New Zealand Aviation Meteorology Symposium

Meeting 2 - Summary

Date:	3 October 2018	Time:	0830-1630
Venue:	CAA Wellington	Host	CAA NZ
Attendees:	Refer Appendix 4	Apologies	Refer Appendix 4
Agenda	Refer Appendix 3	Actions	Refer Appendix 1

1. Discussion Summary

#	Item	Discussion/Action
1.	Actions Review	Refer Appendix 1
2.	Objective	To better support the dynamism of aviation in the region, 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.
3.	Presentations	The PowerPoint (PPT) presentations mentioned below will be made available on the CAA web site *Meteorology* pages under *Meteorology Symposium.* (refer to : https://www.caa.govt.nz/meteorology/meteorology-home/) **CAA** – Peter Lechner, Paula Acethorp, Keith Mackersy: ✈ Meteorological Components of the Dec 2017 ICAO Global Air Navigation Information System (GANIS) symposium ○ Overview of global MET ○ Space Weather system ○ IWXXM (ICAO Meteorological Information Exchange Model – TAC (Traditional Alphanumeric Code) Situation ✈ WAFS Ten Year Plan (London WAFC) ✈ SO_2 Developments - Meteorology Panel (METP) ✈ Weather and Climate Science (WMO) ✈ Regional Hazardous Weather Advisory Centre (RHWAC) developments ✈ Regional MET co-ordination and developments ✈ ICAO Annex 3, Amendment 78 Changes effective November 2018 **Fiji Airways** – Mike Truman ✈ Operating in the South Pacific region **NSS** – Steve Smyth ✈ Overview of New Southern Sky (NSS) programme ✈ MET as a system enabler **MetService** – Norm Henry, Ramon Oosterkamp, Ray Thorpe, Simon Leyland, Greg Reeve ✈ Forecasting Research Update – Volcanic Ash Advisory Centre (VAAC) support ○ Satellite based volcanic ash detection (VOLCAT) ○ Ash dispersion modelling, including ash concentration work ○ Under development: Automatic alerting of eruption detection, automatic initialisation of ash dispersion model ✈ Forecasting Research Update – general modelling ○ Improved model initialisations ○ Cloud-based computing ○ Land-surface modelling improvements, nowcasting of convective storms. ✈ Network observations – Otago radar update ✈ Resilience programme update (Auckland & Wellington Forecast Centres) ✈ VAAC operations update

		○ Significant increase in activity over last few years, likely due to Himawari-8 and dedicated Volcanic Ash (VA) shift ○ Aoba eruptions overview ○ Use of World Wide Lightning Location Network (WWLLN) data ✈ SIGMET harmonisation with BoM ✈ SMS and QMS progression ✈ Update on products and services ○ Airport weather risks ○ Lightning notifications ○ South Pacific lightning detector installations ○ Embedded meteorologists – example, Rocket Lab ○ Airport Runway Condition Observations ○ API – available products, next development phase ✈ New meteorological manuals for PPL, CPL and ATPL pilots coming soon **Airways** – Mike Haines, Ian Dore, Wayne Blythe ✈ SBAS trial – process and outcomes ✈ Digital towers update, trial planned for 2019 ✈ Skyline X – new ATM system implementation update ✈ AMHS implementation update ✈ IWXXM – use of smartWeather system ✈ Future surveillance systems ○ ADS-B as the main surveillance technology ○ Contingency surveillance coverage for main routes, not dependant on GNSS ○ Replacing primary radars at AKL, WLG and CHC with new non-cooperative technology **NZ Airports Association** – Garry Goodman ✈ Weather disrupting the smooth flow of airport operations – low visibility, wind, precipitation, lightning. ✈ Runway conditions reporting – challenges of communicating this information to pilots. **Australian Bureau of Meteorology (BoM)** – Ted Williams ✈ MET CDM, using embedded meteorologists - predicting the arrival rate ✈ Transformation of Aviation Meteorological Services ○ Establishing a dedicated team of aviation forecasting specialists ○ Two main aviation-focused service centres (Brisbane and Melbourne), resilient in operation and flexible to meet workload requirements.
4.	Discussion Points	For discussion relating to action items, see Appendix 1. This section simply lists further points that were raised during the day: 1. Qantas noted the usefulness of providing a debrief following high-level eruptions and asked if that could be done for the Aoba events. Noting the SIGMET harmonisation progress with BoM, it was agreed that harmonisation with Tahiti and Nadi FIRs should also be a priority.
5.	Breakout feedback	See Appendix 2.
6.	Post Symposium feedback (Survey to follow for all attendees to provide further feedback)	1. It was noted that the Director CAA recently introduced a monthly CAA Briefing in response to requests for the CAA to provide better communication to the industry on CAA activities. In this regard it was suggested that a similar communication on MET activities would be welcome given the nature and complexity of the MET developments outlined at the Symposium. While a number of participants were aware of the MET blog on the CAA website, some felt it was updated too infrequently and on occasions contained a lot of technical detail and unfamiliar terms. 2. Some participants felt that more information and guidance concerning IWXXM was needed. In this regard it was suggested that CAA should consider providing easy-to-understand information about how IWXXM coded weather information will be provided and visualised in the future for aircraft operators in NZ, and especially for GA.
7.	Actions	Full list of actions in Appendix 1.

