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)

DARWIN VAAC REPORT (JULY 2009 – JUNE 2010)

(Presented by Australia)

SUMMARY

This paper reports on the recent activities of the Darwin 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-18Aeronautical Information
GPI-19 Meteorological systems

1. Introduction

1.1 The Darwin VAAC covers the area from the Andaman Islands (India) eastwards to the Solomon Islands, and includes the volcanically active Indonesian archipelago, Papua New Guinea and the southern Philippines. Overall, more than 150 active volcanoes lie in the area. The region has poor communications and general infrastructure, incomplete volcanic monitoring and is characterised by moist tropical convection that makes remote sensing difficult for much of the year.

1.2 Over the past year the VAAC has continued progress towards improving the implementation of the International Airways Volcano Watch in the region, through ongoing engagement with volcano observatories, meteorological agencies, airlines and the scientific community.

2. VAAC Operations

2.1 A total of 1396 Volcanic Ash Advisories were issued by Darwin VAAC from 1 July 2009 to 17 June 2010. No major eruptions occurred within the Darwin VAAC area of responsibility during this period.

2.2 Advisories were dominated by low-level ash plumes detected on satellite imagery. Rabaul (Tavurvur) in Papua New Guinea, normally the region's most active volcano, ceased eruptive activity in December 2009. Consequently, advisories for this volcano amounted to only a third of the previous year, and is largely responsible for the slight reduction in advisory output seen in Figure 1, below.

2.3 The main event of concern for the year was a pilot report in January of a sulphur smell in the cabin and cockpit at cruising levels northeast of Jakarta, Indonesia. No signs of volcanic ash were reported, although at those altitudes, the gas cloud would almost certainly be volcanic in origin. Back-trajectories from the encounter location suggest a source from somewhere along the length of Java. However, no volcanic eruption clouds could be detected on satellite imagery (although the cloudy conditions typical of that time of year would make detection difficult) and no significant sulphur dioxide emissions could be observed using AIRS and OMI imagery. Furthermore, the Indonesian Centre for Volcanology and Geological Hazard Mitigation advised that no unusual volcanic activity had been reported. It was therefore reasoned that the sulphur most likely came from a brief explosion from one of the frequent eruptors in the region (e.g. Krakatau, Raung, etc.), or from an unmonitored volcano.

