

# Volcanic Disasters and How to Survive Them

By Kevin Scott

In the cities and towns along the Cowlitz River, which drains Mount St. Helens above its confluence with the Columbia, most people were sleeping late on Sunday, May 18, 1980. Although the volcano was increasingly restless, there was no reason for any downstream alert or evacuation plan beyond the existing hazard zones.

Suddenly, the north flank of St. Helens failed as three successive volcanic blocks flowed down the North Fork of the Toutle River as a debris avalanche. Inside the north flank, a hidden, expanding mass of magma was suddenly exposed, causing it to instantly depressurize as the flank collapsed. It exploded northward, blasting through the sliding avalanche as a huge, ground-hugging pyroclastic density current. Awesome in its violence, it boiled northward at about 300 miles per hour, instantly flattening old-growth forests as if, as one survivor said, “they were instantly slapped down by a giant hand.”

In a 50-year career with the U.S. Geological Survey (USGS), I have studied many volcanic disasters around the Pacific Rim of Fire, as well as at Mount Vesuvius and Campi Flegrei in Italy. I’ve also recognized ways that future lives can be saved in the 21st century — certainly in the hundreds, and perhaps in the tens of thousands — but only if people heed what we now know.

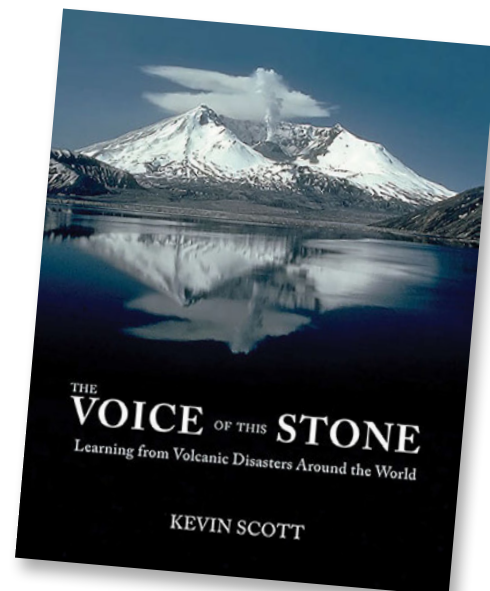
My book’s title, *The Voice of This Stone*, is borrowed from an ancient “billboard” in Italy, a warning sign erected in 1632 by the Spanish viceroy after a large eruption of Mount Vesuvius the previous year.

Installed at the base of the volcano, the sign’s chilling words are as urgent today as they were then: “Descendants, descendants, listen to the voice of this stone. When the volcano rumbles, growls, shakes, do not delay, leave your possessions and run away without delay.”

In defining volcanic risk, it is important to know how a volcano has behaved throughout its history. We do that with field geology, reading the layers and deposits of past eruptions and collapses. But we know this history for only about 10 percent of the world’s roughly 1,500 active volcanoes. For that 10 percent, can we generalize how to warn those living on or near them and save lives and property? Strangely and curiously, no.

Volcanoes have very different personalities, even those that are adjacent like Mount St. Helens and Mount Rainier. And each has its own story to tell. We ignore those stories, both oral and written, at our peril. For those who live near active volcanoes, education, early and often, is essential.

Another way to stay alive: immediate and patient responsiveness to calls for evacuation. In anticipation of an eruption, calls for evacuation tend to arrive too late. As volcanic activity can wax and wane, officials fear looking foolish if there is no eruption or collapse, so they choose to err on the side of being too early. Then if activity quiets, residents can grow mistrustful or angry and demand to return home, even though the danger is still high. Experts refer to this as the “false-alarm problem”



and ask, “What do you cry when there may be a wolf?”

The worst-case scenario is an eruption that occurs with no warning. That possibility illustrates the need for an event-warning system. At Mount Rainier, the USGS has installed acoustic flow monitors at the base of the volcano linked to downstream sirens that can provide about 30 minutes of advance warning. That could make the difference in getting to high ground for those living in the pathway of volcanic debris flows.

My work, and that of my esteemed colleagues, involves reconstructing volcano behavior over millennia. In turn, that lets us plan for the most probable future behavior. But study alone is worthless unless we reach our target audience: those who live in zones of great volcanic danger. My greatest hope is that through my life’s work and publication of this new book, many thousands of lives will be spared.

**Join Kevin Scott at 7 p.m., Tuesday, June 11, for an illustrated talk based on his new book. The event is free. Register at theMAC.com. WH0611**