



# Payload Stability and Long-Range Tracking

ASCEND!

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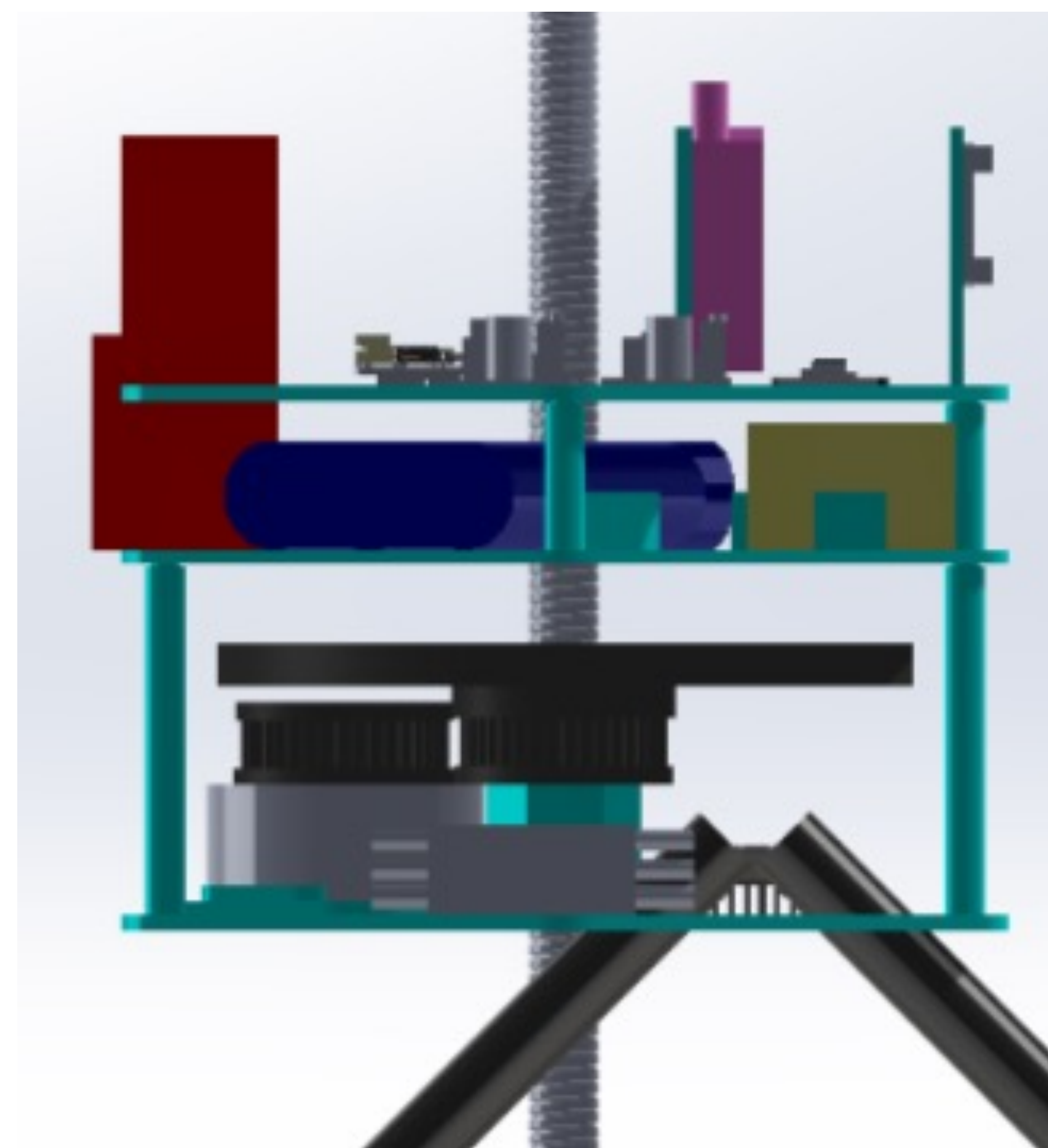
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## Introduction

- Current data collection dependent on payload recovery
- As the Payload is raised into the atmosphere rotation causes video to be unstable
- Tracking the payload has been inconsistent in previous attempts



Internal Payload Layout (Knoell, 2026)

## Payload Information

- 2.978 pound weight limit
- 6781 style fiberglass exterior
- 3D-Printed PLA internals
- Featherweight microcontroller
- Reaction wheel
- 12-24V BLDC Motor
- Telemetry Sensors
- Antennas
- One 11.1V battery and two 3.7V batteries

