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Administration and Management

Volcanic Ash, NWSPD 10-15

VOLCANIC ASH PRODUCTS FROM WFO, CWSU, AAWU, AND NCEP CENTERS

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(Signed)

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1 Purpose

Create a single reference for actions needed by NWS units **after** receiving an alert for volcanic ash episodes from the Volcanic Ash Advisory Centers (VAACs) and /or the United States Geological Survey (USGS) Volcano Observatories. Actions taken by the VAACs during volcanic ash episodes are outlined in NWSI 10-1501.

1.1 Key Assumptions

- All actions listed in this directive take place after the VAAC releases a Volcanic Ash Advisory (VAA), or Volcanic Ash Graphic (VAG).
- All NWS units producing a forecast or warning product in response to a VAA or VAG will use the most current software and hardware systems available.
- Update of the Area Forecast Discussion (AFD) issued by Weather Forecast Offices (WFOs) will take the lowest priority of all response actions; if done at all.

1.2 Responsibilities

- NWS Headquarters and the Regional Headquarters will provide the guidance and tools needed for the operational NWS units to perform their duties.
- National Centers for Environmental Prediction (NCEP) Ocean Predictions Center (OPC), Aviation Weather Center (AWC), AAWU and WFO Honolulu will produce the large scale products needed to warn marine and aviation operators of volcanic ash events.
- Center Weather Service Units (CWSUs) and Air Traffic Control System Control Center (ATCSCC) Liaison will provide volcanic ash information to the National Airspace System (NAS) traffic flow managers.
- WFOs will provide marine and public volcanic ash forecasts and warnings to the County Warning Area (CWA).
- Meteorological Watch Offices will produce large scale products similar to those issued by AWC to warn aviation operators of volcanic ash episodes.

2 Introduction

Volcanic Ash episodes are short-notice, emergency events requiring immediate warning forecasts and services from all affected offices within the NWS. Aviation focused units, such as CWSUs and MWOs need to issue warnings and advisories for aircraft and the National Airspace System (NAS). Similarly the Ocean Prediction Center (OPC) and WFOs, depending on location, will need to issue special public or marine products if volcanic ash will affect their forecast areas.

The volcanic ash products described in this directive are defined by the level of NWS unit and NWS service area that will issue the bulletin. Links to the parent service area directive are

included as resources for additional information about the basic product format and content. Appendix A contains three tables that summarize the information contained in the main chapters of this directive.

3 National Center Environmental Prediction (NCEP) Aviation Weather Center (AWC) and Ocean Prediction Center (OPC)

3.1 AWC

3.1.1 Priority

Volcanic Ash cloud SIGMETs are aviation warnings. Issuance of warning products takes precedence over routine duties or products.

Volcanic Ash is extremely hazardous to safe flight. Most Volcanic Ash events will trigger the issuance of a SIGMET which is a warning product and takes precedence over any other routine duty or product. Other Volcanic Ash Advisory products (AIRMET, VAA, etc) should also take a very high priority over other duties and products.

3.1.2 Products

Upon receipt of a VAA or VAG from the VAAC, issue the following products:

- Volcanic Ash SIGMET <http://www.nws.noaa.gov/directives/sym/pd01008011curr.pdf>
- Updates to en-route weather hazard forecasts: AIRMETs and SIGMETs <http://www.nws.noaa.gov/directives/sym/pd01008011curr.pdf>
- Significant weather for World Area Forecast System (WAFS) <http://www.nws.noaa.gov/directives/sym/pd01008006curr.pdf>

3.2 OPC

3.2.1 Priority

Volcanic Ash forecasts are marine warnings when ash fall will impact shipping operations. Issuance of warning products takes precedence over routine duties or products.

3.2.2 Products

Upon receipt of a VAA or VAG from the VAAC, issue the following products:

- Offshore Waters Forecast and NAVTEX Forecast <http://www.nws.noaa.gov/directives/sym/pd01003011curr.pdf>

4 Center Weather Service Units (CWSU) and ATCSCC Liaison

4.1 Priority

Volcanic Ash forecasts and pilot reports (PIREP) have an immediate impact on in-flight safety,

and traffic-flow management.

4.2 Products

Upon receipt of a VAA or VAG from the VAAC and SIGMET from MWO, issue the following products:

- Issue, or provide a briefing on the occurrence and predicted extent of the volcanic plume. <http://www.nws.noaa.gov/directives/sym/pd01008003curr.pdf>
- Review and brief en-route hazards associated with volcanic ash <http://www.nws.noaa.gov/directives/sym/pd01008011curr.pdf> and <http://www.nws.noaa.gov/directives/sym/pd01008003curr.pdf>

5 Weather Forecast Offices (WFO) and Meteorological Watch Offices (MWO)

5.1 Priority

Volcanic Ash episodes are public, aviation, and marine warning events affecting the local CWA or meteorological watch area. Issuance of warning products takes precedence over routine duties or products.

