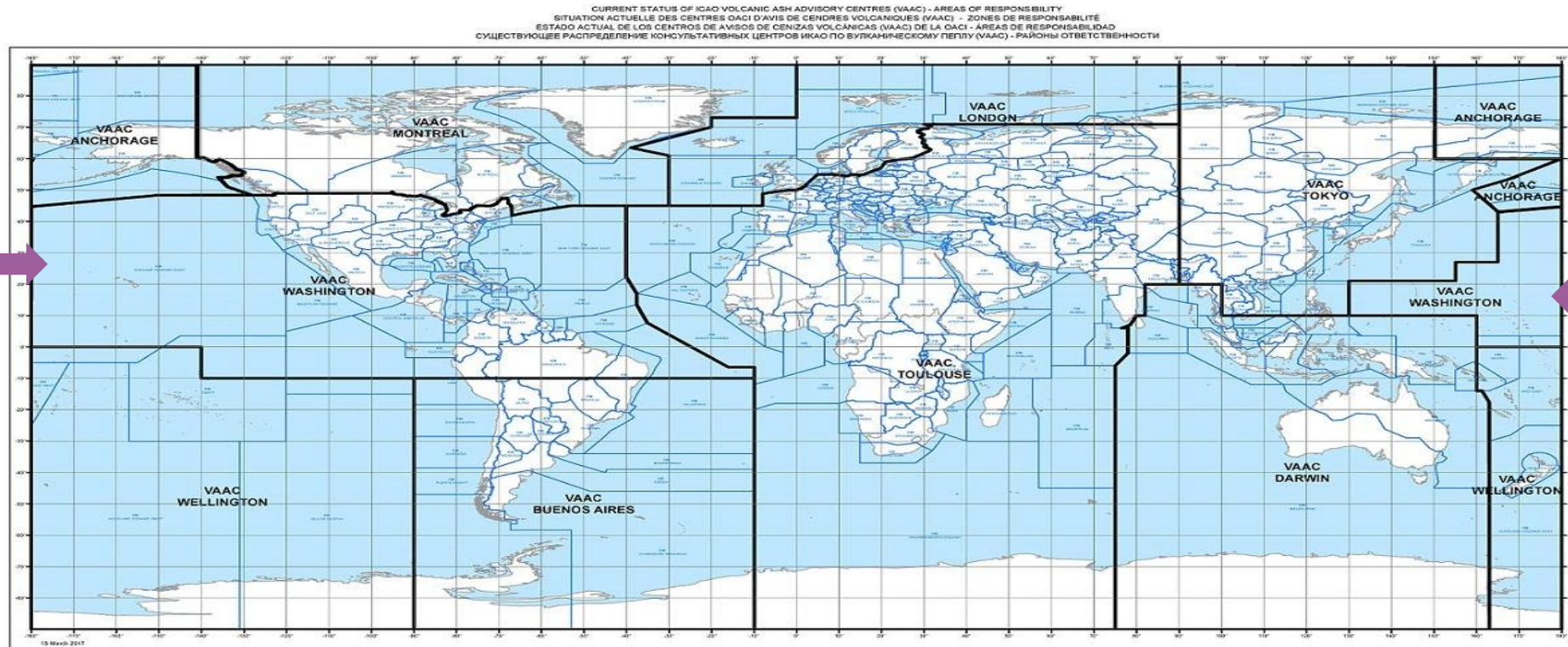




# Washington Volcanic Ash Advisory Center

*Juan Velasco – Washington Volcanic Ash Advisory Center Analyst*

# Washington Volcanic Ash Advisory Center



- **9 Volcanic Ash Advisories Centers (VAAC) around the globe**
- Roughly 20 Volcano Observatory (VO) groups and 23 Meteorological Watch Offices (MWO) within the Washington VAAC Area of Responsibility (AoR)
- **14 volcanic ash analysts work for the Washington VAAC - 24/7/365**

# Washington Volcanic Ash Advisory Center

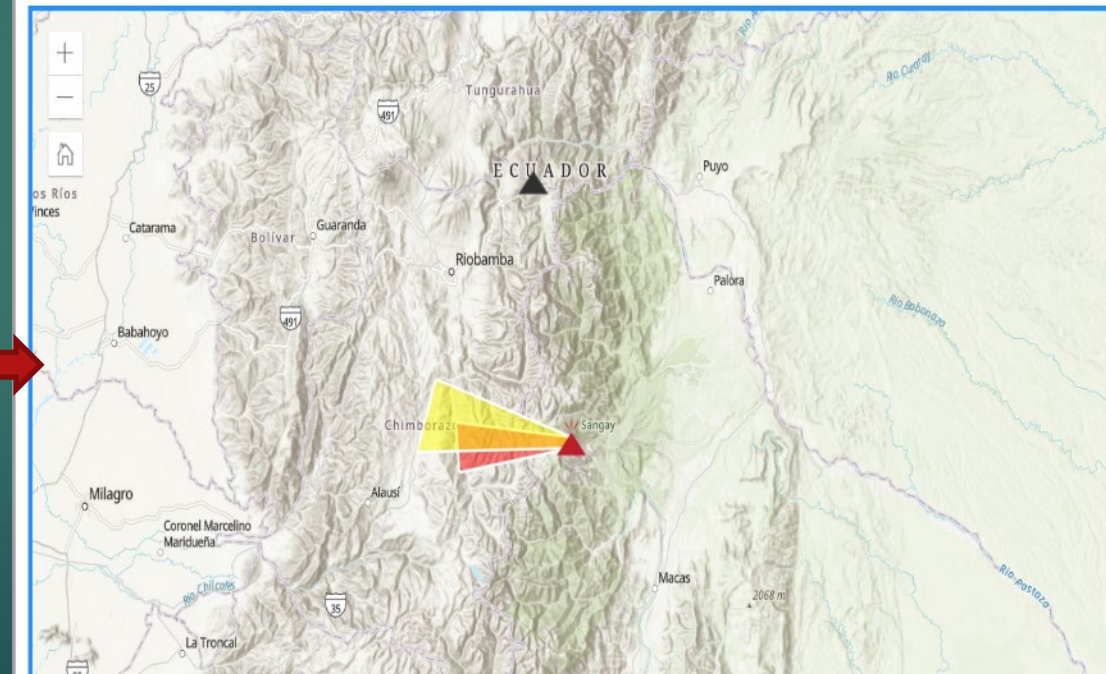
The Washington Volcanic Advisory Center resides in the National Ocean and Atmosphere Administration (NOAA), **National Environmental Satellite, Data, and Information Service (NESDIS)** and Office of Satellite and Products Operations (OSPO)/Satellite Analysis Branch (SAB).

There are four programs in the Satellite Analysis Branch.

- Volcanic Ash Program – [Washington VAAC is one of them](#)
- Marine Oil Spill Detection Program
- Tropical Storm Program
- Fire and Smoke Program

Washington VAAC:  
Active Volcanos

Volcano Name	Lat/Lon(DMS)	Summit(ft)	Eruption Height(ft*100)	Next Advisory
KLIUCHEVSKOI	56.05/160.63	15597	--	--
POPOCATEPETL	19.02/-98.62	17693	--	--
RUIZ	4.88/-75.32	17319	200	07/1815Z
REVENTADOR	-0.08/-77.65	11686	140	07/1900Z
SANGAY	-2.00/-78.33	17342	250	07/2100Z



# Washington Volcanic Ash Advisory Center

## Present and future products by the Washington VAAC

- Volcanic Ash Advisories (VAA)
- Volcanic Ash Graphic (VAG)
- Quantitative Volcanic Ash (QVA), currently in the planning phase and will become an ICAO Annex 3 recommended practice by November 2025 and a standard practice for each VAAC by November 2029.

