

MAGNETIC FIELD VS ALTITUDE



METROPOLITAN
Community College

INTRODUCTION

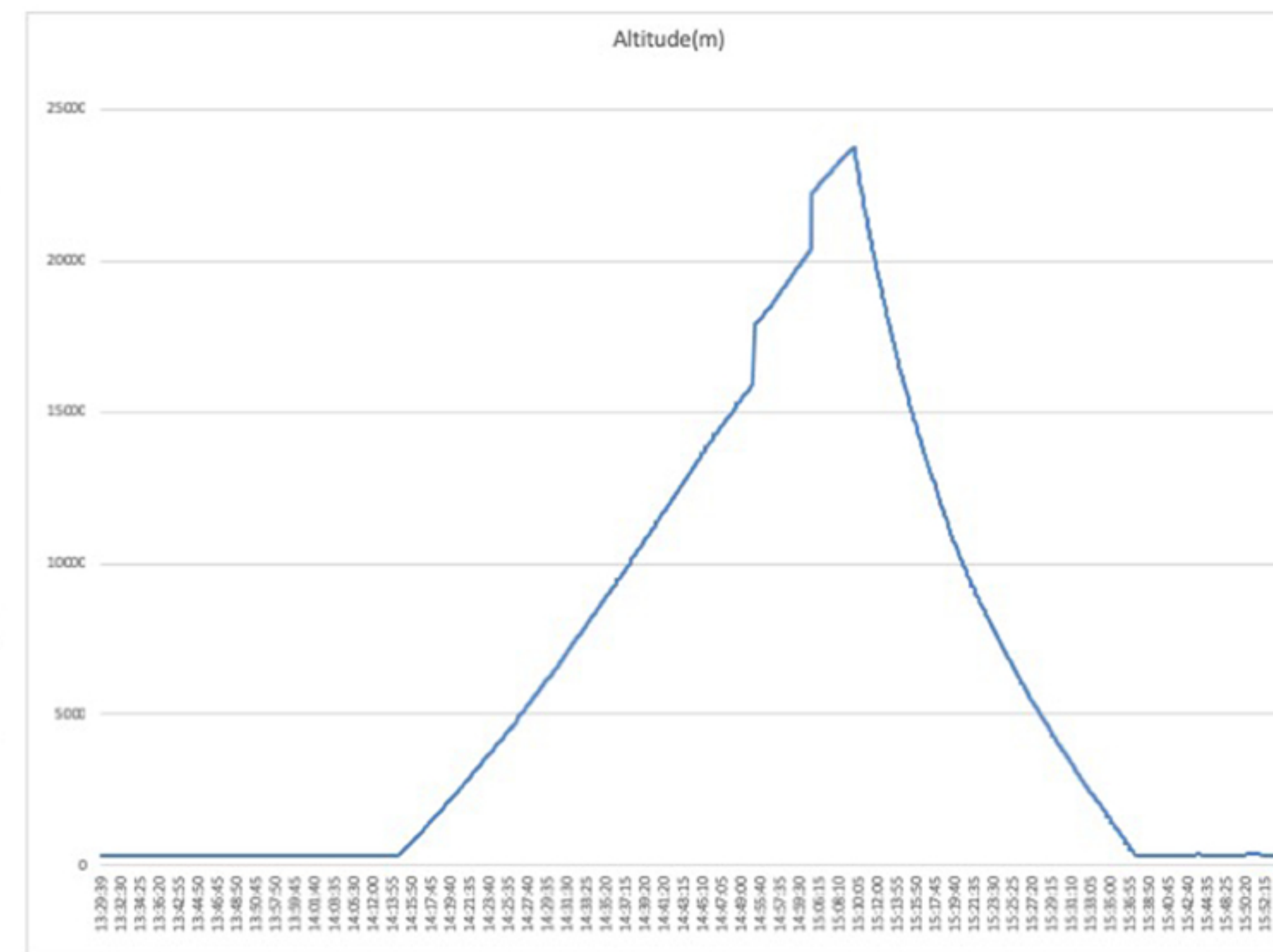
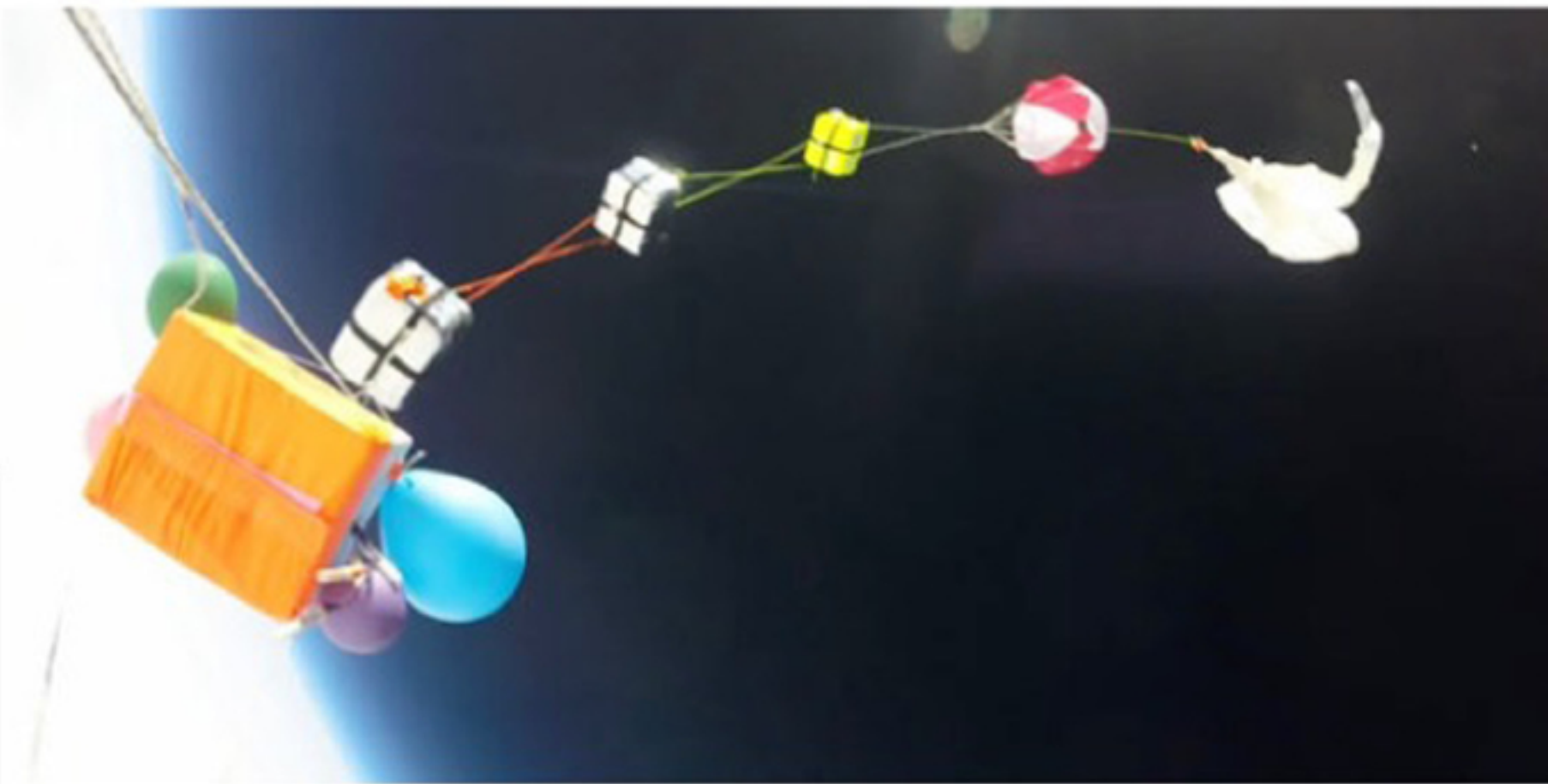
For our experiment, we measured magnetic field experienced by a high altitude balloon to see if altitude had any effect on magnetic reading.

