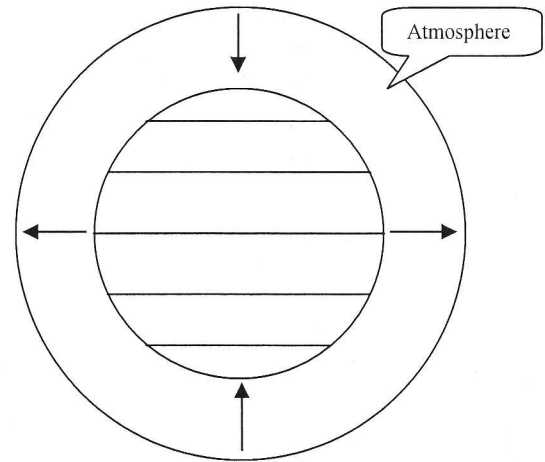


Pressure and Temperature Applications:  
Prevailing Winds and Climate Patterns

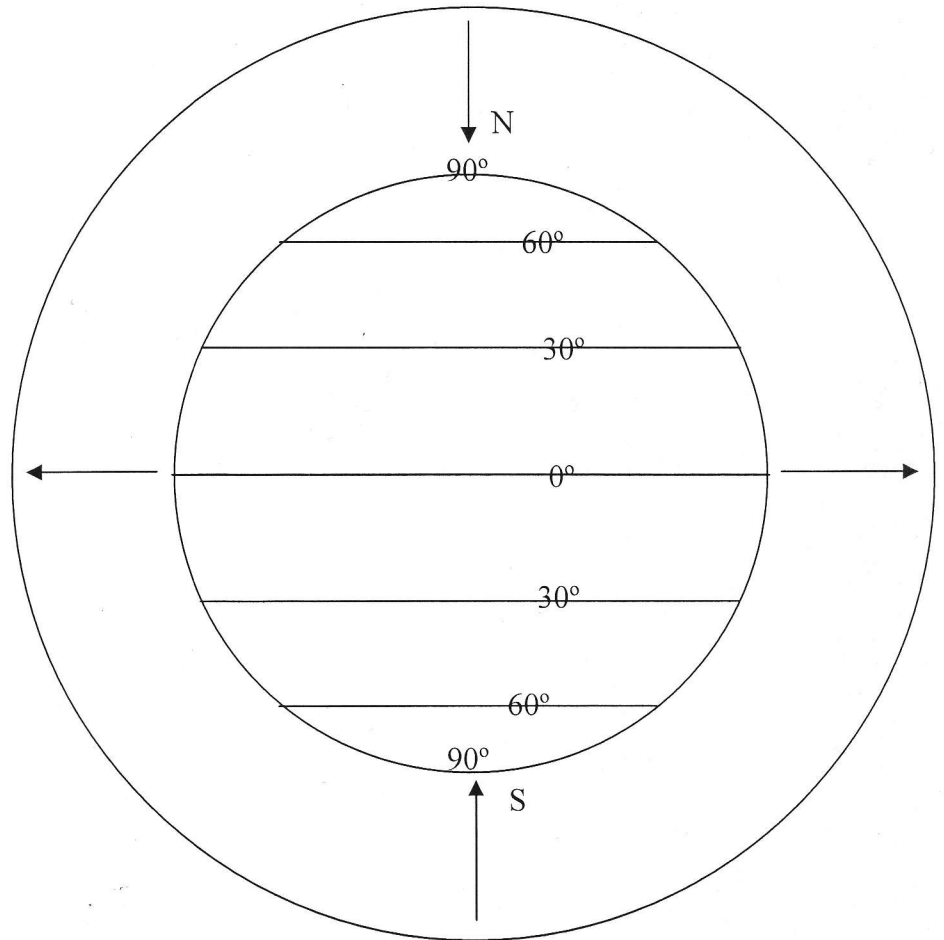
1. The diagram on the right shows the earth and the atmosphere surrounding the earth. In the diagram, air is rising at the equator and sinking at the poles. [The atmosphere is not drawn to scale.]



a. Why does air rise at the equator and sink at the poles?

b. The rising and sinking air currents will create a pattern of circulating air. Draw that pattern in the donut shape of the atmosphere.

