

# U.S. Volcanic Ash Program in Support of IVATF

Presented to: ASIA/PAC MET/ATM Seminar  
By: Steven Albersheim, FAA  
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## Icelandic Eruption

- Consequences were:
  - Disruption in global economy resulting from airspace closure in EUR/NATS Region
  - Illumination of gap in science
  - Revelation of the lack of global harmonization in contingency plans
  - Revelation of no engine certification standards for safe ash concentration levels

## ICAO stands up Task Force

- To develop a global safety risk management framework that will make it possible to determine the safe levels of operation in airspace contaminated by volcanic ash
- To complete its basic work within a year although complex issues would be pursued by appropriate ICAO bodies beyond 2011



## Organization of IVATF

- **Four Sub-Groups or Expertise Established**
  - Air Traffic Management
  - Airworthiness
  - Science
  - International Airways Volcano Watch
- **Each group given specific tasks and responsibilities**
- **Groups recognized the need to leverage off each others expertise**



## Expected Outcome from Sub-groups

- **ATM**
  - Assess existing contingency plans
  - Assess existing notification and warning procedures
- **AIR**
  - Identify acceptable levels of ash concentration in contaminated airspace for operations
  - Assess regulatory procedures
- **Science**
  - Assess detection capabilities (remote, ground based, airborne)
  - Assess eruption source parameters
- **IAVW**
  - Assess framework of transport and dispersion models
  - Evaluate framework to visually depict ash in products



## U.S. Volcano Program

- Federal Agencies: FAA, NOAA/NWS/NESDIS/OAR, USGS, DoD, NASA, Smithsonian
- National Operations Plan that defines agency roles and responsibilities, format for messages, and procedures



## Goal of U.S. VA program

- **Promote advancement in volcanic ash services by:**
  - Identify the gaps in the science specifically in areas of transport and dispersion modeling, detection, and source parameters
  - Evaluate acceptable levels of ash concentration
  - Evaluate existing contingency plans
  - Promote use of collaborative decision



## FAA Public Meeting on VA

- **FAA held a public meeting on VA asking stakeholders to comment on services:**
  - 55 attended including reps from 6 major carriers
- **General theme of issues expressed were:**
  - Airline Operators:
    - Want more information on ash cloud.
    - Want information sooner, even with less certainty
    - **Lack confidence in the SIGMETs accuracy**, thus look at other data before making operational decisions



# SIGMET

BIRD SIGMET 03 VALID 150600/151200 BIRK-  
BIRD REYKJAVIK CTA VA ERUPTION MT EYJAFJALLAJOKULL LOC N6337 W01937  
VA CLD OBS AT 0000Z BLW FL350 N6405 W01937 - N6420 W00712 - N6800  
W00210 -N6900 W00000 - N6100 W00000 - N6100 W01000 - N6330 W01937 -  
N6405 W01937 FCST 1200Z VA CLD APRX BLW FL350 N6356 W01952 - N6400  
W00000 - N6100 W00000 - N6130 W01000 - N6330 W01952 - N6356 W01952  
CNL SIGMET 08 150600/151200=

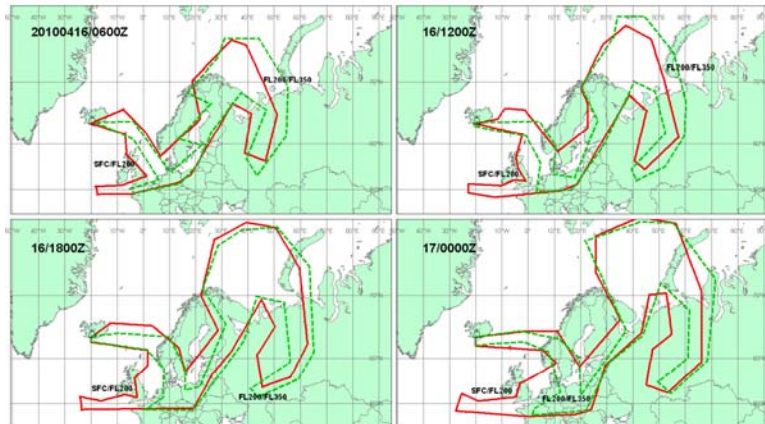


## FAA Public Meeting on VA (2)

- **Issues expressed by Airline Operators (cont):**
  - They want **more detail in SIGMET graphic.**
    - Willing to **accept a difference between simple text SIGMET** and complex/detailed SIGMET graphic (since text SIGMET is limited to 7 points).
  - They agreed that a volcanic ash severity or intensity index, similar to the light/moderate/severe used for turbulence would be useful.
  - They desire more operationally specific products with **better vertical (altitude) resolution in the VAA.**



## Volcanic Ash Advisory (VAA)



VA ADVISORY  
DTG: 20100416/0600Z  
VAAC: LONDON  
VOLCANO:  
EYJAFJALLAJOKULL  
PSN: N6338 W1937  
AREA: ICELAND

SUMMIT ELEV: 1666M  
ADVISORY NR: 2010/009  
INFO SOURCE: ICELAND MET OFFICE  
AVIATION COLOUR CODE: RED  
ERUPTION DETAILS: SIGNIFICANT ERUPTION  
CONTINUING, REACHING FL180.

