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MET Requirements in Regional Framework for Collaborative ATFM

MET/ATM Seminar 2023

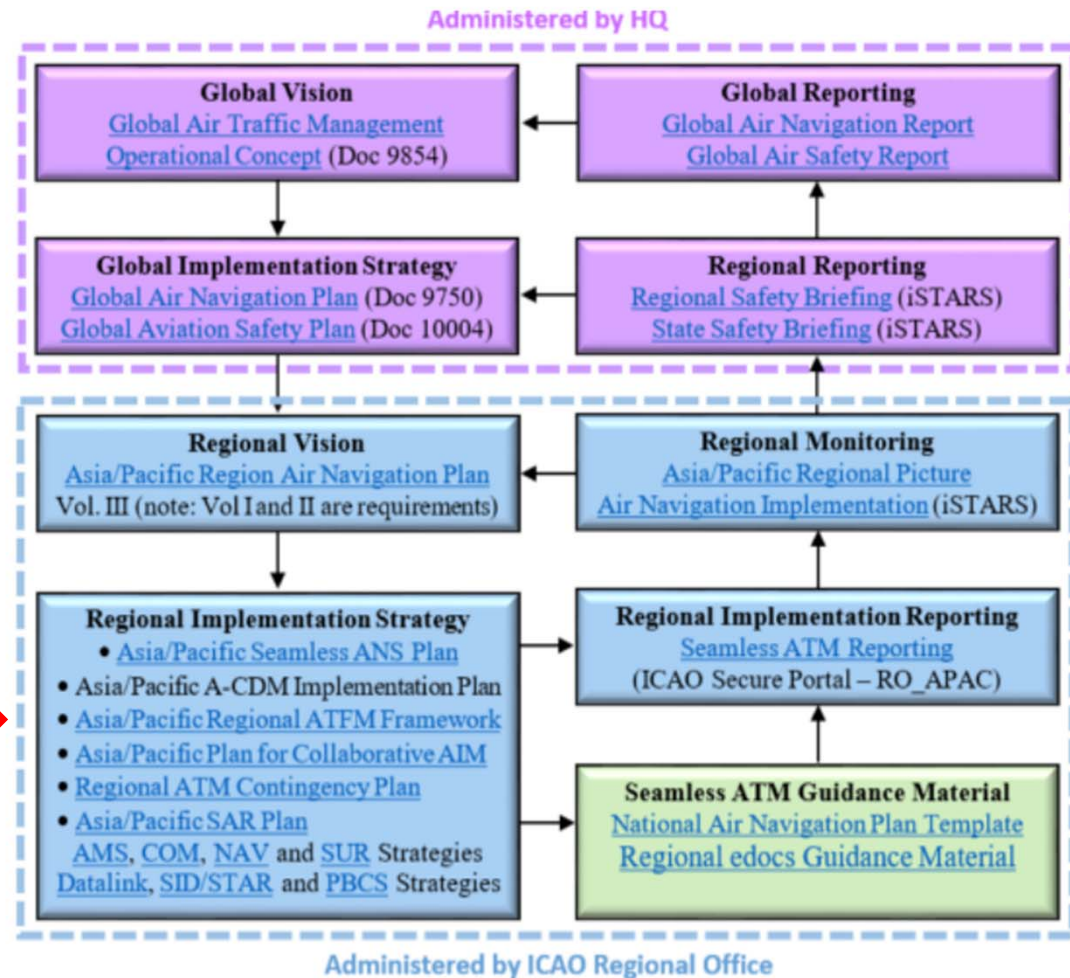


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Hierarchy of Global and Regional Plans





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Regional ATFM Con Ops

- Regional ATFM Concept of Operations
 - Collaborative Development
 - Various ANSPs & Industry Partners
 - Developed by ATFM/SG
 - Approved by APANPIRG/26
 - September 2015
- Key Concepts
 - No overarching centralized network capability
 - Distributed multi-nodal cross border ATFM network
 - GDP as the foundation, 75% participation level required
 - Delay absorption intent
 - Allow aircraft operators to flexibly distribute their total ATFM delay across various phases of flight



