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The toba super eruption

A view from the Dhaba site, overlooking the Middle Son Valley, northern India. An archaeological trench can be seen near the left edge of the photo. Picture Christina Neudorf / Max via Planck Institute. Archaeologists have found evidence that modern people - Homo sapiens - migrated to India when the Toba super volcano in Indonesia erupted 74,000 years ago. Stone tools found in Dhaba, northern India, show that people were there before and after the explosion and were not severely affected. These findings were published in the February 25, 2020 issue of the journal Nature Communications. Chris Clarkson of the University of Queensland is the paper's lead author. In a statement, he said: Dhaba populations were also using tool kits similar stone tools used by Homo sapiens in Africa. The absence of these tool kits during the Toba superburst, or the dramatic change soon after, shows that human populations survived the so-called catastrophe and continued to produce tools to change their environment. Stone tools crafted by ancient people living on the Dhaba site during the Toba volcanic superburst 74,000 years ago. Image via Chris Clarkson / Max Planck Institute. The first large wave of modern people migrating from Africa occurred about 60,000 years ago. However, some small-scale migrations occurred much earlier. At dhaba excavation sites in northern India's Middle Son Valley, archaeologists found stone tools that began 80,000 years before the explosion. There has been a lot of controversy about the Toba super volcano eruption - this is about 5,000 times larger than Mount St Helens - that affected the world. Some scientists think that the eruption, which spewed a large amount of ash into the atmosphere 74,000 years ago, caused winter-like conditions of six to 10 years and a cooler climate for about 1,000 years. They believe that this profound change in climate has almost resulted in the extinction of modern humans. However, archaeological evidence from Africa, India and Asia suggests that the Toba eruption has no serious impact on human populations, and this result has been supported by new findings. Excavations at the Dhaba site in northern India. Image via Chris Clarkson / University of Queensland. In a statement published by the University of Queensland, Clarkson said: An important theory is that a few human survivors in Africa cope by developing more sophisticated social, symbolic and economic strategies, thus refing them into Africa and then providing migration to Europe, Asia and Sahul 60-50,5000 years ago. In fact, archaeological sites in South Africa show that human populations have flourished following the superburst in Toba. Climate and vegetation records Lake Malawi in East Africa likewise show no evidence for a volcanic winter during the eruption. In Sumatra, close to the explosion itself, colleagues found Homo sapiens teeth dating back 73,000-63,000 years. This shows homo sapiens living in a closed rainforest environment in Sumatra shortly after the explosion. While the Toba superburst was an absolutely gigantic event, this natural disaster can only have a small impact on human populations living in India at that time. A stone tool from the Dhaba region in northern India. Image via Chris Clarkson / University of Queensland. Bottom line: Stone tools found in northern India show that modern people were there 80,000 years ago, and 74,000 years ago the super volcano continued to live there after the Toba eruption. Via Max Planck Institute Via Queensland Source: North India Human invasion Toba superburst ~74,000 years ago Supereruption 75,000 years ago a global volcanic winter toba eruption spreads 42 kilometers (26 mi) North SumatraVolcanoLake Toba CalderaDate75,000 ± 900 ± 900 BPTypeUltra-Plinre, Indonesia2°41′04″N 98°52′32E﻿ / ﻿2.6845°N 98.8756°E﻿ / 2.6845; 98.8756Coordinates: 2°41′04″N 98°52′32E﻿ / ﻿2.6845°N 98.8756°E﻿ / 2.6845; 98.8756VEI8In the latest supervolcanic explosion; The impact of the emerging crater lake Of Lake Toba was a supervolcanic eruption that occurred about 75,000 years ago at the site of today's Lake Toba in Sumatran, Indonesia. It's one of the world's largest known explosive explosions. The Toba disaster theory argues that this event caused a global volcanic winter of six to 10 years and possibly a 1,000-year cooling chapter. In 1993, science journalist Ann Gibbons suggested that a population bottleneck had formed in human evolution about 70,000 years earlier, suggesting it was caused by the explosion. Geologist Michael R. Rampino of New York University and volcanologist Stephen Self of the University of Hawaii in Manoa support his proposal. In 1998, the bottleneck theory was developed by anthropologist Stanley H. Ambrose of the University of Illinois at Urbana-Champaign. Both the link and global winter theories are controversial. [1] The youngest Toba eruption is the most closely studied supervolcanic explosion. [2] [3] See also super volcanic eruption: List of major volcanic eruptions The youngest Toba eruption occurred at the current site of Lake Toba in Indonesia, ± 75,000 ± 900 years according to BP potassium argon date. [4] This eruption was the last and largest of Lake Toba Caldera during the Quaternary period and is also recognized by its diagnostic