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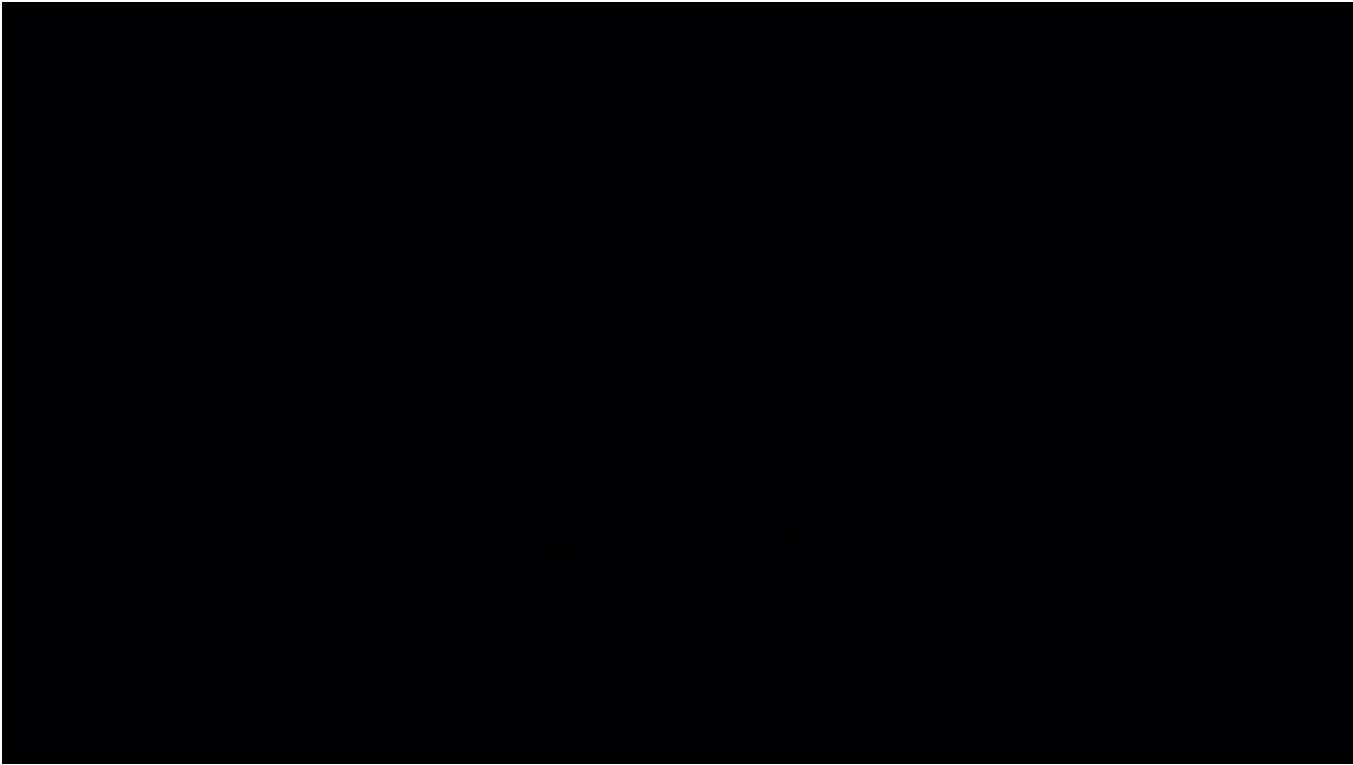
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Tracksoar APRS

by **mike bales**

The Tracksoar APRS tracker is the smallest, lightest, ready to fly open source APRS tracker.

[Read more](#)

📍 Goleta, CA

🛩️ Flight

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backers

\$5,627

pledged of \$22,000

20

days to go

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This project will only be funded if at least \$22,000 is pledged by Sun, Nov 8 2015 10:00 PM +02:00.



