

Interpreting Weather Maps

Background

Weather maps are made by combining meteorological data collected from stations all over the nation or the world. Weather stations are maintained at airports, at broadcasting stations, by schools, by private citizens, and in remote areas by the National Oceanic and Atmospheric Administration (NOAA). Weather maps usually have an outline of the area being surveyed, the names of the cities where the reporting stations are located, and symbols that represent the weather data. These weather symbols express a lot of information in a concise way. If you combine information from many stations on a map, the map will give you a picture of the large weather systems across the nation.

Figure 1 shows an example of the weather stations symbols, and the information given by each symbol. Following Figure 1 is an explanation of each type of information. As of this writing, weather station symbols in the United States are still expressed in the English system of measurement.

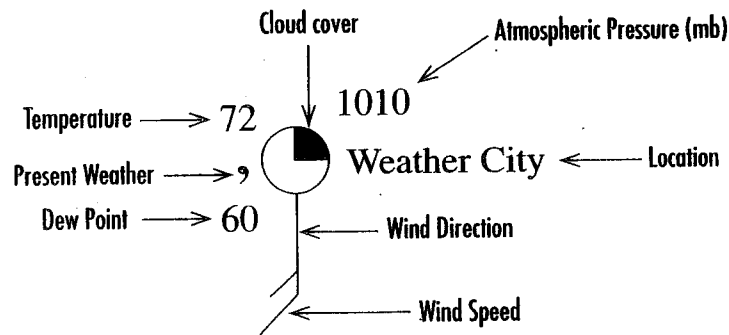


Figure 1

Atmospheric pressure: This is the atmospheric (or air) pressure measured in millibars (mb). Air pressure at sea level averages about 1013 mb (14.7 lb/in² or 1.04 kg/cm² or 760 mm Hg or 29.92 in. Hg). Often weather maps have curved lines

Objective

The objective of this activity is to learn how to interpret a basic weather map.

Materials

For each student:

- colored pencil

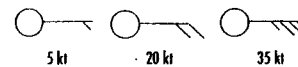


Figure 2

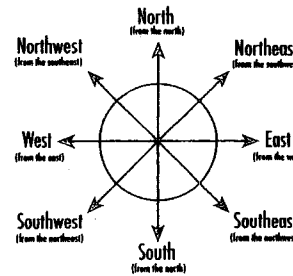


Figure 3

called isobars (literally "equal bars"). These lines are drawn by connecting lines between locations on the map with the same air pressure.

Wind speed: The small lines that look like barbs represent the wind speed. Each full line represents 10 knots (kt) of wind speed (1 kt = 1.15 mph = 1.8 kph). Shorter lines represent wind speeds of 5 knots. Add the lines to get the total wind speed. Figure 2 shows several examples.

Wind direction: If you think of the wind speed lines as feathers on an arrow, the circle represents the arrowhead. The arrow points the direction the wind is blowing, but wind direction is designated as the direction the wind is blowing from. Therefore, if an arrow points to the east, the wind direction is actually called "from the west." In Figure 1 above, the wind direction is from the south. See Figure 3 for the principal wind directions.

Temperature: This is the temperature measured in °F every hour.

Dew Point: This is the temperature in °F the air would have to be cooled to for the air to become saturated and for water vapor in the air to condense.

Cloud cover: The amount of cloud cover is represented by the amount of the circle that is blackened. Figure 4 shows some examples.



Figure 4

Present weather: Figure 5 shows a list of symbols used to designate some of the different types of weather.

Figure 5

◦ Intermittent rain	9 Intermittent drizzle
◦ ◦ Continuous rain (light)	9 9 Continuous drizzle
△ Hail	⚡ Thunderstorms
△ Sleet	= Fog
* Intermittent snow	◦ Slight rain showers
* * Continuous snow (light)	◦ Moderate or heavy rain showers

Procedure

- Answer the following questions referring to the weather map in Figure 6:
 - What is the "present" weather in Dallas, Texas?
 - What is the atmospheric pressure in Kansas City?
 - From which direction is the wind blowing at Hatteras, North Carolina, and what is its speed?
 - What is the temperature in Pueblo, Colorado?
 - What is the cloud cover in Miami, Florida?
 - What is the atmospheric pressure in Roswell, New Mexico?
 - What is the "present" weather in Chicago, Illinois?
 - What is the cloud cover in New York City?
 - From which direction is the wind blowing in Helena, Montana and what is its speed?
 - What region of the nation appears to be generally cloudy? What region appears to be generally clear?
- In Weather City, the atmospheric pressure is 1010 mb. The temperature is 54°F, and the dew point is 40°F. The wind speed is 15 knots from the southeast. The cloud cover is 50 percent. Draw the weather symbols that represent the data recorded at Weather City.
- Use a colored pencil to shade lightly all areas in Figure 6 that are experiencing 100 percent cloudiness or precipitation.
- Why is it important to be informed about weather conditions?
- Of all the weather conditions that occur in your area, which pose threats to life and property?

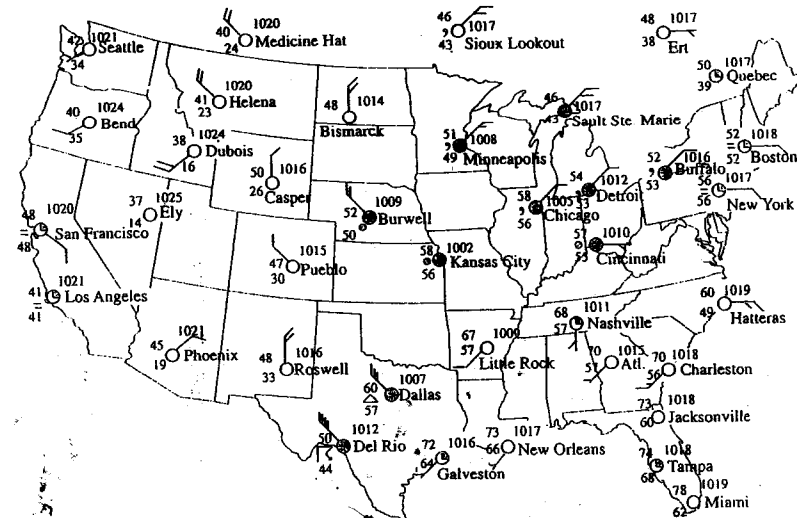


Figure 6