

VAAC COLLABORATION ACTIVITIES INCLUDING THE DEVELOPMENT OF A COMMON WEBSITE

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BACKGROUND INFORMATION

- Collaborative activities have been discussed for a number of years between the VAACs. The seventh meeting of the defunct IAVWOPSG came to the following conclusion:
 - **Conclusion 7/22 — Common web page for VAACs**
 - That an ad-hoc group consisting of members from Australia, Canada (rapporteur), France, Germany, United Kingdom and the United States be tasked to:
 - investigate the feasibility and usefulness of a volcanic ash advisory centre (VAAC) common web page as a means to share dispersion model outputs amongst the VAACs;
 - develop and test a password-protected, common web page prototype to post VAAC dispersion model outputs as a proof of concept and for demonstration purposes; and
 - report back to the IAVWOPSG/8 meeting.
- At IAVWOPSG/8, it was agreed that conclusion 7/22 should remain valid, since "work in this regard was on-going".
- This was then pursued as outcome #4 from the 4th VAAC Best Practices Workshop (BPW4) in May 2015.

FOURTH OUTCOME OF THE FOURTH VAAC BEST PRACTICES WORKSHOP

- This outcome was formulated as follows:
 - **VW004:** *Coordinated development of mechanisms (common website, chat room, exchange of process documentation BP and VAAC Ops subscription to volcanicclouds@yahoogroups.com) for improved pull-through and sharing of volcanic ash science and information into operations. (IAVWOPSG ref 7/22, 8/7) – MET-P WG-MOG paper (Date TBC). Lead: VAAC Montreal.*

FOURTH OUTCOME OF THE FOURTH VAAC BEST PRACTICES WORKSHOP

- Following BPW4, discussions amongst the VAACs were started by email regarding the following points:
 - Development of a common web page prototype by colleagues at NOAA, in accordance with IAVWOPSG conclusion 7/22.
 - In the wake of the response to the June 2011 eruption of Cordon Caulle, are there ways of more efficiently sharing information between VAACs?
 - Sharing satellite imagery on an external webpage or by email.
 - Subscription of VAACs to the "Volcanic clouds" discussion group.
 - Use of chat software ("NWSChat" or similar) during operational response.

VAAC COMMON WEB PAGE PROTOTYPE

- A VAAC common web page prototype was publicized to the VAAC community and other members of an ad-hoc group in December 2014.
- The initial use of this web page is limited to VAACs for testing, development and comments.
- Several comments were received from various VAACs regarding this prototype, as detailed in the following slides.
- These comments have been relayed to the developers of the web page prototype.

VAAC COMMON WEB PAGE PROTOTYPE

VOLCANIC ASH ADVISORY CENTER (VAAC)

VAAC MODEL PRODUCTS

This website is under development and does not contain current products.

The following are test VAAC products. To view a product click on the text link or click on one or more checkboxes and then click on the **request checked boxes** button. The lead VAACs are highlighted in yellow shading. To ensure the latest update, refresh/reload your browser.

For additional and archived results click on the link titled, "**Additional Products**" in the first column of each VAAC. If this link is not present then no additional products are available.

ORGANIZATION / ERUPTION	VIEW PRODUCTS	OBSERVED VA CLOUD	MODEL INPUTS TIME CREATED (YYYYMMDD_HHMM)	FORECAST 00Z	FORECAST 06Z	FORECAST 12Z	FORECAST 18Z	DATA FILES
KASATOCHI		Request all checked products Clear all checkboxes						
Anchorage Kasatochi Additional Products	Check All Uncheck All	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	↓ VAA kml
Washington Kasatochi Additional Products EXERCISE	Check All Uncheck All	↓ 'MODIS Retrieval' 'Satellite Images'	<input type="checkbox"/> R1 20080808_0230 ↓ <input type="checkbox"/> R2 20080808_0530 ↓	<input type="checkbox"/> R1 <input type="checkbox"/> R2	<input type="checkbox"/> R1 <input type="checkbox"/> R2	<input type="checkbox"/> R1 <input type="checkbox"/> R2	<input type="checkbox"/> R1 <input type="checkbox"/> R2	↓ R2 Mass Loading kml ↓ R2 Levels kml ↓ R2 netcdf
TestVaac Kasatochi EXERCISE	Check All Uncheck All	Not Available	<input type="checkbox"/> R1 20080808_0530 ↓	<input type="checkbox"/> R1	<input type="checkbox"/> R1	<input type="checkbox"/> R1	<input type="checkbox"/> R1	↓ R1 Mass Loading kml ↓ R1 Levels kml ↓ test kml
SOUFRIERE HILLS		Request all checked products Clear all checkboxes						
Washington Additional Products EXERCISE	Check All Uncheck All	Not Available	<input type="checkbox"/> test ↓	Not Available	Not Available	Not Available	Not Available	Not Available
NO ERUPTION		Request all checked products Clear all checkboxes						
Buenos Aires	Check All	'Satellite Images'	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

