

Chapter 1 : Mount Tambora - Wikipedia

Mount Tambora, or Tomboro, is an active stratovolcano in the northern part of Sumbawa, one of the Lesser Sunda Islands of blog.quintoapp.com is known for its major eruption in

Last updated Jul 8, Share The summer of 1816 has an unusual claim to fame. It is known as The Year Without a Summer. How did it come by this unusual moniker? The answer lies in the events of the previous year. It was the largest volcanic eruption for 1,700 years. It had a significant effect on the global climate causing severe weather abnormalities. It resulted in a decrease in global temperatures by 0.5°C. This may not sound like much but the impact of this was significant. Earth had been in a period of global cooling from the fourteenth century. The spring and summer of 1816 was marked by consistent dry fog across the east coast of America that reddened and dimmed in the sunlight. One result of this was that sunspots were visible to the naked eye. For many this gave it an unusual, perhaps even supernatural quality. It is important to note that the understanding of the eruption has come in recent years with volcanologist and scientists being able to better understand the events of 1816. In line with this, historians have been able to take this new information and apply it to their understanding of the time. For example, riots occurred across France and Great Britain in 1816. The causes are now known to be linked to the eruption. Arson, looting of grain warehouses and political unrest was accompanied by a revival in religious demonstrations. The numbers recorded as attending church and chapel services increased during this period. Switzerland was particularly badly hit by the climatic changes. One example is that an ice dam formed below the tongue of the Gietro Glacier high in the Val de Bagnes in 1816. Eventually the dam collapsed under its own weight in the June of 1816, contributing to flooding in the Swiss capital. Further to this crop failures resulted in famine conditions with the government declaring a national emergency. The flooding was worsened by the unseasonably large storms and rainfall that flooded many major European major rivers. After this came frost in August. The melt resulted in further flooding. Higher elevations suffered the most. Following on from this in New York in May 1816 temperatures were recorded as dipping below freezing most days. On June 9th the ground froze solid and crops failed. Closer to home the cost of bread in Britain almost doubled in the same space of time. Cool temperatures and heavy rains had resulted in failed harvests. Bread shortages led to riots breaking out in East Anglia in May 1816. In the town of Ely labourers armed themselves before marching on the town and taking the magistrate hostage. The bread shortages also fuelled mass demonstrations in many of the larger cities. The army were often used to combat the civil unrest as feelings of discontent and frustration grew. Prison numbers increased as rioters were jailed, as did the number of those executed or sentenced to transportation. However, Britain was better able to deal with the food shortages than much else of Europe due to established trading links with Western America. North and South West Ireland also saw the failure of wheat, oat and potato harvests. Ireland seems to have been particularly vulnerable. There was a major typhus epidemic from 1816-17 in which an estimated 200,000 people died. In Ireland a recorded 80,000 people were infected. Figures vary however it is clear that Ireland was hard hit by the epidemic. High levels of unemployment had followed the demobilisation of the British army following the end of the Napoleonic wars. Many were living in abject poverty with little food available. So how could one volcanic eruption have such a big impact? The eruption of Mount Tambora occurred between 5th and 15th April 1816. To put this into perspective this eruption was over 1,000 times greater than the Iceland eruption that caused mass travel chaos. The sound of the eruption was reportedly heard up to 2,000 miles away. Millions of tonnes of sulphur dioxide, ash and pumice were ejected into the atmosphere. Billions of tonnes of dust, gas, rock and ash scoured the surrounding area before hitting the sea at such velocity that it triggered a tsunami. A 2 metre high wave hit the East Coast of Java. This was 1,000 km away. The wave had enough power to travel for over two hours before it reached land. Further to this, hurricanes of debris incinerated the area 20 km radius of the volcano. The eruption was incredibly devastating. Clive Oppenheimer, a volcanologist with Cambridge University has placed the number of deaths between 60,000 and 120,000. These figures vary however what is sure is that this caused the largest death toll as a direct result of a volcanic eruption in recorded history. The loss of life continued in the months after the eruption as disease, famine and pestilence ravaged the area. A British Statesmen he was best known for his

