

# Instruction Guide: Kīlauea Timeline Activity

**Objective:** Using the case study of increased volcanic activity on the Island of Hawai‘i in 2018, understand cause and effect in how communities respond to natural disasters.

<u>NGSS</u>	<u>HĀ</u>
4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	Strengthened Sense of Belonging Strengthened Sense of Total Well-Being Strengthened Sense of Hawai‘i

**Preparation:** Print pages 3-16 and laminate, if possible.

**Time Estimate:** 15 minutes

## **Procedure:**

1. Select 14 volunteers total - 12 volunteers to each hold a date card, 2 volunteers to hold the “Color Sequence Guide” and “Volcanic Alert Level/Aviation Color Code Index” cards.
2. Direct school group to discuss the listed events and help order cards from earliest event to end event. Students will discuss and use critical thinking skills to create a timeline based off written clues and indicators. The color sequence is meant to provide clues about the order of events. Lead the group in an organized manner, allowing one suggestion at a time. Ask for explanations.
3. Check to see if the students are in the correct order, based on the timeline solution key. Facilitate discussion on order of events and community response/actions. During these events, is it better for the community to react to events or to prepare in advance?

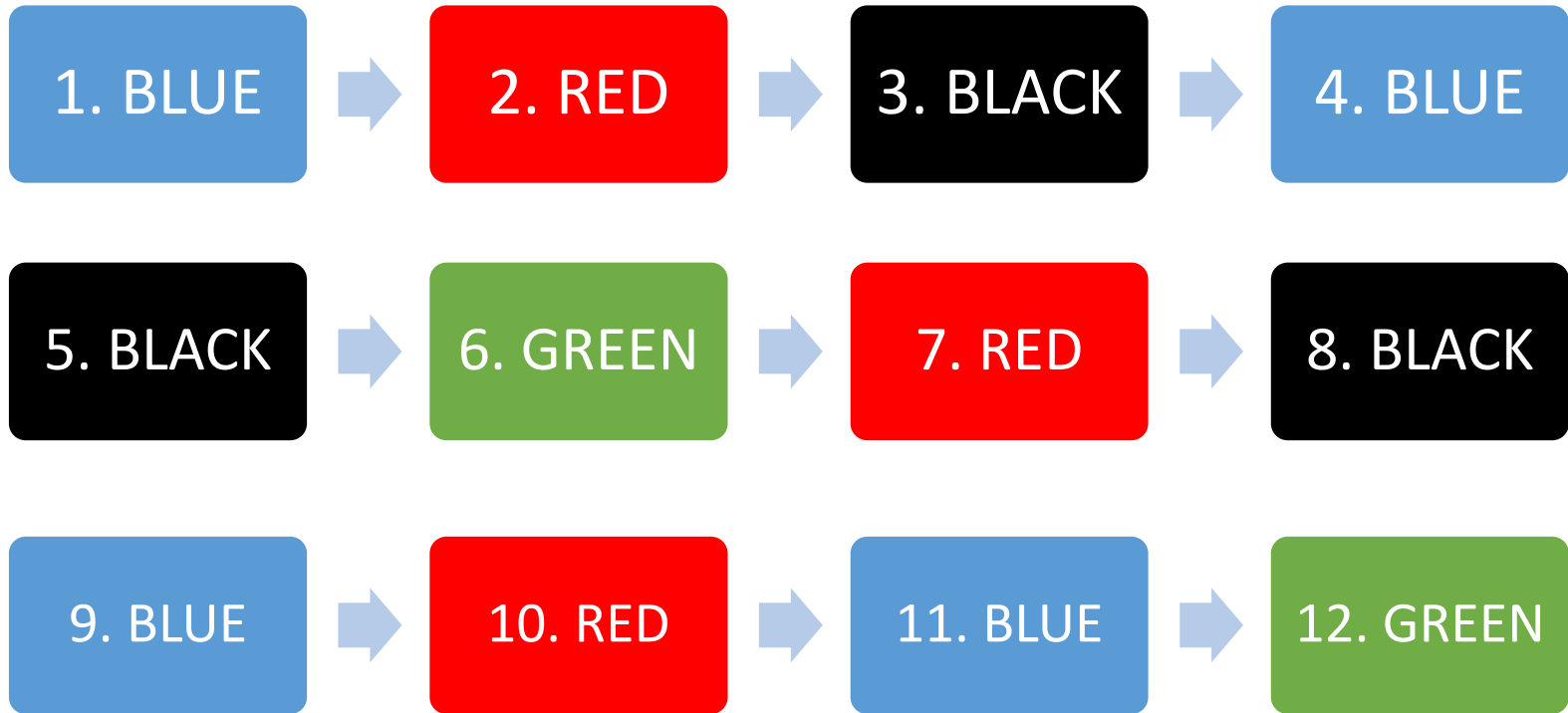
## **Additional Resources:**

- [https://volcanoes.usgs.gov/vsc/file\\_mgr/file-179/Chronology%20of%20events%202018.pdf](https://volcanoes.usgs.gov/vsc/file_mgr/file-179/Chronology%20of%20events%202018.pdf)

