

Washington Volcanic Ash Advisory Center

Building Relationships for Better Ash Products:

Jamie Kibler

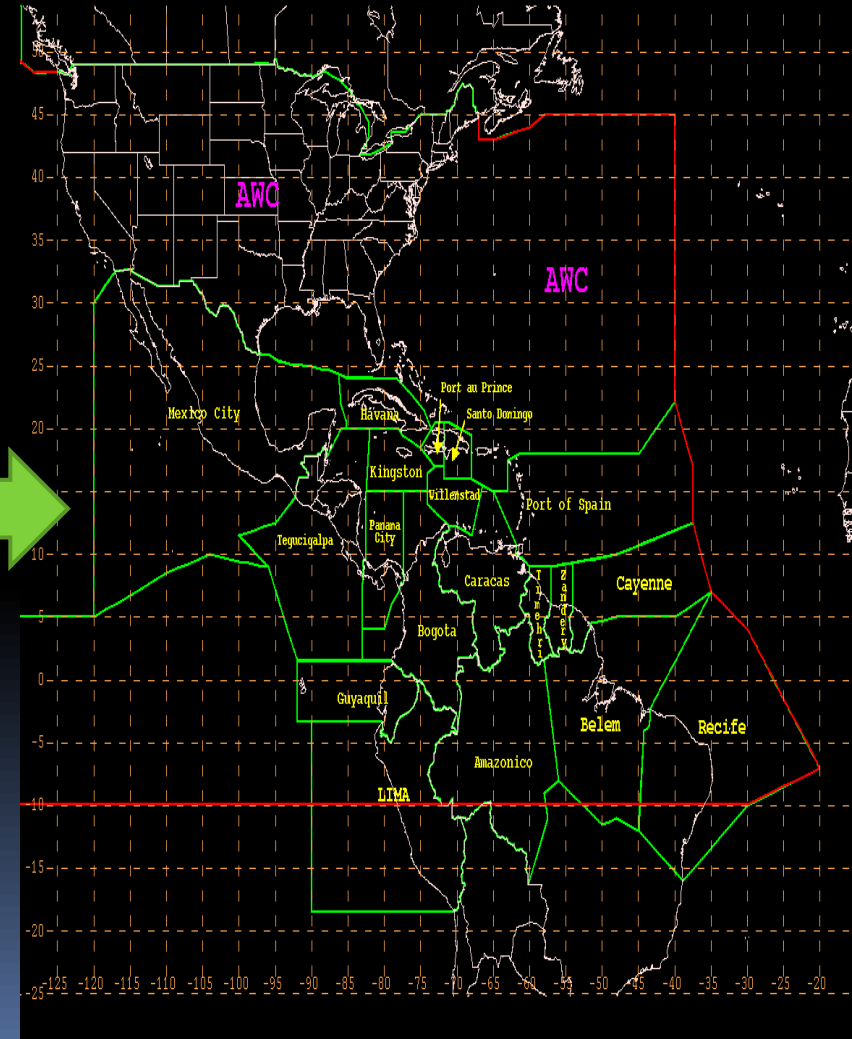
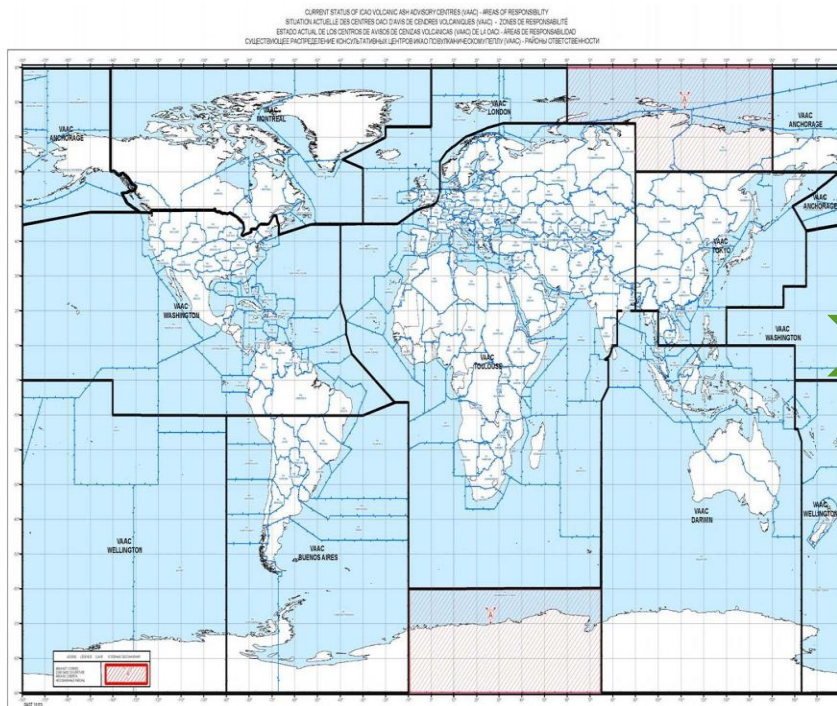
Washington VAAC Operations Manager/Meteorologist