involvement in the conquest of Java over the Dutch and French military forces during the Napoleonic Wars and his role in the founding of Singapore. Usefully he also wrote a memoir which included details of the eruption and its aftermath. He noted that the eruption lasted for over a week with the major explosions occurring on the 5th and the 10th of April. He is also a vital source of information for the effect the eruption had on the local area. The eruption of Mount Tambora was intensified as the eruption came on the heels of several other volcanic explosions. Examples of this include eruptions in , in the Pacific Ocean, and an eruption on the Caribbean island of Saint Vincent. Added to this was the impact of an eruption in Japan and another eruption in the Philippines. These eruptions contributed to a substantial build-up of atmospheric dust. This resulted in less sunlight passing through the stratosphere leading to a drop in temperature. The decade of to was the coldest in years. In the United States crop failures had a different impact. Migration increased as individuals and families moved away from the food shortages in New England on the east coast and began to settle in the more hospitable areas of West and Central New York and the American Midwest. Grain prices had collapsed which contributed to the first major American economic depression. One side effect of this was that the cost of oats rose from 12c a bushel in to 92c a bushel in . The climatic changes continued into with temperatures in Central and Northern New York recorded as being as low as 0F in the winter and snow falling in the August. This came after months of hard frosts that froze the ground, destroying further crops. In a letter dated 8th September Thomas Jefferson had this to say. The summer, too, has been as cold as a moderate winter. In every State north of this there has been frost in every month of the year; in this State we had none in June and July, but those of August killed much corn over the mountains. The crop of corn through the Atlantic States will probably be less than one-third of an ordinary one, that of tobacco still less, and of mean quality. The crop of wheat was middling in quantity, but excellent in quality. But every species of bread grain taken together will not be sufficient for the subsistence of the inhabitants, and the exportation of flour, already begun by the indebted and the improvident, to whatsoever degree it may be carried, will be exactly so much taken from the mouths of our own citizens. My anxieties on this subject are the greater, because I remember the deaths which the drought of in Virginia produced from the want of food. They lived in Norwich, Vermont, from to . Due to the bad harvests they were one of the families that moved west, in their case to Palmyra in New York. The population of Vermont decreased from 15, to 10, at this time. In Joseph Smith Jr was 10 years old. The family moved to an area known for its intense religious revivalism. This Protestant religious revivalism resulted in membership of Baptist and Methodist congregations rising rapidly. Rejecting rationalism, it placed emphasise on emotion and the supernatural. Shortly after their arrival Joseph Smith Jr began to experience a series of visions. These were intense spiritual events that had a profound effect on him. In one of his visions an angel directed him to a buried book of golden plates inscribed with a Judeo - Christian history of an ancient American civilisation. Over time he wrote down all he learned and in published an English translation of the plates. It is fascinating the think how a volcanic eruption in Indonesia could influence religious beliefs in America. John Murray, cited by Oppenheimer

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The eruption of Mount Tambora was one of the most powerful in recorded history, with a Volcanic Explosivity Index (VEI) of 7. It is the most recently known VEI-7 event and the only unambiguously confirmed VEI-7 eruption since the Lake Taupo eruption in about AD.

Contact Privacy Cookie Policy Terms of Use The eruption of Mount Tambora killed thousands, plunged much of the world into a frightful chill and offers lessons for today. More than 13, feet high, Tambora blew up in and blasted 12 cubic miles of gases, dust and rock into the atmosphere and onto the island of Sumbawa and the surrounding area. The ground shook, sending tsunamis racing across the JavaSea. They have studied how debris from the volcano shrouded and chilled parts of the planet for many months, contributing to crop failure and famine in North America and epidemics in Europe. The eruption of Tambora was ten times more powerful than that of Krakatau, which is miles away. But Krakatau is more widely known, partly because it erupted in , after the invention of the telegraph, which spread the news quickly. Word of Tambora traveled no faster than a sailing ship, limiting its notoriety. In my 40 years of geological work I had never heard of Tambora until a couple of years ago when I started researching a book on enormous natural disasters. So when the chance arose to visit the volcano while on a trip last fall to Bali and other Spice Islands, I took it. But researchers who have studied the volcano encouraged me. That was all I needed to hear. The parched terrain was like savanna, covered with tall grasses and only a few trees. A few hours west of Bima, the huge bulk of Tambora begins to dominate the horizon. We camped a third of the way up the mountain, and set out at dawn for the summit, wending around boulders the size of small cars that were tossed like pebbles from the erupting volcano nearly two centuries ago. Our guide, Rahim, chose a trail that switched back and forth for about four miles. The day was warm and humid, the temperature in the 70s. Grasses in places were charred black, burned by hunters in pursuit of deer. I was excited to approach the site of one of the most important geological events since human beings first walked the planet. Yet as I looked up at the mountain, I realized I had another purpose in mind. The climb was a chance to reassure myself that after treatment for two kinds of cancer in the past decade, I could still master such a challenge. For me, then, it was a test. For the two porters, striding along in flip-flops, it was a pleasant stroll in the country. In repose for thousands of years, the volcano began rumbling in early April of Soldiers hundreds of miles away on Java, thinking they heard cannon fire, went looking for a battle. Fire-generated winds uprooted trees. Pyroclastic flows, or incandescent ash, poured down the slopes at more than miles an hour, destroying everything in their paths and boiling and hissing into the sea 25 miles away. Huge floating rafts of pumice trapped ships at harbor. Throughout the region, ash rained down for weeks. Houses hundreds of miles from the mountain collapsed under the debris. Sources of fresh water, always scarce, became contaminated. Crops and forests died. All told, it was the deadliest eruption in history, killing an estimated 90, people on Sumbawa and neighboring Lombok, most of them by starvation. Great quantities of sulfurous gas from the volcano mixed with water vapor in the air. Propelled by stratospheric winds, a haze of sulfuric acid aerosol, ash and dust circled the earth and blocked sunlight. In China and Tibet, unseasonably cold weather killed trees, rice, and even water buffalo. Floods ruined surviving crops. Failing crops and rising prices in and threatened American farmers. Odd as it may seem, the settling of the American heartland was apparently shaped by the eruption of a volcano 10, miles away. Thousands left New England for what they hoped would be a more hospitable climate west of the Ohio River. Partly as a result of such migration, Indiana became a state in and Illinois in They cite historian L. Stillwell, who estimated that twice the usual number of people left Vermont in and a loss of some 10, to 15, people, erasing seven years of growth in the Green Mountain State. In Europe and Great Britain, far more than the usual amount of rain fell in the summer of It rained nonstop in Ireland for eight weeks. The potato crop failed. The widespread failure of corn and wheat crops in Europe and Great Britain led to what historian John D. Typhus broke out in Ireland late in , killing thousands, and over the next couple of years spread through the British Isles. Researchers today are careful not to blame every misery of those years on the Tambora eruption, because by a cooling trend was already under way. World Climate in In Switzerland, the damp and dark year of stimulated Gothic imaginings that still

