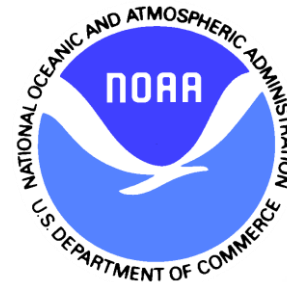
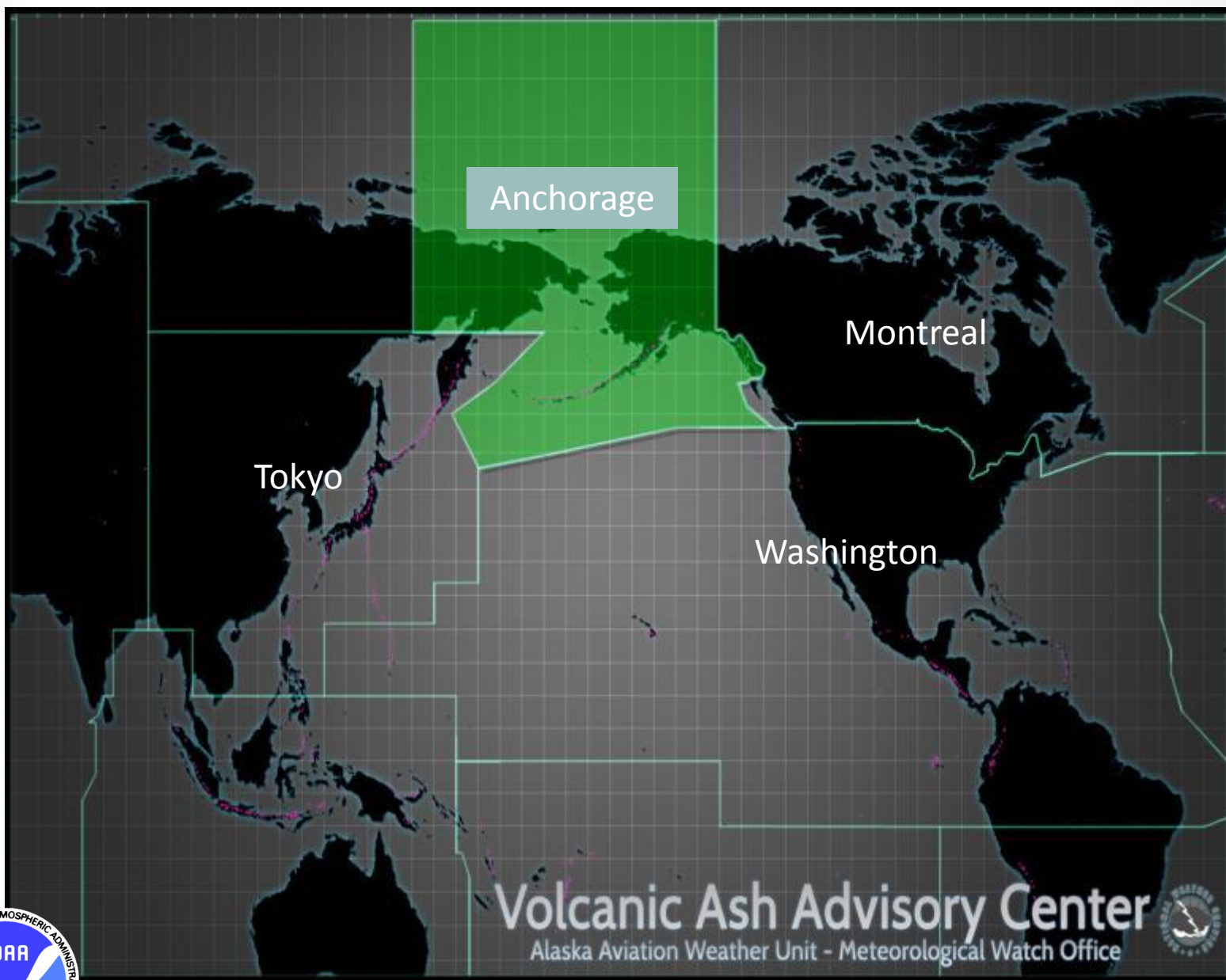


# Data integration, analysis/forecast process, and collaboration: Path toward a global harmonization of volcanic ash products and services

