



Eclipse Activity Report (EAR)

Nationwide Eclipse Ballooning Project

Issue #10

12/21/2016

Happy Holidays Everyone!

<http://eclipse.montana.edu>

EAR Issue 10 Summary

This and all previous issues of EAR can be found at:
<http://eclipse.montana.edu/news/>

General Updates

T-minus

Creating Shipping Papers for Transporting Helium with
 Weight > 440lbs and < 1001lbs

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Individual Team Updates

Next Telecom: 1/12/2017 at 11AM MST. We will spend about 20 minutes on updates then open the floor for questions.

- Call toll free 855-797-9485
- Pass code 921-692-445# then # again

Action Items

- **Send Shane requested topics for the technical telecom**
- **Send Shane possible date for individual team calls**
- **Report to Shane your Milestones 1-6 (excluding Milestone 3)**
- **Send Shane your team website or blog to be added to the eclipse ballooning page**
- **Invite students to join the Eclipse Ballooning Project Student Communications Google Group here:**
<https://groups.google.com/forum/?hl=en#!forum/sgebpsc>
- **Telecom 1/12/17, 11 AM Mountain Standard Time**

General Updates

T-Minus

As of this writing we are 34 weeks, 5 days, 22 hours, 23 minutes and 54 seconds away from the moons shadow reaching Oregon's coast as the Great American Eclipse begins.

Creating Shipping Papers for Transporting Helium with Weight > 440lbs and < 1001lbs

We are working with the Motor Carrier Captain (who also helped us organize and understand the rules and regulations guiding the transporting helium for our needs) on a generic "Shipping Paper" that teams can quickly print and fill out for the vehicle transporting helium. **Shipping papers must be carried in the vehicle when transporting more than 440lbs but less than 1001lbs of helium.** All the regulations and rules under the "Materials of Trade," which all teams should be familiar with, still apply. The regulations and regulation explanations can be found on the fourth bullet point down here: <http://eclipse.montana.edu/participant-ballooning-resources/>

The shipping paper form will be shared via email and on the page linked (Participant Ballooning Resources) above when complete. Please note that these rules and regulations are relevant to all ballooning teams all the time. Please contact Shane with any questions.

Practicing with the Common Payload

Before you begin expanding upon your common payload systems, it is highly recommended that you become confident in your ability to run the system "as is" first. The common payload systems are complicated and each have their own unique characteristics to learn and become familiar with.

Student Google Group

We currently have 29 members within the Space Grant Eclipse Ballooning Project Student Communications Google Group but have had very little chatter. Please encourage students and team members to join and bounce ideas around as they start brainstorming about their scientific payloads and expansions of the common payload systems. If anyone is interested in joining the google group please do so here:

<https://groups.google.com/forum/?hl=en#!forum/sgebpsc>

Historical Prediction Run

Shane will begin running historical predictions for each team that has provided their launch locations (see <http://eclipse.montana.edu/ebp-airspace/> for the sites that will have predictions ran). Once the predictions have been run, each team will receive three .kml files (one for the dates of August 20th, 21st and 22nd) each containing ~10 predictions (from the years 2005-2014) which can be imported into Google Earth or Google Maps. If your team's location is not listed and you would like the historical predictions ran for it, please share the location with Shane before the end of December.

Unfortunately, due to the user un-friendliness of the program, the program won't be made available to teams as support cannot not be provided. Please contact Shane if you require a specific prediction ran.

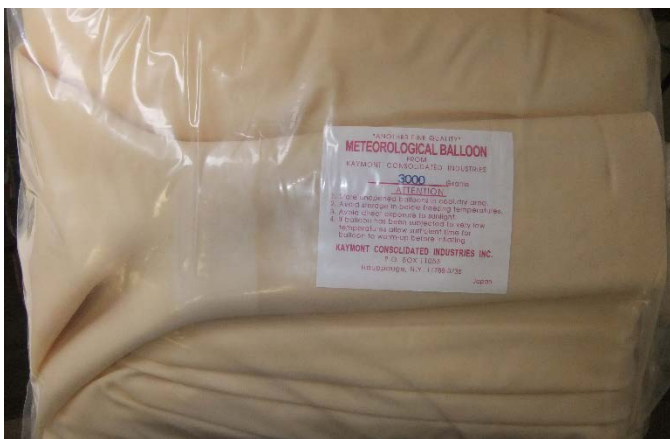
Eclipse Path at 80,000ft

We will soon have detailed maps available that show the path totality shadow at 80,000ft! These will be made available for print or will be viewable on the internet.