November 18, 2013

**2nd IUGG-WMO Workshop on
Ash Dispersal Forecast and Civil Aviation
November 18-20, 2013**

Washington Volcanic Ash Advisory Center

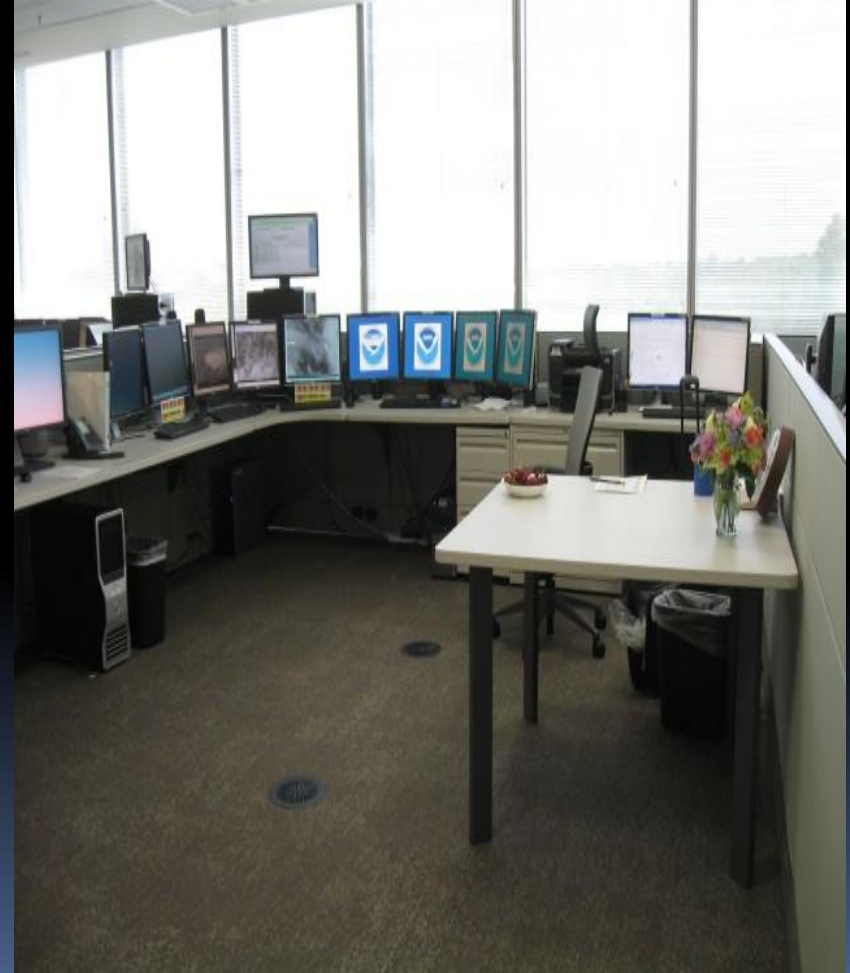
The 24 MWO's of the Washington VAAC (NAM/CAR/SAM)



