

September 30, 2016

To: Dr. T. Gregory Guzik - HASP Project Director
From: Hannah Weiher-Project Manager
RE: HASP Monthly Status Report

1. Activities

Reviewing the flight data from the HASP flight for our final science report.

First we review the data from each of the channels. The 4 plots below show the number of counts vs. time for each channel. The x-axis (time) is in an arbitrary unit and that is due to lost data in the telemetry. Timestamps will be provided upon completion of the full radio data analysis. The data for this was saved and broadcast using the HASP radio system. (Our own telemetry data sent via the FreeWave radios is still being analyzed.)

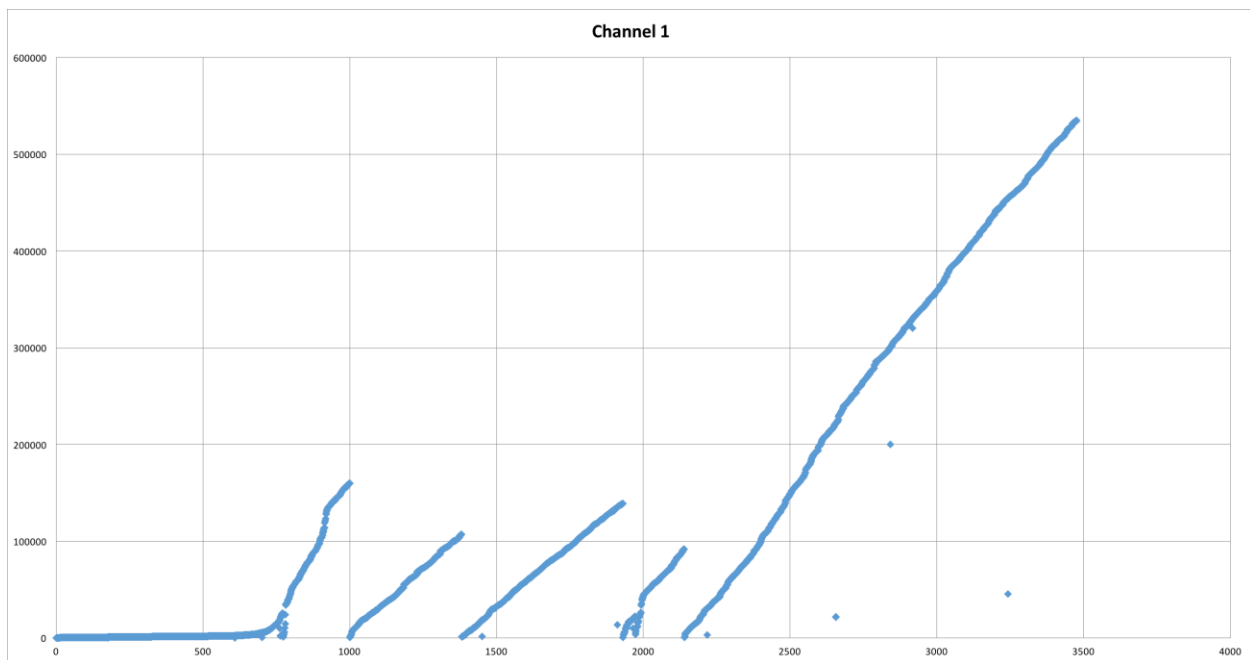


Figure 1: Count vs. time for Channel 1.