FVXX20 KNES 241403  
VA ADVISORY  
DTG: 20230524/1403Z

VAAC: WASHINGTON

VOLCANO: POPOCATEPETL 341090  
PSN: N1901 W09837

AREA: MEXICO

SUMMIT ELEV: 17693 FT (5393 M)

ADVISORY NR: 2023/626

INFO SOURCE: GOES-16, WEBCAM, NWP MODELS.

ERUPTION DETAILS: VA EMS CONT

OBS VA DTG: 24/1330Z

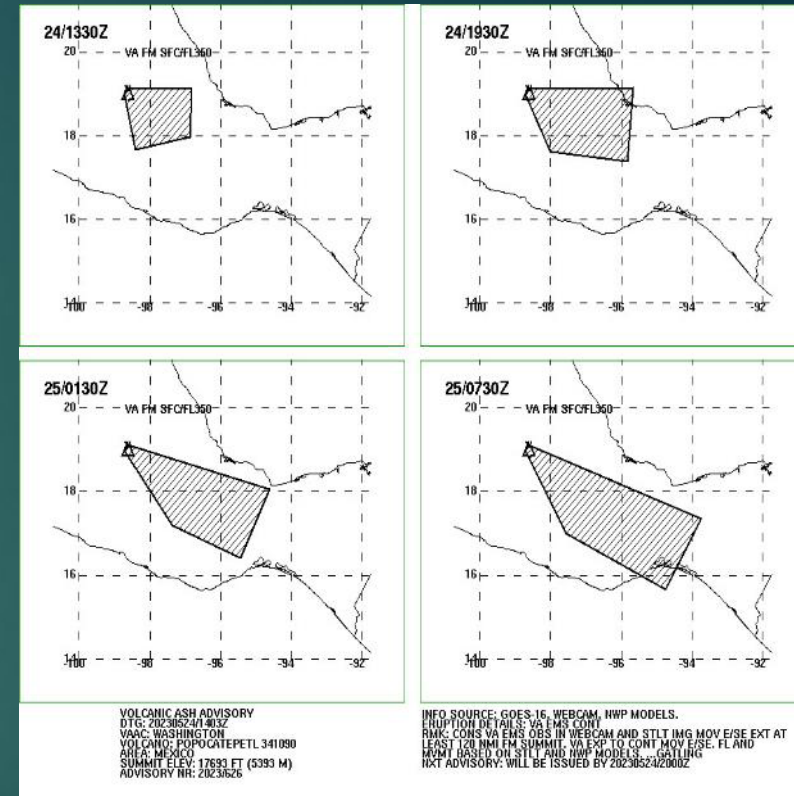
OBS VA CLD: SFC/FL350 N1907 W09837 - N1907 W09649  
- N1758 W09651 - N1740 W09824 - N1859 W09842 -  
N1907 W09837 MOV SE 30KT

FCST VA CLD +6HR: 24/1930Z SFC/FL350 N1908 W09540  
- N1723 W09549 - N1737 W09800 - N1859 W09843 -  
N1907 W09836 - N1908 W09540

FCST VA CLD +12HR: 25/0130Z SFC/FL350 N1906  
W09835 - N1802 W09436 - N1625 W09525 - N1711  
W09721 - N1858 W09843 - N1906 W09835

FCST VA CLD +18HR: 25/0730Z SFC/FL350 N1907  
W09837 - N1720 W09344 - N1540 W09444 - N1659  
W09734 - N1858 W09843 - N1907 W09837

RMK: CONS VA EMS OBS IN WEBCAM AND STLT IMG MOV  
E/SE EXT AT LEAST 120 NMI FM SUMMIT. VA EXP TO  
CONT MOV E/SE. FL AND MVMT BASED ON STLT AND NWP  
MODELS. ...GATLING