Washington Volcanic Ash Advisory Center

Current Challenges

- **Forecasting beyond +6 hrs in the equatorial regions**
- **Lack of observational data throughout Central and South America along with complex terrain**
- **Limited technology and communication barriers**
- **Conflicting information between models, what is observed in satellite imagery and what is being reported**

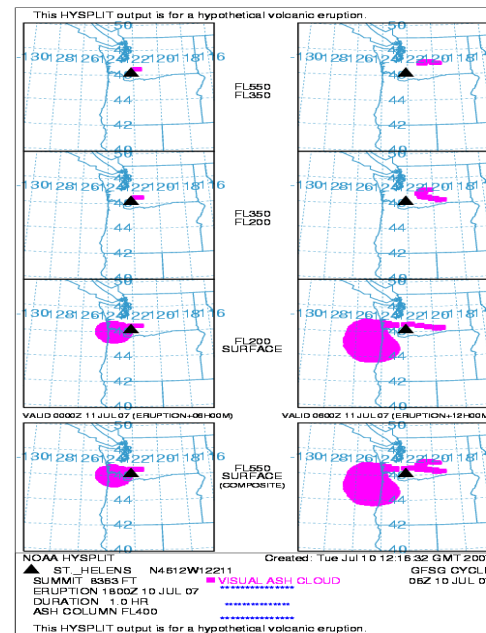


Washington Volcanic Ash Advisory Center

Running the HYSPLIT Model

Information provided is:

- Name of the Volcano
- Eruption time
- Eruption duration
- Estimated height of volcanic ash



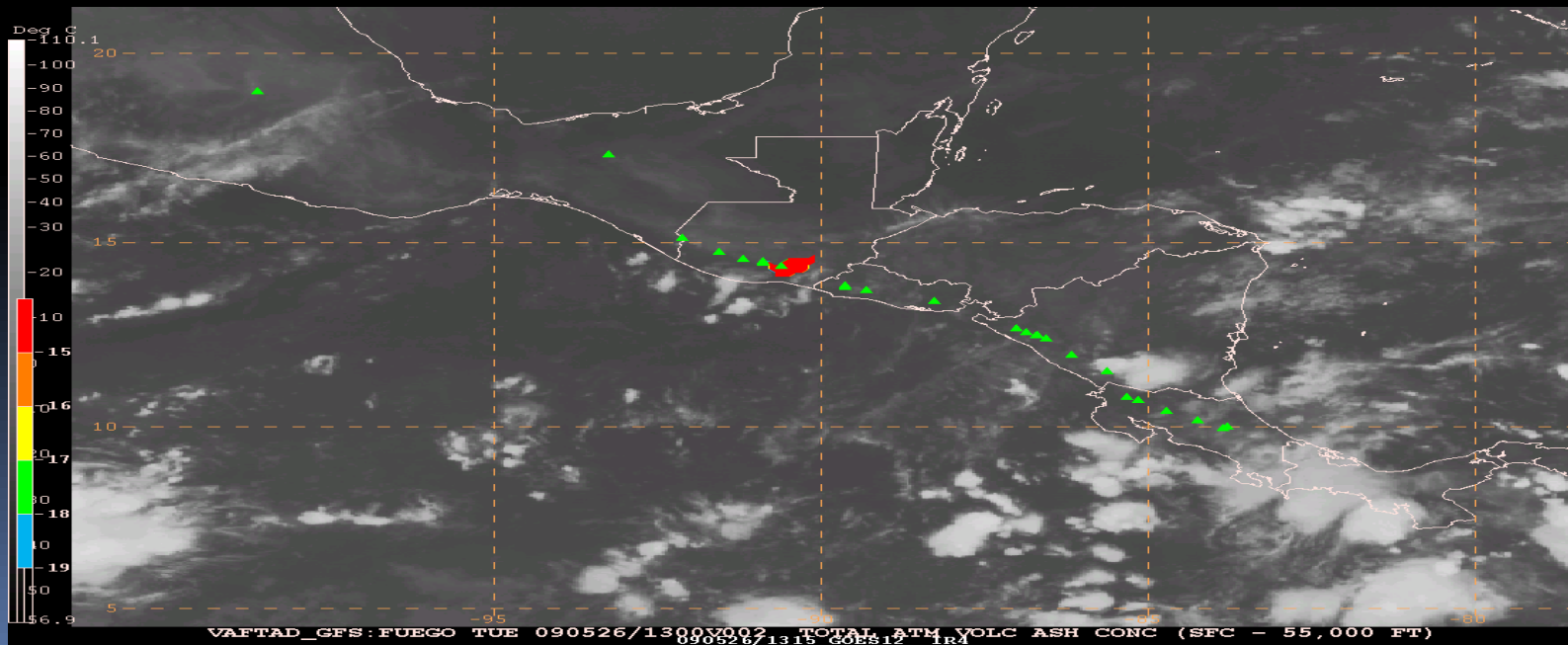
Information is fed into the HYSPLIT model with the GFS, NAM or European model used for meteorological conditions.

