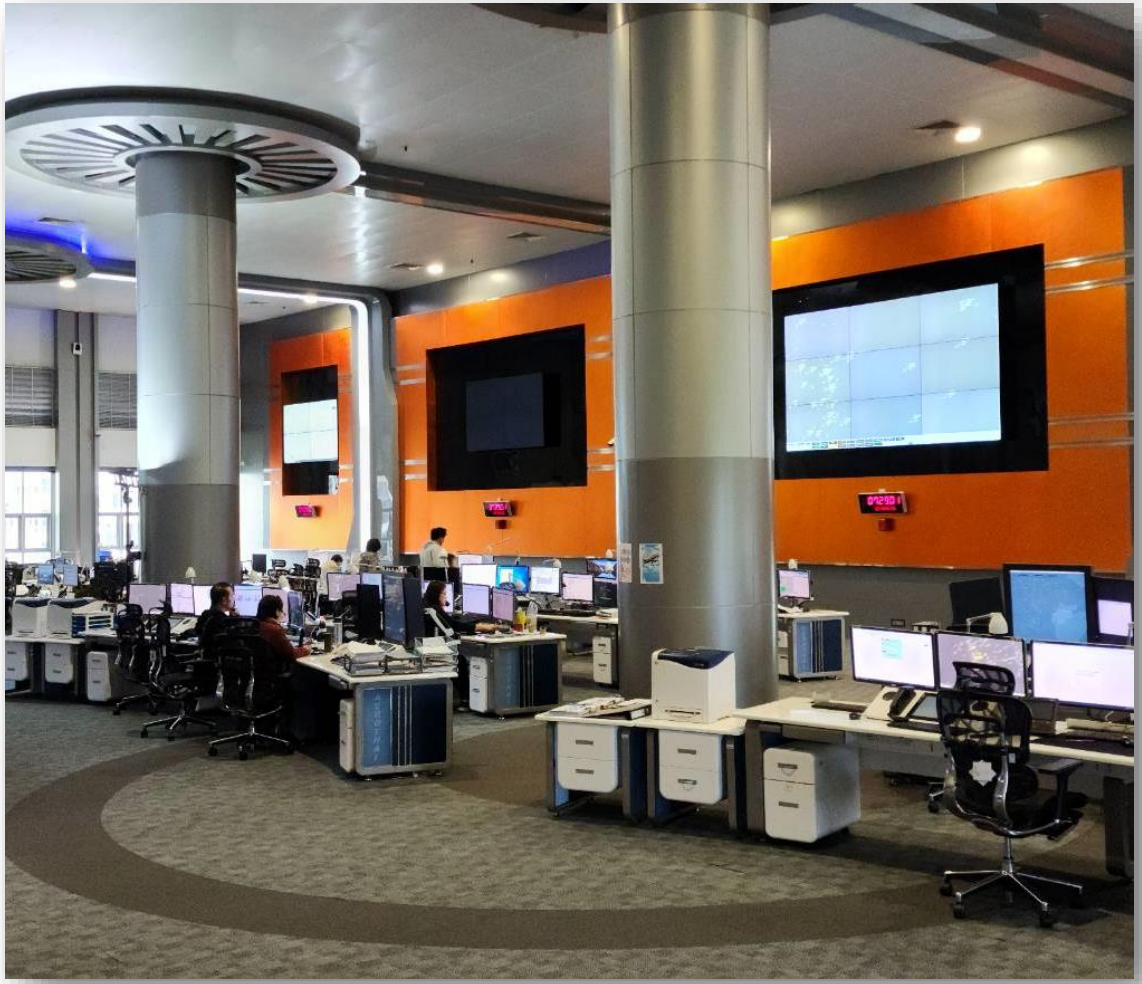
AEROTHAI Aeronautical Radio of Thailand
บริษัท วิทยุการบินแห่งประเทศไทย จำกัด

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



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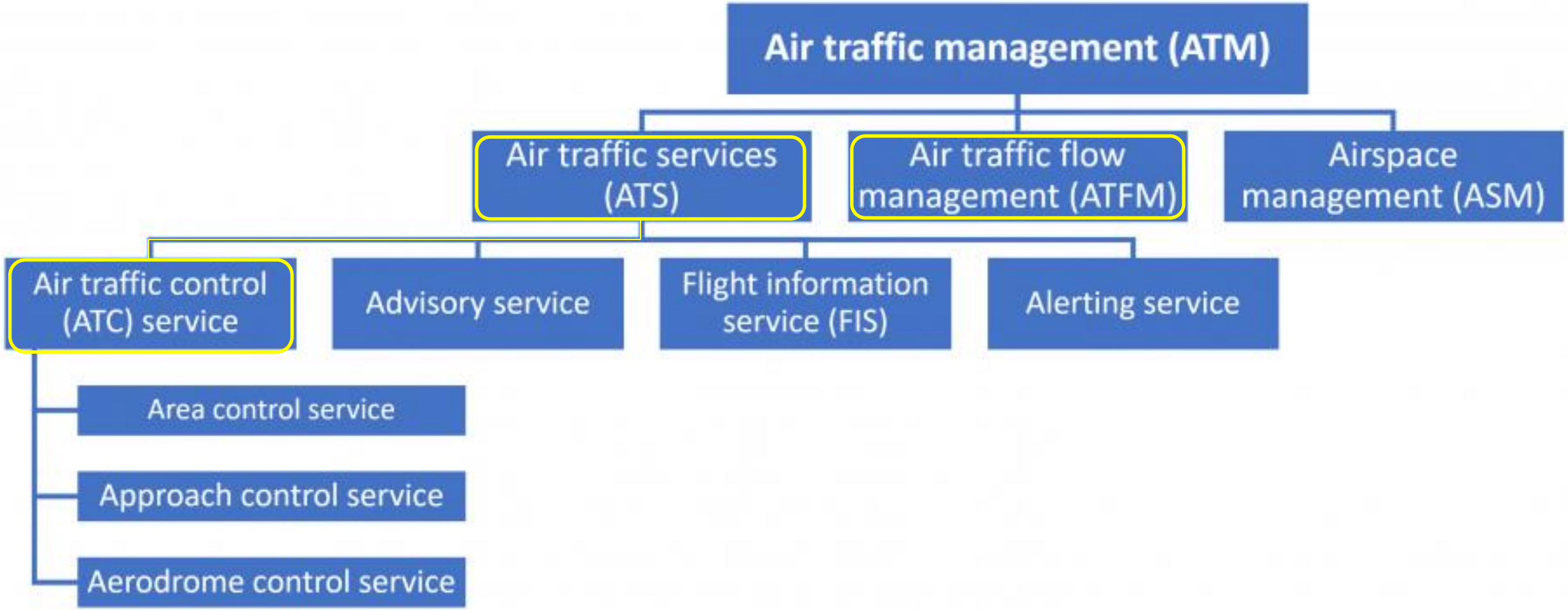
ATM Operations



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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