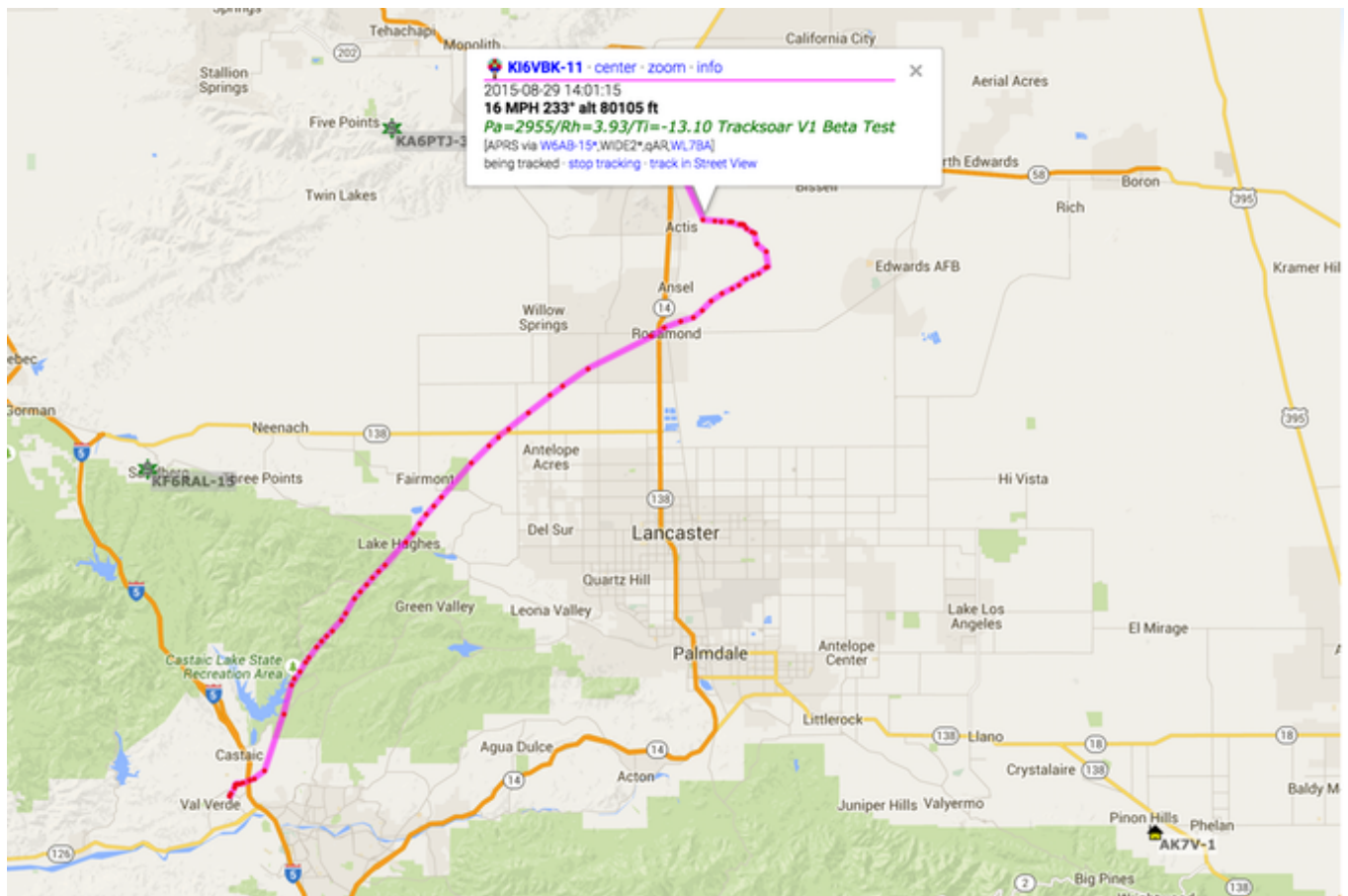
Project by
mike bales



Maricopa CA from 20k feet

Have you ever wanted to take your own stunning photos of the curvature of the earth and the blackness of space against the pale blue of the sky? Have you ever wanted to gather data on atmospheric conditions near the edge of space? The Tracksoar is the smallest fully integrated APRS tracker available to make this possible. It works with nearly any airborne platform that can carry a payload of 60 grams or more. The goal is to reduce the number and weight of required electronic components to allow for the least expensive and easiest high altitude balloon launch possible.