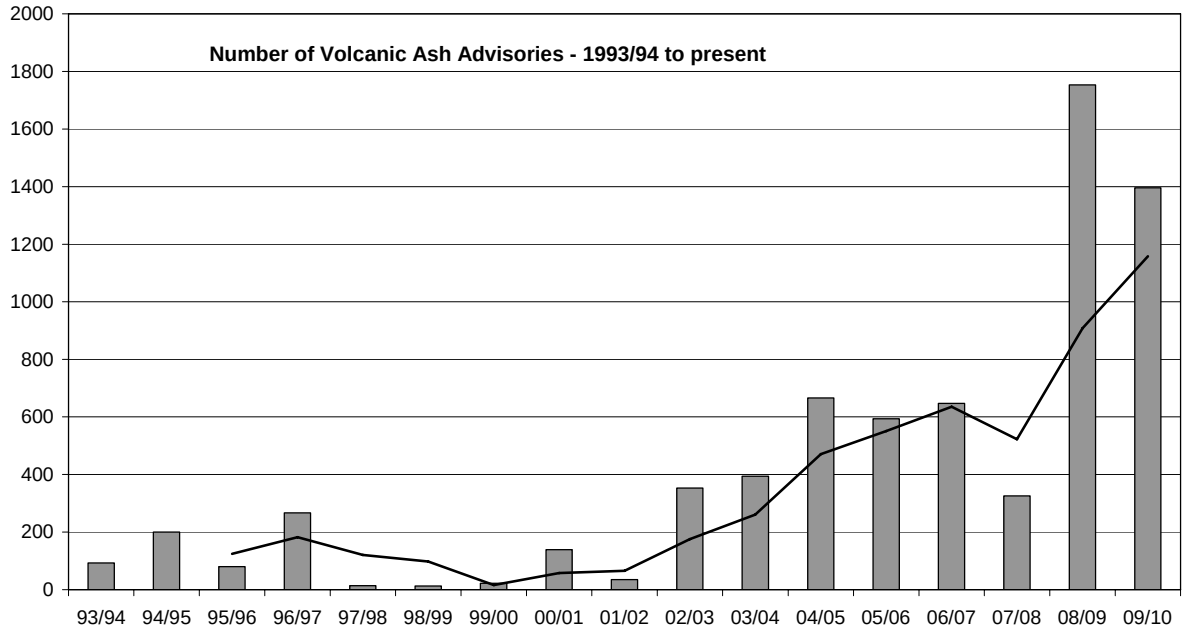

Figure 1 - Total Volcanic Ash Advisories by year from Darwin VAAC. Solid line is the three-year moving average.

2.4 Darwin VAAC has continued its focus on forecaster training, this year implementing a comprehensive competency-based training and assessment program for VAAC meteorologists.

2.5 In April 2010, Darwin VAAC was certified as complying with AS/NZS ISO 9001:2008 Quality Management Standard by Lloyd's Register of Quality Assurance (LRQA).

3. IAVW Implementation Issues

3.1 Australia has collaborated with New Zealand to produce "*Guidance for State Volcano Observatories: The International Airways Volcano Watch*", which addresses the volcanic ash and aviation issue, and includes guidance on recovering the cost for providing volcanic activity information to aviation. This document can be found on the World Organisation of Volcano Observatories (WOVO) website:
http://www.wovo.org/information-for-state-volcano-observatories-providing-services-to-aviation.html

3.2 Despite the afore-mentioned document, and a recent ICAO State Letter, progress in implementing cost recovery arrangements by Rabaul Volcano Observatory (RVO) in Papua New Guinea has been slow, hampered by the recent restructure of PNG's civil aviation and air services

authorities. In spite of this, communication between RVO and Darwin VAAC has remained strong. Darwin VAAC considers the information provided by RVO and the other volcanological agencies in the region vital for providing early warning of volcanic eruptions to aviation, a sentiment echoed at the WMO 5th International Workshop on Volcanic Ash (Santiago, Chile, March 2010).

3.3 Darwin VAAC is improving its remote sensing capabilities in a number of ways:

a) An X-band satellite receiver has recently been installed near Darwin, and high-resolution MODIS, AIRS, and related imagery will soon be available in real-time for detecting volcanic ash and/or SO_2.

b) A system for SO_2 detection (S-Watch) developed by Dr Fred Prata of the Norwegian Institute for Air Research is expected to be implemented into Darwin VAAC operations.

c) An automatic ash detection system presented at the WMO 5th International Workshop on Volcanic Ash and developed by the Cooperative Institute for Meteorological Satellite Studies (CIMSS) is being considered.

3.4 Darwin VAAC is continuing work on its volcano status product reported on at CNS/MET SG/13, and has been tasked at the ICAO 5th IAVWOPSG meeting to develop further concepts around the coordination and provision of volcano situational awareness information.

3.5 Following the eruptions of Eyjafjallajokull in Iceland and subsequent air traffic disruption over Europe, a special meeting of Vulcan-Aus (a collaborative group of volcanological, meteorological, airline and airservice representatives from Australia and nearby) was convened in June. The group was informed about airline operator experiences during the event, and discussed the enhanced products produced by the UK Met Office. It was agreed that the Bureau of Meteorology would await the findings of the recently created International Volcanic Ash Task Force (IVATF) before considering any enhanced product, and that further scientific work on several aspects is still required. It was also noted that a Volcanic Ash Science Steering Group was proposed at the WMO 5th International Workshop on Volcanic Ash to provide a method of coordinating the science developments with the changing needs of international aviation.

4. Action required by the meeting

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

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