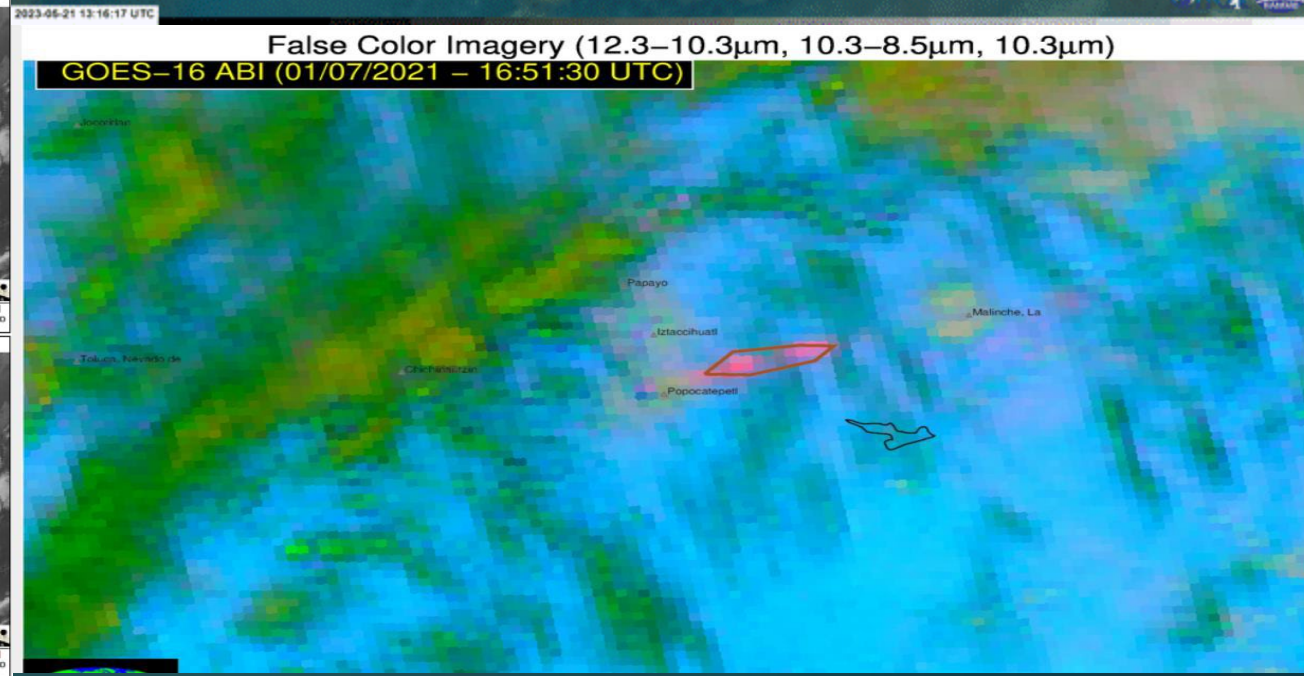
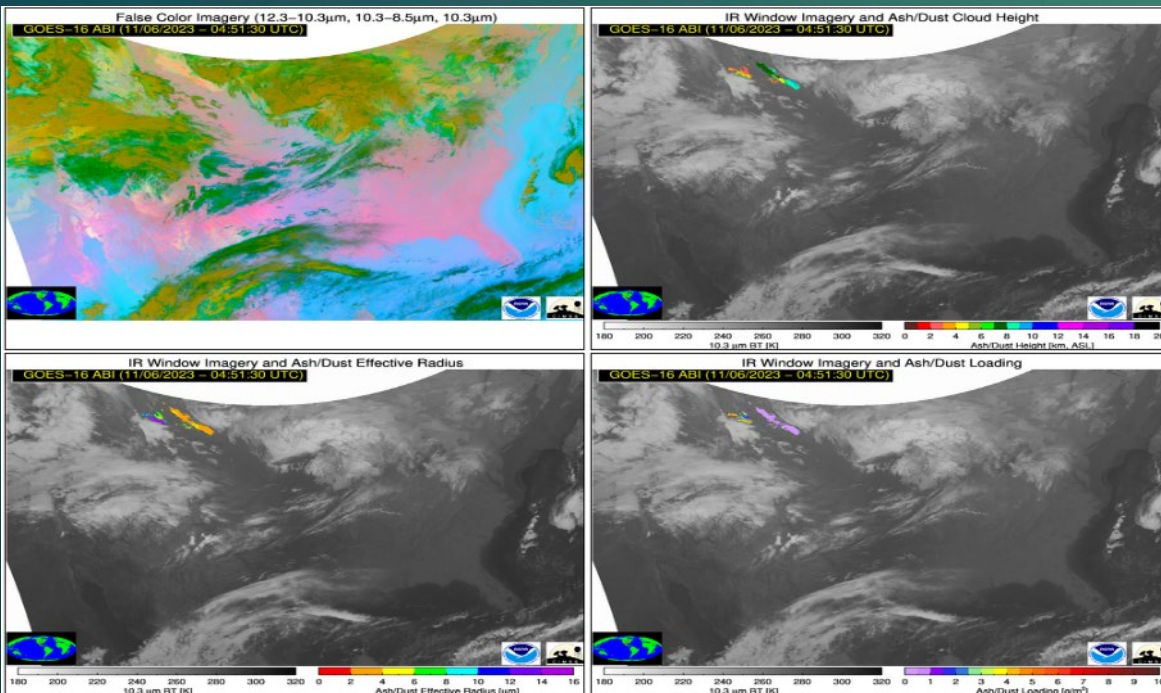
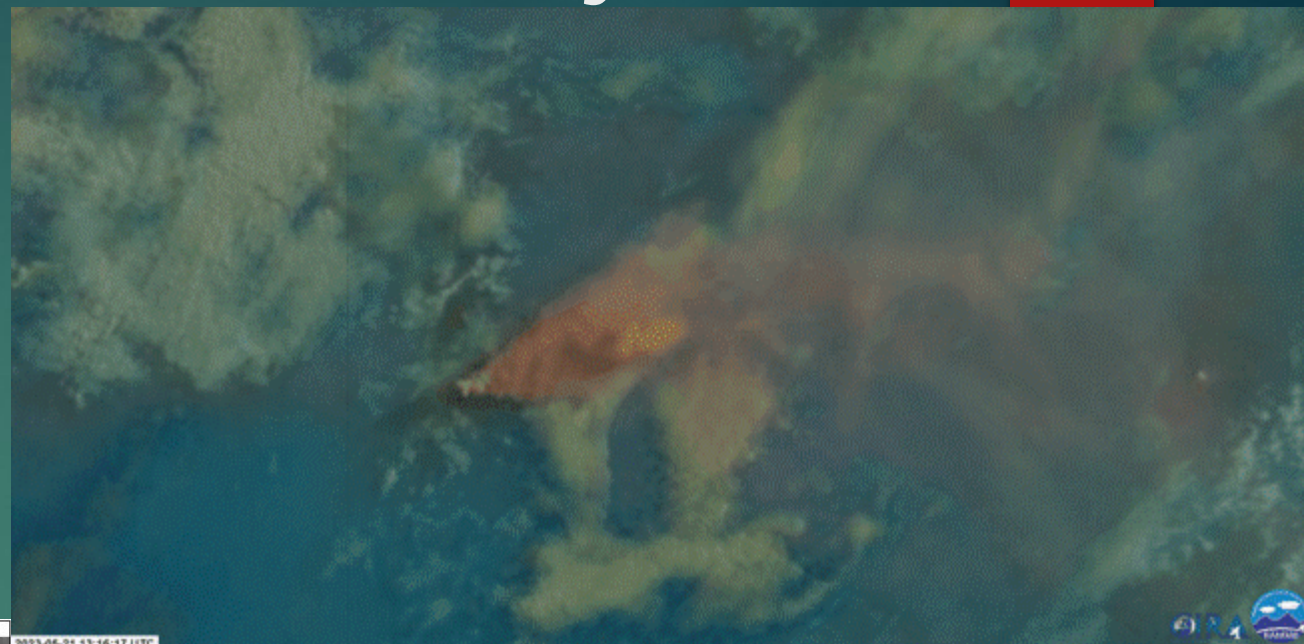
Popocatepetl May 24, 2023 large ash  
emission to FL350

VAA/VAG issued on May 24, 2023 for Popocatepetl volcano in Mexico

# Washington Volcanic Ash Advisory Center

Information collected, received, and reviewed by the volcano analyst

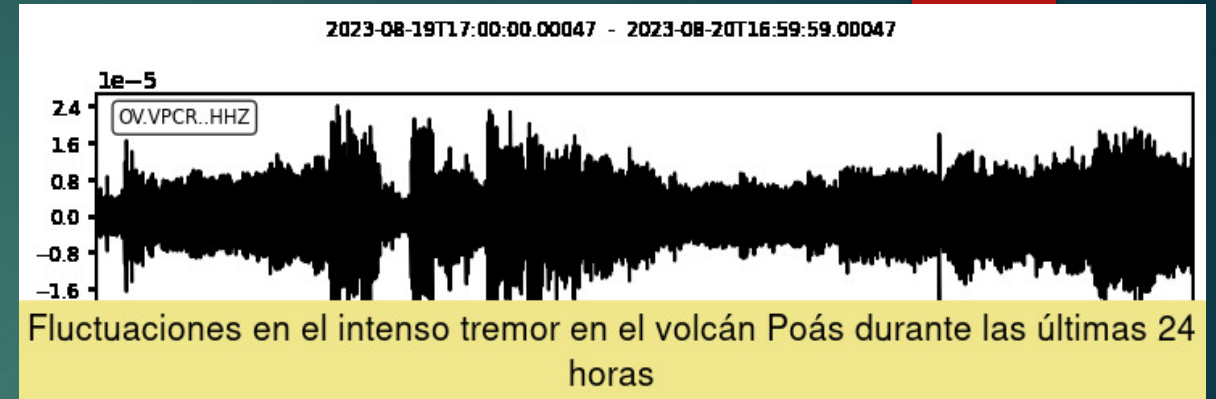
- Satellite imagery – Geostationary and Polar orbiting (some in high resolution when needed)
  - **GOES 16/18, Meteosat (EUMETSAT), Himawari (Japan) and NPP/NOAA20/Landsat**
- Automated algorithms and alerts
  - **NOAA/CIMSS Volcanic Cloud Monitoring - <https://volcano.ssec.wisc.edu/>**