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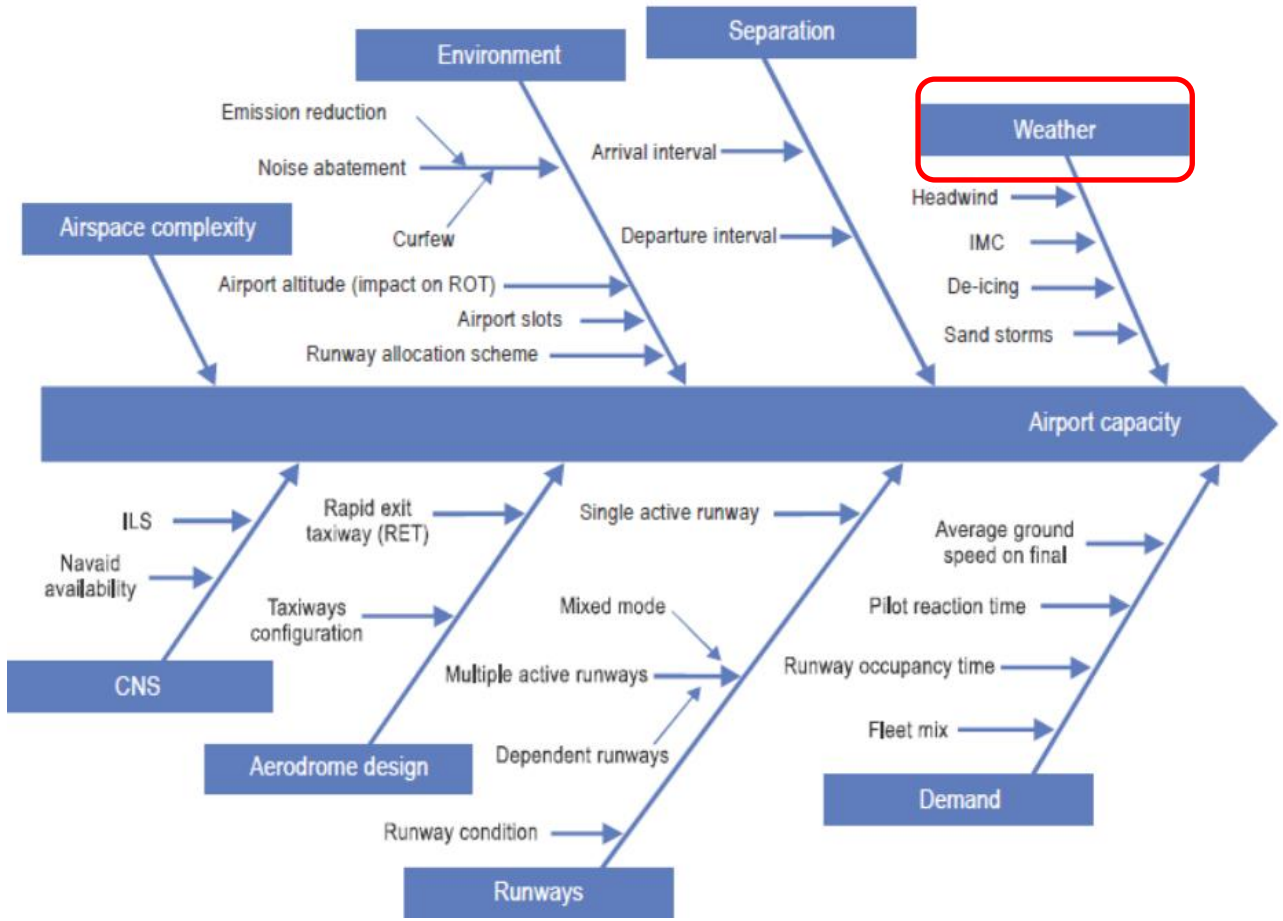
Factors that effect ATM Operations

Airport Capacity

Airspace Capacity

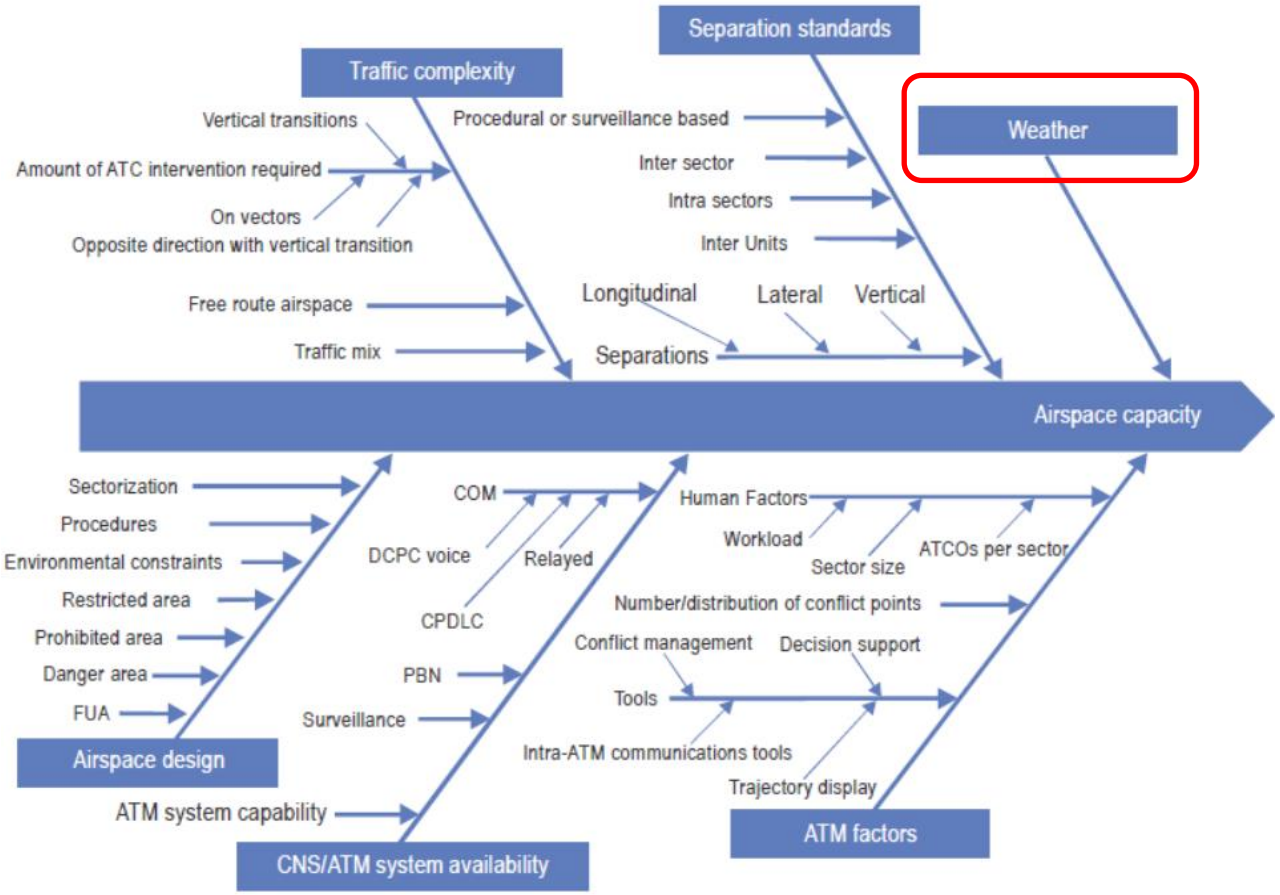


Brief introduction to Bangkok ATFMU Operations

Factors that effect ATM Operations

Airport Capacity

Airspace Capacity



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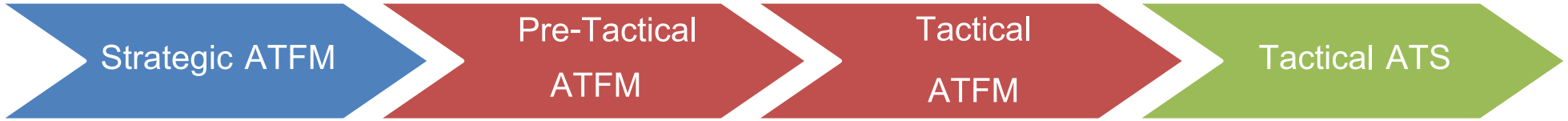
Phases of ATFM Operations

ATFM Execution — ATC Operations



Strategic ATFM	Pre-Tactical ATFM	Tactical ATFM	Tactical ATS
Forecast & Plan	Update Plan	Execute	Traffic
Coordinate	Communicate	Manage	Control

Key Outputs:

Strategic ATFM	Pre-Tactical ATFM	Tactical ATFM	Tactical ATS
Strategic / Initial ATFM Plan	ATFM Daily Plan	ATFM Measures & Balanced Demand	Safe Flight Operations

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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	