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Developing Framework Version 4.0

Need for Update

- Alignment of the Regional ATFM Framework and Doc 9971 (3rd edition 2018);
- Global Air Navigation Plan 2019 update, including a major restructure of the ASBU framework;
- Asia/Pacific Seamless ATM Plan 2019 update;
- The new suite of basic phrases for Cross-Border GDP facilitation;
- Development of ATFM Post Ops Analysis Framework;
- Introducing interoperability requirements between ATFM and A-CDM implementations in the APAC region;
- PfA to the Regional Framework – Origination of DLA Message; and
- Rationalization of the document and its appendices, including the need to establish some large appendices as separate documents.



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Developing the Framework Version 4.0

- ATFM/SG/11 in 2021 proposed review and update of Version 3.0
- ATFM/IR/SWG developed Version 4.0 and submitted to ATFM/SG/12 in September 2022.
- Approved by ATFM/SG/12
- Adopted by ATM/SG/10 in October 2022.
- Available on ICAO e-Docs website



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MET Requirements in Regional ATFM Framework Version 4.0





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GANP 6th Edition AMET Modules

2013-19

B0-AMET (B0/1 to B0/4)

MET Information supporting enhanced efficiency and safety

2019-2025-2031

B1-AMET (B1/1 to B1/4) and B2-AMET (B2/1 to B2/4)

Enhanced operational decisions through integrated MET information (planning and near-term services)

2031-2037

B3-AMET (B3/1 to B3/4)

Integrated meteorological observation information in support of enhanced operational ground and air decision-making processes, for all flight phases and corresponding air traffic control operations, allowing gate-to-gate seamless operations.