Next Meeting	
Date:	Tentative – October 2019
Place:	CAA, Wellington
Time:	Full day

Appendix 1 – Consolidated Actions and Decisions

Mtg	Action / Decision	Description and comment	State	Who/Lead	When
01	02	Continue with the development of the GA graphical and ARFOR Sit Brief products, with user testing Products are now live.	Closed!	MetService	
01	03	Investigate the provision of enhanced verification of existing MET products (this may mean at least the provision of PODs and FARs for all domestic aerodromes) – using latest satellite and IT potentials. MetService advised the work was now completed (with presentation of the data to be finalised), following the existing BoM verification scheme. Qantas noted that the BoM had already moved on to developing a new verification scheme and MetService agreed they would look at moving to that new scheme once developed (BoM and MetService to follow up on this).	Closed!	MetService	
01	04	Investigate the provision of MET data to 3rd party App providers such as Oz Runways and AvPlan so these products can provide information that has full Met integrity from authoritative source(s) Oz Runways and Avplan are involved in beta testing the new MetService API, which is anticipated to go live by the end of the year.	Closed!	MetService & Airways	
01	05	Develop a TAF provision policy based on aerodrome usage and demand – with a view to spreading limited AWS capacity (and METAR AUTO production) in a collaborative and considered fashion. Note the BoM work in this area. MetService advised that the draft policy is complete and the next step is to share with industry for feedback (new Action 02/01)	Closed!	MetService	
01	06	Develop, for consultation, a new air navigation based MET charging model in conjunction with Airways, using ICAO/IATA guidelines and in close liaison with CAA. Has hit a roadblock due to current legislation not supporting the implementation of this charge (unlike for Airways). To be continued as ongoing implementation task – see Action 02/02.	Closed!	MetService	Report Oct 2019
01	07	Investigate and implement if possible access to Fiji Airways AMDAR. No opportunity as yet to get the key players together as yet, anticipated this action may require an MOU.	Open	MetService	Report Oct 2019
01	08	Investigate the potential implementation and costs of meteorologist direct link to airport/ATM/airline operations. This is a work in progress. It is anticipated a business case will be put to industry for implementation in 2019.	Open	MetService	Report Oct 2019
01	09	Work with aerodromes to implement key MET input into A-CDM. To include runway condition and radar scanning concepts and costing. Work is continuing in this area, including a planned trial of a mobile LIDAR at a test aerodrome.	Open	MetService	Report Oct 2019
01	10	Promote possible usage of pending ADS-B or other technology to move MET data to/from aircraft. Noted that this may be difficult with current ADS-B bandwidth availability. Advised as not a viable option.	Closed!	CAA	
01	11	Maintain watch on ICAO development of new Terminal Area Forecast approach to support TBO. Ongoing – little development to report yet.	Open	CAA	Report Oct 2019
01	12	Improve verification and reporting from Vanuatu's Volcano Observatory working with GNS Sciences and BoM	Closed!	MetService	

