METEOROLOGY PANEL

GANIS2 Meteorology Session

The Future of Global Aviation Meteorology - a quiet revolution gaining pace now.

Presented by Peter Lechner, Chairman of the MET Panel

The Value of MET information

- The annual net direct benefit of meteorological information for global air transport operations is around **US$ 20-30 Billion**

  (based on UK and IATA data)

  - *Global airline turnover in 2016 was US$705 Billion (IATA)*
  - *Global GDP contribution in 2016 was US$2.7 Trillion (IATA)*
- MET information is critical to aviation safety risk management.
- MET information and data is critical to the global economy.

As the level of aviation activity increases, the value and significance of MET increases.

The financial value of MET is around half of the overall global profit margin of airlines.

One Sky

- We have only one contiguous atmosphere.
- It is a critically scarce resource.
- Safe and efficient aircraft operation, with minimal affect on the atmosphere, will always require good MET information.

How we use airspace for aviation will be increasingly constrained

Global MET data

- The monitoring and modelling of the atmosphere is now at an advanced level and still improving.
  - *Satellite and terrestrial observational data*
  - *Spatial and temporal advances*
  - *Supercomputer and modelling advances*

Air traffic management, aircraft manufacturers, and aircraft operators need to plan for the fully integrated use of big MET data.

Seamless Global MET

- To meet the challenges of tomorrow's aviation world, MET information must be increasingly global and seamless.
- We already have some important global MET systems and products:
  - *World Area Forecast System (WAFS)*
  - *International Airways Volcano Watch System (IAVWS)*
- MET initiatives close to implementation:
  - *Space Weather Warning system (SPW)*
- MET initiatives under consideration and development:
  - *Hazardous Weather Advisory Centre System*

The changes in MET are gathering pace, reflecting the changing needs of aviation.

Getting MET information to the Users

- Product-centric to data-centric:
  - Traditional alphanumeric coded (TAC) products to GML/XML data streams - IWXXM data.
  - Regional OPMET to a system wide information management environment (SWIM).

In the future, aviation operations will take only the MET data needed to ingest into their systems and build what is wanted - no more no less.

Changing Demands and Drivers for MET

- The aviation industry continues to change with pace
  - ICAO GANP initiatives
  - Commercial structures
  - Technical operations eg: PBN, TBO
  - Aircraft types
    - Longer range and higher operations
    - Supersonic renaissance
    - RPAS/UAS
    - Personal aerial vehicles

The only sure thing is that change will continue - and the pace will be variable.

Some Emerging Initiatives

- High ice water content
- Wake vortex
- Turbulence
- Volcanic ash concentration
- Sulphur dioxide (SO_2) information
- Wide terminal area forecasting (supporting TBO)

As aviation continues to develop, new critical MET factors will continue to arise.

MET is not standing still

- ICAO and the MET Panel are strongly supported by the World Meteorological Organization (WMO).
- This lends a huge scientific development capability and capacity.
- Current and future MET capabilities will continue to undergo relentless, well considered development.
- MET Panel experts here today will explain a number of examples.

Able to change and advance new areas of MET endeavour as rapidly as possible.

Issues and Challenges

- Move to phenomena based MET information
- Funding global MET systems
- State MET capability deficits
- Private MET sector involvement
- MET data transport, access and SWIM
- Global MET system development agility

There will always be scientific, operational and funding challenges, but there is a will to meet and overcome these challenges on a global scale.

METEOROLOGY PANEL

Meteorology Panel

(comprising individual Experts – not State representatives)

Peter Lechner

Bill Maynard

METP Management Group
Co-ordination work

WG-1 MET Requirements and Integration (WG-MRI)

Dennis Hart, Jun Ryuzaki

Job Cards 1,2,5 (ATMRPP6)

- **WS-1 MET for ATM** — Rick Heuwinkel
- **WS-2 GANP Update** — Stephanie Desbios
- **WS -3 PANS MET** — Michael Berechree

WG-2 MET Information & Service Development (WG-MISD)

Richard Heuwinkel

CM Shun

Job Cards 6,7,9,12

- **WS-1 RRM** — Harmut Walter
- **WS-2 RHWAC** — Sharon Lau
- **WS-3 Space Weather (SPW)** — Pat Murphy
- **WS-4 Sulphur Dioxide (SO_2)** — Tammy Farrar

WG-3 MET Information Exchange (WG-MIE)

Sue O'Rourke

Bill Maynard

Job Cards 4, (CP8)

- **WS-1 IWXXM Reqs** — Patrick Simon/Pat Murphy
- **WS-2 SWIM Plan** — Aaron Braeckel
- **WS-3 IWXXM Document^{n}** — Tim Hales
- **WS-4 Support and Co-ord** — Bill Maynard

WG-4 MET Operations Group (WG-MOG)

Colin Hord

Job Cards 3,8,10 OPSG legacy tasks

- **WS-1 IAVW Operations** — Emile Jansons
- **WS-2 WAFS Operations** — Matt Strahan
- **WS-3 SADIS Operations** — Karen Shorey