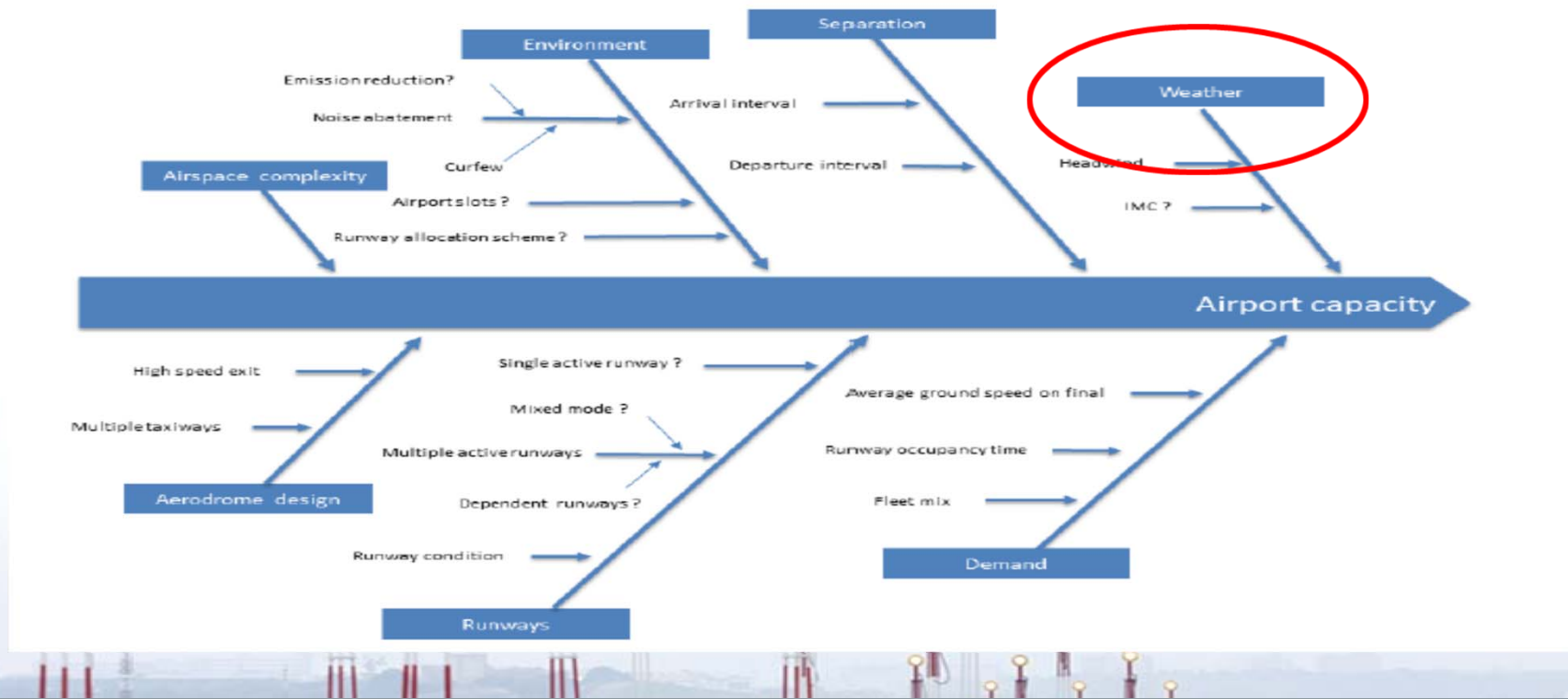


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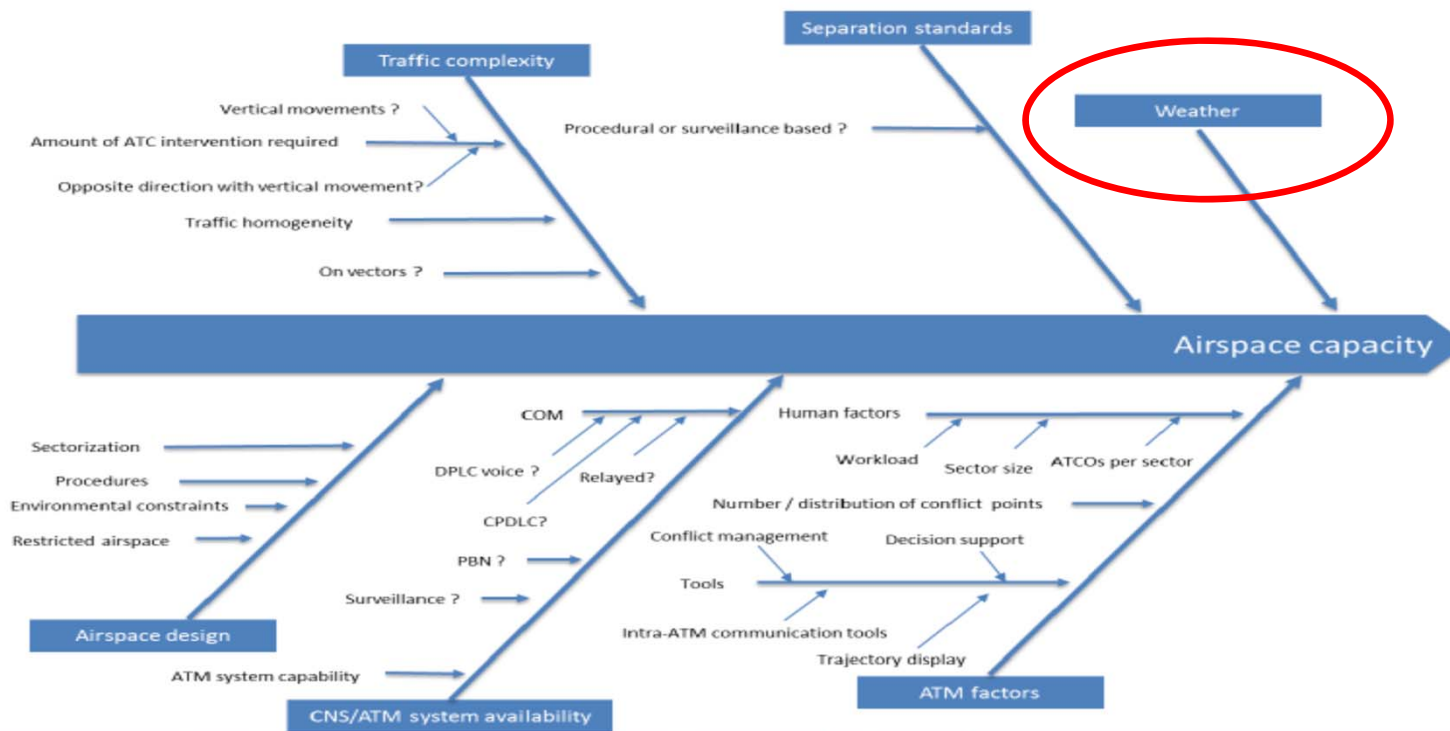


