

Volcanoes of Alaska

Information Circular 38

Volcanoes in eruption are enthralling in their power and grandeur and demonstrate unequivocally that the earth below the atmosphere and biosphere is not static. They are the one facet of the geologic evolution of the planet Earth that can be studied on a human timescale.

The Alaska Volcano Observatory

The Alaska Volcano Observatory (AVO) is a joint program of the United States Geological Survey (USGS), the Geophysical Institute of the University of Alaska Fairbanks (UAFGI), and the State of Alaska Division of Geological & Geophysical Surveys (DGGs). AVO monitors and studies Alaska's hazardous volcanoes, predicts and records eruptive activity, and works closely with other agencies to implement public safety measures. AVO is presently focusing on expanding the existing seismic network to include some of the more active Alaska volcanoes on the Aleutian Chain. Some of these volcanoes lie along many international air-traffic transportation corridors. AVO was formally established in 1968 in response to the 1966 eruption of Augustine Volcano and in time to warn of the 1989 eruption of Redoubt volcano. Most recently AVO successfully monitored and notified the public of the 1996 eruption of Pavlof volcano and the 1997 eruption of Oymyak volcano.

RUSSIA

CANADA

EXPLANATION OF MAP SYMBOLS

These features are primarily associated with strains across the boundary between the Pacific and North American plates.

Volcanoes that have been active within approximately the last 2,000,000 years (Wood and Kienle, 1990; Simkin and Siebert, 1994; and Alaska Volcano Observatory files). Dates, when given, are of the most recent major eruption. Many volcanoes have vented steam more recently.

Outcrop areas of volcanic rocks less than approximately 2,000,000 years old (Luedke and Smith, 1986).

Subduction zone - Location of the boundary between the subducting Pacific Plate and overriding North American Plate; teeth on upper plate of convergent boundaries. Amount of movement in centimeters per year across crustal plate and tectonic block boundaries (Moore and others, 1992; Plafker and others, 1993).

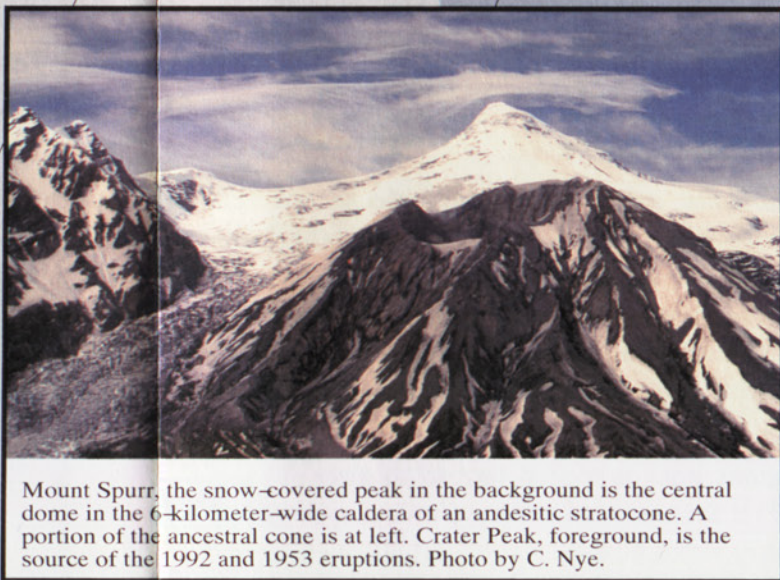
Active transform fault - The principal fault at a broad strike-slip plate boundary. Arrows indicate relative horizontal motion.

Active faults - Arrows indicate relative horizontal motion: U = up, D = down (Moore and others, 1992; Plafker and others, 1993).

