International Civil Aviation Organization

INFORMATION PAPER

Twenty-fourth Meeting of the Meteorology Sub-group (MET SG/24) of the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG)

Web-conference, 16 – 20 November 2020

Agenda Item 5: Research, development and other initiatives

VAAC WELLINGTON MANAGEMENT REPORT

(Presented by New Zealand)

SUMMARY

This paper covers the VAAC Wellington activities for the period 1 June 2019 to 30 September 2020.

1. INTRODUCTION

1.1 Volcanic Ash Advisory Centre (VAAC) Wellington, operated by the Meteorological Service of New Zealand Limited (MetService) covers the region southward from the Equator and from E160 to W140, except for the Melbourne and Brisbane FIRs, and southward from S10 and from W140 to W90.

1.2 VAAC Wellington works closely with GNS (Institute of Geological and Nuclear Sciences New Zealand), who is responsible for volcano monitoring in New Zealand. The VAAC also works closely with the Vanuatu Meteorology and Geo-Hazards Department (VMGHD) who is responsible for monitoring volcanoes across the Vanuatu region. There has also been closer collaboration between the VAAC and the Tongan Meteorological Service (TMS) as part of the work needed to help Tonga remove the existing ICAO deficiency for volcanic activity reporting.

1.3 The VAAC also communicates with other meteorological and air traffic service organisations across the Pacific region when seeking confirmation of volcanic activity.

2. DISCUSSION

VAAC Wellington Operations

2.1 A total of 36 Volcanic Ash Advisories (VAA) and accompanying Volcanic Ash Graphics (VAG) have been issued for the Wellington area of responsibility between the period 1 July 2019 and 30 September 2020.

2.2 Of these 36 VAA/VAG, Yasur (Vanuatu) accounts for 86% of the total number of advisories issued (see Figure 1). All events for Yasur were low level eruptions with little/no disruption to air traffic.

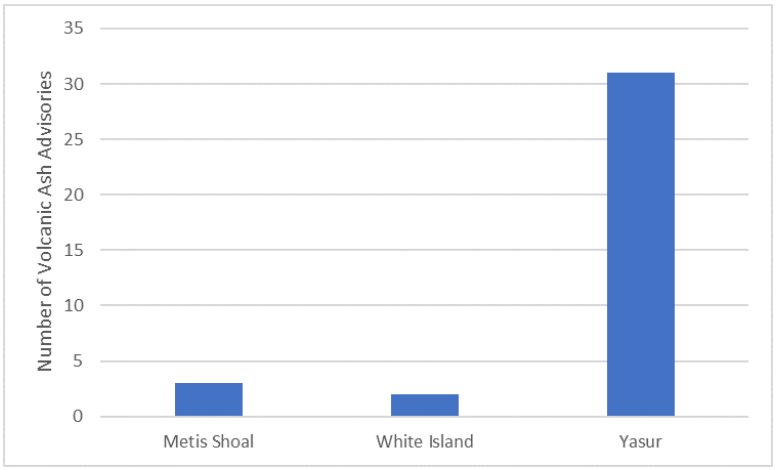

Figure 1 - Advisories by volcano for the VAAC Wellington area of responsibility for 1 July 2019 – 30 September 2020

2.3 The Metis Shoal event did not produce ash but served as an interesting event where conflicting communication about the event has resulted in better coordination between the VAAC and air navigation service providers in the area.

2.4 The White Island eruption in December 2019 (New Zealand) was a significant event for VAAC Wellington, due to high media interest and the loss of life due to the eruption, but little ash was emitted. Figure 2 shows the volcano shortly after the eruption began.

2.5 MetService's Aviation and Severe weather teams worked closely with the State Volcano Observatory GNS Science NZ and the National Emergency Management Agency (NEMA) in the weeks following the eruption in providing weather conditions about the volcano in support of the recovery effort there. This meant providing aviation specific conditions about the volcano and providing authorities with likely weather windows to operate within.

Figure 2. GNS Science NZ webcam imagery of White Island, 0110Z 9 December 2019

2.6 The last 18 months have been much quieter than in previous years (see Figure 3), largely due to reduced volcanic eruptions in the Vanuatu area.