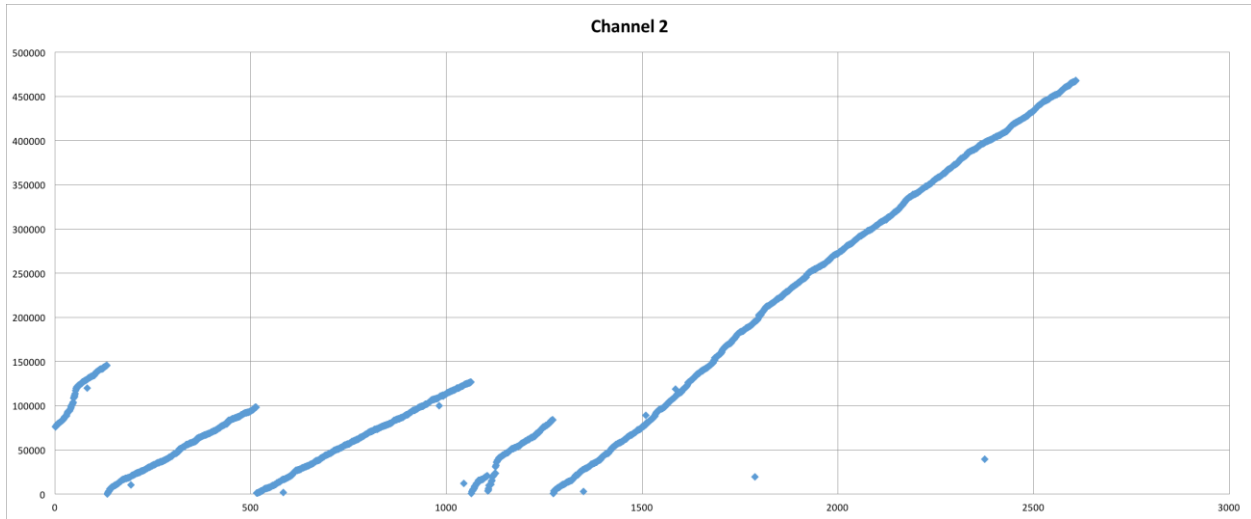


Figure 2: Count vs. time for Channel 2.

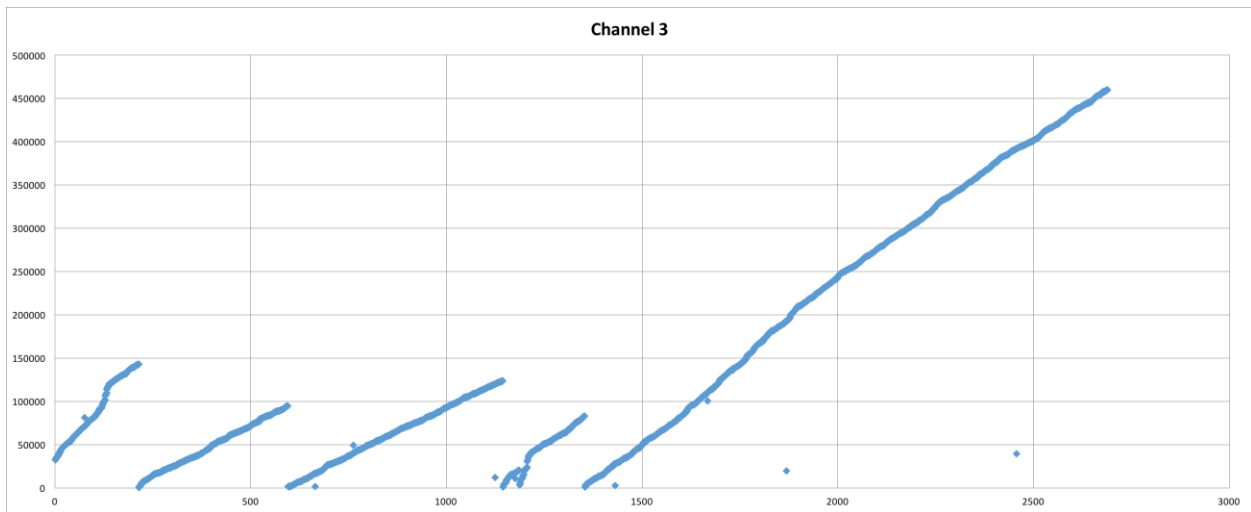


Figure 3: Count vs. time for Channel 3.