horizons. ashfall, young Toba tuff. [5] Estimated volcanic eruption indic 8 (highest rating of any known eruption on Earth): 100 × made a great contribution to the 35 km kaldera complex. [6] Estimates of the intense-rock equivalent (DRE) volume for the tassing range from 2,000 km³ to 3,000 km³; The most common DRE estimate was 2,800 km³ (about 7×1015 kg) of exploded magma, which was deposited as 800 km³ of ash fall. [7] Why the exploding mass, at least, was the largest volcanic eruption in recent history, the 1815 eruption of Mount Tambora in Indonesia, the 1816 Year Without a Summer in the northern hemisphere. [8] Toba's erupting mass accumulated a layer of ash about 15 centimeters (5.9 in) thick throughout South Asia. A blanket of volcanic ash was also deposited over the Indian Ocean, the Arabian Sea and the South China Sea. [9] Deep-sea cores from the South China Sea expanded the known area of the eruption, suggesting that the 2,800 km³ calculation of the exploding mass was the minimum value and even underestimated. [10] Based on new methods (crystal concentration and superelene), Lake Toba Caldera probably erupted up to 3,200 km³ of ignimbrite and co-ignimbrite. Volcanic winter and global cooling computer models Geologist Michael R. Rampino and volcanologist Stephen Self claim that the eruption led to a short, dramatic cooling or 'volcanic winter' that caused the global average surface temperature to drop to 3-5 °C, evidence from greenland ice cores showed a 1,000-year low δ18O period, and dust accumulation increased immediately after the eruption. Eruption cold temperatures can cause this 1,000-year period (stadial), two centuries of Toba stratospheric loading can be calculated by perseverance. [12] Rampino and Self believe that global cooling had already begun during the explosion, but that the process was slow; Young Toba tuff may have provided extra 'kicking' to cause the climate system to move from hot to cold states. [13] Although Clive Oppenheimer rejected the hypothesis that the eruption triggered the recent glaciation,[14] 19. [15] According to Alan Robock, who also issued nuclear winter declarations, the Toba eruption did not accelerate the last glacial period. However, assuming the release of six billion tons of sulfur dioxide, his computer simulations have come to the conclusion that it occurred for three years after a maximum global cooling explosion of about 15 °C, and this cooling will take decades, destructive life. [16] Saturated adiabatic vest 4.9 °C/1,000 m, at temperatures above freezing point.[17] the line and snow line were about 3,000 m (9,900 ft) lower this time. [where?] The climate improved over several decades, and Robock found no evidence that the cold 1,000-year period seen in greenland ice core records was caused by the Toba eruption. In contrast, Oppenheimer believes that the forecast for a drop in surface temperatures of up to 3-5 °C is probably too high, suggesting that temperatures have dropped to just 1 °C. [18] Robock criticized Oppenheimer's analysis, arguing that it was based on simple T-compulsion relationships. [19] Despite these different predictions, scientists agree that the supervolcanic eruption on the scale at Toba Caldera Lake must have led to very large layers of ash fall and the injecting of harmful gases into the atmosphere. [20] In addition, Greenland ice core data showed a sudden climate change during this period,[21] but there is no consensus that the eruption directly created the 1,000-year-old cold period seen in Greenland or triggered the recent glaciation. [22] Physical data contradicting the winter hypothesis in 2013 Archaeologists led by Christine Lane found a microscopic layer of mosque volcanic ash in the sedine of Lake Malawi, definitively linking the ashes to the 75,000-year-old eruption at Lake Toba Caldera, but found no change that could be expected after a severe volcanic winter in the fossil type close to the ash layer. They came to the conclusion that the explosion did not significantly change the East African climate[23][24] and drew criticism from Richard Roberts. [25] Lane, we examined smear slides at a 2 mm interval corresponding to subdecadal resolution, and X-ray fluorescent scans correspond to a sub-annual resolution at intervals of 200 μm. We have not observed a significant change in sediment composition or Fe/Ti ratio, suggesting that after the Toba supererfict, the water column is turned upside down in a thermally driven way. [26] In 2015, a new study of the East African climate supported lane's result that there was no significant cooling regarding Mount Toba. [27] Genetic bottleneck theory The genetic bottleneck young toba explosion in humans was linked to a genetic bottleneck in human evolution about 70,000 years ago[28][29] which may have led to a significant reduction in the size of the total human population due to the effects of the explosion on the global climate. [30] According to genetic bottleneck theory, between 50,000 and 100,000 years ago, the human population fell sharply to individuals who survived 3,000-10,000 people. [31] [32] It has been supported by some genetic evidence suggesting that today's people are descended from a very small population of 1,000 to 10,000 breeding pairs that existed about 70,000 years ago. [33] [34] Proponents of genetic bottleneck theory (including