Mtg	Action / Decision	Description and comment	State	Who/Lead	When
		GNS Science has been working with VMGD to improve their operations, with VAAC Wellington noticing an improvement in proactive notification of volcanic activity. Given the constraints with local staffing, comms and observation network, this action is closed, with VAAC Wellington and GNS maintaining communications.			
01	14	Investigate the modification of weather radar scanning patterns (e.g. low levels first) to provide useful data to Airways (and others) quickly. MetService's doppler radars are unable to do this. Noted that there is currently a new radar product being trialled by Auckland Oceanic Control.	Closed!	MetService & Airways	
01	15	Continue to develop ash concentration model for DARWIN and Wellington VAACs in close association with the WMO VABP and ICAO METP. Noted that an ICAO requirement is a number of years away. This work is ongoing and open-ended, noting the MetService presentation including a slide on this topic. Agreed action to be closed.	Closed!	BoM & MetService	
01	16	Implement a programme of investigation into the probable MET requirements of UAV/RPAS including low-level smaller craft through to unmanned heavy metal aircraft (eg B747 freighters) at cruising levels. Recent BoM-MetService discussions (August 2018) noted that unmanned large aircraft are unlikely to need different MET requirements to manned aircraft. Liaison is planned with small UAV (drone) groups in Australia and NZ to understand any MET requirements.	Open	BoM & MetService	Report Oct 2019
01	17	Develop a Pacific Island assistance strategy to improve the provision of MET products from the region. Covered by airlines in the panel discussion session – refer Appendix 2 and Action 02/09	Closed!	CAA, BoM & MetService	
01	18	Review the utility of TREND in context of operator need for short term forecast window on probable aerodrome conditions – noting the recent work completed by BoM in this regard Agreed that CAA should now be the lead for this work. Noted by Qantas that in Australia, the industry required a "responsive TAF" in place of soon-to-be discontinued TREND, giving operators confidence that TAF is being regularly reviewed, despite inclusion of requirement for continuous review of TAFs in Annex 3.	Open	CAA, ~~MetService~~	Report Oct 2019
01	19	Ensure that the various development programmes, including NSS, address the issues of IWXXM data storage and distribution within the SWIM environment – drawing on overseas developments and testing within the ICAO gambit. Ongoing. Noted by Director NSS that it is unlikely that government will fund infrastructure to the level of that in the US, and it is likely that any solution will be adapted and tailored to NZ requirements.	Open	CAA	Report Oct 2019
02	01	Share the domestic TAF provision policy with industry for feedback, and progress its implementation.	Open	MetService	Report Oct 2019
02	02	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.	Open	CAA & MetService	Report Oct 2019
02	03	Consider a review of June domestic TAF issue and validity time changes – a mandatory update overnight may alleviate concerns of "old data".	Open	MetService	Report Oct 2019
02	04	Consider the feasibility of providing automated forecasts for some small aerodromes, with appropriate verification in place.	Open	MetService	Report Oct 2019

Mtg	Action / Decision	Description and comment	State	Who/Lead	When
02	05	Consider ways of improving utility of forecasts for GA operations, such as aerodrome specific change criteria for TAFs when aerodromes are significantly terrain influenced (eg NZMF), whether the visibility & cloud base in both TAFs & METARs can be made available as part of the domestic format TAF, and consider "local time" alternatives to UTC. (Note: local time forecasts may be an outcome of IWXXM format OPMET where users specify how they view the data).	Open	MetService, CAA & relevant GA organisations	Report Oct 2019
02	06	Encourage better user/forecaster interactions and mutual understanding by involvement in events hosted by RNZAC, NZAWA and attending annual CAA instructor and examiner seminars.	Open	MetService & CAA	Report Oct 2019
02	07	Consider possible MET products to support Westland GA/tourism community, keeping in mind appropriate cost recovery.	Open	MetService	Report Oct 2019
02	08	Consider providing more information on limitation of AWS sensors, for example 20km visibility limit to users of the observations. (Note: there is explanatory information at https://www.caa.govt.nz/meteorology/metar-auto/	Open	MetService	Report Oct 2019
02	09	Chair of the ICAO Meteorological Panel and Chief Meteorological Officer at CAA to approach relevant NZ government agency to facilitate a government level approach at the next South Pacific Forum.	Open	CAA	Report Oct 2019
02	10	Draft Terms of Reference (TOR) for MET Symposium to clarify span and intent of work.	Open	CAA	Report Oct 2019

Appendix 2 – Break-Out Session

GA and Training Sector General Discussion

- Review domestic TAF issue and validity times
    - Since the recent domestic TAF issue and validity time change, there has been a perception that the first issue TAFs (12-06Z) is "old data" by the early morning, despite being under watch by meteorologists (there is no communication of this).
    - During the summer, the domestic TAF issue that covers the evening period is not available until after 11am – users wanting to plan their flight during daylight hours must wait for that information.
    - A review of the domestic TAF issue and validity times could form part of the wider TAF provision review (Action 02/03).
    - Also noted that there may be some merit in providing automated forecasts for some small aerodromes, with appropriate verification in place. (Action 02/04)
- ICAO change criteria not sufficient for terrain-influenced aerodromes (eg NZMF)
    - Consider aerodrome specific monitoring and/or change criteria for domestic TAFs, based on user requirements. (Action 02/05)
    - Noted that there is provision under Annex 3 for local variations under Appendix 5, section 1.3.2.
- Encourage better user/forecaster interactions and mutual understanding.
    - Noted that events under organisations such as RNZAC, NZAWA and annual CAA instructor and examiner seminars would provide good opportunity for interactions. (Action 02/06)
- High volume of GA activity in the Westland area (especially around glaciers), but aviation weather information is limited.
    - Noted that it has been historically difficult to get funding for observational equipment in this region.
    - Flights tend to be of short duration, so a traditional TAF may not be the most appropriate forecast for the area. Consider other possibilities, keeping in mind appropriate cost recovery is also necessary for new forecasts. (Action 02/07)
- ICAO rules for international METARs/TAFs reduce the resolution of visibility and cloud base once above "CAVOK" values.
    - Consider whether the visibility and cloud base information in both TAFs and METARs can be made available as part of the domestic format TAF, without affecting the internationally disseminated format (as per NZQN OPMET). (Action 02/05)
    - MetService to consider providing more information on limitation of AWS sensors, for example 20km visibility limit to users of the observations. (Action 02/08)
- Consider the benefits and risks associated with using "local time" in both OPMET and flight plans
    - Noted that in the "SWIM" world, users can view the data as they please (as long as someone provides an app for it). (Action 02/05)

