

## Purpose:

Our purpose for this experiment was to send up a balloon with a gondola attached to it to measure temperature and air pressure vs. height. We wanted to see if the temperature and air pressure would change with altitude. During our experiment, we stopped our balloon every hundred feet for two minutes going up 600 feet. This way, the temperature probe and the barometer would be able to collect accurate data. To see this change in altitude, we would need to graph our data.

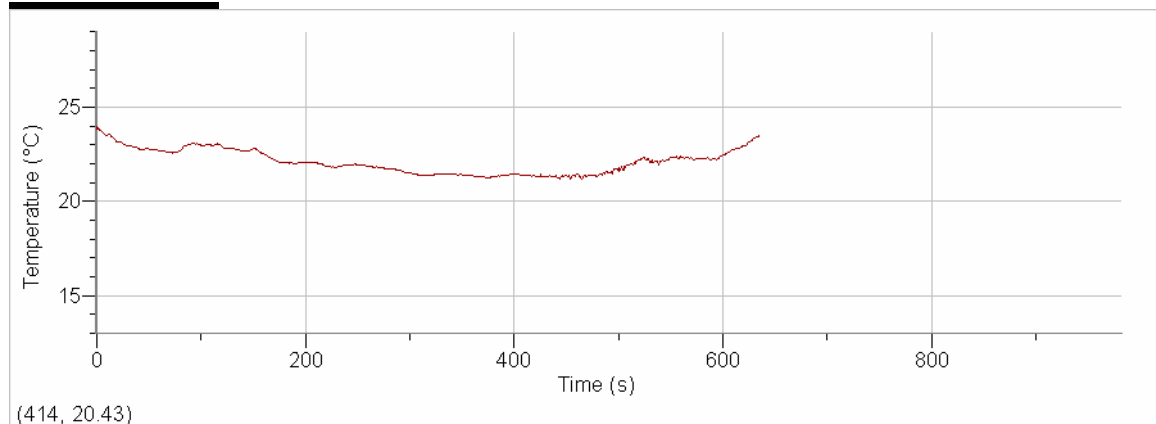
## Hypothesis:

Our hypothesis was that the air pressure would decrease and also the temperature would decrease at higher altitudes. We believed this because we saw chart on the World Wide Web that were similar to our experiment.

After the graphs were analyzed we now realize that our hypothesis of the temperature was correct. It raised and lowered in the way we thought it would.

But the Barometer was set to altitude so we can not conclude if the air pressure did actually decrease. Our data showed that we were correct but in a different way. For instance we got meters instead of kilopascals.

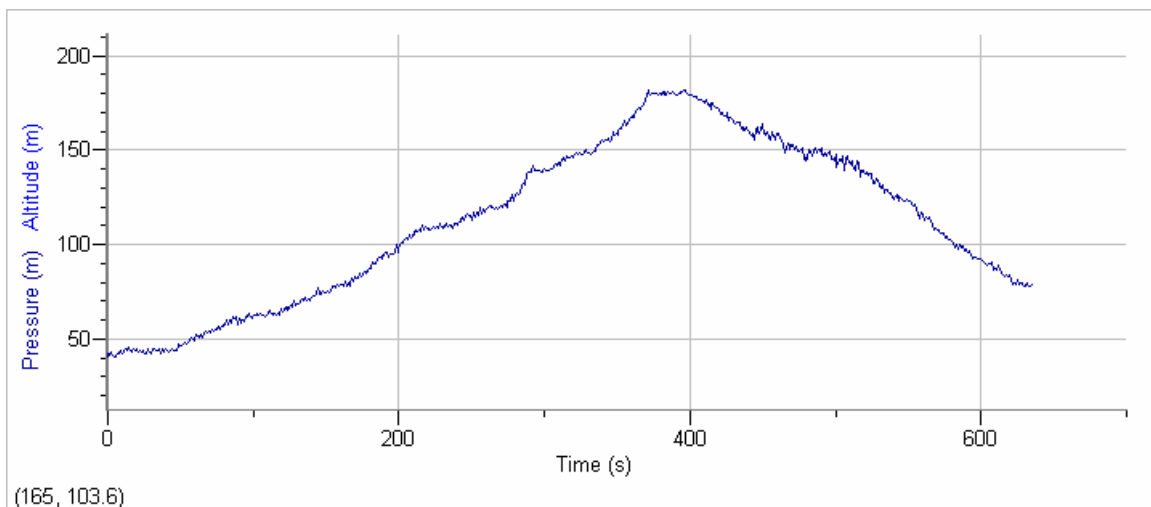
## Charts:



## Analysis:

In our temperature graph we recorded the temperature over time. We were very successful in our readings because as we got higher the temperature slowly dropped. Then it slowly came back up to its original state. That is exactly what we predicted in our hypothesis. This reading was recorded up to 600ft in the atmosphere. The base temperature on the ground was 24 degrees Celsius. As the balloon went up higher the temperature dropped to a low of 22 degrees Celsius as our balloon went up to its highest altitude. We just replaced time for altitude.

## Altitude:



## Analysis

In our pressure graph we recorded pressure over time. Although you can not really tell, our data was correct. But since we measured in meters and not

kilopascals it reversed the graph. So in reality we were correct in our hypothesis. Our data was supposed to make a downward slope not upward.

## **Source of Data:**

We got our data by using a gondola which contained a lab pro, a barometer and a temperature probe. We took the balloon up 200 hundred feet every two minutes for 600 feet. We originally went up every 100 hundred feet every three minutes for a thousand feet but due to lack of time we had to change our experiment. When we took our gondola down we found that the barometer was set to measure altitude not air pressure which made it so we could not conclude if the air pressure actually decreased.

## **Protocol:**

### **Pre-Flight**

Plug the barometer, temperature probe to the lab pro  
Create a program in the lab pro  
Run the program  
Do not hit start button twice  
Attach the lab pro and equipment to the gondola  
Put flags on the balloon

### **Flight**

Start the stopwatch and the lab pro at the same time, we should hear a beep  
Fly the balloon with the attached equipment  
Raise the balloon 100 feet every three min. until it reaches 1000 feet

When it reaches 1000 feet, leave the balloon there for 5 min  
It will take 33 minutes to get to the top.

### **Recovery**

Then bring the balloon down 100ft every Three min. stopping to get data.  
It will take 28 min. to get down. A total of 61 min. just over an hour

### Data

Make sure the green light is still flashing  
Stop recording  
Press stop once  
Do not delete data  
Load on to the Computer

## Conclusion:

In conclusion, our hypothesis was that the pressure and temperature would decrease verses altitude but was not supported by our data. As we got higher in the atmosphere the pressure varied and the temperature pretty constant. This research did not run smoothly though, our first two runs resulted in a failure due to complications with the lab pro. But our last run we retrieved smooth data points.

## Changes for Next Year

Next year we would only change a few things. For instance, we would make sure the barometer is set to measure air pressure not altitude. This would greatly help our project, because we would have more accurate data. Also, we would change the batteries before we get to balloon fest. This year, we forgot to put fresh batteries in the lab pro. Our lab pro would turn off half way through experiment and ruin it.