entertain us. Vacationing near Lake Geneva that summer, Lord Byron, Percy Bysshe Shelley and his soon-to-be wife, Mary Wollstonecraft, and some friends sat out a June storm reading a collection of German ghost stories. After several hours of hard, slow climbing, during which I stopped frequently to drink water and catch my breath, we reached the precipice that is the southern rim of Tambora. Clouds on the far side of the great crater formed and reformed in the light breeze. A solitary raptor sailed the currents and updrafts. Three thousand feet deep and more than three miles across, the crater was as barren as it was vast, with not a single blade of grass in its bowl. Enormous piles of rubble, or scree, lay at the base of the steep crater walls. The floor was brown, flat and dry, with no trace of the lake that is said to collect there sometimes. Occasional whiffs of sulfurous gases warned us that Tambora is still active. We lingered at the rim for a couple of hours, talking quietly and shaking our heads at the immensity before us. When it was time to go, Rahim, knowing that I would probably never return, suggested I say good-bye to Tambora, and I did. He stood at the rim, whispering a prayer to the spirits of the mountain upon whose flanks he has lived most of his life. Then we made our descent. The material that it ejected into the atmosphere perturbed climate, destroyed crops, spurred disease, made some people go hungry and others migrate. Tambora also opened my eyes to the idea that what human beings put into the atmosphere may have profound impacts. Interestingly, scientists who study global climate trends use Tambora as a benchmark, identifying the period to in ice cores from Greenland and Antarctica by their unusually high sulfur contentâ€”signature of a great upheaval long ago and a world away.

Chapter 3 : eruption of Mount Tambora - Wikipedia

Mount Tambora, also called Mount Tamboro, Indonesian Gunung Tambora, volcanic mountain on the northern coast of Sumbawa island, Indonesia, that in April exploded in the largest volcanic eruption in recorded history. It is now 2, metres (9, feet) high, having lost much of its top in the eruption.

Tambora is known for its major eruption in 1815. It was formed due to the active subduction zones beneath it, and before the eruption of 1815, it was more than 4,169 metres (13,678 feet) high, making it then one of the tallest peaks in the Indonesian archipelago. The large magma chamber under Tambora had been drained by pre eruptions and underwent several centuries of dormancy as it refilled. Volcanic activity reached a peak that year, culminating in the eruption. With a Volcanic Explosivity Index of 7, the eruption was the most devastating in recorded history. The explosion was heard on Sumatra island, more than 2,000 kilometres (1,243 miles) away. Although estimates vary, the death toll was at least 71,000 people. The eruption caused global climate anomalies in the following years, while 1816 became known as the "year without a summer" due to the impact on North American and European weather. In the Northern Hemisphere, crops failed and livestock died, resulting in the worst famine of the century. During an excavation, archaeologists discovered the remains of a house destroyed and buried by the eruption. The site has remained intact beneath three metres of pyroclastic deposits and provides insight into the culture that vanished. Today, Mount Tambora is closely monitored for volcanic activity; a powerful eruption would affect millions of Indonesians. The mountain is administered by the Bima Regency in the northeast and by the Dompu Regency in the west and south. Geographical setting Mount Tambora and its surroundings as seen from space Mount Tambora, also known as Tomboro,[3] is situated in the northern part of Sumbawa island, part of the Lesser Sunda Islands. It is a segment of the Sunda Arc, a string of volcanic islands that make up the southern chain of the Indonesian archipelago. The mountain also attracts tourists for hiking and wildlife activities,[8] though in small numbers. There are three concentrations of villages around the mountain slope. At the east is Sanggar village, to the northwest are Doro Peti and Pesanggrahan villages, and to the west is Calabai village. The second route starts from Pancasila village at the northwest of the mountain and is only accessible on foot. The trail leads through dense jungle with wildlife as *Elaeocarpus batudulangii*, Asian water monitor, reticulated python, hawks, orange-footed scrubfowl, pale-shouldered cicadabird *Coracina dohertyi*, brown and scaly-crowned honeyeater, yellow-crested cockatoo, yellow-ringed white-eye, helmeted friarbird, wild boar, Javan rusa and crab-eating macaques. Sumbawa Island is flanked to the north and south by oceanic crust. The latter estimate published in 1991 is based on argon dating of the first pre-caldera lava flows. The Mojo islet was formed as part of this geological process in which Saleh Bay first appeared as a sea basin about 25,000 years BP. The volcanics contain phenocrysts of apatite, biotite, clinopyroxene, leucite, magnetite, olivine and plagioclase, with the exact composition of the phenocrysts varying between different rock types. Within the upper section, the lava is interbedded with scoria, tuffs, pyroclastic flows and pyroclastic falls. This eruption had a long-term effect on global climate. Volcanic activity ceased on 15 July 1817. This eruption created the Doro Api Toi parasitic cone inside the caldera. However, it was a gentle eruption with a VEI of 0, which means it was non-explosive. Hot pyroclastic flows cascaded from the mountain to the sea on all sides of the peninsula, wiping out the village of Tambora. Loud explosions were heard until the next evening, 11 April. The veil of ash spread as far as West Java and South Sulawesi, while a "nitrous odor" was noticeable in Batavia. The heavy tephra-tinged rain did not finally recede until 17 April. Explosions ceased on 15 July, although smoke emissions were still observed as late as 23 August. Flames and rumbling aftershocks were reported in August, four years after the event. On my trip towards the western part of the island, I passed through nearly the whole of Dompo and a considerable part of Bima. The extreme misery to which the inhabitants have been reduced is shocking to behold. There were still on the road side the remains of several corpses, and the marks of where many others had been interred: It is supposed by the natives to have been caused by drinking water which has been impregnated with ashes; and horses have also died, in great numbers, from a similar complaint. A tsunami causing waves of 1 to 2 metres (3 to 6 feet) high. Between 28 June and 2 July and 3 September and 7 October, prolonged and brilliantly coloured sunsets and

