



International Civil Aviation Organization

**FOURTEENTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE
AND METEOROLOGY SUB-GROUP OF
APANPIRG (CNS/MET SG/14)**



Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 9: Regional Implementation of International Airways Volcano Watch (IAVW)

WELLINGTON VAAC REPORT – 2009/10

(Presented by New Zealand)

SUMMARY

This paper reports on the recent activities of the Wellington Volcanic Ash Advisory Centre (VAAC).

This paper relates to:

Strategic Objectives:

A. Safety – Enhance global civil aviation safety

D. Efficiency – Enhance the efficiency of aviation operations

Global Plan Initiatives:

GPI-18 Aeronautical information

GPI-19 Meteorological Systems

1. Introduction

1.1 Activity occurring during the period covered by this report was the eruptions of the *Gaua*, *Ambrym* and *Yasur* volcanoes in Vanuatu (South Pacific). The Wellington VAAC issued Volcanic Ash Advisories (VAA) for the significant activity. The Fiji Meteorological Watch Office (MWO) issued VA SIGMET in response to these events.

1.2 The Wellington VAAC has remained operational for the period with no outages resulting from internal or external issues.

1.3 Periodic testing of VAAC procedures were undertaken and the results used to further develop procedures.

1.4 Since the beginning of 2010 there has been an almost continuous need for the Wellington VAAC to prepare Volcanic Ash Advisory information. More episodes were experienced during the period compared with the previous period.

2 Background

2.1 New Zealand has operated the Wellington Volcanic Ash Advisory Centre (VAAC) since the inception of the Volcanic Ash Advisory Centres (VAACs) as part of the International Airways Volcano Watch (IAVW) system.

2.2 The Wellington VAAC area of responsibility is that between 160°E and 140°W and Southward from the Equator to the South Pole.

3 Operations of the VAAC

3.1 Issuance of Volcanic Ash Advisories in the VAAC Area

3.1.1 The Wellington VAAC issued VAA messages during the period of this report and in particular covering the *Gaua*, *Ambrym* and *Yasur* volcanic eruptions in Vanuatu since January 2010. Advisories continue to be issued for *Gaua* (as of 16 June 2010).

3.2 Volcanic Eruptions in the VAAC Area

3.2.1 The activity occurring during the period covered by this report was the eruption of the *Gaua*, *Ambrym* and *Yasur* volcanoes in Vanuatu. In summary:

Volcano (Summit Height)	Country	Date	VAA Issued by Wellington VAAC
<i>Gaua</i> (797m)	Vanuatu	21 January to 5 February 2010	52
<i>Ambrym</i> (1,334m)	Vanuatu	4 to 7 March 2010	11
<i>Gaua</i> (797m)	Vanuatu	8 April 2010 ongoing (as of 16 June 2010)	230
<i>Yasur</i> (361m)	Vanuatu	29 May to 10 June 2010	50

3.2.2 *Gaua*, Vanuatu, January to February and April onwards

3.2.2.1 The Wellington VAAC started issuing VAAs for *Gaua* on 21 January on the basis of an aircraft report and subsequent inspection of MODIS satellite imagery. The AIREP was not initially received by Wellington but was passed on from Darwin.

3.2.2.2 The ash cloud was generally small and determined not to extend higher than 10,000ft.

3.2.2.3 On 5 February ash was no longer visible and the issue of Advisories ceased.

3.2.2.4 *Gaua* resumed significant eruptive activity in early April and the issue of Advisories resumed.

3.2.2.5 Given the continual low level activity it was decided on 28 April that Wellington would stop trying to chase the wind around *Gaua* every six hours and that the advisory would be a single box with the forecast wind direction placed in the RMK line. This would be modified if the eruption were to become more significant.

3.2.2.6 The advisories continue to be issued as of 16 June 2010.

3.2.3 *Ambrym*, Vanuatu, March 2010

3.2.3.1 Advisories for *Ambrym* were issued first on 4 March in response to an AIREP and subsequent examination of MODIS satellite imagery. Activity was low with ash not extending higher than 8,000ft.

3.2.3.2 The last Advisory was sent on 7 March when ash could no longer be discerned in imagery.

3.2.4 Yasur, Vanuatu, May and June 2010

3.2.4.1 *Yasur* began significant eruptions in late May with the first Advisory being issued on 29 May. The ash cloud was extending to 6,000ft.

