

Aviation Meteorological Service in Malaysia



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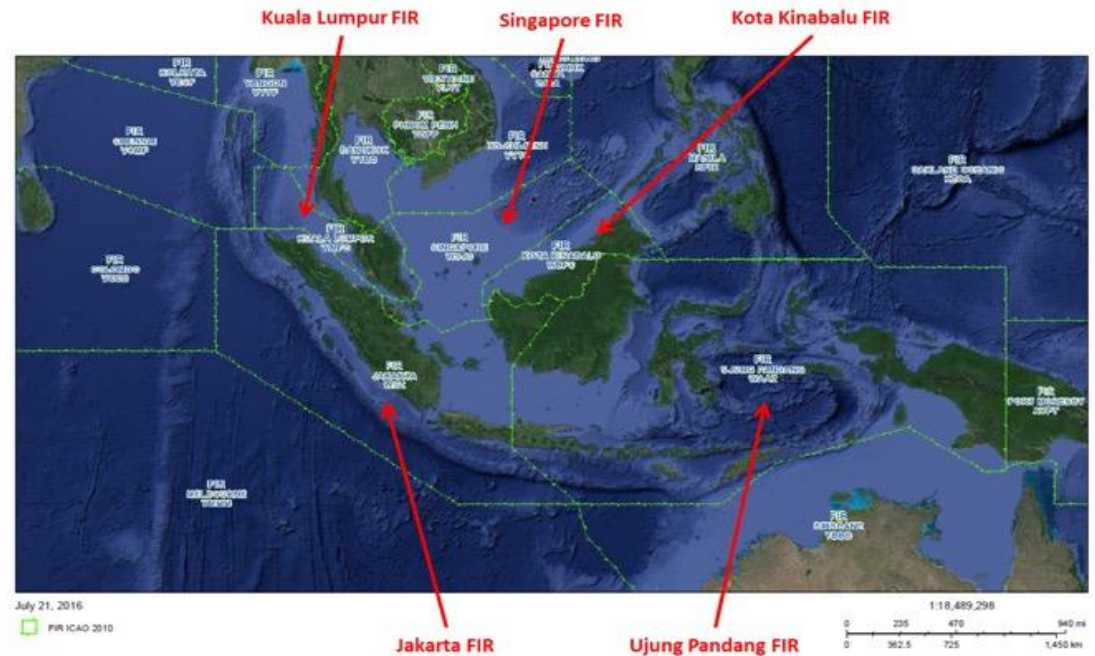
Introduction to NAMC

Meteorological System at Airports

MET-ATM Collaboration

Introduction to NAMC

Center for the aviation meteorological services (Civil and Military) in Malaysia.



Two FIR (Kuala Lumpur and Kota Kinabalu)
2 MWOs

Kuala Lumpur FIR – NAMC, KLIA

Kota Kinabalu FIR – Sabah Meteorological Office, KKIA

Introduction to NAMC

Aviation Meteorological Offices
(6) and Aviation Meteorological
Stations (24)



6 international airports and 18 domestic
airports.

