

6th New Zealand Aviation Meteorology Symposium



Meeting Report

Date: 16 November 2022
Venue: Microsoft Teams

Time: 1000-1430
Actions: Refer Appendix 1

Discussion Summary

Item	Discussion/Action
Opening and introductions	David Harrison, Deputy Chief Executive – Aviation Safety, made the opening remarks, welcoming attendees to the meeting. David commented on the range of presentations scheduled for the Symposium, pleased to see a focus on the importance of the ‘human in the loop’ for aviation forecasts, via the ‘Value of the Meteorologist’ presentation and also the focus on the more recently identified aviation hazards – space weather and climate change. It was good to hear about the space weather exercise, as the aviation industry gets its collective heads around the increasing reliance on satellite-based systems.
Actions Review	Refer Appendix 1. Note – outreach activities to form a standard reporting feature of the MET Symposium.
Presentations	The PowerPoint (PPT) presentations mentioned below are available on the CAA web site <i>Meteorology</i> pages under <i>Met Developments</i> . (refer to: https://www.aviation.govt.nz/airspace-and-aerodromes/meteorology/met-developments/)
International MET Developments – Paula Acethorp (CAA – ICAO MET Panel member) and James Lunny (MetService – WMO Manager)	<u>International Civil Aviation Organisation - Meteorology</u> Amd 81 to Annex 3 to be applicable November 2024. Contents still under review / to go through State consultation. Of interest to NZ aviation: <ul style="list-style-type: none"> Quantitative volcanic ash (QVA) information service to be introduced. QVA information offers operators the opportunity to move away from traditional discernible/visible ash criteria and instead use certified engine susceptibility for flight route planning and inflight re planning. See QVA Flyer for more information (noting Amd 81 to Annex 3 is still going through review by ICAO and to go through State consultation, so there may be changes) - https://www.aviation.govt.nz/assets/licensing-and-certification/meteorology/QVA_information_flyer_vs_First-edition.pdf Use of the Volcano Observatory Notice to Aviation (VONA) for volcano observatories to share volcanic activity information with aviation to become a ‘recommended practice’. VONA is currently a “suggested” format – the change will bring about global standardisation of volcanic activity information for aviation and allow VONA to be part of pre-flight briefing material and be distributed in a similar manner to MET warning products In NZ, we will consider how volcanic hazards are managed in our air space – where aviation colour code in VONA may be more relevant to aviation risk than the volcanic alert level for some volcanic activity (eg lava flow, no ash may not pose significant hazard to aviation). <p>Amd 82 to Annex 3 – expected applicability in November 2026.</p> <ul style="list-style-type: none"> ICAO MET Panel has been tasked by the ANC to develop a “...phenomena-based, globally-consistent hazardous weather information service system for select en-route hazardous meteorological conditions...”

