

## Climate Studies – Teacher Background

Dendro + climat + ology – The study of climate and trees

Daniel Gabriel Fahrenheit was a German physicist who invented an alcohol thermometer in 1709 and the mercury thermometer in 1714. In 1724, he introduced the standard temperature scale that bears his name - Fahrenheit scale – that was used to record changes in temperature in an accurate fashion.

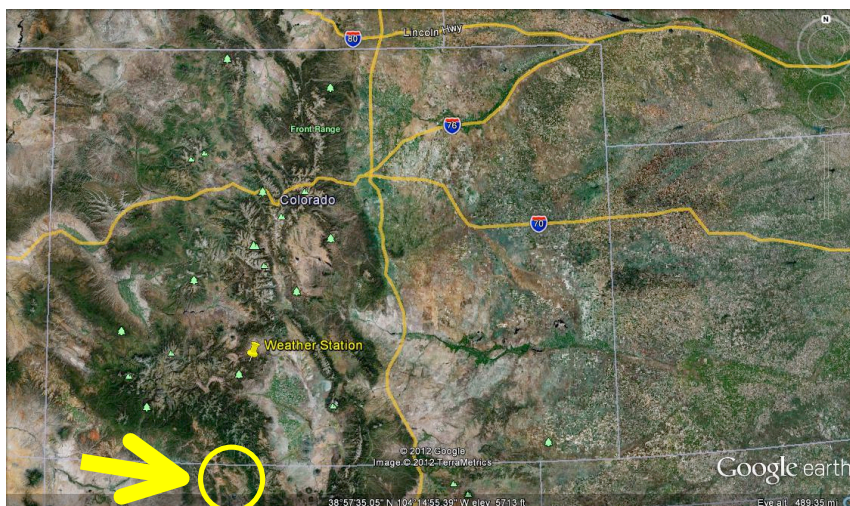
In 1895, a scientist proposed that industrial emissions would raise the earth's temperature, but his theory was largely discounted until the 1960s. Fifty years later, the debate over climate change continues. There is scientific evidence that temperature and precipitation patterns are changing. This is the first such climate change that scientists have had the technology to record.

The study of climate before records were kept is called Paleoclimatology (Paleo = old or ancient). Scientists use a variety of physical evidence such as boring into glaciers, sedimentary soil studies, fossils and tree ring growth patterns to develop theories of past climate conditions.

The study of climate is well suited to the use of graphs, charts and data tables. Included in this lesson is a table of average monthly temperature and precipitation data at a specific location over a ten year span. (Climatologists prefer at least 30 years of data to determine trends and predict future conditions.) Students will identify maximums and minimums and compare values to averages. Using this table, students can create graphs of temperature and precipitation for visual comparison and discuss if a trend exists and how it might affect them individually.

The second exercise to determine if each year's data is above average, average or below average will produce visual results in the interactive tree ring exercise that uses the climate

variables and students' analysis to construct a sample tree ring illustration.



The climate data in this lesson was obtained from NASA records from a weather station west of Saguache, CO at: Longitude 106.3W, Latitude 38N.