

W:\DCARC\920 - Balloon Projects\2023-03-14 The Balloon Project Concept 3.14.23 by Harvey KC4CX.docx

Subject: The Balloon Project Concept

From: "Harvey K" <harvey.k@earthlink.net>

Date: 2023-03-14, 14:31

To: wb4ehg, WB4BAG, N4QV

CC: harvey.k

## **The Balloon Project Concept 3.14.23 by Harvey KC4CX**

---

The balloon project can be very simple or very complex depending upon our initial goals.

1. Are we doing it for the fun of it,
2. Experiment with new technology,
3. Looking for local publicity or looking for national publicity.

Is the goal to keep it within the club or invite other clubs such as SFDXA to join us. They have some wonderful members who have tremendous technical knowledge.

The project can be as simple as a Latex Weather Balloon that has the ability to stay aloft for 3 to 5 hours and will reach an altitude of approximately 30,000 feet, then burst and parachute down . They only cost between \$15 and \$75 depending on the size 12 foot is recommended because of its payload capacity.

The second type of balloon is Mylar which has the ability to go aloft to approximately 50,000 to 60,000 feet and can fly for approximately 10 to 15 hours covering a distance of many hundreds of miles. It has a greater payload capacity.

The third type is a thin, film plastic balloon that has the ability to reach 60,000 to 100,000 feet and can circumvent the earth. These are much larger and have a greater payload capacity. The largest can lift 8,000 pounds on equipment.

All of them basically use helium with an option of using hydrogen, which is lighter but much more dangerous to handle. Yes, Hydrogen is explosive.

It is important that we have a member who is familiar with the FAA and can file a NOTAM and notify NORAD. We must file our Projected Flight Path,

intentions (reason for the launch), our launch location, and whether or not, we will be in the Jetstream.

The simplest balloon has a small transmitter that's capable of telemetry sending back temperature and pressure, humidity, wind direction using on board GPS. A more complex payload would be to install a 2 m repeater and a color CCTV camera transmitting on the UHF band. If we really want to get sophisticated, we can put in a full auto track system. It would have a beacon with GPS that will include wind, speed and direction. Having DX stations around the world would give us the ability to track the Balloon with its payload and maybe recover it.

A large Solar Company in Florida that may donate (or give us a major discount) on some damaged solar panels that we can cut done in size and utilize. These are 250-300 watt panels.

Attached will find a document compiled from some companies that have equipment that's really available off the shelf and they charge you accordingly.

**I believe that we can build better equipment with more functionality.**

I have a major supplier of helium in Fort Lauderdale. We can get any size tank we need at a reasonable price as they do specialize in welding, so helium is a normal item that they will stock.

We need someone to head up the project and a lot of individuals to assist. If you want local publicity and want to involve Junior High Schools, High Schools, Scouts and Universities we need a few school liaisons. If we want additional local and national exposure, we will need an individual to work with the media and we will videotape, all aspects of the project beginning from its inception, the construction and its final launch.

These are just a few ideas that I had to put on paper and looking for some response / suggestions from club members.

**Harvey KC4CX**

=====

# ***High Altitude Science***

<https://www.highaltitudescience.com/>

<https://www.highaltitudescience.com/pages/tutorials>

<https://www.kaymont.com/> **For NASA and Civilian Use**  
<https://www.kaymont.com/resources>

<https://aerostar.com/products/balloons-airships/zero-pressure-balloons>

Welcome to High Altitude Science. We make it possible for anyone with a passion for space exploration to launch a science payload to the edge of space! We accomplish this by providing our customers with the highest quality weather balloon kits and supplies. We also provide free online tutorials and tools to make it easier for you to plan a successful mission to the edge of space. Whether you are a school looking for a science project to challenge and inspire your students, a research organization with specific science-gathering goals, or just someone wanting to explore the edge of space, we are here to serve you.



## [Latest news](#)

### [Weather Balloon Tutorials](#)

We just added a Tutorials section to our website. They're a great place to start if you're new to launching weather balloons. If you have any questions that are not answered.