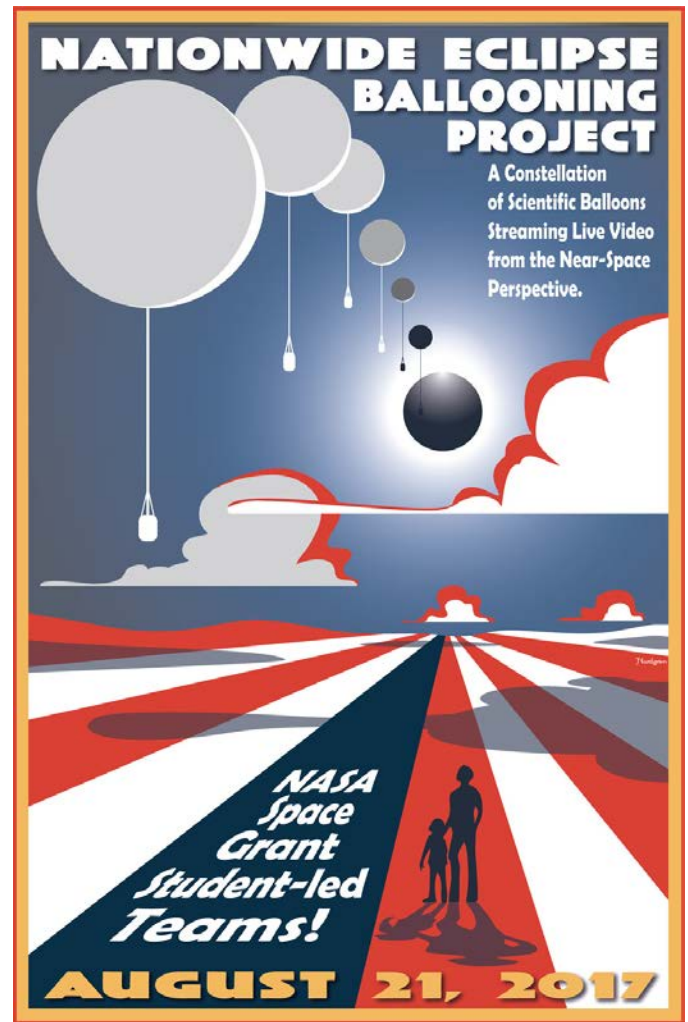


3000g and 1200g Balloons Available

We still have a few 3000g balloons (the so called “Expired Google Balloons”) and we stumbled upon a few extra 1200g balloons which are available to teams who are in need of practice balloons for the cost of shipping only. Max of two (one 1200g) per team until we run out. Please contact Shane if you are interested. Once shipped a receipt will be provided with reimbursement information.




Eclipse Ballooning Project Poster



The “official” poster has been created by Tyler Nordgren for the Eclipse Ballooning Project! We will be sending 5 posters to each team and additional posters can be purchased (at a cost of \$2 per poster) from Tyler Nordgren by contacting him at Tyler_Nordgren@redlands.edu or on his website TylerNordgren.com. Please note that this poster is copyrighted by Tyler so we are not allowed to print our own versions.

White Paper Fact Sheet

A new White Paper Fact Sheet for the EBP has been created (see the *News* tab). Please feel free share!



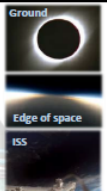
Eclipse Ballooning Project

<http://eclipse.montana.edu/>

Students will conduct high altitude balloon (HAB) flights from over 30 locations across the 8/21/2017 total eclipse path, sending live video and images from near space to the NASA website. Video and images of a total eclipse from near space are fascinating and rare. It's never been done live, and certainly not in a network of coverage across a continent.