Introduction to NAMC

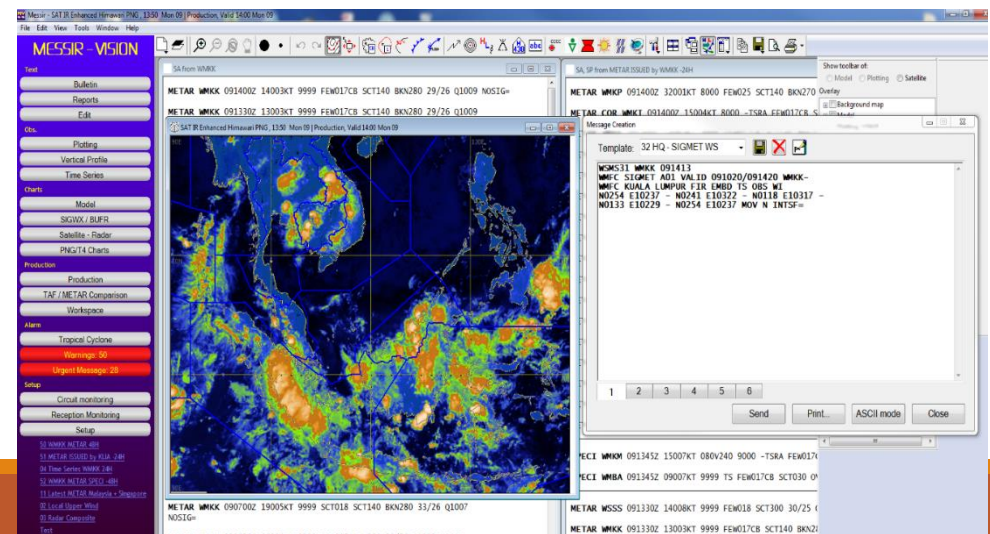
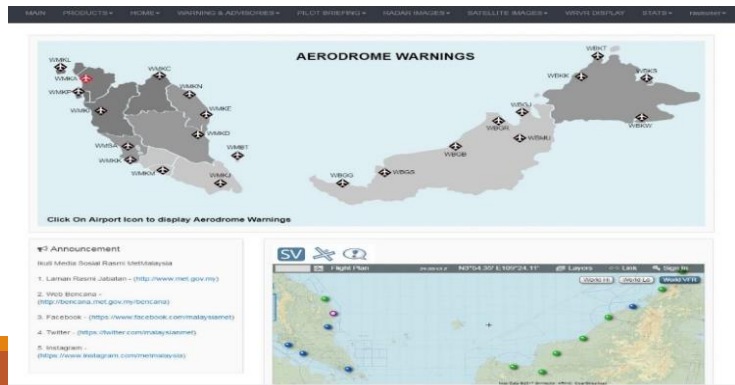
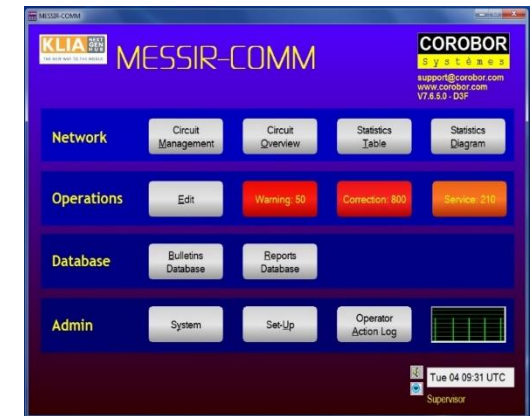
Provisions of Met Information as required in Annex 3 (OPMET, Take-Off, Aerodrome Warning, Wind shear and microburst alerts and warnings (8 airports), Charts and AIRMET.

Aviation Meteorological Products	Responsible/Source of Data	Issued time	Validity
Upper wind and upper temperature	WAFC	4 times daily (0000UTC, 0600UTC,1200UTC,1800UTC)	6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36 hours
SIGWX Chart a) High level SIGWX (SWH) b) Medium level SIGWX (SWM) c) Domestic SIGWX – ASEAN Chart (SWH-SWM)	a) WAFC London and WAFC Washington b) WAFC London and WAFC Washington c) Aerodrome Meteorological Office (AMO) - NAMC, KLIA	4 times daily (0000UTC, 0600UTC,1200UTC,1800UTC) 4 Times daily (NAMC: 0245UTC, 0845UTC,1445UTC,2045UTC)	24 hours 24 hours Based on agreement between meteorological authority and users (NAMC: 0300UTC, 0900UTC, 1500UTC, 2100UTC)
METAR SPECI	Aeronautical Meteorological Station (AMS)- PMSepang, KLIA	METAR: Hourly or half hourly intervals SPECI: anytime	-
		Hourly or half hourly intervals	2 hours
Terminal Aerodrome Forecast ,TAF or amended TAF	AMO - NAMC, KLIA	TAF: Every 6 hours (0000UTC,0600UTC,1200UTC,1800UTC) Amended TAF: when necessary	24 hours or 30 hours
Take off forecast	AMO - NAMC, KLIA	Based on agreement between meteorological authority and users. NAMC: issued every 3 hours	Based on agreement between meteorological authority and users (NAMC: 6 hours)
SIGMET information	MWO – WMKK FIR (NAMC, KLIA)	When necessary	SIGMET convective: not more than 4 hours, SIGMET VA and TC: shall be extended up to 6 hours
Volcanic ash and tropical cyclone advisory	TREND forecast	AMO - NAMC, KLIA	
Aerodrome Warning (11 of international/domestic airports in Peninsular Malaysia)	AMO - NAMC, KLIA	As necessary	1 – 2 hours depends on severity
Wind Shear Warning (for KLIA International Airport only)	AMO - NAMC, KLIA	As necessary	Less than 1 hour