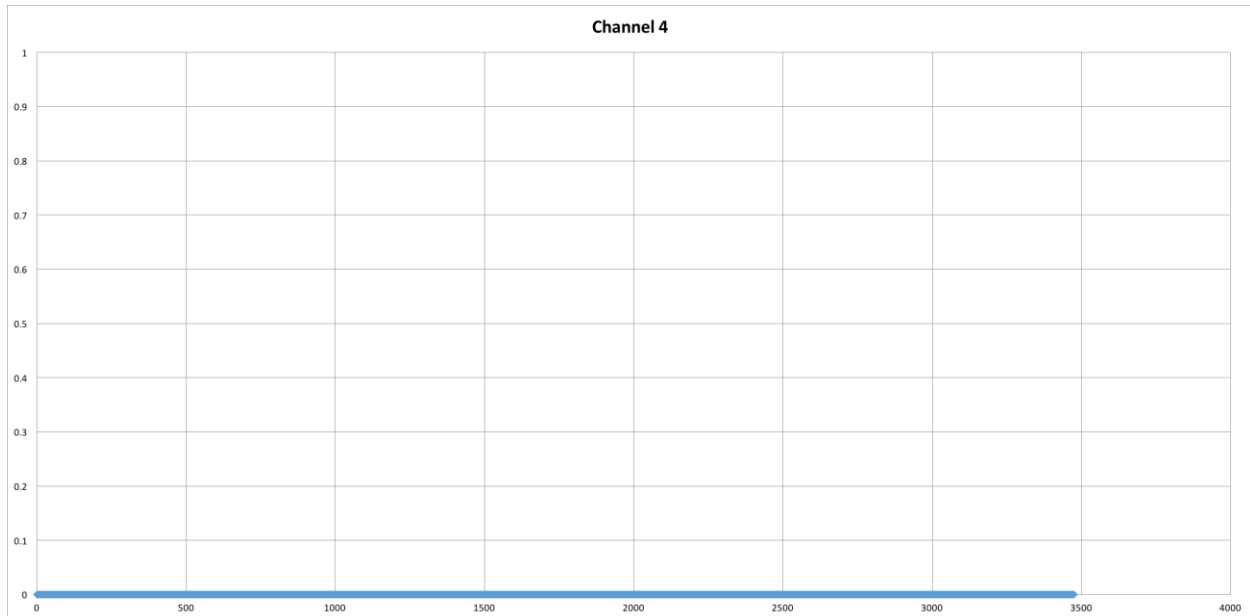


Figure 4: Count vs. time for Channel 4. (This is correct because we did not use Channel 4, so this plot is as expected.)

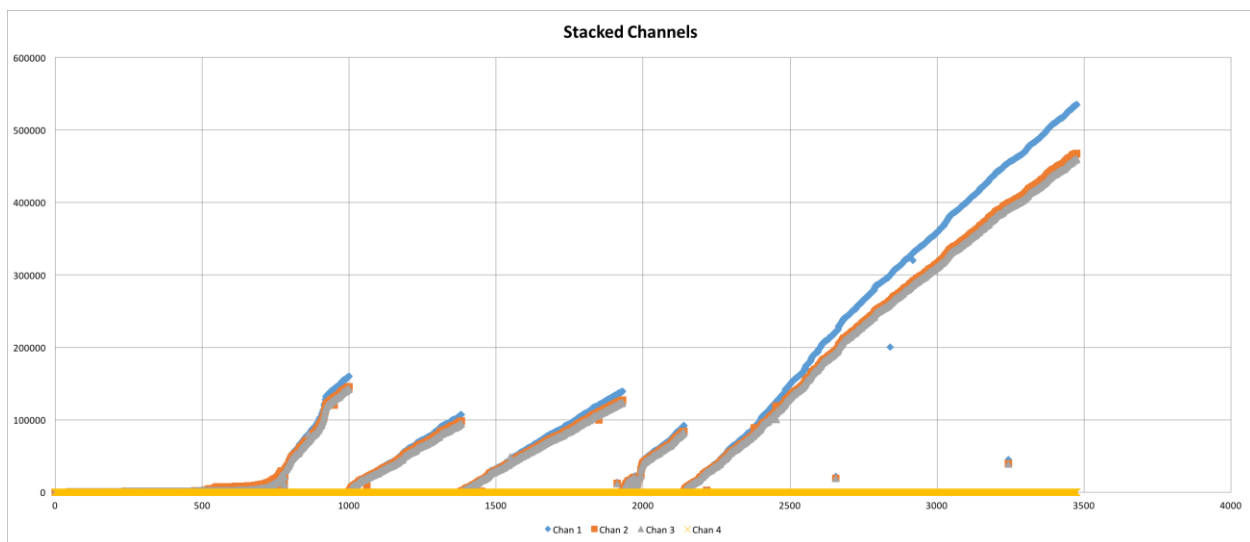


Figure 5: Count vs. time for all 4 Channels for reference.

The plots for the three channels in use (1, 2, and 3) all show a fairly linear increase in counts vs time. The linear trend is exactly what we expected from the detector receiving background radiation. On the graphs there are places where the counts for all of the channels would jump from some number down to 0. This is a result of us power cycling the payload, and was intentional for testing purposes. The stacked plot verifies that the three channels being used were operating in a similar manner.