Washington Volcanic Ash Advisory Center

The Senior Duty Meteorologist provides the volcano analyst with four different scenarios

Level 0 Ash reduction – no ash is taken out after + 00 hrs

- **Level 1 Ash reduction – very little ash taken out after + 00 hrs**
- **Level 2 Ash reduction – moderate amount ash taken out after + 00 hrs**
- **Level 3 Ash reduction – Majority of ash taken out after + 00 hrs**



Washington Volcanic Ash Advisory Center

What do we need from MWO and VO during and eruption event

- **Time and duration of the eruption**
- **Height determination of ash plume**
- **Direction of the ash plume**
- **Content of the plume**
- **Communication.**



Washington Volcanic Ash Advisory Center

What is needed from the MWO and VO in general

- **Continuous updates of any change in activity. Daily reports (Special Reports) or if possible, multiple reports per day when needed**
- **Emails or phone calls on rapidly changing parameters during an event.**
- **Educated opinion of what the observatory thinks is going to happen based on past events - Communication**

Washington Volcanic Ash Advisory Center

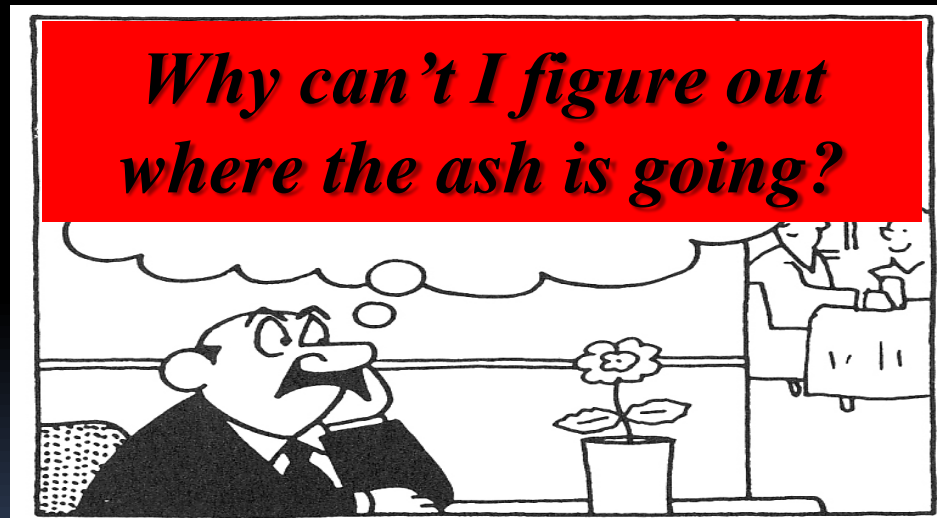
Current challenges for MWO and VO

- **Limited Technology**
- **Limited skill set** (mostly at MWO)
- **Not all offices are 24/7**
- **No designated email or phone for operations**



