833/25)	(NIL)
VTBB SECTOR 1S	26 MAR 2025 0200	26 MAR 2025 1000	TFC CONGESTION	MINIT = 4
VTBB SECTOR 3N	26 MAR 2025 0000-1100	26 MAR 2025 0000-1100	MIL AIR EXERCISE (AIP SUP A 15/25)	MINIT = 4-6
VTSP	26 MAR 2025 0100	26 MAR 2025 1300	TFC CONGESTION	AAR = 15
ATFM MEASURE				
LOCATION	APPLICABLE PERIOD (UTC)		DESCRIPTION	
	START	END		
VTBS	26 MAR 2025 0200	26 MAR 2025 1500	GDP for FLT Destination VTBS	
VTBD	26 MAR 2025 0200	26 MAR 2025 1300	GDP for FLT Destination VTBD (during airspace closure and congested period only)	
VTBB SECTOR 1S	26 MAR 2025 0200	26 MAR 2025 1000	GDP for FLT OPR into Sector 1S with destination VTBD,VTBS, and VTBU (during congested period only)	
VTBB SECTOR 3N	26 MAR 2025 0100	26 MAR 2025 1100	GDP for FLT OPR into Sector 3N with destination VTBD,VTBS, and VTBU (during congested period only)	
VTSP	26 MAR 2025 0100	26 MAR 2025 1300	GDP for FLT Destination VTSP	
OTHER INFORMATION				
Bangkok ATFMU Contact Information				
E-Mail: atfm@boba.aero				
Phone: +66 2287 8024 / +66 2287 8025				
CTOT View Page: https://atfm.aerorhai.aero				

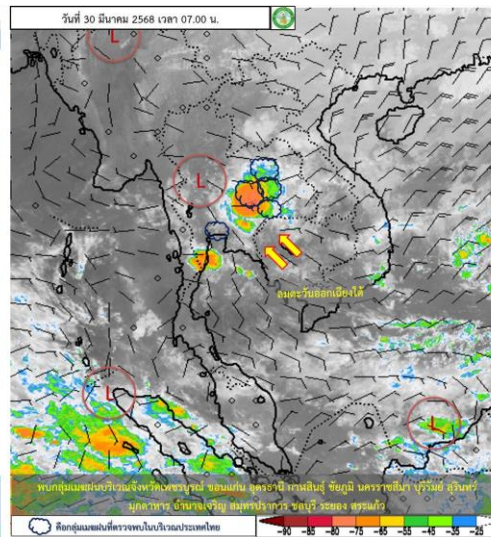
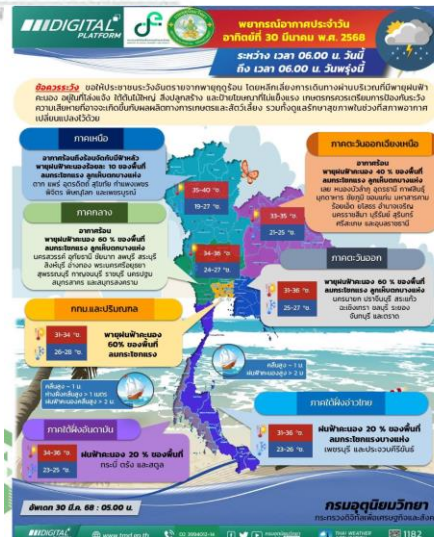
ATFM Daily Plan