twilights were frequently seen in London, England. Most commonly, pink or purple colours appeared above the horizon at twilight and orange or red near the horizon. Swiss botanist Heinrich Zollinger traveled to Sumbawa in and recollects witness accounts about the eruption of Tambora. In , he published estimates of directly killed people at 10,, mostly from pyroclastic flows. A further 37, were numbered having died from starvation on Sumbawa island. Zollinger, who spent several months on Sumbawa after the eruption, and the notes of Sir Stamford Raffles ,[30] Governor-General of the Dutch East Indies during the event. Tanguy pointed out that there may have been additional victims on Bali and East Java because of famine and disease, and estimated 11, deaths from direct volcanic action and 49, from post-eruption famine and epidemics.

The island of Sumbawa, home to Mount Tambora, is located in present-day Indonesia. When the island was first discovered by Europeans, the mountain was thought to be an extinct volcano. However, about three years before the eruption, the mountain seemed to come to life.

Sulfate concentration in ice core from Central Greenland, dated by counting oxygen isotope seasonal variations: An unknown eruption occurred around the s. Different methods have estimated the ejected sulphur mass during the eruption: The figures vary depending on the method, ranging from 10 to million tonnes. The fog reddened and dimmed the sunlight, such that sunspots were visible to the naked eye. Neither wind nor rainfall dispersed the "fog". It was identified as a stratospheric sulfate aerosol veil. Average global temperatures decreased by about 0. Canada experienced extreme cold during that summer. The second-coldest year in the Northern Hemisphere since around was , and the s are the coldest decade on record. Cool temperatures and heavy rains resulted in failed harvests in Britain and Ireland. Families in Wales travelled long distances as refugees, begging for food. Famine was prevalent in north and southwest Ireland, following the failure of wheat, oat, and potato harvests. The crisis was severe in Germany, where food prices rose sharply, and demonstrations in front of grain markets and bakeries, followed by riots, arson, and looting, took place in many European cities. It was the worst famine of the 19th century. Most of the water vapor and CO₂ is collected in clouds within a few weeks to months because both are already present in large quantities, so the effects are limited Bodenmann et al. SO₂ can be found higher in the atmosphere and bonds efficiently there with water vapor to form sulfuric acid , which blocks solar radiation exceptionally well. It usually takes months to years for it to acquire enough water vapor to fall back to Earth. Toxic gases also were pumped into the atmosphere, including sulfur that caused lung infections. The food shortages were compounded by the Napoleonic wars, floods, and cholera. The monsoon season in China and India was altered, causing flooding in the Yangtze Valley and forcing thousands of Chinese to flee coastal areas. An ice dam formed in Switzerland during the summers of and , earning the title "Year without a Summer". The length of the growing seasons in parts of Massachusetts and New Hampshire were less than 80 days in , resulting in harvest failures. Oppenheimer Visually unique sunsets were observed in western Europe, and red fog was observed along the eastern coast of the U. These unique atmospheric conditions persisted for the better part of 2. Robock Scientists have used ice cores to monitor atmospheric gases during the cold decade "1816", and the results have been puzzling. The sulfate concentrations found in both Siple Station , Antarctica and central Greenland bounced from 5. Tambora caused the largest shift in sulfur concentrations in ice cores for the past 5, years. Estimates of the sulfur yield vary from 10 teragrams Black et al. Generally, the mornings were warmer because of nightly cloud cover and the evenings were cooler because the clouds had dissipated. There were documented fluctuations of cloud cover for various locations that suggested it was a nightly occurrence and the sun killed them off, much like a fog. In contrast, the volcanically perturbed years "1816" had a change of only around 2. This meant that the mean annual cycle in was more linear than bell shaped and endured cooling across the board. This is again contrasted by the unusually low precipitations in , which caused droughts throughout most of Europe and Asia. There are also documented reductions in ocean temperature near the Baltic Sea, the North Sea, and the Mediterranean Sea. This seems to have been an indicator of shifted oceanic circulation patterns and possibly changed wind direction and speed. They found large ice sheets miles off the coast of Greenland, where two years prior they had been limited to the near-shore waters of eastern Greenland. Contemporary scientists have attributed the "Year Without a Summer" to the drifting polar ice sheets rather than the eruption of Tambora because of their proximity to England. While other eruptions and other climatological events would have led to a global cooling of about 0. Comparison of selected volcanic eruptions Eruptions.