What can Tracksoar do for you?



Real time Data From aprs.fi

The Tracksoar can provide near real time location, altitude, and atmospheric data from your airborne craft to the internet. It is small and light enough to fly in your model rocket, airplane, helicopter, quad rotor, or weather balloon. Since it's open source, the Tracksoar is customizable for your specific project, and with a daughter board you can add most any extra device to expand its sensors, input, or output capabilities.

Motivations



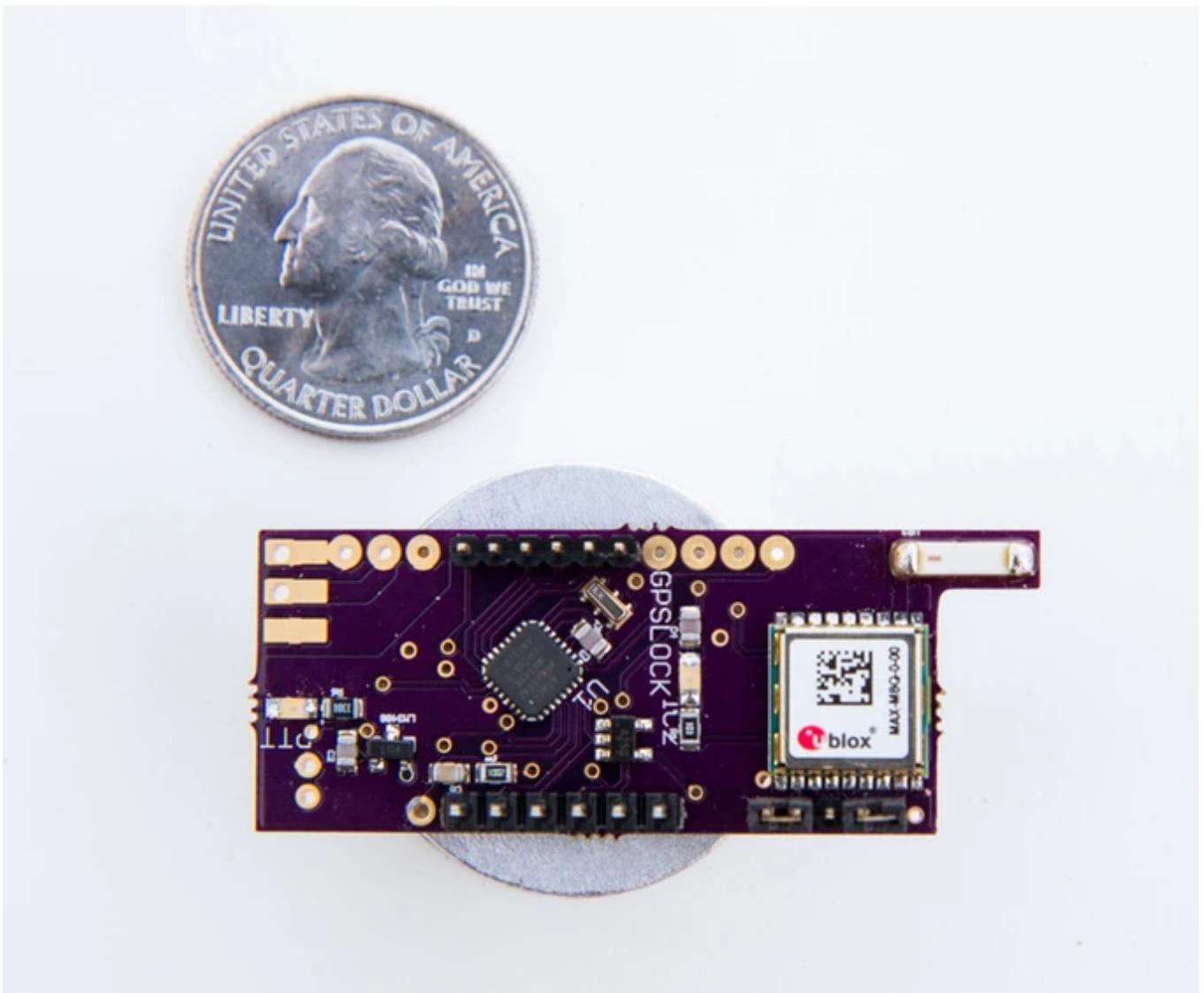
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Tracksoar Ready To Fly

