

## Water properties: Temperature



The U.S. Geological Survey (USGS) has been measuring how much water is flowing in rivers, determining the water levels in groundwater, and collecting water samples to describe what the quality of those waters are for over a century. Millions of measurements and analyses have been made. Water temperature is taken almost every time water is sampled and investigated, no matter where water is being studied.

### Significance of water temperature

Temperature exerts a major influence on biological activity and growth. Temperature governs the kinds of organisms that can live in rivers and lakes. Fish, insects, zooplankton, phytoplankton, and other aquatic species all have a preferred temperature range. As temperatures get too far above or below this preferred range, the number of individuals of the species decreases until finally there are none.

Temperature is also important because of its influence on water chemistry. The rate of chemical reactions generally increases at higher temperature. Water, particularly groundwater, with higher temperatures can dissolve more minerals from the rocks it is in and will therefore have a higher [electrical conductivity](#). It is the opposite when considering a gas, such as oxygen, dissolved in the water. Think about how much bubblier a cold soda is compared to a warm one. The cold soda can keep more of the carbon dioxide bubbles dissolved in the liquid than the warm one can, which makes it seem fizzier when you drink it. How warm stream water is can affect the aquatic life in the stream. Warm water holds less [dissolved oxygen](#) than cool water, and may not contain enough dissolved oxygen for the survival of different species of aquatic life. Some compounds are also more toxic to aquatic life at higher temperatures. (Source: [A Citizen's Guide to Understanding and Monitoring Lakes and Streams](#))