Washington Volcanic Ash Advisory Center

Examples coming next



Washington Volcanic Ash Advisory Center

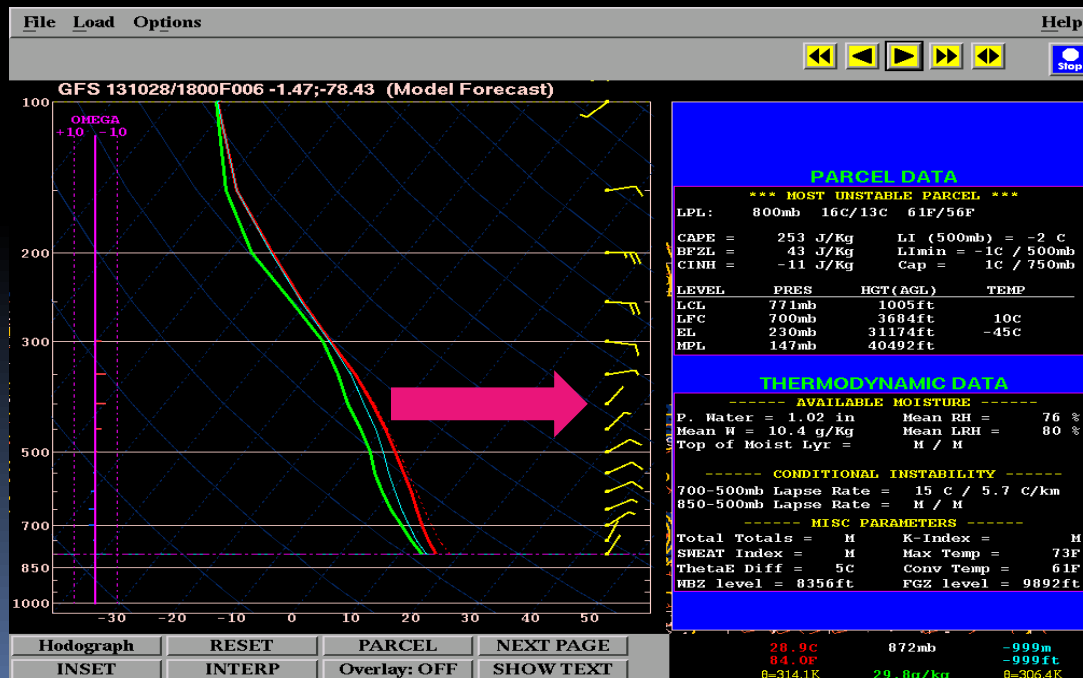
Tungurahua Eruption – October 28-31

WVEQ31 SEGU 282237

SEGU SIGMET 01 VALID 282237/290137 SEGUSEGU

GUAYAQUIL FIR TUNGURAHUA 1502-08 S01 28.00 W078 26.3

INS GEOFISICO OBS AT 2158Z VA CLD FL165/230 MOV W TO SE



Volcano Analyst could not see ash that day. So what direction is the ash actually moving

Washington Volcanic Ash Advisory Center

Tungurahua Eruption – October 28-31



Apartado 2759 Telf: 2225-655; Fax: (593)-2-2567847 - www.igepn.edu.ec Quito - Ecuador

ESCUELA POLITÉCNICA NACIONAL
INSTITUTO GEOFÍSICO
Campus Ing. José Rubén Orellana

INFORME DEL ESTADO DEL VOLCÁN TUNGURAHUA No. 301 Lunes, 28 de octubre de 2013

RESUMEN DE LA ACTIVIDAD DEL VOLCÁN

El volcán presenta una actividad considerada como moderada. La mañana de hoy estuvo caracterizada por pequeñas emisiones de gas y ceniza que se dirigieron hacia el occidente y sur occidente. La madrugada de hoy reportaron caída de ceniza desde la zona de Palitahua. No se han registrado lluvias.

ANEXO TÉCNICO Y OBSERVACIONES

Sismicidad: Se contabilizó 49 eventos de largo período (LP), 4 explosiones y 8 episodios de temblor de emisión.

Observaciones, emisiones y ceniza: En la mañana el volcán se mantuvo semi-despejado, se observaron emisiones de gases con carga moderada de ceniza, las columnas fueron poco energéticas y se dirigieron hacia el occidente y sur occidente. En la madrugada de hoy se reportó caída de ceniza Palitahua.

Lluvias y lahares: No se reporta lluvias en la zona.