Meteorological System at Airports

Meteorological Data Processing System (MDPS)

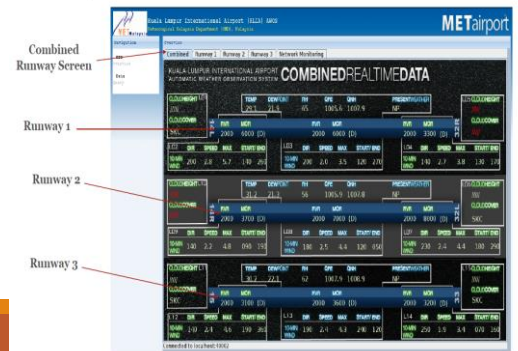
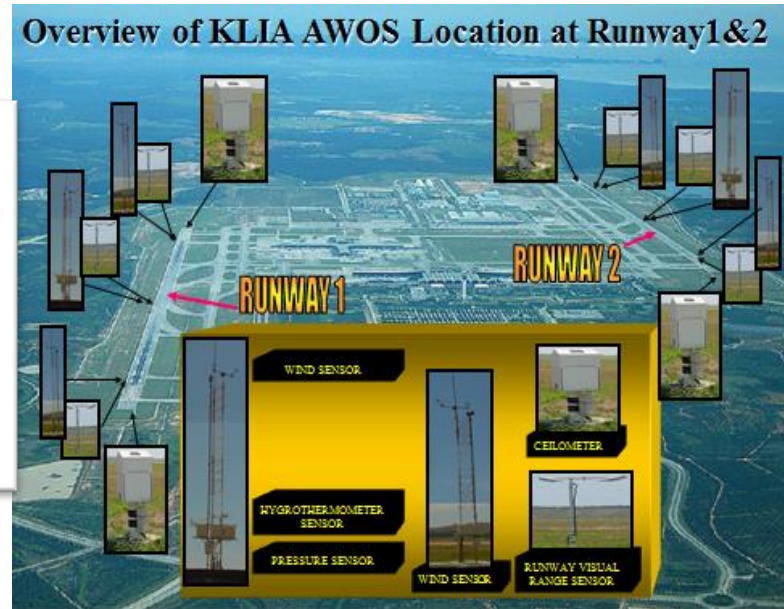
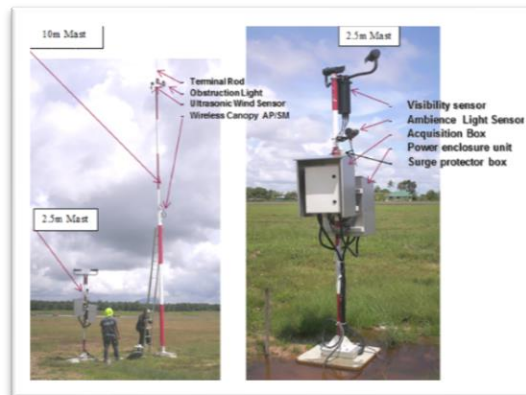
- Receiving (WIFS and Observation Data)
- Generating (Met Information – OPMET, Aerodrome Warning, Take-Off)
- Dissemination (OPMET)
- Display system to end - user



Meteorological System at Airports

AWOS and WRVR

- Wind
- Runway Visual Range
- Temperature and RH
- Cloud Base
- Pressure QNH, QFE
- Present Weather

