ICAO Asia/Pacific Office
MET / ATM Seminar

Meteorology / Air Traffic Management Seminar 2

Fukuoka Japan 24 – 26 January 2011

ATM Operational Needs

John Wagstaff
Asia Pacific Representative IFATCA

ifatca

International Federation of Air Traffic Controllers' Associations

ICAO / WMO ASIA/PAC
Meteorology / Air Traffic Management Seminar

After MET/ATM Task Force Meeting 1, ICAO conducted a survey of regional ANSPs to determine what MET products they considered to be important.

12 replies were received from: Australia, Hong Kong China, India, Japan, Malaysia, Mongolia, New Zealand, Pakistan, Philippines, South Korea, Singapore and USA.

- Briefings by forecasters ✓
- Trend forecasts ✓
- Convective forecasts ✓
- Timely updating of forecasts ✓
- Integrity of data WIP
- Tailoring information to unit requirements – tower, approach/terminal, area ✓

MET/ATM Seminar Singapore 26-31 May 2019

John Wagstaff Asia Pacific Representative IFATCA

ICAO / WMO ASIA/PAC
Meteorology / Air Traffic Management Seminar

In 2020 IFATCA conducted a survey amongst controllers at ATFM units as to what MET products they considered to be important

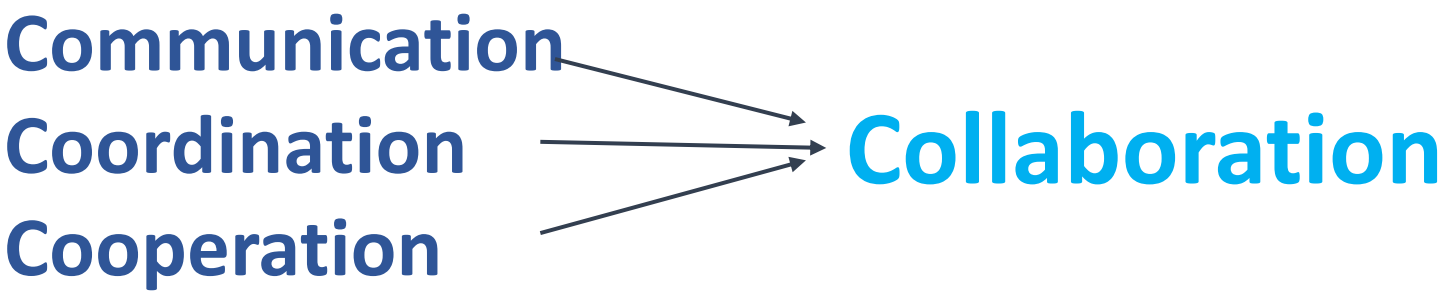
- Improved accuracy – automated systems/manual assessment ✓
- Briefings by forecasters for ATFM personnel ✓
- Extent and duration of events ✓
- Lead time for warnings of extreme conditions – snow, fog, typhoon ✓
- Unpredicted convective activity WIP
- Colour coded graphics for easy assimilation of information ✓

MET/ATM Seminar Bangkok 1 May 2023

Can We Do Better ?

Can we do Better ?

