

Eclipse Activity Report (EAR)

Nationwide Eclipse Ballooning Project

Issue #16

6/7/2017

<http://eclipse.montana.edu>

EAR Issue 16 Summary

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

General Updates

T-minus

Our Project is a Big Deal

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Communication

Next Eclipse Group Telecom 6/8/2017 at 11AM MDT

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

Action items

- **Update your video payload streaming code.**
- **Update your ground station video code**
- **Participate in the June 13 bench test**
- **Participate in the June 19 bench test *NASA will be observing this test***
- **Participate in the June 20 dry run *NASA will be observing this test***
- **Complete the WPS form and return to Shane ASAP.**
- **Send Shane your team website or blog to be added to the eclipse ballooning page**
- **Next Group Telecom 6/8/2017 at 11AM MDT**

General Updates

T-minus

As of this writing, we are 10 weeks, 4 days, 16 hours, 43 minutes and 15 seconds away from the Moon's shadow reaching Oregon's coast and the Great American Eclipse begins.

Our Project is a Big Deal

NASA is becoming increasingly more excited about our project and focusing more eyes upon it. The spotlight is being cast on us and we need to be ready for it!

MAJOR UPDATE 1: Code to Stream to Stream.live

The updated code for your video payload in order to stream to Stream will be made available by the end of this week which will include instructions on how to update the code by flashing a new SD card. Please make sure your team has completed this in preparation for the June 13th bench test.

MAJOR UPDATE 2: Antenna Tracker Code

The antenna tracking ground station code will be updated by the end of this week with instructions on how to do so. This must be completed before the June 13th bench test.

Technical Questions?

Having issues? Check out the ProBoards page. New troubleshooting tips/solutions and ideas are being shared on a near daily basis.

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

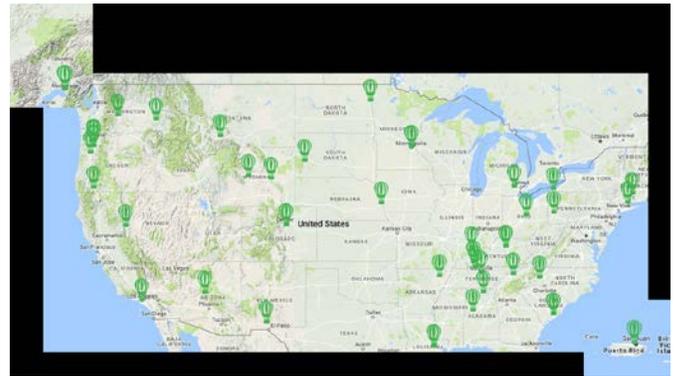
Bench Test June 13

At 11am MDT on Tuesday June 13, we need everyone to perform a full bench test (streaming to Stream, tracking,

etc.). Make sure you have updated both your ground station antenna tracking code and your video payload code beforehand. The test will last for one hour.

Tracking Website Test Success

The tracking website test went off with overall great success. At the peak, we had around 47 unique iridium modems on covering the continental US as well as Alaska and Puerto Rico. Thank you to everyone who participated in this very important test.



Tracking Website Reminder

The tracking website is no longer the .26 site. Please visit eclipse.rci.montana.edu for tracking. **Please do not share this website outside of your ballooning group.**

June 20th Launch Sites

The June 20, 2017 project dry run is less than 2 weeks away! It is important for teams to participate in the event whether that be a flight (preferred), tethered launch, or bench test. For all teams that expect to do a full balloon flight, we will be filling NOTAMs just as we would for the eclipse day flights. It is therefore imperative that we receive your dry run launch sites ASAP! If you have not already done so please fill out the **“June 20 Dry Run Launch Sites”** spreadsheet and **email to Shane by Friday** so we may organize our communication and coordination with the FAA for the dry run. This is your chance to practice with support on the line for, make sure you take advantage of this opportunity!

