

International Civil Aviation Organization



**THIRTEENTH MEETING OF THE ASIA/PACIFIC REGIONAL OPMET
BULLETIN EXCHANGE WORKING GROUP (ROBEX WG/13) and
FIFTH MEETING OF METEOROLOGICAL HAZARDS TASK FORCE
(MET/H TF/5)**

Seoul, Republic of Korea, 18 March 2015

Agenda Item (conjoint session) 2: SIGMET and advisory information

DARWIN VAAC MANAGEMENT REPORT

(Presented by Australia)

SUMMARY

This paper presents the VAAC Darwin Management Report which addresses the main features of the IAVW operations, highlighting any recent developments and difficulties and future planned developments.

1. INTRODUCTION

1.1 The Volcanic Ash Advisory Centre (VAAC) Darwin is responsible for monitoring the area from the Andaman Islands (India) eastwards to the Solomon Islands including the volcanically active Indonesian archipelago, Papua New Guinea and the southern Philippines. More than 150 active volcanoes lie within the area, some of which have given rise to the largest eruptions in human history. Areas within the region have poor communications and general infrastructure, incomplete volcanic monitoring and are characterised by moist tropical convection that makes remote sensing difficult for much of the year.

2. DISCUSSION

2.1 A total of 742 Volcanic Ash Advisories (VAA) were issued by VAAC Darwin from the 1st of July 2014 to the 31st of January 2015 (see Figure 4). During this period the most significant ash events within the VAAC Darwin area were the high level eruptions of the volcanoes Rabaul in August 2014, Sinabung in January 2015 and Soputan in January 2015 (see Figures 2 and 3).

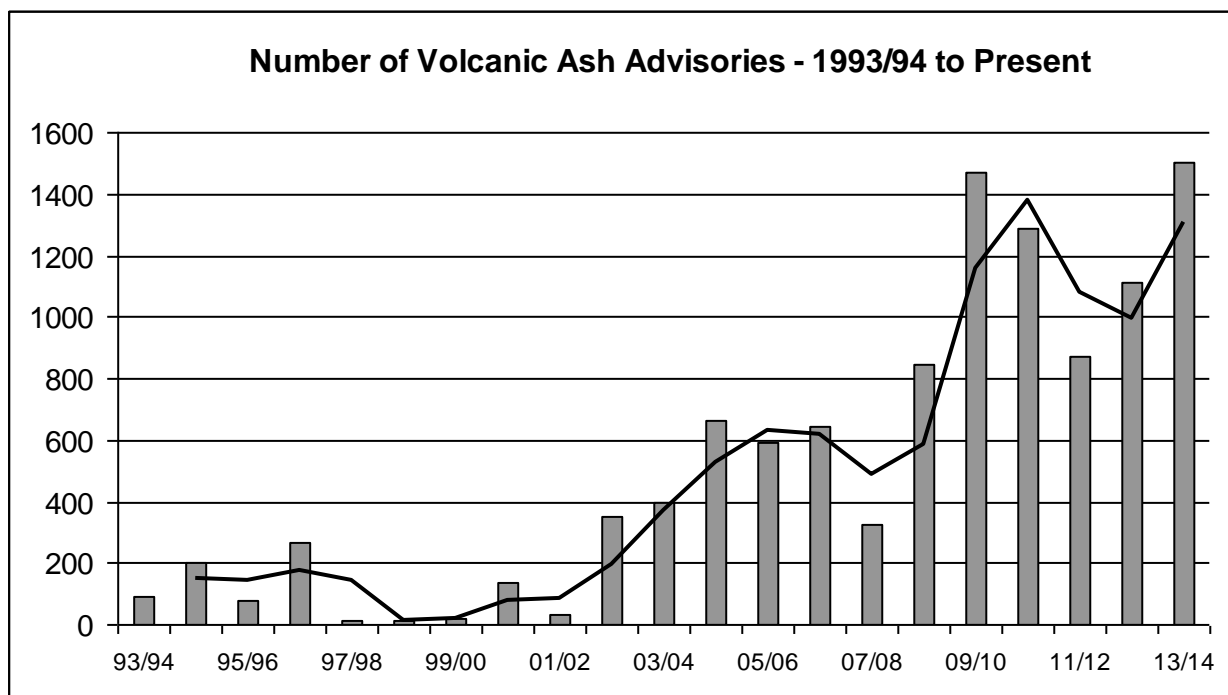


Figure 1 - Total Volcanic Ash Advisories by fiscal year issued by Darwin VAAC. The solid line is the two-year moving average.

