



New Zealand Aviation MET Symposium

Wellington
0830 - 1700
31 August 2017

Hosted by Civil Aviation Authority of New Zealand

Provisional Objective

To better support the dynamism of New Zealand aviation, through a regular aviation MET industry meeting where the users, providers, and regulators can come together to co-ordinate and collaborate efforts with the objective of ensuring what is done, and what is developed, is optimal, responsive, and sustainable.

Agenda

1	Opening and Introductions	20	0
2	CAA Responsibilities	10	10
3	International MET system developments and progress	20	20
4	MetService overview and current product review	30	30
5	Airways overview	20	10
6	Airports overview	20	10
7	RNZAF overview	20	10
8	RPAS and other new Tech	0	30
9	Australian perspectives	20	10
10	Establishing clear base-line MET	20	25
11	Airlines breakout	0	30
12	GA/Training breakout	0	30
13	Breakouts report back	10	20
14	Review	20	0
15	Future symposium/meeting structure	15	15



Scene Setting

Meteorological Information

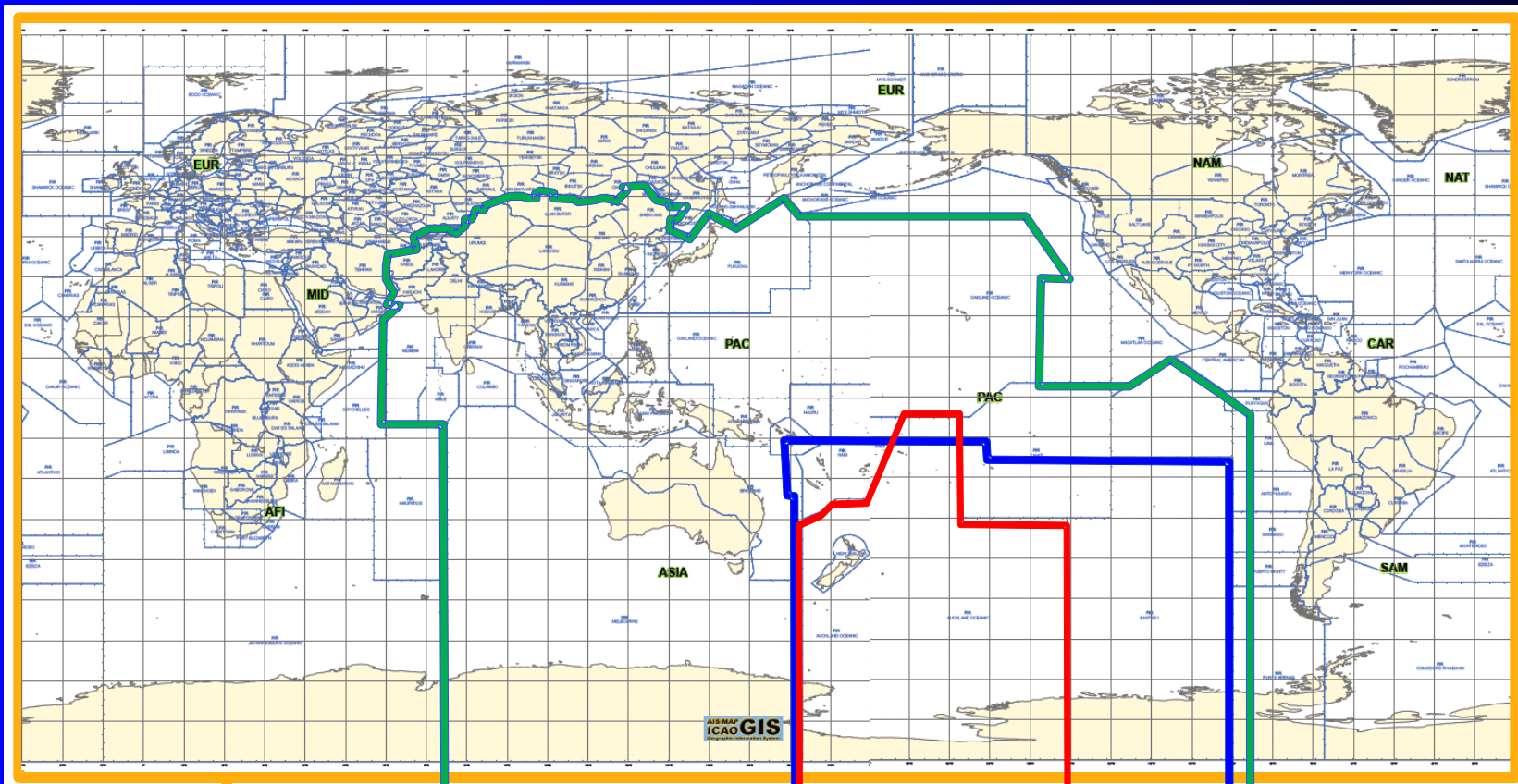
➤ **Meteorological information** means;

