



Balloon Fest

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Group 2

Members:

Christopher Dana

Brent Edelman

Mentor:

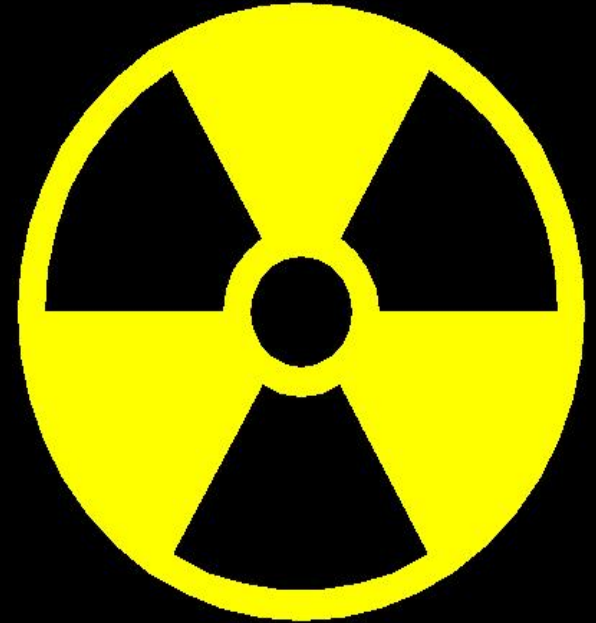
Chris Betancourt



RAD-BRO

RAD-BRO - PURPOSE

- To develop a radiation profile for the area around Tobin James Winery.
- To study varying forms of radiation from both ground and atmospheric sources.



RAD-BRO – DESIGN

- The experiment will consist of a Vernier LabQuest with a Geiger counter and altimeter connected to it.
- The apparatus will be attached to a helium balloon on a gondola and will collect data for 45 minutes.
- Once loaded onto the laptop, the data will then analyzed and put into graphs.

RAD-BRO – BACKGROUND

- Radiation is present nearly everywhere. Radiation comes from many radioactive sources. These sources are in the ground, in the air, and even from the sun.
- Radiation sources are generally heavier elements such as Uranium. These elements are primarily found in rocks and in the ground.
- This leads us to believe that radiation will come primarily from the ground which will result in a decrease in radiation at a higher altitude.

RAD-BRO – BACKGROUND

-While analyzing the data it is important to understand that radiation is a random event.

-Thus, it is necessary to know simple methods to use random events, like radiation counts, for statistics and data collection.

-Relevant methods include Poisson's principles, which states that the square root of the number counts collected over the number of counts is the accuracy of the data collected.