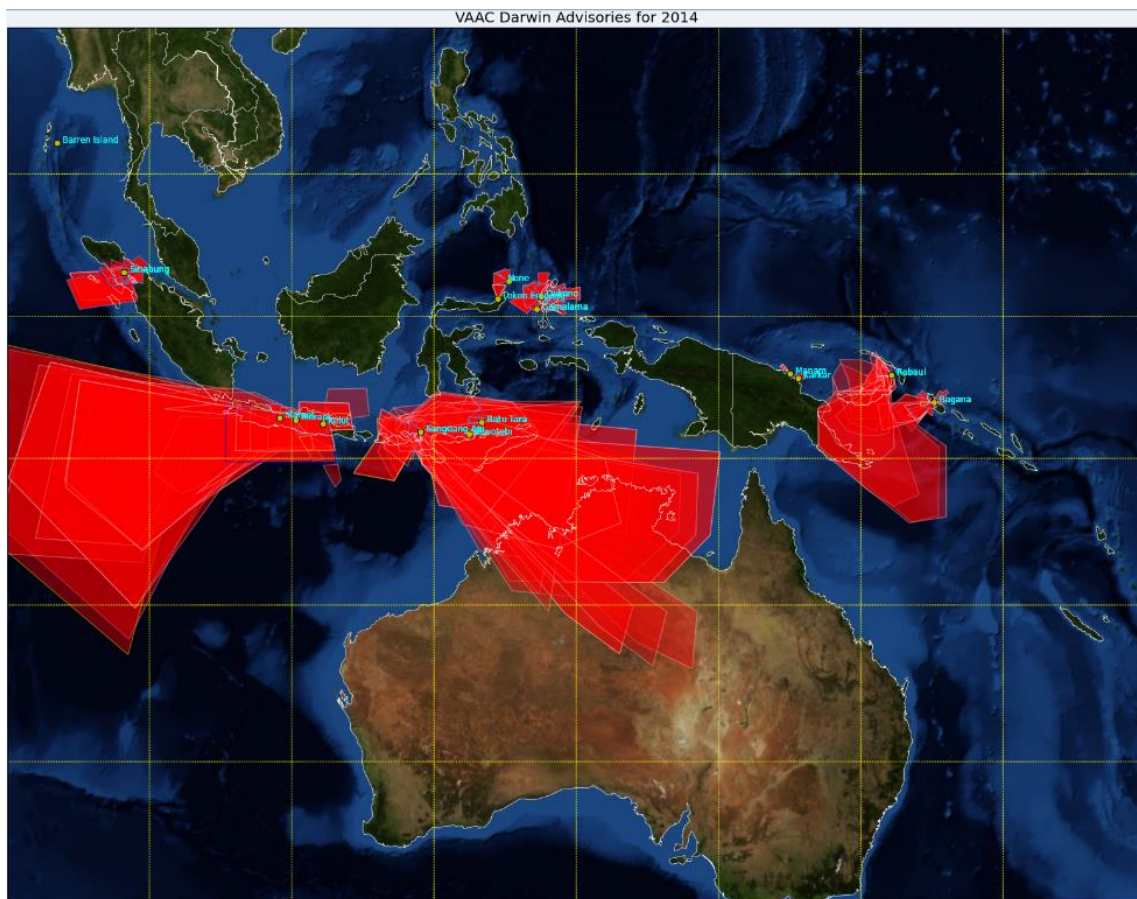


Figure 2 – Areas covered by volcanic ash forecasts during 2014

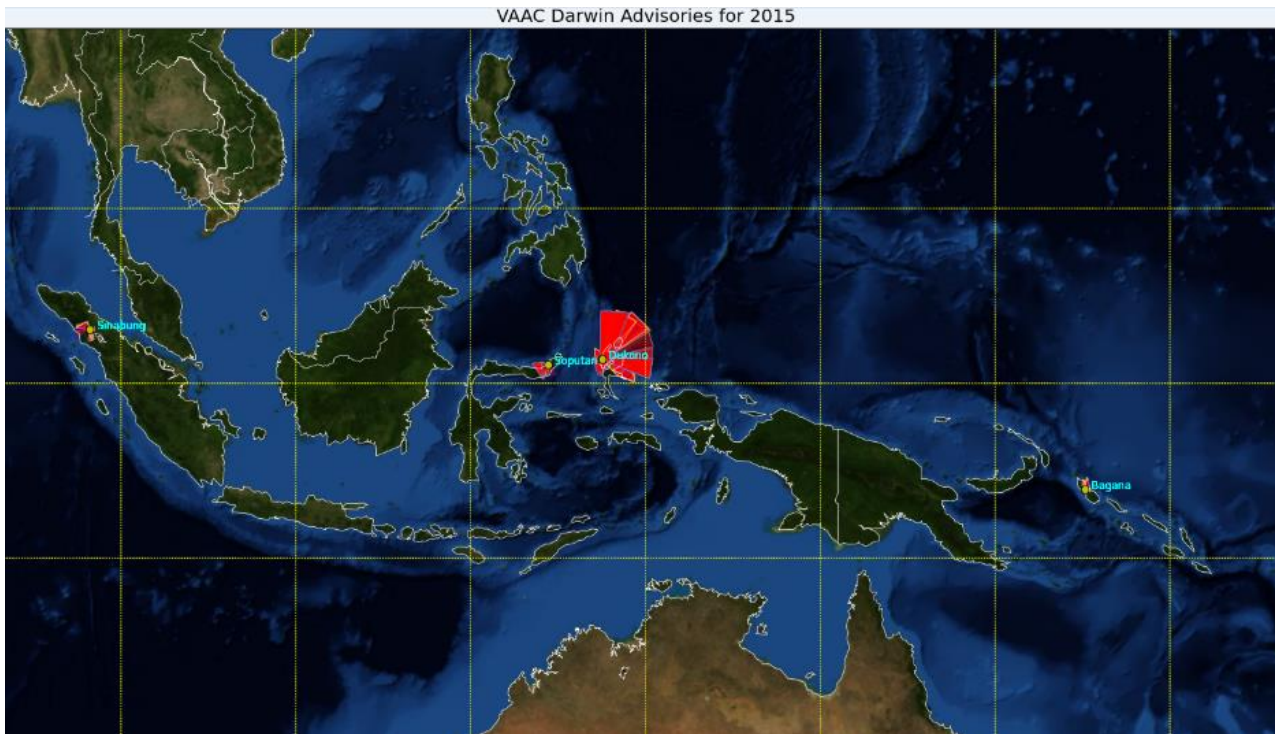


Figure 3 – Areas covered by volcanic ash forecasts during the period January 2015.

2.2 During the first 7 months of the 2014/15 year, there were 742 VAA compared to 1511 VAA during the 12-month period of 2013/14. The number of VAA for the 2013/14 year indicate an approximately 26% increase in activity compared with 2012/13.