INFORMACIÓN GENERAL

- De presentarse lluvias en el sector del volcán, éstas pueden removilizar los depósitos de los flujos piroclásticos y generar lahares. Por esta razón se recomienda extremar los cuidados al circular en los caminos y carreteras que cruzan las quebradas por las que han descendido dichos flujos y por las zonas que en ocasiones pasadas se han visto afectadas por este tipo de fenómeno.
- Para mayor información concerniente a aspectos no relacionados con la vigilancia científica de la actividad del volcán, contactar a los comités de operaciones de emergencia de las Provincias de Tungurahua y Chimborazo (COEs cantonales y provinciales).
- Para consulta de términos técnicos presentados en este informe, revisar el glosario que se encuentra en el menú de la página web del Instituto Geofísico: www.igepn.edu.ec
- Este informe diario será emitido a las 15h00 (TL). En caso de un incremento o cambio en el comportamiento del volcán se emitirá adicionalmente y de manera inmediata un Informe Especial.

Geophysical Institute indicates ash is moving southwest in direction.

•Are the MWO and VO talking?

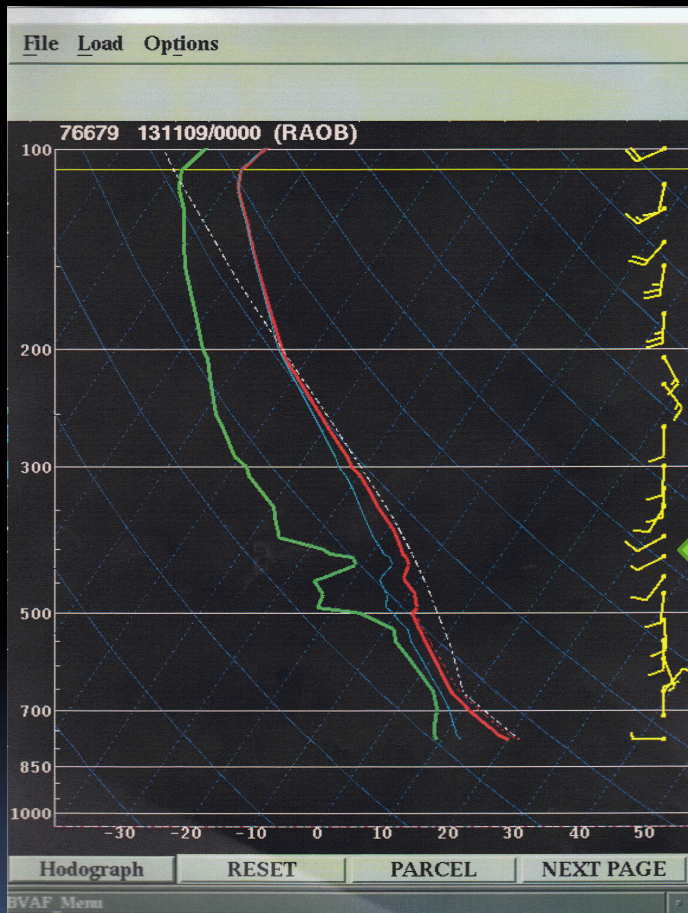
•Not good for trying to run the HYSPLIT model

Washington Volcanic Ash Advisory Center

POPO RAOB

vs.

GFS Winds



Direction of ash different at 400-450mb level. The usual height of ash with Popocatepetl

Washington Volcanic Ash Advisory Center

FVXX20 KNES 291316

VA ADVISORY

DTG: 20120929/1316Z

VAAC: WASHINGTON

VOLCANO: FUEGO 1402-09

PSN: N1428 W09052

AREA: GUATEMALA

SUMMIT ELEV: 12346 FT (3763 M)

ADVISORY NR: 2012/059

INFO SOURCE: GFS WINDS. INSIVUMEH. GOES-14

ERUPTION DETAILS: DISCREET PUFFS OF VA

OBS VA DTG: 29/1245Z

OBS VA CLD: SFC/FL160 N1428 W09106 - N1428 W09059 -

N1423 W09058 - N1423 W09105 - N1428 W09106 MOV W 10-15KT

SFC/FL160 N1421 W09112 - N1417 W09111 - N1411 W09119 -

N1419 W09123 -

N1421 W09112 MOV W 10-15KT

FCST VA CLD +6HR: 29/1900Z SFC/FL160 NO ASH EXP

FCST VA CLD +12HR: 30/0100Z NO ASH EXP

FCST VA CLD +18HR: 30/0700Z NO ASH EXP

RMK: MORNING VISIBLE IMAGERY SHOWS DISCREET

PUFFS OF VA MOVING W AND WSW FROM THE SUMMIT.

