

Team discovers ancient road at Maya village buried by volcanic ash 1,400 years ago

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An ancient Maya white road known as a sacbe has been discovered buried under roughly 17 feet of volcanic ash at the archaeological village of Ceren in El Salvador by a University of Colorado Boulder team. The sacbe, shown here with a drainage canal on the left and several corn plants preserved by ash on the right, is roughly 1,400 years old and is the only sacbe ever discovered constructed without stone linings. Credit: Image courtesy of Payson Sheets, University of Colorado

A University of Colorado Boulder-led team excavating a Maya village in El Salvador buried by a volcanic eruption 1,400 years ago has unexpectedly hit an ancient white road that appears to lead to and from the town, which was frozen in time by a blanket of ash.

The road, known as a "sacbe," is roughly 6 feet across and is made from white volcanic ash from a previous eruption that was packed down and

shored up along its edges by residents living there in roughly A.D. 600, said CU-Boulder Professor Payson Sheets, who discovered the buried village known as Ceren near the city of San Salvador in 1978. In [Yucatan Maya](#), the word "sacbe" (SOCK'-bay) literally means "white way" or "white road" and is used to describe elevated ancient roads typically lined with stone and paved with white lime plaster and that sometimes connected temples, plazas and towns.

The sacbe at the buried village of Ceren -- which had canals of water running on each side -- is the first ever discovered at a Maya archaeology site that was built without bordering paving stones, said Sheets. The road was serendipitously discovered by the team while digging a test pit through 17 feet of [volcanic ash](#) in July to analyze [agricultural activity](#) on the edges of Ceren, considered the best preserved Maya village in Central America.

"Until our discovery, these roads were only known from the Yucatan area in Mexico and all were built with stone linings, which generally preserved well," said Sheets of CU's anthropology department. "It took the unusual preservation at Ceren to tell us the Maya also made them without stone. I'd like to say we saw some anomaly in the ground-penetrating radar data that guided us to the Ceren sacbe, but that was not the case. This was a complete surprise."

The sacbe was struck almost dead-on by the excavators of the 3-meter by 3-meter test pit, said Sheets, with the full width of road visible. In order to follow the sacbe, two subsequent test pits were excavated to the north and confirmed the sacbe had a minimum length of at least 148 feet long -- about half the length of a football field.

The sacbe appears to be headed toward two Ceren ceremonial structures less than 100 feet away -- buildings that were unearthed in Ceren by

Sheets and his team in 1991. One structure is believed to have been used by a female shaman. The adjacent community ceremonial structure contained evidence -- including the bones of butchered deer, a deer headdress painted red and blue and a large alligator-shaped pot -- that large quantities of food and drink were being prepared and dispensed to villagers in the town plaza during what Sheets believes was a crop-harvesting ceremony.

"We know there was a celebration going on when the eruption hit," said Sheets. "And we've found no evidence of anyone going back to their houses, gathering up valuables, and fleeing, because all the household doors were tied shut. We think people may have left the plaza and run south, possibly on the sacbe, because the danger was to the north."

Radiocarbon dates from Ceren indicate the eruption occurred in roughly A.D. 630, and CU researchers have even pinpointed the month and time of day the fiery mass of ash and debris from the Loma Caldera volcano rained down on the town from less than a third of a mile away. Sheets believes the eruption hit at roughly 7 p.m. on an August evening because of the mature corn stalks preserved in ash casts, the fact that the farming implements had been brought inside, the sleeping mats had not yet been rolled out, meals had been served but the dishes were not yet washed, and corn was set into pots to soak in water overnight.

Sheets said it is logical that the villagers in the plaza might have used the white sacbe as an emergency route to flee the destruction of the volcano in the dark of night. "How far they might have gotten, I don't know," said Sheets. "It would have been a footrace. I think it is very likely we will find bodies as we follow the sacbe southward in future excavations." To date, no human remains have been found at the village.

Sacbeob, the plural of sacbe, had strong practical, political and spiritual connotations in the Pre-Columbian Yucatan, said Sheets. Some were

fairly long -- up to 40 miles -- while others stretched less than 50 feet. Because of the high level of preservation at Ceren, the researchers can see hand marks of farmers who were repairing the edges of the sacbe.

