

NATIONAL WEATHER SERVICE INSTRUCTION 10-1502
AUGUST 1, 2022

Operations and Services
Volcanic Ash Services Program, NWSPD 10-15
VOLCANIC ASH PRODUCTS

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SUMMARY OF REVISIONS: This directive supersedes NWSI 10-1502, “*Volcanic Ash Products from WFO, CWSU, AAWU, and NCEP Centers*,” dated January 3, 2018. Changes include:

- Reformatted the entire document for better flow and consistency with other directives.
- Changed name to “Volcanic Ash Products” from “WFO, CWSU, AAWU, and NCEP Centers” to be more inclusive of other un-named areas of the NWS that have Volcanic Ash responsibilities.
- Relabeled the “Purpose” section as “Introduction” as a better descriptor.
- Removed the “Key Assumptions” section, as the information was extraneous.
- Added sections to include NWS Operations Center and Regional Operations Centers responsibilities.
- Updated “Purpose” cells in Appendix A Table 2 to match NWSI 10-1315.

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Date

Volcanic Ash Products

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1 Introduction

Volcanic ash (VA) events are short-notice, emergency events requiring immediate products and services from all affected offices within the National Oceanic and Atmospheric Administration’s (NOAA’s) National Weather Service (NWS). Aviation-focused units, such as Center Weather Service Units (CWSU) and Meteorological Watch Offices (MWO) need to issue warnings and advisories for aircraft and the National Airspace System (NAS). Similarly, the National Centers for Environmental Prediction (NCEP) and Weather Forecast Offices (WFO) may need to issue special aviation, public, or marine products if volcanic ash will affect their forecast areas.

This policy instruction creates a single reference for actions needed by NWS offices after receiving an alert for volcanic ash events. All actions listed in this directive take place after either the Volcanic Ash Advisory Center (VAAC) releases a Volcanic Ash Advisory (VAA) and Volcanic Ash Graphic (VAG), and/or receives an alert from the United States Geological Survey (USGS) Volcano Observatories (VO). VAAC Actions during volcanic ash events are outlined in [NWS Instruction \(NWSI\) 10-1501 - Volcanic Ash Advisory Centers](#).

The volcanic ash products described in this directive are defined by the type of NWS office and NWS service area that will issue the products. Links to the parent service area directive are included as resources for additional information about the basic product format and content. All NWS offices producing forecast, statement, advisory, or warning products in response to a VAA and VAG product issuance will use the most current software and hardware systems available. Forecasters will prioritize NWS warning products over routine products and duties. VA products are considered high priority.

Appendix A summarizes the information contained in the main chapters of this directive in concise tables.

2 Responsibilities

Various NWS offices have responsibilities for VA products. [NWS Policy Directive \(PD\) 10-15](#) defines organizations' and offices' roles and responsibilities for VA Services.

2.1 Meteorological Watch Offices (Aviation Weather Center (AWC), Alaska Aviation Weather Unit (AAWU), and WFO Honolulu) Products

Most VA events will require the issuance of a SIGNificant METeorological (SIGMET) information statement. Upon receipt of a VAA and VAG from the Washington or Anchorage VAAC, MWOs should issue:

- Volcanic Ash SIGMET (See [NWSI 10-811](#))
 - o *Note: The Anchorage VAAC/AAWU issues both the VAA and SIGMET concurrently.*
- Updates to enroute weather hazard forecasts: AIRman's METeorological Information (AIRMETs) and SIGMETs (See [NWSI 10-811](#))
- Significant Weather (SIGWX) for World Area Forecast System (WAFS) – AWC only (See [NWSI 10-806](#))

2.2 Marine Offshore and High Seas Products

Because VA can cause vessels to stall out or even sink, VA forecasts trigger certain marine products and warnings to be issued when ashfall is expected to impact operations. When these conditions are expected, forecasters/analysts should consider issuing or updating the following:

- Offshore and High Seas Products (See [NWSI 10-311](#)).

When NWS marine forecasters become aware of a VA event in or near their forecast area, it will be noted in the Offshore, High Seas, Voice Broadcasts (VOBRA), and NAVTEX forecasts following the procedures indicated in [NWSI 10-311](#).

2.3 NWS Operations Center (NWSOC) and Regional Operations Centers (ROC)

VA events are public, transportation, and emergency response events affecting state, regional, and national partners.

NWSOC and ROC Emergency Response Specialists should consider the following actions as appropriate upon receipt of VA products from a VAAC, National Center, WFO, or CWSU:

- Issuing emails or briefing packets for their partners highlighting the potential impacts.
- Conducting briefings and webinars highlighting the potential impacts.
- Ensuring awareness of the event and potential impacts by NWS regional and national leadership and program managers.
- Coordinating Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) runs for their region, or among multiple regions, to ensure consistent HYSPLIT inputs for the eruption and distribution/use of the output and any talking points.
- Facilitating forecast coordination calls between the appropriate VO, VAAC, MWO, CWSU and WFOs.