## Timeline Solution Key

- **April 30** Pu'u 'Ō'ō eruptive vent collapses; magma begins moving underground through east rift zone toward communities in Puna
- **May 3** Volcano Alert Level raised to **WARNING** due to underground magma movement
- **May 3** Red Cross shelter open for residents affected by Kīlauea lava threat; first Volcano Alert Level change
- **May 3** Volcanic fissures begin erupting on rift zone; **May 4** Magnitude-6.9 earthquake on south flank of Kīlauea
- **May 4** Hawai'i National Guard activated to help with evacuation of residents, security of neighborhoods, and monitoring air quality near new volcanic fissure eruptions
- **May 11** Hawai'i Volcanoes National Park closes to the public
- **May 15** Aviation Color Code elevated to RED in anticipation of summit explosive events that would produce ash plumes
- **May 17** Free dust masks to protect from ash available for Hawai'i County residents
- **June 24** Collapse events no longer producing ash
- **June 24** Aviation Color Code lowered to ORANGE due to decreased ash emission
- **August 2** Summit collapse events end
- **Sept. 22** Hawai'i Volcanoes National Park reopens

## Color Sequence



### Color Guide:

Blue – Volcanic Event (marked with date)

Red – Change in Volcanic Alert Level or Aviation Color Code

Black – Community aid response

Green – Hawai'i Volcanoes National Park status change

# Volcanic Alert Level / Aviation Color Code Index

## ALERT-LEVEL TERMS.

When the volcano alert-level is changed, a Volcano Activity Notice (VAN) is issued.

<b>NORMAL</b>	Volcano is in typical background, noneruptive state or, <i>after a change from a higher level</i> , volcanic activity has ceased and volcano has returned to noneruptive background state.
<b>ADVISORY</b>	Volcano is exhibiting signs of elevated unrest above known background level or, <i>after a change from a higher level</i> , volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
<b>WATCH</b>	Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, <b>OR</b> eruption is underway but poses limited hazards.
<b>WARNING</b>	Hazardous eruption is imminent, underway, or suspected.

## AVIATION COLOR CODES

When the volcano color code changes, a Volcano Observatory Notification for Aviation (VONA) is issued.

<b>GREEN</b>	Volcano is in typical background, non-eruptive state or, <i>after a change from a higher level</i> , volcanic activity has ceased and volcano has returned to noneruptive background state.
<b>YELLOW</b>	Volcano is exhibiting signs of elevated unrest above known background level or, <i>after a change from a higher level</i> , volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
<b>ORANGE</b>	Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, <b>OR</b> eruption is underway with no or minor volcanic-ash emissions [ash-plume height specified, if possible].
<b>RED</b>	Eruption is imminent with significant emission of volcanic ash into the atmosphere likely <b>OR</b> eruption is underway or suspected with significant emission of volcanic ash into the atmosphere [ash-plume height specified, if possible].

(start)

April 30

**Pu'u 'Ō'ō eruptive vent collapses; magma begins moving underground through east rift zone toward communities in Puna**

Volcano Alert Level raised to  
WARNING due to underground  
magma movement

**Red Cross shelter open for residents  
affected by Kīlauea lava threat; first  
Volcano Alert Level change**

**May 3 Volcanic fissures begin erupting on rift zone; May 4 Magnitude-6.9 earthquake on south flank of Kīlauea**

**Hawai'i National Guard activated to help with evacuation of residents, security of neighborhoods, and monitoring air quality near new volcanic fissure eruptions**

# **Hawai'i Volcanoes National Park closes to the public**

**Aviation Color Code elevated to RED  
in anticipation of summit explosive  
events that would produce ash  
plumes**

**Free dust masks to protect from ash  
available for Hawai'i County  
residents**

**June 24**

**Collapse events no longer producing ash**

**Aviation Color Code lowered to  
ORANGE due to decreased ash  
emission**

# **August 2**

## **Summit collapse events end**

# **Hawai'i Volcanoes National Park reopens**