

Activity 1.4.2 Highs, Lows, Winds and Jet Streams (Student Worksheet 1.4.2.1 "Low")

OBJECTIVE

Students will apply the "hand-twist" model to determine wind direction around high and low pressure centers.

Students will predict changes in surface wind direction caused by movements of high and low air pressure systems.

MATERIALS

- The map of the U.S. that is labeled 1.4.2.1 High
- Pencil
- WEATHERLogs

PROCEDURE

1. Draw a small circle around the large "L" appearing on the map.
2. Place the map on a desk top or table surface. Place your hand flat on the map, fingers spread, with your palm on the circle.
3. Slowly rotate your hand (not the map) in a counter-clockwise manner and gradually draw your thumb and fingers together until they touch as you raise your palm. Practice this motion until you can comfortably achieve a full twist.
4. Place your hand flat on the map, fingertips spread, in the starting position with your palm on the circle. Mark and label the positions of your thumb and fingertips 1, 2, 3, 4 and 5 respectively.
5. Slowly rotate your hand counter-clockwise while gradually drawing your thumb and fingers together and raising your palm. Stop, mark and label the new positions 1,2,3,4 and 5 respectively.
6. Follow the same procedure in quarter steps until your thumb and fingers touch together and your palm is at its highest point.
7. Connect the numbers for each finger and thumb, successively, resulting in five smooth curved lines. (Connect all the 1's together, all the 2's together, etc.) Draw arrows on the lines showing the directions your thumb and fingers moved.
8. The spiral you have drawn represents airflow into a low pressure system.
9. Describe the flow of surface wind around a high pressure system.
10. Describe the flow of surface wind around a low pressure system.
11. The motion of your palm represents the vertical direction of air in high and low pressure centers. What is the vertical motion of air in a high? What is the vertical motion of air in a low?
12. Examine the Activity 1.4.1 Sheets. From which direction is the wind blowing in the city west of the High? From which direction is the wind blowing in the city west of the Low?
13. As the high and low pressure centers move eastward across the U.S., how will wind directions change for the surrounding cities?