

Revisit the Concepts of Weather

Linking to Weather

Explain to the students that weather describes their surroundings for a short time. Their journals will serve as an excellent record of weather conditions for a given interval of time. Climate, on the other hand, describes a more established pattern of weather conditions. Climate is the long-term average of weather. It is observed over many years and many seasons. The two most important factors in describing the climate of an area are temperature and precipitation.

Climates differ for various locations on Earth. The differences are often related to the proximity to the equator or to the poles, the nearness to oceans and related currents, the position of mountain ranges, and the prevailing wind patterns.

Older students might report on climate patterns for selected locales. A Web search for a country's tourist information generally supplies annual climate statistics for assisting potential travelers in their planning. Related images give clues to the kind of vegetation and animal life in the region.

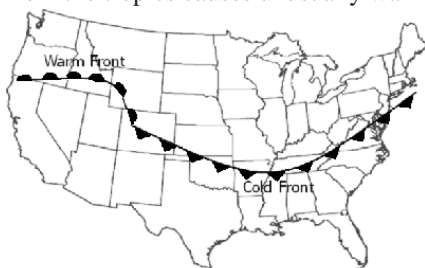
Digging Deeper

Atmospheric Pressure

Air consists of gas molecules, which are combinations of two or more atoms. Although you cannot see them with your eyes, the molecules are constantly moving this way and that at very high speeds. As they move, they collide with one another and with solid surfaces. The temperature of the air is a measure of how quickly the molecules are moving. The more energy of motion the molecules have, the higher the temperature you feel in the air.

Air temperature is measured with thermometers. Common thermometers consist of a glass rod with a very thin tube in it. The tube contains a liquid that is supplied from a reservoir, or "bulb," at the base of the thermometer. Sometimes the liquid is mercury, and sometimes it is red-colored alcohol. As the temperature of the liquid in the bulb rises, the liquid expands. As the liquid expands, it rises up in the tube. The tube is marked with a scale, in degrees Fahrenheit or in degrees Celsius.

Large masses of air, as much as a thousand miles across, take on certain weather characteristics when they stay at high latitudes (near the poles) or at low latitudes (near the equator) for several days at a time. They may be very cold or very warm, or they may be very humid or very dry. Then, as they move into other areas, they can affect the weather there very strongly. The coldest winter weather in much of the United States is at times when a bitter cold air mass from the high arctic regions of northeastern Asia, Alaska, or northern Canada sweeps down into the southern parts of North America. At other times, a flow of warm and humid air from the tropics causes unusually warm weather in the eastern United States.



The boundaries between air masses are often zones of very rapid changes in temperature and moisture. Enormous swirling storms tend to develop along these zones of rapid change. On weather maps, cold fronts are shown as lines with triangular teeth. These show where the cold air mass is wedging under the warm air mass. As the warm air is lifted along the front, heavy rain from thunderstorms is common. Warm fronts are shown on weather maps as lines with half-circular teeth. These show where the warm air masses are moving up over the cold air masses. Broad areas of rain are often associated with warm fronts.

Weather Unit Sections

Introduction

Air

Temperature

Wind

Clouds

Weather

How can you tell the speed of the wind?

How does temperature affect air pressure?

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