

Tree Rings Have a Story to Tell

In 1895 a scientist suggested smoke (emissions) from factories could increase the earth's temperature in the futureⁱ. However, most scientists didn't believe man's activities could affect the climate until the 1960s. As signs of human effects on nature became more noticeable, the discussion of climate change began again. Global warming became one of the biggest scientific debates of the last 50 years. Could climate change be a threat to mankind? And could our own actions increase the threat?

To answer these questions, scientists are searching the earth for signs of past climate changes. Fossils and ancient objects can help scientists look at the past, but without thermometer records, how can they know how cold it was? The Fahrenheit thermometer we use today was not invented until 1724!

Scientists who want to know about past climates collect clues and study many pieces of evidence, much like detectives. This is called Paleoclimatology, (Paleo = old or ancient + climate), the study of climates before there are records of temperature, rain and snowfall, and other information, by using special instruments.



Tree ring growth patterns are one kind of historical clue being collected. The study of tree ring data is called Dendrochronology (dendro = tree + chrono = time + ology = study).

Scientists study this tree ring data to try to identify the past local climate conditions that caused the growth ring patterns. Here, they have identified the years that local wildfires burned this tree and left scars. Scientists can study these tree rings to see if growth was poor before the fires and predict years when it was cold or very dry.

Using this information and the records of more recent climate, scientists use computers to predict how natural and human triggers might change our climate in the future.

A fire-scarred ponderosa pine from Mount Rushmore National Memorial, Black Hills, South Dakota
Photo: [Rocky Mountain Tree-Ring Research, Inc.](#)

ⁱ Reference: <http://earthobservatory.nasa.gov/Features/Paleoclimatology/> excerpts paraphrased