3.2.4.2 The ash plume was forecast to extend towards New Caledonia and ash was reported as falling in Les Isles Loyaute 100 km to the NE of the main Island of New Caledonia.

3.2.4.3 The proximity of the forecast ash to New Caledonia coupled with the publicity generated by the ash events in Europe, prompted enquiries to the Wellington VAAC from the New Caledonia office of the French Civil Aviation Authority for volcanic ash cloud concentration maps. Because of limitations of the Wellington ash model such maps could not be provided. There was also considerable Press interest in this eruption.

3.2.4.4 *Yasur* ceased erupting on 10 June and the issue of Advisories ceased.

4 Significant Operational/Technical Changes in the VAAC

4.1 There have been no regulatory or coverage changes with regard to the Wellington VAAC.

4.2 The VAAC continues to use the PUFF and HYSPLIT models for trajectory forecast information.

4.3 Local modelling, using the PUFF model, remains available for ash transport and dispersion; however this is still embedded in coarse global model data.

4.4 MTSAT imagery for tropical areas is now being used operationally.

4.5 MODIS imagery in non-real-time (time lag of the order of several hours) is being used operationally where possible.

4.6 Bi-spectral analysis is operationally available from the geostationary satellite MTSAT.

4.7 Experiments are being conducted with a local copy of HYSPLIT to see whether useful ash concentration charts could be produced if required in the future.

5 Wellington VACC Back-up

5.1 The Wellington VAAC is operated by Meteorological Service of New Zealand Ltd (MetService). While an off-site computing back-up facility for core MetService data and operations is maintained, this does not currently provide back-up VAAC operations capacity.

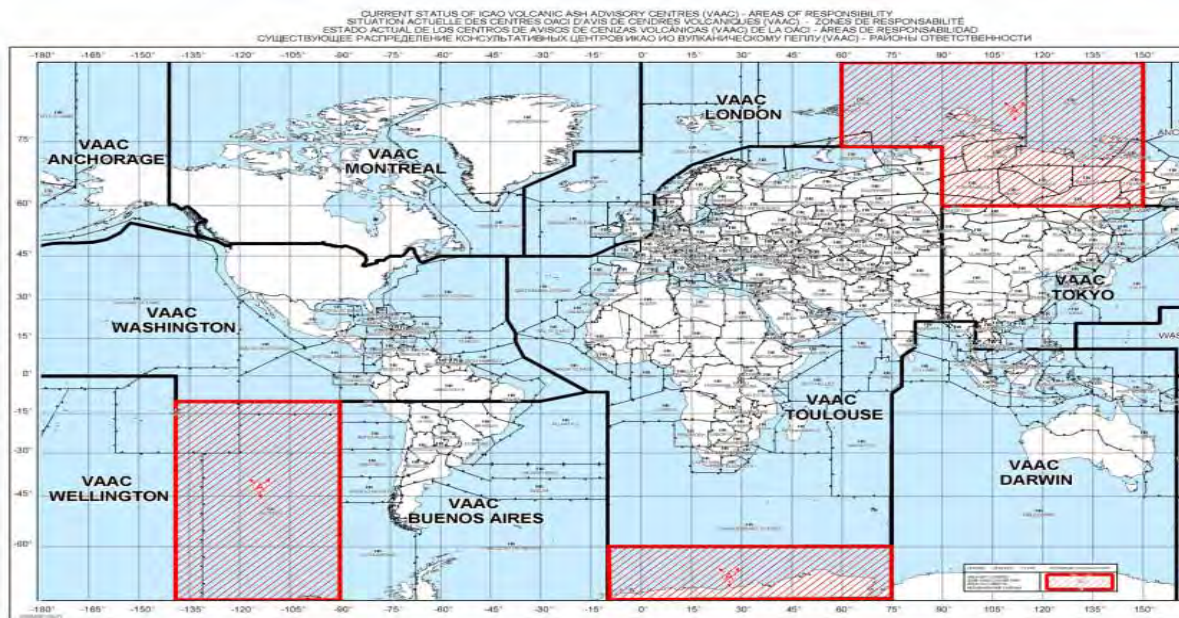
5.2 An agreement exists with the Australian Bureau of Meteorology whereby the Darwin VAAC will back-up the Wellington VAAC (the Tokyo VAAC is the back-up for Darwin).

5.3 There have been no instances where the Wellington VAAC needed to be backed up.

5.3 Periodic desktop testing of the system (with particular emphasis on New Zealand) continues to ensure procedures are manageable, understood and timely.