MET ⟷ ATFM



INTERNATIONAL FEDERATION OF AIR TRAFFIC CONTROLER ASSOCIATIONS

ICAO MET/ATFM Seminar, Bangkok, 28 April 2025

15 Years of MET/ATFM Collaboration – Can we do Better ?

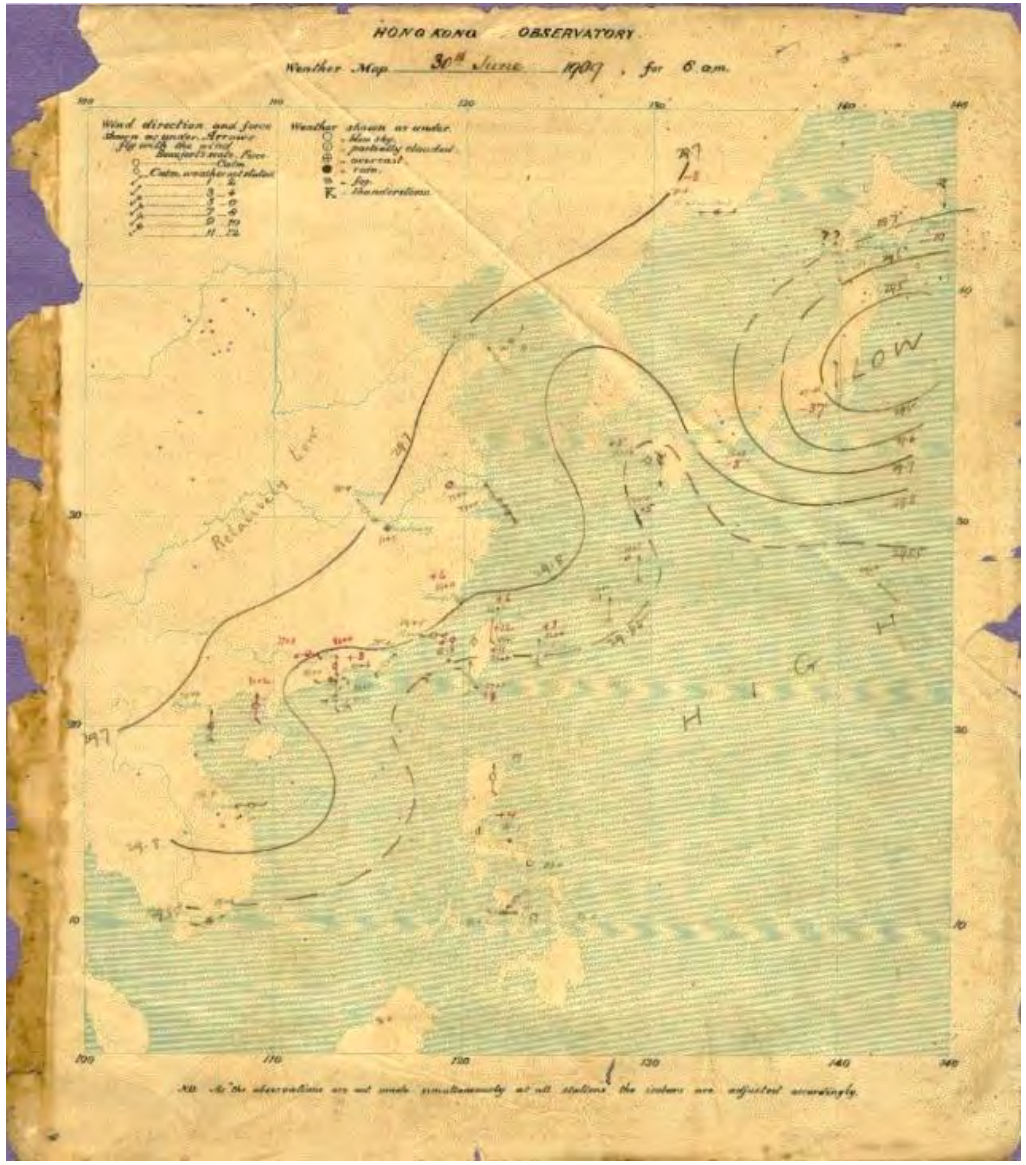
John Wagstaff - Asia Pacific Representative IFATCA

Can we do Better ?

