Evaporation

An Investigation

Introduction

- Ms. Coffey's class has learned about Solids, Liquids, and Gases over the last week.
- Throughout the year, the Science Inquiry section of the Essential Standards provide a guideline for topics
- Link to more information (K-2):
  - http://www.dpi.state.nc.us/curriculum/science/scos/support-tools/#standards

- The investigation idea is taken directly from the standard…

Matter: Properties and Change

	Essential Standard	Clarifying Objectives	
2.P.2	**Understand properties of solids and liquids and the changes they undergo.**	2.P.2.1	Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling.
		2.P.2.2	Compare the amount (volume and weight) of water in a container before and after freezing.
		2.P.2.3	Compare what happens to water left in an open container over time as to water left in a closed container.

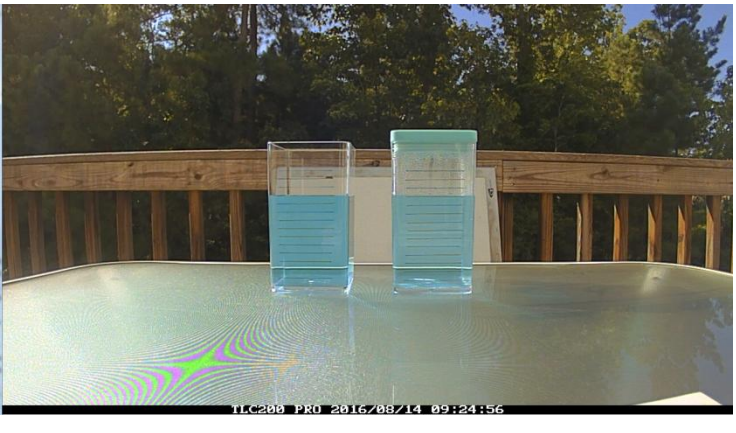
Setup

- Two containers were used to investigate what happens when one is left open
- The containers were marked with lines to help observe changes
- An equal amount of water was placed in each, and left outside for several days
- The student were asked to guess what would happen and why

Result

- The open container outside Ms. Coffey's class was HIGHER than the closed container!
- The students correctly guessed that it was because rain water that caused the result

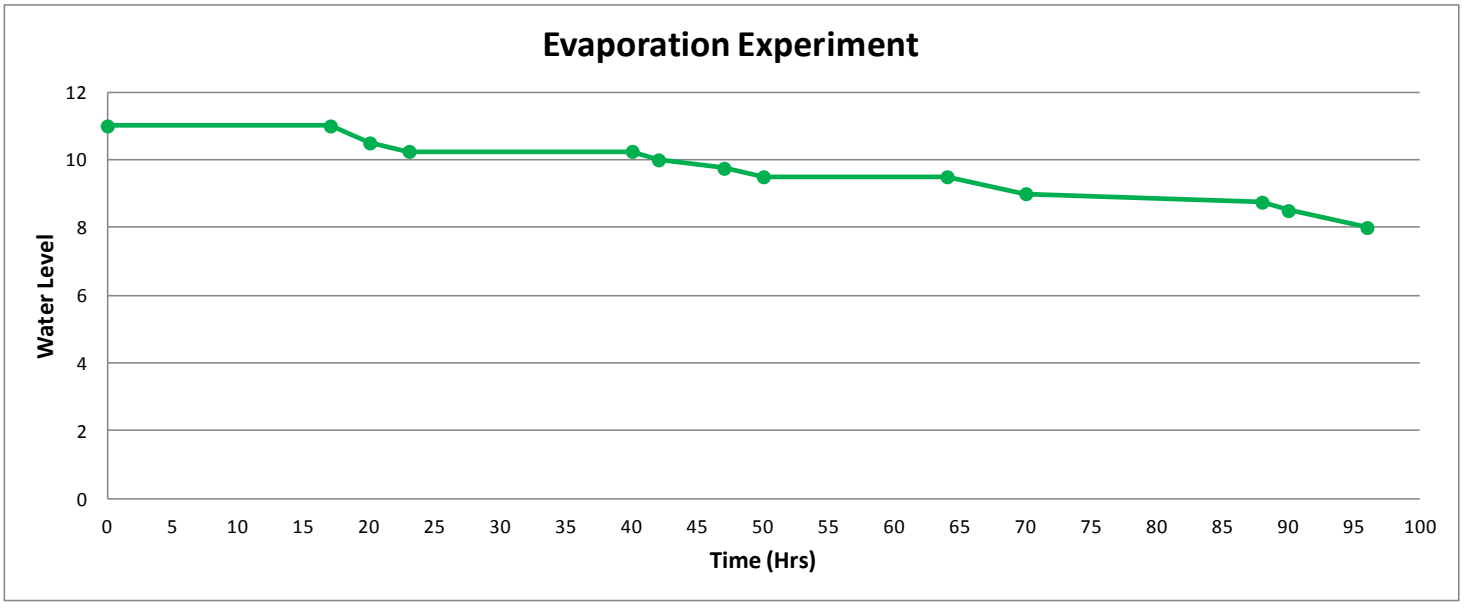
- An identical experiment was performed at Tori's house
- A time lapse camera was used to record the change over time
- A video was shown in class to see the changes
- Watch it here…
- https://www.youtube.com/watch?v=Yr5Tipf6xoc



