

# Interpreting Weather Station Models

**Meteorologists** are scientists that study the weather. They constantly monitor weather models to help predict weather patterns. Weather stations produce models and symbols that are interpreted as to what the current weather is like. The images on this page are keys to interpreting models.

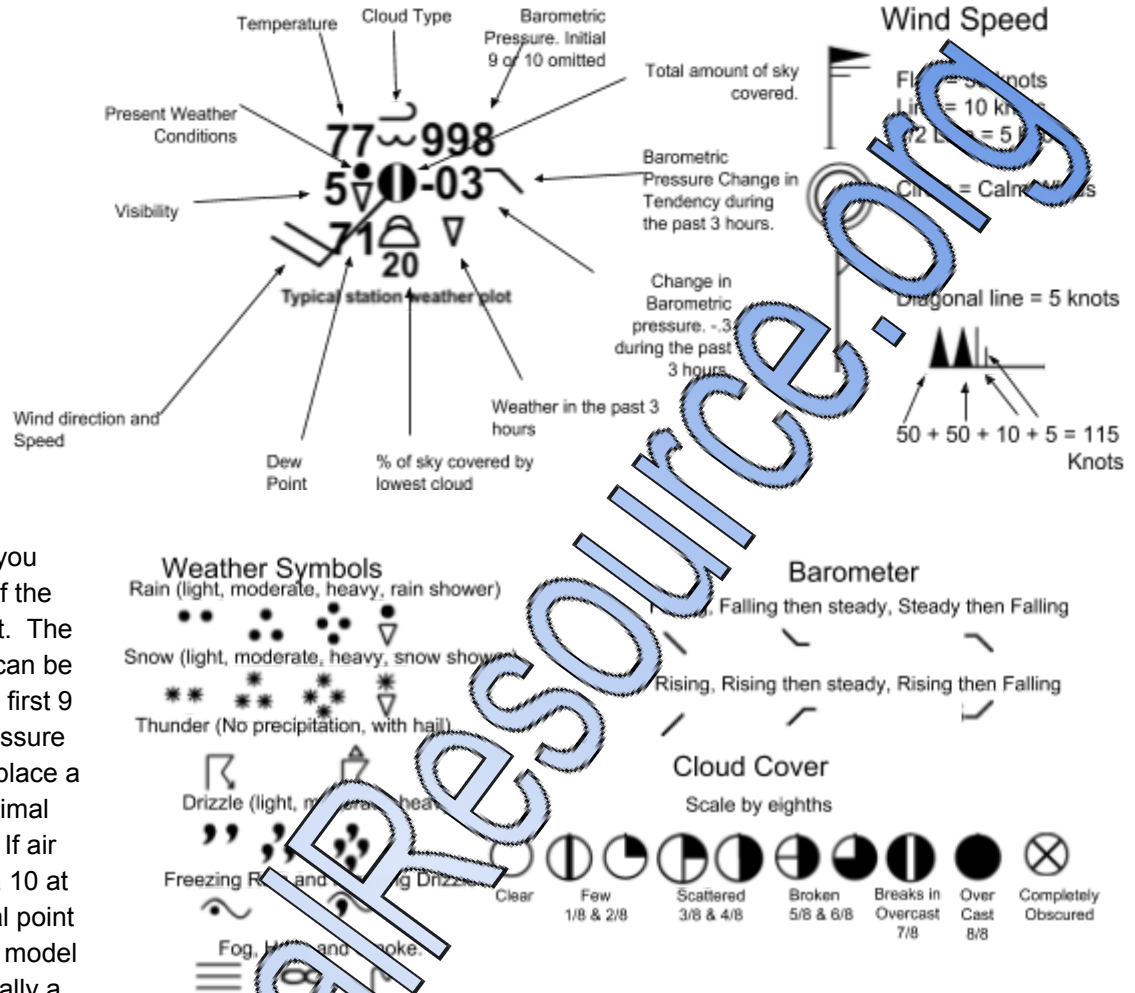
A weather model shows the temperature, air pressure, wind speeds and direction, humidity, dew point, and precipitation.