	<ul style="list-style-type: none"> The resulting Hazardous Weather Information Service (HWIS) will be a new inclusion, which will address existing SIGMET issues for some FIRs (such as conflicting or missing information, lack of required precision etc). HWIS being developed in line with 7 principles: <ol style="list-style-type: none"> Phenomena-based, globally consistent. SWIM-compliant provision of harmonized observations and forecasts. Reflect best available intelligence on current and predicted state of known MET hazards. Users obtain bespoke HWIS guidance to inform decision support products. Automated, quality-assured, harmonized –with appropriate human input and controls. Won't use “advisory” or “warning” descriptions –but these may be outputs of the HWIS information. Current operational challenges to global SIGMET service will be addressed separately to HWIS <p><u>WMO</u> WMO's Standing Committee on Services for Aviation recent activities:</p> <ul style="list-style-type: none"> WMO/UKMO/BOM/MetService Aero Met Online Seminars, 8-10 Nov 2022 <ul style="list-style-type: none"> Topics: fog/low ceiling; volcanic ash; icing Separate sessions for Asia/Pacific and Europe/Africa Global Survey on Gender Equality in Aeronautical Meteorology Report – Q4 2022 Climate change considerations (ET ET-CCV) WMO ‘White Paper’ on SEB hydromet services (incl. aero products & services) <p>Second session of the WMO Services Commission (SERCOM-2) held 17-21 Oct 2022 – in Geneva and online. Meeting outcomes include:</p> <ul style="list-style-type: none"> Doc. 5.1(3) on the proposed amendment to WMO No. 49, Volume I and update to WMO No. 1209 addressing aeronautical meteorological personnel qualification and competency requirements (approved) Doc. 5.1(6) on the plan of action for the discontinuation of WMO No. 49, Volume II (approved) Doc. 5.4 on the update to WMO No. 732 on service delivery and WMO No. 904 on cost recovery (approved) INF. 5.4 on the status of the update to the long-term plan for aeronautical meteorology (noted) Doc. 7.2 on amendments to the terms of reference of the standing committees and study groups of SERCOM (approved) Approved resolutions will be taken to the World Meteorological Congress, May/June 2023 for endorsement <p>WMO is organising the 8th International Airways Volcano Watch (IWVA-8) in Rotorua 4-5 February 2023, following directly on from the IUGG International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) Scientific Assembly, 30 Jan – 3 Feb. There will be a strong aviation industry focus (airline operators, airframe and engine manufacturers) and a strong focus on existing capabilities and capability gaps amongst volcano observatories. Registration closes on 13 January 2023. ICAO and WMO working group meetings to be held in Rotorua the following week. IWVA-8 website: https://community.wmo.int/activity-areas/aviation/workshops/iwva-8</p>
<p>NZ Regulatory Developments – Stuart Worden (CAA NZ – Principal Policy Advisor)</p>	<p><u>Runway Condition Reporting</u></p> <p>There is a project to implement the global reporting format for contamination on the runway due to water, snow or ice. While the ICAO Standards and Recommended Practices have recently come into force, there has been a delay in aligning the Civil Aviation Rules with these. A Notice of Proposed Rule Making on this is currently out for consultation, alongside a draft revised Advisory Circular AC139-3. Aerodromes will need to report on the condition of the runway using the standard format, with ATS communicating that information to the aircraft. NPRMs open for submission aviation.govt.nz</p>

Air Navigation Services Regulatory Framework project

There is a policy project underway to carry out a holistic review of the regulatory framework for ATS. The main objective of this is to ensure the Civil Aviation Rules are fit for purpose for the current and future technological environment. The review is looking at Parts 171, 172, 65 and 174.

Problem definition workshops were held with key stakeholders earlier in the year and this has led to work on a proposed framework for how to best regulate this area. This is at a high level at this stage – currently looking at how best to balance performance-based and prescriptive requirements, and how to incorporate risk management into the regulatory framework. The next step will be to apply this framework to the issues that have been identified with the current Rules and produce a set of policy proposals for consultation late next year. More stakeholder engagement is likely early/mid next year

The Ministry of Transport is also working on a higher-level review of the Air Navigation system, which is looking at more fundamental questions of Policy and Regulatory, Institutional and Funding arrangements. They are engaging directly with relevant stakeholders on this, and more information can be found at [Air Navigation System Review | Ministry of Transport](#)

Civil Aviation Bill

The Ministry has been revising the Civil Aviation Act for a number of years now, with the CAA policy team supporting them in this work.

Some of the key changes include: Drug and Alcohol Management Programmes, protection of safety information, powers relating to unmanned aircraft, the exemption provision, and the regulatory powers of CAA inspectors.

The Bill has been through its first reading and the Select Committee process, which included the review of public submissions and public hearings to listen to people's views. These submissions have been considered, and the Bill will be introduced to Parliament for its second reading very soon.