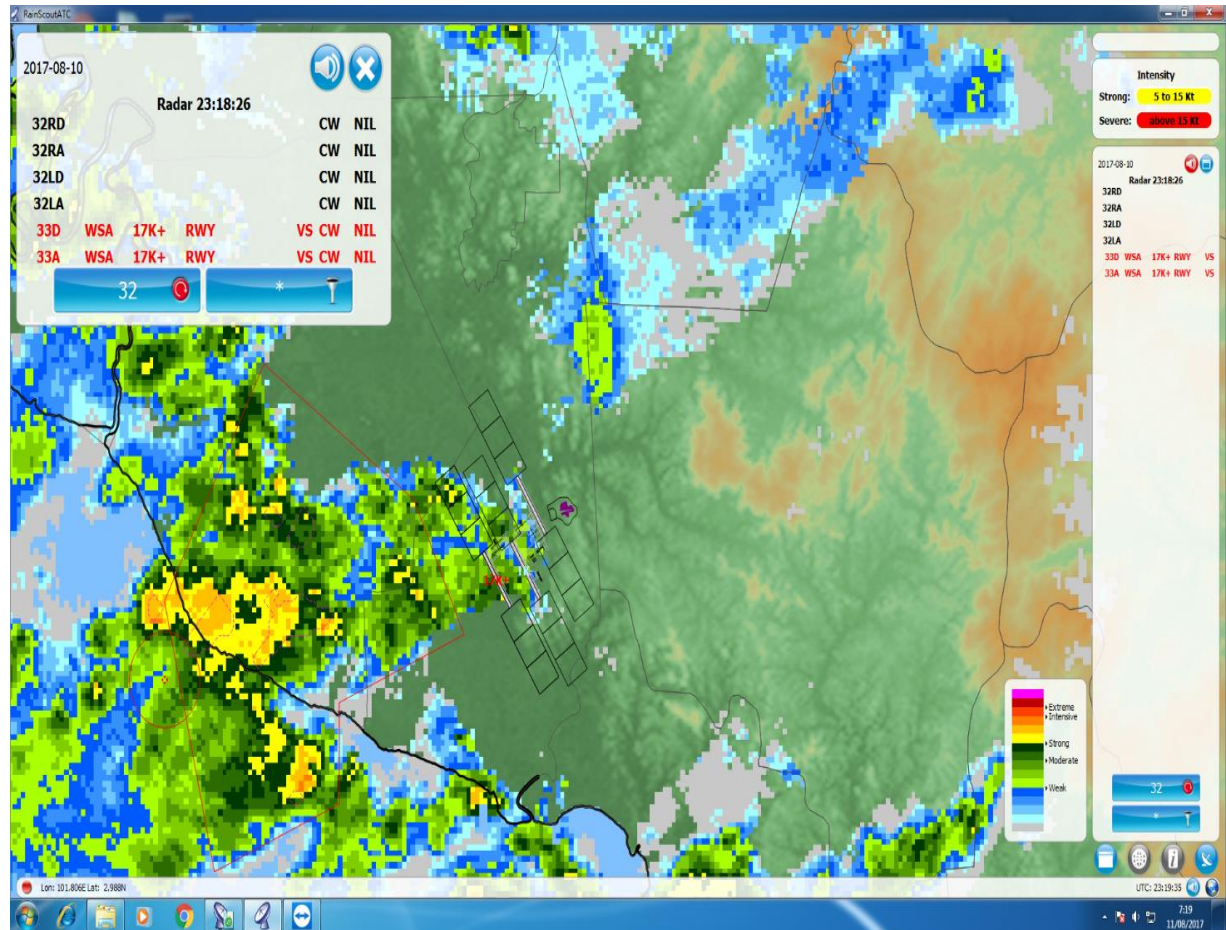


Meteorological System at Airports



Wind Shear Detection System (TDR) with Hazardous Weather Warning Display (6 airports)