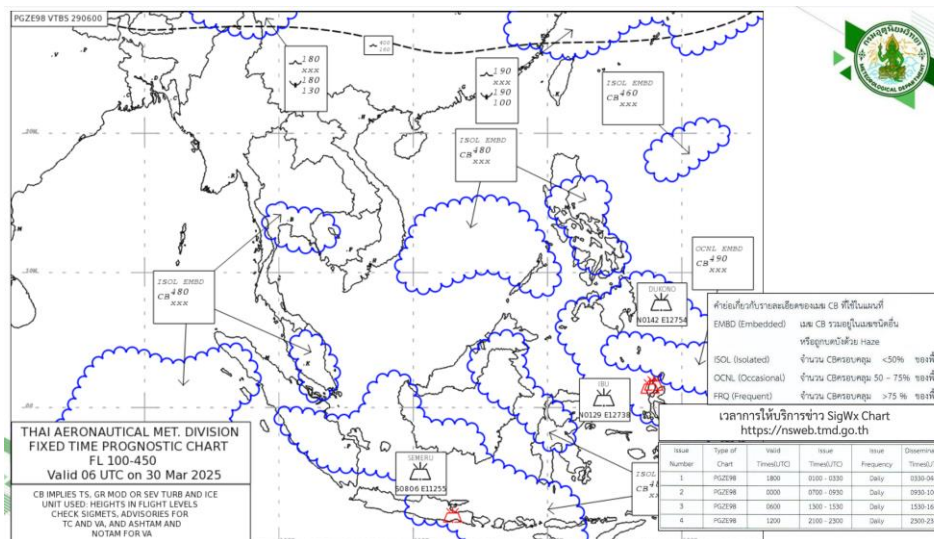
NOTAM

Use of Meteorology information in Bangkok ATFMU

MET BRIEFING PACKAGE BY TMD



Overall weather phenomena



SigWX Charts

Weather Forecast for VTBS valid (DMY) 30-03-2025 00 UTC to 30-03-2025 15 UTC

Based on: TAF VTBS 292300Z 3000/3106 12005KT 9999 FEW020 BECMG 3002/3004 19008KT TEMPO 3005/3009 VRB15KT 3000 TSRA FEW018CB SCT030 BKN100 BECMG 3022/3024 13005KT BECMG 3102/3104 2000KT

MET Elements Forecast (15hrs)		30/00>	30/01>	30/02>	30/03>	30/04>	30/05>	30/06>	30/07>	30/08>	30/09>	30/10>	30/11>	30/12>	30/13>	30/14>	30/15>
WIND	DIR/Speed (kt)	120/05	120/05	120/05	120/05	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08
	TEMPO DIR/Speed (kt)	-	-	-	-	VRB/15	VRB/15	VRB/15	VRB/15	-	-	-	-	-	-	-	-
Visibility (m)	Average	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999
	TEMPO	-	-	-	-	3000	3000	3000	3000	-	-	-	-	-	-	-	-
Weather	Type 01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEMPO Type 02	-	-	-	-	TSRA	TSRA	TSRA	TSRA	-	-	-	-	-	-	-	-
Ceiling (ft)	1st Cloud Layer	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
	TEMPO	-	-	-	-	1800	1800	1800	1800	-	-	-	-	-	-	-	-
Temperature (C)	TEMPO	29	29	30	30	31	31	31	30	29	28	28	28	28	28	28	28
	Pressure (hPa)	1010	1011	1012	1012	1011	1010	1009	1008	1008	1009	1010	1011	1011	1011	1011	1012

Weather Forecast for VTBD valid (DMY) 30-03-2025 00 UTC to 30-03-2025 15 UTC

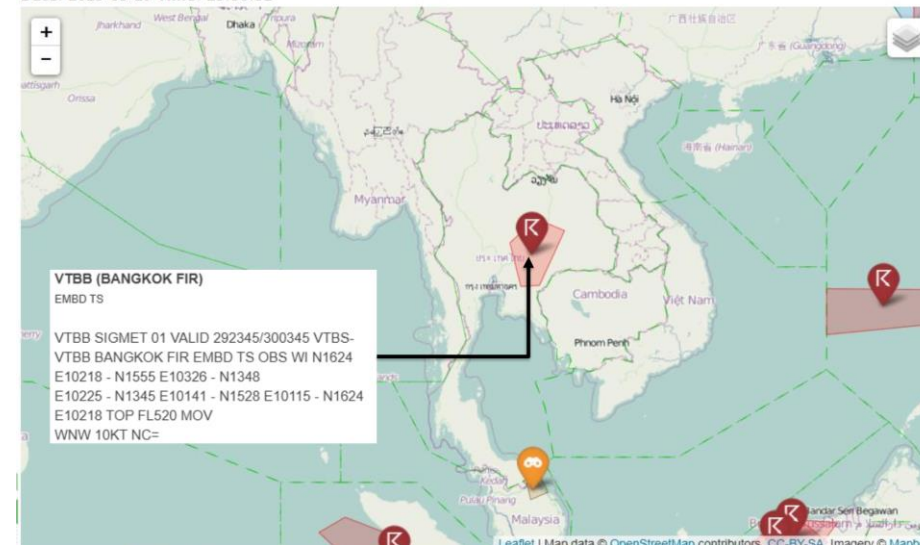
Based on: TAF VTBD 292300Z 3000/3106 12005KT 9999 FEW020 BECMG 3002/3004 18008KT TEMPO 3005/3009 VRB15KT 3000 TSRA FEW018CB SCT030 BKN100 BECMG 3022/3024 12005KT BECMG 3102/3104 1900KT

