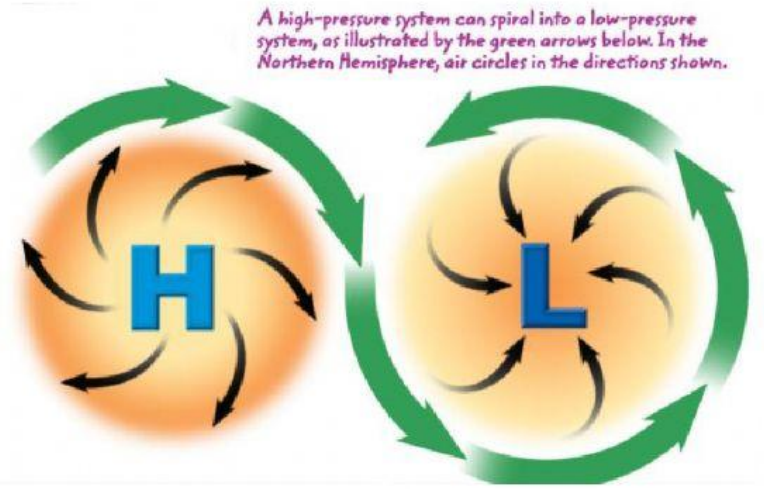
Apr. 26-30 Station 1: Explore Air Pressure

What are pressure systems?

Areas of different air pressure cause changes in the weather. In a high-pressure system, air sinks slowly down. As the air nears the ground, it spreads out toward areas of lower pressure. Most high-pressure systems are large and change slowly. When a high-pressure system stays in one location for a long time, an air mass may form. The air mass can be warm or cold, humid or dry.

In a low-pressure system, air rises and so has a lower air pressure than the areas around it. As the air in the center of a low-pressure system rises, the air cools.



A high-pressure system can spiral into a low-pressure system, as illustrated by the green arrows below. In the Northern Hemisphere, air circles in the directions shown.

Follow Up Questions:

In a high-pressure system, air _____.

In a low-pressure system, air _____.

The diagram to the right shows airflow between two air pressure systems. Describe the airflow that you see shown by the green arrows.

How does uneven heating of the Earth's surface affect the movement of air between pressure system?

High-pressure systems and Weather

High-pressure systems are areas where air sinks and moves outward. The sinking air is denser than the surrounding air, and the pressure is higher. Cooler, denser air moves out of the center of these high-pressure areas toward areas of lower pressure. As the air sinks, it gets warmer and absorbs moisture. Water droplets evaporate, relative humidity decreases, and clouds often disappear. A high-pressure system generally brings clear skies and calm air or gentle breezes.

Low-pressure systems and Weather

Low-pressure systems have lower pressure than the surrounding areas. Air in a low-pressure system comes together, or converges, and rises. As the air in the center of a low-pressure system rises, it cools and forms clouds and rain. The rising air in a low-pressure system causes stormy weather.

A low-pressure system can develop wherever there is a center of low pressure. One place this often happens is along a boundary between a warm air mass and a cold air mass. Rain often occurs at these boundaries, or fronts.

13 Match Label each picture as a result of a high- or low-pressure system. Then, draw a line from each photo to its matching air-pressure diagram.