# Washington Volcanic Ash Advisory Center

## Information collected, received, and reviewed by the volcano analyst

- Information from State Volcano Observatories
  - Volcano Observatory Notice to Aviation (VONA)
  - Daily Reports
  - Special Reports
  - Seismic Data



**INSTITUTO GEOFÍSICO**  
INSTITUTO GEOFÍSICO

**INSTITUTO GEOFÍSICO**  
ESCUELA POLITÉCNICA NACIONAL  
Campus Ing. José Rubén Orestana

**AVISO DEL OBSERVATORIO DE VOLCANES PARA LA AVIACIÓN**  
VONA N° 2021-992

Quito, 2021-11-02 07:11

<b>Información General</b>	20211102 / 1211Z
Volcán:	REVENTADOR 352010
Ubicación:	50° 4' 28.616" O 77° 38' 34.268" W
Cima:	3530.0msnm - 11610.75pies
Area:	Ecuador
<b>Reporte de emisión de ceniza</b>	
Fecha - UTC:	20211102 / 1211Z
Clave Aeronáutica actual:	Naranja
Clave Aeronáutica anterior:	Naranja
Fuente:	Instituto Geofísico - EPN
Estado de actividad:	Erupción Ocurrida
Tiempo de inicio de la erupción - UTC:	20211102 / 1211Z
Duración de la erupción:	No conocida
Altura de la nube volcánica:	>1000msnc
Fuente de altura de nube de ceniza volcánica:	Cámara Copete
Resumen de la actividad volcánica:	Emisión de gases y ceniza.
Próxima notificación:	Se emitirá un nuevo VONA si las condiciones cambian significativamente o si el código de color cambia.

Emisión de gases y ceniza.

**Contacto:**

MOTHES A. VILLARREAL E  
Instituto Geofísico  
Escuela Politécnica Nacional

Instituto Geofísico - EPN  
Meteorología Aeropuerto José Joaquín de Olmedo. Fax: (04)2025145  
Información de vuelo. Fax: (04)2025047  
Centro de Control Aéreo (04)2024219 - (04)2025405

Teléfono: 59322225665; 59322225627; Fax: 59322567947  
Dirección: Av. León de Quesada E11-253 - Pto. Ing. Civil y Ambiental - 6to Piso  
Página Web: www.igepn.edu.ec Email: geofisico@igepn.edu.ec  
Apartado Postal 2759 - Quito, Ecuador  
Página 1 de 1

**NOTIFICACIÓN DEL OBSERVATORIO DE VOLCANES PARA LA AVIACIÓN - VONA**

<b>Emisión:</b>	20211103/1122Z
<b>Volcán:</b>	Volcán Nevado del Ruiz 351020
<b>Clave de color aeronáutica actual:</b>	<b>YELLOW</b>
<b>Clave de color aeronáutica previa:</b>	YELLOW
<b>Fuente:</b>	SERVICIO GEOLOGICO COLOMBIANO
<b>Número de notificación:</b>	1218 - 2021
<b>Ubicación Volcán:</b>	4° 14.9167' N, 75° 5.3667' W
<b>Área:</b>	Colombia
<b>Elevación de la cima:</b>	5321 m (17453 ft)
<b>Resumen de la actividad volcánica:</b>	El Nivel de Actividad continúa en Nivel Amarillo o III: Cambios en el comportamiento de la actividad volcánica. Variaciones en los niveles de los parámetros derivados de la vigilancia, que indican que el volcán está por encima del umbral base y que el proceso es inestable, y puede evolucionar aumentando o disminuyendo esos niveles. Puede registrarse fenómenos como ensordecidos de ruidos (algunos de ellos secundos), emisiones de ceniza, lahares, cambios morfológicos, ruidos, olores de gases volcánicos, entre otros. Estos fenómenos pueden alterar la calidad de vida de las poblaciones ubicadas en la zona de influencia volcánica.
<b>Altura de la nube de ceniza volcánica:</b>	1050 m (3444 ft). Es posible que la altura sea mayor a la observada al momento del reporte. Altura estimada a una distancia entre 4.5 y 25 km de la cima del volcán.
<b>Otra información de nube de ceniza volcánica:</b>	Columna de color gris, densa y con dirección de dispersión hacia el Oriente - Nororienta. No se puede apreciar la altura máxima de la columna, debido a que supera el campo visual de observación.
<b>Observaciones:</b>	

**BOLETÍN VULCANOLÓGICO ESPECIAL INSIVUMEH**  
Prevención para una mejor nación

**Guatemala, 19 de mayo de 2021, 08:15 horas (Hora Local)**  
**BOLETÍN VULCANOLÓGICO ESPECIAL BEPAC-79-2021**  
**ACTUALIZACIÓN DE LA ACTIVIDAD**  
**VOLCÁN PACAYA (1402-II)**

Tipo de actividad: Estremotiloso. Morfología: Estrato volcán compuesto  
Localización geográfica: 14°22'30" Latitud N, 90°39'00" Longitud W Altura: 2552 msnm.

Desde el día 15 de mayo el volcán de Pacaya presentó un cambio en su patrón eruptivo, el flujo de lava activo en las últimas semanas se detuvo, la actividad principal actualmente se encuentra en el cráter Mackenney, está actividad consta de períodos de constante emisión de columnas de gases y ceniza a una altura de hasta 3500 msnm (11,483 pies) que se desplazan en dirección del viento y algunas explosiones de características débiles y moderadas que expulsan balísticos a una altura de hasta 100 metros sobre el cráter, se ha reportado en caída de ceniza en las comunidades como San Francisco de Sales, Concepción El Cedro, Aldea El Patrocinio y San Miguel Petapa.

Fig. no. 1. Columna de ceniza desplazándose en dirección norte. Fotografía tomada por el observatorio del volcán de Agua OVAGU, INSIVUMEH.