## The Flight

- Wires unplugged from microcontroller on impact with ground from launch causing most systems to power off
- RFD-900 communicator was not working, pivoted to a new in-house method
- Unable to construct payload that was designed originally had to pivot to using last semesters payload
- Ground station could not track as power system for GPS malfunctioned
- Reaction wheel malfunctioned before launch causing it to not work in flight and was unable to stabilize the video
- Video was recovered after flight
- Sensor data was only collected on ground before flight
- Main power bus was damaged before launch and unable to be repaired properly

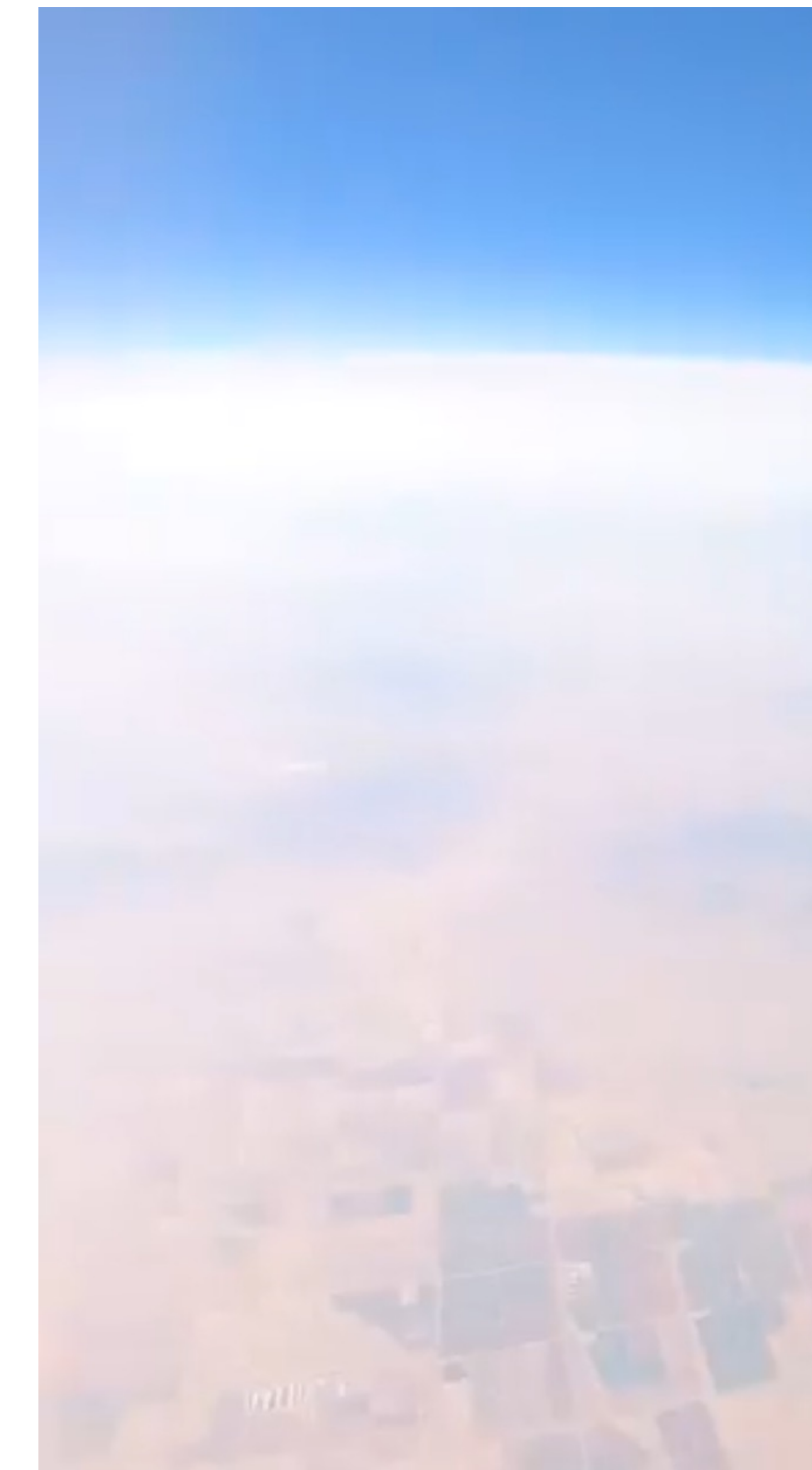


Image Recovered From Payload (Payload, 2026)