Chapter 5 : All Facts for Kids about Mount Tambora

On April 10, , the Tambora Volcano produced the largest eruption in recorded history. An estimated cubic kilometers (36 cubic miles) of tephraâ€”exploded rock and ashâ€”resulted, with ash from the eruption recognized at least 1, kilometers (miles) away to the northwest.

Geographical setting[edit] Mount Tambora and its surroundings as seen from space Mount Tambora, also known as Tomboro, [3] is situated in the northern part of Sumbawa island, part of the Lesser Sunda Islands. It is a segment of the Sunda Arc , a string of volcanic islands that make up the southern chain of the Indonesian archipelago. The mountain also attracts tourists for hiking and wildlife activities, [8] though in small numbers. There are three concentrations of villages around the mountain slope. At the east is Sanggar village, to the northwest are Doro Peti and Pesanggrahan villages, and to the west is Calabai village. The second route starts from Pancasila village at the northwest of the mountain and is only accessible on foot. The trail leads through dense jungle with wildlife as *Elaeocarpus batudulangii* , Asian water monitor , reticulated python , hawks , orange-footed scrubfowl , pale-shouldered cicadabird *Coracina dohertyi* , brown and scaly-crowned honeyeater , yellow-crested cockatoo , yellow-ringed white-eye , helmeted friarbird , wild boar , Javan rusa and crab-eating macaques. Sumbawa Island is flanked to the north and south by oceanic crust. The latter estimate published in is based on argon dating of the first pre-caldera lava flows. The Mojo islet was formed as part of this geological process in which Saleh Bay first appeared as a sea basin about 25, years BP. The volcanics contain phenocrysts of apatite , biotite , clinopyroxene , leucite , magnetite , olivine and plagioclase , with the exact composition of the phenocrysts varying between different rock types. Within the upper section, the lava is interbedded with scoria, tuffs , pyroclastic flows and pyroclastic falls. This eruption had a long-term effect on global climate. Volcanic activity ceased on 15 July This eruption created the Doro Api Toi parasitic cone inside the caldera. However, it was a gentle eruption with a VEI of 0, which means it was non-explosive. Hot pyroclastic flows cascaded from the mountain to the sea on all sides of the peninsula, wiping out the village of Tambora. Loud explosions were heard until the next evening, 11 April. The veil of ash spread as far as West Java and South Sulawesi , while a "nitrous odor" was noticeable in Batavia. The heavy tephra -tinged rain did not finally recede until 17 April. Explosions ceased on 15 July, although smoke emissions were still observed as late as 23 August. Flames and rumbling aftershocks were reported in August , four years after the event. On my trip towards the western part of the island, I passed through nearly the whole of Dampo and a considerable part of Bima. The extreme misery to which the inhabitants have been reduced is shocking to behold. There were still on the road side the remains of several corpses, and the marks of where many others had been interred: It is supposed by the natives to have been caused by drinking water which has been impregnated with ashes; and horses have also died, in great numbers, from a similar complaint. A tsunami causing waves of 1 to 2 metres 3. Between 28 June and 2 July and 3 September and 7 October , prolonged and brilliantly coloured sunsets and twilights were frequently seen in London, England. Most commonly, pink or purple colours appeared above the horizon at twilight and orange or red near the horizon. Swiss botanist Heinrich Zollinger traveled to Sumbawa in and recollected witness accounts about the eruption of Tambora. In , he published estimates of directly killed people at 10,, mostly from pyroclastic flows. A further 37, were numbered having died from starvation on Sumbawa island. Zollinger, who spent several months on Sumbawa after the eruption, and the notes of Sir Stamford Raffles , [30] Governor-General of the Dutch East Indies during the event. Tanguy pointed out that there may have been additional victims on Bali and East Java because of famine and disease, and estimated 11, deaths from direct volcanic action and 49, from post-eruption famine and epidemics.

Chapter 6 : Mount Tambora: Facts and Information - Primary Facts

Mount Tambora is an active volcano on the island of Sumbawa in blog.quintoapp.com eruption in is the most powerful volcanic eruption in recorded history and is considered one of the greatest natural disasters ever to befall mankind.