any meteorological report, analysis or forecast in support of aviation, and any other statement in support of aviation relating to existing or expected meteorological conditions.

Value of MET Information

- The annual accounting value of meteorological information for global aviation is:
 - >US \$30 Billion**
- Extrapolated pro-rata from UK figures.
- Global airline turnover in 2016 was US\$709 Billion
- Global GDP Contribution in 2012 was US\$2.4 Trillion

CAA Areas of Responsibility



The Globe

ICAO ASIA/PAC Region

Wellington VAAC

Auckland Oceanic FIR



Regulation of Meteorology

Agenda Item # 2

Part 174 – Certification

- No person shall provide a meteorological service except under the authority of the provisions of a meteorological service certificate issued under this Part.
- Only Director of Civil Aviation (DCA) may issue such certificates.
- Certificates are valid for up to 5 years.

Part 174 - Certification Types

- Forecast service
- Meteorological briefing service
- Information dissemination service
- Meteorological reporting service
- Meteorological watch service
- Climatology service
- Definitions reflect ICAO Annex 3

Part 174 – Organisations

- **Meteorological Service of New Zealand Ltd**
 - Certification since 1994
- **Airways Corporation of New Zealand Ltd**
 - Reporting and Dissemination services certification since 1994
- **Other organisations Pending**
 - Localised reporting

Part 174 – Future

- **Rule Part 174 needs review.**
 - not likely to reach Minister's approved programme anytime soon).
- **Further development of AC material possible.**
- **Being used as a model by other States:**
 - Australia, Fiji, Cook Islands, Solomon Islands, Tonga, Vanuatu & PNG

Domestic – Perspectives

- No legislation defining the nature and extent of MET supply.
- New contractual/MOU structures to define and allocate basic MET services.
 - MetService and Airways documents pending.
 - Domestic seen as a subset of international MET.
 - Operators free to choose approved or certificated supplier outside contracted services.



International Responsibilities

Agenda Item # 3

International Responsibilities

- Under the Chicago Convention, the Minister of Transport has designated the CAA as the;
 - Meteorological Authority
 - Air Traffic Services Authority
 - Aviation Security Authority
 - Personnel Licensing Authority
 - Airspace Authority
 - Dangerous Goods Authority

Meteorological Authority (MA)

➤ From Annex 3

- The authority for providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State.

Meteorological Authority (MA)

- **CAA carries out;**
 - International liaison on policy and overall management of MA (including notification of differences)
 - Representation at ICAO forums with technical assistance as necessary
 - Annex 3 policy, implementation and management of SARPs through contract