Observations

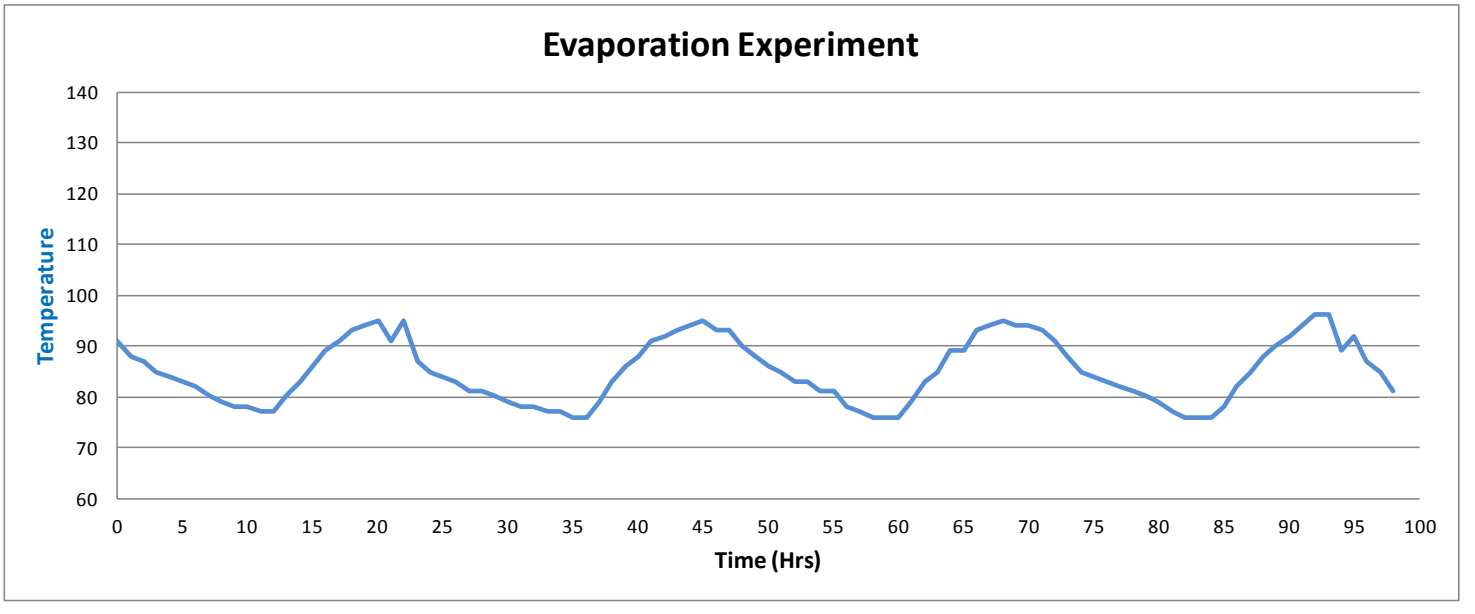
- A series of graphs was shown after the video…

- The water level over time was charted
- Students were asked why the line looks like this
  - They answered that evaporation happened more when the sun was shining
  - Also, it was warmer outside when the sun was shining



