

**Meeting on the Intercomparison of Satellite-based Volcanic Ash Retrieval Algorithms within WMO SCOPE-Nowcasting**

29 June - 2 July 2015

Pyle Center

Madison, WI, USA

*Agenda Version 2015-06-26*

**Monday, 29 June**

**1. Background, overview of goals and user perspectives  
(Chair: Mike Pavolonis)**

13:00-13:20: Registration

13:20-13:30: 1.1 Welcome and practical information (Mike Pavolonis)

13:30-13:55: 1.2 Background and objectives in the context of ICAO and WMO SCOPE-Nowcasting (Stephan Bojinski)

13:55-14:10 1.3 Volcanic ash information for the WMO Global Atmosphere Watch (GAW) and World Weather Research Project (WWRP) (Alexander Baklanov)

14:10-14:30: 1.4 Overview of CREW cloud intercomparison (Andy Heidinger and Bryan Baum)

14:30-14:50: 1.5 Overview of ESA volcanic cloud intercomparison activity (Claus Zehner)

14:50-15:10: Coffee break (included in registration fee)

15:10-15:30: 1.6 Overview of Anchorage VAAC operations with focus on use of satellite data (Don Moore)

15:30-15:50: 1.7 Overview of Washington VAAC operations with a focus on use of satellite data (Jamie Kibler)

15:50-16:10: 1.8 Overview of operations at the Alaska Volcano Observatory with a focus on use of satellite data (Dave Schneider)

16:10-16:30: 1.9 Dispersion modeling needs for satellite data (Larry Mastin)

16:30-16:50: 1.10 Potential impacts of the next generation of meteorological satellites (Mike Pavolonis)

16:50-17:30: 1.11 Group discussions on user needs (Moderator: Mike Pavolonis)

Topics for discussion (preliminary):

- Real-time volcanic ash applications desired by VAAC's
- Real-time volcanic ash applications desired by modelers
- Ideas for operational applications from the research community
- Communicating uncertainty
- Role of research community in user training
- Blending automated satellite techniques with existing VAAC analysis techniques
- Impact of new sensors on eruption identification and ash cloud tracking
- Multi-sensor fusion

17:30-18:30: Cash bar at Pyle Center

18:00: Group dinner at Pyle Center (included in registration fee)

## **Tuesday, 30 June**

### **2. Validation sources, intercomparison results, and algorithm overviews (Chair: Dave Schneider)**

09:00-09:20: 2.1 Space-based lidar as a validation source (Anne Garnier)

09:20-09:40: 2.2 Airborne lidar measurements of volcanic ash: A validation source (Franco Marengo)

09:40-10:00: 2.3 Aircraft measurements as a validation source (Hans Schlager)

10:00-10:20: Coffee break (included in registration)

10:20-10:40: 2.4 Microwave measurements (space and ground based) as a validation source (Frank Marzano)

10:40-10:45: 2.5 Introduction to intercomparison results (Mike Pavolonis)

10:45-12:00: 2.6 Intercomparison results and discussion (Richard Siddens)

12:00-13:00: Lunch at Pyle Center (included in registration fee)

13:00-14:00: 2.7 Discussions on intercomparison results with focus on key questions (Moderator: Dave Schneider)

Key Questions (preliminary):

- How do the ash detection results vary as a function of satellite sensor(s) and technique?
- Which cases and scene types produced the most consistent and inconsistent ash detection results?
- What are the best methods for validating volcanic ash detection techniques (e.g. quantifying detection and false alarms)?
- How do the ash cloud property retrieval results vary as a function of satellite sensor(s) and technique?
- Which cases and scene types produced the most consistent and inconsistent ash cloud property retrieval results?
- Which ash cloud parameters are the most relevant and can be validated with sufficient accuracy?
- What are the best methods for validating volcanic ash cloud property retrieval techniques?

