

In-Depth Investigation: Weather Map Interpretation

In this investigation, you will study the symbols used on a weather map to gain an understanding of the relationship among temperature, pressure, precipitation, and winds.

1. On the map shown in Figure 25.1, draw the isotherms in red for every 2°C of temperature beginning with the 10°C isotherm.
2. Next, draw the isobars in blue for every 4 millibars of pressure, beginning with the 1004-millibar isobar.



Analysis and Conclusions

1. What is the lowest temperature for which you have drawn an isotherm? What is the highest temperature for which you have drawn an isotherm?

2. Is either isotherm a closed loop? If so, which one?

3. Is the air mass identified by the closed isotherms a cold air mass or a warm air mass?

4. Is there a shift in wind direction associated with either front shown on your map? Describe the shift.

5. What is the value of the lowest-pressure isobar drawn? Is the isobar an open curve or a closed loop?

6. What is the value for the highest-pressure isobar drawn? Is the isobar an open curve or closed loop?

7. Do the winds blow in a general clockwise or counterclockwise direction around a low-pressure region? Is the general wind direction clockwise or counterclockwise around a high-pressure region?

8. What are some weather conditions that are associated with fronts?

Extensions

1. Assume the following things will happen in the 24 hours after the observations were made for your map.
 - a. The cold front, with its weather and low-pressure center, moves about 650 km in a southeasterly direction.
 - b. The warm front and its weather move about 1000 km eastward.
 - c. The high-pressure center and weather move about 800 km southeastward.
 Predict the weather conditions at Stations A, B, and C 24 hours after the observations for your map were made. Record your predictions in Table 25.1.
2. Are you equally sure of all the predictions for Stations A, B, and C? Explain.

Table 25.1

Station	Pressure	Wind direction	Wind speed	Temperature	Sky condition
A					
B					
C					