



MIGHTY Stalagmites

For environmental scientists, ice cores and ocean sediments have long served as important indicators of past climate change, providing records of precipitation, temperature, atmospheric conditions, and more for particular periods in our planet's history. It was believed that for certain large-scale climate changes, these weather archives reflected conditions that applied to all of the earth, but new findings from stalagmites—large fingerlike formations that rise from the floors of limestone caves—imply that the planet's tropical regions may have a climate history all their own.

According to a study by Caltech geochemist Jess Adkins and colleagues at the Georgia Institute of Technology, climate records found in stalagmites gathered from Borneo indicate that the western tropical Pacific responded very differently than other regions of the globe to abrupt climate change—a finding that could help researchers better understand what might happen during future climate change events.

Stalagmites are formed when rainwater seeps into the ground, dissolving limestone rock that drips into the caves to grow the structures at a rate of roughly one centimeter every thousand years. Adkins worked to correlate different depths in stalagmite samples with different periods of time in much the same way scientists date trees by analyzing their rings; he used a type of radioactive dating technique called U-series dating, then merged data from four different stalagmites from caves across Borneo. Together, these analyses provided a record of precipitation trends in the western Pacific over the past 100,000 years.

What they found, says Adkins, is that “some historic climate changes, defined by records from ice cores and ocean sediments in the high latitudes, show up in Borneo, but others do not. This is surprising because most of the field thinks that the mechanisms behind events that happen at higher latitudes are similar, if not identical, to those in the tropics. Our findings question these notions.” —*KN*