5.2 Products

Upon receipt of a VAA or VAG from the VAAC and/or call from USGS Volcano Observatory, issue the following products:

- Supplementary Surface Observations <http://www.nws.noaa.gov/directives/sym/pd01013011curr.pdf>
- Co-operative Station Observations <http://www.nws.noaa.gov/directives/sym/pd01013015curr.pdf>
- Special Marine Warnings <http://www.nws.noaa.gov/directives/sym/pd01003013curr.pdf> and <http://www.nws.noaa.gov/directives/sym/pd01003015curr.pdf>
- Marine Weather Statement <http://www.nws.noaa.gov/directives/sym/pd01003014curr.pdf>
- Terminal Aerodrome Forecasts <http://www.nws.noaa.gov/directives/sym/pd01008013curr.pdf>
- Volcanic SIGMET (OCONUS) <http://www.nws.noaa.gov/directives/sym/pd01008011curr.pdf> and <http://www.nws.noaa.gov/directives/sym/pd01008006curr.pdf>
- Public Volcano Warning <http://www.nws.noaa.gov/directives/sym/pd01005018curr.pdf>

6 Performance Metrics

Volcanic Ash performance metrics depend on the episode's occurrence. Basic metrics applicable to all levels of service include:

- Lag time between notification of the episode and issuance of first warning product
- Verification of occurrence
 - Amount of ashfall on the ground and impacts to the public
- Verification of extent of VAA and SIGMET areas and actual ash
- Operational response to volcanic event (e.g., NAS response to Volcanic Ash SIGMET)
- Locally developed metrics that enhance the value of volcanic ash products.

APPENDIX A - Summary Tables

Table 1. Forecast Products for Volcanic Ash

Purpose	Product Name	Reference:
Significant Hazards Highlighted By Headlines	Non-tropical Cyclone Headlines	http://www.nws.noaa.gov/directives/sym/pd01003011curr.pdf Paragraph 2.3.5 a and c
	Volcano/Volcanic Ash Headlines	
Over-water Effects of Volcanic Activity	Special Marine Warnings	http://www.nws.noaa.gov/directives/sym/pd01003013curr.pdf Appendix A Example for Ash Fall
	Marine Weather Statements	http://www.nws.noaa.gov/directives/sym/pd01003014curr.pdf Appendix A Example for Ash Fall
Aviation Hazard Forecasts	Significant Weather on WAFS	http://www.nws.noaa.gov/directives/sym/pd01008006curr.pdf Paragraph 4.2.1 I and 4.2.2 c
	AIRMETS and SIGMETS	http://www.nws.noaa.gov/directives/sym/pd01008011curr.pdf Paragraph 6.3.2 and Paragraph 9
	TAFs	http://www.nws.noaa.gov/directives/sym/pd01008013curr.pdf Appendix A, B, and C
	ARTCC and ATCSCC Support	http://www.nws.noaa.gov/directives/sym/pd01008003curr.pdf Paragraph 4 j, 7.2 c, 7.4.4 a(9)
Public Services	Public Volcano Warning	http://www.nws.noaa.gov/directives/sym/pd01005018curr.pdf Paragraph 5.3.4, and Appendix C: Paragraph 4.18

Table 2. Observation Products for Volcanic Ash

Purpose	Product Name	Reference:
“Weather” Obscuration of the Atmosphere	Supplementary Surface Observations	http://www.nws.noaa.gov/directives/sym/pd01013011curr.pdf Appendix A: Paragraph 10.1 e(2), 10.3.5, 10.3.6.1, 11.1, 11.3.5 and Table A-5
	Co-Operative Station Observations	http://www.nws.noaa.gov/directives/sym/pd01013015curr.pdf Appendix F: Paragraph 6.1

Table 3. Other References Applicable to Volcanic Ash

Purpose	Product Name	Reference:
Volcanic Ash Plume	HYSPLIT Model	http://www.nws.noaa.gov/directives/sym/pd01005018curr.pdf Paragraph 2.2
ARTCC and ATCSCC Briefings	Traffic Flow Management	http://www.nws.noaa.gov/directives/sym/pd01008003curr.pdf Paragraph 4.j, 7.2 c, and 7.4.4 a(9)
	Aviation International Service Agreements	http://www.nws.noaa.gov/directives/sym/pd01008007curr.pdf Paragraph 2.e
National Verification System	Storm Data Preparation	http://www.nws.noaa.gov/directives/sym/pd01016005curr.pdf Paragraph 7.4.4
Changes to Volcanic Products	National Service Changes and Technical Information Notices	http://www.nws.noaa.gov/directives/sym/pd01018005curr.pdf Appendix B
Continuity of Operations	Back-up Operations	http://www.nws.noaa.gov/directives/sym/pd01022001curr.pdf Appendix A, and D