- Wind Shear
- Microburst
- SWI
- CAPPI

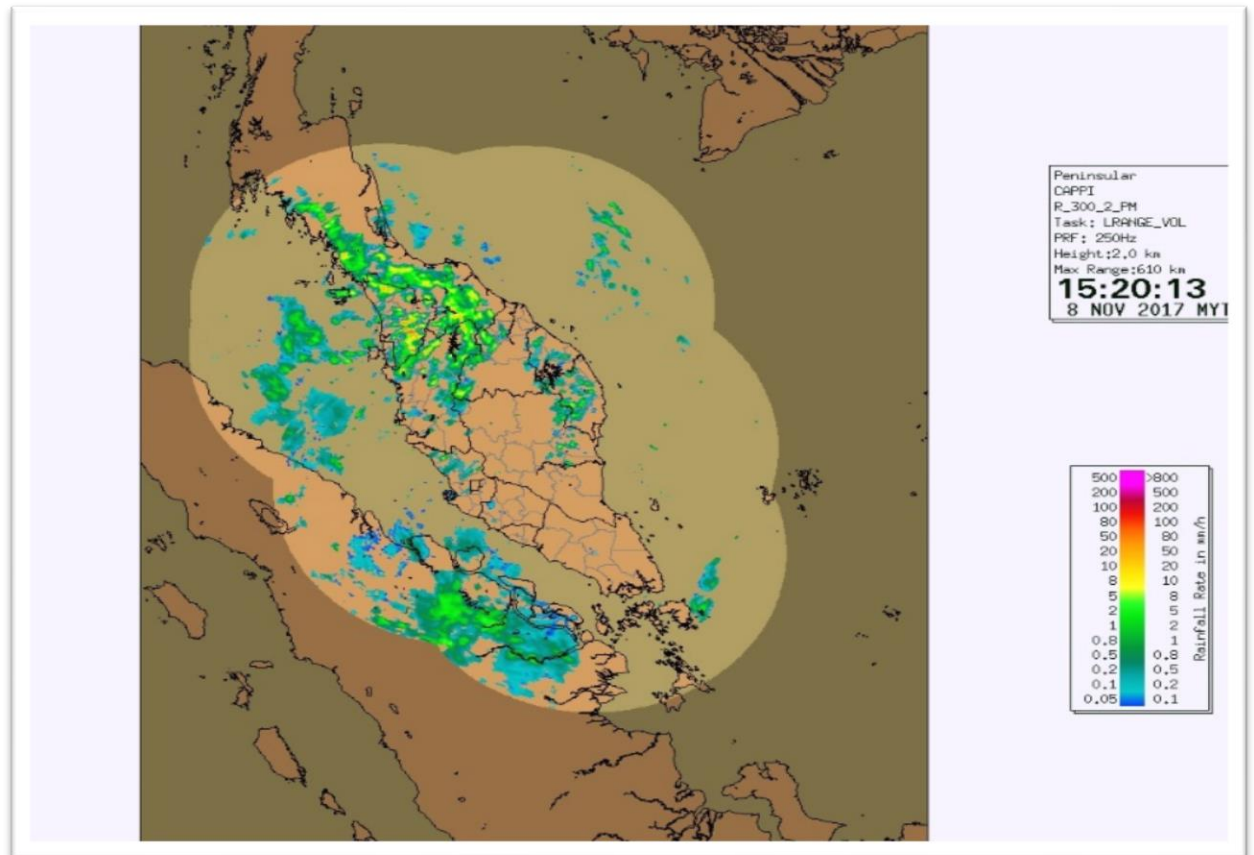


Meteorological System at Airports

MMD Composite Radar Network

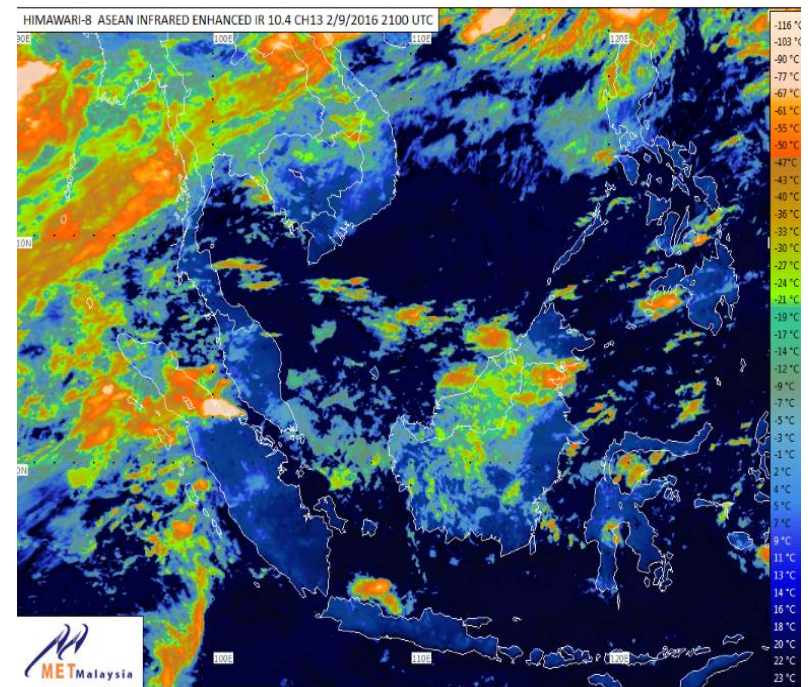
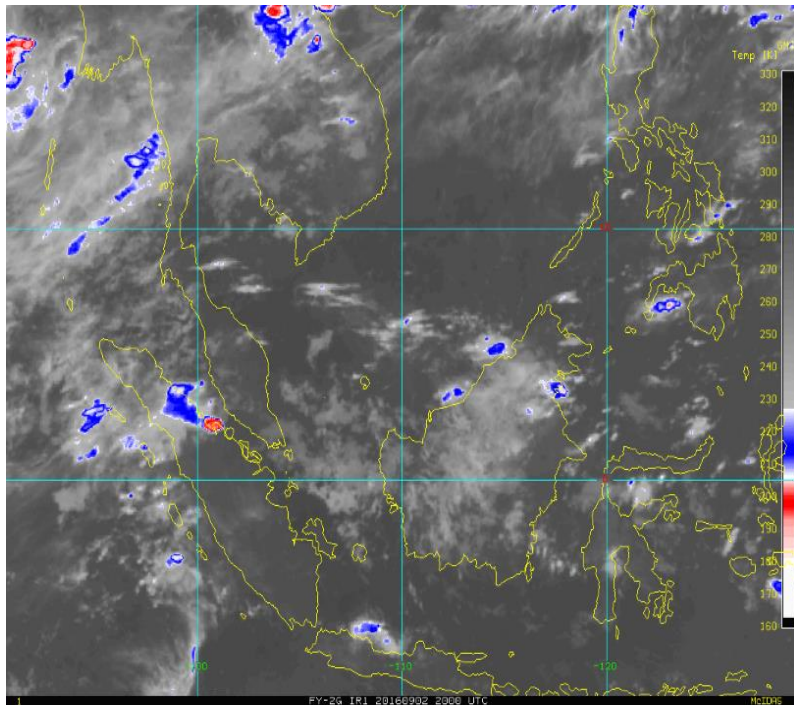
- CAPPI (2km)

