AVO GRADUATE STUDENTS RESPOND TO VOLCANIC ERUPTIONS WORLDWIDE

At left, the field crew at Augustine Volcano, 1987. At right, the Alaska Volcano Observatory team at the 2008 Coordination Meeting in Fairbanks, Alaska. AVO has grown to be one of the most dynamic volcano observatories, and has been an example to other observatories worldwide through the unique partnership between State and Federal agencies and university researchers.

1980-90

Table: Volcanic Activity in Alaska in the Last 20 Years

1991 - West Sand\n1992 - South Bezymianny\n1993 - Mount Redoubt\n1994 - Katmai\n1995 - Augustine\n1996 - Augustine\n1997 - Pavlof\n1998 - Bezymianny\n1999 - Redoubt Volcano 21 April\n2000 - Augustine\n2001 - Cleveland\n2002 - Spurr\n2003 - South Bezymianny\n2004 - Spurr\n2005 - Veniaminof\n2006 - Pavlof\n2007 - Pavlof\n2008 - Veniaminof

AVO at UAF/GI is on the forefront of training future volcanologists. Over 65 past and current students are involved in the program. Presently there are 15 students working in AVO related projects (9 PhD and 6 MS), many supported through programs that grew around AVO UAF/GI’s research and education efforts. Our students earned 44 advanced degrees over the first 20 years, (24 PhDs and 20 MS). AVO students are a dynamic group, and this snapshot will change quickly as they respond to eruptions and opportunity around the globe.

• Graduates have gone on to prestigious positions within government and academia.
• AVO offers unique opportunities to graduate students through hands-on training during eruptions.
• Over 90% of our graduates remain in the Geosciences.
• About half of the students stay in Alaska, the remainder are expanding AVO’s reputation to the rest of the United States and abroad.
• Nearly half of our graduates remain in academia to continue the AVO’s legacy of research and education.

AVO’s students have been active in research and monitoring projects around the globe. The pins represent locations where AVO’s current students and graduates are hard at work. Purple pins represent seismology students, green for geology, and blue for remote sensing.

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Background Photo: PIRE Field camp in July 2007 at Bezymianny Volcano, Kamchatka, photo by W. Thelen

Atwood Atwood collects a sample of ash from Augustine Volcano. The graduate degrees of 14 students focused on volcanology, with 9 current students. Volcanic geology has been the topic of 21 advanced degrees, with 4 current students.

Tess La reuse's sensing welded 9 degrees, with 6 active students.

Brandon Brown participates in a viscosity experiment in the physical volcanology laboratory.

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20th Anniversary of the ALASKA VOLCANO OBSERVATORY

The Alaska Volcano Observatory was founded in 1988 after the eruptions at Cook Inlet’s Augustine Volcano in 1986 caused significant disruptions to passenger jet travel to Anchorage and south-central Alaska. In 1986 few tools were available for scientists in Alaska to warn safety officials and the public of the size and location of Augustine’s ash clouds that threatened to damage passenger aircraft. Residents of Homer and other coastal cities in south-central Alaska faced significant uncertainty about what would happen next at the volcano and what kind of risks their communities faced from Augustine Volcano.

The first major Alaskan eruption for AVO happened at Mt. Redoubt in 1989-90 pictured here. A passenger jet encountered ash from this eruption on December 15th, 1989. The aircraft recovered after a near catastrophe having lost power to all four engines and made a safe emergency landing in Anchorage.

Using modern tools, AVO now provides timely warnings to state and federal agencies as well as the public of impending volcanic eruptions, and aids in disaster mitigation through real-time monitoring and hazard studies. There is volcanic activity almost daily at over 100 volcanoes in the region. AVO is recognized worldwide as leaders in monitoring, research and education for volcanoes and their hazards.

The research scientists and graduate students of the Geophysical Institute of the University of Alaska Fairbanks, together with their colleagues in the U.S. Geological Survey of the Federal Government and in the Division of Geological and Geophysical Surveys of the Alaska State Government play significant roles in the basic research, volcanic hazards assessment and eruption monitoring that help lower the risk to Alaskans and visitors to Alaska posed by Alaska’s volcanoes.

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MORE REMOTE SEISMIC NETWORKS THAN ANY OTHER VOLCANO SEISMIC OBSERVATORY

Since 1988, sixteen volcanoes have had confirmed explosive eruptions. In 1996, only three of these volcanoes were monitored. In 2008, all but four have 24-hour monitoring networks. In response to the growing awareness of the hazards posed by airborne ash, AVO has expanded its coverage westward along the Alaska Peninsula and across the Aleutian Islands.

• Largest volcano monitoring network in the world including seismic, GPS, web cameras and infrasonic sensors.
• 31 monitored volcanoes spanning 2500 kilometers.
• Up to 5,000 earthquakes per year at Alaska volcanoes.
• 300 channels of seismic data.
• 400,000 km of data transmission (enough to reach the moon).

FIRST OBSERVATORY TO OPERATIONALLY USE SATELLITE REMOTE SENSING

Since 1980, AVO has developed and operated the first operational satellite remote sensing system for volcanic monitoring. This system, which has been upgraded several times since then, is now a highly refined tool that provides critical information about volcanic eruptions.

The Puff volcanic ash tracking model was developed at the Geophysical Institute to predict the path of ash clouds and study past eruptions.
• Automated alarms detect volcanic activity in near real-time satellite data.
• New gas and aerosol measurement techniques will help provide real-time assessments of airborne hazards to human health, property and aircraft.
• The Puff volcanic ash tracking model was developed at the Geophysical Institute to predict the path of ash clouds and study past eruptions.

HAZARD STUDIES OF THE UNITED STATES’ MOST ACTIVE EXPLOSIVE VOLCANOES

AVO has built an extensive volcano monitoring network covering Alaska to determine their size and risk. AVO evaluates the nature, timing, and likelihood of dangerous activity to local, state, and federal officials and the public.

• Over 40 geologic maps and 15 hazard assessments of airborne volcanic ash.
• A state of the art experimental petrology laboratory gives insights into volcanic eruptions.
• Database of Alaskan ash fall deposits provides markers for long term studies of volcanic activity and climate change.

Background Photo: Mt. Augustine erupting on March 7, 2001, photo by C. Cahill