Setting up and using the CubeSat SD Card

This document describes the initial setting up of the SD card and the collection and importing of data from the card.

Using your computer, the SD card should be formatted to FAT32 (note: a 2GB SD card is sufficient and this formatting only has to be done once). For the data logger to work the SD card MUST have a test file already on the SD card called *BLog.txt*

To do this, use Notepad or similar to create a blank text file and name it *BLog.txt*. Copy this file to the SD card. For each activity; make sure you have a blank *BLog.txt* file on the SD card.

Once the SD card has been correctly formatted and the BLog.txt file has been placed on it, insert the SD card in the holder on the CubeSat.

Check the batteries are fully charged and turn on the CubeSat electronics.

Do the testing experiments.

Once the experiment and the logging have been completed the *BLog.txt* file will contain rows of the following formatted data:

T,Date,Time,Latitude,Longitude,Altitude,Course,Speed,Pressure,Temperature

Importing the Data from the Card

Connect the SD Card to your computer and download the BLog.txt file. There are two methods you can use to import the data to your computer.

Method 1

This data can be imported into Excel by opening BLog.txt. Press CRTL+A to select all text, CTRL+C to copy. Open an Excel file and select box A1 and then press CTRL+V. With all the data in column A selected the “data” pull down menu and then click "text to columns". In step 1 leave the "Delimited" radio button selected and press next. In step 2 tick the box next to "Comma" and un-tick the box next to "Tab". In step 3 click finish button. The data should now be sorted into the spread sheet columns.

Method 2

Open Excel
Open the BLog.txt through Excel
The import wizard will open
Step 1 – click on delimited
Step 2 – click on comma
Step 3 – click OK

You may have to add the headings at least for pressure and temperature in the excel spreadsheet. You will now have your excel file where you can analyse the data collected.

Interpreting the Data

A couple of lines of data will look as follows:

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

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: Further information on the analysis of the data will be provided as part of the lessons after the balloon flight.