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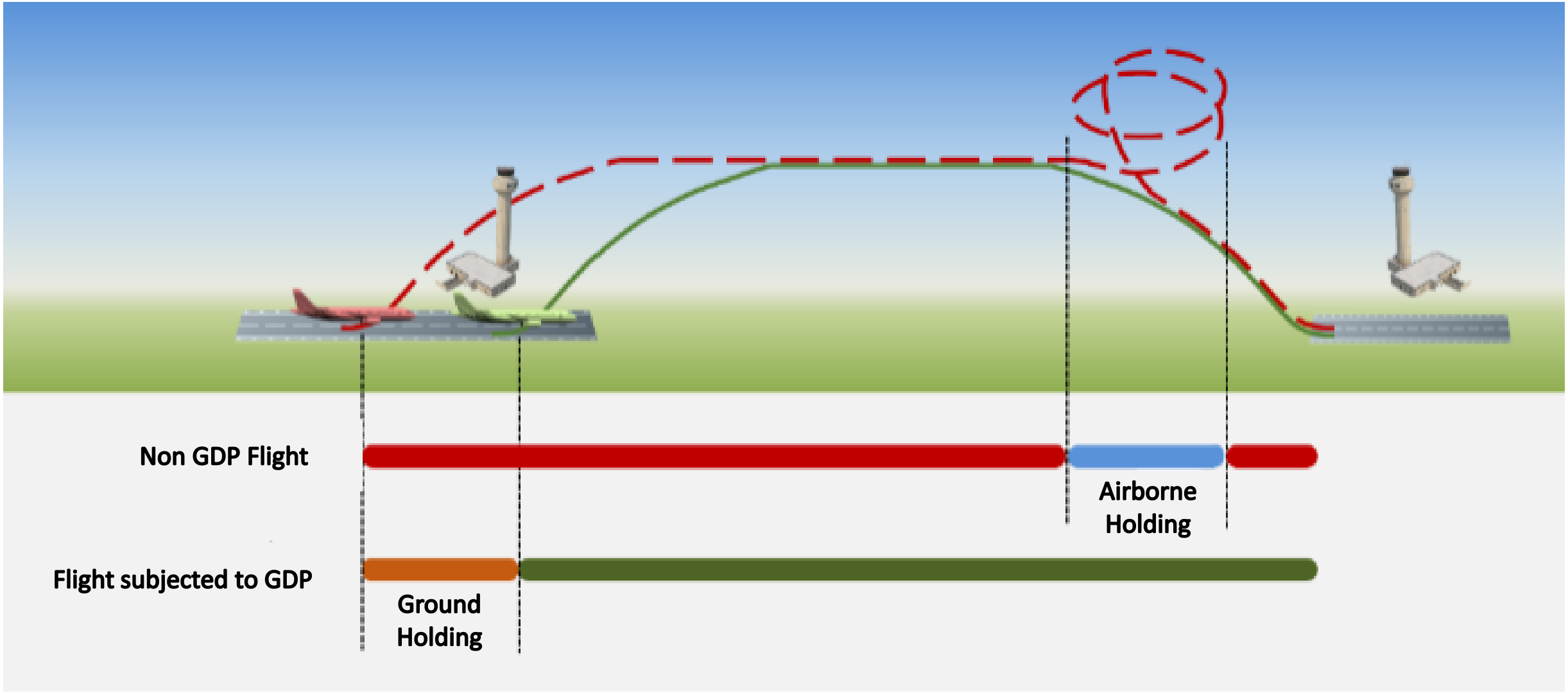
Understanding the GDP



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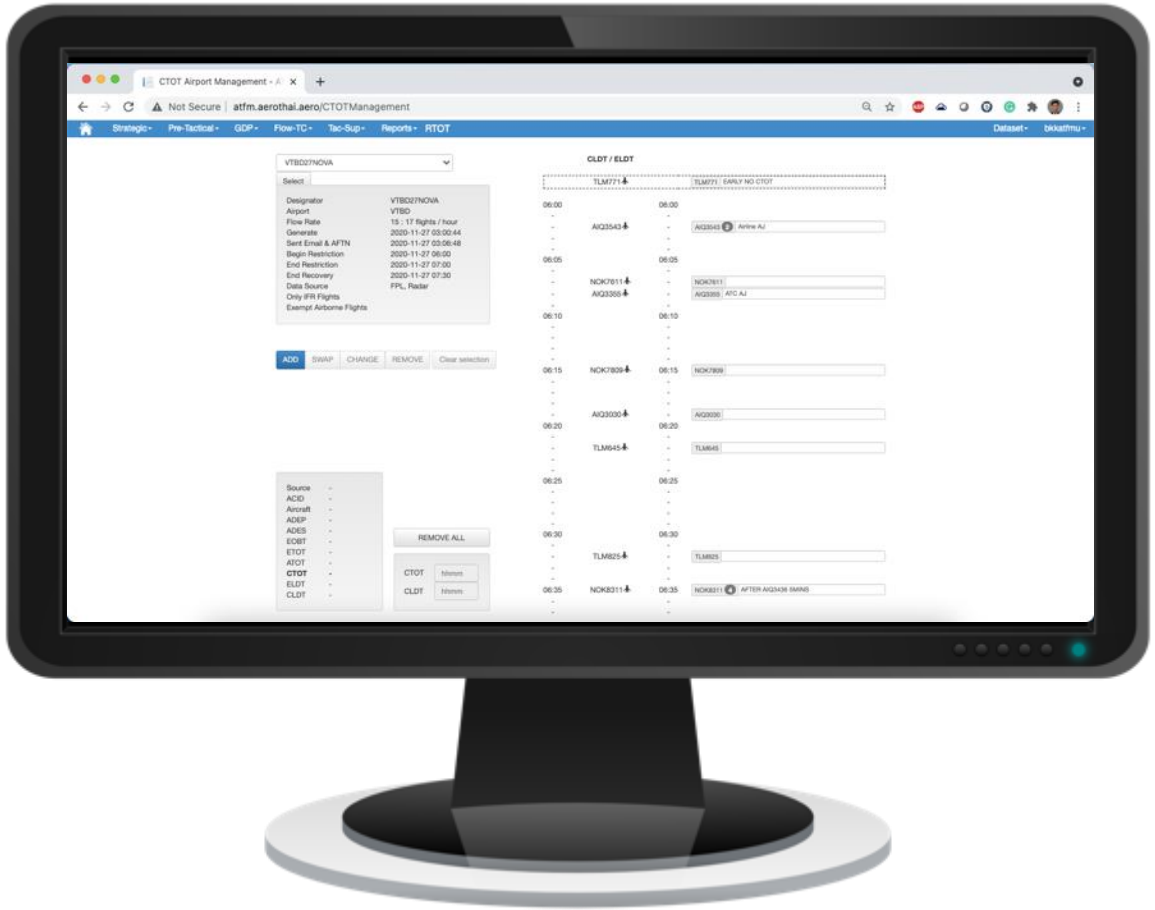
ATFM Support System

ATFAS

Air Traffic Flow Advisory System



https://atfm.aerothai.aero

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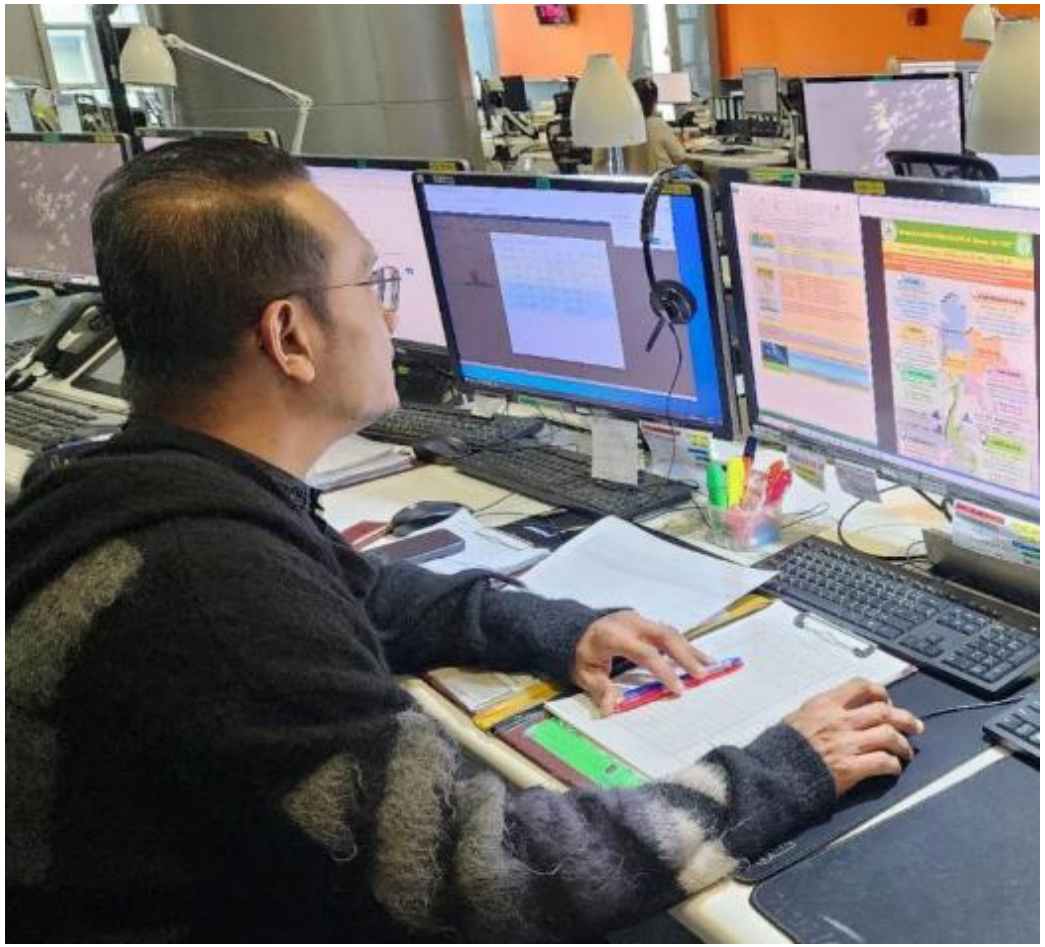