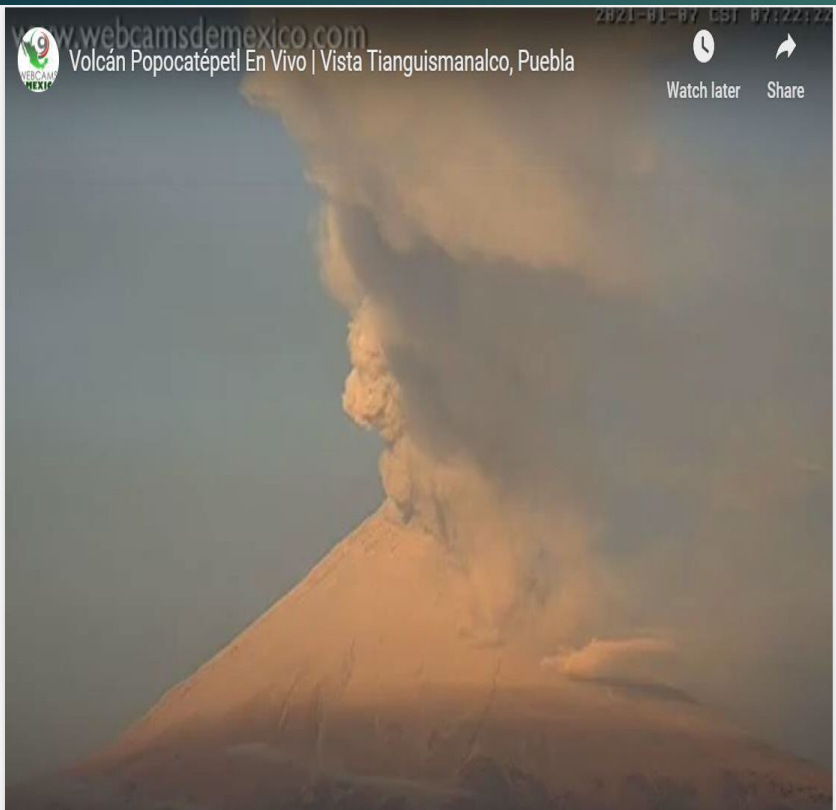
Se espera que esta actividad continúe por los siguientes días o semanas por lo que se espera caída de ceniza en las comunidades alrededor del volcán dependiendo la dirección del viento. No se descarta que se generen períodos de alta explosividad en las próximas horas o días y/o surgimiento de flujos de lava en los distintos flancos del volcán de Pacaya.

INSIVUMEH mantiene la vigilancia visual e instrumental de la actividad volcánica a través de las estaciones sísmicas y observadores de OVPAAC.

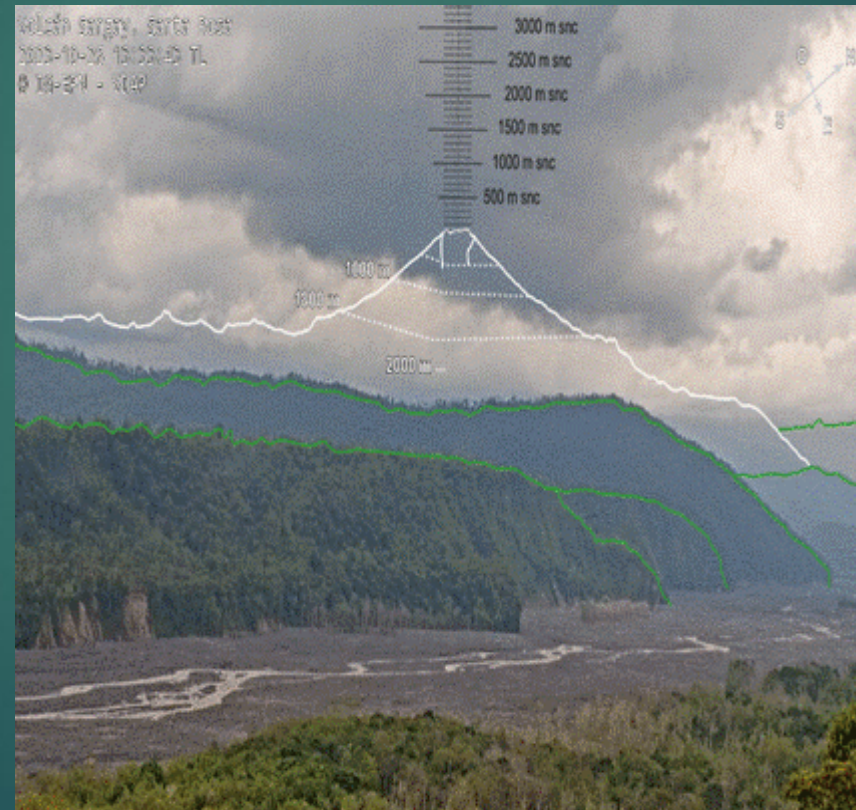
# Washington Volcanic Ash Advisory Center

Information collected, received, and reviewed by the volcano analyst

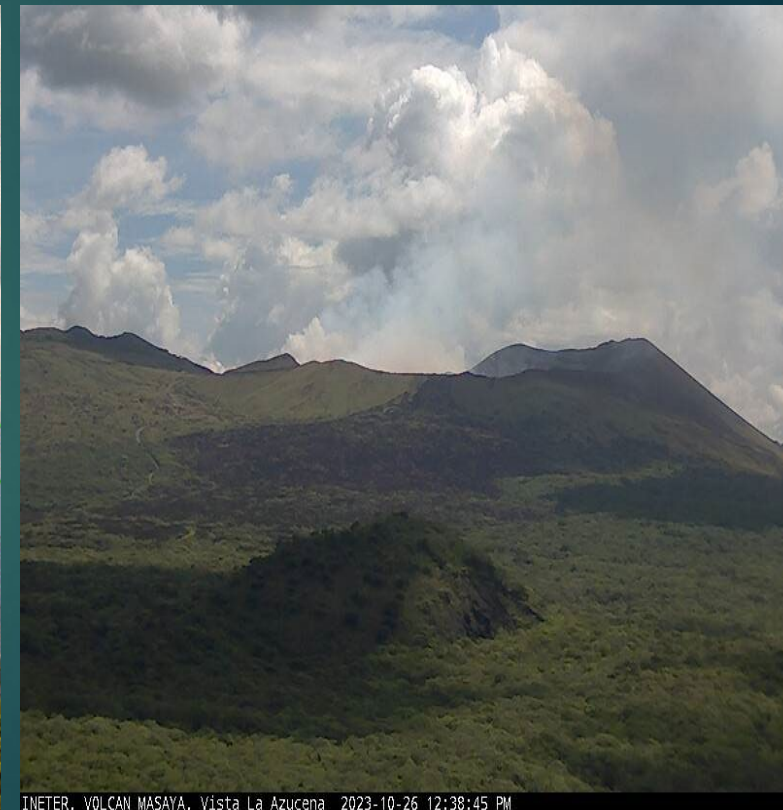
- Web Cams – from many different science and university groups



Popocatepetl - Mexico



Sangay - Ecuador



Masaya - Nicaragua

# Washington Volcanic Ash Advisory Center



## Information collected, received, and reviewed by the volcano analyst

- SIGMET from Meteorological Watch Office
- NOTAMs and ASHTAMs from Aviation Authority
- Pilot reports (PIREPs) and other relayed information

MDO UA /OV MDO200160/TM 2310/FL340/TP B77W/TB NEG/RM NO VA OBSERVED

WVHO31 MHTG 241031  
MHTG SIGMET 2 VALID 241030/241630 MHTG-  
MHCC CENTRAL AMERICAN FIR VA FUEGO PSN N1428  
W09052  
VA CLD OBS AT 1000Z SFC/FL150 N1439 W09055 -  
N1428 W09052  
- N1427 W09053 - N1434 W09104 - N1439 W09055 MOV  
NW 5KT FCST 1600Z SFC/FL150 N1437 W09111 - N1428  
W09052 - N1428 W09053 - N1423 W09113 - N1437  
W09111=

