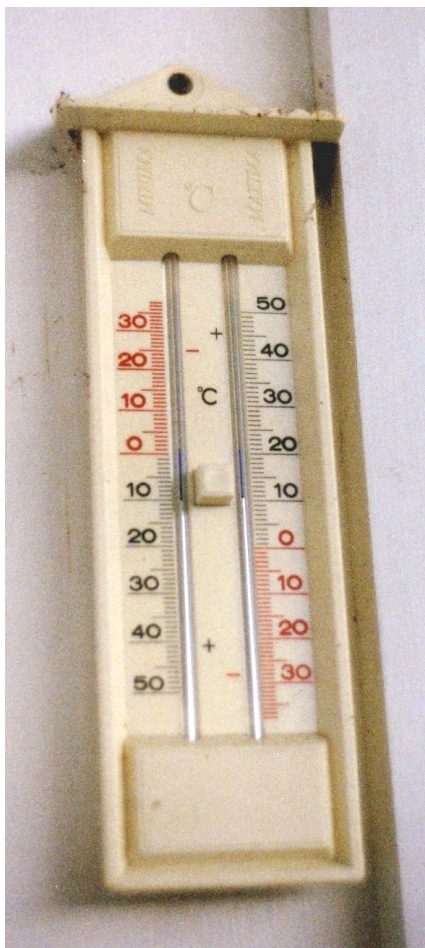


Weather: Observing and Recording Temperature

Introduction



Credit: Uwe W.

In *Weather: Air*, you helped your students learn that air is a material "thing" with properties that are typical of all matter, but are not as readily recognized for air as for some other things; specifically, having mass and taking up space. Air is all around us. It takes up space (fills a balloon or a cup), it exerts pressure (holds sheets of newspaper on a table top), and has inertia which can be seen as it moves or resists moving from place to place (resists being fanned with cardboard sheets). Although it is invisible to our eyes, our other senses readily detect its presence all around us. Later, your students will learn that measuring the properties of air forms the basis of measuring the atmospheric conditions that we call "weather".

In these investigations, students make observations and measurements of additional properties of air that combine to produce weather conditions. These observations are made at levels appropriate to the students' levels of understanding and skills. This will form the building blocks they will need to understand the molecular nature of atmospheric gases and the kinetics of molecular movement, which are concepts they will develop at later stages of their learning about the natural world.

One property of air that can be measure is its temperature. Air temperature is measured with thermometers. Common thermometers consist of a liquid-in-glass tube attached to a scale.

The scale can be marked (graduated) in degrees Celsius (°C) or degrees Fahrenheit (°F) or both. The tube contains a liquid that is supplied from a reservoir or "bulb" at the base of the thermometer. The internal liquid is usually mercury or red-colored alcohol. In the interest of safety, alcohol thermometers are mainly used in schools, since mercury is very toxic.

Alcohol thermometers work due to the expansion and contraction of liquid relative to temperature. As the liquid in the bulb of the thermometer is heated, it expands and rises up in the tube. Conversely, as the liquid in the bulb is cooled, the liquid contracts and falls in the tube.

In this investigation, your students will develop the concept of expanding liquids on which a liquid-filled thermometer is based, and then apply this knowledge by using an outdoor thermometer to record daily temperatures.

Weather Unit Sections

Introduction

Air

Temperature

How can we put things in a sequence by how hot they are?

How warm or cool is it?

How much can air temperature change during a day?

Revisit the concept of Temperature

Wind

Clouds

Weather