2. In reality, winds cannot travel all of the way to the equator from the poles, because the Coriolis Effect causes them to turn before they get there. In order to replace the rising and sinking air at the equator and the poles, air also sinks at 30° and rises at 60°. Draw the complete circulation pattern that results when you add-in these rising and sinking air currents.



3. This rising and sinking air creates areas of high and low pressure. Who do you think would feel high pressure, someone standing beneath rising air or someone standing beneath sinking air?

4. Sinking air = \_\_\_\_\_ (high pressure or low pressure) = \_\_\_\_\_ (clear skies or cloudy skies)

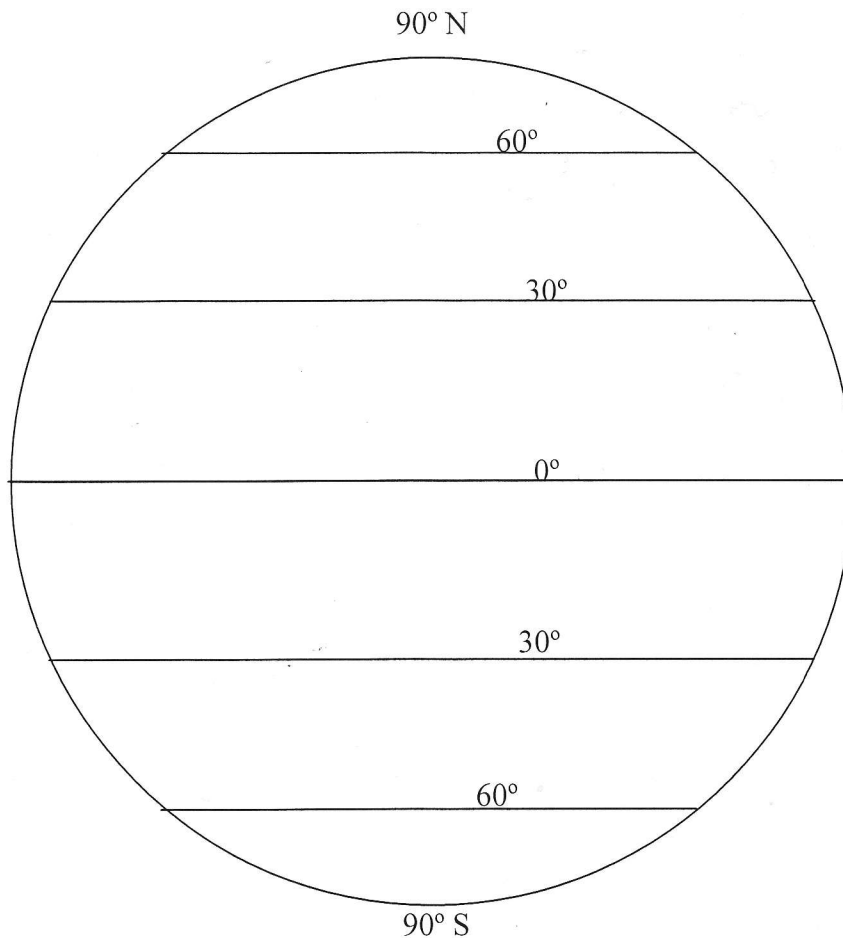
5. Rising air = \_\_\_\_\_ (high pressure or low pressure) = \_\_\_\_\_ (clear skies or cloudy skies)