Presented by: Jeff Osiensky NOAA/NWS Alaska Region

2<sup>nd</sup> IUGG-WMO Volcanic Ash Workshop  
Geneva, Switzerland  
November 18, 2013





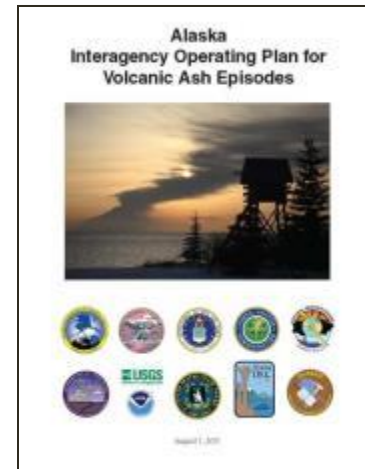
# Challenges

- Limited data availability
  - GOES data usefulness limited north of 60N latitude (due to stretched pixels)
  - POES – better resolution, swath dependant
  - PIREPs – limited resource
- Weather issues
  - Many times volcanic ash plumes are obscured by clouds
  - Difficult to see volcanic ash on satellite imagery
- Model output
  - Poor model performance
  - Assumptions to input parameters
  - Errors in output (many times overdone)
  - Difficult to calibrate with satellite imagery



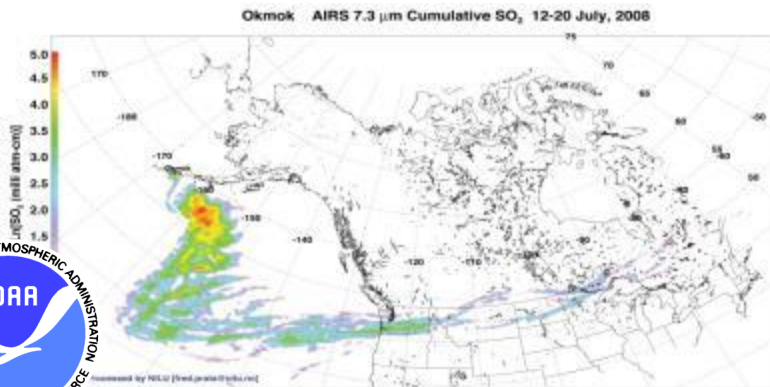
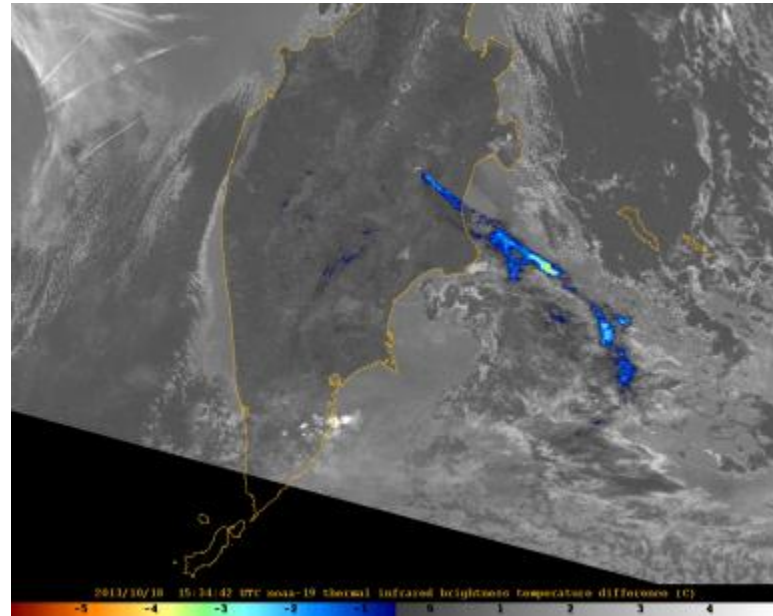
# Response Plans

- Alaska Interagency VA Group
  - Federal, state, local entities
  - Scientists, other subject matter experts (SMEs)
- Document agency roles and responsibilities
  - Call down lists, phone contacts, reference information
- Basis for table top exercises, drills, etc.