MET Elements Forecast (15hrs)		30/00>	30/01>	30/02>	30/03>	30/04>	30/05>	30/06>	30/07>	30/08>	30/09>	30/10>	30/11>	30/12>	30/13>	30/14>	30/15>
WIND	DIR/Speed (kt)	120/05	120/05	120/05	120/05	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08
	TEMPO DIR/Speed (kt)	-	-	-	-	VRB/15	VRB/15	VRB/15	VRB/15	-	-	-	-	-	-	-	-
Visibility (m)	Average	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999	9999
	TEMPO	-	-	-	-	3000	3000	3000	3000	-	-	-	-	-	-	-	-
Weather	Type 01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEMPO Type 02	-	-	-	-	TSRA	TSRA	TSRA	TSRA	-	-	-	-	-	-	-	-
Ceiling (ft)	1st Cloud Layer	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
	TEMPO	-	-	-	-	1800	1800	1800	1800	-	-	-	-	-	-	-	-
Temperature (C)	TEMPO	28	29	30	31	32	33	33	33	33	32	31	30	29	28	28	28
	Pressure (hPa)	1010	1011	1012	1012	1012	1011	1010	1009	1008	1008	1009	1010	1011	1011	1012	1012

Detailed Aerodrome Forecast based on TAF

Report generated at:

Date: 2025-03-29 Time: 23:58:52



Graphical SIGMET/AIRMET



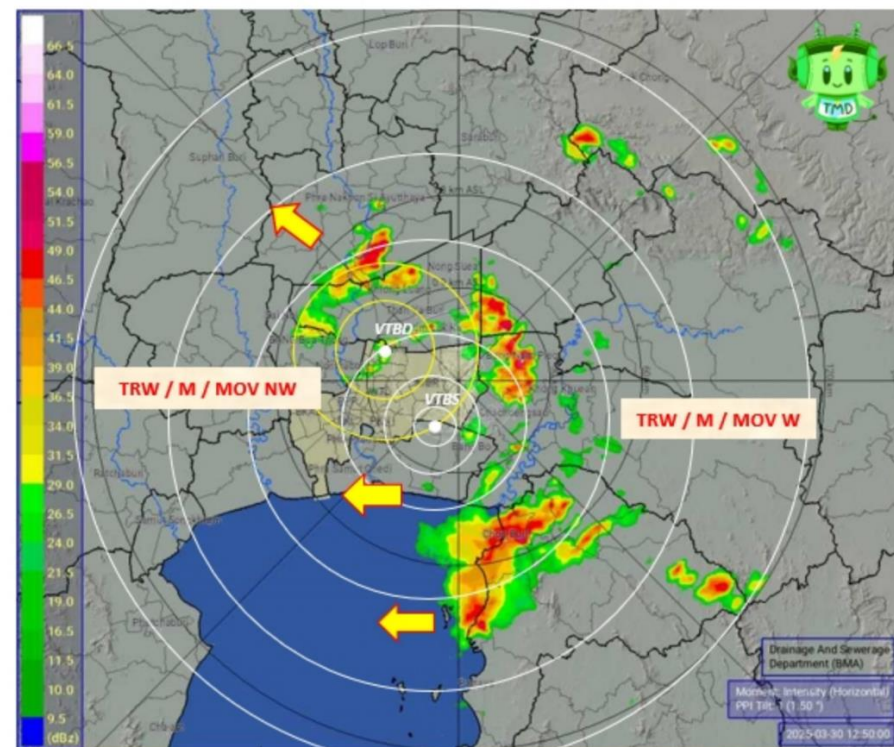
Routine RADAR report from TMD

- Type of rain
- Intensity
- Status (Increase, Decrease, No change)
- Direction



ส่วนตรวจและเฝ้าระวังด้วยเครื่องมือพิเศษ กองอุตุนิยมวิทยาการบิน

วันที่ 30 มีนาคม 2568 เวลา 12.50 น.