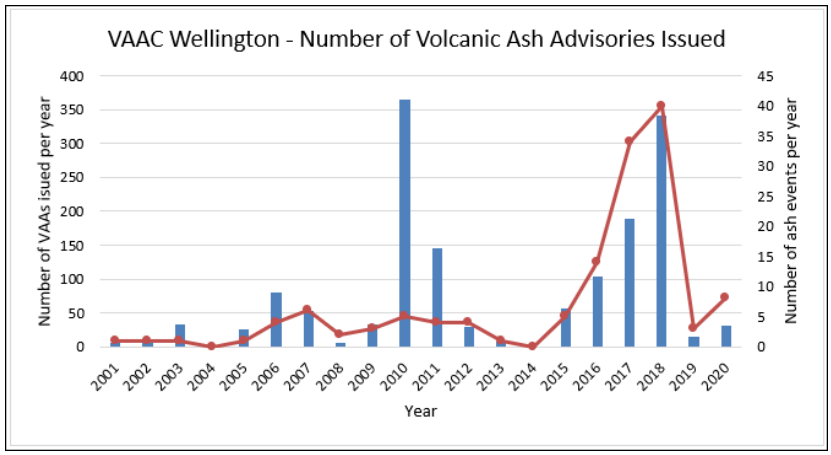

Figure 3 - VAAC Wellington - Number of events and advisories per year

Other Activities

2.7 The cloud-based and upgraded Volcano Cloud Analysis Toolkit or VOLCAT was put into operations in October 2019. This a significant step forward for the VAAC in that the forecaster is now provided with enhanced in-house volcano monitoring assistance based on satellite detection.

2.8 Volcanic ash workshops were run over three days in May 2020. In these workshops the team spent time focussing on the White Island event from December 2019 and identified some opportunities for how best to improve current response processes. Due to the pandemic restrictions this was the first workshop that was run remotely with forecasters participating from home. A positive outcome in running the workshop via Microsoft Teams was the ability to record a full session and make that available to forecasters who were not able to attend the workshops on the allocated days.

2.9 The VAAC successfully participated in the APAC annual SIGMET tests on the 20 November 2019. There were also preparatory tests run on 30 October and 7 November (with RODB participation), aimed at testing upgraded forecasting software rolled out in September 2019.

VAAC Wellington Competencies

2.10 All VAAC Wellington forecasters, as Aeronautical Meteorological Forecasters (AMF), meet the competency and qualification standards prescribed by WMO. Around 30 AMF competent VAAC forecasters are split between Wellington and Auckland that can step in for a VAAC response if needed. This allows the VAAC with the resource required to ramp up its response to significant events that may require additional resource day to day. The VAAC is also working on a stand-alone VAAC competency assessment (currently incorporated into the wider aviation competency), to allow a larger pool of meteorologists to remain VAAC competent.

COVID-19 Response

2.11 This year most organisations have been forced to operate differently in response to the ongoing global pandemic. The VAAC (and MetService's wider aviation team) was split between

multiple forecast rooms and locations at times. This even saw some forecasters working volcanic ash duties from home. Under strictest distancing requirements, MetService's aviation team was spread between Wellington (which in itself was spread between 2 different locations in the same building), Auckland and forecaster's homes.

2.12 There were forecasters new to aviation and the VAAC that were trained up during the same period that New Zealand's experienced the most restrictive level 4 lockdown. This saw existing staff having to embrace the Microsoft Team's approach to collaborating, which at times was challenging. However, this did not impact the solo date of the newer team members and they are currently operating solo on the forecasting bench having met the WMO AMF Competency assessment requirements.

2.13 The uptake in Microsoft Teams across the VAAC has led to a positive collaborative outcome, with VAACs Darwin and Wellington conversing more routinely than in the past. Both VAACs have embraced the use of Microsoft Teams as a medium for communicating day to day. This is easier for VAAC Wellington to use when compared to WhatsApp, due to all other daily communications shifting onto this platform.

VAAC and Key Stakeholder Collaboration

2.14 VAAC Wellington invoked the backup of its area of responsibility by VAAC Darwin on 30 January 2020 due to a technological outage. No active VAAs were issued on behalf of VAAC Wellington on this occasion.