Its eruption in is the most powerful volcanic eruption in recorded history and is considered one of the greatest natural disasters ever to befall mankind. Apart from killing tens of thousands of people and plunging South East Asia into darkness, it also had other environmental consequences including what is known as the Year Without A Summer. The lava flowing from a stratovolcano is more viscous as compared to a shield volcano and thus it cools and hardens before spreading wide. Mount Tambora experienced centuries of dormancy but by it had entered a period of high activity. It is estimated that small eruptions occurred for three years before the violent eruption of April Mayon Volcano in Philippines, a stratovolcano, erupted on December 29, 2 The initial eruption of Mount Tambora was thought to be cannon fire km away On the evening of April 5, , a massive explosion occurred at Mount Tambora which was heard as far as 1, km away at Ternate, an island in the Maluku Islands. In Java, which is 1, km from Mount Tambora, British authority mistook the sound for cannon fire. Fearing a neighboring post was under attack, troops were dispatched from Djogjokarta, in central Java, to repel the invaders. Along the coast the officials thought that a ship was under distress and rescue boats were sent. The location of Mount Tambora in Indonesia 3 Mount Tambora eruption wiped out the village of Tambora On 10 April, , Mount Tambora erupted even more violently with three columns of flaming lava rising to a great height and merging together. The village of Tambora, which was near the volcano, was wiped out. Pumice stones of up to 20 cm 7. Large explosions occurred till the evening of April Its density varies and it might float on water. The eruption of Tambora created pumice rafts in the surrounding seas which, like giant icebergs, remained a hazard to ships for many years. Also the eruption created an umbrella of volcanic ash which spread and blanketed South East Asia plunging it into darkness for a week. The estimated volcanic ashfall regions during the Tambora eruption 5 The eruption blew off the top ft of the mountain Mount Tambora was formed by the active subduction zone beneath it. By the eighteenth century it reached a height of around 4, m 14, ft making it one of the tallest peaks in the Indonesian archipelago. However after the eruption it measured only 2, m 9, ft about two thirds of its previous height. The explosion destroyed the top one third of the peak leaving behind a large crater three miles wide and half a mile deep. Aerial view of the crater of Mount Tambora, formed during the colossal eruption 6 With a death toll of more than 71, it is one of the deadliest volcanic eruptions 11,â€”12, people were killed directly by the eruption of Tambora. It led to several Indonesian islands being struck by tsunami waves reaching heights up to 4 m 13 ft , further increasing the death toll. Eruptive fallout ruined agricultural productivity in the local region leading to famine and diseases which were responsible for most of the deaths. The death toll of Mount Tambora eruption varies according to different sources but it is estimated to be at least 71, Table of estimated deaths caused due to some of the major volcanic eruptions 7 Mount Tambora eruption is the most powerful in recorded history The volcanic explosivity index VEI is used to measure the explosiveness of volcanic eruptions. Mount Tambora eruption is the most powerful volcanic eruption in recorded history with an estimated cubic kilometres of tephra ejected and a 45 meter tall eruption column. Volcanic Explosivity Index volume graph 8 It led to drop in global temperatures Cover of a book on Mount Tambora eruption and the Year Without a Summer Mixed with the material that flowed out of Mount Tambora were millions of tonnes of sulfur dioxide. A large portion of this rose up into the stratosphere and spread around the equator and towards the poles. The sulfur dioxide then oxidized to form sulfate ions. These developed into tiny particles which reflected a fraction of the light from the sun. With less sunlight, global temperatures dropped. As the sulfate ions were small enough to stay afloat for many months, the cooling continued into the following year. Average global temperatures decreased about 0. There were severe climate anomalies with snow in unusual months. Northern hemisphere was hardest hit. Most agriculture crops were ruined in North America. There was famine in several countries. Thousands of people perished due to floods, droughts, starvation and disease. An estimated , deaths resulted in Europe alone. Also it gave rise to a new and deadly strain of cholera which first hit the Bay of Bengal in India and

eventually spread across the globe. Mount Tambora eruption is thus placed among the greatest environmental disasters ever to befall mankind. Volcanic material had preserved them in the position they had occupied in This was similar to the rediscovery of Pompeii, which was destroyed by the eruption of Mount Vesuvius in 79 A.

Chapter 7 : 10 Facts About The Eruption of Mount Tambora | Learnodo Newtonic

The volcanic eruption of Mount Tambora changed history. The year following the eruption, was known in England as the "Year without a Summer," in New England as "hundred-and-froze-to-death", and "L'annee de la misere" Read more.

