MET PANEL (METP)
MET OPERATIONS GROUP (MOG)
VOLCANIC ASH (VA)

SECOND MEETING

Buenos Aires, Argentina, 29 April 2016

Agenda Item 6 VAAC Management Reports:

VAAC Toulouse, IAVW Management Report, January 2013 – March 2016

(Presented by France)

SUMMARY

This paper presents the VAAC Toulouse IAVW Management Report for the period following the one reported by France to the IAVWOPSG7 meeting.

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1. INTRODUCTION

1.1 The area of responsibility of VAAC Toulouse covers more than 180 Flight Information Regions on three continents and five different Air Navigation Regions (EUR, NAT, MID, AFI, ASIA). VAAC Toulouse has common borders with six other VAACs in both hemispheres (Buenos Aires, Darwin, London, Montréal, Tokyo and Washington).

1.2 The largest part of volcanic activity within the VAAC Toulouse area of responsibility is located in AFI air navigation region and in the south of EUR region, specifically in Italy, where lies one of the most active (in terms of eruption frequency) volcano in the world, Mt ETNA.

1.3 VAAC Toulouse is operated in the Meteo-France National Forecast Center in Toulouse by the 'MET services for Aviation' department, where 17 forecasters work on three different positions including the Met Watch Office for the 5 French FIRs, SIGWX charts production and the VAAC position.

2. VAAC OPERATIONS

2.1 Issuance of operational Volcanic Ash Advisories

233 (Two hundred thirty three) operational VAAs/VAGs were issued by VAAC Toulouse from January 2013 to March 2016.

In 2013,

- 73 operational advisories were issued :
- 72 VAA/VAG for ETNA (Italy)
- 1 VAA/VAG for HEARD (Southern Indian Ocean)

In 2014,

88 operational advisories were issued :
- 29 VAA/VAG for ETNA (Italy)
- 50 VAA/VAG for FOGO (Cape Verde)
- 1 VAA/VAG for Le PITON de la FOURNAISE (Reunion Island)
- 8 VAA/VAG for STROMBOLI (Italy)

In 2015,

68 operational advisories were issued :

- 52 VAA/VAG for ETNA (Italy)
- 1 VAA/VAG for STROMBOLI (Italy)
- 10 VAA/VAG for Le PITON de la FOURNAISE (Reunion Island)
- 4 VAA/VAG for Mt MERU (Tanzania)
- 1 VAA/VAG for CALBUCO (Chile)

In 2016, 4 VAA/VAG were issued (1 for STROMBOLI, 3 for ETNA) up to now.

2.2 Significant eruptions in the VAAC area :

In 2013,

Mt ETNA had regular activity all year long with 32 active episodes of which 6 significant eruptions (mostly short and feeble or moderate activity with plume mainly composed of SO2)

HEARD volcano VAA/VAG was based on a Pilot Report.

In 2014,

Mt ETNA had ten feeble or moderate eruptions without significant VA cloud (major part of the activity occurred between January and August)

FOGO volcano showed continuous activity from 23/11 to 04/12 with a plume mainly composed of SO2 and ash fallen down in the close vicinity of the volcano. Communication occurred at several times between the Cape Verde civil aviation authorities, the Met Watch Office and the VAAC.

PITON de la FOURNAISE : effusive lava flow without significant ash emission in the atmosphere

STROMBOLI had moderate activity between August and October

In 2015,

ETNA had 7 weak to moderate eruption episodes from January to May then a moderate ash productive eruptive period in early December.

MERU production was based on the reports made by KLM. It was in reality a forest fire on the slope of volcano that produced a thick smoke cloud.

In 2016, no significant eruptions occurred in the VAAC Toulouse AoR up to now.

2.3 **Significant operation or technical changes :**

2.3.1 A proposal was made to ICAO EUR/NAT VATF (Volcanic Ash Task Force) to move from concentrations charts, not recommended by the ICAO IVATF (2011) towards total column mass loading. The first developments to produce total column mass loading fields from the MOCAGE dispersion model have been achieved and the model outputs are available for visualisation on SYNOPSIS software (Météo-France and Météo-France International new visualisation and production software).

