Sources of Uncertainty in the Data

With all investigation there will be sources of uncertainty in the data. These need to be examined to understand the reliability of the data and the accuracy of the conclusions drawn.

Path Prediction

Compare the predicted path as found in the activity *Balloon Altitude and Flight Time* with the actual path as found using the GPS visualizer software. How similar are they? If they are different what might be the reasons?

Altitude

The altitude provided by the Data Logger on the CubeSat is the GPS altitude. However, the air pressure recorded by the data logger can also be used to calculate your altitude. You will need the following three pieces of data: sea level air pressure, air pressure from the BMP180 sensor on the data logger board, and the temperature from the BMP180 sensor. Information about this calculation can be found at the following website.

http://keisan.casio.com/exec/system/1224585971

The excel formula is similar to:

=((POWER((Sea level pressure / BMP180 pressure),(1/5.257))-1)*(BMP180 temp +273.15))/0.0065

The sea level air pressure can be read from the Bureau of Meteorology website. This measurement will have to come from the Adelaide airport weather station as it is the closest to sea level measurement available at 2m above sea level. Go to the following link for this weather station observation.

http://www.bom.gov.au/products/IDS60901/IDS60901.94672.shtml

Apply this formula to the data in the spread sheet and plot the GPS altitude along with the calculated altitude. The plotted lines for the two data sets should follow each other roughly. Why might there be difference in the two measurements of altitude?

Other sources of error

What may be other sources of error in your experiment?