Meteorological Facilities

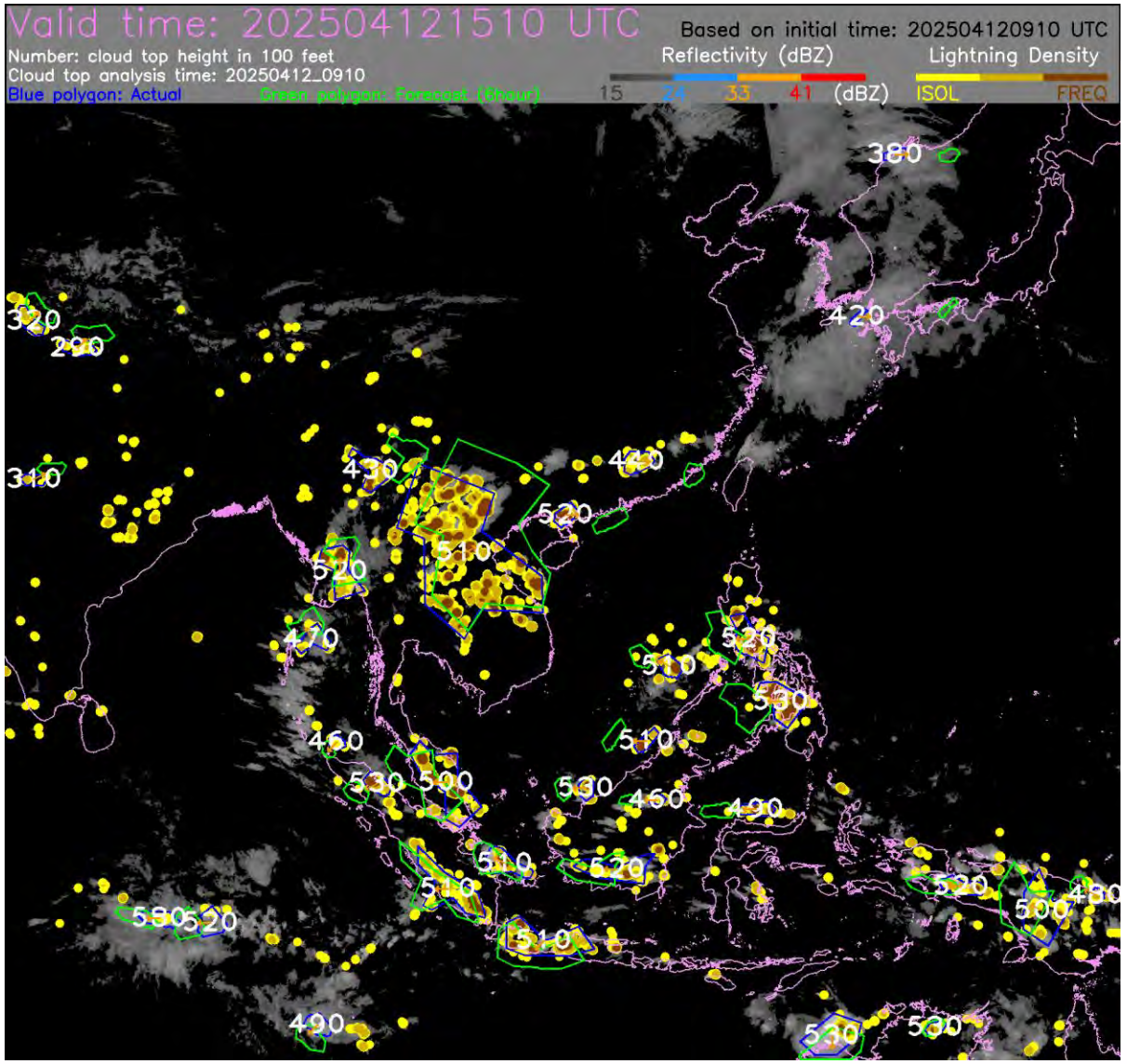
Meteorological Forecasting has Improved

Weather Chart Issued by HKO Wednesday 30 June 1909

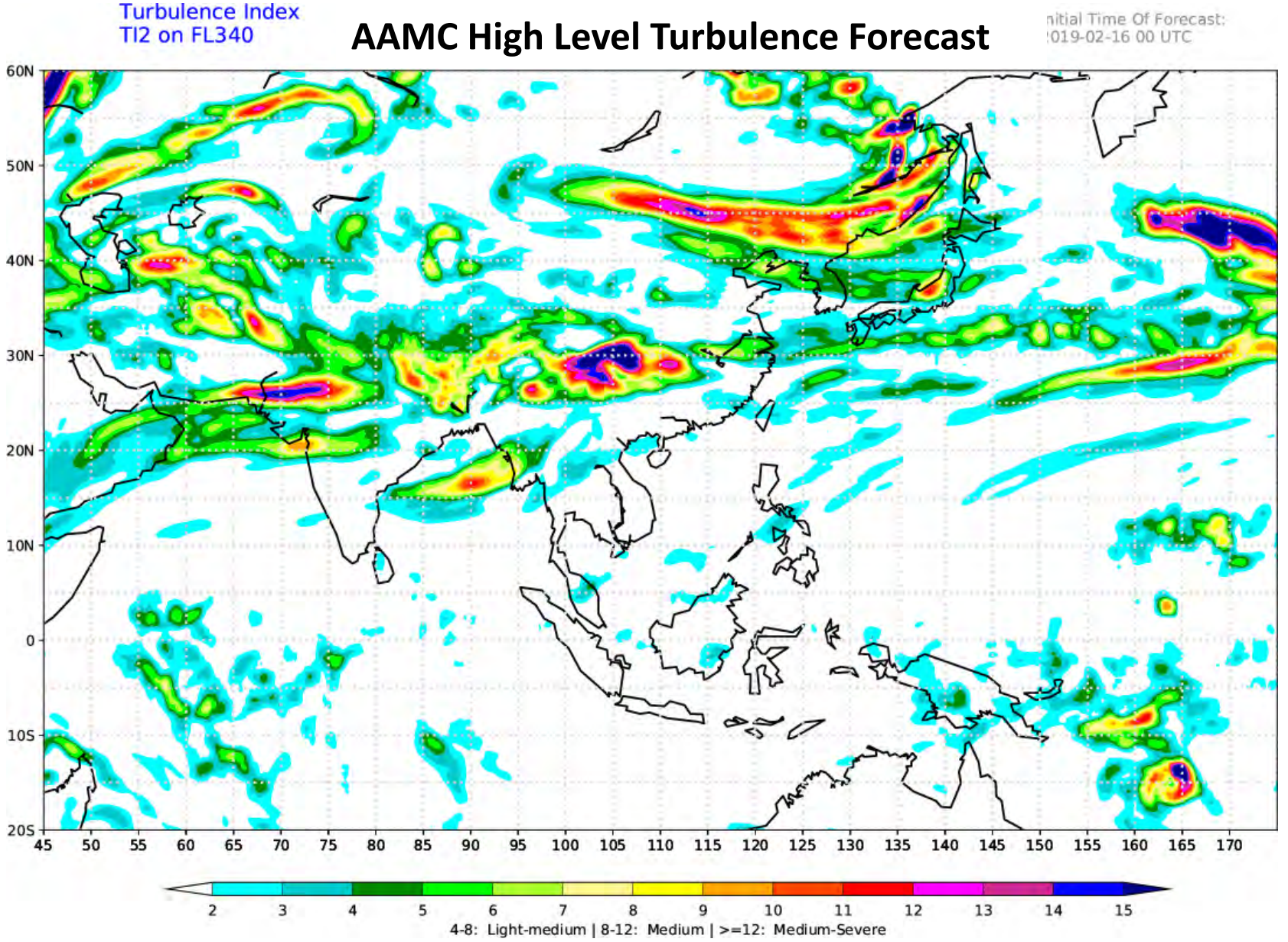


Asian Aviation Meteorological Centre's Mega-Crystal Ball 2018

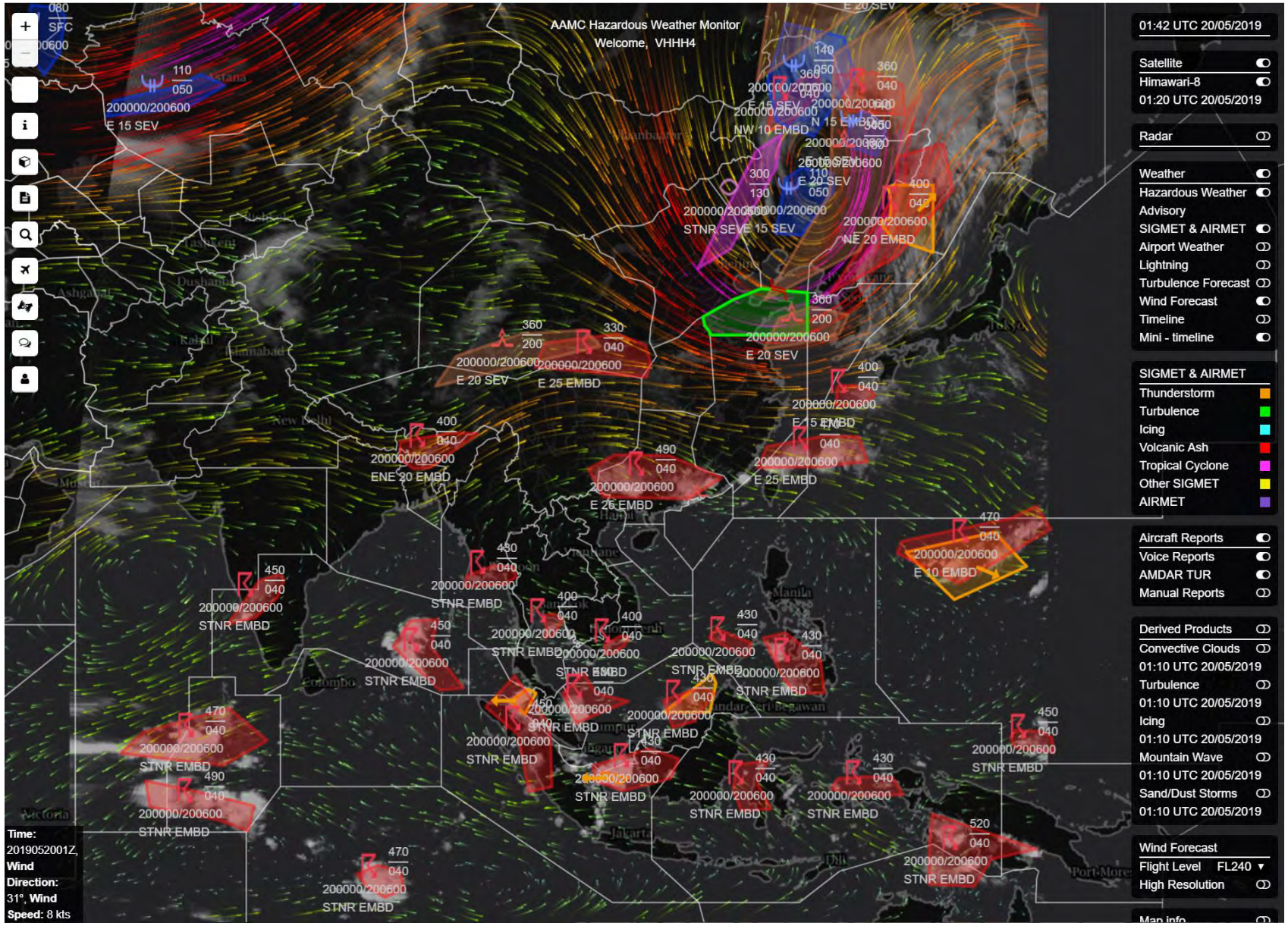
AAMC Satellite-Based Nowcast



AAMC High Level Turbulence Forecast



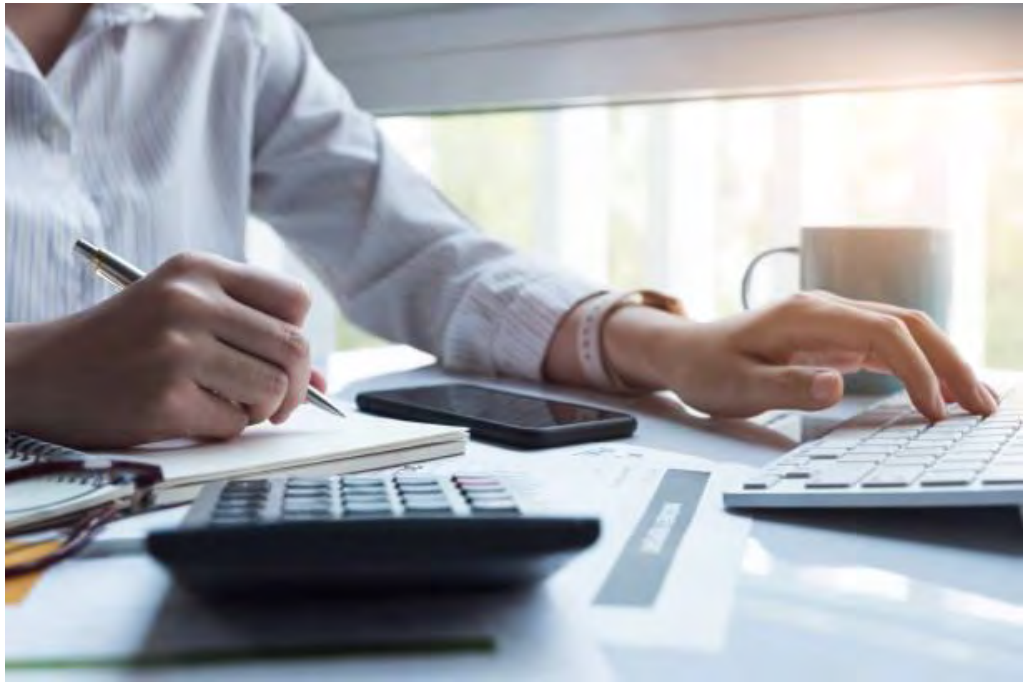
AAMC Comprehensive Display of Regional Weather Events