Press Kit and Media Resources

As the project slides further into the national spotlight, you may begin receiving more inquiries from both local and national media sources. It is also worthwhile to reach out to local media to promote your operations and activities during the eclipse. To help you with these inquiries, and to share a globally consistent vision of the project, we have compiled a number of resources to assist your correspondence with the media. Attached within the EAR 16 email is a press release template, which has an overview of the project and is easily adjustable to match your teams' circumstances (highlighted in blue).

Media Resources Page:

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

- Links to a Media Image Repository (Password **Bobcats**)
- Videos overviewing the project, balloon launch and a float demonstration
- Links to the "The Teams" and "Programs Page" (send us your team website so we may link to it)
- Links to the project white paper and infographic
- Links to our project news archive

If you have additional resources (such as images or videos) you would like us to consider including within these resources please feel free to send them to Shane. Below you will find the national and project media contact:

National contact: Dr. Angela Des Jardins, director, Eclipse Ballooning Project

Media Contact: Marshall Swearingen at Montana State University Communications
marshall.swearingen [at] montana.edu – (406) 994-5036

Dry Run – Leadership Team Support

We will have a number of options available for support during the dry run such as open telecoms and a Google Hangout. We will have five telecom numbers to call into with support team members on the line:

- 1) General (non-technical) questions/conversations
- 2) Ground station support
- 3) Still image payload support
- 4) Video payload support
- 5) Tracking payload/Cutdown support

We will share each support call in information before the dry run. In order to allow everyone to take advantage of the calls, if you call in please make sure you do not interrupt a current back-and-forth exchange before asking your question.

A Google Hangout will also be available should you need to talk one on one with a support member and share screenshots or should you need to screen share.

Should you need additional support, we will do our best to make one-on-one support available on a case-by-case basis.

***IMPORTANT NOTE* Most of the support is provided by students and interns of the Montana, Minnesota, Colorado and LSU Space Grants. Please respect their privacy and do not ask for or use their personal phone numbers and/or emails to contact them directly unless they communicate that it is OK to do so.**

Setting Up Wireless Priority Service (WPS) for Eclipse Day

Introduction: In order for our team primary points of contact (POC) to be able to make or receive cell phone calls on eclipse day (when cell phone towers along the path of totality are expected to be overloaded), we will be granted access to the Wireless Priority Service (WPS). WPS is coordinated by Homeland Security but NASA will act as the liaison for us; our WPS requests will be submitted by NASA. In order for NASA to submit the requests, a GETS/WPS Request Form must be filled out by each individual POC. Instructions are given below.

Email completed forms to Shane Mayer-Gawlik (shane.mayergawlik [at] montana.edu) no later than June 16, 2017.

WPS cost:

Using the WPS service does require a few minimal charges to individual POC cell phone accounts by their cell phone provider (i.e. Verizon). The *maximum* amounts of these charges are regulated by Homeland Security but are typically lower and vary by provider.

- \$10 maximum one-time activation fee (typically \$1 to \$2)
- \$4.50 maximum monthly service fee (for us will be one time only as the service will only be activated for us for a period of about two weeks)
- \$.75 per minute maximum for WPS calls (*272) (only charged if the service is used)

Instructions for fill out the GETS/WPS Request Form for our group:

Please save a copy of the form with your team name appended, filling in each section as instructed below.

- Requesting: no change
- Organization: no change. Group/component within organization: your team name (and institution if not clear from team name)
- GETS NS/EP...: no change
- WPS NS/EP...: no change
- NS/EP User Type: no change
- For WPS Requests Only: This is the most important area of the form. Service Provider is the provider for your cell phone – i.e. Verizon – select one. Account # is your account number that appears on your cell phone bill (so the provider can identify you). WPS Phone # is your cell phone number tied to the account # given and is the number that you want to be able make calls from on eclipse day.
- Name: your name. NS/EP Title or Function: no change
- Work Address: your work address
- Contact Information: your contact info
- If you have...: no change in this whole section.

Instructions for WPS use will be communicated when the service is activated.