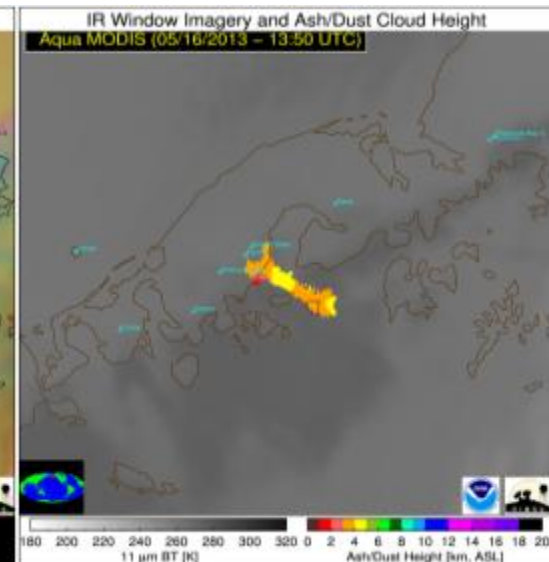
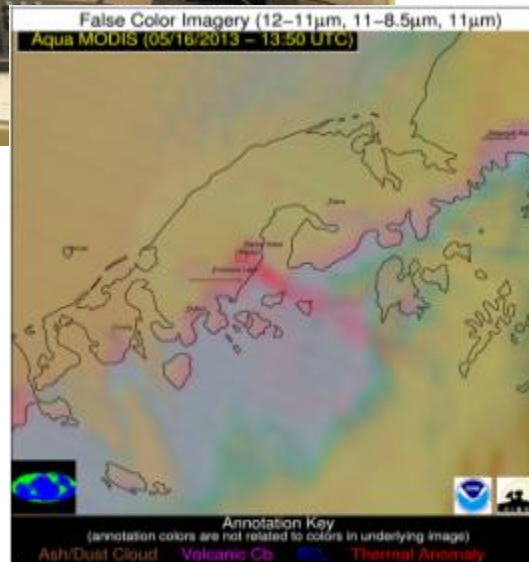
# Situational Awareness

- Anchorage VAAC tools
  - Volcview (USGS)  
<http://volcview.wr.usgs.gov>
    - GOES, AVHRR, MTSAT
    - WSR-88D (Doppler) radar imagery\*
    - Pilot Reports (PIREPs)
      - \* Cook Inlet Volcanoes



# Operational Systems

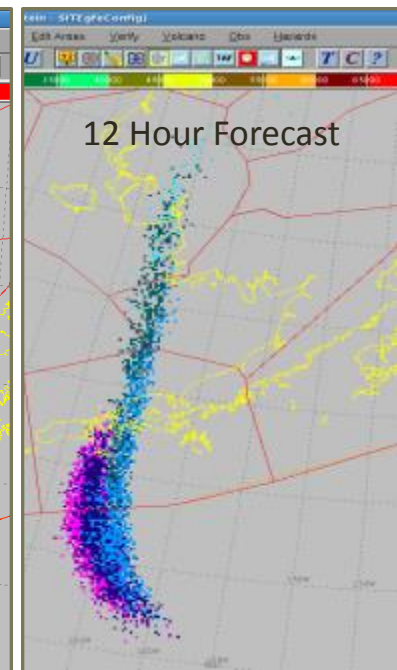
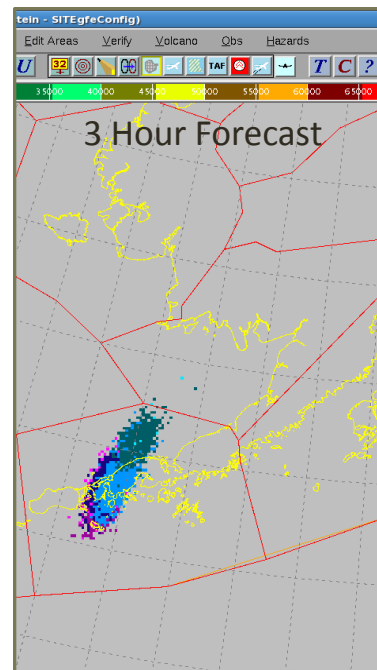
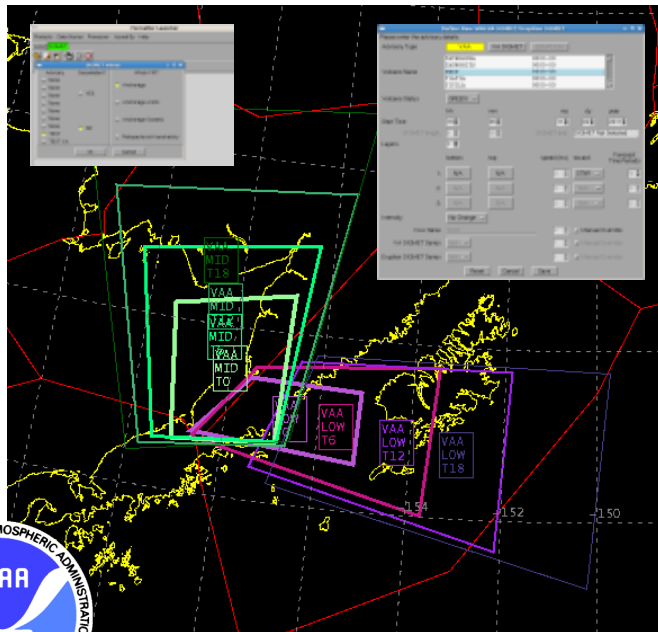
- Advanced Weather Interactive Processing System (AWIPS)
- Mike Pavolonis' work integrated into AWIPS