Can we do Better ?

ATFM Facilities

Single controller and manual calculations



Dedicated staff in ATFM Unit with Automated Systems

Distributed Multi-Nodal Project 

Asia-Pacific Cross-Border Multi-Nodal ATFM Collaboration (AMNAC)

13 Participating ATFM Units

Bi-Weekly Web Conferences
Upgrade of On-Line CDM Platform

North Asia Regional ATFM Harmonisation Group (NARAHG)

3 Participating ATFM Units

Upgrade of Collaborative Data Platform

Can we do Better ?

ICAO Meetings, Seminars, Workshops

Can we do Better ?

MET/R WG/13

WP/05 SURVEY OF STATE METEOROLOGICAL INFORMATION SUPPORTING AIR TRAFFIC MANAGEMENT

Key Findings of Draft Report

(iii) For en-route flight operations, significant factors affecting aircraft are **thunderstorm, including convective cloud**, tropical cyclone and wind factors, including **turbulence**.

MET/R WG/13

IP/04 ESTABLISHING AN INTEGRATED WEATHER INFORMATION SUPPORT CONCEPT FOR AIR TRAFFIC CONTROL SERVICES IN THE REPUBLIC OF KOREA

2.2 The initial principle emphasizes the provision of tailored information for each operational scenario. To achieve this, we conducted a thorough investigation into the requisite weather information for each control service.

Area Control – Location and classification of **convective clouds**, along with cloud top altitudes and movement direction.

