

## **GreenCube 3A – Lessons Learned**

### **Isaac Shivers:**

- “The iPhone ran into some strange hitch - I got 45 seconds of data on the ground before launch, and then some 5 seconds of data during flight about 30 minutes after launch (sampling at 10hz). We're not sure why the data collection failed. I've attached all of the data (timestamps show the discontinuity). The accelerometer data looks real throughout; the magnetometer and the gyroscopes seem to have some sort of hardware-level smoothing which the discontinuity messed up; the GPS never picked up a signal (a software problem that is fixed). See plots in the data for more info. ([This site](#) describes the collected data.)

### **Peter Horak:**

- “We should probably try to position the telescopes to better avoid the outdoor lights or, better yet, figure out how to turn the lights off. Also, we should fasten the antenna(s) to the payload more securely, so that we do not have to take the covering off in order to reconnect it.”

### **Amanda Slagle:**

- “The ham radio antenna on the payload should be secured in some way other than just the bnc connection. Duct tape worked well.”
- “It's easier to make sense of telescope images if 1) the secondary payload is attached to the flight train in the same way as the primary (ie at two points rather than one) and 2) all the LEDs are flashing at the same rate.”
- “After we focus the CCD camera, we should check it by looking at a different object.”

### **Sean Currey:**

- “Adding a gps on the recovery vehicle would be very useful, not just for tracking the balloons but also for analyzing the radio data.”
- “Some of the chords attaching the radios to the laptops kept coming undone. It would be wise to rig up a stronger connection between them.”
- “The position of recovery team members and equipment in the vehicle could be optimized. Because Tim's map was with Tim in the back seat with the radios, the driver and navigator in the passenger seat could not see where the balloon was in relation to the car, so

navigating was slightly difficult. Perhaps providing an extra screen for the navigator in the front seat would allow for faster navigation and decision making in the case when the balloon is traveling far off course.”

**Casey Bradshaw:**

- “We should bring more 9pin serial cables. We should also make sure (before leaving) everyone is on the same page about how we want the secondary payload suspended.”

**William Voight:**

- “I think the one thing that really stood out for me was to try and get a GPS for the car, and incorporate that into the tracking program, so that we know exactly where we are and where the balloon is.”