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**MET PANEL (METP)
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VOLCANIC ASH (VA)**

SECOND MEETING

Buenos Aires, Argentina, 27 to 28 April 2016

Agenda Item 6: VAAC Management Reports

**6.1.: VAAC Management Reports: Anchorage, Buenos Aires, Darwin, London,
Montreal, Tokyo, Toulouse, Washington, Wellington**

VAAC TOKYO MANAGEMENT REPORT

(Presented by Japan)

SUMMARY

This paper presents the VAAC Tokyo
IAVW Management Report.

1. INTRODUCTION

1.1 VAAC Tokyo is operated by Japan Meteorological Agency (JMA) which is responsible for observing meteorological, climatological, geophysical and oceanic phenomena and issuing information accordingly as national services. The VAAC Tokyo coverage includes the East Asia and the Northwest Pacific region. This report covers operations since 2014.

2. OPERATIONS OF VAAC TOKYO

2.1 This section describes operations of VAAC Tokyo in accordance with the IAVW on the issuance of volcanic ash advisories (VAA), identification of significant eruptions that influenced the performance of operations and/or air traffic management, changes in operational procedures or use of technology to enhance operational capability of the VAAC and issues related to backup operations and exercises/drills.

2.1.1 Issuance of VAAs

VAAC Tokyo issued 1,356 VAAs for 10 volcanoes in 2014 and 2,537 VAAs for 17 volcanoes in 2015. Exercise VAAs at Volcanic Ash Exercises in Kamchatka region in 2014, 2015 and 2016 as well as those at an Exercise in Asia/Pacific region in 2015 were also issued. VAAC Tokyo participated in SIGNET tests in Asia/Pacific region and issued test VAAs in 2014 and 2015.

2.1.2 Significant eruptions in the VAAC area of responsibility

Ontakesan (Mt. Ontake) erupted on 27 September 2014 with volcanic ash plume once reaching as high as FL370. It was a phreatic eruption and soon the amount of volcanic ash in the plume decreased, however, the impact to the aviation operation was significant. This event highlighted once again the importance of preparation against volcanic eruptions. Another volcano in Japan called Kuchinoerabujima erupted on 29 May 2015 with volcanic ash plume as high as FL360. Adding to them, eruptions of Sheveluch generated volcanic ash plume higher than FL300 several times in 2014 and 2015.

High volcanic activity especially at Sakurajima volcano in the first several months in 2015 could also be highlighted, though the ash plume height itself was not significant. Due to the high activity, a total of 846 VAAs were issued for Sakurajima volcano in 2015. Asosan (Mt. Aso) was also active and 696 VAAs were issued in the same year.

2.1.3 Significant operation or technical changes

2.1.3.1 VAAC Tokyo's system update completed on 24 March 2015 in which satellite imagery for the unmonitored area is incorporated. In addition, VAAC Tokyo has developed software to run a dispersion model and create VAA and VAG (VAA information in graphical format) for the unmonitored area. Using the AVHRR Global Area Coverage (GAC) data provided by the National Environmental Satellite, Data, and Information Service of the National Oceanic and Atmospheric Administration (NOAA/NESDIS) in the U.S., VAAC Tokyo is technically ready to start operation for the unmonitored area as its area of responsibility. Currently, VAAC Tokyo has been working on processing the Local Area Coverage (LAC) data from NOAA/NESDIS that is available in a more timely manner to enhance its performance for the unmonitored area.

2.1.3.2 In case volcanic ash clouds migrate into neighbouring VAACs' area of responsibility, coordination is required to make VAA provisions user friendly. As eruptions in Kamchatka region often produce volcanic ash clouds expanding across the boundary of VAACs Anchorage and Tokyo, the VAACs have developed handover procedures. The VAACs prepared a guideline how and when to conduct a handover so that forecasters in both VAAC can operate consistently. Handover is conducted by exchanging a Handover Request Sheet, in which necessary items are already written and forecasters just fill a volcano name, advisory number, issuance time and so on, with a confirmation phone call. This procedures became operational on 30 June 2014; since then, communication related to a handover was held 20 times in 2014 for Sheveluch and Zhupanovsky volcanoes and 41 times in 2015 for Sheveluch, Zhupanovsky, Karymsky and Kliuchevskoi in Kamchatka region.