# IC4D

- Alaska “home grown” processing/display system
- Allows for aviation grids to be displayed/manipulated in the vertical (e.g. turbulence, icing, volcanic ash)
- Tool to create SIGMET/VAA

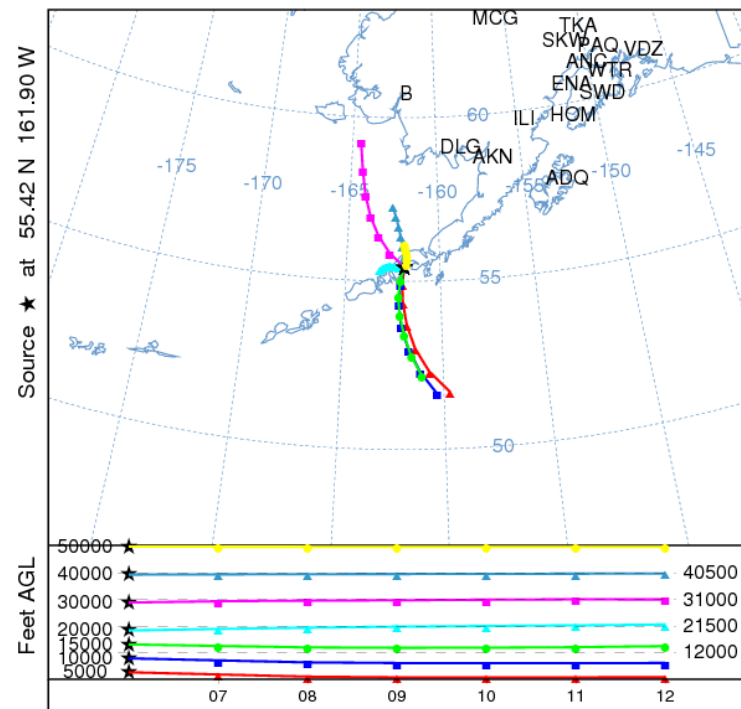
PUFF Model



# HYSPLIT

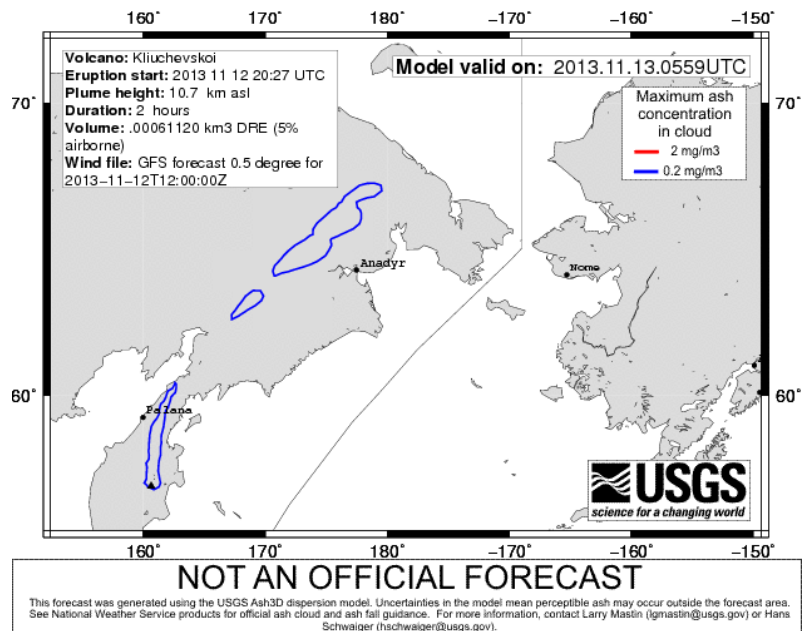
- Official NOAA dispersion model
- U.S. VAACs run a script to “feed” input parameters to NOAA/NWS Central Operations for official model run
- Model may be run through web interface