Airline Sector General Discussion

Opening panel questions

1. Do the Pacific Islands States and their respective meteorological service providers (including Fiji) know what their ICAO obligations are and/or are aware of the list of deficiencies listed for their regions? *(Around 80% of Pacific Island States complete surveys, indicating an awareness. However, Part-174 audits would indicate there is a limited awareness of ICAO obligations.)*

2. Does the current ICAO MET strategy suit and/or is appropriate for the Pacific Region?
The consensus is no as it is unlikely to be able to be implemented by most developing States in the region who do not have the infrastructure or technical capacity to implement existing requirements, or many future requirements such as IWXXM and big data management.

3. Can the directors of the meteorological service providers be approached directly at ICAO meetings to address the known deficiencies? *The attendance of member states at Regionals APAC ICAO meetings is problematic with very low attendance compared to WMO meetings, where attendance is funded by WMO.*

Solutions/approaches put forward by the Panel

- One to one mentoring from States who do things well with the provision of appropriate funding to undertake the task.
- Co-operative approach utilising MFAT/SPREP/NZTE/World Bank has been tried but has not delivered long term solutions due to lack of understanding and buy-in from decision makers at government level in the Pacific States.
- The implementation of the Regional Hazardous Warning Advisory System would solve many issues around the provision of MET information that airline operators are currently facing, but this is still a long way off from implementation.
- Bilateral agreements between States to provide services on their behalf is a possible solution.
- Existing funding/charges and any new funding/charges levied against airlines/operators needs to be funnelled directly to the meteorological service providers providing aviation meteorological services.
- Private weather companies/3rd party suppliers/flight planning vendors are being increasingly called upon by airlines operating jet aircraft in the region, to fill the gaps in the provision of reliable pre-flight MET information due to ongoing list of deficiencies with local meteorological service providers.
- Prioritisation:
    - The main hazards for airlines/aircraft operators centre around the provision of METAR/SPECI, TAF & SIGMET, which currently do not meet ICAO requirements.
    - Take a targeted approach starting with Fiji, who provide aviation meteorological services on behalf of and to neighbouring Pacific States, followed by Tahiti and New Caledonia.

Proposed Strategy

1. **Utilising the South Pacific Forum** – A presentation on the importance of and benefits of the provision of meteorological information to the aviation industry in the Pacific needs to pitched at government level to high-level decision makers.
   The primary objective is to both educate and provide information/knowledge on revenue, branding, reputational implications and impacts on tourism, when sub-standard aviation meteorological services are provided.
2. **Followed by ICAO audit to ring fence problem areas with suggested solutions**

Setting up 1 and 2 above should be co-ordinated with Pacific Island Aviation Weather Services Panel Chair.

Action

Chair of the ICAO Meteorological Panel and Chief Meteorological Officer at CAA to approach relevant NZ government agencies to facilitate a government level approach at the next South Pacific Forum. (Action 02/09)

Appendix 3 – Agenda

#	Item	Covering	Presenter
1.	Opening and Introductions	• Opening Remarks • Emergency briefing • Meeting Objectives • Round table introductions and expectations	Graeme Harris - CCA Peter Lechner - CAA All
2.	CAA Responsibilities	• Review of all open actions (refer Appendix 1) • Note actions reported in agenda • Close actions where agreed	Peter Lechner - CAA

3.	International meteorological (MET) system developments and progress.	• Meteorological Components of the Dec 2017 ICAO Global Air Navigation Information System (GANIS) symposium
		  ○ Overview of global MET
		  ○ Space Weather system
		  ○ IWXXM – TAC Situation
		• WAFS Development Direction (London WAFC)
		• SO_2 Developments (METP)
		• Weather and Climate Science (WMO)
		• RHWAC developments
		• Regional MET co-ordination and developments
		• Amendment 78 Changes effective November 2018
			Peter Lechner - CAA
			Paula Acethorp - CAA
			Keith Mackersy - CAA