RMK: ASH CONCENTRATIONS WITHIN INDICATED AREAS ARE  
UNKNOWN, NO SIGNIFICANT ASH RISK ABOVE FL350.  
NXT ADVISORY: 20100416/1200Z

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11

## FAA Public Meeting on VA (3)

- Issues expressed by Airline Operators (cont):
  - They stressed the importance of:
    - timely information on eruptions,
    - including more frequent updates, with
    - information programmed into the airplane's Flight Management Computer (FMC)
  - Operators would like a **level of confidence** on volcanic ash forecast information, but must be **understandable to be useable** in their operational decisions.
  - Overall, operators want the **right information**, and then **they will make the operational decisions** regarding ash avoidance.

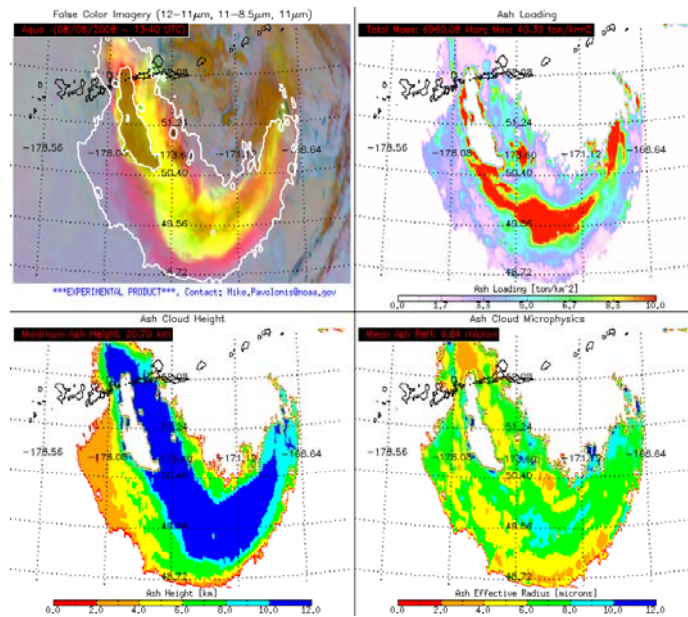
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24-26 January 2011



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12

**Examples of experimental volcanic ash products (NOAA)**

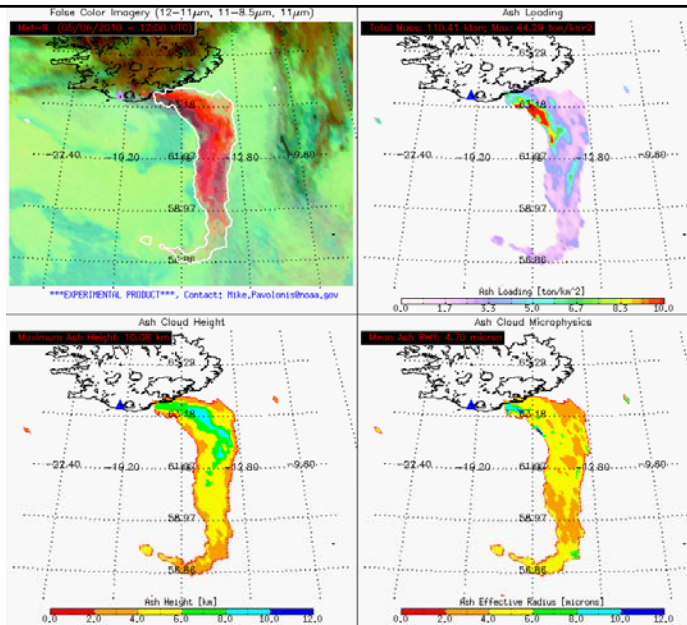


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**Examples of experimental volcanic ash products (NOAA)**



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24-26 January 2011



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## Next Steps for U.S. Program Management

- Develop a concept of operations plan for VA and socialize the service needs with the international community
- Continue to address the gaps in the sciences and prioritize what is most needed
- Promote the concept of CDM for VA on a global scale to bring in all stakeholders (VAAC, Forecast Offices, AOC, and ACC)
- Enhance the use of graphics for Volcanic Ash especially for complex events
- Evaluate identifying ash concentrations. Harmonize global transport models and evaluate use of ensemble modelling
- Evaluate probabilistic forecasting of ash concentration and how it affects decisions on fly or no fly zones



## What U.S. is doing in the near term

- **Conducting operational testing of an upgraded U.S. Hy-Split Model to account for:**
  - Time varying emission rate and height
  - Maintain ash from previous simulations
  - More realistic ash removal mechanisms (e.g., wet deposition)
- **Examining whether U.S. transport model can be initialized with satellite data, and assess subsequent forecasts**





## Summary

- **ICAO VA TF is to present findings from Sub-groups on various tasks in July 2011. ICAO recognizes that not all tasks will be completed and will go beyond 2011.**
- **U.S. revisiting its existing program to identify gaps and where improvements can be made.**
- **Development of a Concept of Operations to lay out a roadmap instead of a shot gun approach to determine where resources need to be directed.**
- **Share our knowledge with ASIA/PAC to support global harmonization on exchange of information.**