IP/06 COLLABORATIVE DECISION-MAKING BETWEEN AUSTRALIAN BUREAU OF METEOROLOGY, AIRSERVICES AUSTRALIA AND OTHER ATM STAKEHOLDERS

2.9 Future concept – Collaborative Convective Forecast-CDM

2.9.1 Impacts/disruptions to ATFM at a distance from the point of departure/arrival are mostly attributed to **thunderstorms, severe thunderstorms** and tropical cyclones in the Australian region.

2.9.2 CCF-CDM aims to improve readiness for disruptive events in a manner that meteorologists, ATC and operators understand.

2.9.3 There are ATFM technology dependencies required to gain benefits and predictability from CCF-CDM outside of the current scope of operations.

MET/R WG/13

IP/07 AIRCAST: Automatic Integrated Real-time Convection forecAST

1.2 During recent regular meetings with the ANSP, it was noted that weather information for the coming 2 to 6 hours is also vital for air traffic flow management, especially for formulating ATFM measures for regional flights.

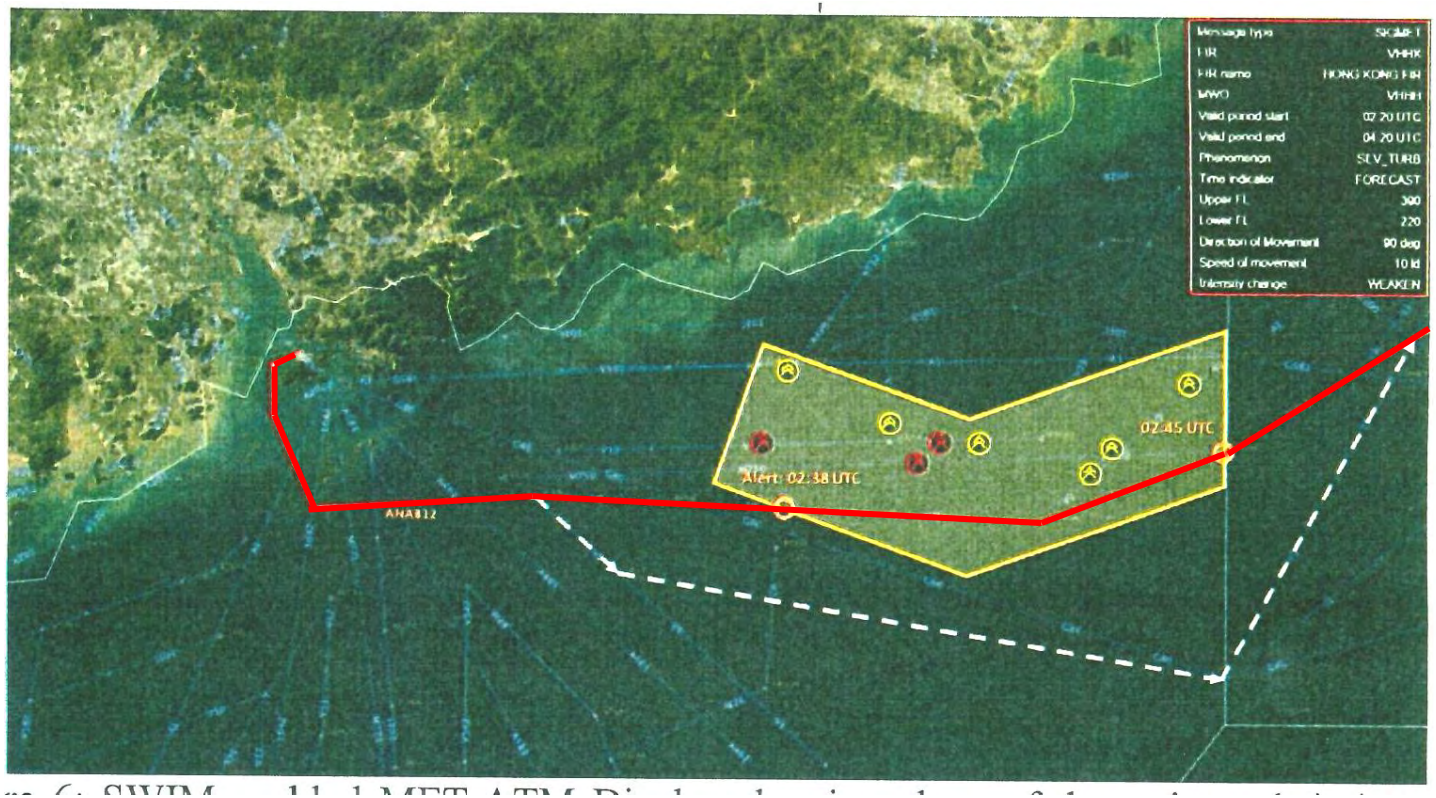
2.1 By using a combination of satellite-based Nowcasting data and computer modelling the forecasting horizon for significant **convection activity** has been increased to 8 hours with hourly updates.