Use of Meteorology information in Bangkok ATFMU

Limited MET data resources

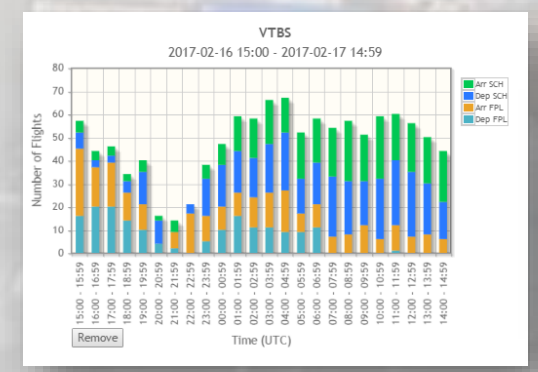
TMD is preparing the basic infrastructure to collect initial data and develop its forecast model for Nowcasting.

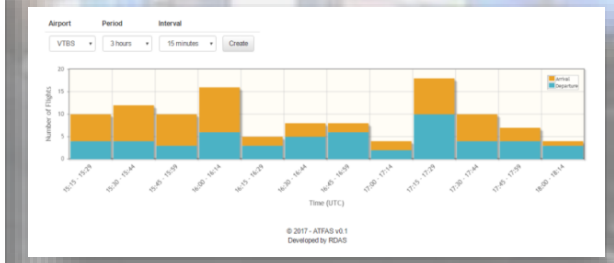
While this process is ongoing, some collaborations are being held between TMD and AEROTHAI using the currently available resources.

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) START	APPLICABLE PERIOD (UTC) END	DECRIPTION	CAPACITY IMPACT
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

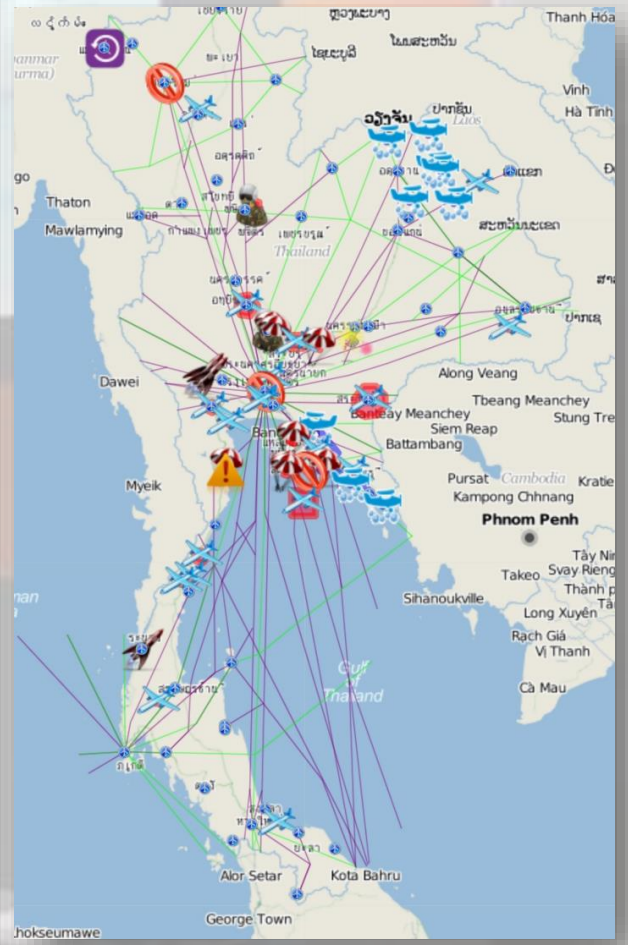
ATFM MEASURE

LOCATION	APPLICABLE PERIOD (UTC) START	APPLICABLE PERIOD (UTC) END	DECRIPTION
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: atfmu@bobcat.aero
Phone: +66 2287 8024 / +66 2287 8025
CTOT View Page: https://atfm.aerothai.aero

ATFM Daily Plan



NOTAM

Use of Meteorology information in Bangkok ATFMU

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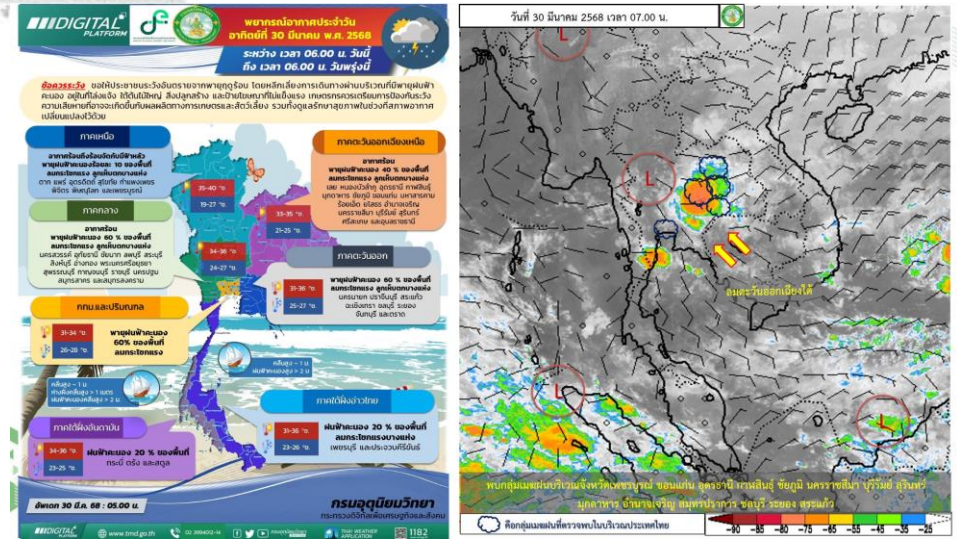
MET BRIEFING PACKAGE BY TMD



Overall weather phenomena

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

Based on: TAF VTBS 292300Z 3000/3106 13005KT 9999 FEW020 BECMG 3002/3004 19008KT TEMPO 3005/3009 VRB15KT 3000 TSRA FEW018CB SCT030 BKN100 BECMG 3022/3024 13005KT BECMG 3102/3104 20008KT=

MET Elements Forecast (15Hrs)			DD/HH (UTC)														
			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)	130/05	130/05	130/05	130/05	190/08	190/08	190/08	190/08	190/08	190/08	190/08	190/08	190/08	190/08	190/08	190/08
		Gust (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEMPO	DIR/Speed (kt)	-	-	-	-	-	VRB15	VRB15	VRB15	VRB15	-	-	-	-	-	-	-
		Gust (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Type 02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEMPO	Type 01	-	-	-	-	-	TSRA	TSRA	TSRA	TSRA	-	-	-	-	-	-	-
		Type 02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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)			29	29	30	30	30	31	31	31	30	30	29	29	28	28	28	28
Pressure (hPa)			1010	1011	1012	1012	1011	1011	1010	1009	1008	1008	1009	1009	1010	1011	1011	1012

