

El Alto

Michael Sobczak
Jennifer Tighe
Megan Gritzfeld
Kyle Wright

Experimental Design

Purpose:

The purpose of our experiment is to find the altitude of the balloon using different methods of measurement. We will be using laser range finder, the GPS, the plate scale, the three-angle measurement, and the barometer. We will compare the measurement for the altitude that we get from all of the different instruments. To make sure that we get the most accurate data possible, we will take all of the measurements at the same time.

Method:

To find the altitude, getting the most accurate data as possible, we will have the people in our group taking measurements with the different instruments. The barometer and the GPS won't need anyone to collect the data because they will do it automatically when we set up the LabPro correctly. Megan will be taking pictures of the balloon every hundred feet that the rope is let out, for the plate scale, and she will also find the altitude using the laser range finder. Michael, Jen, and Kyle will be finding three angles from the balloon to the ground so that we can use trigonometry to find the altitude.

Hypothesis A:

We think that out of all the instruments we are going to use, the three angle measurements will be the most accurate. The three-angle measurements will not be affected if there is a change in the weather while the other instruments like the barometer would be affected with bad weather.

Test 1- Find out if the calculated altitude is about the same as the altitude found by the other methods.

Test 2- Try finding the height of a stationary object (flagpole), using the three-angle method or using the three-angle method of a stationary object that has a known height.

Hypothesis B:

The barometer should be the next most accurate way to measure the altitude. We think this because the barometer is used in airplanes to find the altitude.

Test 1- See if the barometer's readings lowers when you put it higher up.

Test 2- For the barometer, the ground measurement should be the same at the beginning and at the end of the data.

Hypothesis C:

We think that the *GPS* will be the least accurate of all the instruments that we will be using.

Test 1- Take the *GPS* unit to different locations with different signal strengths and record the altitude multiple times to account for signal changes.