The images on the right will help you interpret weather models. Most of the weather model is easy to interpret. The **barometric pressure**, however, can be a little tricky. The model omits the first 9 or 10 in the number. If the air pressure in the model is greater than 500, place a 9 at the beginning and then a decimal point between the last two digits. If air pressure is less than 500, place a 10 at the beginning and place a decimal point between the last two digits. On a model that has a pressure of 998 is actually a 999.8 mb and a 032 is actually 1003.2. Tools that they might use are satellites, Doppler radar and weather balloons. To interpret the change in pressure correctly, just put a decimal point between the two digits.

There are thousands of meteorological stations throughout our country that keep a watch out for changes because weather. There is always a decimal point between the last two numbers.

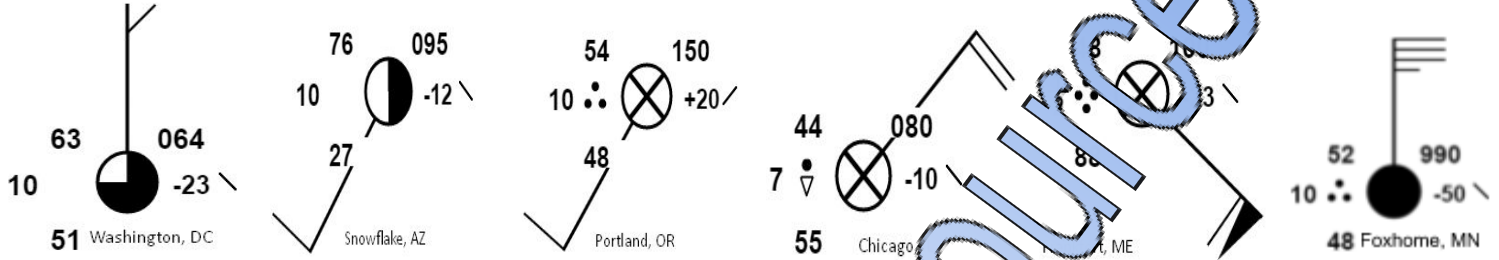
Try the following

1. Station model says 103 the actual reading is \_\_\_\_\_.
2. Station model says 98 the actual reading is \_\_\_\_\_.
3. Station model says 11 the actual reading is \_\_\_\_\_.
4. Station model says 97 the actual reading is \_\_\_\_\_.
5. Change in pressure says +15 the actual reading is \_\_\_\_\_.
6. Change in pressure says -25 the actual reading is \_\_\_\_\_.



Below are weather station models for cities around the country. You can see that they are a bit more basic than the more detailed version on the first page. Interpret the models and fill in the following table.

	Washington, DC	Snowflake, AZ	Portland, OR	Chicago, IL	Frankfort, ME	Foxhome, MN
Temperature						
Dew Point						
Wind Speed in Knots						
Wind Direction						
The pressure in mb.						
Change in Pressure						
Sky Cover						
Visibility						
Precipitation						



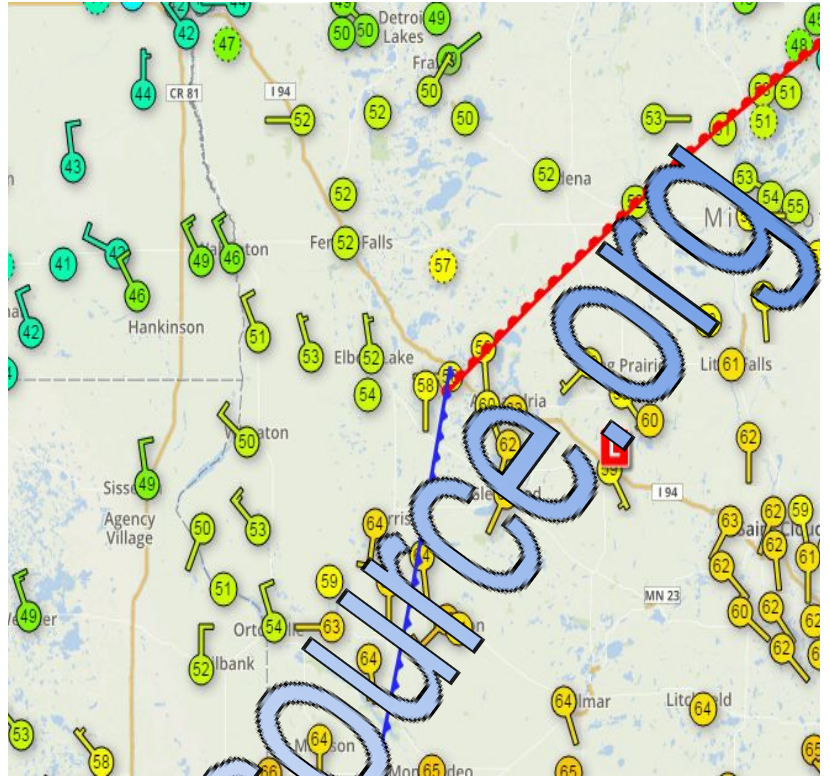
Using the following table of weather data, create your own station models.

