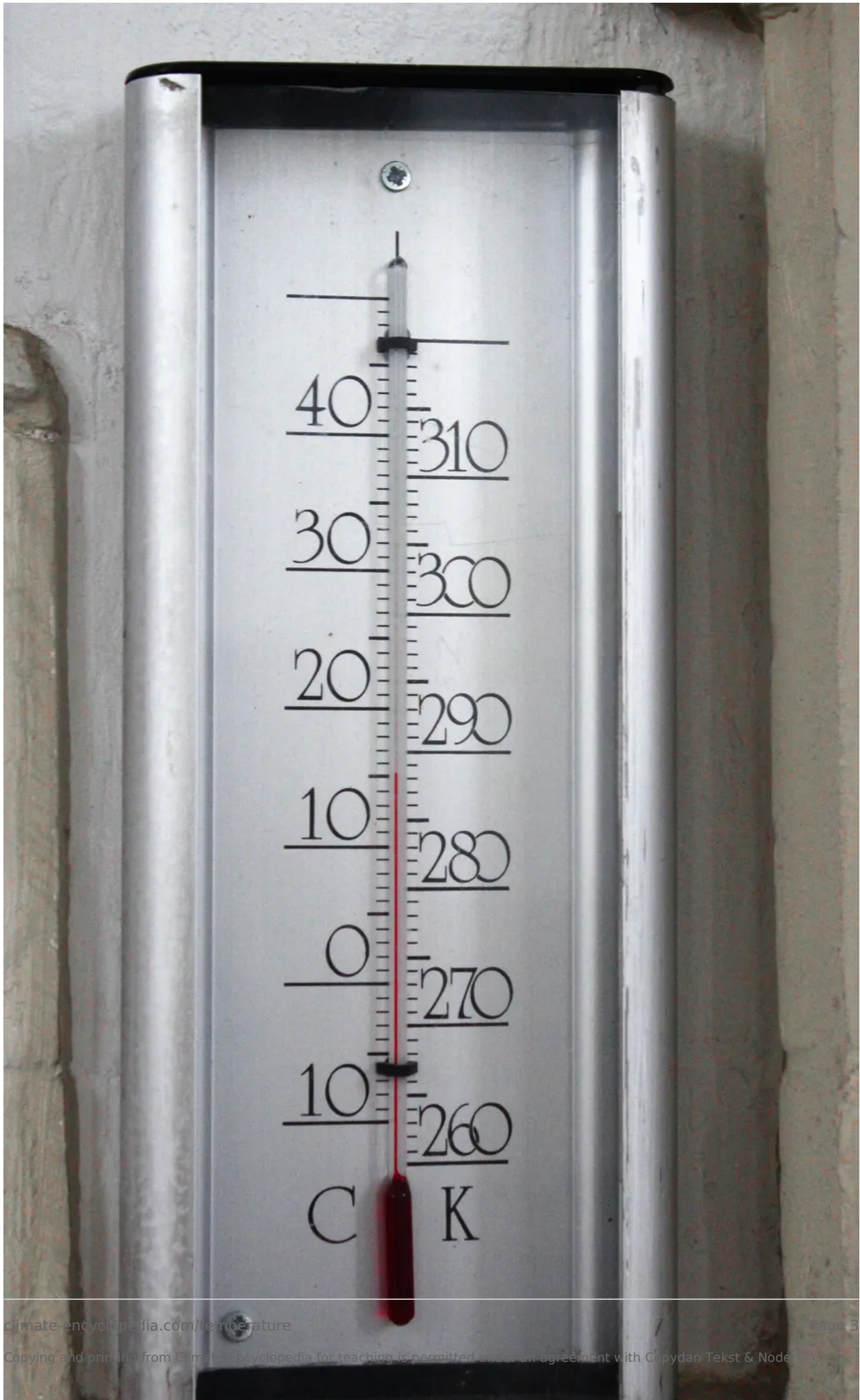


Temperature

By Lennart Kiil



A thermometer with both a Celsius and a kelvin scale. 0 °C equals 273 K, and one degree is the same size on both scales.

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A measurement of the internal energy of a system.

There are three standard temperature scales; Celsius, Kelvin, and Fahrenheit.

The freezing and boiling points of water are exactly 100 degrees apart on the Celsius scale at 0 and 100 degrees respectively. On the Fahrenheit scale they are 180 degrees apart at 32 and 212 degrees. The Kelvin scale is the same as the Celsius scale minus 273.15, so that 0 degrees Kelvin is -273.15 degrees Celsius. 0 degrees Kelvin is also called 'absolute zero' because no lower temperature is possible.

In general temperature is often used to describe the hotness or coldness of an object or environment. It is, however, not accurate to describe temperature as heat, although it is closely linked to it. Heat is a measurement of the transfer of energy from one system to another.

Temperature measures how much energy is contained within a system, and has to do with the movement of the atoms in the system. The more heat the system absorbs, the faster the atoms in the system move, which then raises the temperature. A temperature of 0 degrees Kelvin is the lowest possible temperature. Here the atoms are completely at rest.

When researching climate changes it is important to have accurate and reliable [temperature records](#).

Today a global temperature is obtained by using a network of readings from weather stations on land and readings at sea made by ships. In addition weather satellites add temperature measurements of the lower atmosphere.

However, an accurate [temperature record](#) of instrumental readings with a wide geographical coverage only go back to the 19th century. This is not enough in climate research, and scientists, therefore, have to use a range of different indicators of the past climate and temperature. This include analyzing [ice cores](#) and [pollen samples](#).

Using such indirect temperature measurements introduce a range of potential uncertainties and limits. Analysis of this data is still a source of scientific disagreement regarding the extent of global warming in the present and the past.

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