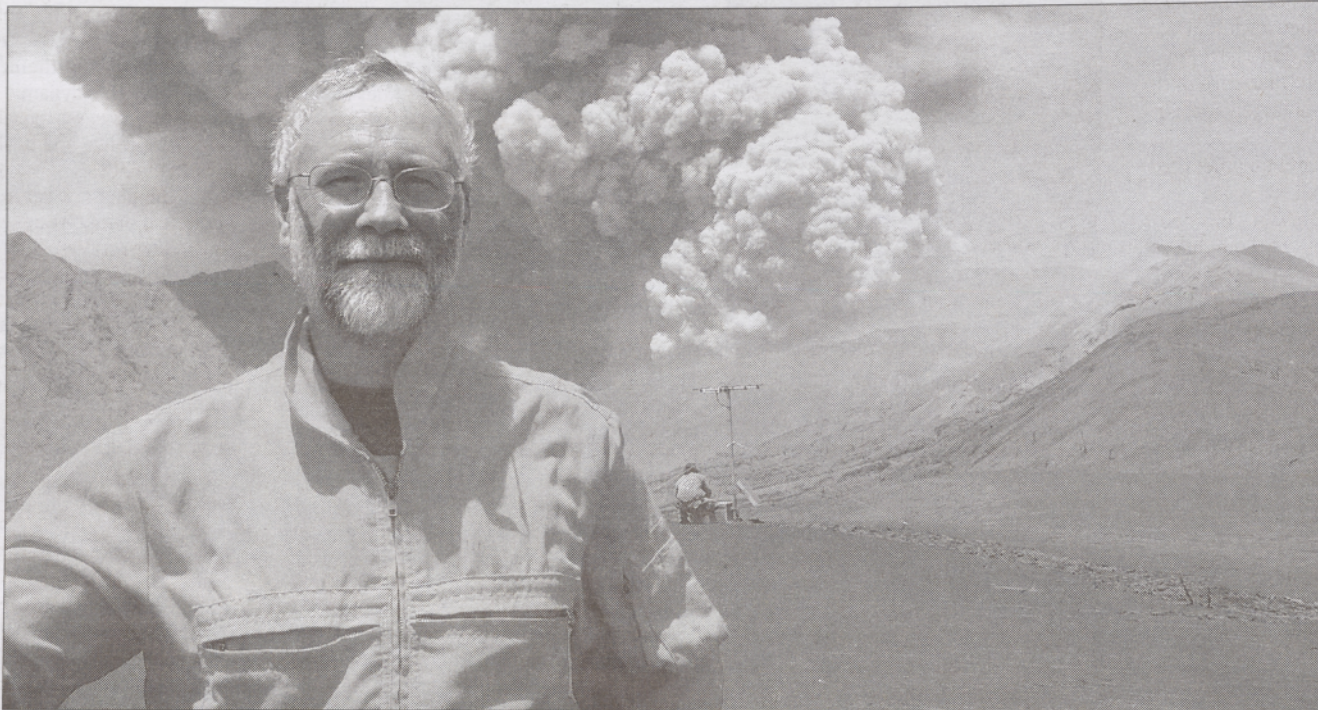


Fretting 'the big one'?

Generally, Portlanders need not fear an eruption, geophysicist explains; unlike earthquakes, volcanoes 'broadcast their intentions'



Andy Lockhart stands in front of Anatahan Volcano in the Mariana Islands in 2005. Lockhart, who works with the Volcano Disaster Assistance Program, has worked on about 60 volcanoes in 13 countries, including the U.S.

PHOTO COURTESY OF ANDY LOCKHART

BY SUE ZALOKAR
STAFF WRITER

Working with the U.S. Geological Survey might be the best work on the planet, says Andy Lockhart, a geophysicist who specializes in volcano monitoring, instrumentation and crisis response. The work is useful and exciting, he says, and there's a lot of travel and interesting people.

That travel has involved 13 countries, where Lockhart has worked on about 60 volcanoes. He has been at the Cascades Volcano Observatory since 1986, but he mostly works overseas with the Volcano Disaster Assistance Program, a joint effort of USAID's Office of Foreign Disaster Assistance and the USGS. They work in developing countries to mitigate the effects of volcanic eruptions.

Sue Zalokar: *Your work sounds pretty exciting. By exciting, I mean in a way that also causes some universal anxiety in terms of thinking about "the big one," whether it's Mount Rainier erupting or the Cascadia subduction zone shifting and releasing enormous amounts of pressure.*

Andy Lockhart: It should cause concern. Some people should be anxious about it. Those would be people who are in charge or have authority (in the community) to make changes in infrastructure.

