In Anchorage:
- Volcanic Ash Advisory Center
- Alaska Aviation Weather Unit
- Weather Forecast Office
- Alaska Pacific River Forecast Center
- Center Weather Service Unit
- Alaska Regional Headquarters
Weather Forecast Office (WFOs) Functions

- Public Forecasts for the next 7 days.
  - Watches, warnings, and advisories for higher impact events

- Marine and Fire Weather Forecasts for the next 5 days.

- Terminal Aerodrome Forecasts (TAFs) for the next 24-36 hours
  - Airport specific forecasts

- Sea Ice (Anchorage only)

- Multi-media Broadcasts
  - TV from Anchorage only

- Other functions as needed:
  - Ash fall
  - Flood Warnings and Advisories
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[Map showing locations of Fairbanks, Anchorage, Juneau]
Center Weather Service Unit (CWSU)

Located in the Air Route Traffic Control Center (ARTCC) and staffed by four NWS meteorologists between 5am and 9pm daily.

Provide meteorological consultation, forecasts, and advice to managers and staff within the ARTCC and other Federal Aviation Administration supported facilities.

Collaborate with other NWS offices and solicit pilot reports.
Forecasts for AK's 5.76 million sq. kilometer airspace with involvement from 5 offices (3 WFOs, CWSU, and AAWU)
  Graphics, Area Forecasts, AIRMETs, and SIGMETs

Terminal forecasts for 39 airports issued by WFOs
  Transmitted very 6 hours with routine updates for ANC at 7am & 21UTC (12pm AKST and 1pm AKDT)

Need for a strong internal collaborative forecast process

Close partnerships with FAA, industry, and formal Association to help guide services
Alaska Aviation Weather Unit (AAWU) & Volcanic Ash Advisory Center (VAAC)

Forecast Staff (2 always on duty)
5 Lead Forecasters
6 Journey Forecasters

Support Staff
1 Science Operations Officer
1 System Administrator
1 Meteorologist in Charge/Volcano Ash Advisory Center Manager
North Desk
- Area Forecast
- AIRMETs and SIGMETs
- Icing and Freezing Levels
- Convection
- Flight Category
- 24-60 hour Weather Depiction

South Desk
- Area Forecast
- AIRMETs and SIGMETs
- Wind and turbulence
- Surface Analysis
- Volcanic Ash Advisory and Graphic
Volcanic Ash Advisory Center Anchorage

- VAAC Anchorage of area of responsibility is approximately 12.1 square million kilometers
- North Pacific air routes in close proximity to active volcanoes along with many Alaskan routes
Most active volcanoes last 30 years in or very near VAAC Anchorage area

More in Kuril Islands to Southwest
Alaska Aviation Weather Unit and Volcanic Ash Advisory Center
What if there’s a major Mount Redoubt Eruption?
Functions During Major Cook Inlet Volcanic Eruption

Ash in atmosphere (Lead office)

Lahar and Ash Fall

State-wide internal coordination and with external partners

Specialized Dissemination
Volcanic Ash Advisory and SIGMET Forecast Process

- Heavily based on observational data such as satellite, radar, webcams, vertical soundings, pilot reports, and seismic data
- Numerical guidance used more heavily for longer prediction times, with consideration of current errors and biases
- Collaboration with partners and other offices (NWS and VAACs)
Greatest Challenges in Short Term Forecasting of Volcanic Ash Clouds

• Meteorological clouds obscuring eruptions
  • Especially challenging for eruptions below 7.5km (25,000 feet)

• Determining and communicating ash cloud heights

• Identifying the edge of ash clouds or determining hazards when ash cloud dissipating
External Collaborative Efforts in Alaska

Alaska Volcano Observatory

Anchorage VAAC

Center Weather Service Unit Anchorage
External Collaborative Efforts

Tokyo

Montreal

Washington
Operational Computer System

Product Preparation and Interactive Analysis of Meteorological Data

Situational Monitor

VAAC Collaboration and email notification and supplemental monitoring
Possible Volcanic Ash Cloud Found

Alert Status: Newly detected feature
Latitude of Radiative Center: 57.783 [degrees]
Longitude of Radiative Center: -153.843 [degrees]

Maximum Height [AMSL]: 3.9 [km] (12684.28 [ft])
Handover and Collaboration Procedures with VAAC Tokyo

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 VAA 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 VAA 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 VAA 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 VAAC AOR. Anchorage VAAC will never issue a VAA extending to a volcano in Tokyo VAAC 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 VAAC’s area of responsibility (AOR). Tokyo VAAC issues VAA in their AOR.
<table>
<thead>
<tr>
<th>Time</th>
<th>User</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>08 Oct 1:24 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>Hello Tokyo VAAC. We have received your HRS for VA assoc with Sheveluch. We accept handover and will reply to the HRS soon.</td>
</tr>
<tr>
<td>08 Oct 1:25 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>We will issue the next bulletin at 08/1000 UTC.</td>
</tr>
<tr>
<td>08 Oct 1:26 AM</td>
<td>international-yohko.igarashi</td>
<td>This is Tokyo VAAC.</td>
</tr>
<tr>
<td>08 Oct 1:26 AM</td>
<td>international-yohko.igarashi</td>
<td>I see.</td>
</tr>
<tr>
<td>08 Oct 1:27 AM</td>
<td>international-yohko.igarashi</td>
<td>I see. I will issue VAA soon. Please issue VAA after our advisory.</td>
</tr>
<tr>
<td>08 Oct 1:27 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>Very well. We will issue after your final advisory.</td>
</tr>
<tr>
<td>08 Oct 1:27 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>Thank you for coordinating</td>
</tr>
<tr>
<td>08 Oct 1:31 AM</td>
<td>international-yohko.igarashi</td>
<td>Thank you.</td>
</tr>
<tr>
<td>08 Oct 1:32 AM</td>
<td>international-yohko.igarashi</td>
<td>Could you return HRS by e-mail?</td>
</tr>
<tr>
<td>08 Oct 1:34 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>We have just transmitted the HRS reply.</td>
</tr>
<tr>
<td>08 Oct 1:34 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>You should receive an e-mail in your inbox very shortly.</td>
</tr>
<tr>
<td>08 Oct 1:49 AM</td>
<td>international-yohko.igarashi</td>
<td>Thank you. Now I have just issued final VAA.</td>
</tr>
<tr>
<td>08 Oct 2:11 AM</td>
<td>nws-ANCH VAAC-joshua.maloy</td>
<td>Thank you Tokyo VAAC. Our 1000 UTC bulletin has likewise been posted.</td>
</tr>
<tr>
<td>08 Oct 2:59 AM</td>
<td>international-yohko.igarashi</td>
<td>Thank you for your cooperation, regards.</td>
</tr>
</tbody>
</table>

Volcanic Ash
VolcView (USGS) – Web based interface for satellite information, useful for collaboration

- Image Selection
- Overlays
- Temperature Profile
- Wind Trajectory
- Image Control
- Annotation

volcview.wr.usgs.gov
Collaboration– Web based display of satellite information, Forward Trajectory
volcview.wr.usgs.gov

- Colors indicate different altitudes in feet above ground level (AGL): 5,000’, 10,000’, 20,000’, 30,000’, 40,000’, 50,000’.
- Circles along each line are spaced one hour apart.

Trajectory Start 2015-04-13 05:00:00
(0:32 h:mm before image)

Trajectory Start 2015-04-13 05:00:00
(2:32 h:mm before image)

Trajectory Start 2015-04-13 05:00:00
(4:32 h:mm before image)
Thank You! Questions?