Downloading and Using the Data

Plotting the data in Google Earth or Maps

Example
The website GPS Visualizer is an excellent tool to allow you to track the path of your CubeSat. The following example demonstrates how to use the website.

Download the file *example.txt* from the VSSEC/Launchbox website and save it on your computer.

The website is: http://www.gpsvisualizer.com/

In the get started now box click the "Browse" button and find the example.txt file. Select the file and press "Open". Next select the output file type from the pull down menu. Several output types are available however click on "Google Earth" or Google Maps. You can now click the "Go!" button.

You should see the following map:
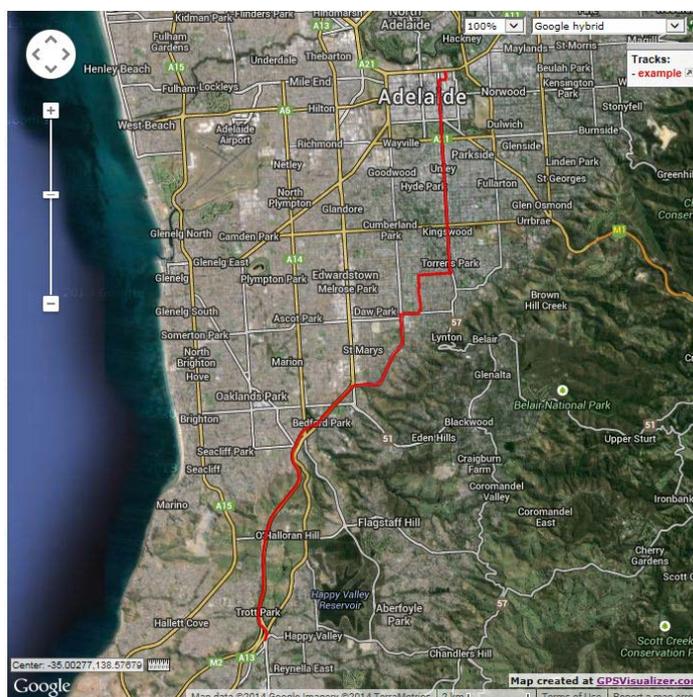
The red line shows the path the GPS device took.

Using your CubeSat GPS data
After the balloon flight, download the BLog.txt file from the SD card as previously described. Open the BLog.txt text file (or a copy of it) and check that the top line has the following text.

type,date,time,latitude,longitude,alt,course,speed

If not, add it. Make sure that each word is separated by a comma and there are no spaces. Save the file as a text file. It would be advisable to save it as a different name.
Go to the GPS visualizer website and import the file as shown previously.

If you have done the above steps correctly the website will produce a file that can be opened by Google Earth/Maps. This will produce a line that represents the path taken by the CubeSat during the balloon flight.

Using the CubeSat Data

Import the BLog.txt file into Excel as previously described in the document *Setting up and using the SD Card*. If the column headings have not come across then add them to the table. (Your actual data will look different to this.)

type	date	time	latitude	longitude	alt	course	speed	Pressure	Temperature
T	180814	214132	-35.0838	138.5459	136.9	0	0.61116	1008.58	10.5
T	180814	214151	-35.0838	138.5459	136	7.21	2.778	1008.61	10.4
T	180814	214152	-35.0838	138.5459	135.6	3.34	6.59312	1008.58	10.4
T	180814	214158	-35.0834	138.546	129.5	8.18	35.57692	1008.49	10.4

As previously indicated the GPS will always output the UTC (Universal Coordinated Time) date and time. For South Australia 9.5 hours is added (non-daylight saving). 180814 is 18/08/14 and 214232 is 21:42:32pm. For the GPS time any leading zeros will be dropped so 023856 (2:38:56am) will look like 23856. The date will be the same, so single digit days 010214 will look like 10214.

Note:

- The altitude is in metres and is calculated by the GPS
- The course is in degrees, where 0 degrees is due north
- The speed is in km/hr
- The pressure is in hectopascals
- The temperature is in Celsius

From this data you can graph temperature versus altitude, pressure versus altitude, altitude versus time of flight and speed versus time of flight.