Assorted Issues Rule

Rules drafting on an Assorted Issues Project will start soon, looking at a number of small, discrete rules issues, including:

- Part 61 Night Vision Imaging Systems (NVIS)
- Part 91 Aircraft Call Signs
- Part 91 Performance-Based Communication and Surveillance (PBCS)
- Part 145 Maintenance Organisation Rating Requirements
- Part 129 Foreign Aircraft Operations
- Part 91 Helicopter Hover Entry/Exits
- Part 121 Flight Attendant and Cabin Crew Ground Instructor Training Requirements:
- Part 43 Duplicate Inspections
- Part 1 Definition of Introductory Flight
- Part 1 Definition of a Crew Member Revision.
- Part 1 Definition of Cost-Sharing Flights

An NPRM is expected to be out for this around the middle of next year.

ICAO Alignment

A policy project is underway to align CARs with ICAO SARPS in a number of specific areas, including:

- BK117 Maintenance and Required Equipment
- Global Aeronautical Distress and Safety System (GADSS)
- Part 139 – alignment with Annex 14 Amendments
- Sensitive Pressure Altimeters

	Annex 3 is not within scope of this project but may be included in a future ICAO alignment project. The NPRM for this should be released later next year.
VAAC Wellington – Chelsea Glue	<p>An overview of the global VAAC system was provided, with VAAC Wellington (operated by MetService) one of 9 VAACs worldwide.</p> <p>VAAC Wellington also issues the VA SIGMETs for the NZZC and NZZO FIRs, and provides information to Nadi, Nauru, Honiara, Tahiti and Isla De Pascua FIRs for MWOs to issue SIGMETs also, as necessary.</p> <p>During 2022 (to date) there has been 141 VAA issued, with 96% of these related to eruptions/VA events, the rest were for test/exercise/back-up events.</p> <p>The Hunga Tonga-Hunga Ha’apai January event was the most significant eruption of the year, but VAAs also issued for Whaakari/White Island, multiple Vanuatu volcanoes and Home Reef in Tonga.</p> <p>Extensive collaboration with volcano observatories and VAAC Darwin is undertaken, to ensure active volcanoes are monitored and that the VAAC is ready to issue advice when needed. Further monitoring undertaken by VAAC via webcams, lightning alerts and satellite imagery – as well as receipt of PIREPs.</p>
Navigatus – Geraint Bermingham	<p>An update was provided on investigation into the relationship between the Navigatus system’s turbulence calculation vs reported aircraft deviation from 1g (aircraft data) in the Queenstown basin.</p> <p>A new approach was developed, determining expected turbulence based on overall low-level airflow conditions, rather than using spot data at individual weather station locations. This has resulted in turbulence predictions specific to overall wind flow and speed.</p>
MetService – Ray Thorpe, Kevin Alder, Chris Kroger, Amy Dreverman	<p>MetService has initiated the 4-year Te Pae Tawhiti project to initiate structural and process changes leading to more efficiency and allowing an environment to grow capability. Along with this, there is a refreshed aviation mission of ‘<i>strong strategic relationships with customers and regulators, reshaping services through ongoing collaboration, ensuring long term sustainable aviation services, that contribute to a safe and efficient NZ aviation system.</i>’ Incorporating Te Tiriti into business practices.</p> <p>Aerodrome reporting upgrades include:</p> <ul style="list-style-type: none"> • Updated Milford Sound AWS, with METAR AUTO now available and two webcams. • Planned relocation of equipment at Kerikeri, Tauranga, Whangārei and Gisborne aerodromes. • Wellington radar upgrade plans – new hardware due to be installed during February/March 2023, with radar data unavailable during that period. <p>An outline of the new ‘nowcasting’ initiatives were presented, describing the development product ‘WindCast’ which combines analytical, probabilistic and ensemble-like elements resulting in rapidly updated wind forecasts at local scales – as spot forecasts, and 2D + 3D gridded forecasts.</p> <p>Work on volcanic ash cumulative thickness modelling underway in collaboration with GNS Science, delivering daily ash deposition forecasts for the 10 monitored volcanic centres.</p> <p>Working towards real-time probabilistic forecasts.</p> <p>Briefing website PreFlight now live, developed in coordination with Aeropath. Future plans include map overlays of model data, radar & satellite data and MSL pressure, as well as spot forecasts for wind, temp and QNH for non-TAF locations.</p> <p>Trends are to be discontinued on 7 December 2023 for NZAA, NZWN, NZCH, NZOH and NZWP with TAFs for those locations (except NZWP) to be issued every 3hrs. GNZSIGWX to be issued more frequently, with a shorter validity period – bringing it in line with the GRAFOR product.</p>
Space Weather Exercise Outcomes – Dr. Jarrad Denman, Bureau of Meteorology Australia	<p>The outcomes of a space weather exercise held in October over two weeks was presented. The first session informed participants of what space weather is and what it might mean for aviation, while the second session a week later took participants through a collaborative exercise based on a real solar flare event that resulted in a severe HF COM effect.</p> <p>The exercise found that while some operators have both SATCOMs and HF COM communications available, some smaller operators rely on just HF communications and so would be impacted by a severe HF COM event.</p> <p>All participants were encouraged to review and include space weather events into their contingency procedures (impacting GNSS and HF COM, as well as radiation events for those</p>