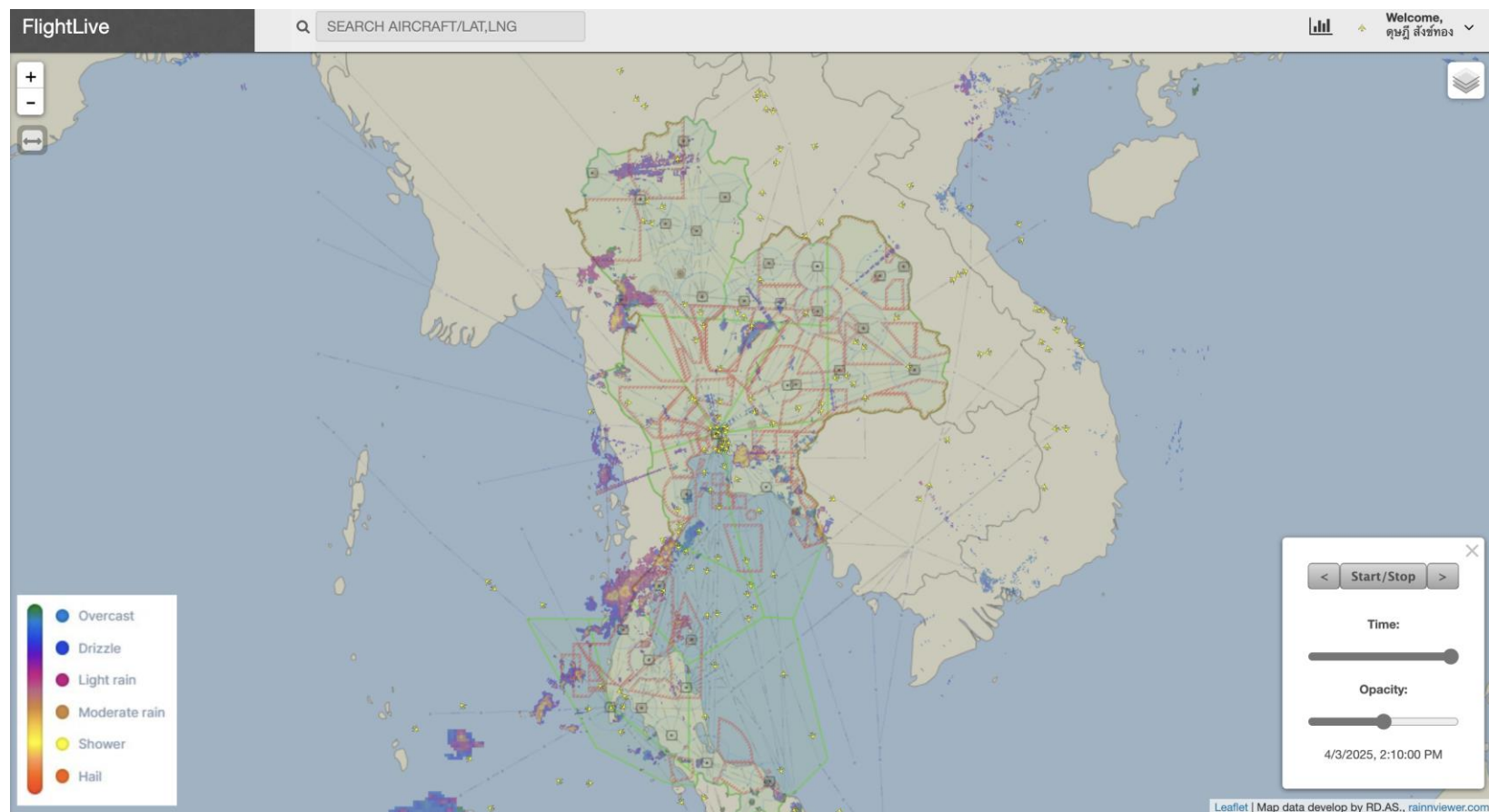


ชนิดของฝน	ความรุนแรงของฝน	แนวโน้มความรุนแรงของฝน
TRW = Thunder Rain Shower	L = ฝนเล็กน้อย, ฝนเบา, ฝนอ่อน (Light Rain)	+ = เพิ่มขึ้น (Increase)
RW = Rain Shower	M = ฝนปานกลาง (Moderate Rain)	- = ลดลง (Decrease)
R = Rain	H = ฝนหนัก (Heavy Rain)	NC = ไม่เปลี่ยนแปลง (No Change)
ทิศทางการเคลื่อนตัว	MOV = Movement (การเคลื่อนตัว)	STNRY = Stationary (ไม่เคลื่อนตัว)
Report Form : ชนิดของฝน / ความรุนแรงของฝน / แนวโน้มความรุนแรงของฝน / ทิศทางการเคลื่อนตัว		
ที่มาของภาพเรดาร์ : สำนักการระบายน้ำ กรุงเทพมหานคร		