Aerodrome Warning,
AIRMET and SIGMET



Meteorological System at Airports

Himawari 8 and FengYun (FY-2G) receiving system.



Meteorological System at Airports

Automatic Weather System
(METAR and MET REPORT)



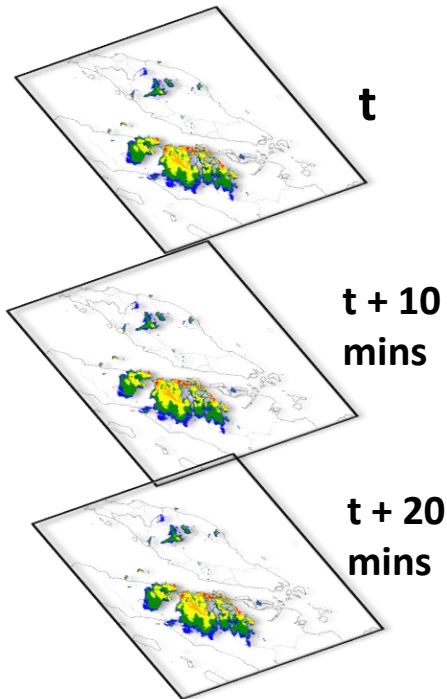
Meteorological System at Airports

RaINS (Radar Integrated Nowcasting System)

SWIRLS (Short – range Warning of Intense Rainstorms in Localized System)

Radar Extrapolation

**Radar Rain-rate
(mm/hr)
CAPPI 2 KM HEIGHT**



[HOME](#) RaINS Nowcast

[Home](#)

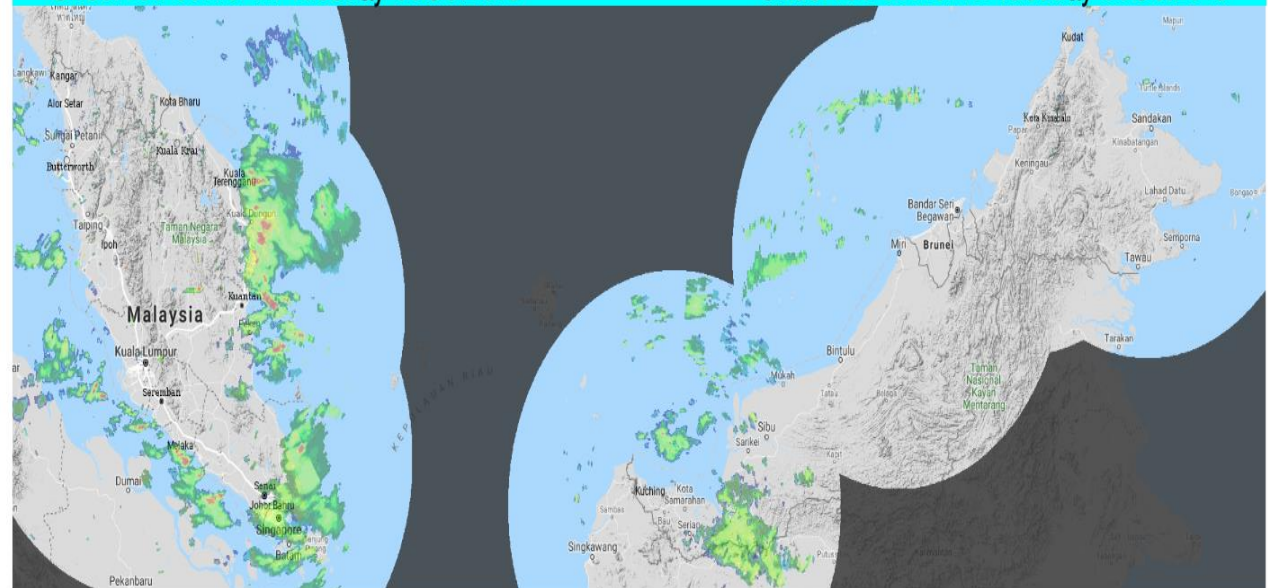
[Nowcast 3 hours](#)