Dubbed the Pompeii of the East, the artifacts were preserved in the positions they had occupied in Tambora and its surroundings as seen from space Mount Tambora is located on Sumbawa island, part of the Lesser Sunda Islands. It is a segment of the Sunda Arc, a string of volcanic islands that form the southern chain of the Indonesian archipelago. Tambora forms its own peninsula on Sumbawa, known as the Sanggar peninsula. At the mouth of Saleh Bay there is an islet called Mojo. The mountain also attracts tourists for hiking and wildlife activities. The two nearest cities are Dompu and Bima. There are three concentrations of villages around the mountain slope. At the east is Sanggar village, to the northwest are Doro Peti and Pesanggrahan villages, and to the west is Calabai village. Sumbawa island is flanked to both the north and south by the oceanic crust. The convergence rate is 7. Its ascent has drained off a large magma chamber inside the mountain. The Mojo islet was formed as part of this geological process in which Saleh Bay first appeared as a sea basin. According to a geological survey, a high volcanic cone with a single central vent was formed before the eruption, which follows a stratovolcano shape. The central vent emitted lava frequently, which cascaded down a steep slope. Since the eruption, the lowermost portion contains deposits of interlayered sequences of lava and pyroclastic materials. Within the upper section, the lava is interbedded with scoria, tuffs and pyroclastic flows and falls. They all shared similar eruptive characteristics: In 1815, Mount Tambora became highly active, with its eruptive peak in April. Its eruptive characteristics included central vent and explosive eruptions, pyroclastic flows, fatalities, land and property damage, tsunamis and caldera collapse. It created a long-term effect on global climate. This activity ceased on July 15, 1815. It created small lava flows and lava dome extrusions; this was recorded at two on the VEI scale. This eruption created the Doro Api Toi parasitic cone inside the caldera. Mount Tambora is still active. Minor lava domes and flows have been extruded on the caldera floor during the nineteenth and twentieth centuries. The last eruption was recorded in 1912. The red areas show thickness of volcanic ashfall. Mount Tambora experienced several centuries of inactivity before 1815, known as dormancy, as the result of the gradual cooling of hydrous magma in a closed magma chamber. Inside the chamber at depths between 1. In 1812, the caldera began to rumble and generated a dark cloud. On April 5, 1815, a moderate-sized eruption occurred, followed by thunderous detonation sounds. On the morning of April 6, volcanic ash began to fall in East Java with faint detonation sounds lasting until April 10th. Hot pyroclastic flows cascaded down the mountain to the sea on all sides of the peninsula, wiping out the village of Tambora. Loud explosions were heard until the next evening, April 11th. The ash veil had spread as far as West Java and South Sulawesi. A "nitrous" odor was noticeable in Jakarta and heavy tephra-tinged rain fell, finally receding between April 11 - 12. The first explosions were heard on this Island in the evening of the 5th of April, they were noticed in every quarter, and continued at intervals until the following day. The noise was, in the first instance, almost universally attributed to distant cannon; so much so, that a detachment of troops were marched from Djocjocarta, in the expectation that a neighbouring post was attacked, and along the coast boats were in two instances dispatched in quest of a supposed ship in distress. Aftermath All vegetation on the island was destroyed. Clouds of thick ash still covered the summit on April 23rd. Explosions ceased on July 15th, although smoke emissions were still observed as late as August 23rd. Flames and rumbling aftershocks were reported in August 1816, four years after the event. On my trip towards the western part of the island, I passed through nearly the whole of Dompou and a considerable part of Bima. The extreme misery to which the inhabitants have been reduced is shocking to behold. There were still on the road side the remains of several corpses, and the marks of where many others had been interred: It is supposed by the natives to have been caused by drinking water which has been impregnated with ashes; and horses have also died, in great numbers, from a similar complaint. Philips, ordered by Sir Stamford Raffles to go to Sumbawa. Prolonged and brilliantly colored sunsets and twilights were frequently seen in London, England between June 28 and July 2, and September 3 and October 7, 1816. The estimated number of deaths varies depending on the source. Zollinger

puts the number of direct deaths at 10,, probably caused by pyroclastic flows. On Sumbawa island, there were 38, deaths due to starvation, and another 10, deaths occurred due to disease and hunger on Lombok island. Tanguy pointed out that there may have been additional victims on Bali and East Java because of famine and disease. Their estimate was 11, deaths from direct volcanic effects and 49, by post-eruption famine and epidemic diseases. Oppenheimer stated a modified number of at least 71, deaths in total, as seen in Table I below. Comparison of selected volcanic eruptions Eruptions.

Chapter 8 : Mount Tambora Facts for Kids

The summit caldera of Tambora volcano (Sumbawa Island, Indonesia), formed during the eruption (Photo: ThomasH)
The mighty caldera of Tambora volcano - the site of the largest known historic volcanic explosion in the world: the volcano was decapitated during its violent explosion.

