



Sulfuric gas rises from the crater on still-active Mount Tambora.

Why do so few people know about the biggest volcanic eruption in history?

BIG BANG

The small island of Sumbawa in the Indian Ocean is home to Mount Tambora, one of the largest volcanoes in the world. In April 1815, Tambora blew its top in the biggest volcanic eruption in recorded history. The blast was monumental—it was heard 2,575 kilometers (1,600 miles) away—and altered Earth's climate the following year.

Strangely enough, little is known about Tambora or its 1815 eruption. Chances are you've heard about the 1980 eruption of Mount St. Helens, in Washington, and the legendary 1883 explosion of Krakatau, in Indonesia. But Tambora—who knew?

Why has this colossal disaster remained hidden in history, and what are scientists learning about it?

BIG SHOT

When Tambora erupted, *lava* (molten rock) flowed down its steep slopes and trillions of pounds of *pyroclastic rock* (ash and debris) shot high into the atmosphere. The eruption clouded the skies and plunged Sumbawa into darkness. The top of the

volcano collapsed, leaving a *caldera*, or crater, nearly 8 kilometers (5 miles) wide.

European explorers heard Tambora's blast from thousands of kilometers away. The renowned British explorer Sir Thomas Raffles (1781–1826) wrote in his extraordinary first-person account that many people mistook the boom of the volcano for the sound of war: “[The noise] was almost universally attributed to distant cannon; so much so, that a detachment of troops were marched from Djocjocarta [a nearby province] in the expectation that a neighboring post was attacked.”

In 2004, Lewis Abrams, a professor of geology at the University of North Carolina, Wilmington, traveled to Tambora to examine the volcano and the remnants of the 1815 eruption up close. He and volcanologist Haraldur Sigurdsson, of the University of Rhode Island, spent days excavating the site, combing it for traces of the lost kingdom of Tambora. Ruled by the British in the 18th and 19th centuries, the kingdom was home to a native population with a culture and



language all its own. “It was sobering,” says Abrams, “bringing to life what happened there, being faced with the reality of it all.”

Residents of the island were *carbonized*—turned to carbon by burning—by the blast, their bodies frozen in position for eternity. Abrams and Sigurdsson uncovered one blackened corpse, the carbonized remains of a woman lying on her back, gripping a knife. They also found old jewelry, pottery, and a home with a bowl of rice still inside. Adams says examining the remains was like viewing “a snapshot out of time.”



Above: Scientists inspect the remains of a house that was carbonized during the 1815 eruption of Mount Tambora. Left: A ceramic bowl that survived the eruption

GLOBAL CATASTROPHE

The Tambora eruption was both a local disaster and an international catastrophe, says Kari Cooper, a volcanologist at the University of California, Davis. The blast destroyed the kingdom, wiping out 11,000 residents on the islands of Sumbawa and Lombok and eliminating both their language and their culture. The larger impact, says Cooper, was on people worldwide, who suddenly faced abrupt climate changes.

The Tambora eruption pumped 360 million tonnes (400 million tons) of sulfur dioxide (SO₂) and other chemical compounds into the atmosphere. Blown around the world, the sulfur gas reflected incoming sunlight, leading to a temporary cooling of the planet. The following year, 1816, became known as the “Year Without a Summer.” “Crops didn't grow, and of those that did, many were poisoned,” says Cooper. “Livestock were poisoned by eating the plants, and so many people didn't have livestock or crops.”

The Tambora disaster struck long before the existence of a global economy like the one we know today. “These were societies that lived hand to mouth,” says Cooper. “If the crops failed, you were in bad shape.” In the subsequent wave of worldwide starvation and disease, hundreds of thousands of people perished.

MISSING INFORMATION

Why do so few people know about the Tambora eruption? Abrams attributes the knowledge gap to an accident of history. Krakatau erupted in 1883, shortly after the invention of the telegraph, which allowed word of the disaster to spread rapidly and become part of common knowledge. Tambora, by contrast, erupted in the early 19th century, before a rapid means of international communication existed.



At the time, says Abrams, “most in America didn't know about the eruption or why it was colder. All they knew was that their crops were dying.”

Today Sumbawa is part of the archipelago nation of Indonesia and home to 1.5 million residents, many of whom live in poverty. While visiting the island, Abrams toured villages of ramshackle houses propped on stilts. Many residents make ends meet by working on the island's coffee plantations. Sumbawa's people would be in great danger, says Abrams, if Tambora blew its stack again.

Could an eruption as disastrous as the one on Tambora strike there—or elsewhere—again? Could we see another Year Without a Summer?

Absolutely, say scientists. Even volcanoes that haven't erupted in thousands of years warrant careful monitoring, says Cooper, because “volcanic systems can have lifetimes of tens of thousands of years, up to millions of years.”

“We know more about volcanoes than we used to,” she adds. “But they can still surprise us.” **CS**