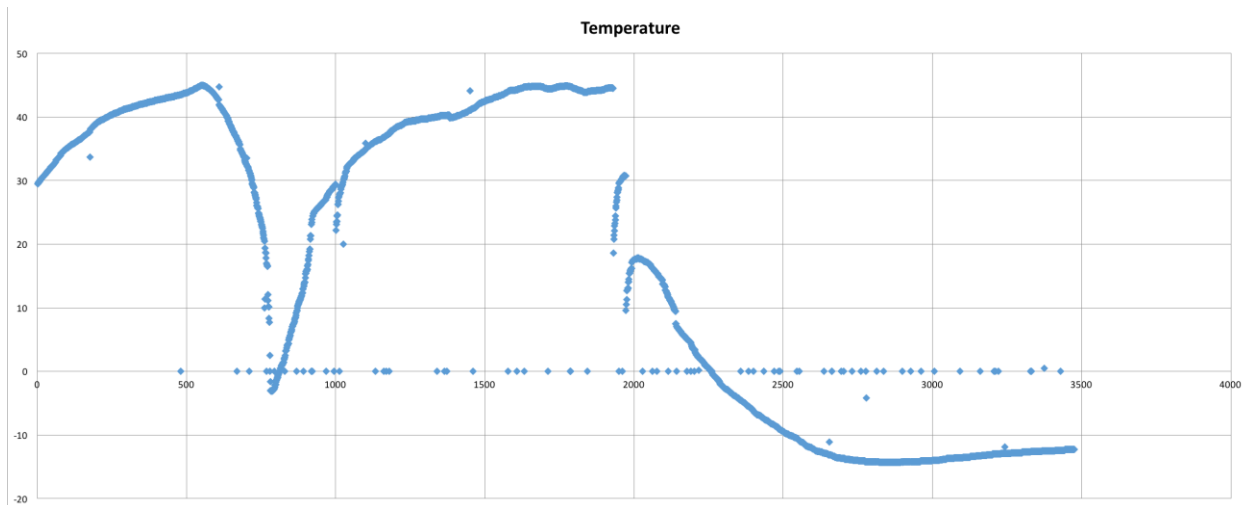


Figure 6: Temperature vs. degrees for the flight.

There is also a plot of the temperature in degrees Celsius vs time shown above. The temperature probe was a part of our IMU sensor; this temperature value was downlinked through the telemetry. Actual temperatures of electrical components and other devices may have been much warmer than what the graph shows. Like before, large jumps in temperature on the graph were caused by the payload being power cycled. Near data point 2000 on the plot, we were getting fairly close to the temperature limits of some components onboard, and we powered the payload down for a short amount of time to let it cool.

2. Issues Encountered

We were not able to extract any data from the SD card. The SD card stopped working mid-flight, and all of the data on the card was corrupt when we got the payload back. We believe that the temperature caused either the SD card or the SD card circuit board to stop working. Analysis on this will continue as well.

3. Milestones Achieved

None currently. (Next planned Milestone is Final Science Report.)

4. Current Student Team

| Name | Gender | Ethnicity | Race | Student Status | Responsibilities |
|---------------|--------|--------------|-----------|----------------------|--|
| Hannah Weiher | F | Non-Hispanic | Caucasian | Graduate Student | Team lead |
| Tim Kukowski | M | Non-Hispanic | Caucasian | Undergraduate Senior | Chief Engineer |
| Joel Runnels | M | Non-Hispanic | Caucasian | Graduate Student | Technical Consultant (Detector engineering and physics)/Payload Lead |

| Name | Gender | Ethnicity | Race | Student Status | Responsibilities |
|-------------------|---------------|------------------|-------------|----------------------------|--|
| Ryan Vogt | M | Non-Hispanic | Caucasian | Undergraduate Sophomore | Detector Systems Physicist (Calibration and testing) |
| Kendra Bergstedt | F | Non-Hispanic | Caucasian | Undergraduate Sophomore | Detector Systems Physicist (Calibration and testing) |
| Maxwell Yurs | M | Non-Hispanic | Caucasian | Undergraduate Junior | Detector Systems Lead (Calibration and testing) |
| Jeffery Chaffin | M | Non-Hispanic | Caucasian | Undergraduate Senior | Detector Systems Physicist (Calibration and testing) |
| Gaurav Manda | M | Non-Hispanic | Asian | Undergraduate Sophomore | Detector board redesigns |
| Luke Granlund | M | Non-Hispanic | Caucasian | Undergraduate Senior | Payload Systems Software |
| Aaron Nightingale | M | Non-Hispanic | Caucasian | Undergraduate Junior | Payload Systems Hardware |
| Seth Willing | M | Non-Hispanic | Caucasian | Undergraduate Junior | Flight Structures Engineer |