EXPOSIVE eruptions from Alaska’s more than 40 active volcanoes pose a significant threat to aircraft, communities, and commerce in the north Pacific. Because of this threat, the Alaska Volcano Observatory (AVO) was established in 1988 to monitor dangerous volcanoes, issue eruption alerts, assess volcanic hazards, and conduct volcano research in Alaska.

Advance warnings and tracking of the 1989-90 eruptions of Redoubt, the 1992 eruptions of Spurr, and the 1996 eruption of Pavlof contributed to public safety and minimized the economic impact of these events.

Introduction

MORE than 40 active volcanoes span the state of Alaska from the Wrangell Mountains to the western Aleutians. The 1912 eruption of Novarupta volcano, in what is now Katmai National Park, located 280 mi southwest of Anchorage, was the earth’s most voluminous volcanic event of this century. Eruptions near Anchorage, Alaska’s largest city, have caused millions of dollars in damage in the last decade alone. Future explosive eruptions from Alaska’s volcanoes pose a significant threat to communities, commerce, and particularly to aircraft in the heavily traveled north Pacific region. The Alaska Volcano Observatory (AVO) was established in 1988 to monitor dangerous volcanoes, issue eruption alerts, assess volcanic hazards, and conduct volcano research in Alaska. AVO also plays a key role in reporting and tracking eruptions in Russia as part of a formal working relationship with the Kamchatka Volcanic Eruptions Response Team (KVERT).

Who We Are

AVO is a cooperative program of the U.S. Geological Survey (USGS), the University of Alaska Fairbanks, Geophysical Institute (UAFGI), and the Alaska Division of Geological and Geophysical Surveys (ADGGS) and is funded primarily by the USGS with additional support from the State of Alaska. AVO consists of a scientific and crisis-coordination center in Anchorage and a research and seismic recording center in Fairbanks. During volcanic crises, AVO operates around the clock and may augment its staff with colleagues from USGS volcano observatories in Hawaii and Vancouver, WA.
Timely warnings of eruptive activity and forecasts of ash plume motion allowed the public, private industry, utilities, and government agencies to prepare and respond appropriately. On September 30, 1994, a violent eruption of Klyuchevskoy Volcano in Central Kamchatka produced a widespread ash plume which extended across major north Pacific and Russian Far East air routes. Coordinated by AVO, effective communication among Russian volcanologists, the FAA, NWS, and air carriers resulted in successful rerouting of dozens of aircraft and minimized disruption and economic impact.

In March 1996, intense seismic activity began beneath Akutan Volcano in the eastern Aleutians. For several weeks, residents of Akutan and employees of a fish processing facility were shaken by thousands of earthquakes. AVO scientists responded quickly by installing a network of seismometers to locate and monitor the activity. AVO personnel remained on site to assist emergency preparedness officials and to provide information to residents. Although no eruption occurred, extensive ground cracking related to a magmatic intrusion was discovered by AVO geologists the following summer. In addition, a more permanent seismic network was installed to detect future earthquake activity that may lead to an eruption.

In September 1996, Pavlov Volcano on the Alaska Peninsula began a prolonged, low-level eruption that repeatedly dusted nearby communities with ash and forced the FAA to restrict air traffic near the volcano. Three months earlier, AVO scientists had instrumented Pavlov with seismometers and as a result, progress of the 1996 eruption was carefully tracked. AVO worked closely with local residents, airlines, staff of the FAA and NWS, and conducted periodic overflights to monitor activity at this remote volcano. Thanks to the new instrumentation, AVO was able to provide timely warnings of several hazardous ash plumes from Pavlov.

In support of public safety, AVO is responsible for assessing potential hazards at high-risk volcanic centers in Alaska. Hazard assessments include a description of the geologic and eruptive history of a given volcano, explanations of likely eruption scenarios, and determination of potential impact zones for a range of expected hazards. A hazard assessment has been published for Redoubt Volcano: an update of this product and new assessments for several other volcanoes is in progress.

AVO maintains close communication links with other agencies and uses a telephone call-down to notify the FAA, NWS, the Department of Defense, the Governor's Office, and the Alaska Department of Emergency Services. Written descriptions of the location, time, size of the eruption, and a forecast of ash cloud motion are distributed by fax and electronic mail to federal, state, and local government agencies, critical industries, the media, and air carriers. Subsequent information releases which include forecasts of the nature and duration of further eruptive activity are prepared as needed. AVO also maintains phone message lines which are updated frequently with summaries of volcanic activity.

During non-crisis periods, AVO releases a weekly written summary of volcanic activity and the status of instrumented volcanoes in Alaska and Kamchatka. AVO fields many calls from the general public and gives interviews with media and tours of the facility as staff time allows. Frequent presentations to schools, trade groups, government agencies, and publication of scientific research are part of a vigorous outreach program.