

# Megathrust earthquake and tsunami 3,800 years ago kept hunter-gathers in Chile inland for 1,000 years

April 7 2022, by Bob Yirka

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An international team of researchers has found evidence of a megathrust earthquake occurring approximately 3,800 years ago off the coast of

what is now Chile. In their paper published in the journal *Science Advances*, the team describes evidence they found of the ensuing tsunami and its impact on the people who lived in the area at the time.

In 1960, a [massive earthquake](#) shook the ground in southern Chile. Seismographs showed it to be 9.5 on the Richter scale—the strongest earthquake in recorded history. In this new effort, the researchers have found evidence of an equally strong earthquake occurring in roughly the same area approximately 3,800 years ago—one that set off a massive tsunami that wreaked havoc on the early hunter-gatherers who were living along the coast.

The work by the researchers involved digging through layers of dirt in the Atacama Desert looking for sediment left behind by the tsunami. Radiocarbon dating of shells and charcoal fragments in the sediment showed it to be from approximately 3,800 years ago. The tsunami was so big it left a trail of debris for 1,000 miles and likely pushed seawater up to 15 to 20 meters above sea level.

Chile's coast lies on a [subduction zone](#)—the Nazca [oceanic plate](#) is slowly being pushed under the South American continental plate, and because of that, the area has a lot of earthquakes. Sometimes they are really big ones, which are called megathrust earthquakes. Plate activity is also responsible for the creation of the Andes mountains and its volcanic activity.

The researchers also found evidence of shifts in population centers following the tsunami—people moved inland and to higher ground. Evidence was also found of people moving their burial grounds. The researchers found that the people did not start returning to the shore for over a thousand years and even then, they appeared to be hesitant to move too close to the sea. Researchers note that they have not found evidence of how the memory of the tsunami could have persisted for so

long in a people who did not have a written language. They also suggest that their work could contribute to safety plans for the people who live in the area today.

**More information:** Diego Salazar et al, Did a 3800-year-old M w ~9.5 earthquake trigger major social disruption in the Atacama Desert?, *Science Advances* (2022). [DOI: 10.1126/sciadv.abm2996](https://doi.org/10.1126/sciadv.abm2996)

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