AIR & WATER TEMPERATURE

What are air & water temperature?

Temperature measures how fast molecules in air or water are moving, or how much energy they have. Both air and water temperature have daily and seasonal cycles—brighter sunlight in the daytime and longer hours in the summer raise temperatures. Because temperature affects other indicators, it is necessary to measure temperature at every sampling site every time samples are taken.

How is temperature measured?

Air and water temperature (°C) are measured using an armored glass thermometer, digital thermistor, or probe. Single measurements of water temperature can be taken at the surface or in a bucket. A depth profile of temperature can be made by measuring temperature at different depths in the water column.

What can air & water temperature tell us about the Bay?

Temperature affects both the biological and physical characteristics of an ecosystem. Changes in temperature influence which animals and plants can survive in the Bay and its tributaries. Warmer temperatures stimulate growth, reproduction, and decomposition of plants and animals. Temperature also affects water chemistry. Water that is too warm cannot hold enough oxygen to sustain animals. The sun heats shallow freshwater streams and surface water, which flow into the Bay and form a layer of warm water that floats above the cold, salty water entering from the sea. During the summer, the large temperature difference keeps these layers separated and contributes to low dissolved oxygen in the deeper waters of the Bay.

Seasonal temperature changes (top outside, W. Parson) and the amount of sunlight available (bottom, C. Donovan) affect the physical properties and water chemistry of the Bay. Air and water temperature can be measured with a glass thermometer (top center, J. Thomas). Source: Chesapeake Bay Program.

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