Determining Airport Capacity (Doc 9971)





Determining Enroute Capacity (Doc 9971)





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MET Products for ATFM



Accuracy of pre-tactical and tactical demand and capacity assessment is reliant on predictability of events that will impact capacity (e.g. Met)





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MET Products for ATFM

Color coding: Enables rapid interpretation of impact on operations

Detailed Terminal Area Forecast for the next 9 hours

Issue time: 220734Z

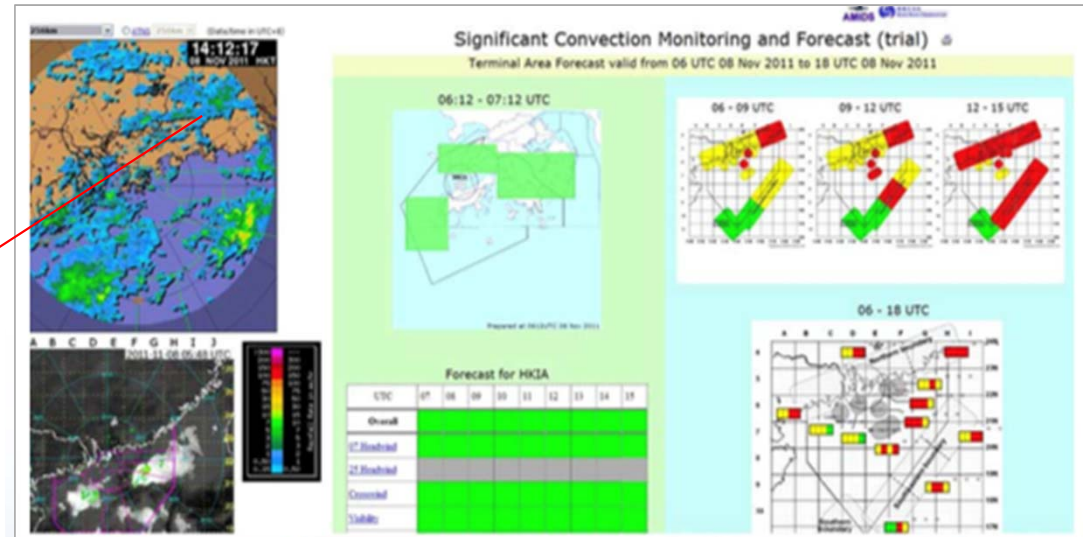
Time (UTC)	0730	0800	0900	1000	1100	1200	1300	1400	1500	1600
Overall										
Wind TEMPO	290 05	290 05	290 05	290 05	040 10	040 10	040 10	040 10	040 10	040 10
07 Headwind (kt)	-4	-4	-4	-4	9	9	9	9	9	9
25 Headwind (kt)	4	4	4	4	9	9	9	9	9	9
Crosswind (kt)	N 3	N 3	N 3	N 3	N 5	N 5	N 5	N 5	N 5	N 5
Visibility TEMPO	3300 m	3300 m	3300 m	4500 m	7000 m	7000 m	7000 m	7000 m	7000 m	7000 m
Ceiling (ft)										

Notes:

(i) The forecasts are normally updated every half an hour.
 (ii) The colours highlighted are based on the thresholds in the following Table. TEMPO group, when given, will also be used when determining the colour levels.