2.3.2 Six aerosols LIDARs have been received and tested in Toulouse. Five of them will be installed in five dedicated sites (Momuy (SW), Aléria (Corsica), Paris, Lille and Brest in the months to come. The sixth one will stay in Toulouse and kept available to be moved if needed in case of volcanic ash presence.

2.4 **VAAC international exercises**

2.4.1 Five days of international exercises involving the production of VAAC Toulouse were run :

2.4.2 On 24/04/2013, VAAC Toulouse produced the complete set of data required by the EUR Contingency plan for ATM for an eruption of KATLA, for the second day of VOLCEX13/01. The exercise was based on a scenario and past weather had to be used. The day1 of the exercise was involving the London VAAC production.

2.4.3 VOLCEX13/02 was run on 23/10/2013 and simulated an Azorean eruption of Furnas Volcano on 22/10/2013. The delay of 24h after the eruption was chosen to allow the VA cloud to reach and impact a number of continental European FIRs. On the 22/10, for the first day of the eruption, a bilateral VOLCSMA exercise was organised with the Portuguese CAA, MET Watch Office and the Santa Maria ACC.

2.4.4 VOLCEX14/01 simulated an eruption from Stromboli on two days with two separated scenarios, on 1st and 2nd of April 2014. Onn both days, VAAC Toulouse made the production of advisories and charts in support to Safety Risk Assessment Procedures.

2.5 **VAAC Back-up**

2.5.1 VAAC London and VAAC Toulouse are mutual backups.

2.5.2 Back-up exercises were performed on 03/07/2013, 19/07/2013, 03/09/2013, 17/06/2014, (the November 2014 exercises was cancelled due to the Bardarbunga activity) 24/03/2015, 28/04/2015 and the next one is programmed for 24/05/2016.

2.5.3 At the occasion of the June 2014 exercise, five VAAC London forecasters went to Toulouse and participate to the back-up provided by Toulouse, using the Toulouse tools.

2.6 **VAAC coordination**

2.6.1 A LoA was signed in July 2014 with the Italian Volcano Observatories of INGV (Istituto Nazionale di Geofisica e Vulcanologia) at Catania (Sicily) and Naples. Since then, VONAs have been regularly received from Catania for ETNA activity.

2.6.2 Discussions have been initiated with Portugal and Italy to set bi-lateral exercises on a regular basis. A VOLCITA exercises have been planned and prepared for June 2016.

2.6.3 A hand-over / coordination exercise SHAPE have been run on 24/01/2014 with participation of VAAC BuenosAires/ VAAC Toulouse. It was a single day exercise, from 08h to17h UTC using the met of the day. Six coordinated VAA/VAG based on the exchange of VAG drafts (4 from Buenos Aires and 2 from Toulouse : each VAAC depicting the VA cloud in its own AoR) were produced and issued. The exercise was successful and allowed to improve the protocol with exchange of several graphical and mail information but lack of time to discuss. For next exercises of this kind, the focus would be to put on the Collaborative Decision on Analysis and Forecast process (enhance and increase discussion about met situation, shape and motion of the VA cloud…)

3. **FUTURE DEVELOPMENTS**

3.1.1 The VAAC Toulouse website is being re-designed to allow the possibility to display new products (total column mass loading, annotated satellite images), commentary for each set of data, xml files and provide an archive where the whole production of VAAC Toulouse will be available - from 206.

3.1.2 The current VAAC visualisation and production software (SYNERGIE) will be replaced by SYNOPSIS. The target date is end of 2016. The new chain of production will allow more automatic verification (coherence and syntax correction) making the process of advisory production more robust. The graphic tool will allow forecaster intervention on all products : satellite images, total column charts etc.

4. ACTION BY THE METP-WG/MISD VA WORK STREAM

4.1 The METP-WG/MOG is invited to note the information contained in this Study Note.