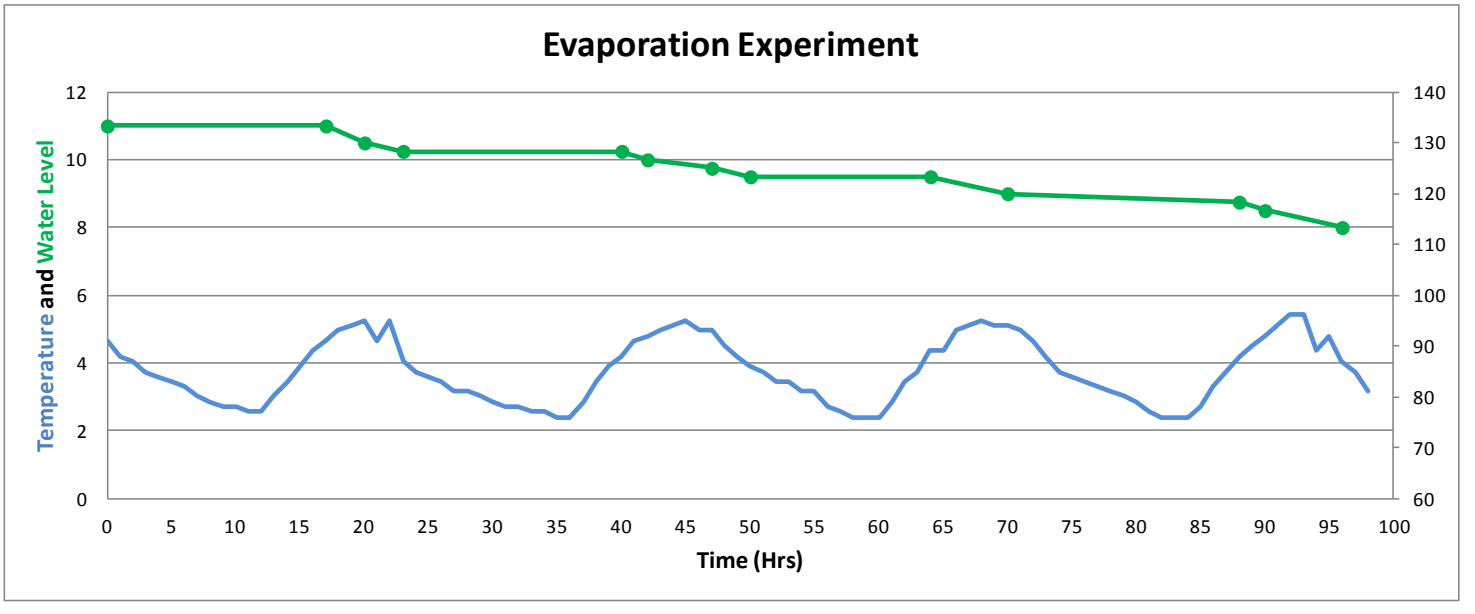
Observations

- The next chart shown was the temperature outside during the experiment
- They were asked when it was warmest outside, and to correlate that with when the sun was shining



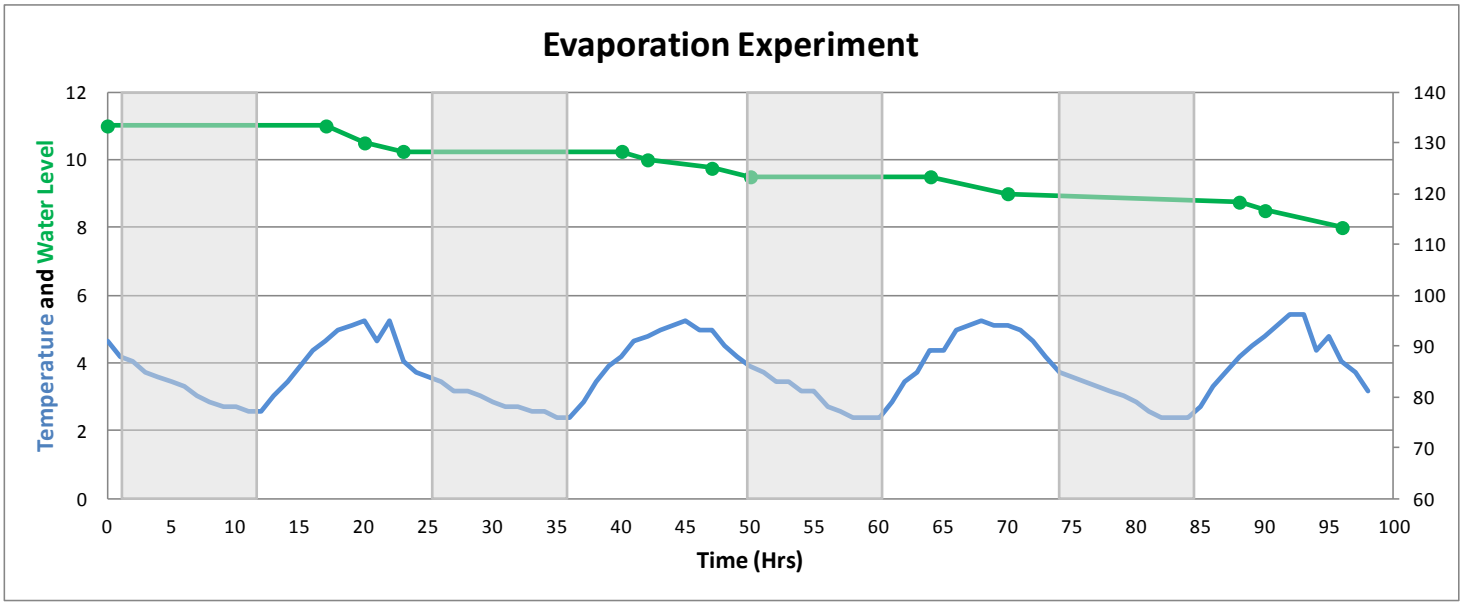
Observations

- Both lines were placed on the same chart to show correlation
- They observed that evaporation happens more when it was warmer
  - And not necessarily when the sun was shining



Observations

- Finally, they guessed that it was cooler at night than it was during the day
- The gray blocks represent the night times during the experiment
- Although this looks like a complicated chart, the students seemed to understand how the different groups of data constructed this final picture



Supplemental Investigation

- To show evaporation in real time, we boiled a pot of water in class

- A thermal imaging camera was used to show the different temperatures of the boiling
- The images also showed how the water moved around rapidly
- And finally water that reached 212 degrees Fahrenheit escaped as a gas!
- Afterward, each student got to see themselves as a thermal image displayed on the class TV