WORLD METEOROLOGICAL ORGANIZATION
Seventh International Volcanic Ash Workshop
Anchorage, Alaska, October 19-23

SCIENTIFIC AGENDA

Redoubt Volcano from Anchorage, April 20, 2009 (Sam Shea, U.S. National Weather Service)
Monday, October 19

The Partnership between Science and Aviation

8:00-9:00  Registration
9:00-9:30  Welcome and opening remarks by sponsors and organizers
          World Meteorological Organization
          NOAA National Weather Service
          U.S. Geological Survey

Overview of the hazard

Larry Mastin, moderator

9:30-10:00  Case studies that illustrate the hazard
          Andrew Tupper, Australian Bureau of Meteorology
10:00-10:30 A history of ash avoidance
          Thomas Casadevall, U.S. Geological Survey (emeritus)
10:30-10:35 Announcements

10:35-11:00 Coffee break

11:00-11:30 How the Eyjafjallajökull crisis influenced developments in volcanic ash forecasting science
          Matthew Hort, U.K. Met. Office
11:30-12:00 Panel discussion
          Andrew Tupper, Thomas Casadevall, Matthew Hort, panel members

12:00-1:15 Lunch

Aviation Perspective: Panel on “Challenges in Managing Aviation Risk from Ash Hazards”

Marianne Guffanti, moderator

1:15-2:30  5-minute summaries of challenges by aviation representatives
          Betty Bollert, Alaska Airlines
          Rory Clarkson, Rolls Royce
          Thomas Fahey, Delta Airlines
          Charles Haldeman, Pratt Whitney
          Douglas Kihm, Boeing
          Graham Rennie, Qantas Airlines
          Mike Stills, United Airlines

2:30-3:00 Panel discussion

3:00-3:30 Coffee break
VAAC Perspective: Panel on “How the VAACs are Working Together to Better Meet Aviation Industry Expectations”

Ian Lisk, moderator

3:30-3:45 VAAC collaboration activities including the development of a common web site
Dov Bensimon (Montreal VAAC), Donald Moore (Anchorage VAAC)

3:45-4:00 Volcanic Ash Advisories: how the VAACs use the ‘Discernable Ash’ definition to draw their lines now and in the future
Eleanor Crompton (London VAAC), Philippe Husson (Toulouse VAAC)

4:00-4:15 Volcanic Ash Advisories: How to introduce the confidence assessments
Adele Bear-Crozier (Melbourne VAAC), Paula Acethorpe (Wellington VAAC)

4:15-4:30 VAAC challenges and opportunities: monitoring volcanic ash with the next generation of satellite platforms
Yohko Igarashi (Tokyo VAAC), Jamie Kibler (Washington VAAC)

4:30-4:45 Future priorities and plans for the VAAC best practice
Miriam Andrioli (Buenos Aires VAAC), Ian Lisk (WMO CAeM)

4:45-5:15 Panel discussion

5:30-6:30 Ice-breaker (cash bar)

Tuesday, October 20

Bringing Research to Ops in the Modeling Realm

Larry Mastin, organizer

8:30-8:50 Modeling innovations at the London VAAC
Matthew Hort, U.K. Met. Office

8:50-9:10 HYSPLIT volcanic ash dispersion modeling R&D, NOAA NWS NCEP operations, and transfer to operations
Barbara Stunder, U.S. NOAA Air Resources Laboratory

9:10-9:30 Dispersion modeling and science into operations at the Icelandic Met. Office
Sara Barsotti, Icelandic Met. Office

9:30-9:50 Innovations in dispersion modeling using Fall3d and operations at the Buenos Aires VAAC
Arnau Folch, Barcelona Supercomputing Centre

9:50-10:10 Research and development advances at Montréal VAAC since the 2010 Eyjafjallajökull eruption: remote sensing, transport and dispersion modelling, statistical validation and meteorological data
Dov Bensimon, Met. Service of Canada (Montreal VAAC)

10:10-10:40 Coffee break

10:40-11:00 Operational use of numerical dispersion-fallout models at the USGS
Hans Schwaiger, U.S. Geological Survey, Alaska Volcano Observatory
11:00-11:20 Use of inverse and ensemble modeling techniques for improved volcanic ash forecasts
   Meelis Zikikheri, Australian Bureau of Meteorology

11:20-11:40 Intercomparison of volcanic eruption column models
   Yujiro Suzuki, Earthquake Research Institute, Tokyo

11:40-12:00 Stratospheric volcanic ash emissions from the 13 February 2014 Kelut eruption
   Nina I. Kristiansen, A.J. Prata, A. Stohl, and S.A. Carn