	that operate polar routes) and to consider benefits of broadcasting MOD and SEV SWX Advisories when impacting ANSP airspace.
Weather models and the value of the forecaster – Ashlee Parkes (MetService Aviation Meteorologist)	Refer video linked at https://www.youtube.com/watch?v=s80lz1TQapM .
Climate change and the future implications for airlines – Jacob Snelgrove, Sustainability Manager, Air NZ	A presentation was made by Air NZ on the expected impacts of climate change on their business – from both physical risks (flooding, storms etc) and transition risks (changes in demand, government policy etc) and how they translate into future business impacts (increased operation costs, physical damage to assets etc). Air NZ intends to meet its commitment to net zero carbon emissions by 2050 through a combination of sustainable aviation fuel use, introduction of zero-emissions aircraft and newer more fuel-efficient aircraft, identifying further operational efficiencies, and carbon removal solutions.
Climate change impacts for aviation meteorology – Mark Schwarz, Consultant Meteorologist, MetService	Refer video linked at https://www.youtube.com/watch?v=crjwRSaYxn4 .
Further discussion	None held.

Appendix 1 – Consolidated Actions and Updates

Mtg	Action / Decision	Description and comment	State	Who/Lead
2018	2	<p>Progress the new air navigation-based MET charging model in conjunction with Airways, in close liaison with CAA, recognising that a change to current legislation may be required.</p> <p>Task is ongoing, with discussions underway or planned with CAA and MOT to progress mechanisms for sustainable cost recovery, with a focus on Part 129 operators. Overflight charging viability to be investigated in mid-2023.</p>	Open	MetService
2020	1	<p>CAA and MetService work together to develop education and outreach material for the aviation industry, utilising a variety of interactive means.</p> <p>GAP Flying Around Volcanoes published in March 2022, with accompanying article published in the Autumn 2022 edition of Vector. Both were written in coordination with GNS Science. Last MET Symposium presentation “A Day in the Life of an Aviation Meteorologist” made available to view on CAA website, with excellent feedback from those who have since watched it – resulting in plan to make such presentations a regular feature of MET Symposium.</p> <p>Additionally, MetService has continued the usual customer engagement activities, such as hosting aviation industry visitors (Air NZ, RNZAF pilots) and visiting industry (Kāpiti Aero Club, RNZAF), along with virtually hosted engagement activities.</p>	Closed. To be a standing agenda item going forward.	CAA & MetService
2021	1	<p>CAA to plan and lead, in coordination with MetService and Airways, an aviation space weather exercise, potentially working in with ICAO SWX Centre exercise plans.</p> <p>Exercise planned and executed in coordination with the Bureau of Meteorology Australia and their Australian Space Weather Forecasting Centre over 19th and 26th October 2022 – refer SWX presentation for further information.</p>	Closed	CAA