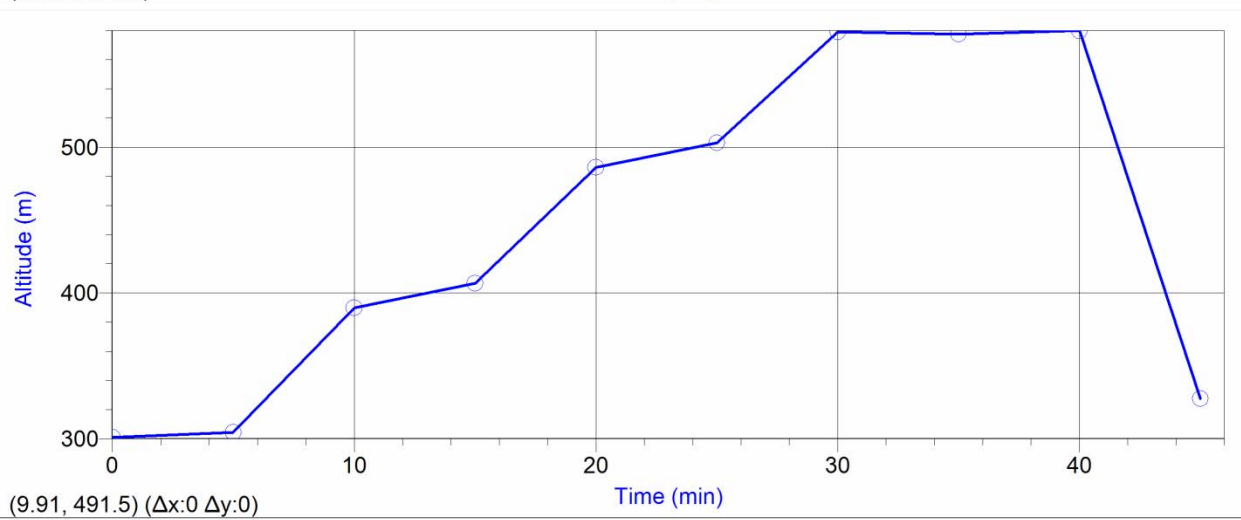
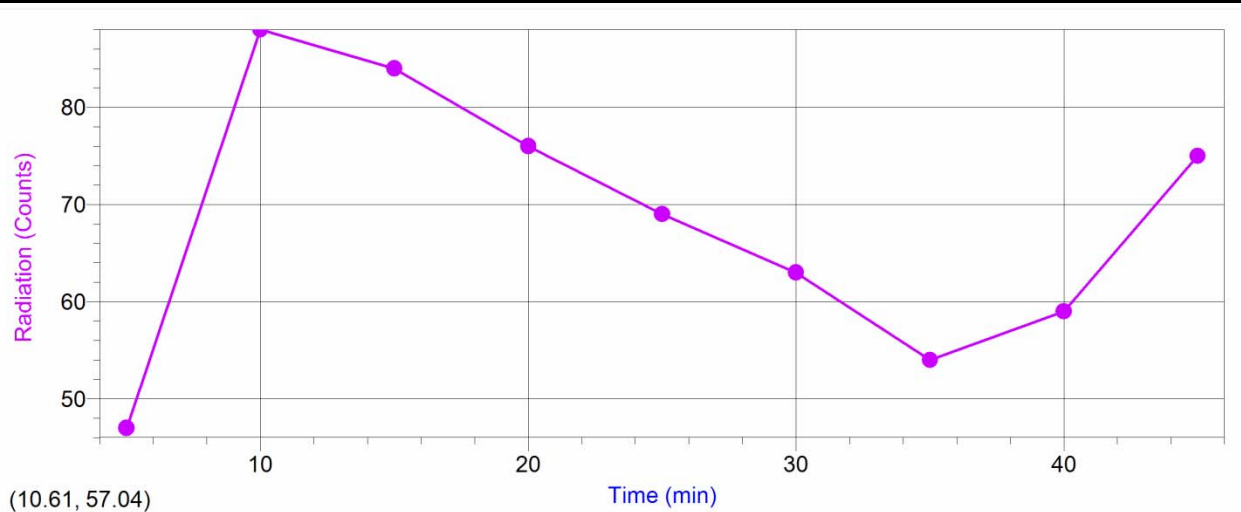
-Our measurements fell well into the accuracy bracket of the number of counts we collected at each altitude.

RAD-BRO – HYPOTHESIS

-The amount of particle radiation will decrease as altitude increases and will increase as altitude decreases. We believe that our instrumentation will be sensitive enough to notice a decrease in CPM as the altitude increases.

-We believe that the CPMs would increase upon reaching altitudes beyond our 1,000 ft limit.

RAD-BRO - DATA



RAD-BRO – DATA

Balloon Action	Time(min)	Altitude (m)	Counts	CPM
Rising	10	390	88	17.6
	15	407	84	16.8
	20	486	76	15.2
	25	503	69	13.8
Stationary	30	579	63	12.6
	35	578	54	10.8
Falling	40	580	59	11.8
	45	328	75	15.0

RAD-BRO – CONCLUSION

- Based upon the data collected by the apparatus, our hypothesis was correct.
- The amount of radiation released by the sources found near the Earth's surface is far greater than the sources of incoming radiation (within the tested 0 – 1,000 feet).
- The CPM of radiation did decrease the further away from the Earth the balloon went.