Composite RADAR Overlay in Flight Live System

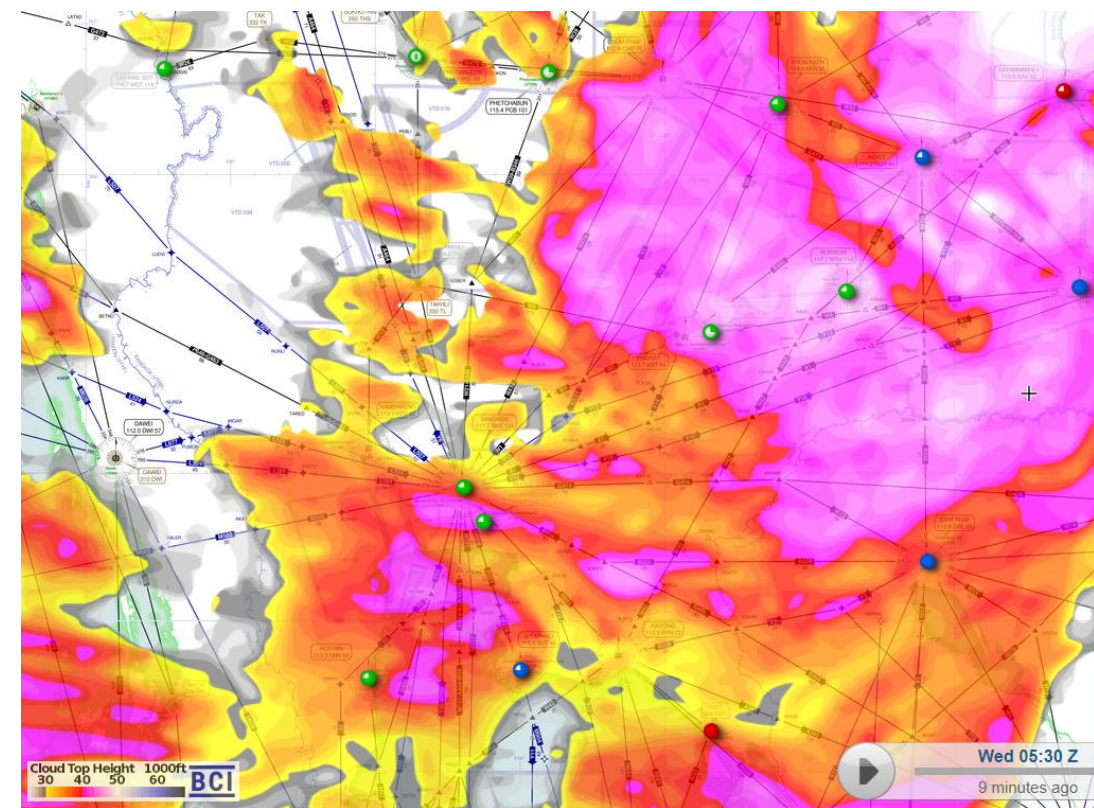
- Developed by an AEROTHAI R&D Engineer
- Weather RADAR information sourced from Rain Viewer
- Provide basic situation awareness for ATS operations and ATFM weather monitoring.





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Information to improve the ATFM Operations



Suvarnabhumi Airport (VTBS) is a major airport in Thailand that consistently operates at full capacity. However, adverse weather conditions can make air traffic control (ATC) operations difficult.

Weather impacts include:

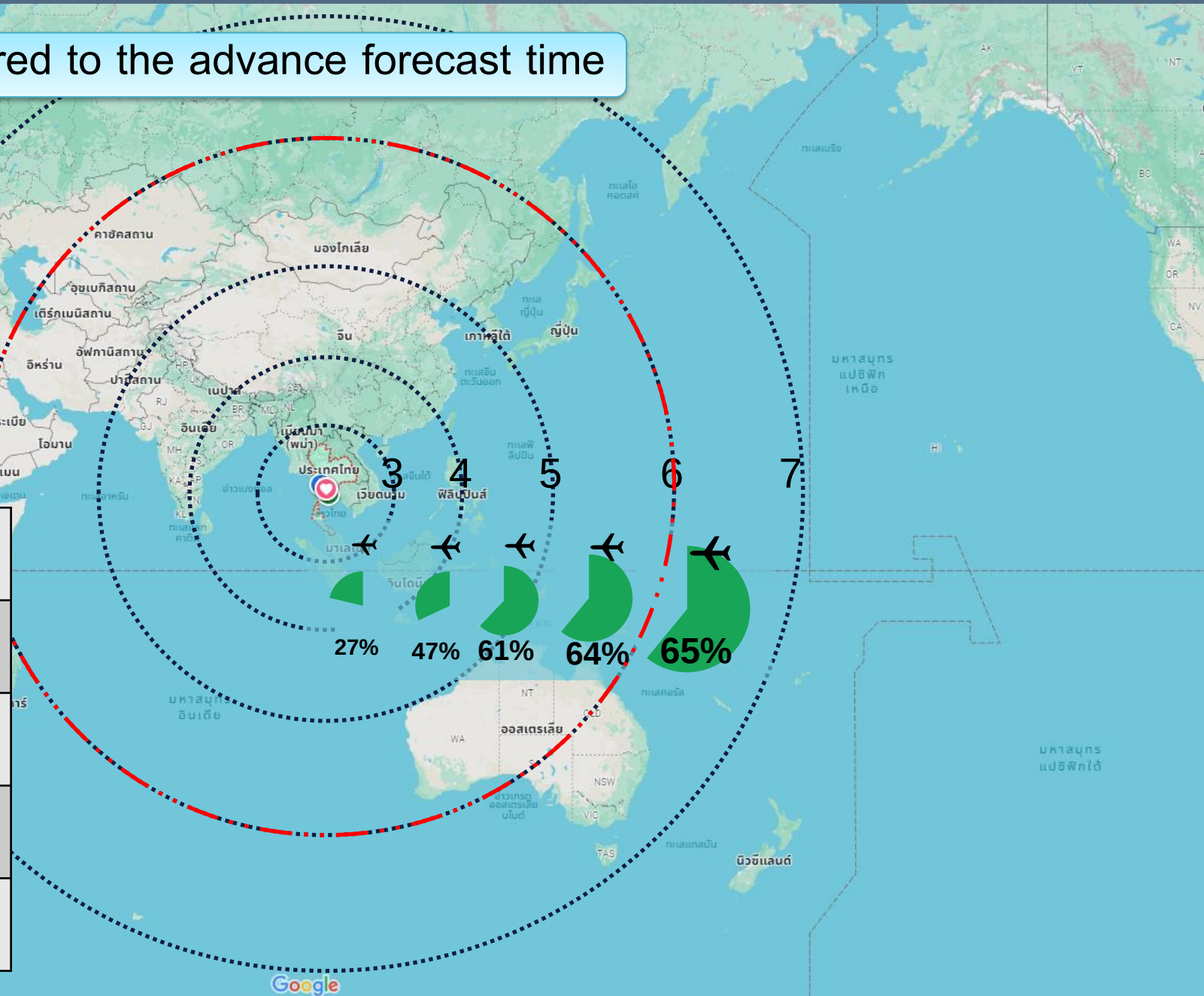
SUMMER – Characterised by summer thunderstorms, occurring without a specific pattern.

RAINY – Influenced by the Southwest Monsoon, coming from the southwest.