I bear that in mind as a metre traverse with footholds threatens to collapse, tufts of grass the only handholds available. Knees buckling, thighs aching, baking hot, long out of water, overburdened with a heavy pack and seriously questioning myself for having accepted this challenge, there is nowhere to go but down. A friend and I had been planning this trip for months when Mount Agung, on the Indonesian island of Bali, km to the west, began threatening to explode, rain down destruction and close the surrounding airspace. But that could have been hours, days, months or even years away, so we took the gamble in the hope that, if successful, we would join the relatively small group of people – perhaps fewer than 50, excluding porters – who have descended into the crater produced by the most powerful volcanic eruption in modern history. Tambora, the highest mountain on the Indonesian island of Sumbawa, was responsible, in , for the only confirmed seven on the eight-point Volcanic Explosivity Index since AD Its crater is 6km in diameter and drops to a depth of 1, metres. Pre-eruption, the mountain stood at 4, metres; after the cataclysmic event, it measures just 2, metres. The massive eruption of Tambora caused some 11, deaths initially, and an estimated 49, worldwide through ensuing famine and epidemic diseases. Managing to avoid the poison-ivy-like plants that, with the slightest contact, cause days of itchiness and throbbing, the first section is a delightful seven-hour hike, giving the adventurer time to admire the changing scenery, from lower jungle and meandering streams to old-growth forest. Clear water filters out of the bank of a stream through a hastily stuffed length of PVC driven into the soil from the last source of water we encounter before we go over the lip of the caldera. After a 3am start the next day, thinning vegetation gradually gives way to lava paths and ruts, slippery rocks and loose earth, as we strike out for the summit. Standing on the peak as the sun comes up, trying to imagine the scene in when earth, rock and lava were blown sky high, is awe-inspiring. As the sun illuminates more and more of the caldera, details become clearer: Out come the nylon ropes, five in total, which are as thick as a finger and knotted to provide some grip. They are tied to the roots of trees no broader than a wrist and we descend hand over hand. Many of the boulders here are as big as a minibus, and under one, which is balanced neatly across others, is a cave of sorts in which we hope to find fresh water. After some minutes of digging in the sand, though, we realise the rains have not produced enough run-off for water to pool; not good news when we have just one can of soft drink remaining between us. Three hours later, exhausted, with legs that no longer listen and water uppermost in our minds, we set foot on the caldera floor. Deep but dry riverbeds scar the ground, boulders are strewn as far as the eye can see and rock outcrops have been dyed white and yellow by continuously rising sulphur-laden gases. The walk to the centre of the crater, where we set up camp, is another long hike. There, we make the most wonderful discovery: Water never tasted so good. Vegetation grows all the way down to the lake, in the corner of the crater, and apparently animals thrive here, too. The caldera floor is hot and dusty, and a constant wind flattens the tents, the only shelter from the relentless sun. All this way for half-baked images! That night, the mid-autumn full moon, cast against a cloudless sky – combined with a lack of wind, and therefore dust – comes to the rescue. The landscape is transformed: Then, the moon ducks behind the volcano walls, leaving us in utter darkness.

Chapter 9 : , the year without a Summer | The Eruption of Mount Tambora

Mount Tambora is an amazing volcano on the island of Sumbawa in Indonesia. Once, Mount Tambora raised as high as 4, m above sea level. The eruption of , the largest volcanic eruption in recorded history, killed over , people and caused a climate cooling in , know as year without summer.

Send Volcano Report On 10 April , Tambora produced the largest eruption known on the planet during the past 10, years. The volcano erupted more than 50 cubic kilometers of magma. Caldera collapse at the end of the eruption destroyed 30 km³ of the mountain and formed a 6 km wide and m deep caldera. Floating islands of pumice 3 miles long were observed in April , and even 4 years later, these islands still hindered navigation. The eruption produced global climatic effects and killed more than , people, directly and indirectly. Minor lava domes and flows have been extruded on the caldera floor at Tambora during the 19th and 20th centuries. The massive Tambora stratovolcano forms the entire km-wide Sanggar Peninsula on northern Sumbawa Island. The volcano originally grew to about m elevation before a major explosion destroyed its summit and left a pre caldera more than 43, years ago. Lava flows had largely filled the early caldera by about 10, years ago, before its activity changed to dominantly explosive eruptions, culminating in the eruption. The eruption emptied about cubic km of magma and measures 7 on the VEI scale. It produced a giant plinian eruption column, which is estimated to have reached more km altitude, ejecting large amounts of ash and aerosols into the stratosphere. Pyroclastic flows reached the sea on all sides of the peninsula, and heavy tephra fall devastated croplands, causing an estimated 60, fatalities. Entire villages were buried under thick pumice deposits. Some of the settlements have recently been brought back to light by archaeological excavations, making the site a "Pompeii of Indonesia". Large tsunamis with wave heights of 10 or more meters might have occurred. While the death toll of people living on Sumbawa and surrounding coastal areas was high enough, even more fatalities can be attributed to the indirect effect of global climate deterioration after the eruption. These changes turned into the "year without a summer" for much of Europe, causing widespread famine. It is estimated that it caused the death of over , people. The reason for the climatic changes was increased absorption of sunlight due to a veil of aerosols consisting mostly of tiny droplets of H₂SO₃ acid, formed by SO₂ release that were dispersed around both hemispheres by stratospheric currents from the tall eruption column. Global temperatures dropped by as much as 3 deg C in and recovered during the following years. It is also believed that the eruption produced tsunamis with waves possibly as high as 10 meters. The summit caldera of Tambora volcano Sumbawa Island, Indonesia , formed during the eruption Photo: ThomasH The mighty caldera of Tambora volcano - the site of the largest known historic volcanic explosion in the world: ThomasH Inner caldera walls of Tambora volcano Photo: