Mount Tambora: The Year Without a Summer

How did a single volcanic eruption cause a global food crisis? After Mount Tambora erupted in 1815, ash and gases spread through the atmosphere and helped trigger the global cooling event known as “The Year Without a Summer.” Discover how this disaster connected climate, agriculture, migration, and human history across the globe.

0:00 *Illustration featuring a person in traditional Japanese clothing walking through a snowy landscape; spinning globe that slowly freezes; blue silhouettes on a beach carrying tools, a boat is docked on the water, in the background is a single green mountain that gets zoomed into.*	In the long, dark winter of 1816, people were already dreaming of summer. But what they didn't know is that, for East Asia, Western Europe, and swaths of North America, this winter wasn't going to end anytime soon. Instead of sunny weather and birdsong, frost gripped the regions well into July. Bad harvests, famine, and epidemics swept the world, threatening livelihoods across the globe. In parts of the world, the year became known as "The Year Without a Summer" or "Eighteen-Hundred and Froze-to-Death." But what caused such a grim forecast? Well, as it turns out, it was a volcano that erupted a whole year earlier, on the other side of the world. The morning of April 5th, 1815, started out like any other on the northern coast of Sumbawa Island in what's now Indonesia. But as the day wore on, the ground began to shake. Then suddenly, it was like the Earth exploded.
1:02 *Map of Indonesia featuring several islands, Sumbawa Island and Mount Tambora are circled in glowing yellow; fiery volcano erupting yellow sparks, rocks, and lava onto nearby and distant grounds and water; silhouetted figures standing among palm trees and thatched-roof huts watching an erupting volcano as they disappear.*	See, in the northern part of Sumbawa Island there was a mountain by the name of Mount Tambora. And Mount Tambora wasn't just any old mountain– it was a volcano, and its eruption that day was the biggest ever recorded. Shooting literal tons of ash, rock, and aerosol gases over kilometers into the outer reaches of Earth's stratosphere– 3 to 4 times higher than airplanes fly. The eruption on April 5th was followed by an even larger eruption five days later. Molten lava shot into the sky. Ash rained down for weeks, covering the entire region in grey dust, collapsing buildings as far as hundreds of miles away with its sheer weight. Rivers of lava ran down the broken slopes of the volcano and into the sea, triggering a tsunami four meters high. There was nowhere for the people of Sumbawa to run. By the time Tambora quieted, in August of that year, at least 10,000 people had died.
2:08 *Spinning globe that slowly becomes a fiery red; faces of cherubs peek out from the clouds as spheres and geometric shapes bind and float in the air as the average global temperature rapidly declines; blue-tinted scene of a blustery day.*	The eruption of Mount Tambora was a terrible tragedy. And things were going to get even worse. Because even though Mount Tambora was rooted in place, its effects traveled across the world, causing chaos for the global climate. See, over the course of the rest of 1815, all those volcanic particles we were talking about mixed with the gases that make up the Earth's atmosphere to form a giant, gassy shield that blocked the Sun's rays. And as less sunlight reached the Earth, so did less heat, and the average global temperature dropped between 0.7 and 1.3 degrees Fahrenheit– and much more than that in certain regions. That may not sound like much to us, but because of how global temperatures affect our weather patterns and climate, it was a pretty huge deal. When temperatures are lower than average, it can cause longer winters, more severe weather, and unpredictable precipitation patterns.
3:11 *Illustration of a massive snowstorm with figures digging out snow in front of shops; illustrations of a European town in winter, a pagoda, rainstorms at the Palace of Westminster, Geneva Switzerland, India, and China; spinning globe.*	And in 1816, the year after Mount Tambora's eruption, that's exactly what happened. From the East Coast of North America to Western Europe to China, people watched in awe and horror as snow fell in June, rivers froze through July, and frost covered the ground in August. In London, storms of freezing rain kept people cooped inside, and in Switzerland, 130 days of rainfall from April to September caused Lake Geneva to flood and flow into the city. Meanwhile, in India, the yearly monsoon rains were disrupted, arriving later than usual and causing immense flooding. And in the Yunnan province in China, people experienced a similar fate. And all of that spelled big trouble for human society.

4:02 *Blue-tinted collage of various historical and scientific illustrations and tools; central globe surrounded by agricultural scenes; text "famine: an extreme scarcity of food"; farmer working on a barren farm, set in a deep red background; homeless individuals under a bridge with the city skyline in view.*	We humans like to think of ourselves as this super advanced species, with our tool use and organized society and whatnot. But really, our entire existence depends on the environment around us. So, when weather patterns and the climate change, it can make it harder for us to get the things we need from the environment to survive. And all of those major weather events in 1816 had major consequences for the crops humans around the world depended on, both to eat and to sell. Some were killed by summer frost, some were killed by floods, and some were killed by drought– all of which led to widespread famine. Thanks to low supply, the price of food in the affected regions skyrocketed. And to make matters worse, without crops to harvest and sell, thousands of agricultural laborers lost their jobs. Homeless, jobless, and hungry, people living in rural areas flocked to cities in search of work and a hot meal. But there were more people seeking work than there were jobs, and desperate, hungry people filled the streets across Europe, China, and the East Coast of North America.
5:15 *Sketch of a large ship docked at a bustling pier set against a purple background; text "immigration: travel into a country for the purpose of permanent residence there"; immigrants on the deck of a ship as it approaches the Statue of Liberty; slave auction; indigenous man watching a scene of people and their flock entering his land.*	These harsh conditions devastated families, communities, and whole nations– and triggered a wave of immigration, as people fled their native countries in search of a better life. In Europe, people left their homes for the Americas in search of a fresh start, far away from the scarcity and neglect back home– many even entering into indentured servitude to pay for the passage. And with the East Coast of the US still feeling some of the climate effects of Mount Tambora's eruption, both immigrants and citizens moved west in search of better farmland, better weather, and a more stable and affordable place to live– leading to this displacement and massacring of indigenous Americans who lived there first.
6:02 *Lush green volcano on a blue sea which becomes deep red and shakes and erupts, historical illustrations move through the background.*	As we study the aftereffects of Mount Tambora's eruption more than two centuries later, we're reminded that human society and the environment remain deeply intertwined, impacting us in ways that aren't always immediately obvious. For all of human history, climate has affected human actions. And in turn, the ways we both respond to and prepare for those effects can have long-lasting impacts on people and society far into the future.