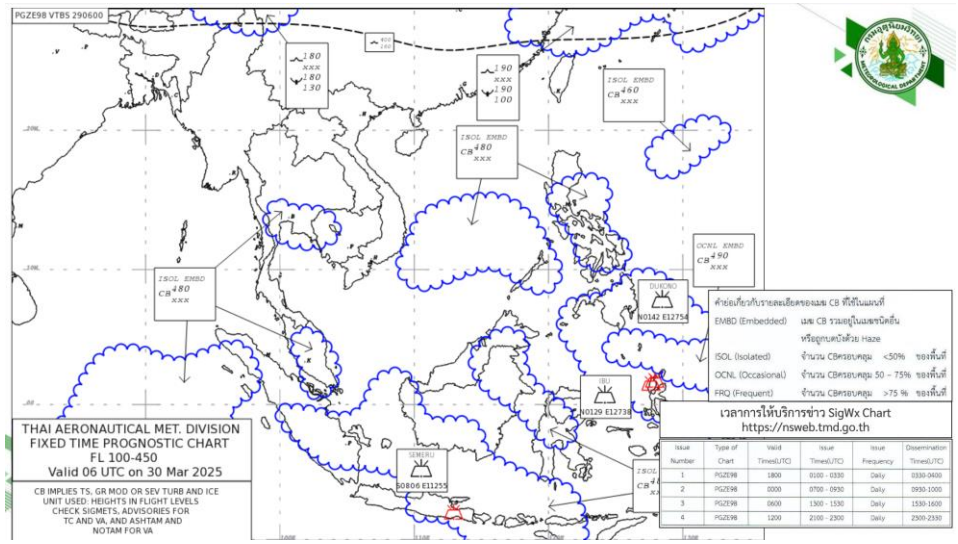
Weather Forecast for VTBD valid (DMY) 30-03-2025 00 UTC to 30-03-2025 15 UTC

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 19008KT=

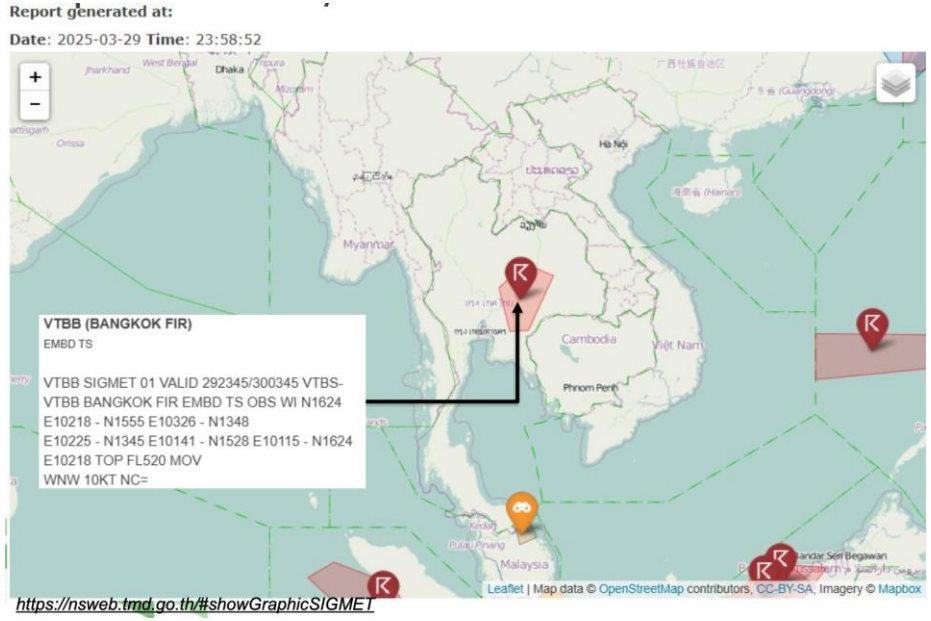
MET Elements Forecast (15Hrs)			DD/HH (UTC)														
			30/00->	30/01->	30/02->	30/03->	30/04->	30/05->	30/06->	30/07->	30/08->	30/09->	30/10->	30/11->	30/12->	30/13->	30/14->	30/15->
WIND		DIR/Speed (kt)	120/05	120/05	120/05	120/05	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08	180/08
		Gust (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEMPO	DIR/Speed (kt)	-	-	-	-	-	VRB15	VRB15	VRB15	VRB15	-	-	-	-	-	-	-
		Gust (kt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Type 02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TEMPO	Type 01	-	-	-	-	-	TSRA	TSRA	TSRA	TSRA	-	-	-	-	-	-	-
		Type 02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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)			28	29	30	31	32	33	33	33	33	33	32	31	30	29	29	28
Pressure (hPa)			1010	1011	1012	1012	1012	1011	1010	1009	1008	1008	1008	1009	1010	1011	1012	1012

หมายเหตุ : ข้อมูลที่แสดงในตาราง เบื้องต้นเป็นการ decode จากข่าว TAF แต่อาจมีการเปลี่ยนแปลงแก้ไขข้อมูลบางเวลาตามความเหมาะสมและเป็นปัจจุบัน Updated on : 30-03-2025 00:24 UTC

Detailed Aerodrome Forecast based on TAF



SigWX Charts



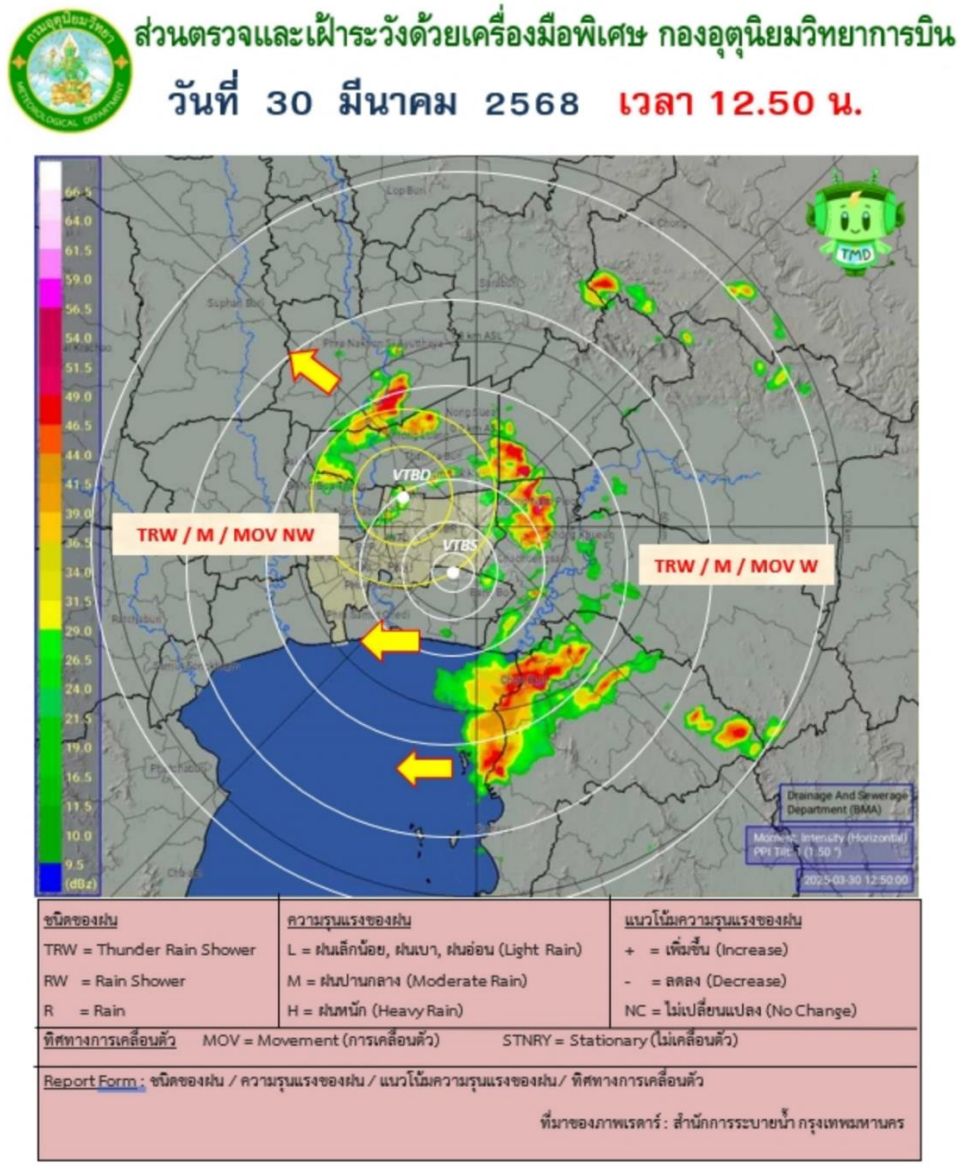
https://nsweb.tmd.go.th/#showGraphicSIGMET