NOAA HYSPLIT MODEL  
Forward trajectories starting at 0600 UTC 06 Aug 13  
06 UTC 05 Aug GFSG Forecast Initialization



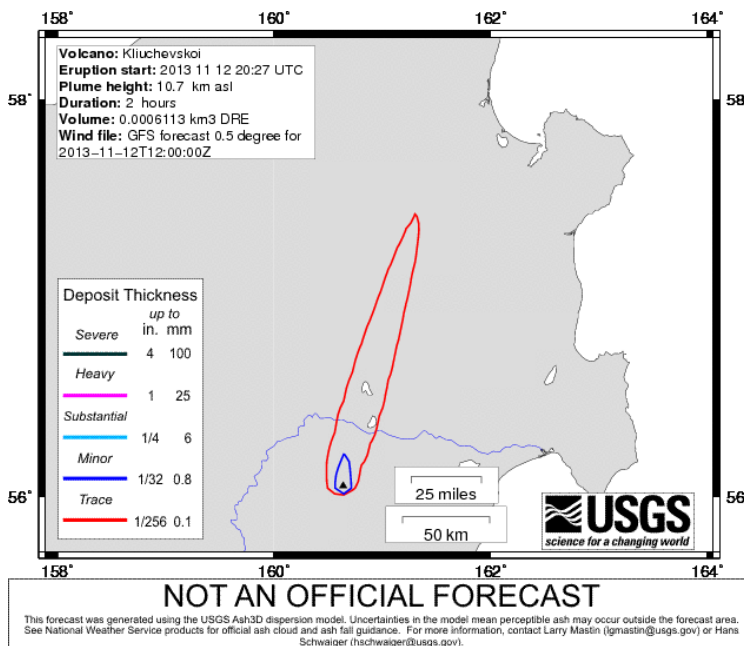
# Ash3D

- USGS ash dispersion/ash fall model
- Requirements from NWS incorporated into the model
- Available in GIF and KMZ



## Airborne dispersion



## Ashfall



# Collaboration

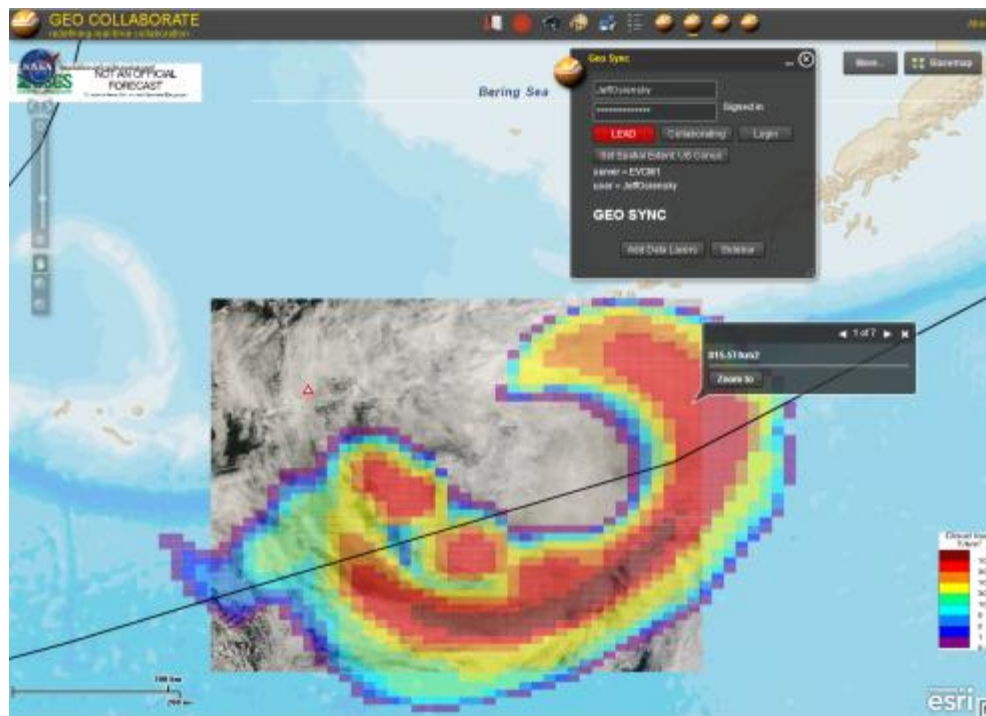
- Washington, Montreal
  - Phone, email
- Tokyo
  - Bi-lingual fax, email (handover)
  - Working on English language training of VAAC forecasters
    - Long-term goal – use phone