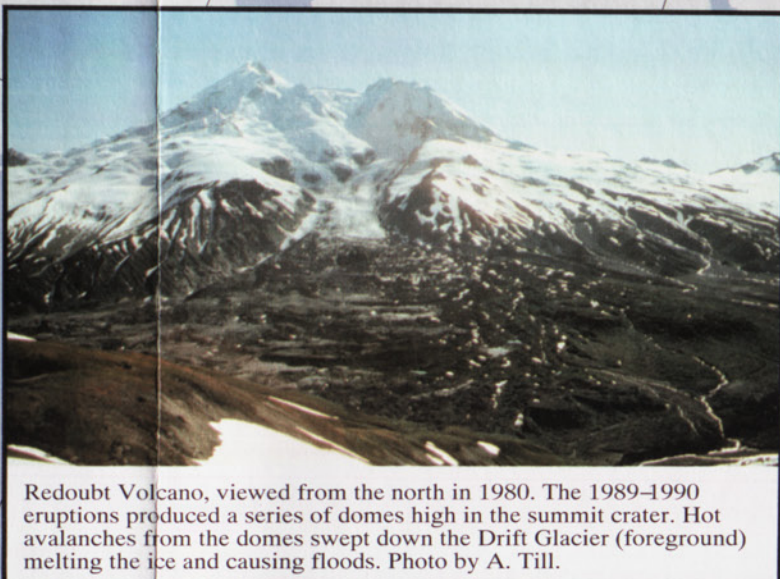
Bathymetry - Collected and compiled by the U.S. Geological Survey for the Circum-Pacific Project.



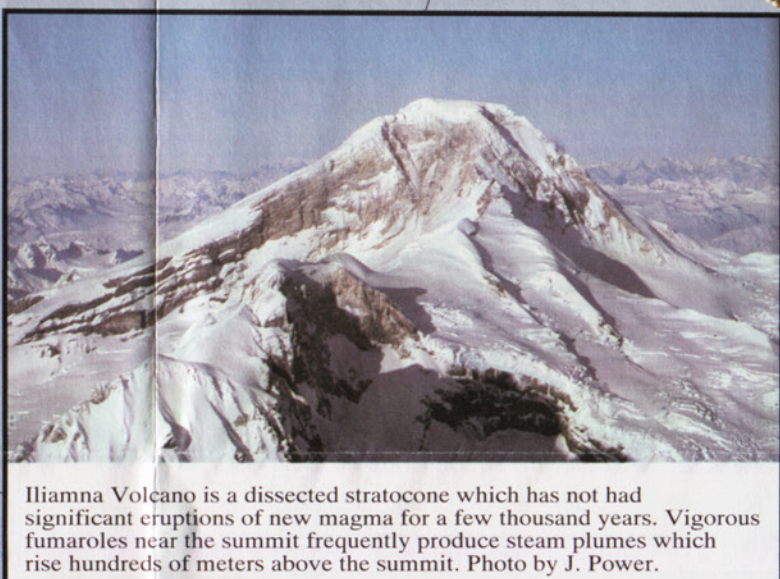
Augustine Volcano in eruption at 4pm on March 31, 1986. Photo by J. Kienle.



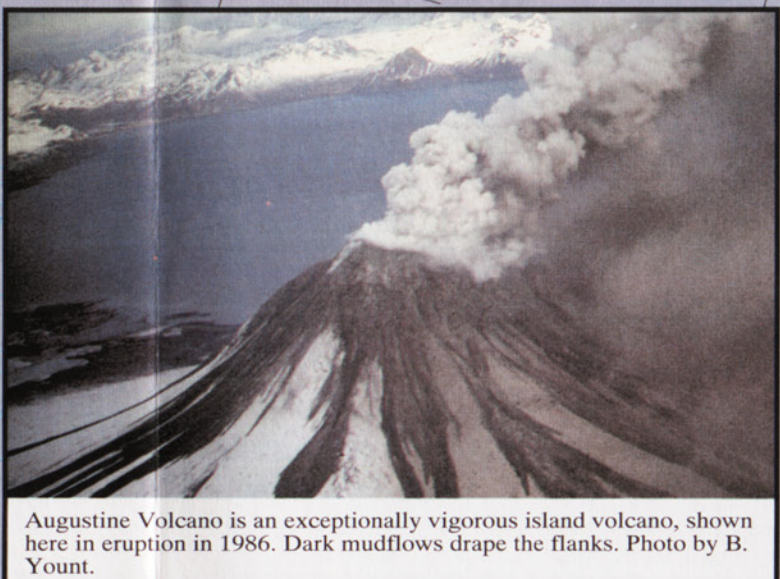
Mount Spurr, the snow-covered peak in the background is the central dome in the 6-kilometer-wide caldera of an andesitic stratocone. A portion of the ancestral cone is at left. Crater Peak, foreground, is the source of the 1992 and 1993 eruptions. Photo by C. Nye.