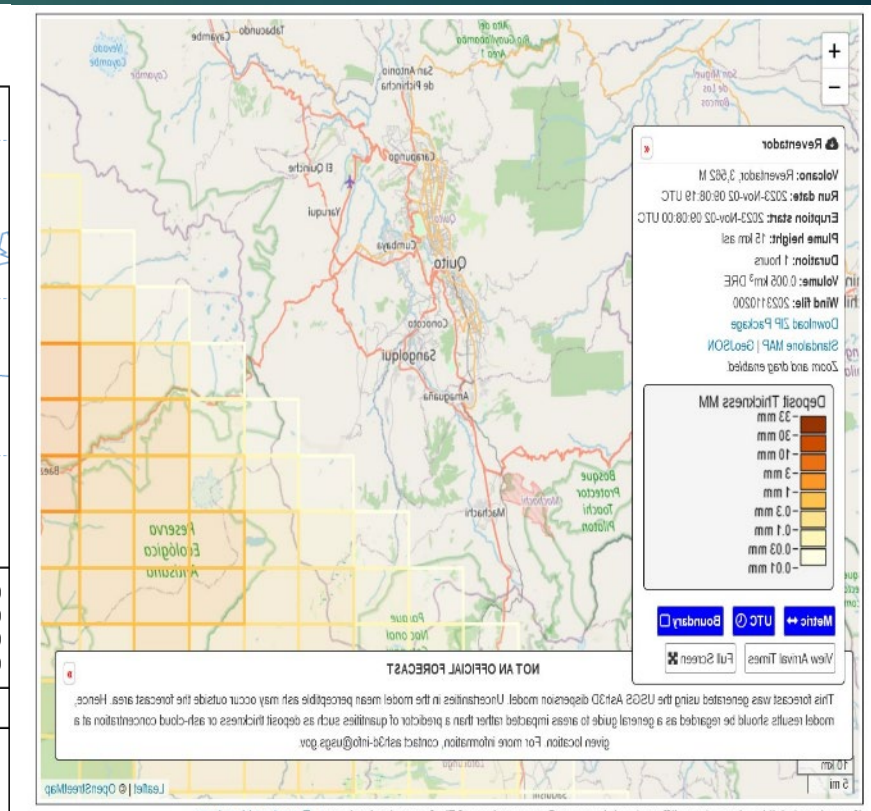
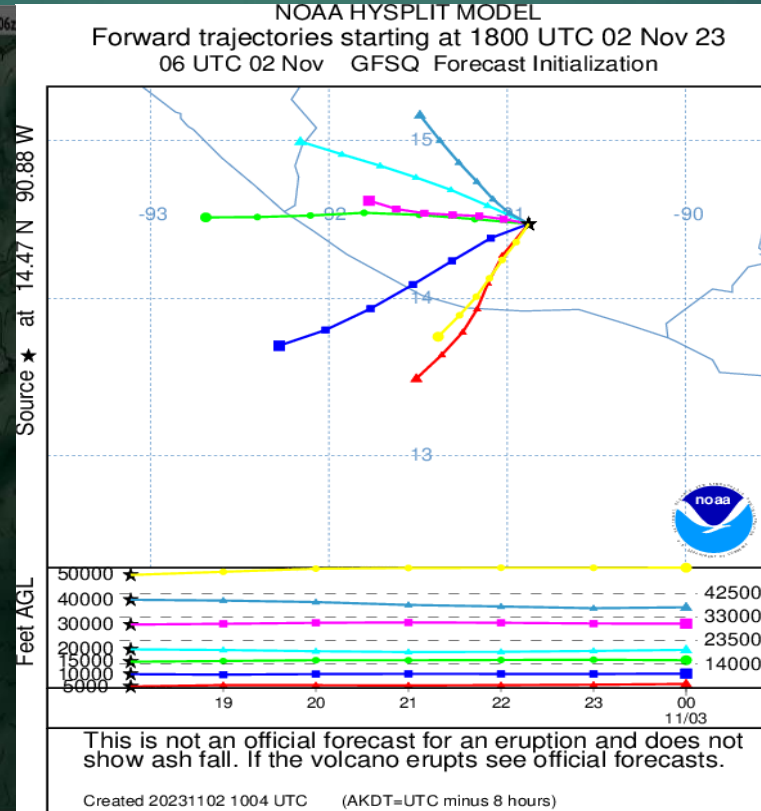
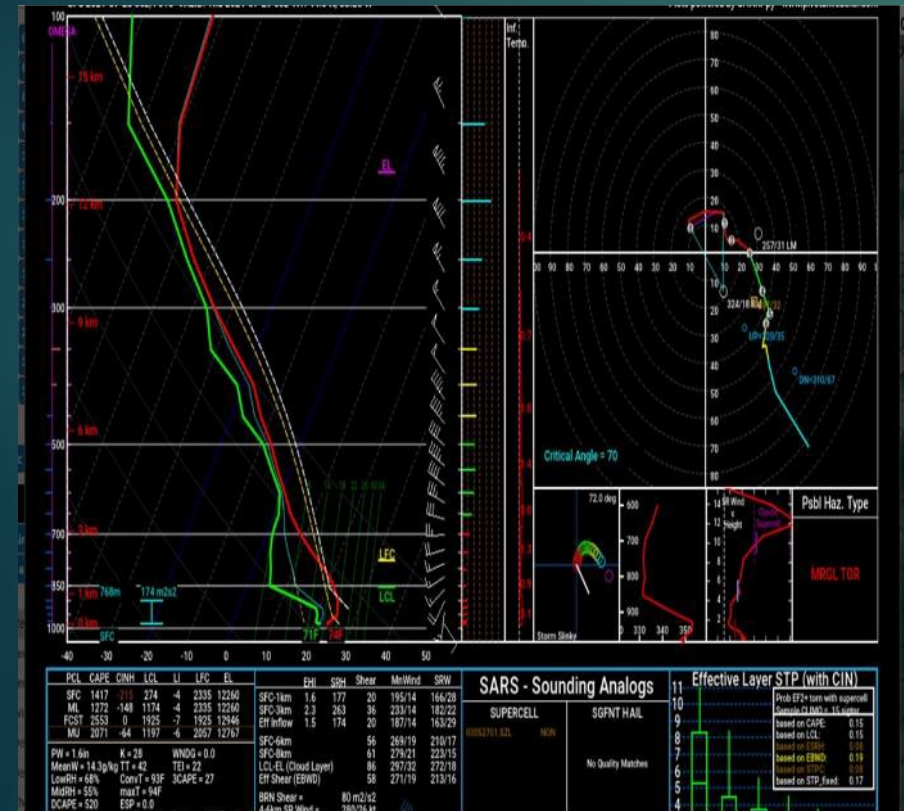
WVCN21 CWA0 041326  
CZVR SIGMET D1 VALID 041325/041925 CWEG-  
CZVR VANCOUVER FIR VA ERUPTION MT  
KLIUCHEVSKOI PSN N5603 E16038 VA CLD FCST WI  
/N5342 W13215/20 S CZMT - /N5354 W12713/60 SW CYPZ -  
/N5047 W12533/45 N CYBL -  
/N5206 W12916/45 W CBBC - /N5342 W13215/20 S CZMT  
SFC/FL260 FCST AT 1925Z WI  
/N5718 W13011/45 E CGC2 - /N5626 W12333/20 NE CBA9 -  
/N5442 W12123/25 SW CBX7 -  
/N5441 W12704/10 SE CYYD - /N5548 W12930/20 SE CZST  
- /N5718 W13011/45 E CGC2  
RMK GFACN31=