*Satellite Algorithm Overviews*

14:00-14:20: 2.8 INGV (Stefano Corradini and Luca Merucci)

14:20-14:30: 2.9 Discussion

14:30-14:50: 2.10 DLR (Kaspar Graf)

14:50-15:00: 2.11 Discussion

15:00-15:20: Coffee break (included in registration fee)

15:20-15:40: 2.12 Argentine Met Service (Guillermo Toyos)

15:40-15:50: 2.13 Discussion

15:50-16:10: 2.14 CMA (Zhu Lin)

16:10-16:20: 2.15 Discussion

16:20-16:40: 2.16 KMA (Kwon-Ho Lee)

16:40-16:50: 2.17 Discussion

16:50-17:00: 2.18 End of day summary

**Wednesday, 01 July**  
**3. Algorithm Overviews (continued)**  
**(Chair: Justin Sieglaff)**

09:00-09:20: 3.1 EUMETSAT (Phil Watts)

09:20-09:30: 3.2 Discussion

09:30-09:50: 3.3 UK Met Office (Pete Francis and Mike Cooke)

09:50-10:00: 3.4 Discussion

10:00-10:30: Coffee break (included in registration fee)

10:30-10:50: 3.5 Australian Bureau of Meteorology (Chris Lucas)

10:50-11:00: 3.6 Discussion

11:00-11:20: 3.7 JMA (Daisaku Uesawa)

11:20-11:30: 3.8 Discussion

11:30-11:50: 3.9 Oxford Imager Based (Greg McGarragh)

11:50-12:00: 3.10 Discussion

12:00-13:00: Lunch at Pyle Center (included in registration fee)

13:00-13:20: 3.11 NOAA (Mike Pavolonis)

13:20-13:30: 3.12 Discussion

13:30-13:50: 3.13 University of Bristol (Luke Western)

13:50-14:00: 3.14 Discussion

14:00-14:20: 3.15 RAL (Richard Siddens)

14:20-14:30: 3.16 Discussion  
14:30-14:50: 3.17 Oxford Sounder Based (Elisa Carboni)  
14:50-15:00: 3.18 Discussion  
15:00-15:20: Coffee break (included in registration fee)  
15:20-15:40: 3.19 Universite Libre de Bruxelles (Lieven Clarisse)  
15:40-15:50: 3.20 Discussion  
15:50-16:10: 3.21 SACS (Claus Zehner and Lieven Clarisse)  
16:10-16:20: 3.22 Discussion  
16:20-16:40: 3.23 NASA MISR retrievals (Ralph Kahn)  
16:40-16:50: 3.24 Discussion  
16:50-17:00: 3.25 End of day summary

#### **Thursday, 02 July**

#### **4. Validation and intercomparisons (continued) and next steps (Chair: Dave Schneider)**

09:00-09:20: 4.1 EUMETSAT PMAp Aerosol Retrievals (Ruediger Lang)  
09:20-09:30: 4.2 Discussion  
09:30-09:50: 4.3 UV absorbing aerosol index (Kai Yang)  
09:50-10:00: 4.4 Discussion  
10:00-10:30: Coffee break (included in registration)  
10:30-12:00: 4.5 Discussions on intercomparison results (ash detection focus)  
(Moderator: Dave Schneider)

Discussion Topics (preliminary):

- For each sensor type, identify key attributes of ash detection algorithms that were shown to most consistently define the spatial bounds of the volcanic ash.

- “Best practices” for ash detection algorithms.

12:00-13:00: Lunch at Pyle Center (included in registration fee)

13:00-14:30: 4.6 Discussions on intercomparison results (ash retrieval focus)  
(Moderator: Dave Schneider)

Discussion Topics (preliminary):

- For each sensor type, identify key attributes of ash cloud property retrieval algorithms that were shown to be most consistent with independent data (e.g. lidar and aircraft).
- “Best practices” for ash cloud property retrieval algorithms.
- Should an ensemble approach (merging results from several different methods) be strongly pursued?
- Should multi-sensor fusion approaches (within a common algorithm framework) be strongly pursued?
- Standard units and quality flags for volcanic cloud geophysical parameters
- Recommendations to Volcanic Ash Advisory Centers (VAACs) and other users on how to best to utilize quantitative satellite products in operations

14:30-15:00: 4.7 Discussions on next steps (Moderators: Stephan Bojinski and Alexander Baklanov)

Discussion Topics (preliminary):

- “Road map” for future volcanic ash related scientific developments and intercomparison/validation activities that can also be applied to SO<sub>2</sub> clouds and emergent volcanic clouds
- Intercomparison report

15:00-15:20: Coffee break (included in registration fee)

15:20-16:00: 4.8 Continued discussions on next steps (Moderators: Stephan Bojinski and Alexander Baklanov)

16:00: Meeting concludes (*in the event that the discussion sessions take less time than scheduled, the meeting will conclude earlier*)