1. [FAQs](#)
2. [Shipping](#)
3. [Return Policy](#)
4. [About Us](#)
5. [Contact Us](#)
6. [Purchase Orders](#)
7. [Jet Stream](#)

Copyright © 2023 High Altitude Science | [POS](#) and [Ecommerce by Shopify](#)

## Products



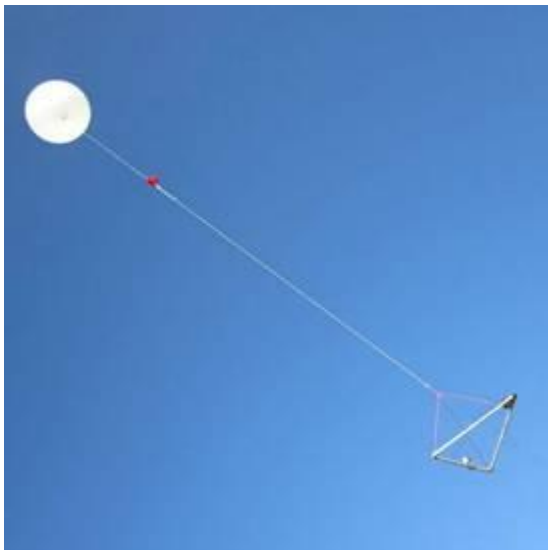
### **Audio Beacon Kit**

High Altitude Science \$29.00



### **Eagle Flight Computer**

High Altitude Science \$299.00 Sold Out



### **Eagle Pro Weather Balloon Kit**

High Altitude Science \$669.00 Sold Out

### **Flight Train Kit**

High Altitude Science \$14.00



**Near Space Parachute 1.0 m**

High Altitude Science \$39.00



**Near Space Parachute 1.5 m**

High Altitude Science \$99.00 Sold Out



**Relative Humidity Sensor**

High Altitude Science\$39.00



**Strato USB Cable**

High Altitude Science\$39.00



**StratoTrack APRS Transmitter**

StratoGear\$335.00



**The APRS Radio Transmitter**

High Altitude Science\$230.00 Sold Out



**Universal Camera Mount Kit**

High Altitude Science \$14.00



**Weather Balloon 1200 g**

High Altitude Science \$129.00 Sold Out



**Weather Balloon 1500 g**

High Altitude Science \$159.00 Sold Out





**Weather Balloon 200 g**

High Altitude Science \$29.00



**Weather Balloon 350 g**

High Altitude Science \$39.00



**Weather Balloon 600 g**

High Altitude Science \$69.00 Sold Out



**Weather Balloon Inflator**

High Altitude Science \$99.00

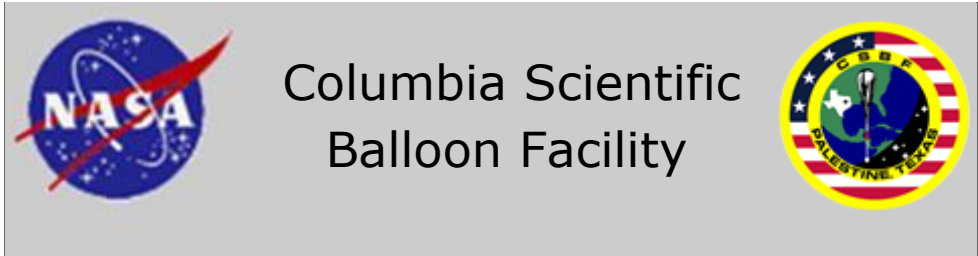


f



# StratoTrack APRS Transmitter \$335.00 Top of Form

Callsign\* SSID\*



[ABOUT](#) | [OPERAT](#) | [SCHED](#) | [CONTA](#) | [PROCUR](#)



[BALLOON IN](#) | [DOCUMEN](#) | [PHOTO ALB](#) | [EMPLOYME](#)  
[LINKS](#)

## Scientific Balloons



Balloons have been used for decades to conduct scientific studies. While the basics of ballooning have not changed, balloon capabilities have increased and their dependability has improved greatly.

Scientific Balloons...

1. can be launched from locations worldwide to support scientific needs.
2. can be readied for flight in as little as six months.
3. offer a low-cost method of conducting science investigations.
4. provide a stable platform for longer flight durations.