2.3 The new AIRCAST forecasts can provide potential benefits in the tactical and pre-tactical ATFM decision making process which will improve the efficiency and effectiveness of the flow control measures.

MET/R WG/13

SP/17 APAC USE CASES AND USER REQUIREMENTS FOR SWIM-BASED MET INFORMATION SERVICES SUPPORTING ATFM

USE CASE 2: Airborne rerouting due to turbulence



Can we do Better ?

LARGE SCALE WEATHER DEVIATION PROCEDURES

Throughout the South China Sea airspace flights are managed in accordance with Reduced Vertical Separation Minima (RVSM) procedures using 1000' vertical separation.

However when there are pilot reports of greater than moderate **turbulence associated with convective activity or clear air turbulence**, RVSM procedures are suspended and 2000' vertical separation is applied.

This action is termed Large Scale Weather Deviation (LSWD) and results in the reduction of airspace capacity by 50%. Because of the inter-connectivity of the South China Sea airspace, the suspension of RVSM in one area impacts the adjacent airspace.

Can we do Better ?

For up to 6 months of the year LSWD procedures can regularly impact South China Sea airspace capacity.

What was a safe and effective contingency measure in 2002 is now a show-stopper procedure that results in excessive delays throughout the South China Sea airspace as well as airports throughout region.

At the recent SAIOSEACG/4 Meeting a Decision on the adoption of revised LSWD spacing for two routes which will reduce the delays to flights on these routes.

However, this revised spacing on the other major routes is not possible. Therefore an alternative solution for the other major routes in the area must be provided

Can we do Better ?

With improved forecasting services providing upgraded **convective** information and **turbulence** predictions, together with the further development of a Network ATFM operation for the region, an organised plan of re-routes for flights, e.g. off-sets to existing routes or establishing contingency routes, to avoid areas of adverse weather affecting the major routes can be developed.

Then the current LSWD procedures can be replaced with a new structured airspace plan based on maintaining airspace capacity through collaborative decision making involving MET, ATFM, ATM, Aircraft Operators and Airport Operators.

The Crystal Ball

The pro-active work of MET authorities in developing convection activity forecasts and turbulence detection, together with the implementation of SWIM-based information to refine more predictive and probability forecasts tailored for ATFM and ATM with more Nowcasts.

ATFM develop further strategic and pre-tactical plans based on improved MET information for maintaining airspace capacity.

ATM provide tactical management of traffic dependent on the dynamic situation of the airspace or airport scenario with updated Nowcasts.

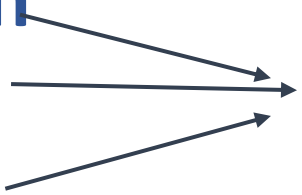
Aircraft operators make executive decisions on flight operations based on MET information and ATFM plans.

Airport operators manage airport resources for the efficient handling of passengers.

Can we do Better ?

MET ⟷ ATFM ⟷ Operators ⟷ Airport

Communication
Coordination
Cooperation



Collaboration

Happy Meteorologists = Happy Controllers