METHOD

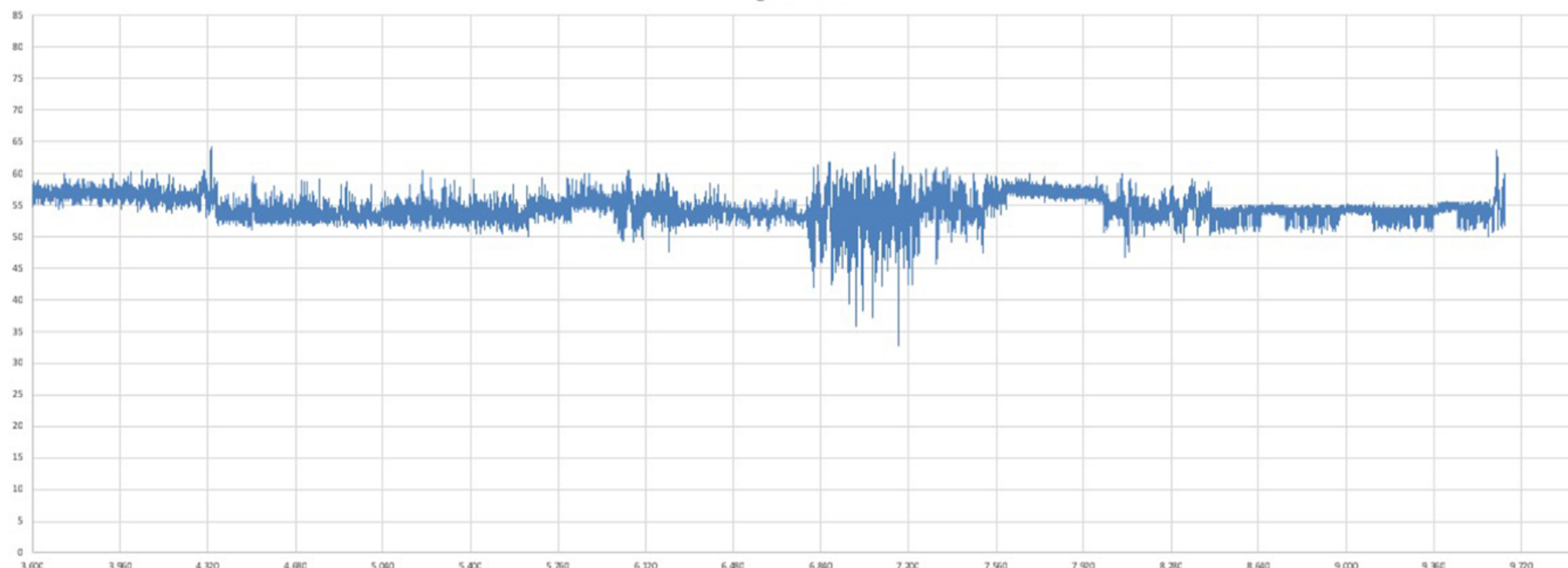
To perform our experiment, we found a cell phone app called Physics Toolbox: Magnetometer, which records magnetic field in multiple axis. We installed this app on an old cell phone to send up in the high altitude balloon. To make sure the battery didn't die in flight, we hooked it up to an external battery pack and put heat warmers in our pod to ensure that the battery didn't die due to the extreme cold at higher altitudes. The app recorded the entire flight and we were able to download the information to review in a spread sheet and graphically.

RESULT

By comparing the graph of magnetic field over time and altitude over time, we can see that there is a noticeable drop in magnetic field at higher altitudes. On the ground, magnetic field was 59 micro tesla. At peak altitude of around 76,000 feet, the magnetic reading dropped to 44 micro tesla.



Magnetic Field Vs Time



CONCLUSIONS

From our data, we could see a clear drop in magnetic reading as our magnetometer gained altitude. Even though the change was slight, this information could be useful in aerospace applications for guidance systems that use magnetic heading.

REFERENCES

To see more pictures and information from our balloon launch, visit <http://nearspace.science.com/mcc-launch-4-21-18/>

CONTACT

NAMES:
Chuong Phan
Matt Spieker
Basma Alfarra