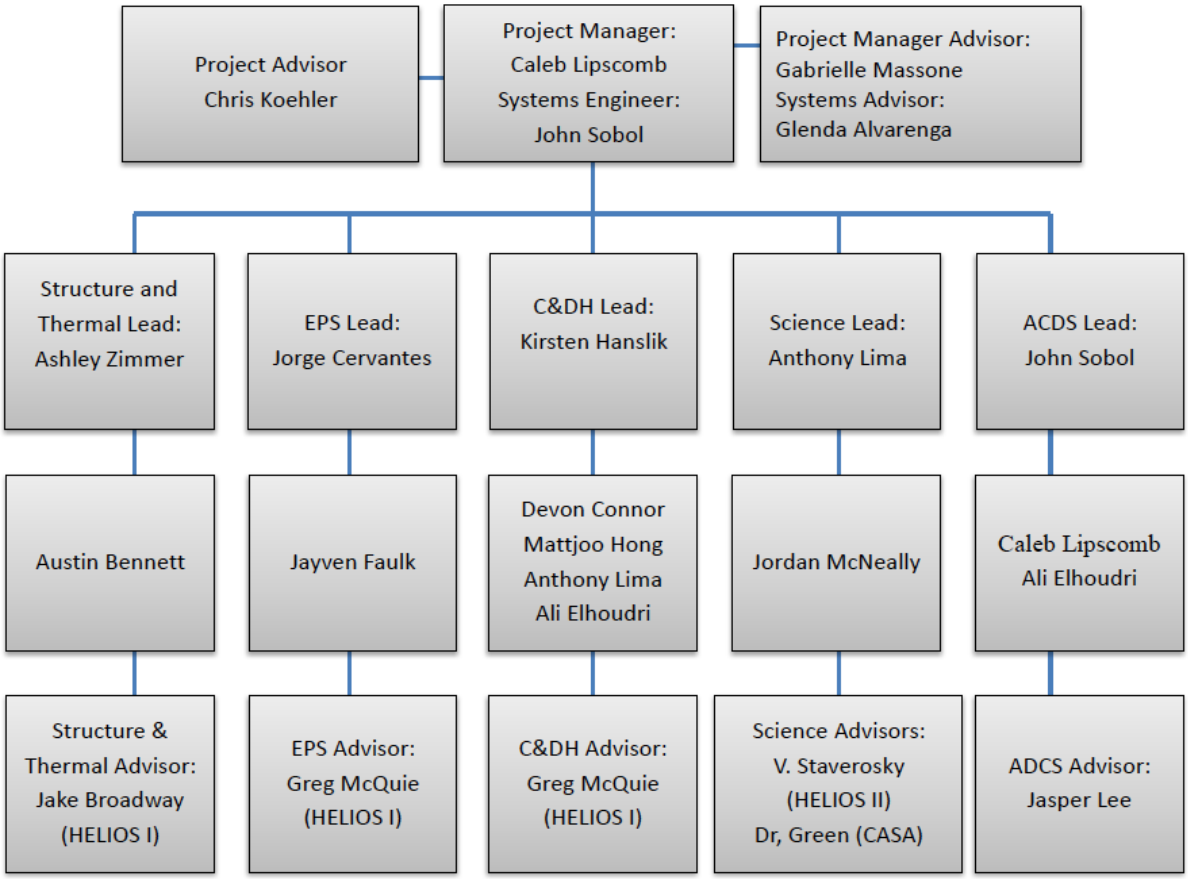
University of Colorado Boulder Monthly Status Report 9/27/13

Overview since 9/27/13

In the last month, HELIOS II was successfully launched on the HASP platform, recovered, and returned to the University of Colorado Boulder. Team HELIOS II has been analyzing the data downlinked and the images captured during the HASP flight.

Current Team Members and Leaders



Activities of Team Members

In the last month, team HELIOS II has had weekly meetings to analyze the data acquired during flight. The first action taken was to look at the information stored on the solid-state drive. The error codes in the Pandaboard were identified and the environmental information stored was collected. The information stored on the solid state matches with the data downlinked by the HASP platform during the flight. This indicates that all information was successfully stored on the solid state and downlinked during nominal flight operations. The cameras successfully took pictures the entire time the payload was operating. We have many images of the sun captured by the ADCS camera. In the images taken, there are images with out the sun in between group of images containing the sun. This indicates that the ADCS was successfully able to track and re-locate the sun. Unfortunately, only one image of the sun was captured by the science camera. This indicates that the science camera was functional, and that there may have been an alignment issue with the ADCS. However, further investigation is needed to

determine the exact cause of error. To help us in our analysis, it is necessary to have images of the landing site as our payload was found immediately after launch.