The single largest cost in launching a weather balloon is the expendables. In the case of weather balloons that means helium and the balloon itself. Most balloon launches opt for an 1800-gram balloon and a k cylinder of helium, which, between the two will cost around \$400. Lifting the bulky trackers that are currently available requires a large balloon and large amounts of helium. The Tracksoar allows you to use a much smaller balloon and less helium significantly reducing the cost of each launch. By reducing the amount of helium required we can help preserve this precious resource while still furthering citizen science and atmospheric data gathering.

Specs



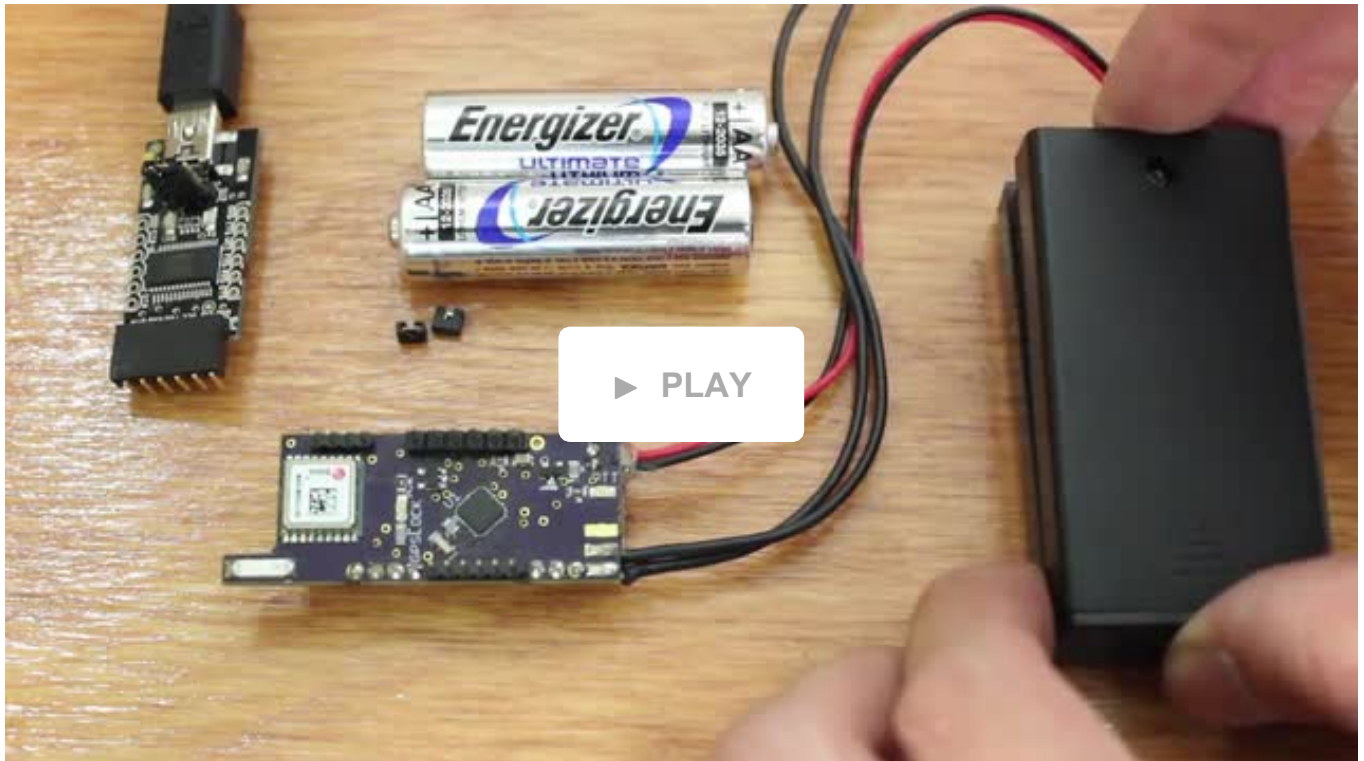
The Tracksoar boasts a 300mw transmitter, barometric pressure, relative humidity, and temperature sensors. Built on existing and proven open source hardware and software, the Tracksoar is powerful and flexible. Powering the Tracksoar is trivial, it can run from anything between 1.5 and 4.5 volts. In laboratory tests it has been able to run at least 12 hours off 2 AA batteries. In keeping with our goal to make the Tracksoar as customizable as possible, the Tracksoar includes SPI / I2C headers for adding new capabilities. FTDI and ICSP programming interfaces are also available for modifying and updating the Tracksoar firmware. Tracksoar will ship with a wire antenna, but also has the option for an N connector so you can add any antenna you prefer.