Robock) The young Toba eruption resulted in a global ecological catastrophe, including the destruction of vegetation along with severe drought in the tropical rainforest belt and monsoon regions. The 10-year volcanic winter triggered by the eruption has largely destroyed people's food sources and could cause a drastic reduction in population size. [35] These environmental changes may have created many types of population bottlenecks, including hominids; [36] This may have accelerated the differentiation from within the small human population. Therefore, genetic differences between modern humans can reflect changes over the past 70,000 years, rather than gradual differentiation over hundreds of thousands of years. [37] Other research has led to doubts about the link between Lake Toba Caldera and the genetic bottleneck. For example, ancient stone tools in southern India were found above and below a thick layer of ash from the Young Toba eruption and were very similar between these layers, suggesting that dust clouds from the eruption did not destroy this local population. [38] [39] Additional archaeological evidence from southern and northern India also revealed a lack of evidence of the impact of the eruption on local populations, and the authors of the study survived the superburst, unlike many lifestyles, significant animal extinctions and other research suggesting genetic bottlenecks. [41] However, evidence from pollen analysis suggests prolonged deforestation in South Asia, and some researchers have suggested that the Toba eruption may have forba blasted people to adopt new adaptive strategies that allowed them to replace Neanderthals and other types of arkaic humans. [42] [43] Additional warnings are difficulties in predicting the global and regional climatic effects of the eruption, and the lack of conclusive evidence for the eruption before the bottleneck. [44] Furthermore, genetic analysis of Alu sequences along the entire human genome showed that 1.2 million years ago the size of the influential human population was less than 26,000; Possible explanations for the low population size of human ancestors may include repeated population bottlenecks or periodic replacement events of competing Homo substanks. [45] Genetic bottlenecks in other mammals Some evidence points to genetic bottlenecks in other animals following the Young Toba explosion. The population of East African chimpanzees,[46] Bornean orangutan,[47] central Indian macathe,[48] cheetah and tiger,[49] was rescued from very small populations all 70,000-55,000 years ago. It is estimated that the separation of nuclear gene pools of eastern and western lowland gorillas occurred about 77,700 years ago. [50] Migration after Toba Anatomically geographical distribution of modern man It is unknown at the time of the explosion, and the surviving population may have lived in Africa and later migrated to other parts of the world. Mitochondrial DNA analyses estimate that the large migration from Africa occurred between 60,000 and 70,000 years ago[51] and is consistent with the date of the young Toba eruption about 75,000 years ago. The criticism showed no evidence of a volcanic winter dating back to the young Toba eruption period in a study by Chad Yost and his core colleagues from Lake Malawi, and they argue that it had no effect on African people. [52] In john hawks' opinion, the study confirms evidence from several studies that the explosion had no significant climatic impact or any effect on human numbers. [53] See also Volcanoes portal Evolutionary biology portal Evolutionary biology portal First human migrations – spreading people from Africa throughout the world Last common ancestor – The latest individual direct descendant of all organisms in a group – mass extinction event, Occurring around 10,000 B.C., marking the end of the Pleistocene and the last African origin of the Holocene of modern people - out of Africa theory of the early migration of people to the World Wallace Line volcanism timeline - the faunal boundary line separating a transit zone between Excerpts and notes from Asia and Wallacea, Asia and Australia ^ toba super-volcano disaster ifikri was 'rejected'. Bbc.com. Accessed 2017-01-08. Choi, Charles Q. (2013-04-29). Toba Supervolcano Is Not Responsible for the Near Extinction of Humanity. Livescience.com. 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Journey of Humanity by the Bradshaw Foundation - Toba explosion, DNA and human migrations Geography Human Genetic Diversity ScienceDaily (Mar. 17, 2005) Prediction - Includes discussion by analyzing the relationship between the geographic location of existing human populations and genetic variability within these populations in connection with East Africa, researchers found new evidence for an African origin of modern people. Out Of Africa - Bacteria, As well: Homo Sapiens And H. Pylori Jointly Globe ScienceDaily (February 16, 2007) Spread - When the man made his debut from Africa to fill the world about 60,000 years ago, he was not alone: He was accompanied by the bacteria *Helicobacter pylori* ...; Illus. migration map. Magma 'Pancakes' Toba Supervolcano Youtube video Can Fuel Stone Age Apocalypse https://en.wikipedia.org/w/index.php?title=Toba_catastrophe_theory&oldid=993013511

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