## Conclusions

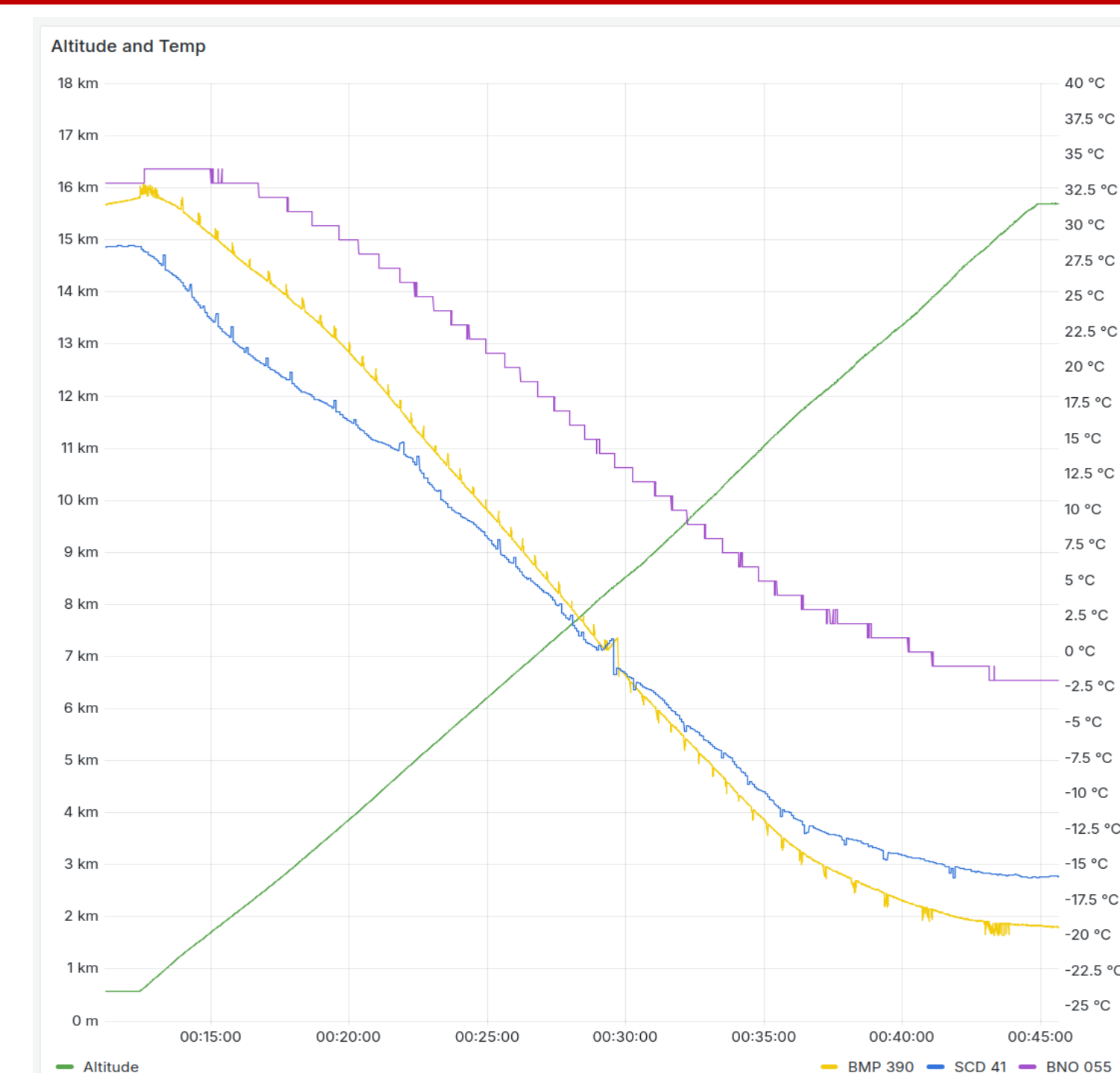
- Need to submit fiberglass early
- New payload radio transmitter required
- More durable connections for all components