2.1.3.3 Regarding the successful coordination between VAACs Anchorage and Tokyo, VAAC Tokyo has been preparing/has prepared a similar guideline with all the neighbouring VAACs; Darwin, Toulouse and Washington.

2.1.3.4 For more close coordination considering the Collaborative Decision Analyses and Forecast (CDAF), VAAC Tokyo started communication in a chat room on a trial basis in 2014. VAAC Tokyo held chat tests three times in 2014 and 2015 with VAAC Anchorage for the first and second tests and with VAACs Anchorage and Washington for the third test, in order to see how it works, using a

scenario based on past eruptions. After that, VAAC Tokyo has naturally shifted to communicate in a chat room on a daily basis and the VAACs Anchorage and Tokyo often chat before conducting a handover these days.

2.1.3.5 VAAC Tokyo had often received a comment from users requesting for more frequent VAA issuances at significant eruptions. Considering user needs, VAAC Tokyo started three-hourly VAA/VAG provisions for eruptions with volcanic ash plume at FL330 or higher in 2014, and lowered the threshold to FL300 in 2015.

2.1.4 VAAC Backup

VAACs Darwin and Tokyo concluded a mutual backup cooperation on 1 March 2014. Since then, backup tests have been held annually following the IAVW Handbook (Doc.9766). The latest test was held on 25 November 2015 and 27 January 2016: VAAC Tokyo conducted backup operations for VAAC Darwin on 25 November 2015 and VAAC Darwin issued VAA/VAG on behalf of VAAC Tokyo on 27 January 2016.

The VAACs tested not only the regular backup procedures but also VAG issuances, while only VAAs are to be issued in the current backup services. The VAACs are expected to coordinate when to start VAG issuances under backup operations.

Real backup arrangements were held six times in total: the latest was on 8 January 2016.

2.1.5 Volcanic Ash Exercises

VAAC Tokyo is a member of the Volcanic Ash Exercise in Kamchatka region which has been held annually since 2013. The fourth exercise was conducted on 21-22 April 2016 (UTC). VAAC Tokyo takes a role of issuing VAA/VAGs for other participants but at the same time, these exercises provides VAACs good opportunities to test new or rare procedures; so far, VAAC Tokyo has tested handover procedures, chat communications and VAA/VAG provisions for a rare scenario in which two volcanic ash clouds from one volcano spread in different directions migrating to a neighbouring VAAC's area of responsibility.

VAAC Tokyo is also a member of the Volcanic Ash Exercise in Asia/Pacific region. The first exercise was held on 11 August 2015 with an assumed eruption of Taal Volcano in the Philippines. It has been working on preparation for the next exercise in the coming August.

2.1.6 Monthly VONA Issuance Drill

As VONA is one of the essential trigger for VAA issuances, VAAC Tokyo have been conducting a monthly VONA issuance drill with a volcano observatory in the Philippines, PHIVOLCS. The drill was held between PHIVOLCS and VAAC Tokyo at the beginning and since March 2016, VAAC Darwin has been involved. This drill is quite successful as a training of VONA issuance as well as a communication test.

3. FUTURE DEVELOPMENTS

3.1 VAAC Tokyo has been providing 24 hours forecast in graphic format (T+24 VAG) on a trial basis since 1 July 2014. It conducted a questionnaire to users and obtained feedback if they need and what layout they prefer. The results of the questionnaire revealed that not many users in its area of

responsibility are waiting for T+24 VAG. In addition, half of them who need T+24 VAG expects an advisory at T+0 in one sheet and T+6 to T+24 in another sheet while the other half expects five charts from T+0 to T+24 in one sheet. VAAC Tokyo will start preparation to make it operational, or stop provisions following a conclusion in relevant meetings in the near future.

3.2 As described in 2.1.3.1, VAAC Tokyo has been working on processing the Local Area Coverage (LAC) data from NOAA/NESDIS that is available in a more timely manner to enhance its performance for the unmonitored area.

3.3 VAAC Tokyo is considering VAG provisions during backup operations in the near future with coordination with VAAC Darwin.

4. ACTION BY THE MOG IAVW WORK STREAM

4.1 The Work Stream is invited to note the information in this paper.

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