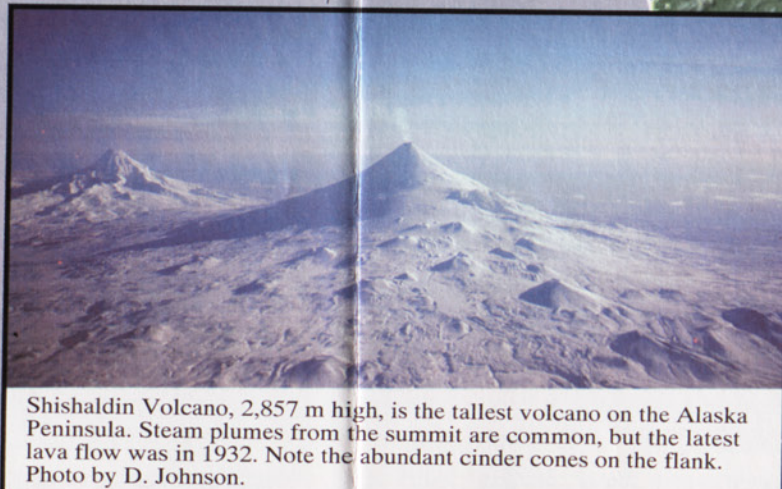
Redoubt Volcano, viewed from the north in 1980. The 1989-1990 eruptions produced a series of domes high in the summit crater. Hot avalanches from the domes swept down the Drift Glacier (foreground) melting the ice and causing floods. Photo by A. Till.



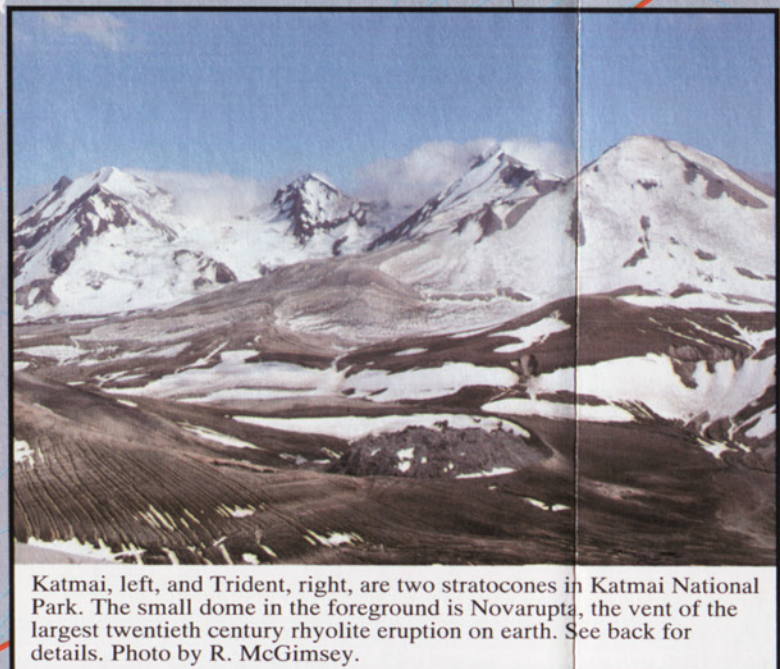
Iliamna Volcano is a dissected stratocone which has not had significant eruptions of new magma for a few thousand years. Vigorous fumaroles near the summit frequently produce steam plumes which rise hundreds of meters above the summit. Photo by J. Power.