INSIVUMEH REPORTS VA 500M TO 900M ABOVE SUMMIT

WITH FINE ASHFALL. ...SCHWARTZ

NXT ADVISORY: WILL BE ISSUED BY 20120929/1915Z

Confusing information to the
Washington VAAC and our users by
the MWO.

WVHO31 MHTG 291543

MHTG SIGMET 1 VALID 291430/292030 MHTG-

MHTG CENTRAL AMERICAN FIR VA SANTA MARIA

LOC N1445 W09133 VA CLD OBS AT 1245Z

SFC/FL160 N1428 W09106 - N1428 W09059 N1423

W09058 - N1423 09105 - N1428 W09105 MOV W

10/15KT SFC/160 N1421 W09112 - N1417 W09111 -

N1411 W09119 - N1419 W09123 - N1421 W09112

MOV W 10/15KT NC=

Washington Volcanic Ash Advisory Center

WVEQ31 SEGU 201426
SEGU SIGMET A1 VALID 201426/201726 SEGU-
SEGU GUAYAQUIL FIR TUNGURAHUA 1502-08 S01 28.00 W078 26.3
ACFT AEE628 OBS AT 1416Z VA CLD FL220

•Needs an Outlook section and possible remarks

WVMX31 MMEX 282241
MMEX SIGMET 1 VALID 282231/290431
MMM- MMEX MEXICO FIR/UIR/SRR VA POPOCATEPETL 01901.2N 09837.2W
OBS AT 282231Z VA CLD EXTDN 6MN NE BTN SFC/FL280 MOV NE 6KTS.
OUTLK AT 290430 UTC VA CLD DISSPTD.=

Correct Format
for a SIGMET

Washington Volcanic Ash Advisory Center

Good example of what is needed by the VAAC and the MWO September 8, 2012 eruption of San Cristobal

Nicaragüense Territoriales Studies Institute
(INETER)

Directorate General of Geology and Geophysics
Managua, September 8, 2012.

Bulletin # 2 Volcano Volcano eruptive activity on San Cristobal.

INETER reports that there have been three explosions accompanied by gas and ash in the San Cristóbal Volcano. To this day the observer INETER which lies at the foot of the volcano and fellow Civil Defense reported abundant emission Volcano, whose column reaches a maximum height of about 1500 meters above the crater rim. The wind speed is 9 km / hr in the direction from north to west in Chinandega. Affected communities are north of the volcano, the ash reached El Viejo, El Chonco, Villa and Rancheria July 15. More are expected emission and sporadic forms explosions. INETER is continuously monitoring the volcano's activity and report any important event.

Managua, September 8, 2012, 09:40 AM local time.

- Information received by the Washington VAAC
- VAA information later lead to a SIGMET Issued with same information