12:00-1:00 Lunch

1:00-2:00 Panel discussion: “What recent modeling advances offer the most promise for operations?”
   Panel members: Matthew Hort, Barbara Stunder, Sara Barsotti, Arnau Folch, Dirk Engelbart

2:00-2:30 Coffee Break

2:30-5:00 Poster Session (Held at the USGS conference room in Glenn Olds Hall)

Wednesday, October 21

Research to Ops for Remote Sensing and In Situ Sampling
Mike Pavolonis organizer

8:30-9:00 The WMO Satellite-derived Volcanic Ash Intercomparison Activity - Capabilities and Challenges for Operational Applications
   Mike Pavolonis, U.S. NOAA National Environmental Satellite, Data, and Information Service

9:00-9:20 Volcanic ash remote sensing products at EUMETSAT for Near Real-time Applications - Present and Future Outlook
   Rosemary Munro, EUMETSAT

9:20-9:40 Volcanic cloud remote sensing products at the Met Office for Near Real-time Applications - Present and Future Outlook
   Pete Francis, U.K. Met. Office

9:40-10:00 Added value to VAAC guidance by secondary observations and simulations in Germany
   Dirk Engelbart, German Federal Ministry of Transport and Digital Infrastructure

10:00-10:30 Coffee break

10:30-10:50 Introduction to Himawari-8 and its Application to Volcanic Cloud Monitoring
   Yuta Hayashi, Japanese Meteorological Agency
Satellite images uncertainty: eruption or resuspension? The importance of the multidisciplinary approach. The case of June 13th, 2015 Ojos del Salado false volcanic eruption

*Estella Collini, Servicio de Hidrografia Naval, Argentina*

Nadir and limb UV-visible satellite observations of volcanic clouds

*Simon Carn, Michigan Technological University*

Volcanic ash detection with lidar: Minimizing false positives and false negatives

*Mike Fromm, Naval Research Laboratory*

11:50-1:00 Lunch

Panel discussion: “What are the most promising research tools to move into operations in satellite remote sensing”

*Panel members: Pete Francis, Kenneth Holmlund, Don Moore, Mike Pavolonis, Dave Schneider*

2:00-2:30 Coffee break

2:30-5:00 Tours of Anchorage VAAC (virtual), Alaska Volcano Observatory (Grace Hall)

**Thursday, October 22**

*Engine Testing and Encounters*

*Andrew Tupper, organizer*

8:40-9:00 Experiment to test low concentration volcanic-ash ingestion by a jet engine

*John Lekki, NASA Glenn Research Center*

9:00-9:30 The 2015 understanding of engine volcanic ash susceptibility

*Rory Clarkson, Rolls Royce*

9:30-9:50 Volcanic ash: just another solid matter in the atmosphere?

*Ulrich Kueppers, Ludwig Maximillians University, Munich*

9:50-10:20 Coffee break

10:20-10:40 Recent encounters of aircraft with volcanic ash clouds

*Carsten Christmann, German Aerospace Center (DLR)*

10:40-11:00 An operator’s view to obtaining a realistic understanding of the volcanic ash hazard and some of the challenges in using an evidence based risk approach

*Graham Rennie, Qantas, Australia*

11:00-12:00 Panel discussion: “What can operators do to reduce risk?”

*Panel members: Rory Clarkson, Charles Haldeman, Carsten Christmann, John Lekki, Douglas Kihm, and Graham Rennie*

12:00-1:00 Lunch
**New methods of Detecting & Measuring Eruptions**

*David Schneider, organizer*

1:00-1:20  Monitoring volcanoes in Iceland: improvements over the past three to four years  
*Sigrún Karlsdottir, Icelandic Met. Office*

1:20-1:40  Recent progress and future opportunities in volcano monitoring using infrasound  
*David Fee, University of Alaska, Fairbanks*

1:40-2:00  Towards a volcanic notification system with infrasound data  
*Pierrick Mialle, Comprehensive Test-Ban Treaty Organization (CTBTO)*

2:00-2:20  Estimating plumes from seismic data: what we can and cannot do  
*Matt Haney, USGS Alaska Volcano Observatory*

2:20-3:00  Coffee break

3:00-3:20  Rapid eruption detection and volcanic ash cloud characterization using weather radar: current capabilities and limitations  
*David Schneider, USGS, Alaska Volcano Observatory*

3:20-3:40  How can advances in aircraft measurements of volcanic plumes be transformed into operational capabilities  
*Konradin Weber, Duesseldorf University of Applied Sciences*

