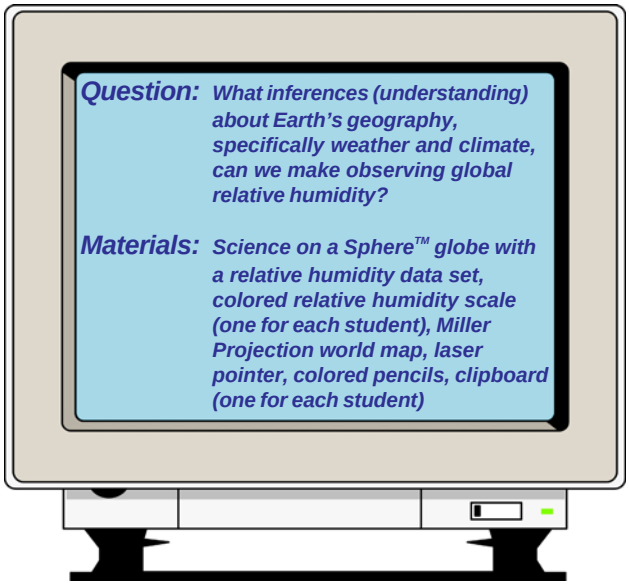

Procedure

Preliminary

(Instruct students to sit in a semi-circle facing the Sphere.)

Primary - Part A

Using the Science on a Sphere™ model globe, have different students volunteer to identify each of the following features using a laser pointer.

- Latitude
- Longitude
- Prime Meridian
- International Date Line
- Equator
- Hemispheres
- Tropic of Cancer (23.5 Degrees North Latitude)
- Tropic of Capricorn (23.5 Degrees South Latitude)

Questions

Part A

(Ask students the following questions and help them to answer correctly.)

1. How does temperature change with latitude?

2. How does climate (average weather conditions over a period of time) change with latitude?

3. How does time change with longitude?

4. When does the Tropic of Cancer directly face the sun?

5. When does the Tropic of Capricorn directly face the sun?

Figure L5.1. Example of Colored Relative Humidity Scale (Individual Copies will be Passed Out to Students for Lesson)

