

SPECIFICS ABOUT THE HAB PROJECT EQUIPMENT

Item	Description
Byonics APRS tracker	A commercial VHF radio transmitter with onboard GPS chip. The GPS measured data values like latitude and longitude, speed, and altitude. The radio then transmitted this data on a frequency of 145.175 MHz. Signal was picked up by receiving stations that uploaded the GPS data to the internet. It allowed us to follow the path of the balloon using the aprs.fi website.
Spot GPS tracker	Commercial device which has an onboard GPS chip. The chip determined the GPS location and sent the data location to communication satellites. The satellites passed this information to specific satellite antennas around the world. An app on our mobile phones was then able to display the data in real time.
Custom-made UHF transmitter	Performed a similar function to the APRS radio but this was built by Andy Nguyen. The signal was transmitted and picked up by a mounted antenna on the chase vehicle. Signal was fed into a software program on a laptop operated by a student. The software decoded the signal and uploaded the balloon's location data to the internet via a mobile phone. It allowed us to follow the path of the balloon using the tracker.habhub.org website.
Raspberry Pi with Sense Hat and camera module attached	The Raspberry Pi is a credit card-sized computer (costing about \$50). It was powered by a bank of six AA batteries. The Sense Hat is a piece of hardware that contains a range of sensors including temperature, pressure and humidity. The camera module is another piece of hardware that was attached to the Pi. A student wrote Python code to run on the Pi to record still and moving images as well as sensor data from the Sense Hat as the balloon rose through the atmosphere and saved them to a SD card.