	Willard, MI	Raleigh Court, VA	Meadow Lark, WY	Sacramento, CA	Barstow, CA	Albuquerque, NM
Temperature	50	52	37	66	77	85
Dew Point	46	51	31	55	32	22
Wind Speed in Knots	10 knots	0	0	15	35	5
Wind Direction	NE	No Wind	No Wind	SE	W	NW
The pressure in mb.	1014.2 Mb	999 Mb	1011 Mb	1016.6	1004.2	998.6
Change in Pressure	Steady Barometer	Steady	Falling 1	Rising 2	Rising 1.5	Falling 2.5
Sky Cover	1/8	8/8	8/8	2/8	3/8	6/8
Visibility	10	6	1/4	10	10	10
Precipitation	None	Heavy Rain	Heavy	None	None	Thunder with hail

Willard, MI	Raleigh Court, VA	Meadow Lark, WY
Sacramento, CA	Barstow, CA	Albuquerque, NM

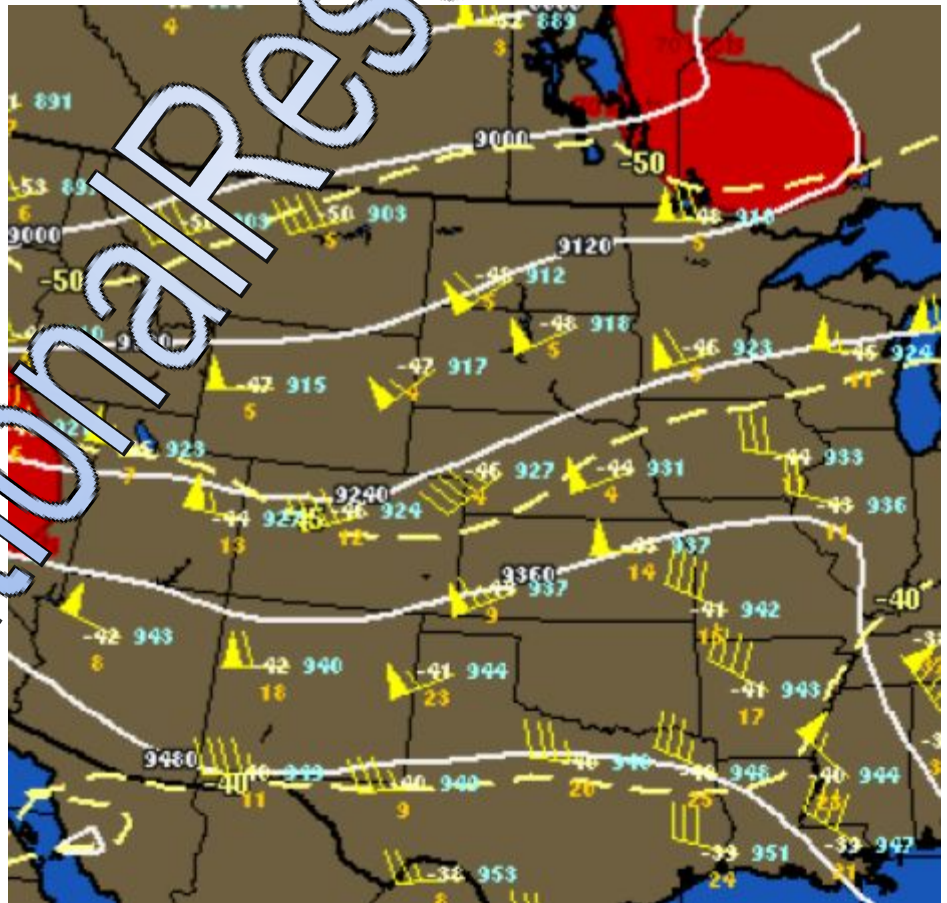
To the right is a very basic surface weather model map. Demonstrate your understanding by answering the following questions.

