

Make Convection Currents

Convection is the transfer of heat by the movement or flow of a substance from one position to another.

Materials:



One clear plastic container about the size of a shoebox



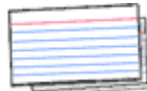
Red food coloring



Ice cubes made with water dyed with blue food coloring



Colored pencils



Index cards

Procedure:

1. Fill the plastic container 2/3 full of room temperature water.
2. Let the water sit for 30 seconds or until it is completely still.
3. Place a blue ice cube at one end of the plastic container.
4. Add two drops of red food coloring to the water at the opposite end of the plastic container. Be careful not to disturb the water.
5. Observe where the red and blue food coloring goes.
6. Use the red and blue pencils to draw what you see happening on the index card.

What is happening?

Water is flowing from one position to another; heat is being transferred; convection is occurring in the container! The cold, blue water sinks, while the warmer, red water rises. The red water stays higher than the blue.

How does this relate to weather?

What type of air mass does the red water represent? Red water represents a warm air mass. How about the blue? Blue water represents a cold air mass. How does this relate to a thunderstorm? A thunderstorm is caused by unstable air. A body of warm air is forced to rise by an approaching cold front. A strong, persistent updraft of warm moist air is formed. The approaching cold front helps build the updraft into a cumulus cloud. Speeds of an updraft have been recorded at 90 miles per hour. When the warm air rises and meets the cold air, it condenses (releases latent heat). The heat helps fuel the thunderstorm. The next stage is when the cumulus cloud has grown into a cumulonimbus cloud rising above 30,000 feet. Then a downdraft forms, bringing cold air and precipitation down to the Earth's surface.

Source: <http://eo.ucar.edu/webweather/tornact2.html>