2.15 VAAC Wellington continues to work on a solution to meet the decision made at the 2019 IAVW MOG meeting regarding the use of headers by VAACs when providing backup services. VAAC Wellington is currently only able to use the NZKL location indicator when backing up VAAC Darwin, instead of the required ADRM (hence mimicking VAAC Darwin when backing them up). The VAAC is close to securing an interim solution with Airways NZ to assist them in issuing the correct header (with ADRM) on their behalf until VAAC Wellington correctly configures their systems to be able to issue the ADRM header. Also, VAAC Darwin has assisted by providing advice on how this may be achieved, since both VAACs use IBL's Visual Weather system for issuing VAAs.

2.16 Since the last report, VAACs Darwin and Wellington are collaborating under a 5 themed approach: Co-ordination, Quality, Consistency, Flexibility and Resilience. Current activities include comparing ash dispersion models, adding further structure to the daily collaboration (done currently via WhatsApp and Microsoft Teams), comparison of advisory and forecast creation and ensuring that as much consistency is present in both VAAC procedures.

2.17 VAAC Wellington, along with VAAC Darwin, participated in a Solomon Islands Exercise held in August 2020, to assist the Solomon Islands in beginning to address their existing ICAO SIGMET deficiencies.

2.18 VAAC Wellington continues to trial the JMA collaboration tool with the aim of using as part of wider ICAO exercises with VAAC Darwin. Next steps include sharing with feedback with VAAC Tokyo on how it could best be integrated into Wellington's operations.

2.19 In September 2019, weekly skype calls were introduced between the VAAC and the GNS duty volcanologists. The aim was for GNS to share information about the state of New Zealand volcanoes with the VAAC. This new routine interaction proved very important during the December eruption of White Island. In recent months, the frequency of these calls has been increased to three-times per week and also includes the GNS duty volcanologist. This has helped raise the VAAC's awareness on the status of the New Zealand based volcanoes and helped better connect the SVO and

VAAC. This has also led to the VAAC participating in GNS led volcanology training sessions, again with the aim of improving the VAAC's background understanding of New Zealand volcanoes. Further, the VAAC Wellington Manager routinely catches up with GNS Volcanology Team Lead, to ensure this VAAC and SVO relationship remains effective.

2.20 From June 2020 VAAC Wellington have assisted the Tongan Meteorological Service (TMS) to begin addressing their existing ICAO deficiency related to VONA issuance. This involved the VAAC putting together a series of scenarios aimed at testing the effectiveness of TMS response to probable volcanic eruptions by issuing timely VONA information to the VAAC. To date there have been 5 exercises between VAAC Wellington and TMS since June 2020. The most recent tests have displayed a considerable improvement in the VONA issuance timing and a better connection between TMS and the Tongan Geological Survey Unit.

International Stakeholder Engagement

The combined VAAC Best Practice and VASAG were held in Washington DC in November 2019 and attended by VAAC Wellington Manager Marcel Roux. These were immediately followed by the WG-MOG and WG-MISD meetings. VAAC Wellington continues to support relevant work done under both workstreams following these meetings.

2.21 VOLCEX 20/02 was successfully conducted on 17 July 2020 in the Pacific region. The exercise included VAACs Wellington, Darwin and Washington and several other aviation users and providers across the region. The event involved a simulation of a Mt Tofua eruption in Tonga and tested various responses from users as the ash spread across FIR and VAAC boundaries. TMS was also involved in this exercise and provided VONAs for the volcano. VAACs Darwin and Wellington tested their communications via the WhatsApp platform as well as the effectiveness of their backup arrangements. VAAC Washington was involved in re-broadcasting a VAA as part of the exercise. Fiji Meteorological Service was involved in testing their meteorological watch office procedures for volcanic ash SIGMETs. The outcomes are provided in the VOLCEX 20/02 outcomes report presented at this meeting.

Quality and Safety Management Compliance

2.22 VAAC Wellington, as part of MetService, is certified to AS/NZS ISO 9001:2015 quality management standards. MetService also has an implemented a Safety Management System across all operations, as of 28 November 2017.

3. ACTION BY THE MEETING

3.1 Note the information contained in this paper.

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