6 IAVW Implementation Issues

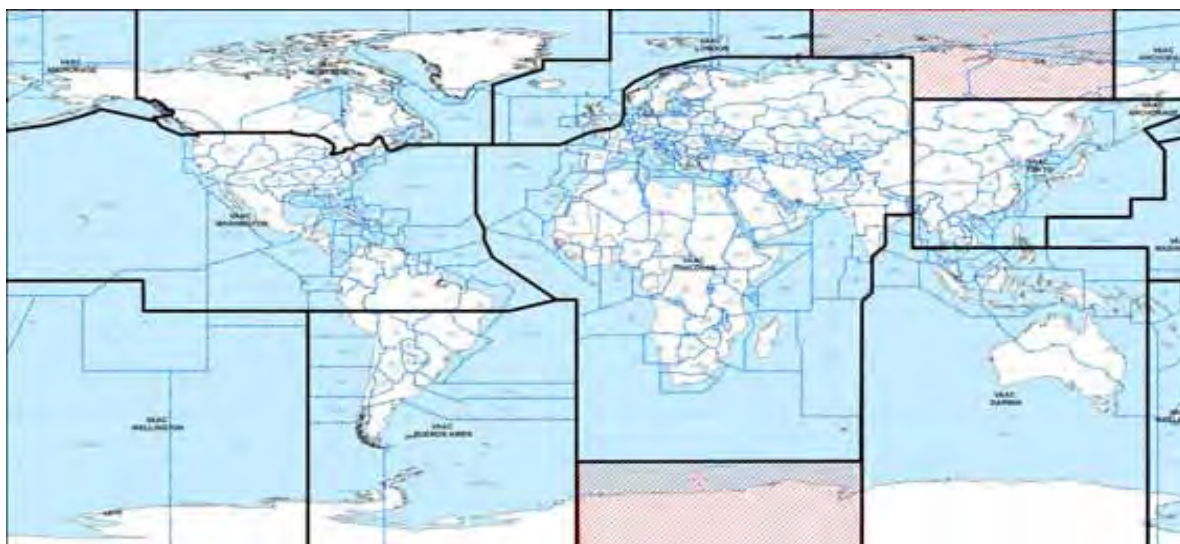
6.1 It has been agreed that the Wellington VAAC will take responsibility for the vacant area between the current Wellington VAAC area and the Buenos Aires VAAC area, and this was implemented on 1 July 2010.



Vacant area



VAAC Map 1 July 2010



6.2 GNS Science (Institute of Geological and Nuclear Science, the NZ Volcanological Authority) and the Wellington VAAC adopted the Aviation Colour Codes on 1 July 2009.

6.3 Matt Ruglys (MetService Manager, Aviation Forecasting) and Peter Lechner (Manager, Meteorological Authority, NZ Civil Aviation Authority) attended the annual VULCAN-AUS meeting of the Australian Bureau of Meteorology (BOM) in Canberra in September 2009.

6.4 A special meeting of the VULCAN-AUS group was held in Canberra on 9 June 2010 in response to the events in Europe. Matt Ruglys, (MetService), Peter Lechner and Keith Mackersy (CAA) participated by conference phone.

6.5 The operation of the New Zealand Volcanic Ash Advisory System (VAAS) is generally reviewed on an annual basis. However, no meeting was held 2009 due to the difficult trading conditions being experienced by airlines. The meeting for 2010 is planned to be held in mid July 2010. The VAAS is a local enhancement of the Wellington VAAC, and involves the cooperative participation of GNS, MetService, Airways NZ, CAA and airlines.

6.6 The relationship between MetService, who operate the Wellington VAAC, GNS Science remains robust with the programme of familiarisation visits and briefings continuing during the period of this report. Similarly the relationship with the Airways Corporation of New Zealand (Airways NZ) remains robust.

6.7 The VAAC receives emailed alerts of SO2 emissions from the SO2 data and alert service (SACS): <http://sacs.aeronomie.be/>

6.8 The Wellington VAAC website remains available at <http://www.vaac.metservice.com/vaac>

7 Future Developments

7.1 Development work has begun on new forecaster tools for the production of VAA and SIGMETs including VAG and graphical SIGMETs. It is intended to be operational in November 2010.

7.2 The expansion of the New Zealand Doppler Weather Radar network continues with the commissioning of a new radar at Mahia on the east coast of the North Island in November 2009.

8 Action Required by the Meeting

8.1 The meeting is invited to note the information presented in this paper.