NWXX01 EGRR 261441  
VASE2868 SEFG 10261438  
ASHTAM 2868  
A)GUAYAQUIL FIR  
B)08221401  
C)VOLCANO SANGAY 1502-09  
D)0200S07821W060  
E)ORANGE  
F)17000/22000FT  
G) S0140 W07845 - S0159 W07820 -  
S0201 W07820 -  
S0148 W07852 - S0140 W07845  
SFC/FL220 MOV NW 10KT  
H)NIL  
I)NIL  
J)WASHINGTON VAAC  
K)VA CLD

# Washington Volcanic Ash Advisory Center

## Model Data for Ash Forecast

- **NWP model data (GFS, NAM, UKMET, ECMWF etc.)**
- **HYSPLIT dispersion and trajectories guidance**
- **ASH3D dispersion guidance**



# *Washington Volcanic Ash Advisory Center*

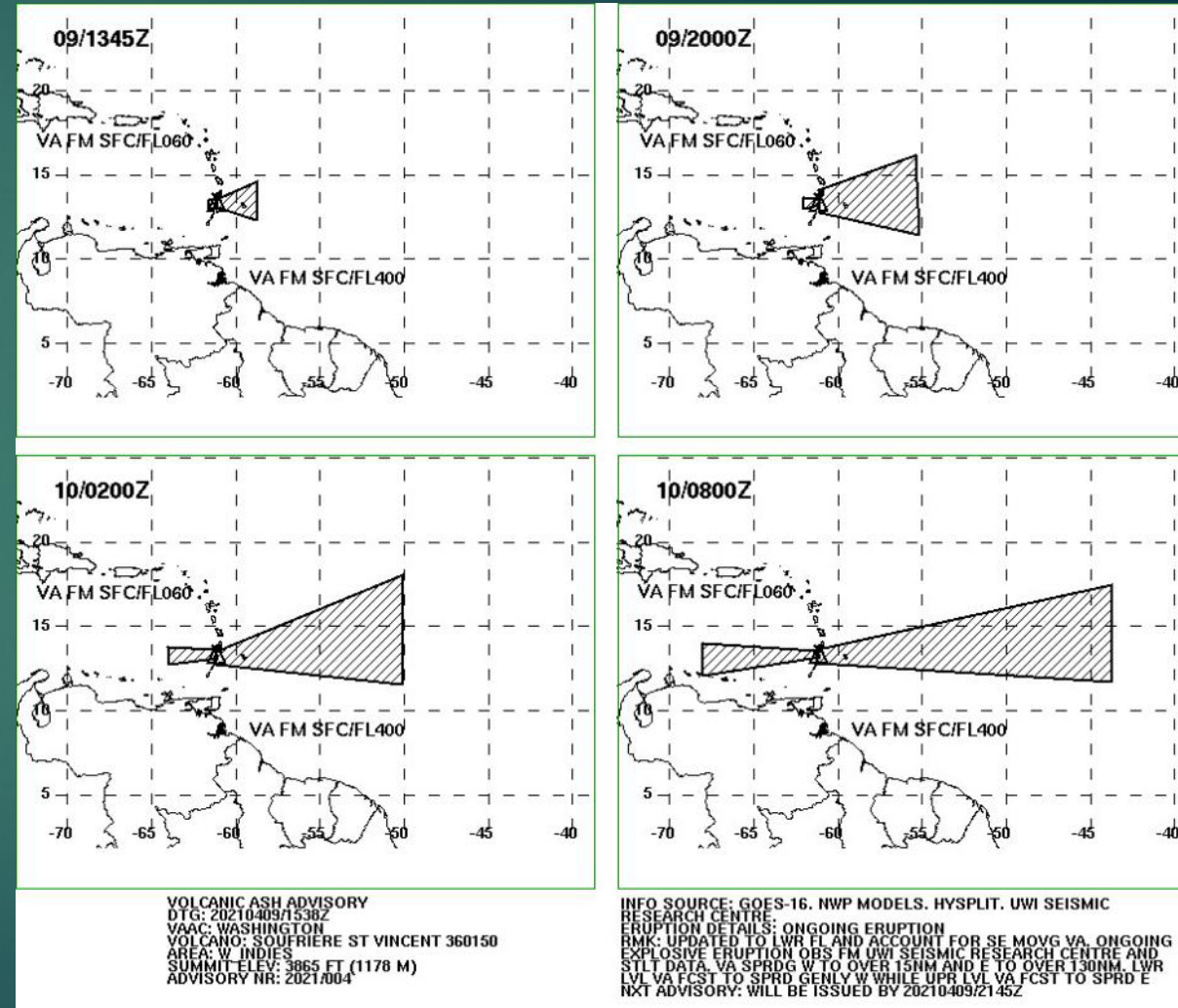
**Volcano Analysts interact with many different groups**

- **Meteorological Watch Office (MWO) forecasters**
- State Volcano Observatories (SVO)
- **Domestic and international airlines**
- Air Traffic Control and operational groups (ATCs & ARTCCs)
- **Private weather companies (Example – The Weather Company)**
- Volcanic Ash Advisory Centers
- **And others**

# Washington Volcanic Ash Advisory Center

## Start to Finish – VAA/VAG

1. Volcano analysts monitor all satellite imagery available, any alerts from VOLCAT or other automated mechanisms, VONA, Special Reports and information from VO and MWO and other essential information 24/7/365.
2. Then, volcano analysts look at Numeric Weather Prediction (NWP) and HYSPLIT/Ash3d dispersion models (if needed) to help with estimating height, movement and speed of ash and forecast of ash through T+18 hrs.
3. Volcano analysts produce the VAA/VAG based on all the information received and from monitoring.
4. Thereafter, volcano analysts continue to monitor and will provide updates every 6 hours or sooner as needed. The main reasons for early updates are based on changes in ash height, direction, speed, and ash movement (multiple directions)



Soufriere St. Vincent April 9, 2021 eruption

# Washington Volcanic Ash Advisory Center

## VAA/VAG Dissemination

- National Weather Service Gateway (NWSTG)
- **Automated Fixed Telecommunication Network (AFTN)**
- Washington VAAC webpage - <https://www.ssd.noaa.gov/VAAC/messages.html>
- **Washington VAAC Volcano listserv**
- NWSChat Chatrooms
- **Twitter – WashVAAC – Tweet all Volcanic Ash Advisories and Volcanic Ash Graphics to Twitter/X for entire area of responsibility. @WashVAAC**
- Facebook – VAAC Washington


# Washington Volcanic Ash Advisory Center

## Washington VAAC Websites

**Volcanic Ash Products**

Washington VAAC:  
Active Volcanos

Volcano Name	Lat/Lon(DMS)	Summit(ft)	Eruption Height(ft*100)	Next Advisory
POPOCATEPETL	19.02/-98.62	17693	220	02/1200Z
RUIZ	4.88/-75.32	17319	200	02/1515Z
KLIUCHEVSKOI	56.05/160.63	15597		02/1615Z
SANGAY	-2.00/-78.33	17342	220	02/1630Z
REVENTADOR	-0.08/-77.65	11686	--	--