Level	Head wind	Crosswind	Visibility	Ceiling
1	20 kt	30 kt	1000 m	400 ft
2	21-40 kt	30-35 kt	600-1000 m	200-400 ft
3	40 kt	35 kt	400 m	200 ft
4	> 45 kt	> 40 kt	< 400 m	< 200 ft
5	> 5 kt	> 5 kt	< 400 m	< 200 ft

(iii) The winds are for the central part of the North Runway. "0" refers to quiet. "07" and "25" indicate respectively Runway 07 and Runway 25.
 (iv) Grey colour will be shown under "Headwind" in cases when the headwind is less than -5 kt (i.e. tailwind greater than 5 kt).
 (v) "H" and "T" in crosswind indicate head and tailwind respectively.
 (vi) "C" in ceiling means no cloud or cloud ceiling above 1000 m. Obscured sky will be indicated by grey colour.
 (vii) "M" will not be indicated in the headwind or crosswind row in any of their names. Instead, a symbol "*" will be displayed.
 (viii) Winds which are highly variable in wind direction will be displayed as "V" for variable.
 (ix) Winds which are highly variable in wind strength will be displayed as "S" for strength.





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MET Information for ATFM (*Revised text*)

- Met Information for ATFM (Para 5.78 to 5.90)
- Requirement for including MET information and services in Post Operations Analysis
- Reference to APAC- Regional Guidance for Tailored MET Information to Support ATM





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MET Products for ATFM (*Revised text*)

- ANSPs and MET authorities should collaborate closely to define MET products enabling decisions based on specific impact to operations
- ***MET Requirements Working Group (MET/R WG) has developed specific regional guidance material necessary to assist States in developing and implementing tailored meteorological information and services to support effective ATM, including ATFM.***
- ***The APAC - Regional Guidance for Tailored MET Information to Support ATM is available at ICAO e-Documents website.***
- ***<https://www.icao.int/APAC/Pages/eDocs.aspx>***





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Performance Expectations

Reporting Form Element	Reporting Metrics	Expected Outcome	Response
Implemented meteorological services to support ATM in the terminal area (e.g. Meteorological Service in Terminal Area - MSTa)	0%- State has not planned the implementation of MSTa; 25%- State has begun an initiative to implement MSTa, e.g. has developed initial coordination between MET service provider and ANSP; 50%- State is in the process of implementing MSTa; 100%- State has implemented MSTa.	State has established MET services for ATM in the terminal area. MET for ATM applications may have been developed for enroute airspace but not the terminal area, which could be considerably more complex.	Dropdown options
Implemented Meteorological information exchange with ATM and ATFM systems using IWXXM v3.0 (or later)	0%- State has not implemented MET information exchange on IWXXM v 3.0 protocol; 50%- State has implemented IWXXM v 3.0 MET information exchange; 100%- State has integrated the systems using SWIM-based technology with IWXXM 3.0 or later as the information exchange model.	For system-to-system interoperability	





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References

Asia/Pacific Regional Framework for Collaborative ATFM (V 4.0)
Regional ATFM Concept of Operations (V 1)
Asia/Pacific ATFM Post-Operations Analysis Recommended Framework
Basic Phrases for Cross-Border ATFM Coordination – Working Draft
Asia/Pacific ATFM Daily Plan (ADP) Exchange Procedure – Working Draft
Regional ATFM Monitoring and Reporting Form (V 3.0)
ATFM Training Guide

- <https://www.icao.int/APAC/Pages/eDocs.aspx>





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Cross Border ATFM – MET Information

- Weather Forecast – Airport and terminal Area
- How long does it continue?
- How much does it affect on air traffic?
- Advance Information exchange among ANSPs





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Cross Border ATFM – MET Information

- Weather Forecast – Airspace (for large scale Weather Events (Typhons))
- How long does it continue?
- How much does it affect on air traffic?
- Advance Information exchange among ANSPs





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Cross Border ATFM – MET Information

- Weather Forecast for seasonal MET phenomenon (Typhoons, Monsoon, Fog..)
- How long does it continue?
- How much does it affect on air traffic?
- Advance Information exchange among ANSPs





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MET Information for ATM (ATFM)

- Regional Guidance material development – seek inputs from academia, R&D institutes ?
- Need to make use of diverse forums for highlighting the importance
- Explore more options for facilitating advance information exchange





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Thank You