While there is speculation the Ceren sacbe may have led to the Maya center of San Andres roughly three miles to the south, there is no evidence of that yet, Sheets said.

While some refer to Ceren as "The New World Pompeii," Sheets is quick to point out the differences. Pompeii was an affluent Roman resort community with multi-story concrete houses, stone streets and marble statues, while Ceren was a modest farming community. Because tiny particles of hot, moist ash blanketed Ceren and packed the thatched-roofed structures, gardens and agricultural fields, the preservation of organic materials is greater than at Pompeii, where dry, pea-sized particles rained down in the Mount Vesuvius eruption of A.D. 79.

Sheets has visited Pompeii, and researchers from Pompeii have visited Ceren, analyzing the similarities and differences at the sites. "When they tell me they wish they had this kind of preservation level at Pompeii, I tell them I wouldn't mind finding a marble statue or two at Ceren," said Sheets.

The Ceren preservation is so great that researchers have found marks of finger swipes in ceramic bowls, human footprints in gardens hosting ash casts of plants like corn and manioc, thatched roofs, woven baskets and pots filled with beans. Researchers have found the remains of mice that lived in the thatched roofs of kitchen areas, and entomologists have even been able to discern that two species of ants inhabited the village, Sheets said.

Thus far 12 buildings at Ceren -- which is believed to have been home to about 200 people -- have been excavated, including living quarters,

storehouses, workshops, kitchens, religious buildings and a community sauna. There are dozens of unexcavated structures and there may even be another undiscovered settlement or two under the ash, which covers an area of roughly two square miles.

While much of the Maya archaeological record points to rigid, top-down societies where the elite made most political and economic decisions, there is evidence of some autonomy at Ceren, including divergent choices by farmers regarding crop cultivation techniques that were discovered this summer, said Sheets. He believes a community building with two large benches in the front room may have hosted village elders when it came time to make community decisions at Ceren.

In addition to Sheets, the 2011 team included CU-Boulder graduate students Christine Dixon, Alexandria Halmbacher and Theresa Heindel, University of Cincinnati Professor David Lentz, University of Cincinnati graduate student Christine Hoffer, Celine Lamb from the Sorbonne in Paris and 23 local Salvadoran workers. The 2011 field season was funded by the National Science Foundation.

"Students on the project are essential," said Sheets. "They put up with less than ideal living conditions and they do valuable work, sometimes pursuing their own research paths based on discoveries they make at the site." Since 1978, more than 30 undergraduate and graduate students have worked under Sheets at Ceren, including 14 who have received or are pursuing master's or doctoral degrees.

"When I first heard about Ceren, I immediately wanted to know more," said master's degree candidate Theresa Heindel, who came to CU-Boulder after graduating from the University of Wisconsin-Madison and who spent the 2011 field season assessing crop cultivation in Ceren's agricultural fields that were frozen in time by ash. "We don't see this type of cultivation anywhere in Central America, and we don't see this

level of preservation anywhere in the world."

In 2009 Sheets and his team discovered a previously unknown Maya agriculture system at Ceren -- intensively cultivated manioc fields that yielded at least 10 tons of manioc shortly before the eruption 1,400 years ago. It was the first and only evidence of intense manioc cultivation at any New World archaeology site and Sheets and others believe such large manioc crops could have played a vital role in feeding indigenous societies living throughout tropical Latin America, he said.

Sheets has collaborated with the National Science Foundation, the National Geographic Society, the Smithsonian Institution, the Getty Conservation Institute and a number of universities since 1978. The 10-acre Joya de Ceren Archaeological Park was declared a UNESCO World Heritage Site in 1993.

"When the radiocarbon dates on the thatched roofs came back in 1978, I saw the rest of my professional life. I knew I did not need to look for any more new archaeological sites," said Sheets. "There is well over a century of research still to be done at Ceren -- in some ways we've only scratched the surface."

Provided by University of Colorado at Boulder

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