2.3 Activity within the region was dominated by low-level ash plumes detected on satellite imagery. The number of VAA issued by volcano for July 2014 – January 2015 is shown in Figure 4. Two highly active volcanoes, Dukono in Halmahera and Sinabung in the northern Sumatra were responsible for 75% of all the advisories issued during the period.

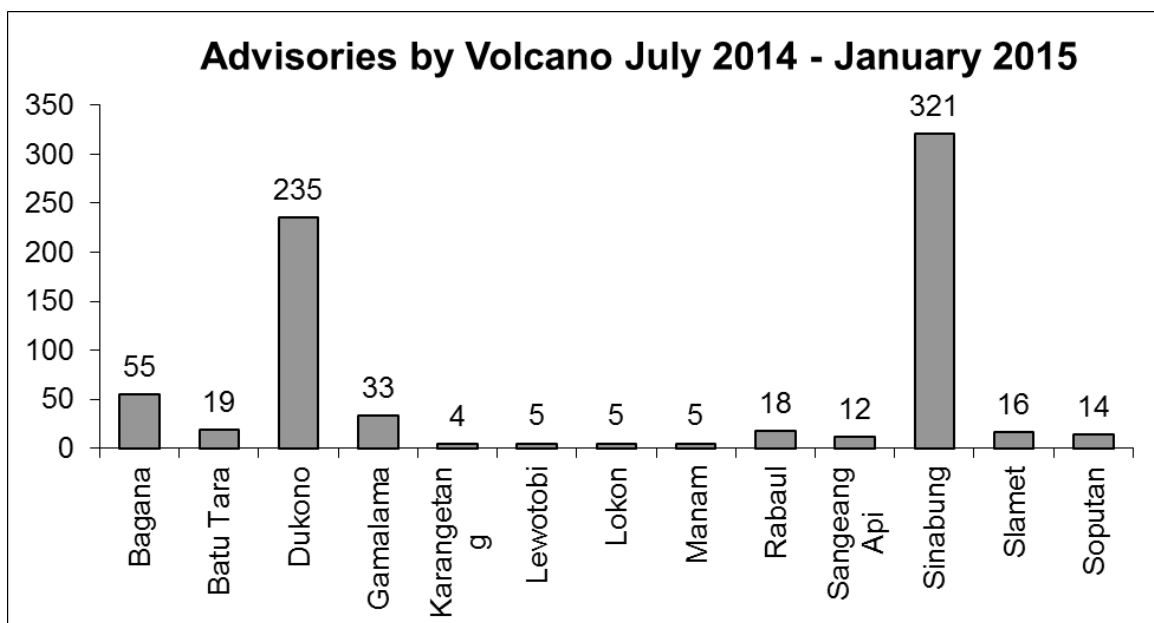


Figure 4: Number of advisories issued per volcano during the period July 2014 – January 2015.

