

## Rebuilding a Volcano

MOUNT ST. HELENS MAY BE PATCHING IN ITS 1980 CRATER BY KRISTA WEST

**O**n October 2, 2004, Mount St. Helens let out a noontime burp of steam; nearly an hour's worth of low-frequency tremors soon followed. Magma, it seemed, might be moving underground. Fearing an imminent threat to human life, scientists at the Cascades Volcano Observatory in southwest Washington State issued a volcanic alert level 3, aviation code red. The next day the Federal Aviation Administration restricted air traffic within five and

a half miles of the summit, diverting and delaying flights. The alerts seemed justified a couple of days later, when eruptions produced a light dusting of ash as far as 70 miles northeast of the volcano.

But nothing close to Mount St. Helens's catastrophic eruption in 1980 ever happened. No one was killed or injured. No trees toppled. And air traffic soon returned to normal. On October 6, volcanologists downgraded the alert.

Given the excitement and media attention, the average citizen undoubtedly expected a big, explosive blowout. Instead Mount St. Helens erupted slowly and quietly. Although explosive activity has largely subsided, the volcano continues to erupt today—with periodic hiccups of steam, ash and tremors. One explosion in March billowed ash nearly 11 kilometers above sea level.

In retrospect, scientists say the increased activity in late September and early October was not caused by the volcano preparing to blow its top but rather by liquid magma steadily burrowing its way to the surface. The volcano is heaping up a new lava dome in its crater, perhaps even rebuilding itself to a pre-1980 shape.

Mount St. Helens is like “a giant tube of toothpaste, squeezing out lava,” says John Eichelberger, a volcanologist at the University of Alaska–Fairbanks. With the current



**BLOWING SMOKE:** Mount St. Helens may not have explosively erupted, but the volcano is slowly spewing lava that may ultimately fill in its crater, which formed after the blowout of May 18, 1980. This aerial view, taken from the west, was photographed on June 8, 2005.

GROWING  
A MOUNTAIN

Since the renewed activity began in October 2004, Mount St. Helens has been reshaping itself with oozing lava. Volcano data taken during spring 2005:

Height added to lava dome:  
150 meters

Total height of dome:  
2,300 meters

Total volume of dome:  
45 million cubic meters

Lava extrusion per second:  
2 cubic meters

Fatalities from 1980 eruption:  
57 humans  
7,000 big-game animals  
12 million hatchery salmon

Human fatalities from  
2004–2005 eruption: 0

Volcano Cam:  
[www.fs.fed.us/gpnf/volcanocams/msh/](http://www.fs.fed.us/gpnf/volcanocams/msh/)

conformation of the mountain, there is little space for magma to collect. So once the magma established a path to the surface, the volcanic activity decreased and the “toothpaste” began to ooze out. As the lava continues extruding, it is forming a long, narrow, spinelike dome in the volcano’s crater.

Known to scientists as the whaleback because of its distinct appearance, the new lava dome is 1,400 feet above the crater floor with a volume of 45 million cubic meters (as of the last measurement in March), enough to fill about 200 oil supertankers. Erupting lava is currently adding to the dome’s volume at a rate of two cubic meters per second—slow enough for gases to escape and rocks to settle without exploding.

William E. Scott, a volcanologist at the Cascades observatory, says that the exiting lava could continue for years but that “a repeat of May 18 [1980] events is essentially impossible because the volcano is radically different.” He adds: “The concern is about the type of eruption, not whether or not there is an eruption.”

In 1980 the catastrophic eruption changed the shape of the mountain quickly. A magnitude 5.1 earthquake preceded the largest landslide in recorded history when the entire northern side of the mountain slid away. This collapse depressurized a giant,

building bubble of magma that exploded up and out, killing everything in its path. Today the eruption is seeping instead of exploding, but it could change the contours of the mountain over time, as the lava slowly squeezes out to form the new dome. “The mountain is just rebuilding itself,” Eichelberger says.

Eichelberger has studied Bezymianny volcano in Kamchatka, Russia, and says that Mount St. Helens is acting the same way. Bezymianny erupted in 1956, blowing out its side and leaving a Helens-like crater. Fifty years of lava-dome growth and intermittent eruptions have mostly filled Bezymianny’s crater and reconstructed the mountain to a pre-1956 configuration.

Scientists are not sure yet if Mount St. Helens is rebuilding itself Bezymianny-style. “Dome-growth episodes come in all sizes and durations,” Scott says. “It’s impossible to tell if the current eruption will continue.” Right now Mount St. Helens has no place to store a 1980-like bubble of magma—that is, unless some mountain reconstruction occurs, enabling the volcano to make room for one. That will be the time to start worrying.

*Krista West watched the 1980 eruption of Mount St. Helens from her backyard swing set, safely out of the blast zone.*

ORIGINS

## Footprints to Fill

FLAT FEET AND DOUBTS ABOUT MAKERS OF THE LAETOLI TRACKS BY KATE WONG

**I**t is one of the most evocative traces of humanity’s ancestors ever found, a trail of footprints pressed into new fallen volcanic ash some 3.6 million years ago in what is now Laetoli, Tanzania. Discovered in 1978 by a team headed by Mary Leakey, the Laetoli footprints led to the stunning revelation that humans walked upright well before they made stone tools or evolved large brains. They also engendered controversy: scientists have debated everything from how many in-

dividuals made the prints to how best to protect them for posterity. Experts have generally come to agree, however, that the tracks probably belong to members of the species *Australopithecus afarensis*, the hominid most famously represented by the Lucy fossil. Now new research is calling even that conclusion into question.

The case for *A. afarensis* as the Laetoli trailblazer hinges on the fact that fossils of the species are known from the site and that the only available reconstruction of what this hominid’s foot looked like is compatible with the morphology evident in the footprints. But in a presentation given at the American Association of Physical Anthro-

**FANCY FOOTWORK:** *Australopithecus afarensis* was thought to have made the 3.6-million-year-old Laetoli footprints. But its foot may have been too flat to have permitted the striding gait evident in the trackway.