3:40-4:00  The April 2015 eruption of Calbuco volcano, southern Chile  
*Alvaro Amigo, Servicio Nacional de Geología y Minería (SERNAGEOMIN), Chile*

4:00-5:00  Panel discussion: “What are the most cost-effective new methods of detecting and measuring eruptions in volcano observatory response?”  
*Panel Members: David Schneider, Sigrún Karlsdottir, Alvaro Amigo, Stefano Corradini*

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**Friday, October 23**

**Breakout Sessions and Wrap-up**

9:00-9:15  Organization of breakout groups

9:15-10:45  Breakout Group discussions to identify “The five biggest advances and challenges since 2010 in: (1) Model forecast accuracy; (2) Remote sensing measurement; (3) new ground-based techniques; (4) operational procedures.”

10:45-11:15  Coffee Break

11:15-12:00  Synthesis of results & wrap up

12:00  Adjournment
Poster Presentations (alphabetical by first author)

1. Statistical emulation of volcanic ash fall at ground level for regional-global scale analysis: Adaptation of Probabilistic seismic and tsunami hazard analysis (PSHA/PTHA) techniques for volcanic ash hazard
   Adele Bear-Crozier, A.N. Miller, V. Newey, V. Horspool, and R. Weber

2. A multi-sensor approach for volcanic ash, SO2 and ice retrievals and eruption characterization
   Stefano Corradini, M. Montopoli, L. Guerrieri, M. Ricci, S. Scollo, L. Merucci, F. Marzano, S. Pugnaghi, M. Prestifilippo, L. Ventress, D. Grainger, E. Carboni, G. Salerno, G. Vulpiani, and M. Coltelli

3. Using satellite based volcanic ash products to improve HYSPLIT transport and dispersion model predictions
   Alice Crawford, B. Stunder, J. Kibler, M. Pavolonis

4. A New Dispersion Modelling System at Wellington VAAC
   Cory Davis, P. Shucksmith, G. Rye, I. Soltanzadeh, M. Bernard, and T. Hurst

5. Investigating the influence of grain-size distribution and its uncertainty on ash dispersal modelling
   Mattia de’Michieli Vitturi, A. Neri, F. Pardini, M. Vittoria Salvetti, and A. Spanu

6. Efficient Forecasting of Volcanic Ash Clouds
   Roger P. Denlinger, Hans Schwaiger

7. Design of a test bench for the investigation of the effect of volcanic ash on aircraft systems
   T. Ebus, R.R. Nunes, and C. Christmann

8. Operative remote sensing monitoring of Kamchatkan volcanoes using the information system VolSatView
   Olga Girina, E.A. Lupian, A.A. Sorokin, D.V. Melnikov, and A.A. Manevich

9. Detection of volcanic ash clouds in MSG-SEVIRI IR data based on a neural network approach and comparison with in situ measurement data of DLR-FALCON
   Kaspar Graf, S. Kox, M. Schmidl, J. Gasteiger, and H. Schlager

10. Extreme events through CTBT monitoring
    Monika Krysta and P. Mialle

11. Using GPS signal strength data to detect characteristics of volcanic plumes
    Kristine M. Larson

12. Stereoscopic estimation of volcanic ash cloud-top height from two geostationary satellites
    Luca Merucci, Klemen Zakšek, Elisa Carboni, and Stefano Corradini

13. An algorithm for automated cloud pattern recognition and mass eruption rate estimation from umbrella cloud or downwind plume observed via satellite imagery
    Solène Pouget, E. Jansons, R. Rustowicz, M.I. Bursik, A. Tupper, and P.W. Webley

14. Volcanic WRF-Chem Model Application Updates
    Martin Stuefer, S. Egan, P. Webley, G. Grell, and S. Freitas

15. Remote infrasound in SE-Asia: A case study of the 2014 Kelud eruption and minimum detection threshold through space and time
    Benoít Taisne, Corentin Caudron, Milton Garcés, Alexis Le Pichon, and Pierrick Mialle

16. Rapid estimation of source parameters from the April 2015 eruption of Calbuco Volcano, Chile, from satellite, lightning, and field observations
    Alexa Van Eaton, Alvaro Amigo Ramos, Larry G. Mastin, Daniel Bertin, Raúl Giacosa, and Jerónimo González

17. Study of resuspended volcanic ash from the Katmai region to Kodiak Island
18. Probabilistic volcanic ash cloud simulations: characterizing the uncertainty and moving into the operational environment