

HASP Monthly Status Report - March 2014

Balloons over Volcanoes Team

March 27, 2014

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1 Synopsis

- Determined that acoustic array would be attached to balloon rigging
- Received and tested data logging system
- Purchased supplies for acoustic array
- Designed electronics for acoustic array
- Accepted an IRIS intern to work on HASP data and development this summer

2 Activity Summary

The Balloons over Volcanoes team is actively constructing the acoustic array to fly on HASP. On March 7th, we were advised that the acoustic array would be attached to the balloon rigging rather than deployed beneath the payload. This simplified our operational design as we no longer have to cut down the array during flight.

We received our DataCube data logger in mid March, and Daniel Bowman tested it in the lab to ensure it was functioning correctly. Initial tests indicate that the DataCube is working as expected (Figure 1), but the presence of high frequency noise in the plot is troublesome. Future tests will determine and rectify the cause of this. Materials for the array wiring were purchased on March 22nd, and we plan on connecting all microphones to the data logger by the end of next week.

Jonathan Lees and Daniel Bowman's application to host an Incorporated Research Institutions for Seismology (IRIS) undergraduate intern for Summer 2014 was accepted. The intern is an undergraduate from Yale University, and she will be joining us this summer to help analyze acoustic data recorded on the ground beneath the balloon's path as well as assist with HASP construction and testing.

3 Issues Encountered

The presence of high frequency noise during an initial test of the data logging system is a bit concerning. However, this noise could be due to electronic interference in the lab, poor electrical connectivity, or the power source. Further tests in April will constrain and resolve the issue.

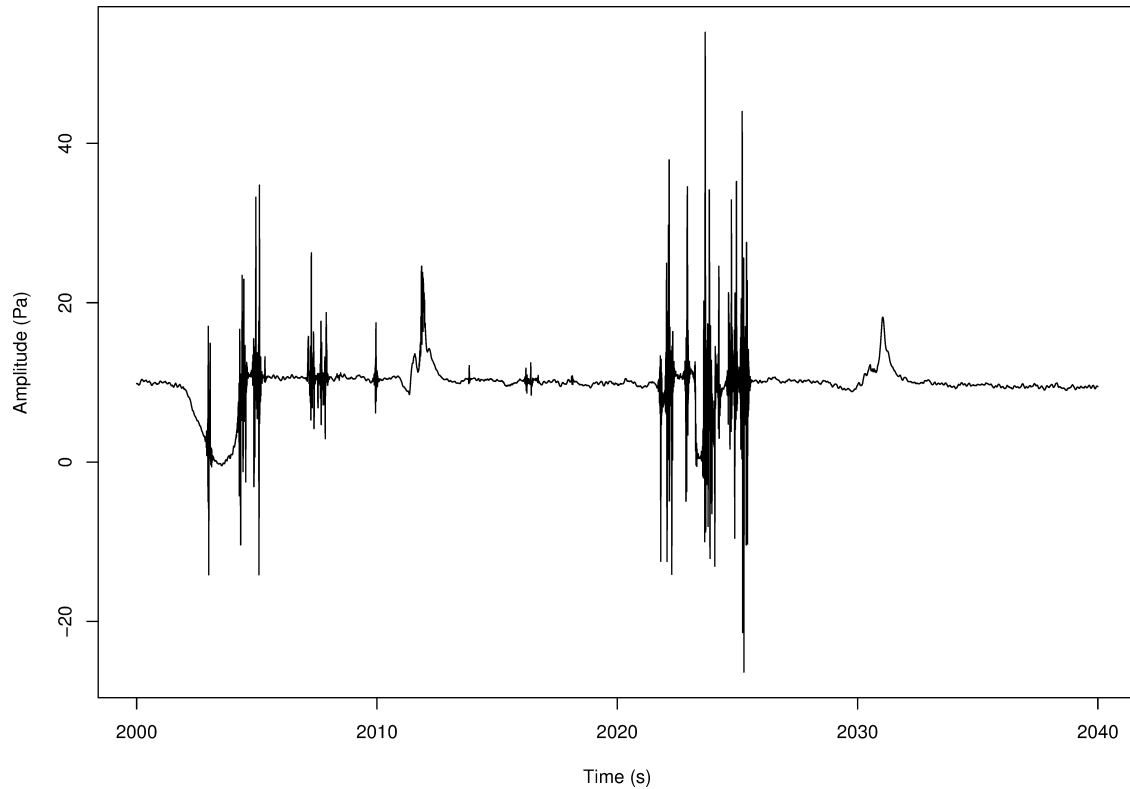


Figure 1: Initial test of infrasound microphone and data logger. A low frequency rarefaction at about 2005 seconds represents lifting the sensor by 1 m, causing a 10 Pa drop in atmospheric pressure. Overpressures at around 2011 and 2033 seconds are due to closing and opening the laboratory door.

4 Milestones Achieved

Resolving the array configuration during flight has enabled us to begin construction. Receiving the data logger has allowed us to begin working on the acoustic array.

5 Team

The student team consists of Daniel C. Bowman (University of North Carolina at Chapel Hill), Jacob F. Anderson (Boise State University), Aaron Curtis (New Mexico Tech), and Tierney Larson (Yale University). Ashley Foguel (UNC) left the team, and Tierney Larson will be joining the UNC group this summer as an IRIS intern. Jonathan M. Lees (UNC Chapel Hill) serves as Faculty Advisor. Paul Norman and Kyle Jones are outside advisors.