## Future

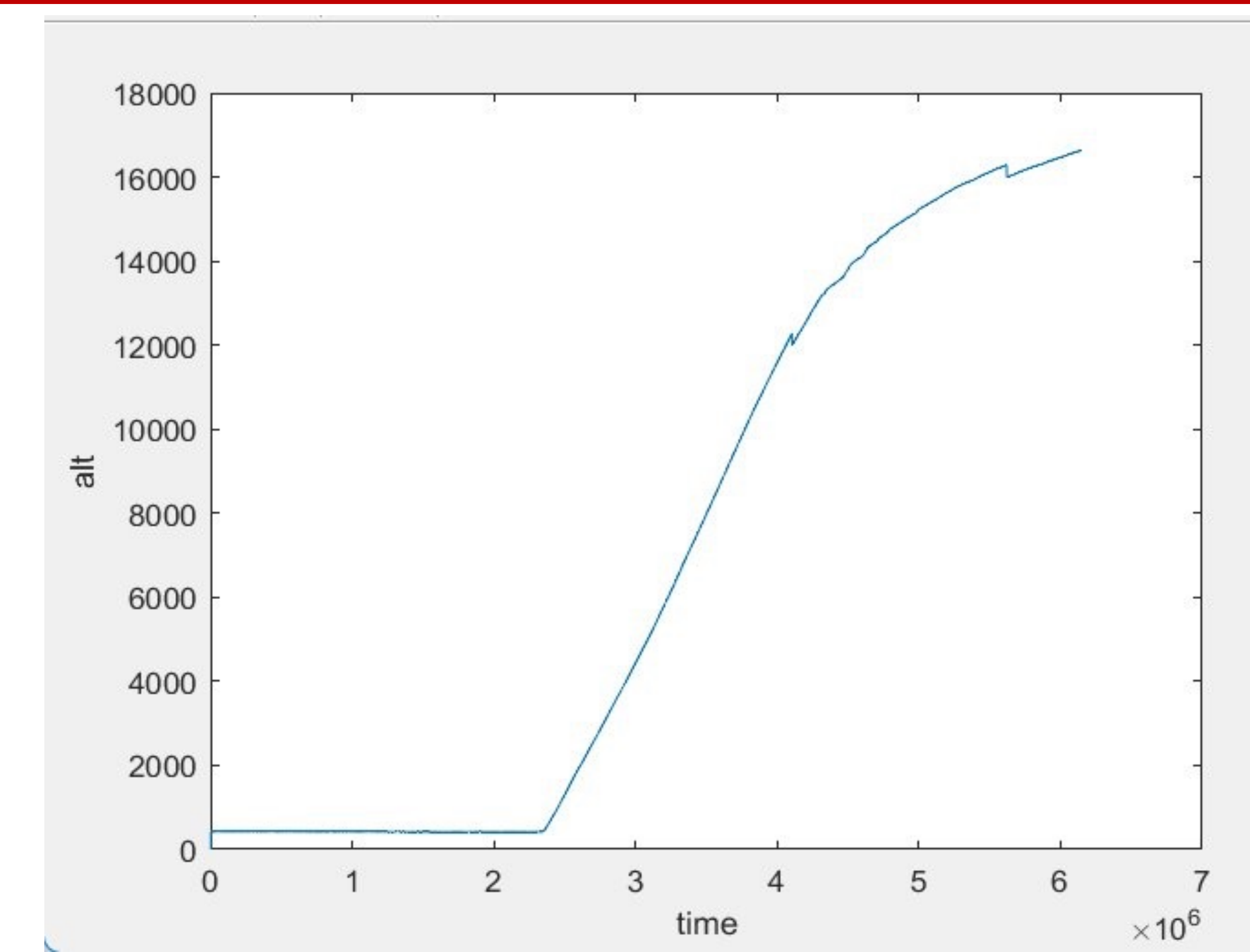
- Collect live telemetry, sensors data, GPS data, and video all able to be transmitted back
- Functional reaction wheel
- Redesigned power system
- Permanent solution for attaching wires to components
- Cylindrical payload
- Baseplate layer slider system
- Solar Panels
- Wind vane

## Past Results

- Inconsistent GPS payload tracking and transmitting connection
- Data collected and only stored on the payload



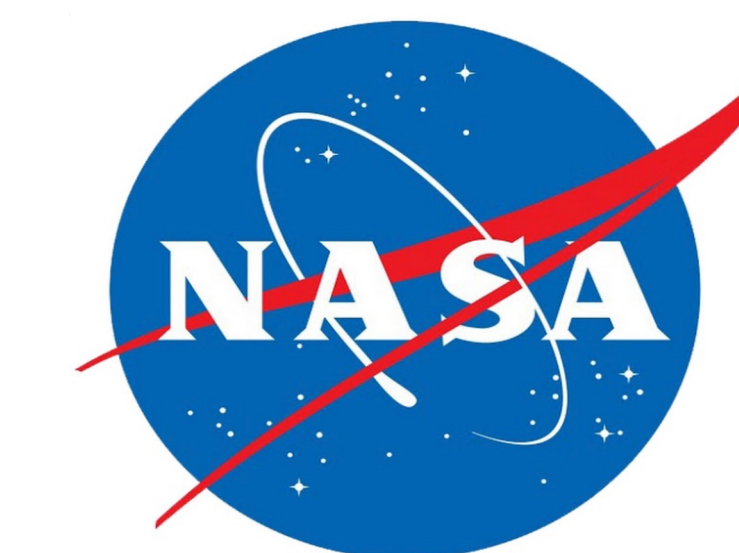
Altitude and Temperature Data (Payload 2025)



Altitude vs Time (Reed, 2024)

## Sponsors and Collaborators

Thank you to our sponsors and collaborators!



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