



This map shows air pressures for various locations over the U.S. The units are in millibars. Higher numbers represent higher pressures. The number 1013 is neither high pressure nor low pressure. So, numbers higher than 1014 and higher are considered higher pressure and numbers 1012 and below are considered low pressure. Watch the youtube video called "isobar contours" : <http://www.youtube.com/watch?v=Zp7ILxyw5oY>

Procedure

1. Using a pencil, lightly draw lines connecting identical values of pressure. Remember, these lines, called isobars, do not cross each other. Isobars are usually drawn for every four millibars. These lines will have values of 1000, 1004, 1008, 1012, 1016, 1020, 1024, etc., or 996, 992, 988, 984, 980, etc. Begin drawing from the 1024 millibars station pressure over Salt Lake City, Utah (highlighted to the left). Draw a line to the next 1024 value located to the northeast (upper right). Without lifting your pencil draw a line to the next 1024 value located to the south and then to the one located southwest, finally returning to the Salt Lake City value. Remember, isobars are smooth lines with few, if any, kinks. The result is an elongated circle, centered approximately over Eastern Utah. The line that was drawn represents the 1024 millibars line and you can expect the pressure to be 1024 millibars everywhere along that line.
2. Repeat the procedure with the next isobar value. Remember, the value between isobars is 4 millibars. Since there are no 1028 millibars values on the map, then your next line will follow the 1020 millibars reports. Then continue with the remaining values until you have all the reports connected with an isobar. **(5pts)**
3. Isobars can be used to identify "Highs" and "Lows". The pressure in a high is *greater* than the surrounding air. The pressure in a low is *lower* than the surrounding air. Label the center of the high pressure area with a large blue "H". Label the center of the low pressure area with a large red "L". **(2pts)**
4. High pressure regions are usually associated with dry weather because as the air sinks it warms and the moisture evaporates. Low pressure regions usually bring precipitation because when the air rises it cools and the water vapor condenses. Shade, in green, the state(s) you would expect to see rain or snow. Shade, in yellow, the state(s) you would expect to see clear skies. **(2pts)**
5. In the northern hemisphere the wind blows clockwise around centers of high pressure, and spreads from the center outward. The air at a high pressure is sinking and has nowhere else to go but outward. The wind blows counterclockwise around lows and moves toward the center where the lowest pressures are. They move toward the center because the air here is rising upward. Draw "octopus" arrows around the "H" on your map to indicate the wind direction. (See your hand model lab if you forgot how this works.) Draw "octopus" arrows around the "L" on your map to indicate the wind direction. **(2pts)**

Analysis

1. What pressure in millibars is neither high pressure nor low pressure?
2. On which side of the country is the high pressure system?
3. Is the weather system in the east a cyclone or anticyclone?
4. Low pressure systems always rotate in which direction?
5. Is wind moving toward the center of the high pressure system or away from the center?
6. Looking at your arrows, does the wind move from a low pressure system to a high pressure system, or a high pressure system to a low pressure system?
7. If there were no pressure differences on this map, would there be any wind?
8. Where is the wind faster—when the isobars are close together, or when the isobars are far apart?