Issues Encountered

Several issues were identified during the flight and in post-flight analysis.

a. The first issue was the loss of communication with our payload. This occurred five to six times during flight. The cause of communication loss is under investigation. There are several possible causes, however, further investigation is needed to find exactly what caused the failure.
b. The second issue was what appeared to be alignment issues with the ADCS. During flight, there were times when ADCS was clearly not tracking the sun via CosmoCam. While many ADCS camera images contain the sun, only one science camera image contained the sun. Several potential causes for this issue have been identified, and the exact cause is under investigation.

Milestones Reached

The biggest milestone reached was the successful launch and recovery of HELIOS II on the HASP platform. We were able to read all information stored on the solid state drive. Both cameras functioned the entire time and captured images during nominal flight operations. ADCS was able to successfully track the sun as many of the ADCS camera images contain the sun.

Next Objectives

The next objective for HELIOS II is to further analyze the data, including identifying all solar phenomena in the science camera image, as well as correlating events in the HELIOS II databank with events during the HASP flight. Finally, we will identify all causes of errors identified during flight by replicating the errors and performing analysis.

For your viewing pleasure, the next page of this report contains images of the sun as captured by our ADCS and science cameras. Enjoy!

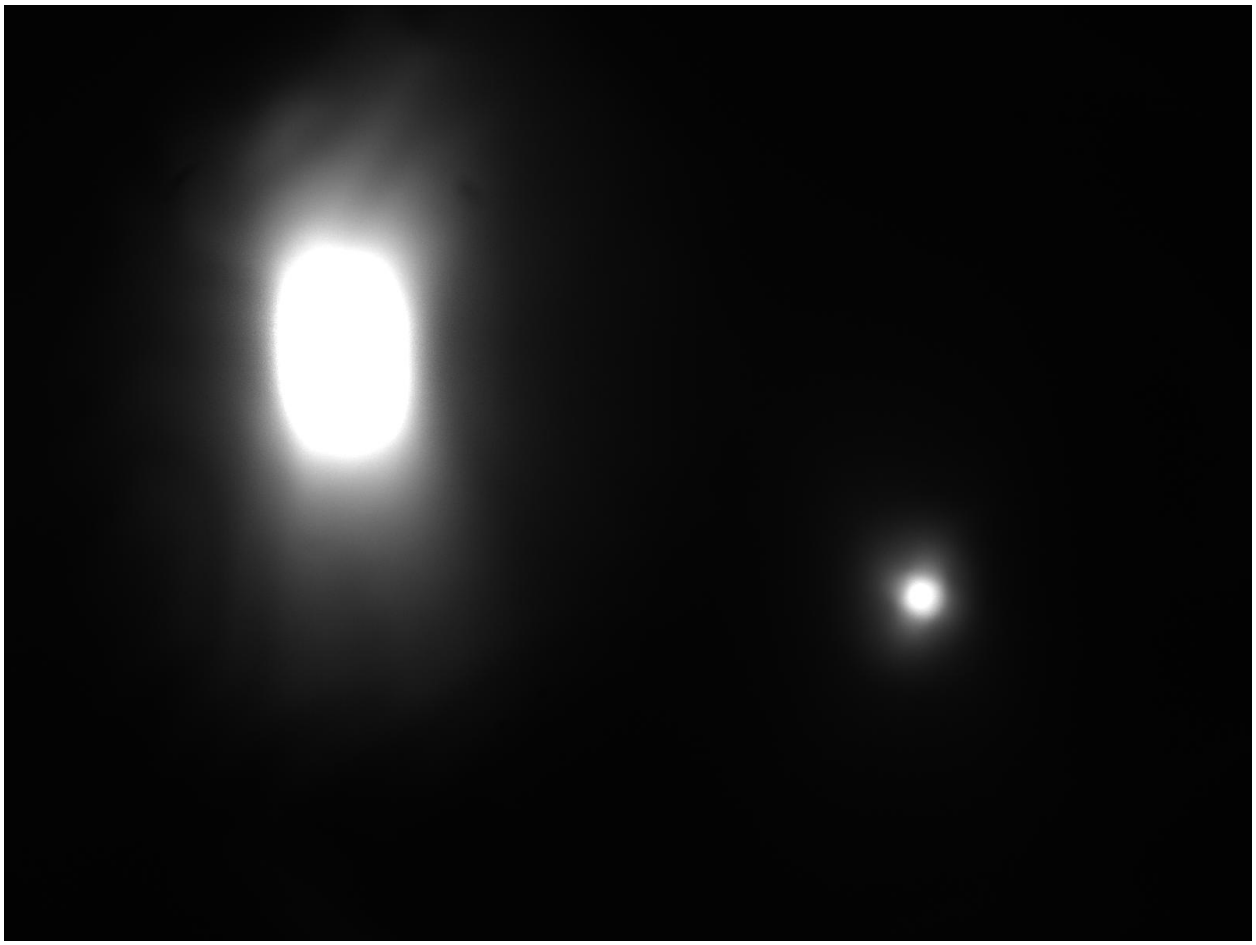


Figure 1.1 ADCS Camera image

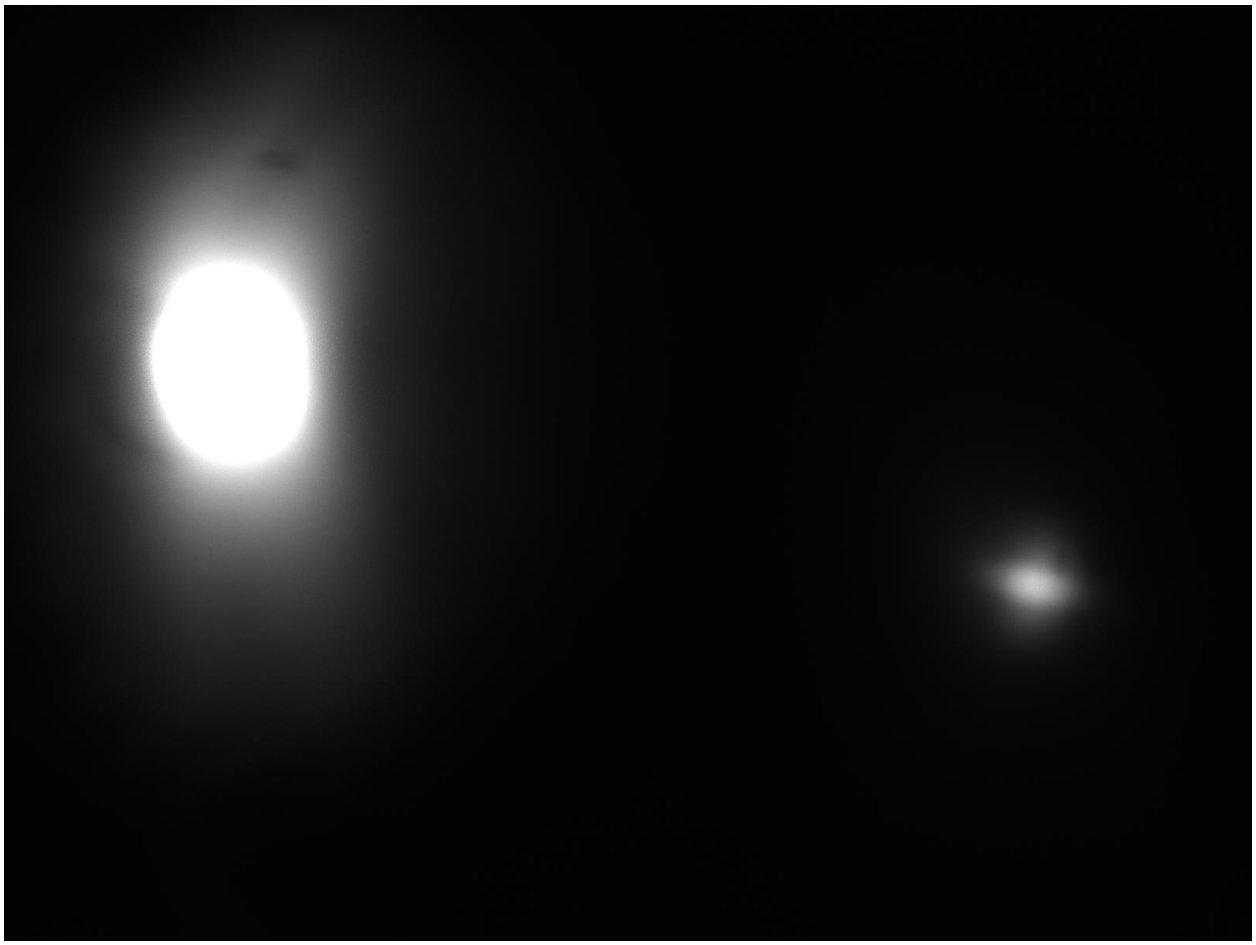


Figure 1.2 ADCS camera image

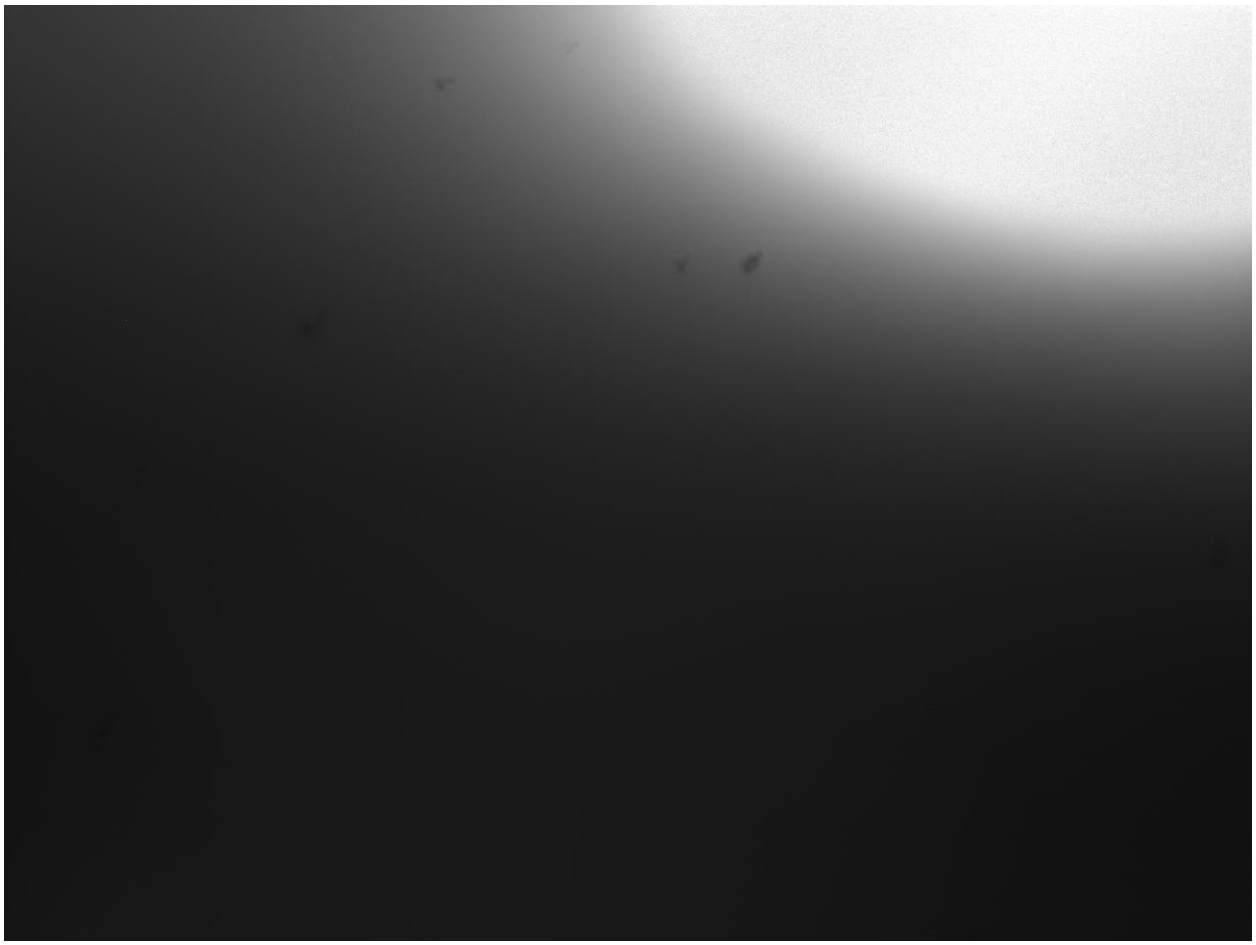


Figure 1.3 Science Camera Image