

## Project Update

Over the course of the summer term and start of the holidays, members of the Cambridge University Spaceflight team have continued to develop high-altitude technology to push the boundaries of low-cost space exploration. During this time we have concentrated on implementation and testing of the new flight computer, and began on balloon and rocket construction techniques.

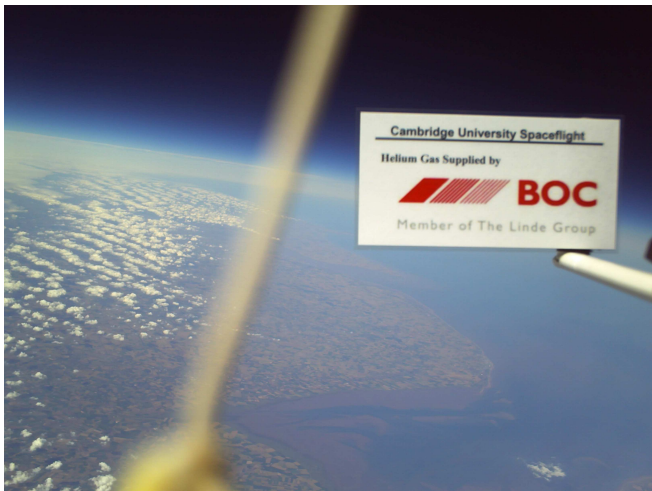
We are also delighted to welcome two new Platinum Sponsors onboard. Cambridge Precision are a company specialising in the manufacture of high quality components, both at the prototype and production level and they are supporting us with machined components and prototyping of designs. We also welcome BOC Gases, part of the Linde Group, who have pledged us supplies of helium gas for our balloon program.

### Nova 6

To test the new flight computer system, an electronics payload was built and carried by the Nova 6 mission. The flight set a new UK amateur altitude record of 32,461m (106,500ft), breaking the record currently held by the CU Spaceflight Nova 1 flight.

Right : A photograph taken by the Nova 6 flight at 32.4km.

Below : A photograph taken by the Nova 6 flight at around 24km.

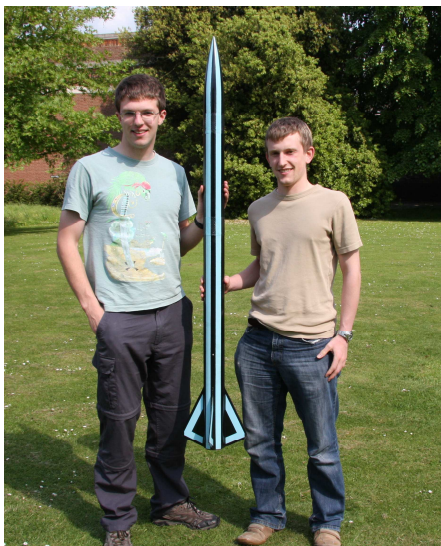
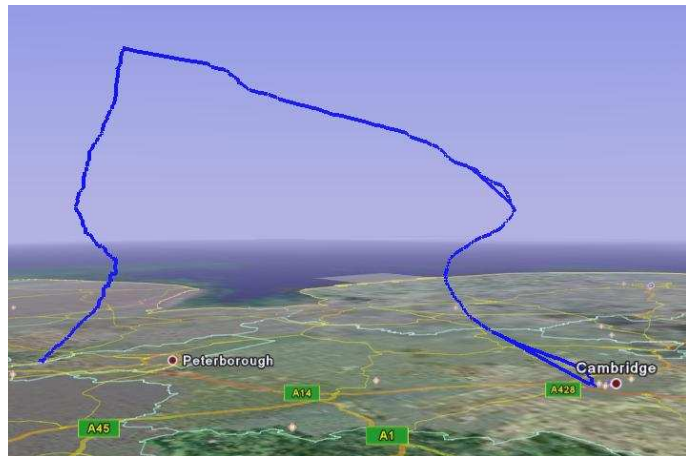


The radio telemetry from the electronics was a huge success, and although only transmitted at less than 10mW power (less than a standard LED) we received almost perfect data downlink. A member of the UK High Altitude Society soon picked up the telemetry from indoors in central London, uploading it real-time onto the internet. This became an internet hit with many users tuning in to watch the record being broken and track the payload live.

The winds were extremely low during the launch window and with our new flight prediction data based on raw weather prediction maps we were confident that a high altitude flight was possible without reaching the coastline. A backup for the radio was also used that 'texted' the payload GPS location to the mobile phones of those tracking it once it was below 500m altitude and had network reception. This worked effectively as the GPS data is accurate to around 5-10m on the ground which allowed for speedy recovery.

The flight path is shown plotted with Google Earth™, showing a slow ascent rate, very low wind drift and slow landing speed. This complete path was plotted using the data that is written by the flight computer onto an onboard SD memory card. Payload interior temperature and program status data were also recorded.

Right : Nova 6 Flight Path plotted in Google Earth™



## Rocket Systems

A test rocket was built to obtain UKRA (United Kingdom Rocketry Association) Certification to launch high-power rockets at rocket sites throughout the UK. It has now been completed, reinforced with carbon fibre and Level 1 Certification passed. Unfortunately, due to crop harvest, low clouds and high winds we have been unable to obtain Level 2 Certification yet.

Left : Flight tested rocket, complete with internal parachute and onboard flight computer.

During the first test flight a small motor was used which accelerated the rocket to 380mph in 1.8 seconds, achieving a maximum altitude of just under 3,000ft. On the next launch we have simulated the rocket to achieve around 550mph and 5,000ft altitude, which should be verified with an onboard flight computer with barometric sensors.

Right : Test rocket launched at the EARS rocketry site.



## Sponsorship

This project is reliant on the generosity and forward thinking of its sponsors, and we have been steadily receiving support as the project gains momentum. We would like to thank all of our sponsors for their continued assistance to the project, whether in financial support or in kind.

For further information our sponsorship document can be found through our website [www.cuspaceflight.co.uk](http://www.cuspaceflight.co.uk) or please feel free to email [cuspaceflight@cusu.cam.ac.uk](mailto:cuspaceflight@cusu.cam.ac.uk).