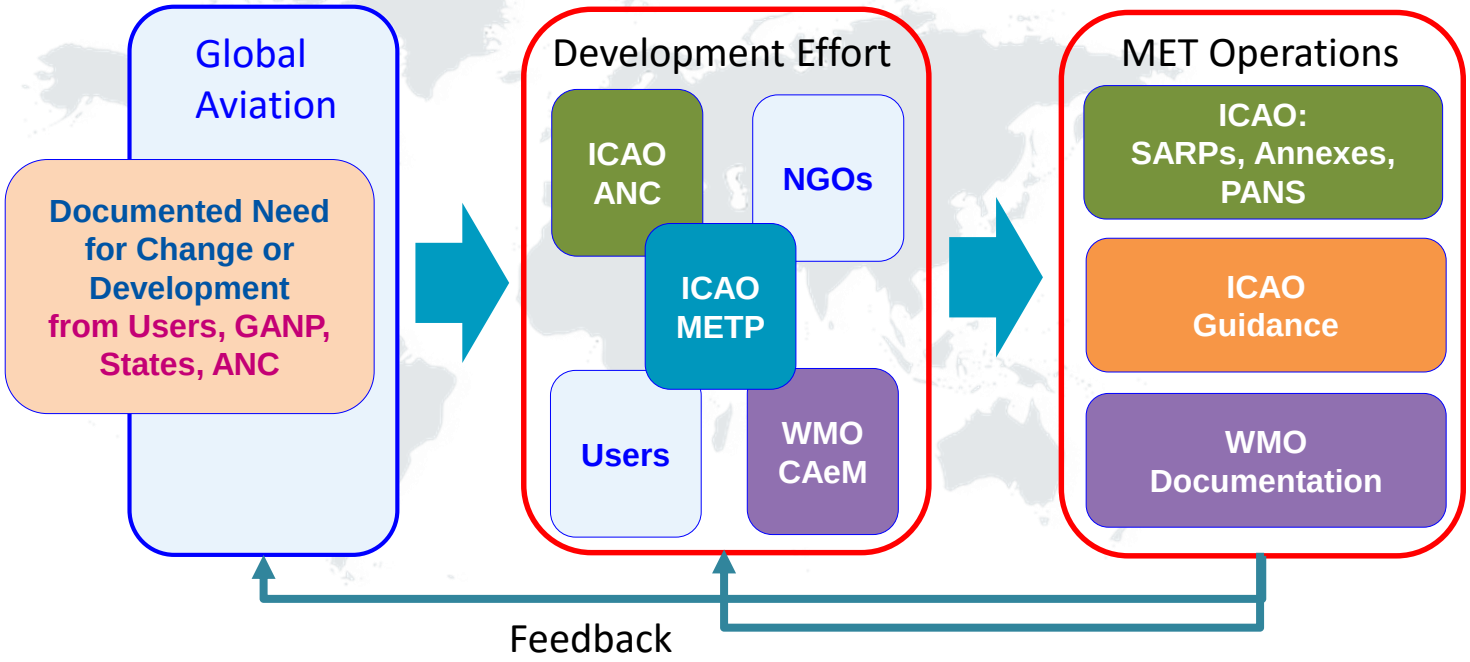
WG-5 MET Cost Recovery Guidance and Governance (WG-MCRGG)

Rodrigo Fajardo

Job Card 11

- **WS-1 White Paper** — Dennis Hart
- **WS-2 TBA**

ICAO MET Development Process



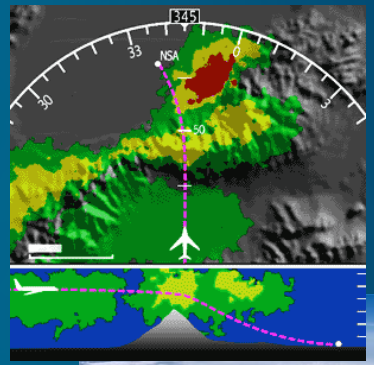
Current MET change programmes

GANP Drivers — **Other Drivers**

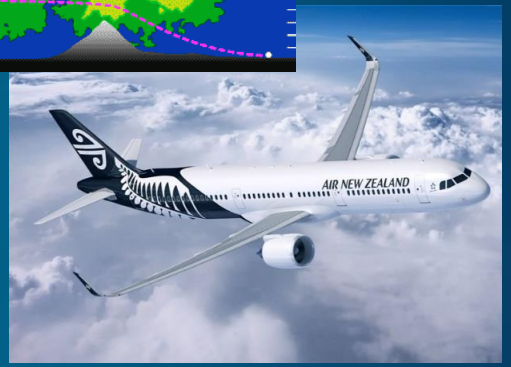
- GANP Update
- IWXXM Development
- SWIM Development
- SADIS Operations
- White Paper to 2035
- MET for ATM
- Space Weather
- Radiation
- WAFS Operations
- Sulphur Dioxide (SO_2)
- PANS MET
- IAVW Operations
- RHWAC

METEOROLOGY PANEL

The MET revolution



BIG GLOBAL DATA



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Regional products and data

The following MET Panel presentations will review key areas in more detail.

Today we need your feedback, questions, and views of the future to better focus our work.

Thank you!