

# Atacama Desert may have harbored lakes, wetlands

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Marco Pfeiffer and his colleagues scan the arid Atacama Desert, where freshwater lakes and wetlands once provided refuge to South America's early settlers. Credit: Marco Pfeiffer

The arid Atacama Desert, thought to be a barrier to early South American settlers, may have held lakes large enough to sustain small human populations, according to new research presented here today. The lakes' presence challenges the current understanding of the paths early settlers took to explore and settle South America, according to the researchers.

Chile's Atacama Desert spans roughly 1,000 kilometers (600 miles) along South America's western coast. The [desert](#) is sandwiched between

two mountain ranges, which prevent water from reaching its valleys and salt flats, making it the world's driest location outside the poles.

Now, new research shows standing water may have existed in the heart of the Atacama. Scientists recently discovered remnants of freshwater plants and animals buried in the sediment of the desert's salt flats: the large stretches of dry, salty soil that pepper the Atacama Desert. Many of the flats span 600 to 1,000 square meters (6,400 to 10,400 square feet), though some are larger. Radiocarbon analysis showed the freshwater lakes and wetlands existed in the desert between 9,000 and 25,000 years ago, according to the researchers.

Many archeologists believe South America's early settlers traveled from the west coast inland toward the Andean Mountains, avoiding the desert's dry center by walking along its wetter edges. But the new findings suggest the Atacama's ancient lakes could have provided another path through the desert, and possibly even homes for South American settlers.



Despite being one of Earth's driest places, new research shows the Atacama Desert once held freshwater lakes and wetlands. Credit: Marco Pfeiffer.

"The implication is that a landscape previously thought to be uninhabitable was actually an important stepping-stone for colonization of South America," said Marco Pfeiffer, a soil scientist at the University of California, Berkeley, and lead author of the new study. Pfeiffer will present the study's results today at the 2016 American Geophysical Union Fall Meeting.

When Pfeiffer and his colleagues dug into the [salt flats](#), they discovered organic material left by freshwater plants, snails and microorganisms.

Radiocarbon dating suggested those organisms lived after one or more wet [climate cycles](#), known as the Central Andean Pluvial Events.

Pfeiffer said the climate cycles likely brought rain from the Andes down to the water-starved soil of the Atacama Desert, creating the lakes and wetlands. Even populations of guanaco, the undomesticated parent of the modern llama, may have once thrived near the Atacama's ancient water bodies, he added. When the climate cycles ended, the lakes and wetlands transitioned from fresh to saltwater before completely disappearing several thousand years later, Pfeiffer said.

Pfeiffer said the new findings could help guide future archaeological expeditions. Only three archaeological sites within the desert have been searched for evidence of human settlement, all of which stand near streams. Pfeiffer believes the Atacama Desert holds a "rich, early archaeological record remaining to be discovered and analyzed."

**More information:** Poster Title: Wetlands and Paleolakes in the Hyperarid Atacama Desert During the Late Quaternary and Their Implications for Early Human Occupation of South America—[agu.confex.com/agu/fm16/meeting ... app.cgi/Paper/188208](https://agu.confex.com/agu/fm16/meeting/index.html#paper=188208)

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