- Atmega 328P microcontroller
- Arduino Compatible
- BMP180 Pressure Sensor
- SHT21 Humidity and Temperature Sensor
- Radiometrix HX1 transmitter
- Ublox MAX-8M GPS receiver

- I2C, SPI / 2 Analog and 4 Digital IO pins

The Tracksoar uses APRS to relay the data to the internet for easy retrieval. APRS uses 2 meter (144.390 mhz in the US) radio and transmits the data at regular intervals to a network of amateur radio repeaters. The repeaters (called digipeaters or igates) send the data to the internet where it is available on sites like aprs.fi

For more information on APRS visit: <http://www.aprs.org/>



Licensing Requirements

The Tracksoar uses licensed radio frequencies so an amateur radio license is required. Rules and regulations will vary, be sure to check the laws in your country to make sure you are compliant. The Tracksoar will need an amateur radio callsign (assigned when you receive your amateur radio license) to identify your device and meet legal requirements.

In the US getting your amateur license is very easy. The best way to get your HAM license is to contact your local amateur radio club and ask about licensing classes and test sessions. For more information the ARRL has a great wealth of resources available here: <http://www.arrl.org/getting-licensed>

Whats in the box?

Tracksoar PCB - Contains only the Tracksoar Printed Circuit Board, no electronics,

definitely for those handy with a soldering iron.

Tracksoar Shields - Contains one or more of the Tracksoar Daughter Boards, a Tracksoar is required to communicate with the shields and transmit the data.

Tracksoar Some Assembly Required - For international Tracksoar users, includes an assembled Tracksoar minus the transmitter. There are a number of available pin compatible transmitters that are very easy to solder.

Tracksoar Fully Assembled and Tested - Available for the US and Canada, this is a Tracksoar which is almost ready to use out of the box, just program your callsign and you're ready to fly.

Risks and challenges

Supply Chain

The parts used on the board are all current generation and available from reputable sources but sourcing them in quantity may be a challenge.

Assembly

We have successfully built and tested many prototypes and are using a pick and place service for assembling 90% of the Kickstarter boards. However, large-scale assembly may be a challenge, as our team of volunteers will need to through-hole solder some components as well as test each Tracksoar.

Shipping

International shipping is always a challenge, but we have the help of some excellent Santa Barbara Hackerspace members who have run successful Kickstarter campaigns in the past giving us guidance.

[Learn about accountability on Kickstarter](#)

FAQ

- [How do I add a shield to my order?](#)
- [What is the maximum altitude for Tracksoar?](#)
- [What is Tracksoar's battery life?](#)

[Ask a question](#)

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