

Explosion That Formed Death Valley Crater Could Happen Again

Study: Massive eruption was more recent than previously thought

John Upton, Bay Citizen, 1-26-12

The cataclysmic explosion that carved Ubehebe Crater into the Southern Californian desert was caused during medieval times when rising magma reached an underground water table, according to geologists who concluded that similar blasts could still be possible.

The spectacular half-mile-wide crater in Death Valley National Park, some 300 miles southeast of San Francisco, was long thought to be as much as 20,000 years old, dating back to a wetter age when a large lake was present nearby.

But the new research, published this month in *Geophysical Research Letters*, puts the crater's age at as few as 800 years and suggests that similar violent desert explosions could still be waiting to happen in today's drier climate.

Despite that possibility, scientists and federal parks officials say the surrounding volcanic field poses no immediate danger.

The crater was formed by a phreatomagmatic eruption — a steamy blast that occurs when rising magma strikes a body of water that is on or near the earth's surface. Such eruptions throw mushroom-shaped clouds of rubble, steam, volcanic ash, soil and poisonous gases into the air.

“There is no evidence that Ubehebe is about to erupt,” said Nicholas Christie-Blick, a geology professor at Columbia University and one of the paper's authors. “However, given that the last eruption was only 800 years ago, there's also no basis for assuming that all of the available magma has been used up.”

The last volcanic lava eruption in Death Valley is estimated to have occurred 400,000 years ago.

The researchers used a beryllium-dating technique on surrounding rocks to determine that the eruption that created Ubehebe Crater likely occurred between 800 and 2,000 years ago.

Another such phreatomagmatic eruption in the valley could be deadly, but most of California would be unaffected, Christie-Blick said.

“You wouldn't want to be in its path, but you could watch safely from a distance as long as you stick to topographic highs,” Christie-Blick said. “You're safe in the Bay Area.”

The area where Death Valley formed was a vast ocean for hundreds of millions of years. Badwater Basin in Death Valley is the lowest point in North America, at 212 feet below sea level.

Brent Goehring, a postdoctoral researcher at Purdue University and co-author of the paper, said a surprising abundance of groundwater was discovered around the crater that could help trigger another blast. But, he said, swarms of small earthquakes would likely occur first, providing a warning system.

“When magma starts to move, it creates small earthquakes that can be detected,” Goehring said.

The National Park Service welcomed the new information but said it was not cause for alarm for the nearly 1 million people who visit the Death Valley park each year.

The new research "does bring up a lot of interesting aspects in terms of the age of the crater," said Terry Baldino, chief of education and interpretation at the park. "It just adds to our list of possibilities that we can tell the public in terms of the age of the crater."