For the (average person), concern is the right level of involvement to have with an earthquake.

With a volcano, it's a much lesser problem. There, the reach of a volcanic eruption is pretty well known and limited. For example, those of us in Portland, Vancouver — we really have got nothing to worry about (in terms of a volcano). We're good. I don't lose any sleep at all over these volcanoes.

Now, if you live up in the Puyallup River

Valley, that's a whole different thing. And if you live up on Government Camp, then it's a long-term hazard, but not the same kind of thing as an earthquake where you sort of wait for it, wait for it, wait for it, and then here it is. With a volcano, in addition to having a limited geographic scope, they kind of broadcast their intentions. That's the big difference.

So the hazards of a volcano here in the Cascades, these are explosive volcanoes, like St. Helens. They're not the droolers like in Hawaii. We sometimes get lava flow like in Hawaii, but the more common thing is that they'll blow up, they will build a dome, like St. Helens did in 2004, 2006. They'll blow some ash around, and then occasionally, they will collapse like St. Helens did in 1980.

The hazard that we really look for in the Cascades, more than anything, unless you are very close — like within a couple of kilometers, say a mile or so — is a lahar, the mudflow and debris flow that comes down the rivers from these volcanoes, like in 1980, what came down the Toutle River.

Those things can extend for many tens of miles, all the way to the ocean. Like the Toutle River in 1980. Or in the case of Rainier, all the way down into Commencement Bay near Tacoma.

Those are areas where a lot of people live. Lahars have happened before; they'll happen again.

That is the main hazard in the Cascades that we worry about.

There is also the hazard of ash being blown up. Ash is basically little shards of glass and sand-like particles. People who were around in 1980 will know what that is all about. That stuff tends to blow downwind.

Downwind here is usually to the east. Once in a while, the wind will circle around, and if there is an eruption going on, it'll broadcast ash around. The level we see here in the Portland area sort of falls into the "nuisance" category.

As far as a hazard goes, if you or somebody already has a serious respiratory problem, then it could be bad. Like being in a bad dust storm. But it's not a serious hazard the way the lahars are. Lahars are limited to the river valley, so for example, around Mount Hood, down the Sandy River.

When the Lewis and Clark expedition came down the Columbia in their log canoes, they grounded on the sandbar coming out of the Sandy River, and that was from volcanic lahar deposits from an eruption that had happened a couple of years before. We have pretty abundant data that it happened in the Sandy — a deep, canyoned river. There are people who live along the bank, but it's not a big, broad, flat river like the Puyallup or where people live all along the banks there.

S.Z.: *Tell me about the work that you do with the volcano assistance program.*

A.L.: The U.S. Geological Survey has observatories in the United States. There's this one in the Cascades (in Vancouver, Wash.), there's one in Alaska, there's one in Hawaii, there is one for Northern California, and then there's one for Yellowstone. Here, in the Cascade Volcano Observatory, we have the responsibility for looking over the volcanoes in Oregon, Washington and Idaho.

We also have the Volcano Disaster Assistance Program. That's the program that I work on. There are quite a few of us,

10 or so, that do this international work. We work for the USGS, but our expenses overseas and part of our salaries are paid by the Office of Foreign Disaster Assistance, which is under AID. Which of course is foreign aid. So the Office of Foreign Disaster Assistance, their job is like when there is a hurricane or a typhoon or an earthquake or there has been a disaster, these are the people who go in with the water supplies and shelter and food and with water purification to save lives.

The idea came about in 1985. There was a very small eruption at a volcano in Colombia called Nevado del Ruiz. It was a fairly small eruption, but it generated a lahar that came down through a town a few hours after the eruption and killed about 25,000 people. Everyone instantly saw that this had been a terrible lack of communication and lack of awareness. It was something that could easily have been avoided. The U.S. went down there and spent a lot of money on the rescue.

They realized two things. One, it could have been avoided by people getting down there and doing work ahead of time. That would have avoided a lot of deaths. If you're a cold-hearted, it would have saved the U.S. a lot of money. No matter how you looked at it, it seemed it would be a better idea to try to get ahead of some of these things than to respond to them.

Volcanoes, because they kind of broadcast their intentions, they give you the opportunity to get ahead of it and prepare populations and maybe get people out of the way so that the results aren't as tragic.

That has been the motivation for the work that we have been doing since, well, 1986. We started out working solely in Latin America and then since have sort of broadened our skills. Now we're planetwide. We only work in countries that would qualify for foreign aid. We don't do crisis response

See LOCKHART, page 11