**Abstract (100 words or less about mission objective and how well it went)**

*The mission goal of our payload H.E.L.I.O.S., Helium Exhaust Liberating Inflation Optimization System, was to release a certain amount of helium from the balloon in order to manage the balloon and its payloads’ rate of ascent. Another objective of H.E.L.I.O.S. was to take temperature readings, and pressure readings inside and outside of the balloon. The valve within our payload was designed to open at a specific GPS reading, determined by the GPS and pressure sensor to determine the altitude and position, and remain open for a period of time while releasing helium. This mission was successful at the launch, and the data proved to release helium. It collected readings for temperature, pressure, and speed, all of which proved that helium was released and the payload controlled the rate of ascent. H.E.L.I.O.S.’s success was also the first step to record-breaking launches in the future.*

**Method Section**

* *Arduino based system*
* *Custom-made valve*
* *Custom-made balloon plug/wheel ←which?*
* *Custom-made circuit board*
* *Pressure sensors - Parallax Inc. Altimeter Module*
* *GPS - Adafruit Ultimate GPS Logger Shield*

**Methodology**

H.E.L.I.O.S. was designed, constructed, and tested over the course of \_\_ weeks in preparation for the launch. Using an Arduino based system, our payload was wired with a custom-made circuit board with a necessary H-bridge for directional voltages along with an Adafruit Ultimate GPS Logger Shield and two Parallax Inc. Altimeter Module Pressure Sensors, for interior and exterior readings. Alongside electronics, our payload housing was constructed out of a 7 by 7 box insulated throughout and where necessary for our specified parts. The payload box housed the custom-made valve in which an actuator was programmed to open and close it. A separate, but crucial, part of H.E.L.I.O.S. rested within the neck of the balloon: a custom-made balloon (plug/wheel) with one of the pressure sensors attached.