Scientists use scientific data collected during balloon flights to help answer important questions about the universe, atmosphere, the Sun and the space environment. Questions such as "How did the universe, galaxies, stars, and planets form and evolve?" and "Are there Earth-like planets beyond our solar system?" are being answered by NASA with the help of experiments flown on scientific balloons.

Standard NASA scientific balloons are constructed of polyethylene film; the same type material used for plastic bags. This material is only 0.002 centimeters (0.0008 inches) thick, about the same as an ordinary sandwich wrap. The film is cut into banana-peel shaped sections called gores and heat sealed together to form the balloon. Up to 180 gores are used to make NASA's largest balloons. These standard, zero-pressure, balloons are open to the atmosphere at the bottom to equalize the internal pressure with the surroundings. The balloon system includes the balloon, the parachute and a payload that holds instruments to conduct scientific measurements.

Helium, the same gas used to fill party balloons, is used in NASA balloons. These very large balloons can carry a payload weighing as much as 3,600 kilograms (8,000 pounds), about the weight of three small cars. They can fly up to 42 kilometers (26 miles) high and stay there for up to two weeks.

The Balloon Program's capabilities are being expanded with the development of an Ultra Long Duration Balloon (ULDB). The ULDB is made of advanced materials and uses a new pumpkin-shaped balloon design to achieve flights of up to 100 days. The ULDB is completely sealed and pressurized in order to maintain constant altitude night and day. The ULDB payload consists of a

solar power system, radio receivers and transmitters, computers, batteries and other systems required for science experiments.

The balloon is launched by partially filling it with helium and launched with the payload section suspended beneath it. As the balloon rises, the helium expands, filling the balloon until it reaches float altitude in two to three hours.

After the science measurements are complete, flight controllers send a radio command that separates the payload from the balloon. The payload floats back to the ground on a parachute where it can be retrieved and flown again. Payload separation creates a large tear in the balloon material, which releases any remaining helium. The balloon also falls to the ground, where it is retrieved and discarded. The balloon and payload land approximately 45 minutes after separation.

(Special thanks to the [Balloon Program Office](#) at [Wallops Flight Facility](#).)

---

## Types of Ballooning

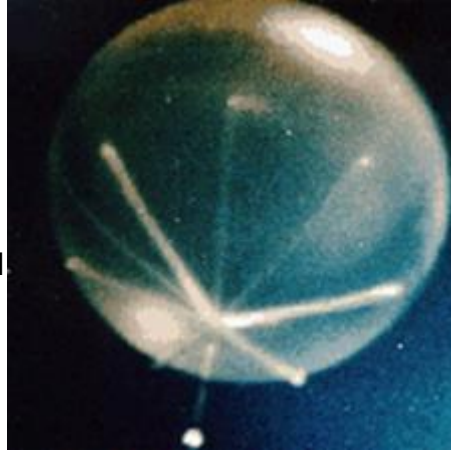


### **Conventional Ballooning**

Conventional missions typically use direct line-of-sight electronics for command and data with flight durations ranging from a few hours to days.

### **Long Duration Ballooning**

A Long Duration Balloon (LDB) mission normally traverses between continents or around the world for one circumnavigation. LDB flights may last up to three weeks and satellite-based electronic systems are utilized for command and data.



### **Ultra Long Duration Ballooning (ULDB)**



The superpressure pumpkin balloon has been designed to increase flight durations up to one hundred days. This new balloon will significantly increase the amount of data that can be collected in one balloon mission.

---

[NASA Standard Design Balloon Load/Altitude Curves \(English Units\)](#)

[NASA Standard Design Balloon Load/Altitude Curves \(Metric units\)](#)

[29X LDB Antarctica Sample Altitude Profile](#)

[34H LDB Antarctica Sample Altitude Profile](#)

[39L LDB Antarctica Sample Altitude Profile](#)

[34H LDB Sweden Sample Altitude Profile](#)

Program Manager: [Robert](#)

Site Curator: [Michelle Johnson](#)

Updated: October 20, 2022

[Privacy Statement](#)



[View Text Version of this Site](#)

©CSBF