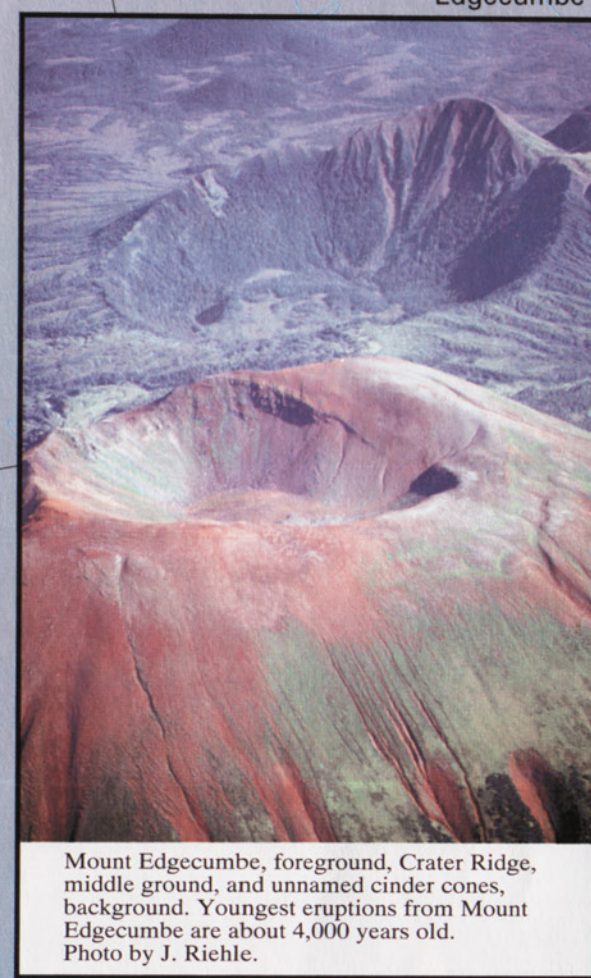
Augustine Volcano is an exceptionally vigorous island volcano, shown here in eruption in 1986. Dark mudflows drape the flanks. Photo by B. Yount.



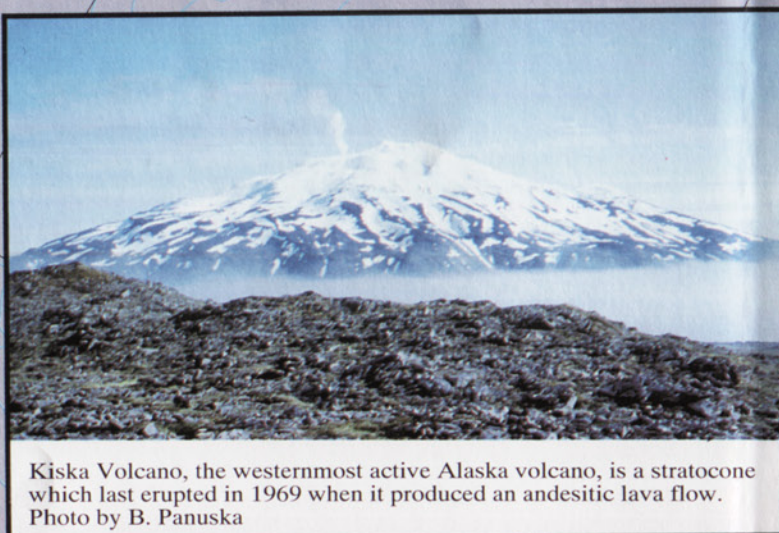
Shishaldin Volcano, 2,857 m high, is the tallest volcano on the Alaska Peninsula. Steam plumes from the summit are common, but the latest lava flow was in 1932. Note the abundant cinder cones on the flank. Photo by D. Johnson.