[Observed 3 hours ago](#)

[Observed 1 hour ago + Nowcast 2 hours ahead](#)

Observed 09:40AM Tuesday 09Oct2018

Observed 09:40AM Tuesday 09Oct2018



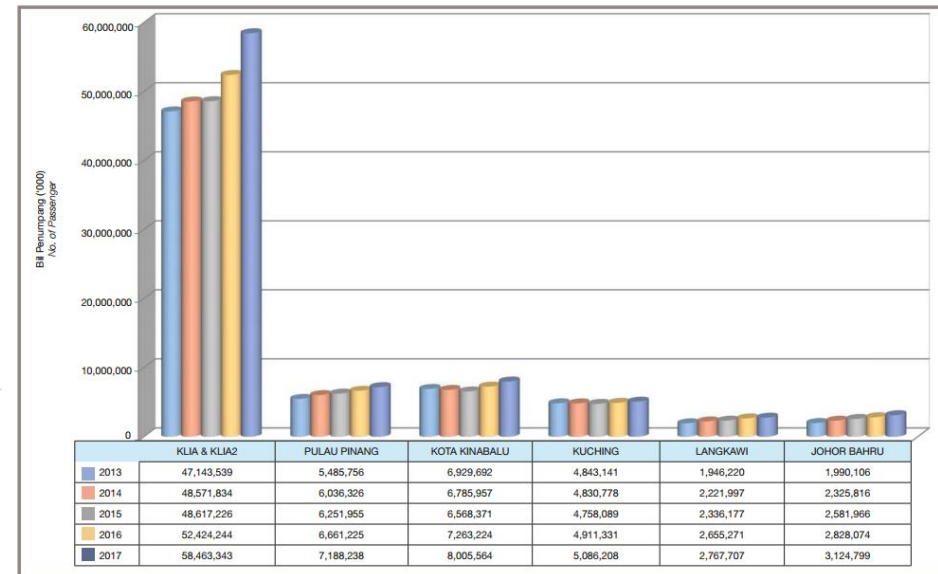
Radar Integrated Nowcasting System (RaINS) v1.8 – Radar Nowcast (SWIRLS) blended with NWP (MMD-WRF) Forecast 2 hours

MET-ATM Collaboration

Carta 4.1: JUMLAH PENUMPANG DOMESTIK DAN ANTARABANGSA YANG DIKENDALIKAN DI LAPANGAN TERBANG, MALAYSIA, 2013-2017
Chart 4.1: Total Number of Domestic and International Passengers Handled by Airport, Malaysia, 2013-2017



Carta 4.2: JUMLAH PENUMPANG DOMESTIK DAN ANTARABANGSA YANG DIKENDALIKAN DI LAPANGAN TERBANG, MALAYSIA, 2013-2017
Chart 4.2: Total Number of Domestic and International Passengers Handled by Airport, Malaysia, 2013-2017



Stat 2017 – Total No of Passenger (98 MILLION)
60 mil. - KLIA.

MET-ATM Collaboration

Statistics of Aircraft Movements 2017

- Overall = 894,609
- Total No of Movements in KLIA 387,054
- 1060 movements per day.