International Interaction

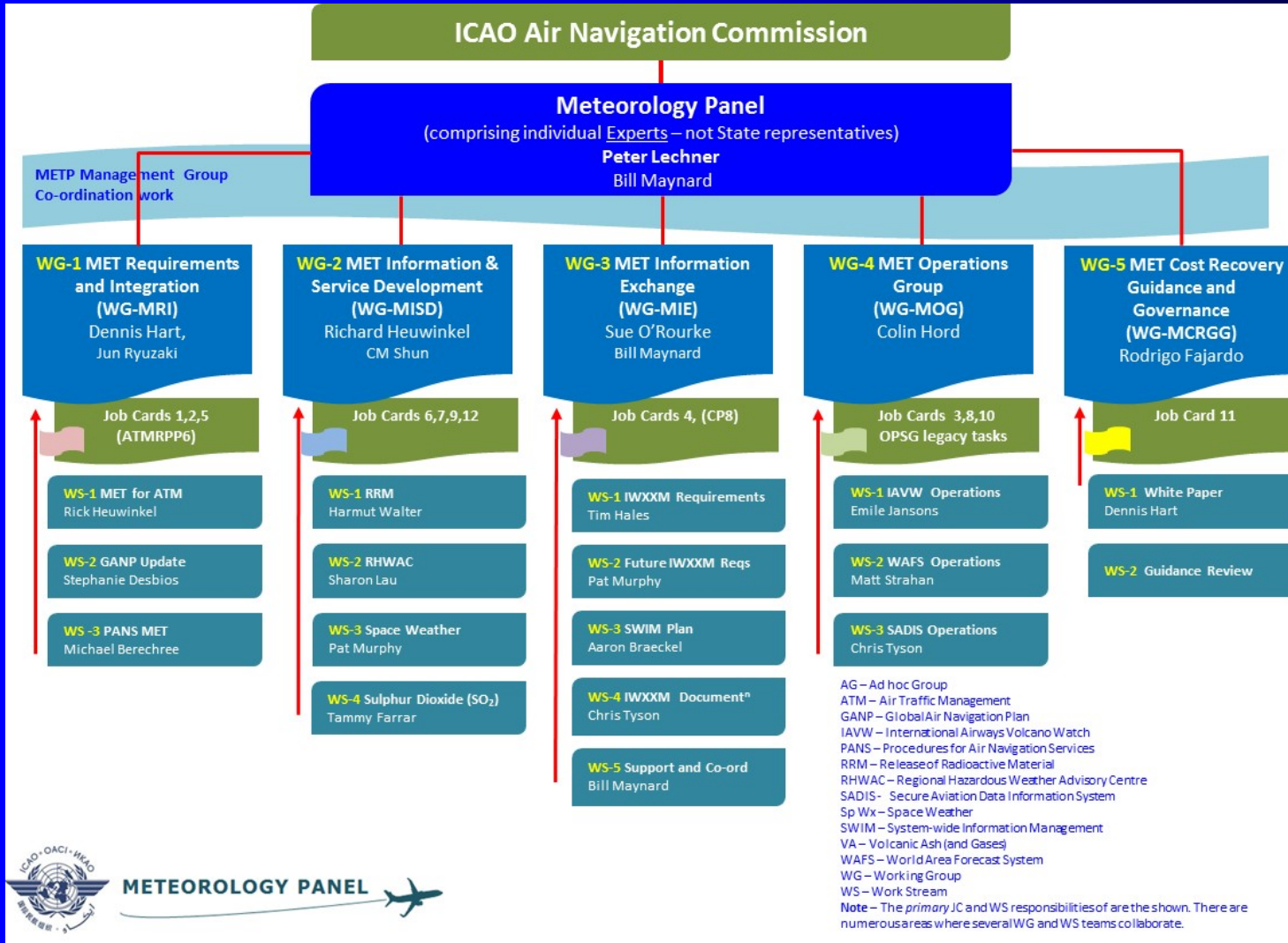
Agenda Item # 3

Meteorology Panel (METP)

The METP shall collaboratively determine operational requirements for aeronautical MET service provision as an enabling function for a future globally interoperable air traffic management system and identify solutions, in coordination with WMO, to effectively and efficiently fulfil the requirements through sound scientific and/or technological capabilities.

