

Land and Water Temperatures Lab

Name: _____ Per: ____ EN: ____

The Purpose of this investigation is the understand why there is such a difference in climate between places near the oceans and other large bodies of water are not the same as climates of places that are not near large bodies of water.

Materials:

2 plastic containers 4 thermometers Ring stand and ring
Sand Heat lamp Stone or metal cylinder

Procedure:

1. Pour about 2 cm of tap water at room temperature into one container, and about 2 cm of sand into the second.
2. Caution: only allow one thermometer to get wet. Place two thermometers into each container. One thermometer bulb should be about $\frac{1}{4}$ cm under the sand, and one should be in the water. (That's the only one that should get wet.)
3. The initial temperatures of all four thermometers should be nearly equal. (if not, get new thermometers)
4. Suspend a lamp about 30-40 cm above the sand and water, halfway between them. Record the initial temperatures and turn on the heat lamp. Continue recording the temperatures each minute for 10 minutes.
5. After 5 minutes, Turn off the lamp and slide it away. Then record the temperatures for another 10 min.

Hypothesis:

If _____

Then _____

Because _____

Time (min)	Above soil	Inside Soil	Above Water	Inside Water	Light OFF	Above Soil	Inside Soil	Above Water	Inside water
0					11				
1					12				
2					13				
3					14				
4					15				
5					16				
6					17				
7					18				
8					19				
9					20				
10					DONE				

Graph the data.

Identify the independent variable: _____

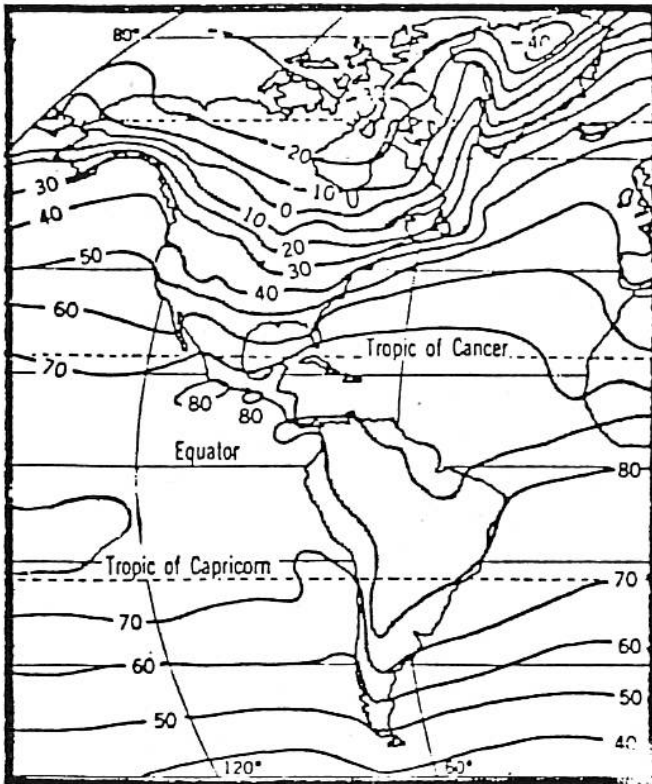
Identify the dependent variable: _____

Discussion:

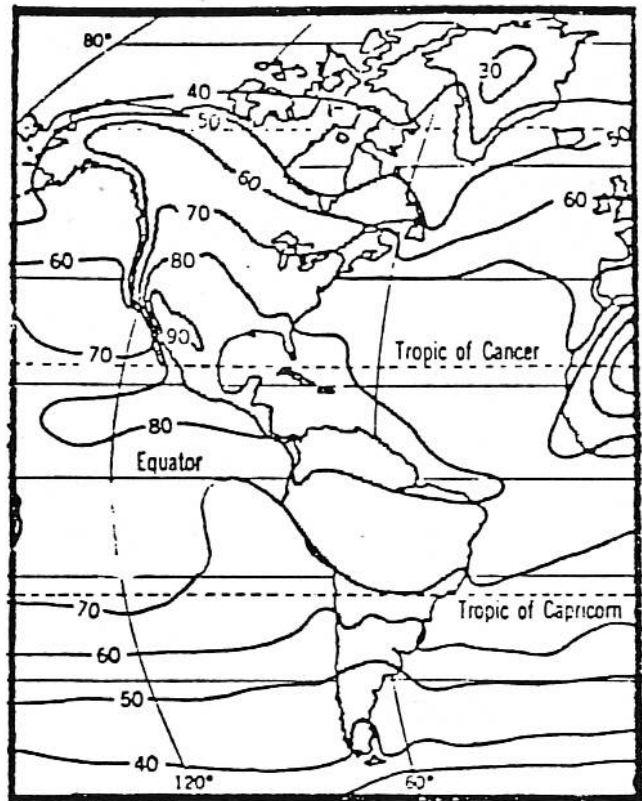
A. Did either container (sand or water) receive more heat from the lamp? _____

B. According to your experiment, which heats up and cools off more, land or water? _____

These maps show the average monthly land temperatures in the Western Hemisphere



Average January Temperatures



Average July Temperatures

c.

Are the coldest January temperatures generally inland in the Northern Hemisphere, or over the nearby oceans? _____

D. Where are the warmest July temperatures? _____

E. Why does water heat up and cool off so slowly?

F: How does this experiment show that water has a higher specific heat than land? _____