**Current Volcanic Ash Advisories**

Advisories Last Updated: Thu Nov 2 10:34:38 UTC 2023  
Advisories from the past 24 hours:

- REVENTADOR ECUADOR 02 Nov 2023 - 1032 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- SANGAY ECUADOR 02 Nov 2023 - 1023 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- KLIUCHEVSKOI KAMCHATKA 02 Nov 2023 - 1008 UTC (XML) -- Has JPEG/KML (KML Only)
- RUIZ COLOMBIA 02 Nov 2023 - 0909 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- POPOCATEPETL MEXICO 02 Nov 2023 - 0607 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- POPOCATEPETL MEXICO 02 Nov 2023 - 0523 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- REVENTADOR ECUADOR 02 Nov 2023 - 0438 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- SANGAY ECUADOR 02 Nov 2023 - 0426 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- KLIUCHEVSKOI KAMCHATKA 02 Nov 2023 - 0414 UTC (XML) -- Has JPEG/KML (KML Only)
- RUIZ COLOMBIA 02 Nov 2023 - 0319 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- KLIUCHEVSKOI KAMCHATKA 01 Nov 2023 - 2351 UTC (XML) -- Has JPEG/KML (KML Only)
- POPOCATEPETL MEXICO 01 Nov 2023 - 2324 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- REVENTADOR ECUADOR 01 Nov 2023 - 2248 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- SANGAY ECUADOR 01 Nov 2023 - 2238 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- SANGAY ECUADOR 01 Nov 2023 - 1928 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- REVENTADOR ECUADOR 01 Nov 2023 - 1849 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- KLIUCHEVSKOI KAMCHATKA 01 Nov 2023 - 1820 UTC (XML) -- Has JPEG/KML (KML Only)
- POPOCATEPETL MEXICO 01 Nov 2023 - 1756 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- SANGAY ECUADOR 01 Nov 2023 - 1348 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- REVENTADOR ECUADOR 01 Nov 2023 - 1310 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- KLIUCHEVSKOI KAMCHATKA 01 Nov 2023 - 1240 UTC (XML) -- Has JPEG/KML (KML Only)
- POPOCATEPETL MEXICO 01 Nov 2023 - 1209 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)

Advisories from the past 15 days:  
Jump to: [Fuego](#), [Kliuchevskoi](#), [Popocatepetl](#), [Reventador](#), [Ruiz](#), [Sangay](#), [Santa Maria](#)

Yearly Archives:  
2023

**FUEGO GUATEMALA:**

- 30 Oct 2023 - 1622 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 30 Oct 2023 - 1032 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 29 Oct 2023 - 2153 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 29 Oct 2023 - 1610 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 29 Oct 2023 - 1026 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 29 Oct 2023 - 0444 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 28 Oct 2023 - 2247 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 28 Oct 2023 - 1658 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)
- 28 Oct 2023 - 1121 UTC (XML) -- Has JPEG/KML (JPEG Only) (KML)

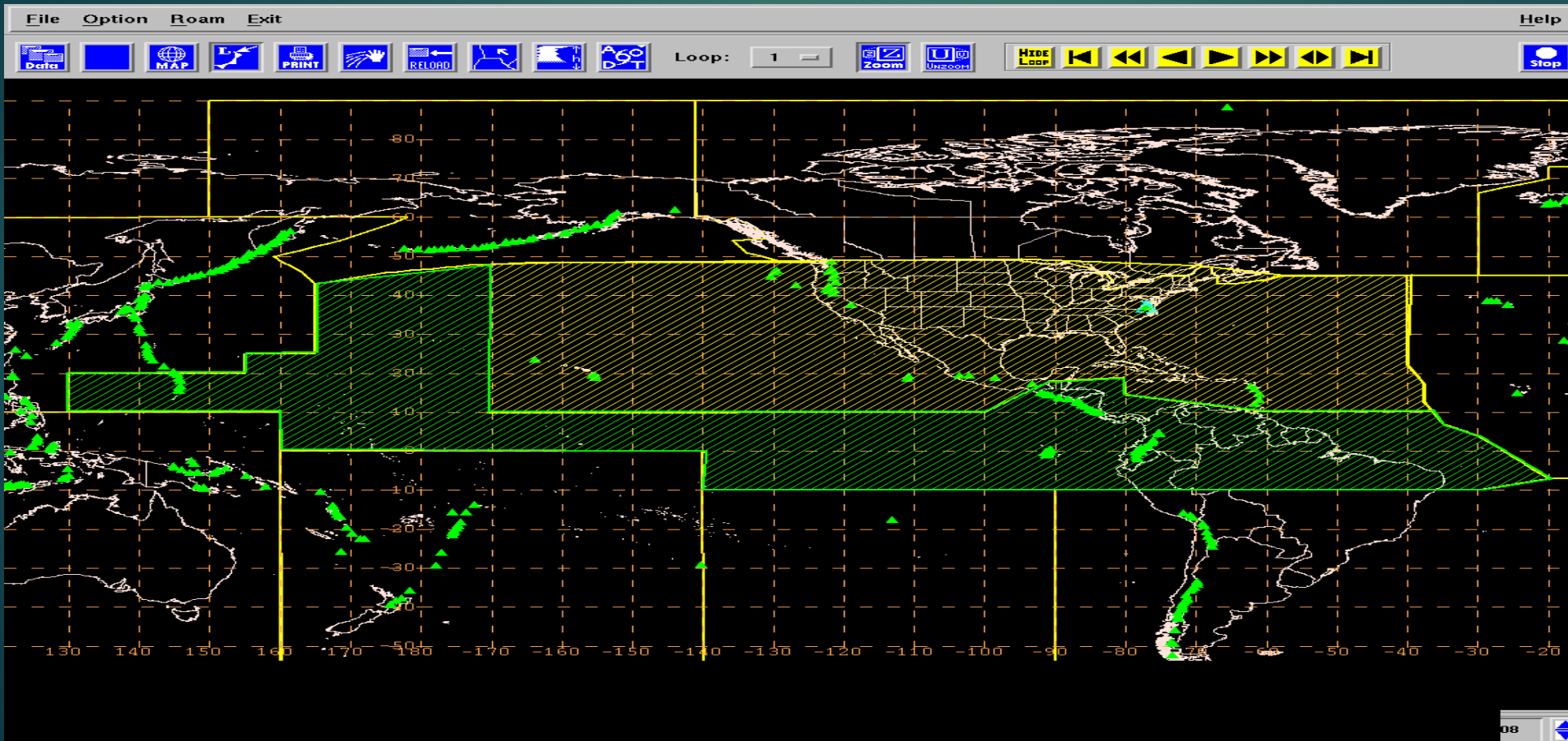
<https://www.ospo.noaa.gov/Products/atmosphere/vaac/>

<https://www.ospo.noaa.gov/Products/atmosphere/vaac/messages.html>

# Washington Volcanic Ash Advisory Center

## Official backup of the Washington VAAC

- Montreal and Darwin VAAC – Joint Backup



Montreal VAAC backup coverage – **Yellow shaded**

Darwin VAAC backup coverage – **Green shaded**

# *Washington Volcanic Ash Advisory Center*

**Thank you!**



*April 9<sup>th</sup> eruption of Soufriere St. Vincent on the Caribbean Island of Saint Vincent*