Information to improve the ATFM Operations

Manageable Traffic at VTBS compared to the advance forecast time

3 Hour Forecast	42%
4 Hour Forecast	47%
5 Hour Forecast	61%
6 Hour Forecast	64%
7 Hour Forecast	65%

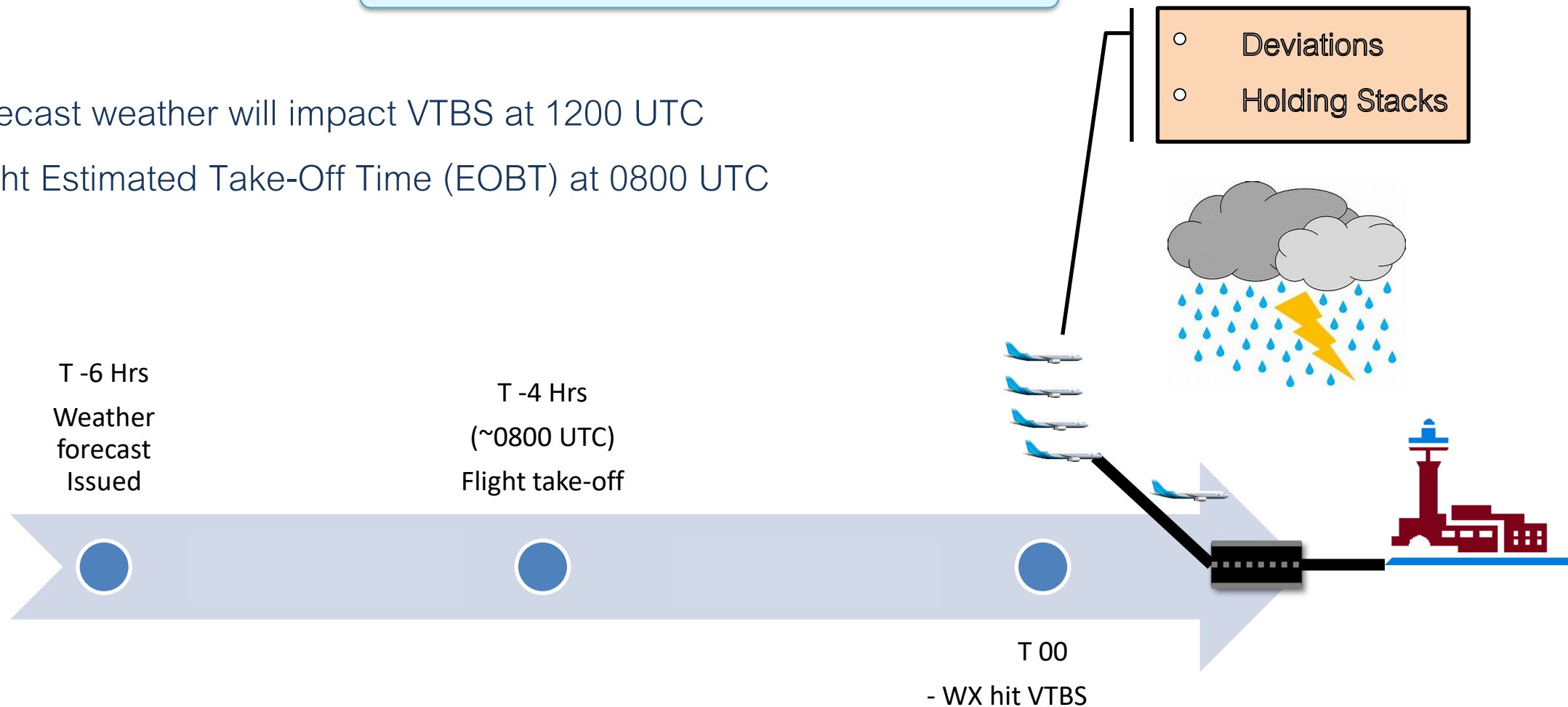




Information to improve the ATFM Operations

Use of GDP

- Forecast weather will impact VTBS at 1200 UTC
- Flight Estimated Take-Off Time (EOBT) at 0800 UTC

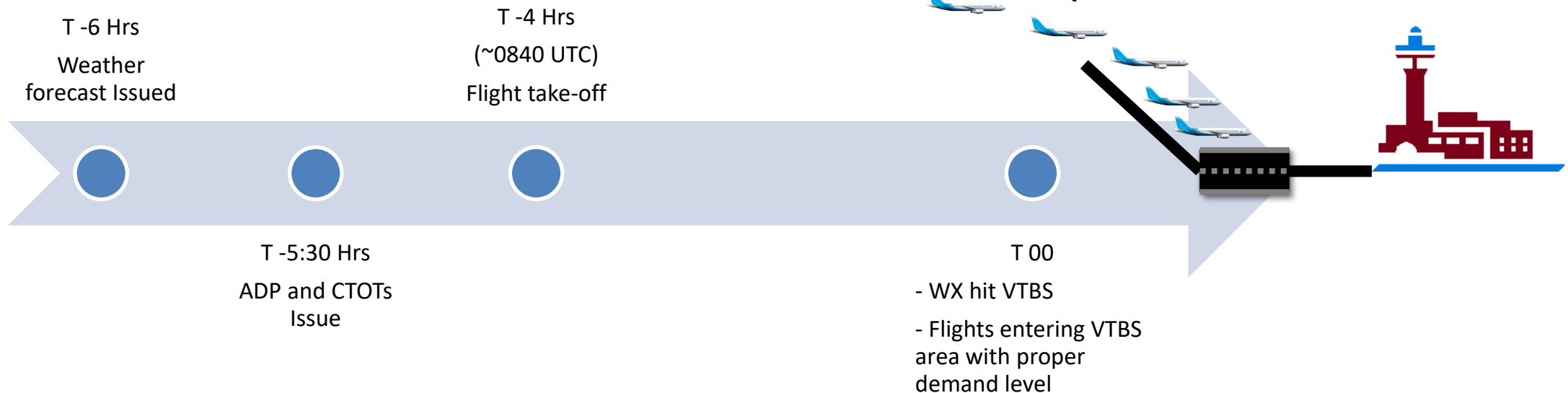




Information to improve the ATFM Operations

Use of GDP

- Forecast weather will impact VTBS at 1200 UTC
- Flight Estimated Take-Off Time (EOBT) at 0800 UTC
- Calculated Take-Off Time (CTOTs) send out for flights destination VTBS