- 27 Independent expert members
- ~50 Advisers to the experts
- METP meets formally on 18 month cycle
- Working Groups and Work streams meet at least annually
- Frequent teleconferences to co-ordinate work

METTP Work



ICAO GANP

The 2019 GANP will take on a multi-layer approach:

- Global Managerial - Global ATM Operational Concept (GATMOC) Vision,
- Conceptual Roadmap,
- Global Performance Ambitions,
- Global Technical (Basic Building Blocks (BBB)),
- Aviation System Block Upgrades (ASBU),
- Performance-based Decision-making Method
- Regional, National

Block 0 from 2013

Block 1 from 2019

Block 2 from 2025

Block 3 from 2031

Block 4 from 2037

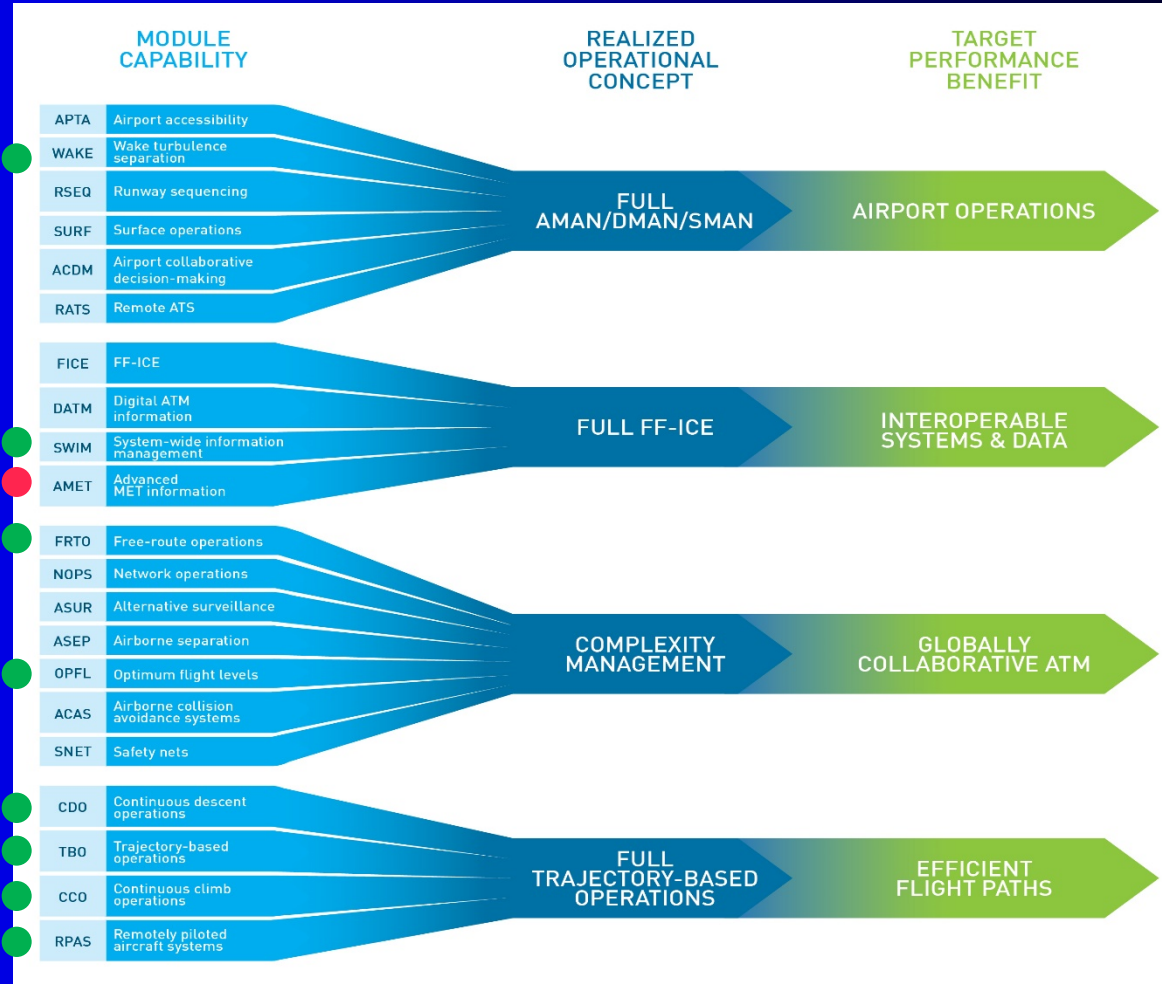
Flight & Flow Information for a Collaborative Environment (FF-ICE)