COMMENTS ABOUT VAAC COMMON WEB PAGE PROTOTYPE

- The "Additional Products" column could point to links such as London VAAC's [concentration charts](#) page.
- Add a column for the T+24 hour forecast.
- It might be useful to have a 'pop-up' map of the VAAC regions.
- Standard output could consist of:
 - column mass loading contour levels at 0.02, 0.2, 2, 4, and 20 g/m²
 - ash base and top height variables (rather than fixed vertical levels)
 - output every three hours
- This standard output would have to be agreed by all VAACs.
- Links to the discussion group(s) could be added under the products table.

COMMENTS ABOUT VAAC COMMON WEB PAGE PROTOTYPE

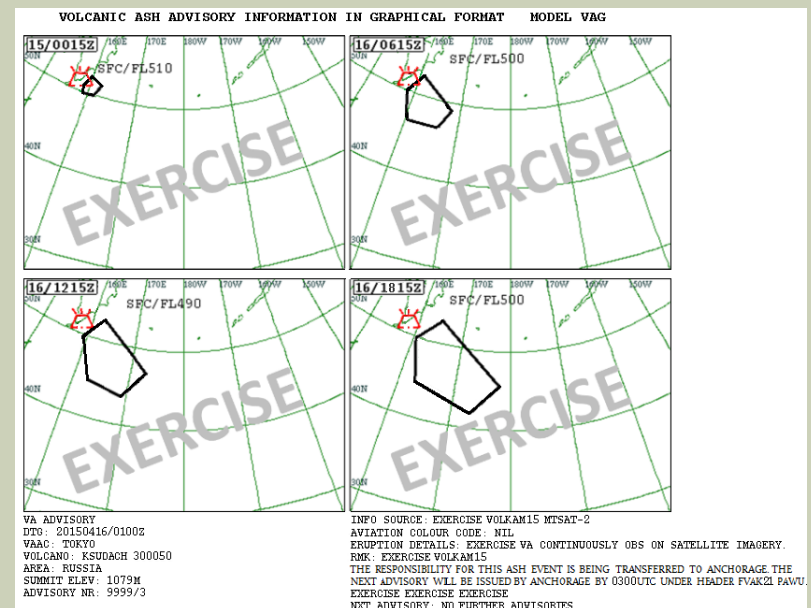
- VAACs should not be obliged to populate the website for all responses, but could be expected to share data on a best-effort basis.
- The "Volcanic clouds" discussion group is useful, even if not always timely. VAACs are not in a position to commit to contributing to this group immediately due to operational constraints: here too, contributions would be made on a best-effort basis.
- Can emails from this discussion group contribute to information overload for operational meteorologists?

COMMENTS ABOUT VAAC COMMON WEB PAGE PROTOTYPE

- It is a good idea to share satellite imagery via the common web page. This would give VAACs with less activity a chance to see examples of VA from other regions in real time.
- Which group would be willing to take responsibility for maintenance and technical support of the common website?
- Communications by phone can be difficult due to linguistic barriers. The use of the phone also limits the capacity to share information such as URLs, graphic data, etc. Email can offer a more viable alternative.
- Being able to add a file (e.g. image) to a discussion on NWSChat may be helpful.
- It would be useful to identify a way of exchanging draft versions of VAA/VAGs and distinguishing them from final versions.

EXAMPLES OF VAAC COLLABORATION EXERCISES

- London and Toulouse VAACs have been conducting Volcanic Ash Exercises VOLCEX since 2008.
- VAAC Anchorage and Tokyo are involved in the Volcanic Ash exercise series VOLKAM to enhance collaboration since 2013. VAAC Washington became involved in this effort since 2015. Testing of chat software for Collaborative Decision Analysis and Forecast (CDAF) is also being explored.
- VAAC Darwin, Tokyo (and possibly Wellington in the future) participate in exercises in the Asia-Pacific region since 2015.