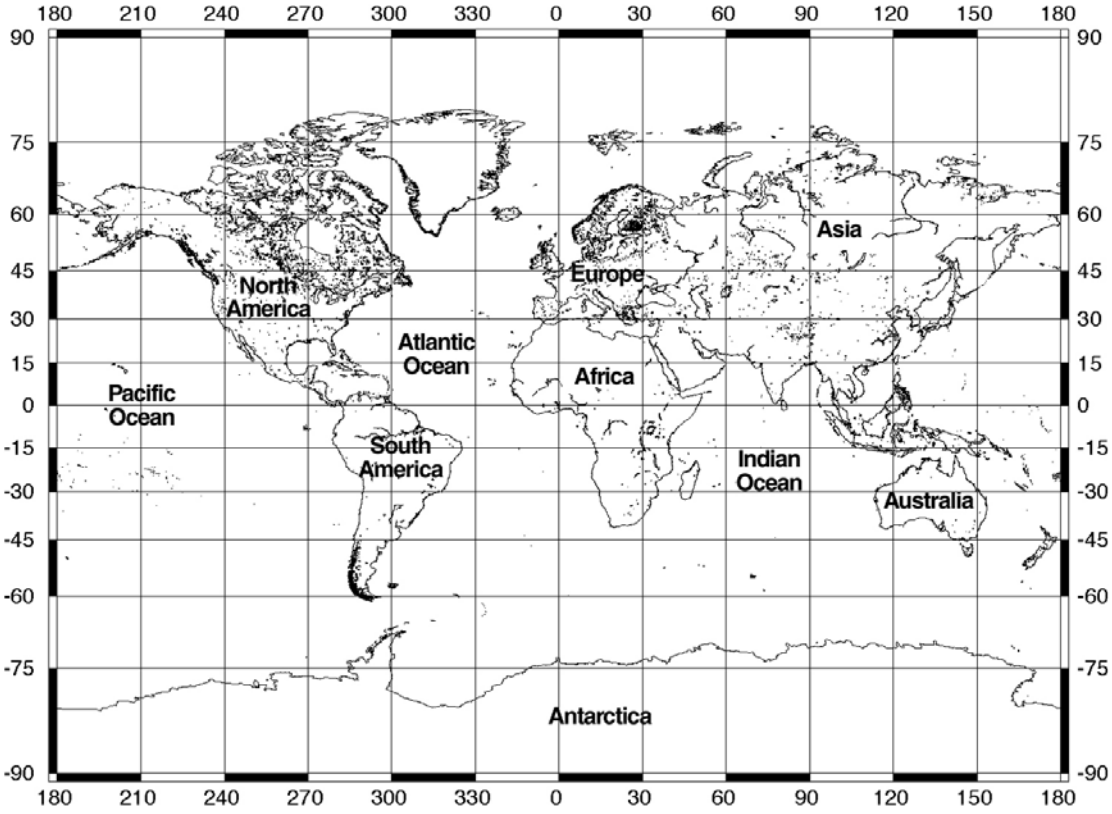

Figure L5.2. Example of Miller Projection World Map (Individual Copies will be Passed Out to Students for Lesson)

Procedure

Primary - Part B

(Operator stops the motion on the Sphere. Have students move so that they can directly observe Australia, then be seated. Distribute colored pencils, colored relative humidity scale [Figure L5.1], and maps [Figure L5.2].)

Les 5-2

Ask students to...

1. Find Australia on the Sphere.

2. Now use your colored relative humidity scale to identify the location for the lowest relative humidity in Australia. Then identify the location for the highest relative humidity.

3. Draw and color the areas of the lowest and highest relative humidity for Australia on your map using the same colors and patterns that you see on the Sphere.

(Students need to move around the Sphere for the next series of instructions.)

4. Find all the remaining lowest relative humidity areas on the Sphere.

5. Now draw and color those areas on your map according to your color scale.

6. Find the equator on the Sphere.

7. Now use your colored relative humidity scale to identify the highest relative humidity in the area around the equator.

8. Draw and color those areas on your map using the same colors and patterns that you see on the Sphere.

9. Using the Sphere as a guide, draw and color all the highest relative humidity areas in the Northern Hemisphere using the same colors and patterns that you see on the Sphere.

10. Using the Sphere as a guide, draw and color all the highest relative humidity areas in the Southern Hemisphere using the same colors and patterns that you see on the Sphere.

Questions

Part B

(Ask students the following questions and help them to answer correctly.)

1. Where in Australia does the highest relative humidity occur? Why?

2. When you see a low relative humidity area over time, what can you infer about the climate in that region?

3. When you see a high relative humidity area over time, what can you infer about the climate in that region?

4. When you see an area of high relative humidity over time, what can you infer about the amount of vegetation in that region?

5. When you see an area of low relative humidity over time, what can you infer about the size of the human population in the area? Why?

6. Is relative humidity typically higher or lower over land? Over water? Why?

7. Is high relative humidity likely to support or slow insect population growth? Why?

Conclusion

(Ask students to answer the question stated at the beginning.)

Relative humidity tends to be higher over water and lower over land. When the relative humidity over land is low, the geographic area tends toward dry weather and a dry climate over time.

On the other hand, when the relative humidity over land is high, the geographic area tends toward moist weather and climate over time.

There are probably more living organisms in moist weather and climate since living creatures need water to survive.

Relative Humidity is the amount of moisture (water) in the air as compared with the maximum amount of moisture that the air could contain at the same air temperature. If the air contains its maximum amount of moisture at a given temperature, it is said to be saturated. The relative humidity in this case is 100%.

Example: If the air temperature is 80 Degrees Fahrenheit, the maximum amount of moisture it can hold (saturation) is "X" units. When you measure the actual amount of moisture in the air at 80 Degrees Fahrenheit and find that it is "0.4X" units, then the relative humidity of that air at 80 Degrees Fahrenheit is 0.4 x 100 = 40%.

The actual methods and units for determining the maximum amount of moisture air can hold at a given temperature and measuring the exact amount of moisture are beyond the scope of this lesson and can be used as an advanced project or assignment.

Answer Key

For "Questions - Part A"

1. Higher latitude usually means lower temperature.
2. Higher latitude usually means colder climate.
3. For every 15 degrees longitude, time increases by one hour.
4. Summer solstice in the Northern Hemisphere (about June 21).
5. Winter solstice in the Northern Hemisphere (about December 21).

For "Questions - Part B"

1. On the coast - because water vapor comes from the oceans surrounding Australia.
2. Dry climate
3. Moist climate
4. There is probably more vegetation.
5. If the climate is very dry, then the population is likely to be low: because human beings need a water supply to survive.
6. Lower relative humidity over land and higher relative humidity over water: because evaporating ocean water increases relative humidity.
7. High relative humidity is likely to support insect population growth: because insects thrive in moist climates.