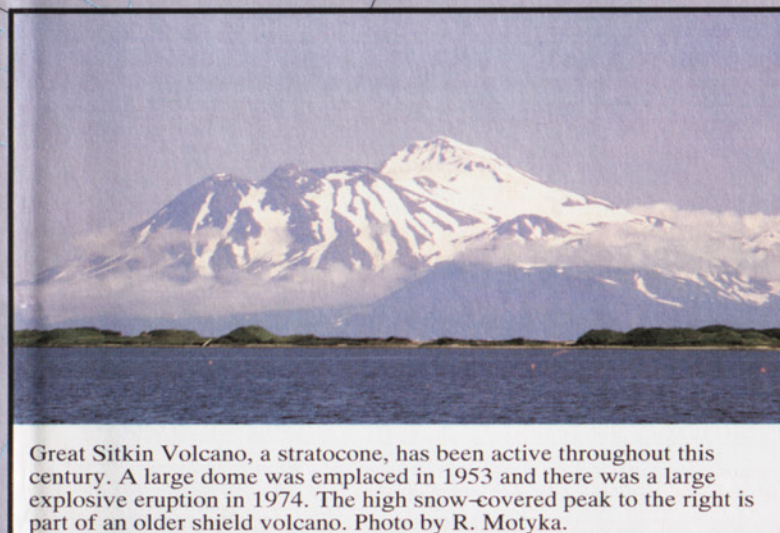
Katmai, left, and Trident, right, are two stratocones in Katmai National Park. The small dome in the foreground is Novarupta, the vent of the largest twentieth century rhyolite eruption on earth. See back for details. Photo by R. McGimsey.



Mount Edgecumbe, foreground, Crater Ridge, middle ground, and unnamed cinder cones, background. Youngest eruptions from Mount Edgecumbe are about 4,000 years old. Photo by J. Riehle.



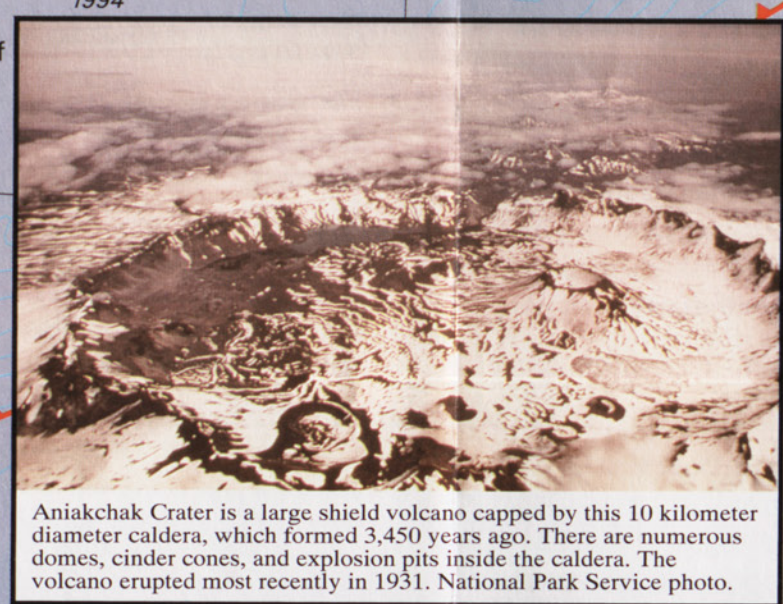
Kiska Volcano, the westernmost active Alaska volcano, is a stratocone which last erupted in 1969 when it produced an andesitic lava flow. Photo by B. Panska.



Great Sitkin Volcano, a stratocone, has been active throughout this century. A large dome was emplaced in 1953 and there was a large explosive eruption in 1974. The high snow-covered peak to the right is part of an older shield volcano. Photo by R. Motyka.



Pyre Peak on Sequam Island, 1977. Lava fountaining from basaltic fissure eruptions such as these is fairly rare in the Aleutians. The most recent was at Westdahl Volcano in 1991. U.S. Coast Guard photo.



Aniakchak Crater is a large shield volcano capped by this 10 kilometer diameter caldera, which formed 3,450 years ago. There are numerous domes, cinder cones, and explosion pits inside the caldera. The volcano erupted most recently in 1951. National Park Service photo.

Acknowledgments

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Base Hypsography for mainland Alaska created with State of Alaska -Land Records Information Section ARC grids; elev900, elev900, hillxg, nd, and sai, glac. Base Hypsography for the Aleutian Chain, created with State of Alaska - Division of Geological and Geophysical Surveys ARC grids; aleut, 900, aleut, g900, and hill, aleut. Base Coastline created with State of Alaska -Land Records Information Section ARC coverages; russa, alaska, and canada. Bathymetry from U.S. Geological Survey Open-File maps 76-821, 76-823, 1976. Albers Equal Area Projection.

SCALE 1:4,000,000
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100 50 0 50 100 150 Kilometers