



HOW VOLCANOLOGISTS PREDICTED KILAUEA'S EXPLOSIVE ERUPTION



Photo: Mario Tama/Getty

AT 4:15 AM on Thursday, May 17th, the slow, oozy eruption of the [Kilauea volcano](#) on the Big Island of Hawaii went boom. Up until then, magma had been moving into what's called the lower East Rift Zone of the volcano, about 20 miles from the summit, opening 20 new fissures and spilling lava into forests and neighborhoods. But magma moving to-

ward one place is moving away from somewhere else; the lava lake in the summit was sinking. It finally got below the water table in the wee hours. Molten rock plus water equals steam—quite a lot of steam, actually. Enough to blast a cloud of ash and vapor 30,000 feet into the sky over the island chain.

Volcanologists who watch Kilauea haven't seen a boom like that since 1924, but that doesn't mean they were surprised. Kilauea and its sibling volcanoes, sitting atop a "hot spot" in Earth's crust, are where volcano observations started, and they're literally a textbook case of how close observation with high-tech sensors can teach scientists to forecast disaster, and by forecasting it, avert the effects.

"Part of the reason we have this opportunity to make good forecasts at Kilauea is that the volcano is extremely well-monitored," says Mike Poland, a USGS geophysicist and scientist in charge at Yellowstone Volcano Observatory. (Poland also spent 10 years at the Hawaiian Volcano Observatory.) "It's been a testing ground for monitoring equipment, and not only are new techniques developed there, but the network of equipment has been expanding for decades."

The scientists at HVO have been very on point for this ongoing, slow-boil eruption. As the geoscientist Erik Klemetti wrote in his blog Discover, "Months ago the HVO scientists predicted vents opening in the East Rift zone, farther away from the summit than they usually appear, based on inflation under an area called Pu'u O'o. They predicted accurately, that the development Leilani Estates was in danger, and Tuesday night USGS classified Kilauea as a code-red eruption risk."

A network of seismometers, Global Positioning System receivers sensitive to within millimeters in three dimensions, tiltmeters embedded in boreholes, gas sensors, and satellites made those predictions possible—not to mention the volcanologists' accumulated knowledge of history and direct observation. "The kind of activity that is occurring now is very similar to the activity that occurred during a two-week period in May of 1924, and we think, involves a steam-driven explosion from the Kilauea Halemaumau crater," said Steve Brantley, deputy scientist-in-charge at the HVO. That behavior, he said, distinguished what's happening now from, say, Kilauea's massive 1790 eruption, which killed dozens, perhaps hundreds.

Those similarities to the 1924 blow-out tell HVO scientists what to watch for now. With all that in mind, HVO scientists are now warning that the next phase of eruptions could send very large boulders as far as a mile from the crater, and marble-to-pea-sized rocks up to four miles away. A GPS receiver in the East Rift zone moved six inches in 24 hours; that tells them to expect more vents opening there. "One thing that we would really be looking for is continued subsidence of the whole summit crater area," Brantley

said. "So far the summit crater area has subsided almost a meter, and we're tracking that with tiltmeters and our GPS receivers."

It's good news for other well-instrumented, keenly observed volcanoes, too—like Mt. Etna in Italy, or the volcanic system under Yellowstone National Park, even though it hasn't erupted in 70,000 years. "Volcanoes are like people. They have fingerprints. They have personalities," Poland says. "Some volcanoes or volcanic systems have earthquake activity, ground deformation. They're dynamic. Others will be quiet for a long time." But some systems, like the volcanoes of the Cascades (other than Mount St. Helens) are much less instrumented and observed less closely—because they pose less risk to people and infrastructure. The weird irony in all this is that the biggest reason scientists understand Kilauea is that it keeps erupting. "You can have a volcano that's super well-monitored, but if nothing's happening you're not getting the opportunity to understand how it works," Deligne says. It's always the quiet ones, you know?

Source: *Wired* *****

DRIVER SHORTAGE AFFECTING US TRUCKING INDUSTRY

According to a report from the [American Trucking Associations](#) (ATA), the trucking industry—responsible for transporting more than 70 percent of goods consumed in the US—faces a serious shortage of drivers, with a need to hire nearly 900,000 new operators over the next decade just to maintain the current workforce. In addition to the sheer lack of drivers, says the American Trucking Associations (ATA), fleets are suffering from a dwindling supply of qualified new drivers, compounding the industry's difficulties.

"Part of the problem is generational," says John Kearney, CEO of Advanced Training Systems, a leading designer and manufacturer of virtual simulators. "Figures from the American Transportation Research Institute show that one in four of today's drivers are 55 years of age or older. The industry needs to recruit younger drivers, and doing that will require the kind of high-tech, high-quality training that younger candidates expect."

The stakes are high—not just for the trucking industry, but for the economy as a whole—in the race to find and qualify new drivers. Retailers and manufacturers grappling with an unusually tight trucking market are paying the steepest prices in years to keep their goods moving. By early January, just one truck was available for every 12 loads needing to be shipped, the most unbalanced market since October 2005, just after Hurricane Katrina.

According to online freight marketplace DAT Solutions LLC, the cost to hire the most common type of big rig had shot up to \$2.11 per mile, including a fuel surcharge, a 3.5-year high.

Source: *Global Trade*
<http://www.globaltrademag.com/global-logistics/driver-shortage-affecting-us-trucking-industry>

INTERLINK
 P.O. Box 610246
 DFW Airport, TX 75261-0246
 Email: candy@interlink-ntx.org
 Website: www.interlink-ntx.org