Graphical SIGMET/AIRMET

Use of Meteorology information in Bangkok ATFMU

Routine RADAR report from TMD

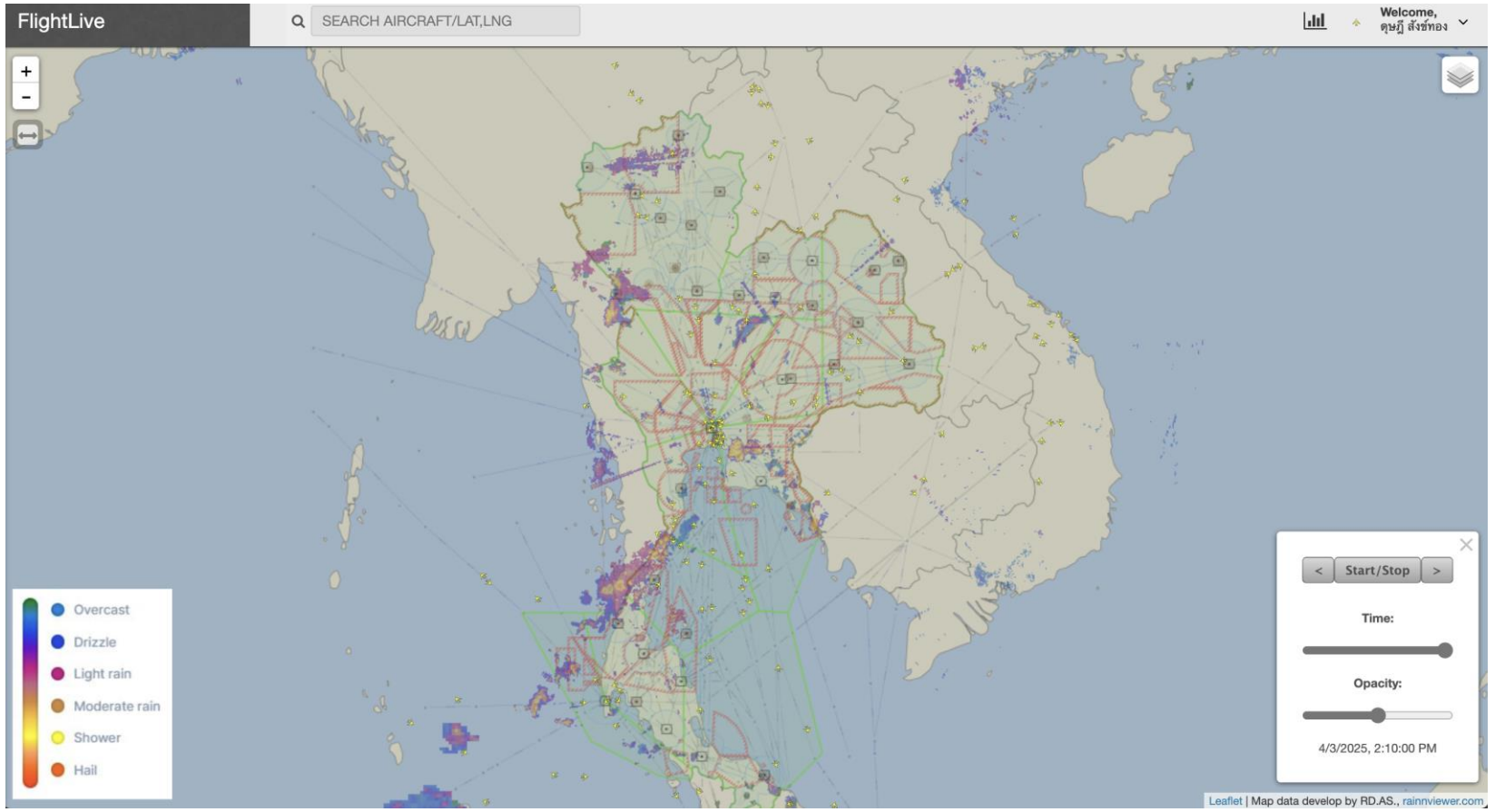
- Type of rain
- Intensity
- Status (Increase, Decrease, No change)
- Direction



Use of Meteorology information in Bangkok ATFMU

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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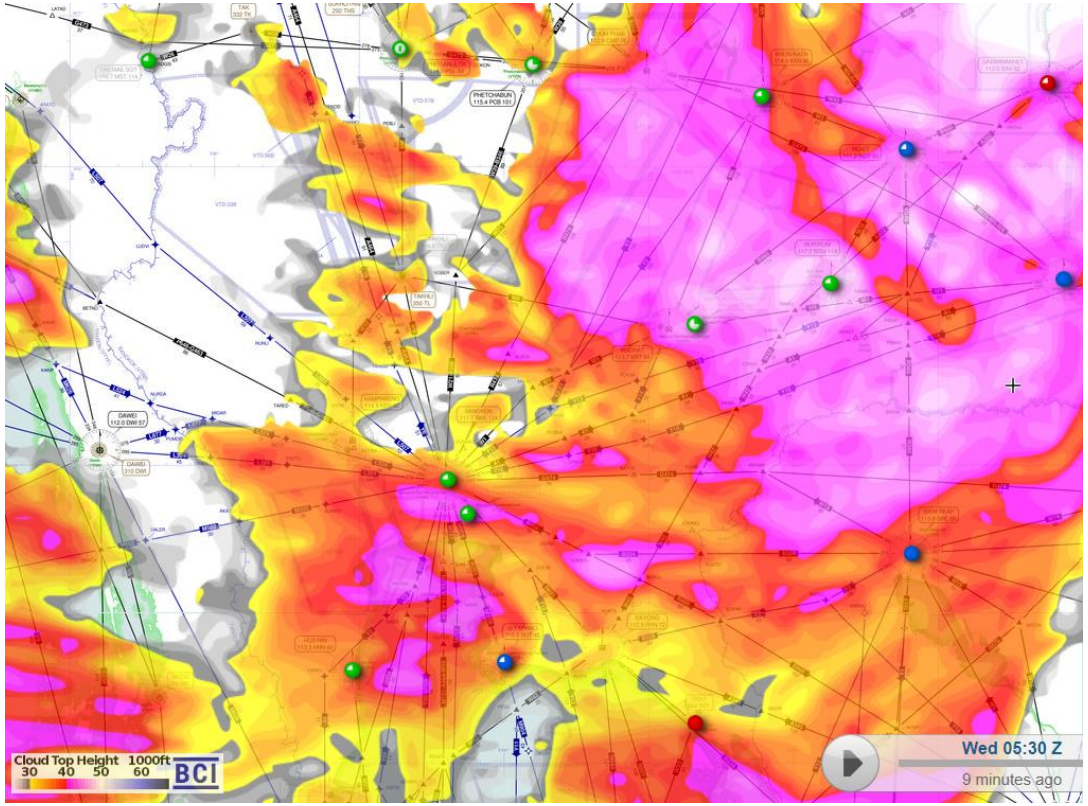