Washington Volcanic Ash Advisory Center

HYSPLIT

Volcano Observatory

PIREPS

VOLCANIC ASH
ALERTS

Aviation community



Air Traffic Controllers

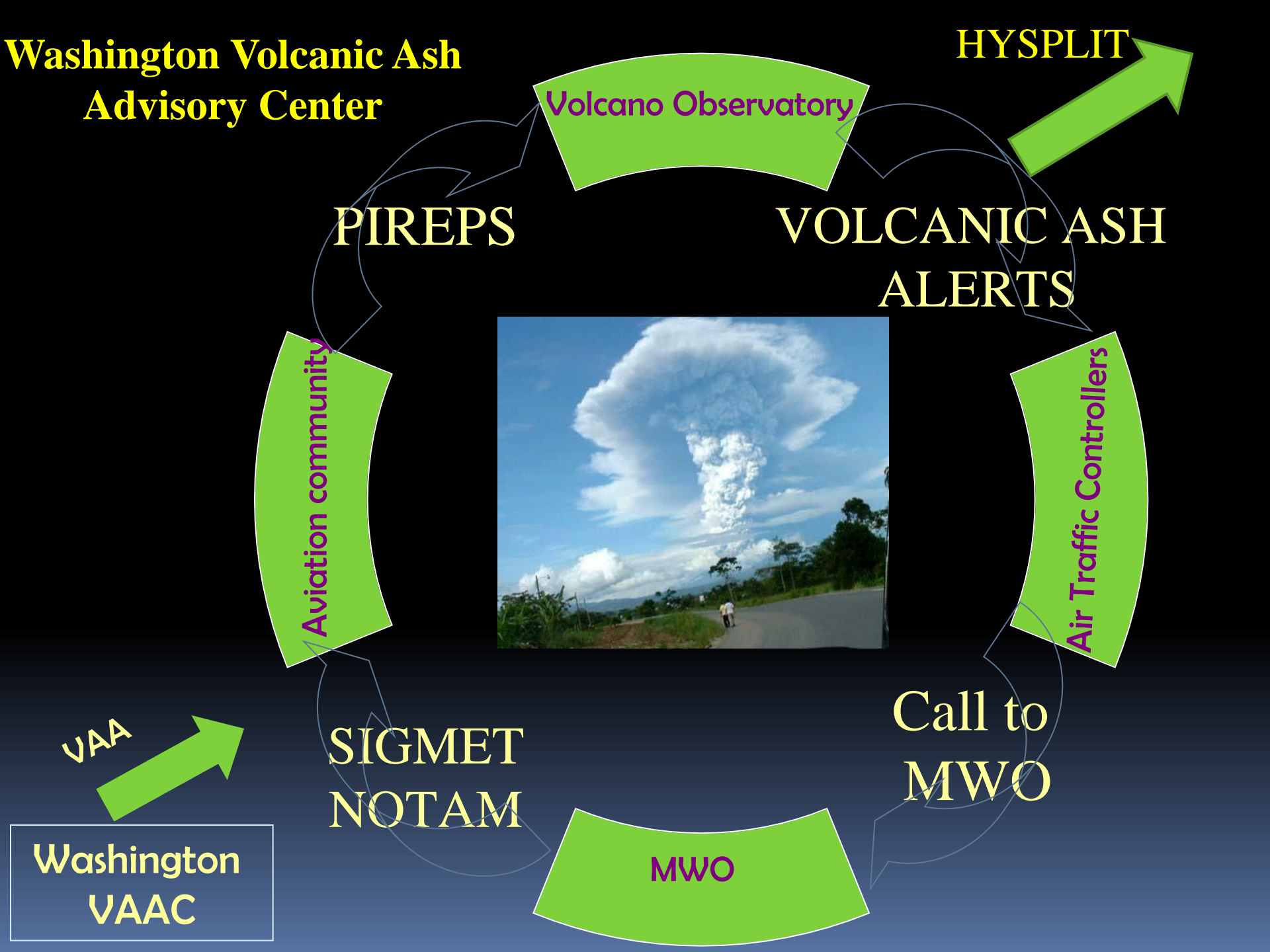
Call to
MWO

SIGMET
NOTAM

MWO

VAA

Washington
VAAC



Washington Volcanic Ash Advisory Center

Summary

- Continue to indicate to the MWO and the VO that the Washington VAAC needs the most updated volcanic ash and contact information. **Building that relationship**
- Working with our WMO (CAR/SAM) representative on issues that we need resolved between the VAAC, MWO and VO. **Getting our concerns across in a more clear manner**
- Since ARL and the Washington VAAC are now located in the same building, we now have the option of working with them on improvements with the HYSPLIT.

Washington Volcanic Ash Advisory Center

Questions??

Thanks

Email: Jamie.Kibler@noaa.gov or
W-vaac@noaa.gov