Handover Request Sheet	Answer Sheet for Handover Request
<p> To: Anchorage VAAC</p> <p>From: Tokyo VAAC                      Fax: +81-3-2212-6446                      Phone: +81-3-2211-7952                      Email: <a href="mailto:vaa@sevel2.bishu.go.jp">vaa@sevel2.bishu.go.jp</a></p> <p>Date and Time (日付と時刻): _____ d _____ UTC                      Volcano Name (火山名): _____                      VAA No.: _____                      Attachments (添付資料): _____  <input type="checkbox"/> VAA text <input type="checkbox"/> VAG <input type="checkbox"/> VAB <input type="checkbox"/> Other _____</p> <p>★ Keeping (発表を継続する) ⇒ 返信不要</p> <p>Though ash clouds are approaching/intruding to your area of responsibility, we keep issuance of VAA for these ash plumes. Any reply to this FAX is not needed.                      (VAGに示した(一帯の)火山灰が貴方の責任領域に入り、続々の観測範囲から逸脱しつつある。指定した火山灰雲について、貴方にVAA発表の責任を委譲しない。承認が限りの返信を要する。)</p> <p>□ Requesting (引継を依頼する) ⇒ 返信希望</p> <p>(Some part of) ash cloud (indicated in VAG) seem to move into your area of responsibility and they will be out of our sight. We would like to ask you to handover responsibility of VAA for indicated cloud. We are waiting for your reply on approval or refusal.                      (VAGに示した(一帯の)火山灰が貴方の責任領域に入り、続々の観測範囲から逸脱しつつある。指定した火山灰雲について、貴方にVAA発表の責任を委譲したい。承認が限りの返信を要する。)</p> <p>Comments (追記事項): _____</p>	<p> To: Tokyo VAAC</p> <p>From: Anchorage VAAC                      Fax: 1-907-266-5169                      Phone: 1-907-266-5110                      Email: <a href="mailto:A-VAA@NOAA.GOV">A-VAA@NOAA.GOV</a></p> <p>Date and Time (日付と時刻): _____ d _____ UTC                      Volcano Name (火山名): _____                      VAA No.: _____</p> <p><input type="checkbox"/> Acknowledgement of Handover (承認の承認)</p> <p>We agree to take over responsibility of the above eruption, and we will assume VAA responsibility from your office. We will issue VAA at _____ d _____ UTC.                      (私どもは上述の噴火を負擔することに賛成し、VAAの責任を貴方より引き継ぎます。xx時xx分にVAAを發表します。)</p> <p><input type="checkbox"/> Refusal of Handover (承認の拒否)</p> <p>We recognize no significant ash plume in our area of responsibility. We ask your office to continue issuance of VAA.                      (私どもの観測内に火山灰の塵は確認できません。引き継ぎ貴方よりVAAを發表されるようお願いします。)</p> <p>Comments (追記事項): _____</p>

# EVCN-G and Flexviewer

- Graphical collaboration
  - Data sharing (not screen sharing like GoToMeeting or WebEx)
- Testing/evaluation for about 2 years now



## Web-based Flexviewer



# Summary

- Anchorage VAAC has a number of tools available to detect, analyze and forecast volcanic ash hazards to aviation.
- “Tool box” concept applied – can’t use all of the tools all of the time
- VAAC Best Practices “theme”
  - Collaborative Decision Analysis and Forecasting (CDAF)
  - Taking incremental steps to improve VAAC to VAAC collaboration
  - Need tools to facilitate data sharing
  - Discussion (email, phone)
  - Sharing “best practices”, tools, techniques
  - Lead VAACs need to collaborate all “downstream” VAACs
    - Ensure consistent message to customers
    - Better understand impacts to customer groups