Information to improve the ATFM Operations

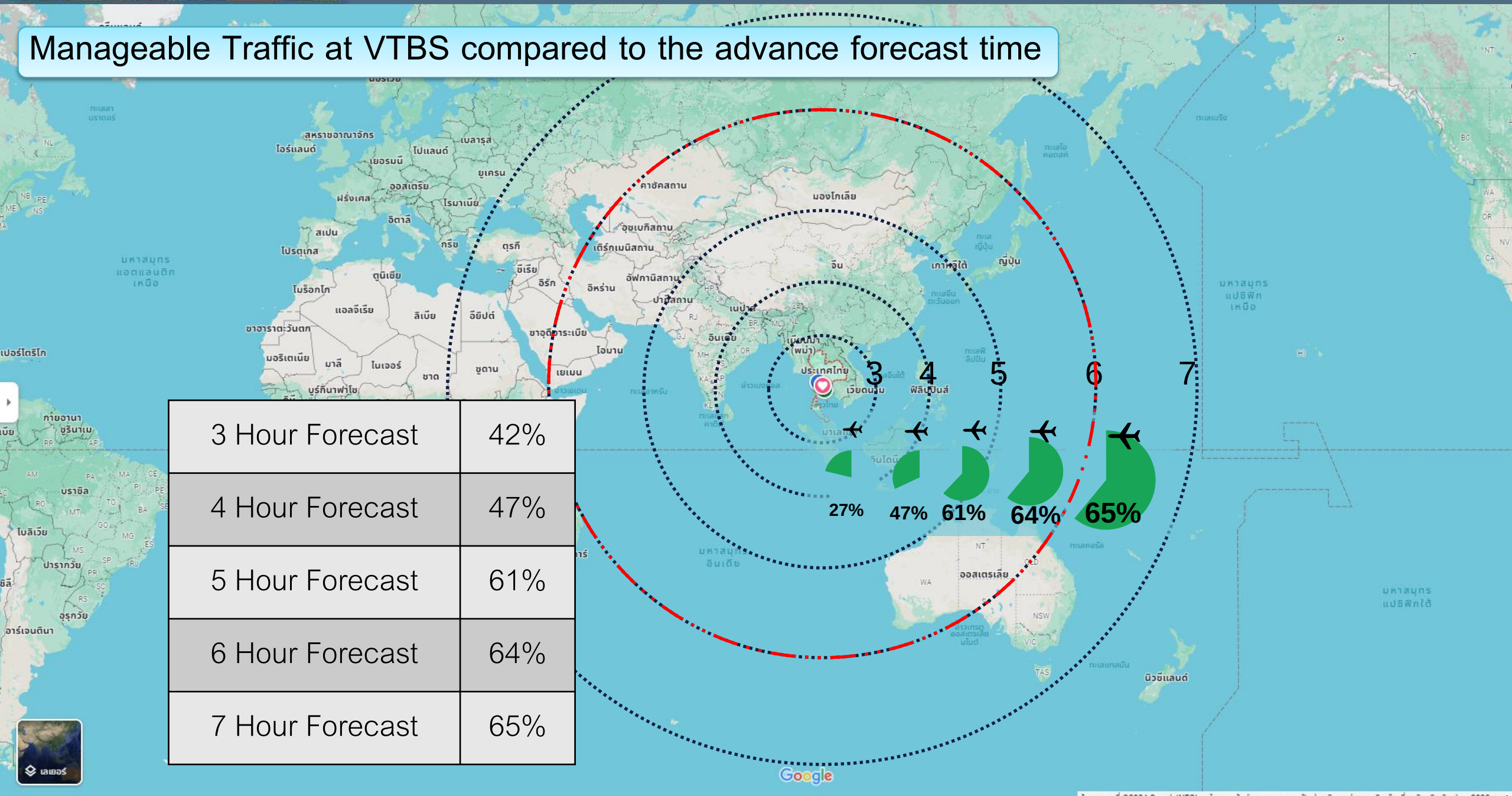
Suvarnabhumi Airport (**VTBS**) is a major airport in Thailand that consistently operates at full capacity. However, adverse weather conditions can make air traffic control (ATC) operations difficult.

Weather impacts include:

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

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

Manageable Traffic at VTBS compared to the advance forecast time

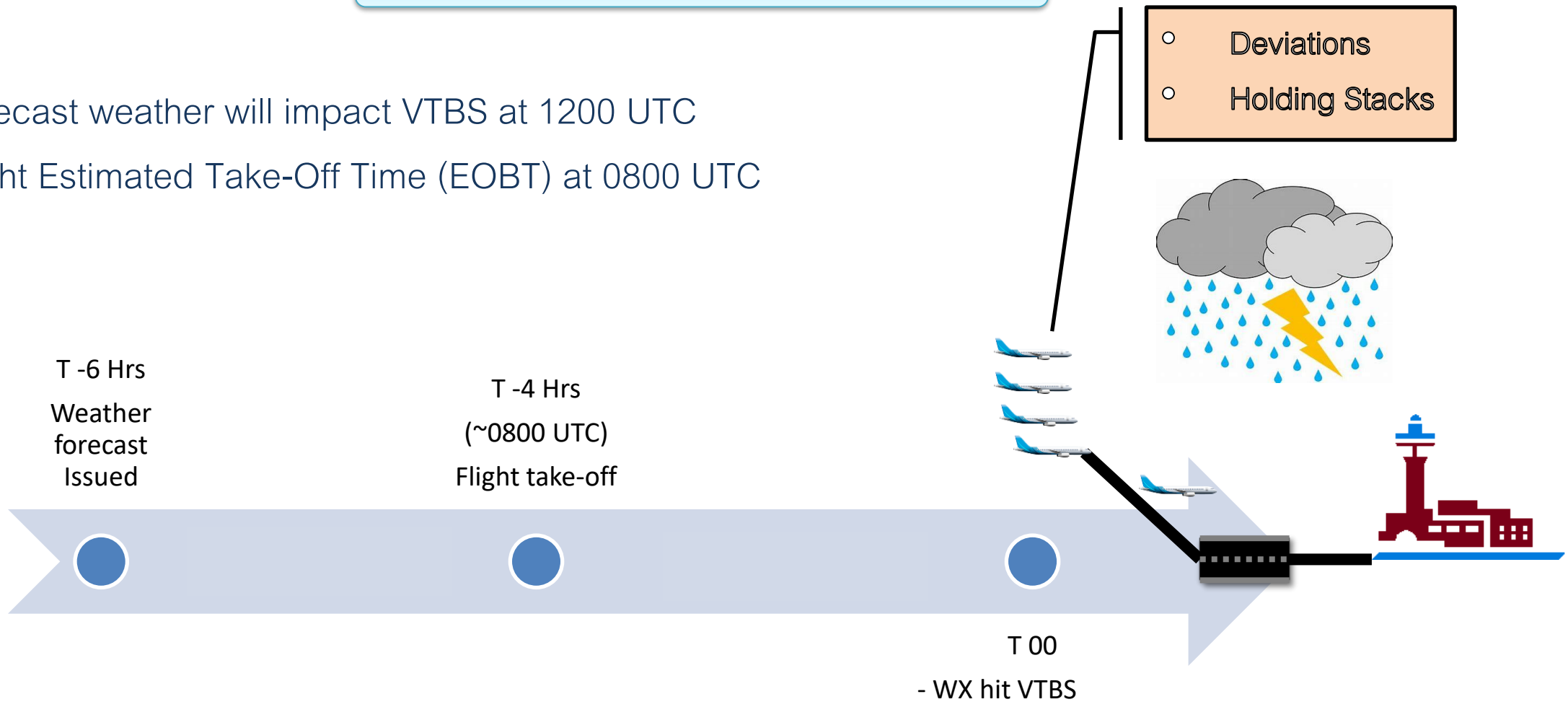


3 Hour Forecast	42%
4 Hour Forecast	47%
5 Hour Forecast	61%
6 Hour Forecast	64%
7 Hour Forecast	65%

Information to improve the ATFM Operations

Use of GDP

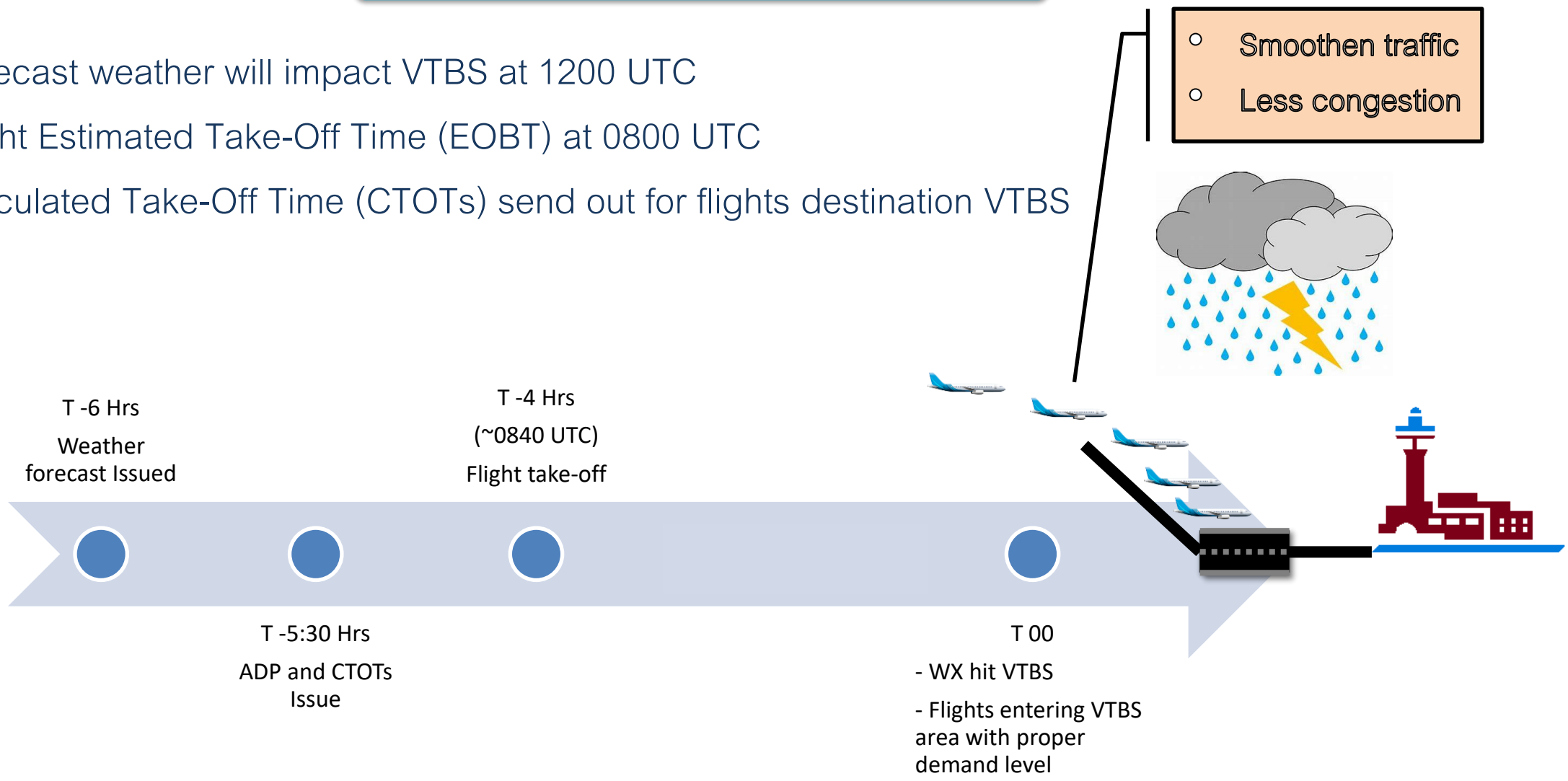
- Forecast weather will impact VTBS at 1200 UTC
- Flight Estimated Take-Off Time (EOBT) at 0800 UTC



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



Information to improve the ATFM Operations

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.

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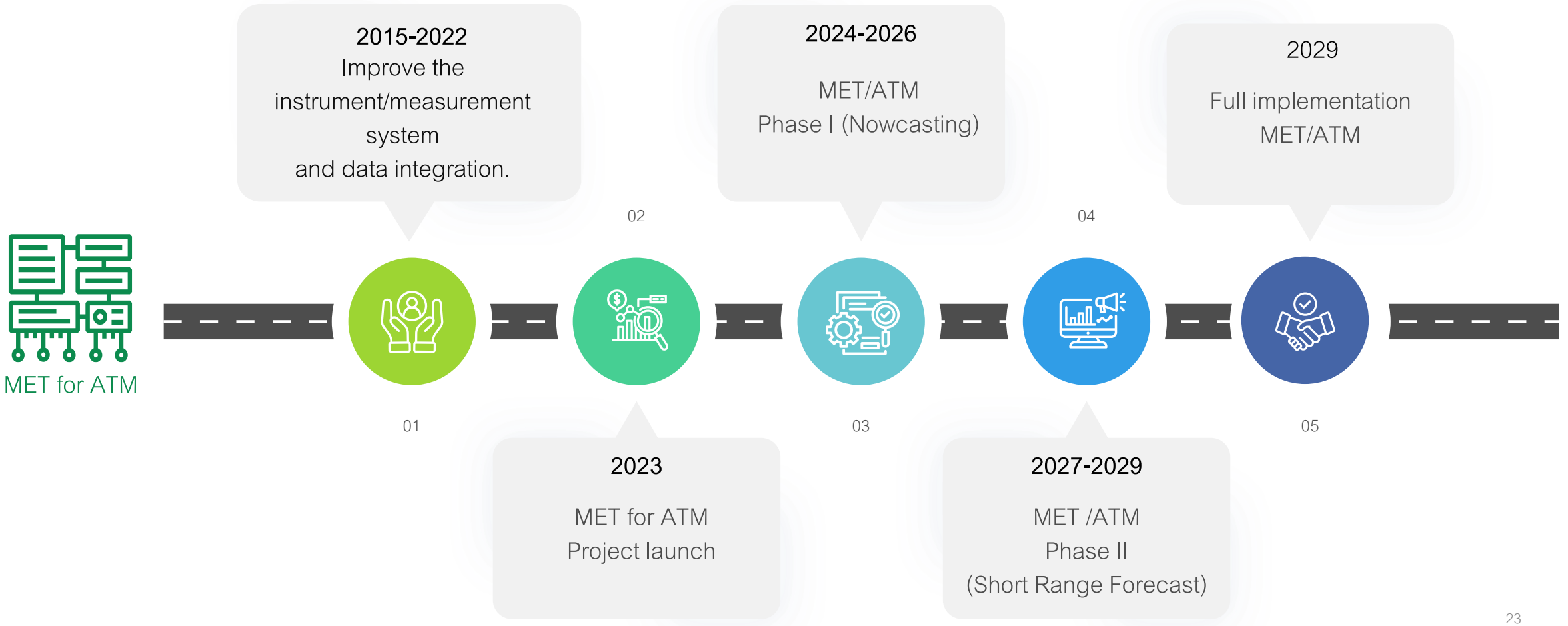
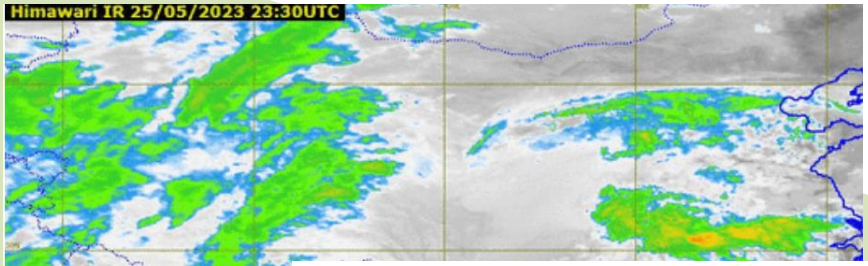
Future TMD and AEROTHAI Collaboration

ROADMAP OF TMD MET for ATM



Q & A



Domestic (Thai)

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METAR VTBS 260000Z 24003KT 190V290 9999 FEW020 29/22 Q100
METAR VTBD 260000Z 24008KT 9999 FEW020 30/22 Q1009 NOSIG
METAR VTBU 260000Z 36003KT 7000 FEW020 28/25 Q1009 NOSIG
METAR VTCC 260000Z VRB02KT 9999 FEW035 27/22 Q1011 NOSIG
METAR VTCT 260000Z 09002KT 9999 FEW025 25/25 Q1010 NOSIG
METAR VTSP 260000Z 29007KT 9999 SCT020 28/25 Q1010 NOSIG
METAR VTSG 260000Z 00000KT 7000 FEW005 25/25 Q1011 NOSIG
METAR VTSS 260000Z 08003KT 050V110 9999 FEW020 26/25 Q101
METAR VTST 260000Z 00000KT 9000 FEW030 26/26 Q1010 NOSIG
METAR VTSB 260000Z 20004KT 9999 FEW020 26/25 Q1010 NOSIG
METAR VTSC 260000Z VRB01KT 9999 FEW005 26/24 Q1011 NOSIG
METAR VTSE 260000Z VRB02KT 9000 FEW020 27/25 Q1010 NOSIG
METAR VTSF 260000Z 00000KT 9000 FEW018 27/27 Q1010 NOSIG
METAR VTSM 260000Z 29003KT 9999 FEW020 29/25 Q1010 NOSIG
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