6. On the map above, each latitude with either an “L” (low pressure) or an “H” (high pressure).

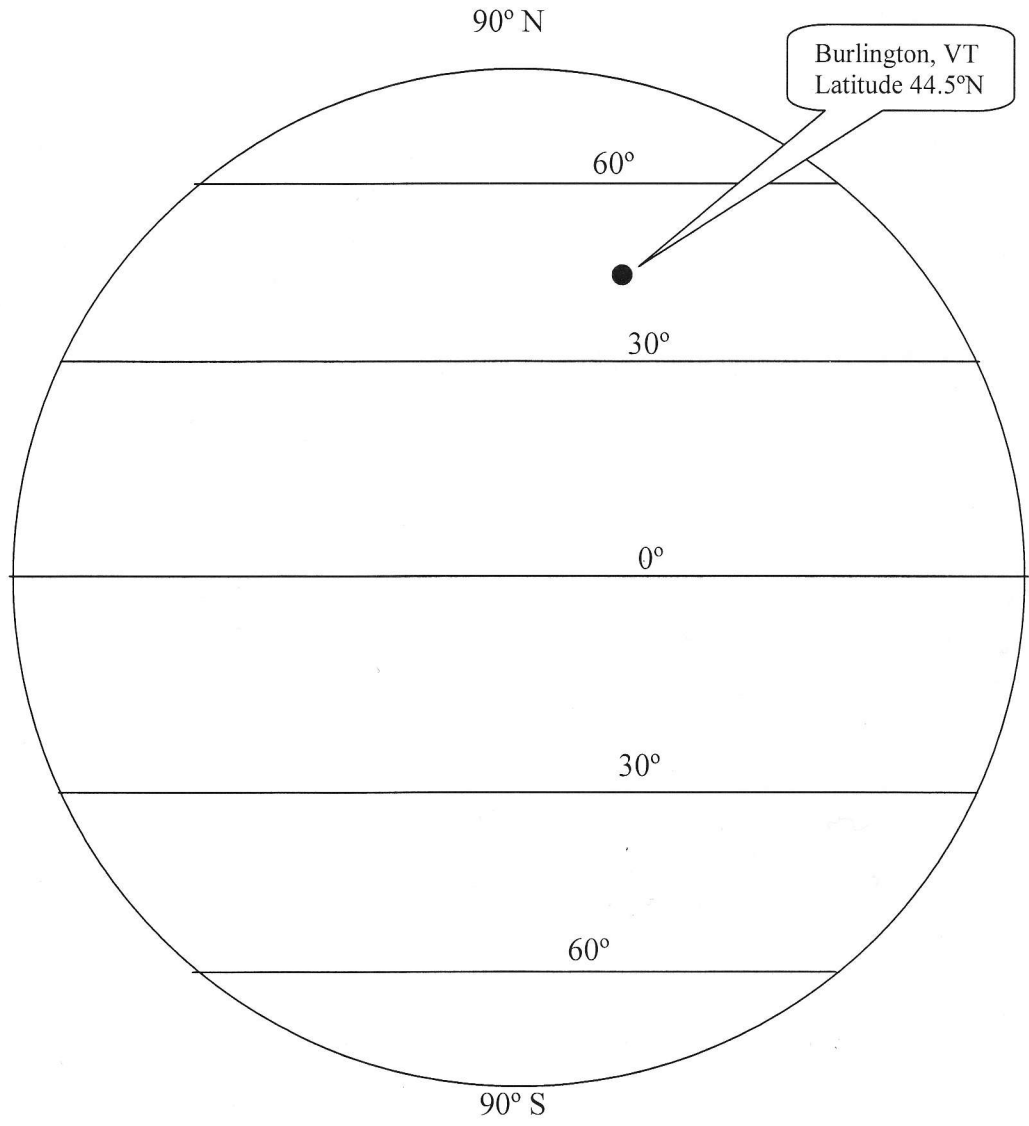
7. Label the lines of latitude “wet” or “dry.”

8. You can see why some of the Earth's major rainforests lie on the equator. What are some of their names?
9. You can also see why some of the Earth's major deserts lie at 30° latitude. What are some of their names?
10. Does air move from high pressure to low or from low pressure to high? [Hint: think of poking a hole in a car tire.]
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11. On the diagram below, label each latitude with the correct pressure (H or L). These areas are known as the earth's "Pressure Belts."
12. Now draw the winds that are created by these pressure differences. The winds will be created *between* the pressure belts. The Coriolis Effect actually makes these winds curve, but for now just draw the winds as straight lines pointing from high pressure to low pressure.



13. Now draw those pressure belts and winds again, but this time make those winds curve according to the Coriolis Effect.



14. According to the map above, from which direction do our winds come?