Tailored MET for ATM User Requirements

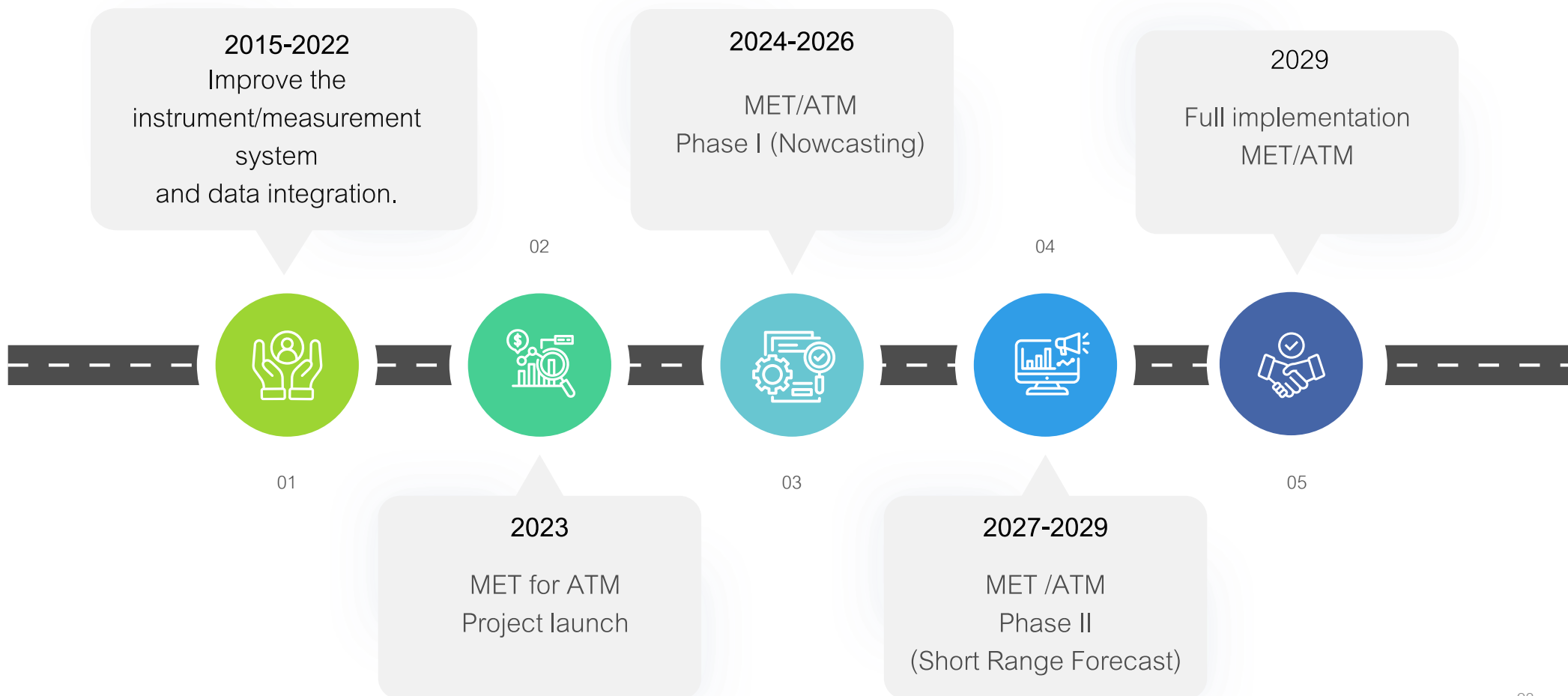
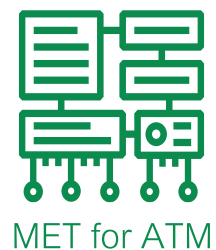
- MET data which published 3-6 hours in advance for ATM impact analysis
- MET Impact depicted on ATM resources map (Sector, TMA) for further analysis on the capacity reduction.
- Forecast MET data for ACC Sectors, TMA, and Aerodrome
- Alerts and notifications when the forecast has been updated.





Future TMD and AEROTHAI Collaboration

ROADMAP OF TMD MET for ATM





Q & A