WHY:


- ❖ Public engagement. Total eclipses are rare and very impactful events. The continental US hasn't had a total eclipse since 1979. The Eclipse Ballooning Project is in a unique position to engage the public in an awe-inspiring and educational way, *right as the eclipse is happening*.
- ❖ Workforce development. This project presents an amazing hands-on learning opportunity for the hundreds of students who are participating.
- ❖ Partnerships. Several long lasting partnerships with other federal agencies and with industry have developed and will continue to mature.

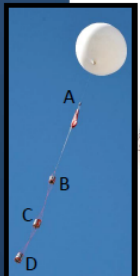


Major Project Milestones:

- ✓ May 2016: Workshop dry run to build common payload
- ✓ July 2016: Workshop to build common payload
- Academic Year 2016: train, practice, test and brainstorm
- June 2017: Dry run with all participating teams
- August 21st, 2017: Eclipse

Official participation includes 54 teams from 31 states. Organization and planning is led by Montana Space Grant with assistance from many other Space Grant Consortia.





About the Common Payload Systems

A – Outdown: System which mechanically severs the line connecting the payload string to the balloon when commanded.

B – Tracking Payload: Housing an NAL Iridium satellite modem near real time tracking of the balloon and payload string is possible for both FAA and the ground station tracking.

C – Still Image Payload: Using a Raspberry Pi, Pi Camera and 900Mhz modem images can be sent to the ground station and commands/settings can be sent to and from the payload.

D – Video Payload: A Raspberry Pi and Pi Camera are to record and transmit an HD video feed to the ground station using a 5.8Ghz Ubiquiti modem.

E – Ground Station: While tracking the balloon during flight, the ground station gathers the near live HD video stream and uploads it to the internet. The ground station also allows users to receive images from and send commands to the still image payload.

Milestone 3

Milestone 3, originally set for 11/11/2016, has been postponed until further notice. The server has been moved and we are ironing out some final glitches. We are expecting a mid-January test date.

Team Activity

What's Up?

Is your team doing something interesting you would like to share? Tell us what you are up to! Please send Shane any details, photos, diagrams, etc. of any activity you would like to share and we will feature it here!

Technical Activity

Technical Telecom Topic Suggestions

We would like to start scheduling technical telecons beginning at the end of January. As much as we would like to address a wide variety of technical questions “on the fly,” we would like to give our Wizards the opportunity to prepare as much as possible for the topics which will be addressed. This will help avoid the conversation from becoming muddled on tangential questions which may need to be addressed separately or at a later date. Therefore, we would like to address the areas which teams find most pressing. Please contact us with the areas you would like the discussion to focus on, for example, ground station tracking and/or alignment. Whichever topics generate the most interest will be the focus of this telecom with next technical telecons addressing the next most pressing topics on the list. Please send all requests to Shane.

All technical telecons will be record for those who cannot be in attendance or for those who need to revisit the discussion.

ProBoards

<http://eclipsedesign.proboards.com/>

We have recently added additional “wizards” from University of Colorado to monitor the forum and help respond to technical questions. Keep posting questions and any feedback you have to current posts.

GitHub

<https://github.com/MSU-BOREALIS>

Students – get involved in tinkering with the software!

New FAQs

See answers at <http://eclipse.montana.edu/faq/>

Communication

Individual Team Updates

We would like to have one-on-one conversations with every team of the EBP to get an update on where each team is at and address individual questions and concerns. We would like to begin in mid-to-late January. Please contact Shane to schedule a time that may work best for your team.

Other Communication Points:

- Points of Contact for eclipse path state hosts can be found from the FAQ page.
- The next group **telecom** will be Thursday January 12th at 11 AM Mountain Standard Time. At the telecoms, we will spend about 20 minutes on updates then open the floor for questions.
 - Call toll free 855-797-9485
 - Pass code 921-692-445# then # again
- Facebook page:
<https://www.facebook.com/EclipseHighAltitudeBallooning/>
- Twitter:
https://twitter.com/Eclipse_HAB

Action items

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