Operational Thread

Enabler Thread

Operational Thread

Operational Thread



MET Block Work – 2016 GANP

B0-AMET – Complete – MET information supporting enhanced operational efficiency and safety.

- WAFC, TCAC, IAVW, OPMET (TAFs, METAR), SIGMET

B1-AMET – In process - Enhanced operational decisions through integrated MET information – planning and near term.

- IWXXM provision, Integration into operational decision processes, SPW implementation.

B3-AMET – In process - Enhanced operational decisions through integrated MET information – near term and immediate.

- Provision of MET direct into flight and ATM operations for routine use and tactical avoidance decision making.
- Enhancement of aircraft based sensing.
- Display of MET information within aircraft based capabilities.
- Seamless hazardous MET information.

B4-AMET - ?

Asia Pacific Region (APAC)

- 38 States, 1 Non-contracting State, 2 Special Administrative regions of China, 13 Territories, 50 FIRs
- Regional office in Bangkok, Sub-regional office in Beijing
- Five MET groups support METP and also co-ordinate the application of METP outcomes in the APAC region.
- The MET groups are aligned with the METP Working Groups
 - MET Sub-Group (MET SG)
 - MET Information Exchange Working Group (MET/IE WG)
 - MET Requirements Working Group (MET/R WG)
 - MET Services Working Group (MET/S WG)
 - Volcanic Ash Exercises Steering Group (VOLCEX SG)
- MET/IE, MET/R, MET/S & VOLCEX SG report to the MET SG, which meets annually in Bangkok
- The MET WGs and SG focus on the regional aspects of METP as well as arranging annual SIGMET and VAAC backup tests, volcanic ash exercises and reviews of the MET deficiencies in the Region.

Future MET Delivery

- Product centric – out
 - TAC - out
 - Periodic products - out
 - AFTN/AMHS – out
 - Human intermediaries - out
 - Data centric - in
 - IWXXM - in
 - Data flow - in
 - Internet – in
 - Machine to machine - in
-
- Change in State Responsibilities
 - New Regional and Global MET Entities
 - New MET funding arrangements

Future MET Delivery

FL999

Seamless/Borderless Global Hazardous Weather Information

Incorporating current IAVW, Space Weather, WAFs, TCACs, in particular:
 Icing, Turbulence, Mountain Waves, Thunderstorms, Radiation, Volcanic Ash,
 Tropical Cyclones

