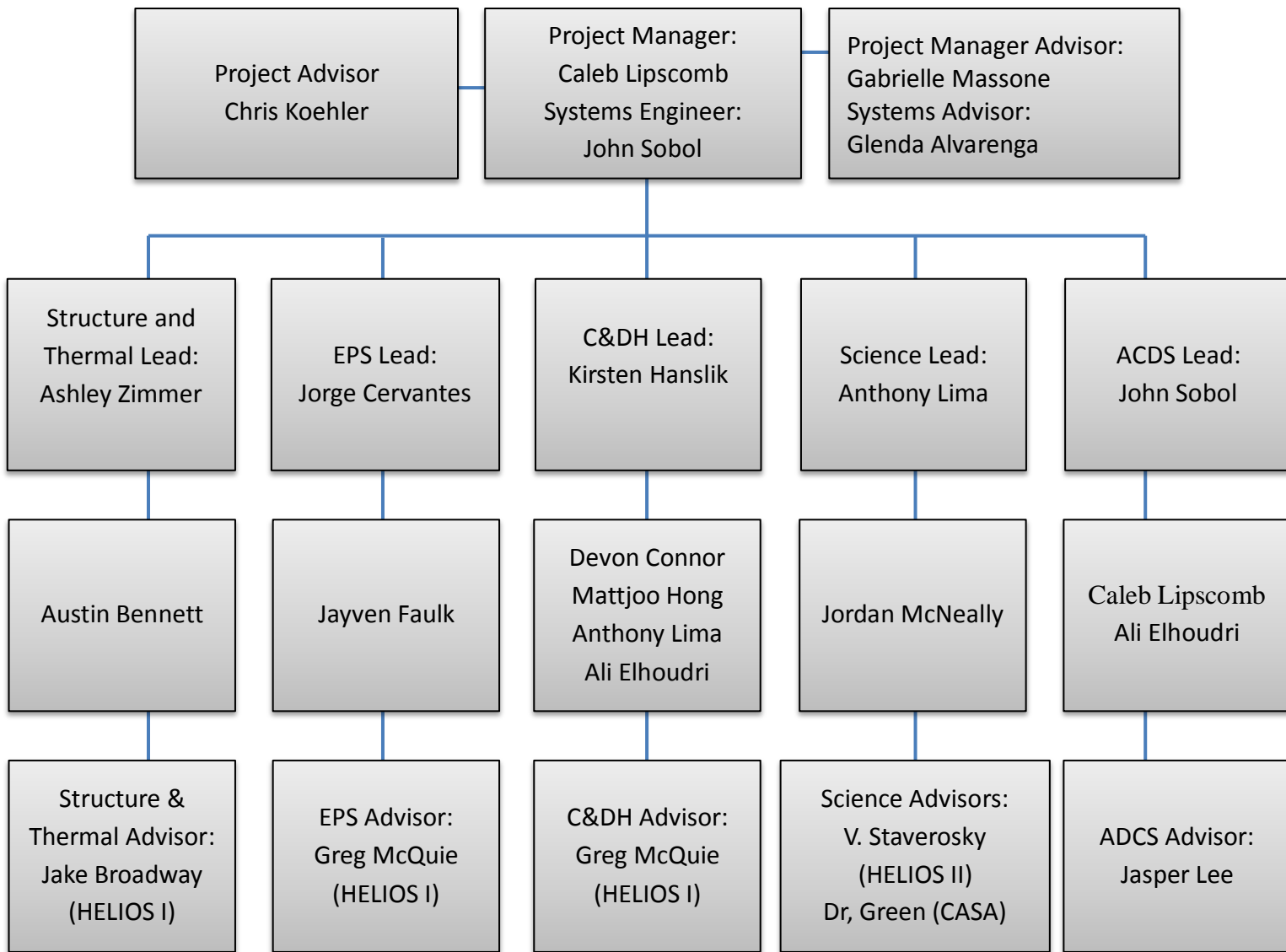


University of Colorado Boulder Monthly Status Report 11/22/2013

Overview since 10/25/2013

In the last month, HELIOS II has finished analyzing data from the 2013 HASP flight. HELIOS II has presented a final science presentation to the Colorado Space grant. HELIOS II will take feedback from this presentation into account in the HASP final science report. Finally, HELIOS II has completed a rough draft of the 2013 HASP final science report.

Current Team Members and Leaders:



Activities of Team Members:

Since the last report, team HELIOS II has finished analyzing data from the HASP 2013 flight. First, we have completed image processing on the single science camera images containing the sun. In the

image, we are able to see the surface of the sun. However the only solar feature visible in the image is granulation on the sun's surface. This is consistent with images from NASA's Solar and Heliospheric Observatory (SOHO) on the launch date, September 3th.

The Attitude Control and determination team has fully characterized the performance of the ADCS system. The inaccuracy in the system was found to be caused the HASP environment. Sunlight reflected off the HASP balloon caused a systematic bias in the ADCS. The sunlight reflected off the balloon caused the "bottom" diode to have a higher light reading. As a result, the ADCS consistently pointed the cameras lower than desired. This was observed in the ADCS camera images. The sun in the ADCS camera images was consistently in the top half of the image. Additionally, shadows casted by other payloads and the HASP balloon cables caused the ADCS to point inaccurately throughout the flight. This was the cause of the low percentage of ADCS photos containing the sun. The ADCS team has created several possible solutions to reduce the effect of the environment on the system accuracy

The electrical power system (EPS) matched events in the HELIOS II data with the HASP data. Using current and voltage data, team HELIOS II was able to identify when HELIOS II powered on, when HELIOS II powered off, when the ADCS was powered off, and when HELIOS II stopped communicating with the ground. HELIOS II lost communication with the ground 4 times. Additionally, The EPS team discovered that the power line to the panda board failed halfway through the mission. After the panda board lost power, HELIOS II was unable to capture any additional images or recorded any data.

The command and data handling team has analyzed the pandaboard performance during flight. While the pandaboard was communicating with the ground, it successfully commanded the cameras, stored images, stored all environmental data, and successfully executed commands sent to it from the ground. It was determined that a bad cable between the pandaboard and the solid state drive caused 3 losses of communication. Additionally, after the flight, the pandaboard was unable to write any new information to the solid state drive. This leads us to believe that the pandaboard was damaged when its power line failed.

The Structure successfully supported the HELIOS II payload during flight. However, the base plated on the camera housing was bent during the HASP landing. Additionally, the thermal management system on HELIOS II did not successfully transfer heat away from the HELIOS II payload. The pandaboard reached 65 degrees C during the flight. This temperature was above our 55 degree design temperature.

Finally, team HELIOS II has been working with team HELIOS III to help them write the 2014 HASP proposal. The members of HELIOS II have been working with the new team members of HELIOS III in their respective subsystem area. This is to ensure that the HELIOS III team can learn from the successes and mistakes of the HELIOS II team.

Issues Encountered:

No major issues have been encountered by team HELIOS II over the last month

Milestones reached:

Team HELIOS II successfully gave their final science presentation to sponsors at the Colorado Space grant consortium. Feedback given to team HELIOS II will be used to help write the HASP final science report. Additionally, HELIOS II has completed a 1st draft of the HASP science report.

Next Objectives:

In the next several weeks, HELIOS II will be editing and finalizing the HASP science report. HELIOS II will complete the HASP final report by December 13th.