7. What do you notice about the relative temperature on either side of the cold front? Explain why this is.
8. Circle a station that is currently reporting 5 knots in wind speed.
9. Draw a triangle around a station that is currently reporting no wind at all.
10. Draw a square around a station that shows the wind blowing from the SE.



The last map is an **isotherm** map that shows wind and air pressure at about 30,000 feet above sea level. The root "iso" means same and the root "therm" means temperature. The isobar lines connect similar points of pressure. The closer the isobars the faster the wind blows. You read it like you would a topographic map; lines will never intersect.

11. Place an "A" by a point that shows 60 knots wind speed.
12. Place a "B" by an area that has a pressure of 994.3 mb.
13. Place a "C" by an area that shows 45 knots wind speed.
14. Place a "D" by an area that has a pressure of 989.1 mb.
15. What do you notice about air pressure at 30,000 feet compared to air pressure at surface level?



16. What do you notice about the wind speed at this altitude compared to the speed at the surface level from the first image on this page?

## Teacher Reflections, Procedures, and Suggestions

1. This lab takes about an hour to complete and can spill into another day.
2. To create my own weather models I found this website that is pretty good.
  - a. [Weather Station Model Creator](#)
3. For the most part, the assignment and lesson are self-explanatory and if your students are self-driven they can easily complete the work without too much assistance if any.
4. In the black and white version of the assignment, the cold or warm front doesn't print out blue or red of course, but students should remember from previous lessons on analyzing weather fronts, <http://earthscience.xyz/Fronts>, that the triangles represent cold fronts and that the line with have circles represent warm fronts.

### Answer Key

**Answers available upon purchase.**

**Wouldn't want the answer key to fall into the wrong hands. :)**

1. Station model says 103 the actual reading is \_\_\_\_\_
2. Station model says 981 the actual reading is \_\_\_\_\_
3. Station model says 114 the actual reading is \_\_\_\_\_
4. Station model says 972 the actual reading is \_\_\_\_\_
5. Change in pressure says +15 the actual reading is \_\_\_\_\_.
6. Change in pressure says -25 the actual reading is \_\_\_\_\_.

	Washington, DC	Snowflake, AZ	Portland, OR	Chicago, IL	Frankfort, ME	Foxhome, MN
Temperature (F)						
Dew Point (F)						
Wind Speed in Knots				2	6	
Wind Direction			W	NE		
Pressure in mb.						
Change in Pressure	-2.	-1.				
Sky Cover						
Visibility in miles						
Precipitation						R in

Willard, MI	Raleigh Court, VA	Meadow Lark, WY
Sacramento, CA	Barstow, CA	Albuquerque, NM

5. What do you notice about the relative temperature on either side of the cold front? Explain why this is.

6. Circle a station that is currently reporting 5 knots in wind speed.

7. Draw a triangle around a station that is currently reporting no wind at all.

8. Draw a square around a station has the wind blowing from the SE.

9. Place an "A" by a point that shows 60 knots wind speed.

10. Place a "B" by an area that has a pressure of 994.3 mb.

11. Place a "C" by an area that shows 45 knots wind speed.

12. Place a "D" by an area that has a pressure of 989.1 mb.

13. What do you notice about air pressure at 30,000 feet compared to air pressure at surface level?

Tornados could drop it lower.

14. What do you notice about the wind speed at this altitude compared to the speed at the surface level from the first image on this page?

models the analyzed.