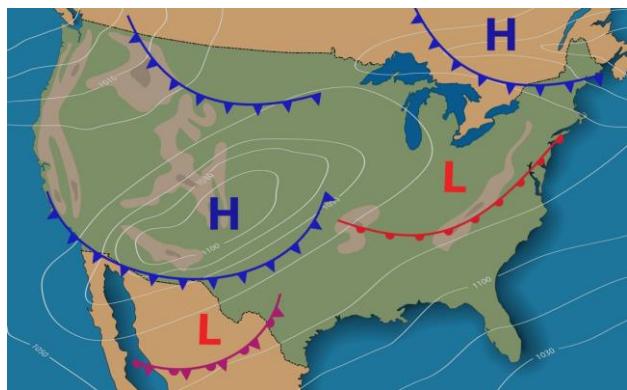


Weather & Climate

Section I: Weather Patterns



Weather is the atmospheric conditions of a particular place at a specific time. Weather is affected by the short-term changes in those conditions and is often associated with pressure systems. A **high-pressure system** is a large body of circulating air with high pressure at its center and lower pressure outside the system. This brings sunshine and good weather. A **low-pressure system** is a large body of circulating air with low pressure at its center and higher pressure outside the system. It brings clouds and precipitation. In both scenarios, the air moves around circularly.

When the weather stays the same for several days, it is because air masses are creating this pattern. **Air masses** are large bodies of air with uniform temperature, humidity, and pressure. Air masses are classified by temperature and moisture. Those that form over water are called maritime. Those that develop over land are called continental. Warm masses are tropical, and cold are polar.

In the continental United States, air masses are commonly moved by prevailing westerlies and jet streams. Colliding air masses can form four types of fronts. A weather front is a boundary between two air masses. Drastic weather changes often occur at fronts, including temperature, humidity, clouds, wind, and precipitation changes. A **cold front** forms when a colder air mass moves toward a warmer air mass. Showers and thunderstorms often form along cold fronts. **Warm fronts** form when less dense and warmer air moves toward colder, denser air. When water vapor in the warm air condenses, it often creates clouds that can bring steady rain or snow for long periods. When the boundary between two air masses stalls, the front is called **stationary**; this leads to cloudy skies and light rain. When a faster-moving cold front catches up with a slow-moving warm front, an **occluded front** forms, usually bringing with it some precipitation.

Weather & Climate

Section I: Weather Patterns Continued

Some severe weather can cause significant damage. Thunderstorms, tornados, hurricanes, and blizzards are all examples of severe weather. A **storm** is a violent disturbance in the atmosphere that involves sudden changes in air pressure. **Thunderstorms** are small storms accompanied by thunder and lightning formed from large cumulonimbus clouds. A **tornado** is a rapidly whirling, funnel-shaped cloud that reaches down from a storm cloud and touches the Earth's surface. They are formed when thunderstorm updrafts begin to rotate. When a storm starts over warm water, it can gain energy from the warm, humid air at the ocean's surface, resulting in a **hurricane**. Hurricanes are tropical storms that have winds of 74 mph or higher and can cause significant damage. Finally, a **blizzard** is a violent winter storm characterized by freezing temperatures, strong winds, and blowing snow.

Review:

1. Explain the difference between a low-pressure and a high-pressure system.
2. What is an occluded front?
3. What are three examples of extreme weather?