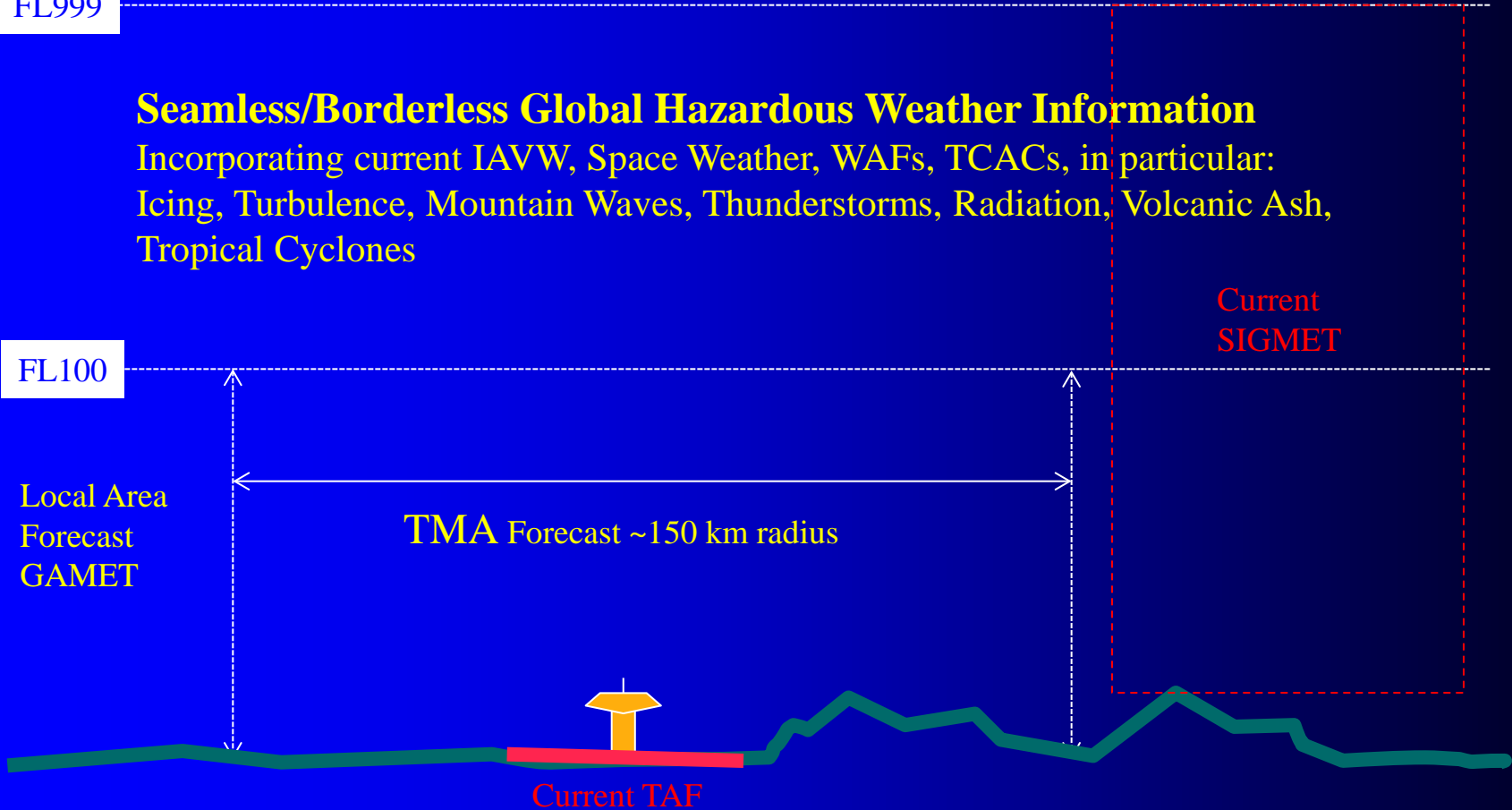
Current
SIGMET

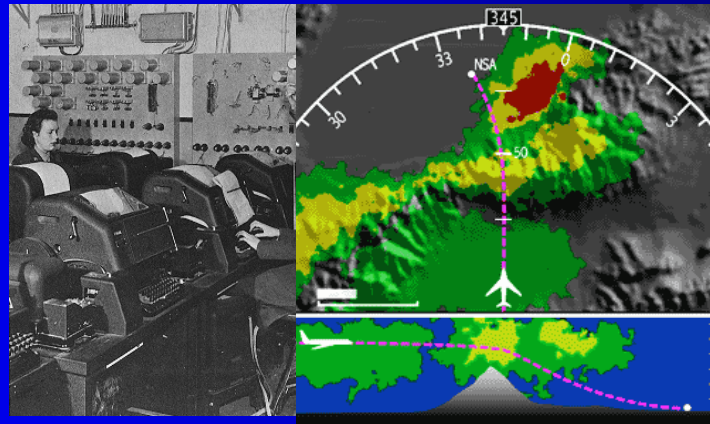
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Local Area
Forecast
GAMET

TMA Forecast ~150 km radius

Current TAF





IWXXM and SWIM

Agenda Item # 3

SWIM

System Wide Information Management (SWIM) is an ICAO initiative to increase information sharing between aviation participants by putting data into common formats, which allows multiple systems to access the same data. It envisions improvements to existing systems as well as new applications made possible by the use of a greater and richer data supply.