The NWSOC and ROCs report VA information to NOAA and NWS leadership in accordance with [NWSI 10-1603](#).

2.4 CWSUs and National Aviation Meteorologists

VA forecasts, advisories, and pilot reports have an immediate impact on in-flight safety and traffic-flow management. Upon receipt of a VAA and VAG from the VAAC and a SIGMET from the MWO, forecasters should:

- Issue or provide a briefing on the occurrence and predicted extent of the volcanic plume (See [NWSI 10-803](#)).
- Issue a Center Weather Advisory (CWA) for VA as appropriate when there is no existing AWC or AAWU advisory in effect. A CWA may also be issued to supplement an advisory that has already been issued by AWC or AAWU (See [NWSI 10-803](#)).
- Review and brief enroute hazards associated with VA (See [NWSI 10-811](#) and [NWSI 10-803](#)).
- Solicit pilot reports (PIREP), through air traffic control, from flights near the volcano.

2.5 WFOs

VA ash events are public, aviation, and marine events affecting the local county warning area or meteorological watch area. Upon receipt of an eruption from the appropriate VO, or a VAA and VAG from the VAAC and a SIGMET from the MWO, forecasters should consider the following actions as appropriate:

- Issue Special Weather Statements in Alaska Region (See [ARS 07-2002](#))
- Issue Volcanic Ashfall Advisories (See [NWSI 10-515](#), [NWSI 10-310](#), [NWSI 10-312](#))
- Issue Volcanic Ashfall Warnings (See [NWSI 10-515](#), [NWSI 10-310](#), [NWSI 10-312](#))
- Issue Special Marine Warnings (See [NWSI 10-313](#))
- Issue Marine Weather Statement (See [NWSI 10-314](#))
- Issue or update Terminal Aerodrome Forecasts (TAF) (See [NWSI 10-813](#))
- Relay Volcano Warning and other Non-Weather Emergency messages at the request of local Emergency Management (See [NWSI 10-518](#))
- Provide Impact-based Decision Support Services (IDSS) for partners
- Post appropriate social media information for the public.
- Coordinate any requests from partners for on-site support or Emergency Operations Center support with the ROC.

3 Performance Metrics

VA performance metrics are verified in the TAF. These values are not reported outside of the NWS (e.g., Government Performance and Results Act (GPRA)); however, they can be run in Stats on Demand.

The VAACs have Key Performance Indicators (KPI) developed through the International Civil Aviation Organization (ICAO) that are tracked locally including issuance and follow-up of VAA and VAG. This information is being reported by the VAAC managers in the VAAC Management Report which is compiled every 12 to 18 months.

APPENDIX A - Product Summary Tables

Table 1. Forecast Products for Volcanic Ash

Purpose	Product Name	Reference:
Marine: Significant Hazards Highlighted by Headlines	Non-tropical Cyclone Headlines	NWSI 10-311, NWSI 10-310, NWSI 10-312)
	Volcano/Volcanic Ash Headlines	
Over-water Effects of Volcanic Activity	Special Marine Warnings	NWSI 10-313
	Marine Weather Statements	NWSI 10-314
Aviation Hazard Forecasts	Significant Weather on WAFS	NWSI 10-806
	AIRMETS and SIGMETS	NWSI 10-811
	TAFs	NWSI 10-813
	ARTCC (including Center Weather Advisories) and ATCSCC Support	NWSI 10-803
Warning/Advisory Products for Volcanic Ash	Public Volcano Warning	NWSI 10-518
	AIRMETS and SIGMETS	
	Special Marine Warnings	NWSI 10-313
	Volcanic Ash Advisories and Volcanic Ash Graphics	
	Volcanic Ash Warnings	
Additional Products	Volcanic Ash Special Weather Statements, Advisories, and Warnings, and regional requirements for updating products (e.g., Zone Forecast Product)	NWSI 10-515

Table 2. Observation Information for Volcanic Ash

Purpose	Product Name	Reference:
Atmospheric Phenomena Observations	Cooperative (COOP) Station Observations	NWSI 10-1315
Surface Weather Observing	METAR reporting	FAA Order 7900.5D
Air Traffic Organization Policy	PIREP solicitation and dissemination	FAA Order 711065Z

Table 3. Other References Applicable to Volcanic Ash

Purpose	Product Name	Reference:
Volcanic Ash Plume	HYSPLIT Model USGS Ash3d	NWSI 10-518 https://vsc-ash.wr.usgs.gov/ash3d-gui/#/
ARTCC and ATCSCC Briefings	Traffic Flow Management and Operations Manager	NWSI 10-803
	Aviation International Service Agreements	NWSI 10-807
National Verification System	Storm Data Preparation	NWSI 10-1605
Changes to Volcanic Products	National Service Changes and Technical Information Notices	NWSI 10-1805
Continuity of Operations	Back-up Operations	NWSI 10-2201
International Requirements	ICAO Annex 3	9766, 9691 and 9744 ¹

¹ ICAO Documents are available online for purchase through the ICAO Store and therefore cannot be linked publicly. NWS staff have internal access to this documentation.