Volcano Disaster Assistance Program

BRIEF HISTORY

There are approximately 1,500 potentially active volcanoes around the world and only one international volcano response team that can deploy to help prevent eruptions from becoming disasters: the Volcano Disaster Assistance Program (VDAP), now celebrating more than 35 years of providing technical assistance worldwide. The former USAID Office of U.S. Foreign Disaster Assistance and the U.S. Geological Survey established VDAP in 1986 in response to the tragic eruption of Nevado del Ruiz Volcano in Colombia, which killed more than 23,000 people from volcanic mudflows.

With more than $56 million of support from USAID's Bureau for Humanitarian Assistance, VDAP scientific teams have responded to over 70 major crises at more than 50 volcanoes and strengthened response capacity in 13 countries since the program began. At the request of affected governments, VDAP helps fellow scientists monitor volcanic activity, assess hazards, generate eruption forecasts, and develop early warning capabilities to get people out of harm's way.

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Volcanic Hazards

EXPLOSIVE ERUPTION

PYROCLASTIC FLOW

VOLCANIC MUDFLOW

CITY AT RISK

Mitigation Efforts

MONITOR ACTIVITY

ASSESS HAZARDS

ERUPTION FORECASTS

EARLY WARNING CAPABILITIES

Below are highlights of some major responses that demonstrate how VDAP has helped save tens of thousands of lives.

1991 MT. PINATUBO, PHILIPPINES

In the spring of 1991, VDAP assistance was requested to monitor Mt. Pinatubo, which had not erupted in 500 years. VDAP worked with scientists from the Philippine Institute of Volcanology and Seismology to install volcano monitoring equipment and analyze data to forecast eruptions. Due to this work, Philippine officials evacuated more than 75,000 people before Mt. Pinatubo had a massive explosive eruption on June 15, 1991. The timely evacuations saved thousands of lives, and this response validated VDAP as a critical hazard-reduction initiative.

2007-2008 NEVADO DEL HUILA, COLOMBIA

After being dormant for hundreds of years, Nevado del Huila erupted in 2007 and 2008. VDAP assisted the Servicio Geológico Colombiano by providing volcano monitoring training and developing protocols for forecasting eruptions and evacuation plans. VDAP's assistance helped Colombian officials decide to evacuate thousands of people before the volcano erupted in April 2007 and again in November 2008, inundating nearby areas with volcanic mudflows.

2010 MT. MERAPI, INDONESIA

Mt. Merapi is one of the world's most hazardous volcanoes, threatening more than a million people who live nearby. In the fall of 2010, Merapi had its largest eruption in more than 100 years, causing pyroclastic flows—fast-moving currents of hot rocks, ash, and volcanic gas—to rush down the mountain. VDAP worked with counterparts from the Indonesian Center for Volcanology and Geologic Hazard Mitigation to analyze volcanic activity and satellite data, which led Indonesian officials to evacuate over 279,000 people. At a minimum, 10,000 to 20,000 lives were saved thanks to preemptive evacuations.

2017 MT. AGUNG, INDONESIA

After a series of deadly eruptions in 1963, Mt. Agung remained quiet until September 2017, when the volcano awoke, emitting steam and causing hundreds of small earthquakes. VDAP deployed a team to work with Indonesia's Center for Volcanology and Geologic Hazard Mitigation to install and repair monitoring equipment, model potential eruption scenarios, analyze seismic data, and develop new ways to sample gases. When Agung erupted in November 2017, more than 130,000 people had been evacuated. The eruption was relatively small, but it further cemented the strong collaboration between both organizations to improve volcano monitoring and strengthen eruption forecasting capabilities in Indonesia.

2021 LA SOUFRIÈRE, ST. VINCENT AND THE GRENADINES

In late 2020, after a new lava dome formed in the crater of La Soufrière on the island of St. Vincent, VDAP assisted counterparts at the University of the West Indies Seismic Research Center (UWI-SRC) by donating volcano monitoring stations, analyzing monitoring data, acquiring satellite images, and interpreting satellite imagery. On April 8, 2021, these monitoring stations detected significant activity, and UWI-SRC warned of an imminent eruption. Local emergency management immediately evacuated approximately 19,000 people before explosive eruptions began on April 9. More eruptions occurred in following days, and VDAP continued to assist counterparts in monitoring them and their impact.

Cover photo: Installation of a telemetered, solar-powered scanning spectrometer in 2016 at Sinabung volcano in Sumatra, Indonesia, which has been continuously erupting since 2013. The instrument measures the amount of sulfur dioxide gas emitted from the volcano, which helps forecast volcanic activity. Photo by Christoph Kern/USGS.

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