- The New Southern Sky Program is considering how the ICAO System Wide Information Management (SWIM) initiative can be applied in New Zealand for the benefit of Aerospace industry participants.
- It is expected that New Zealand will probably not have a big infrastructure build like similar systems in the USA and Europe – but we want to understand where the benefit will be to New Zealand so we can concentrate on those specific areas to maximize any investment.

IWXXM

The ICAO Meteorological Information Exchange Model (IWXXM) is a format for reporting and exchanging MET information in XML/GML format.

- By 2019 IWXXM will include representations for standard products required in ICAO Annex III and WMO Publication No. 49, Vol II.
 - METAR, TAF, SIGMET, AIRMET,
 - Tropical Cyclone Advisory (TCA) and Volcanic Ash Advisory (VAA).

- Later, IWXXM will also include other types of Met information
 - Space Weather Advisory (SPW) information
 - global phenomena hazardous weather information.

IWXXM is designed to be consumed by software providing flight planning, flight management, air traffic management, collaborative system management.

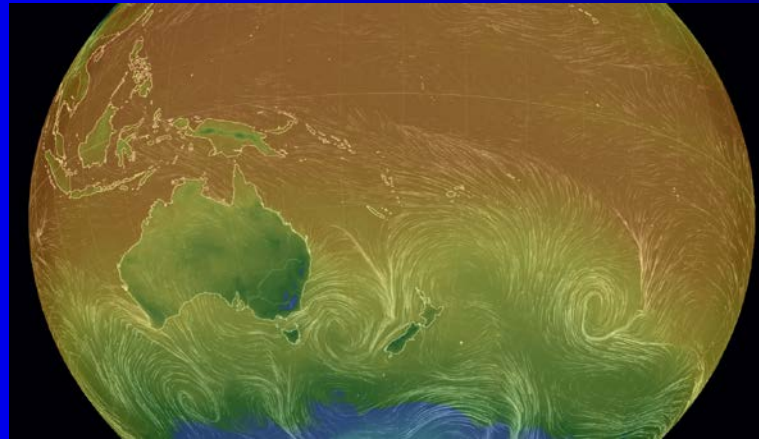
Applications will be needed to convert IWXXM data into visual or textual form.

IWXXM benefits

- IWXXM will allow for the provision of much more granular MET information both spatial and temporal.
- Current product-centric information will be disaggregated into data-centric components with associated metadata.
- The provision of *BIG* MET data becomes possible.
- This approach will allow users to intergrade and use MET data in whatever advantageous manner they wish.

IWXXM in New Zealand

- The implementation of IWXXM here is being managed by Met Service
- Kevin – this is your bit!



Establishing Clear Base-Line MET

Agenda Item # 10

State Supply Arrangements

- Successful contract with MetService in place for international MET since 1996
- Inclusion of domestic MET requirements pending
- MOU with Airways on respective MET requirements pending
- Aim is to establish a clear MET base-line information for New Zealand

Costs and Charging

- Airways – within air navigation charges
- MetService
 - Currently direct user contracts (and MoT for MetFlight-GA)
 - Direct contracts unsustainable due to;
 - Changing airline business models,
 - Volatility in airline operations,
 - Changing nature of MET to an integrated global approach, and
 - Rise of complementary private MET capabilities.

Costs and Charging (2)

- METP working group on Cost Recovery guidance and governance (MCRGG)
- Global production
 - Regional and global cost recovery
 - Use of recovery methods that are not State dependent or State limited.
 - Disbursement of funds on the basis of production.
- Local provision
 - Need for States to move to dynamic cost recovery mechanisms