4.	Pacific Update	• Overview of Pacific Issues from A/L perspective • Review of various Pacific initiatives (chip in) • Feedback on strategy discussions (Action 01/17)	Mike Truman – Fiji Airways
5.	MET in the NSS Programme	• MET part of NSS delivered to date by MetService • Future benefits expected from MET as part of NSS.	Steve Smyth – CAA
6.	MetService overview and new product review	• Brief outline of recent MetService developments, and research plans (including BoM collaboration). • Resilience programme WN/AK • Graphical developments • Training Manuals • Airport MET CDM (Action 01/09) • SIGMET harmonisation and phenomena based approach • VAAC update • Observation network developments	Ray Thorpe – MetService Greg Reeve – MetService Ramon Oosterkamp – MetService Norm Henry – MetService Simon Leyland – MetService
7.	Airways overview	• Progress on new surveillance system • Remote Tower and automation developments and MET requirements • Comms changes – AMHS • MET/ATM CDM requirements • IFIS MET developments	Mike Haines – Airways Wayne Blythe – Airways Ian Dore – Airways
8.	Airports overview	• Developing airport MET requirements • Collaborative development systems	Garry Goodman – NZAA
9.	Australian perspectives	• Structures • New products • Embedded MET experience	Ted Williams – BoM
10.	Establishing clear base-line MET	• New MOU arrangements (Action 01/06) • Funding strategy and direction	Peter Lechner – CAA Norm Henry – MetService
11.	Airlines	• Parallel Panel discussion • Review of existing MET products and benefits. • Ideas on new MET products and benefits	
12.	GA/Training	• Parallel Panel discussion • Review of existing MET products and benefits. • Ideas on new MET products and benefits	
13.	Report Back	• From Panel discussions	All
14.	Review	• Issues - identified • Actions - allocated	All
15.	Future Meeting structure	• Meeting management, next meeting, governance	Peter Lechner – CAA

Appendix 4 – Participants and Apologies

Participants

Aeropath	Matt Day				
Air Nelson	Kelvin Duff				
Air NZ	Markus Kraettli				
Airways	Wayne Blythe	Mike Haines	Ian Dore		
ALPA	Frank Usmar				
Aviation NZ (AIA)	John Nicholson				
BoM	Alicia Tuppack	Amber Raman	Ted Williams		
CAA	Peter Lechner	Paula Acethorp	Paula Moore	Steve Smyth	Sean Rogers
CAA	Carlton Campbell	Keith Mackersy	David Oliver	Scott Earley	
Fiji Airways	Mike Truman				
GNS Science	Brad Scott				
Jetstar	Glenn Johnston				
Kapiti Aero Club	John Harwood				
Massey Aviation	Shannon Mickleburgh				
MetService	Ramon Oosterkamp	Ray Thorpe	Tui McInnes		
MetService	Simon Leyland	Norm Henry	Greg Reeve		
Mt Cook Airline	Hamish Kim				
Navigatus	Maggie Trotter				
NZ Airports Assoc	Garry Goodman				
Qantas	Graham Rennie				
SAA	Tony Quayle				
Wellington Airport	Lachlan Thurston				

Apologies

Advanced Flight	Keith Stephens			
Air NZ	David Morgan	Richard Skevington	David Hiscotte	
Air Services Australia	Simon Young			
Airways	Andrew Crawford	Frances Dowdle		
AOPA	Don Ryder			
Ardmore Flying School	Glenn Drower			
BARNZ	Justin Tighe-Umbers			
CASA	Ashley McAlpine			
CTC	Peter Stockwell	Michael Eastwood	Graham McHaffie	
GNS Science	Gill Jolly			
HeliOtago	Grant Withers			
IATA	David Rollo			
Massey Aviation	Paul Kearney	Ashok Podval		
MetService	Marcel Roux	Kevin Alder	Nicola Weston	James Lunny
MoT	Mark O'Regan	Sudha Rao		
Navigatus	Gerraint Bermingham			
NZAWA	Pip Schofield	Sue Telford	Penny Armstrong	Elizabeth Hogarth
NZPIA	Jennifer Lowe			
RNZAF	Jim Rankin			
Soundsair	Craig Anderson			
TAIC	Lois Hutchinson	Peter Williams		
Tasman Cargo	Andrew Sturrock			
Virgin Australia	Adrian Slootjes	Paul Chevalier		