2.4 The strombolian eruption from Papua New Guinea's Rabaul volcano (Tavurvur crater) sent ash to a height of 18 km and produced a strong SO₂ cloud signature. The Rabaul eruption made global headlines.



Figure 5: Rabaul eruption¹

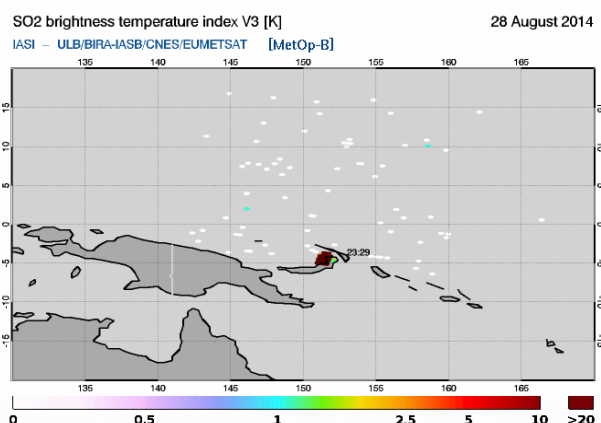


Figure 6: Rabaul eruption SO₂

2.5 There were three high level eruptions within the first two weeks of January 2015. Two of the eruptions were at Sinabung (in northern Sumatra) on 3 January (7.3 km) and 12 January (4.6 km). The third eruption at Sopotan (in northern Sulawesi) reached a height of 8.3 km.

3. INTERNATIONAL AIRWAYS VOLCANO WATCH (IAVW)

3.1 Over the past year the VAAC has continued progress towards improving the implementation of the International Airways Volcano Watch (IAVW) in the region, through ongoing engagement with volcano observatories, other VAACs, meteorological agencies, airlines and the scientific community. Australia remains an active member of the ICAO International Airways Volcano Watch Operations Group (IAVWOPSG).

4. SIGNIFICANT OPERATIONAL CHANGES

4.1 As of 8 October 2014, VAAC Darwin enacted a dedicated roster where VAAC forecasters are no longer responsible for shared aviation duties. Current monitoring standards were reviewed and forecasters received additional training on new products and enhanced monitoring requirements for VAAC Darwin. VAAC Darwin forecasters monitor the VAAC's area of responsibility (AOR) for satellite, airborne, ground-based and conceptual evidence to detect ash clouds.

5. SOCIAL MEDIA

5.1 Several of the VAACs main stakeholders use social media to share operationally relevant information. This includes changes in Alert Levels from Observatories, Volcanic Activity, reports and photos shared via Twitter and Facebook. On 8 October 2014, the VAAC began monitoring social media operationally as part of the duty roster. Forecasters were trained on the use of social media for monitoring of volcanic activity and information. This has seen a greater awareness

¹ 28 August 2014, 20:25 UTC. PNG Climate Network / www.pngclimate.net

amongst forecasters in volcanic activity from ground and observatory reports when ash is not discernable due to meteorological clouds.

6. VAAC BACKUP

6.1 Testing of the VAAC Darwin operational backup procedures between VAAC Darwin and Tokyo occurred on 22 October 2014. The test was successful and VAAC logs were exchanged. More details are given in the paper *'Mutual Back-up Operations between VAACs Tokyo and Darwin'* to be presented at this meeting.

6.2 Following the test, VAAC Tokyo operationally backed up VAAC Darwin during maintenance on Darwin's AIFS system in November 2014. In January 2015, VAAC Darwin backed up VAAC Tokyo during an operational outage and successfully issued a VAA on behalf of Tokyo for the volcano Asosan.

6.3 During the operational and test back-ups VAAC Darwin and Tokyo both used a fax proforma and email to communicate during the handover and return to normal operations. Analysis of the VAAC logbooks found the receipt and sending of the fax proforma to be less reliable than email. In the paper *'Mutual Back-up Operations between VAACs Tokyo and Darwin'*, a recommendation to change the main source of communication is made:

'That VAACs Darwin and Tokyo use email as a main source of communication with an online version of the proforma. When email is not available fax is to be used. If no response is received within 10 minutes make a phone call for a reminder.'

To address this recommendation VAAC Darwin plans to develop an online version of the proforma to use with email.

6.4 Backup testing with VAAC Wellington is expected to occur later in 2015. It is dependent on the completion of an operational IBL software installment for VAAC Wellington.

7. QUALITY MANAGEMENT

7.1 Operations at VAAC Darwin are certified to AS/NZS ISO 9001:2008 quality management standards and VAAC Darwin remains the only VAAC to have obtained this level of certification in its own right. Regular audits are conducted at the VAAC to ensure compliance with ISO specifications.

8. ACTION BY THE MEETING

8.1 The meeting is invited to:

- a) Note the information contained in this paper; and
- b) Discuss any relevant matters as appropriate