JADUAL 4.10: JUMLAH PERGERAKAN PERAJAAN PERGERAKAN TANG UDARA MELAKUKAN MENGIKUT LAPANGAN TERBANG, MALAYSIA, 2008-2017
Table 4.10: Total Commercial Aircraft Movements Handled by Airports, Malaysia, 2008-2017

LAPANGAN TERBANG Airports	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
KLIA	209,681	225,251	244,179	268,265	282,290	325,537	339,650	353,270	386,565	402,360
KLIA2	-	-	-	-	-	-	-	-	168,954	183,694
PULAU PINANG	38,335	38,343	44,753	50,610	49,966	56,760	63,396	64,527	64,428	69,157
KOTA KINABALU	52,463	52,677	55,089	59,638	58,366	67,601	68,776	66,945	69,292	71,922
KUCHING	36,067	41,437	42,940	49,613	43,981	53,095	50,917	50,738	48,562	48,034
LANGKAWI	12,242	12,638	13,274	14,510	15,162	17,675	21,722	22,232	23,797	24,807
JOHOR BHARU	42,343	51,243	50,247	42,911	31,868	37,998	42,976	41,892	42,557	46,497
KOTA BHARU	14,083	13,709	13,180	15,304	17,112	20,527	25,028	28,228	26,666	27,067
IPOH	183	384	844	1,536	1,515	1,464	1,960	3,684	3,632	3,632
KUALA TERENGGANU	6,038	6,006	5,959	6,006	6,506	7,365	9,659	10,625	11,049	11,314
ALOR SETAR	2,934	4,578	4,513	4,841	5,274	5,795	8,421	9,472	10,280	10,801
MELAKA	700	616	584	466	1,053	580	320	1,536	1,294	1,714
SUBANG	11,448	19,897	24,509	30,779	33,224	41,707	56,629	62,911	61,450	67,351
KUANTAN	3,334	2,947	2,628	3,178	3,395	3,289	3,572	3,906	3,186	2,698
TIOMAN	1,603	1,591	1,662	1,766	1,682	1,538	272	-	-	-
PANGKOR	503	502	174	32	324	258	8	-	-	-
REDANG	1,083	862	1,356	1,319	877	955	430	-	-	-
LABUAN	11,212	10,868	11,988	12,645	13,448	15,072	15,533	13,168	10,924	10,134
LAHAD DATU	2,922	2,922	2,860	2,941	3,058	3,321	3,689	3,646	3,455	3,014
SANDAKAN	8,991	10,214	12,095	10,757	12,177	11,536	11,715	11,267	10,820	9,901
TAWAU	7,334	8,885	9,723	9,328	9,689	11,784	12,832	12,401	11,687	11,783
BINTULU	8,933	10,948	10,994	11,270	11,444	12,428	12,246	12,197	11,807	11,526
MIRI	35,178	38,836	39,509	40,931	42,351	44,875	46,504	48,039	42,633	38,392
SIBU	14,307	16,275	17,899	18,211	15,923	17,196	17,878	18,252	17,156	16,588
MULU	1,642	1,570	1,726	1,912	1,760	2,306	2,701	2,381	2,375	2,221
LIMBANG	1,860	1,697	1,947	1,896	1,880	2,075	2,154	2,226	2,647	1,974
STOL SABAH	459	-	167	264	192	231	226	234	608	536
STOL SARAWAK	12,716	12,140	13,538	14,118	13,534	12,886	15,324	16,455	18,337	17,512
SEMENTANJUNG Peninsular	344,510	378,567	407,862	441,523	450,248	521,448	574,043	602,283	603,838	651,092
SABAH	83,381	85,566	91,922	95,573	96,930	109,545	112,771	107,661	106,786	107,270
SARAWAK	110,723	122,903	128,553	137,951	130,873	144,861	147,724	147,288	143,517	136,247
JUMLAH Total	536,614	587,036	628,337	675,047	678,051	775,854	834,538	857,232	854,141	894,609

SUMBER/ Source: MALAYSIA AIRPORTS HOLDINGS BERHAD (MAHB), SENAI AIRPORT TERMINAL SERVICES (SATS)

MET-ATM Collaboration

Procurement of new MDPS (Hardware and Software) – Real time web application.

Enhance the capabilities (Met Data and System) – LIDAR, NWP Products (NWP-SWIRLS).

Identify the user requirement (Air Traffic, Terminal services, Airlines and other operators)

Challenges – Interface and integration met information into end-users display system

THANK YOU

TERIMA KASIH