LOCAL COLLABORATION EFFORTS TO SUPPORT REAL TIME EVENTS

- Local efforts between VAACs to create more seamless services as volcanic ash crosses into different areas of responsibility
- Guidelines created to minimize confusion and increase efficiency of operations
- Evolving concepts, such as chat software, are tested in volcanic ash exercises

Ash clouds that are continuous

- For eruptions where a continuous ash cloud (or an ash cloud with only minor breaks) is extending from the volcano into the Anchorage VAAC AOR, Tokyo VAAC will continue issuing VAAs for the ash cloud until it reaches 180 degrees longitude. Once this continuous ash cloud reaches 180 degrees, Anchorage VAAC send a Handover Request Sheet (HRS) to Tokyo VAAC to coordinate the handover, and then after acceptance assume responsibility for the Anchorage VAAC AOR only (See Figure 2). Tokyo will continue issuing VAAs for their AOR until there is an obvious break in the ash cloud from the volcano. The option does exist to take over ash responsibility prior to the ash reaching 180 degrees, but this just be well coordinated with Tokyo VAAC via the HRS. This should also rarely be done since the preference from the users is to have as few VAAs as possible, for a single ash cloud, to reduce inconsistencies. Once the eruption has ended, Tokyo VAAC will request handover. Anchorage VAAC will then assume responsibility for the entire ash cloud, including in Tokyo VAACs AOR. Anchorage VAAC will never issue a VAA extending to a volcano in Tokyo VAACs AOR. The VAA should only extend to the back edge of the ash cloud, or to an obvious break in the ash cloud if another eruption occurs. This will be coordinated with Tokyo VAAC via the HRS.

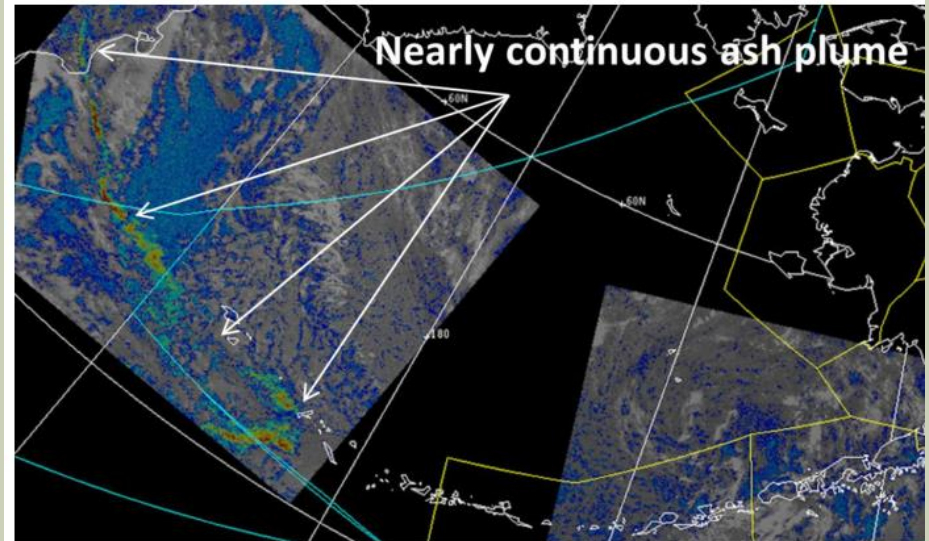


Figure 2. A continuous ash cloud is shown moving to 180 degrees in Anchorage VAAC airspace, and extending back to the volcano on the Kamchatka Peninsula. Anchorage VAAC takes handover from Tokyo VAAC and issues VAA only in Anchorage VAA's area of responsibility (AOR). Tokyo VAAC issues VAA in their AOR.

NEXT STEPS

- VAACs to identify area of greatest priority for future development.
- Common web page prototype:
 - Agree to standard products
 - VAACs test uploading these products to the web page.
 - Organize test between VAACs to see how best to use the common *web page* during an operational response.
 - Identify centre(s) responsible for making changes to and maintaining this common web page.
- Another VAAC best practices meeting is planned for 2016.
- VAACs continue work in developing T+24 hour forecasts, as well as statements of confidence in the position of VA at T+0.