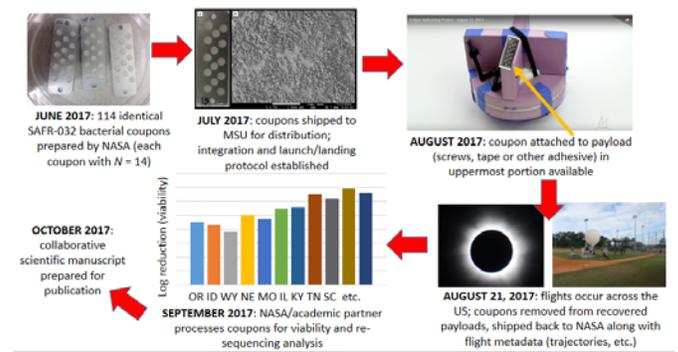
NASA Astrobiology Experiment Opportunity

Would you like to participate in some REAL NASA astrobiology research as part of the EBP? David Smith of NASA Ames Research Center Space Biosciences Research Branch would like each of the EBP ballooning teams to carry a small addition in their payloads as part of a NASA Experiment (using the stratosphere as a stand-in for the Martian surface and planetary protection from Earth life - see attachment). Each team would then send the attachment back after recovery

It will not add much if any extra work (or weight to your payloads ~5 grams) for teams and it is some very interesting science. David says the opportunity to do this experiment with simultaneous payloads across a continent is unprecedented and although not perfect, is very exciting.

Please let us know if you are interested, we will have more information on this soon!

Stratosphere Survival During a Solar Eclipse – Astrobiology/Space Biology Mission of Opportunity w/ Montana State University



Team Collaboration Needed

Request for collaborative payload during eclipse:

“I'd like to inquire about flying a solar radiation experiment on two or more Balloons along or near the path of totality across the US. I'll have a payload flying in the Central US and am looking for interested parties to the west and east. I'd like a good geographical spread if possible. Payload isn't built yet so we can optimize for weight if necessary to collaborate. I am willing to share all data with participants. This experiment is based upon something similar done during the March 20, 2015 eclipse near the UK(1). If you know of any groups measuring solar radiation via a similar method let me know so we can compare data. Thanks! My email: [wvslaton \[at\] uca.edu](mailto:wvslaton[at]uca.edu)”

(1) Coordinated Weather Balloon Solar Radiation Measurements During a Solar Eclipse, Harrison et al, Phil. Trans. R. Soc. A, 374, 20150211.

Eclipse Ballooning Project Teams Flying Multiple Balloons

If you are planning on flying multiple balloons on eclipse day you are not required to have an Iridium tracking payload on your additional balloons. We expect that each team will fly at least one Iridium and that any additional balloons will be launched a similar time. Therefore, balloon location communication for the FAA will be summarized by the one Iridium payload.

Project Youtube Video



<https://www.youtube.com/watch?v=BH3ApvQkt08>

Ground Station Hardware Upgrade (Non-required)

New servos have been tested which can improve tracking accuracy. If your team is interested in upgrading your tracking servos or if your original servos have been damaged or broken they can be purchased on the Servo City website. Model numbers can be found below:

Multiplexor Interest

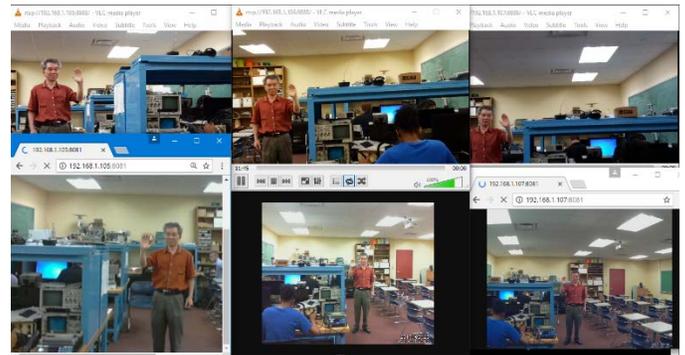
If you are interested in receiving a Multiplexor board to 'point' using multiple cameras from MSGC please contact Shane ASAP. We have a limited number of these boards ready and available (more can be made

but they take time). Please note that all cables, cameras (7 version 2), housings and other attachments will have to be purchased/built on your own. We do not currently have instructions available.

Team Activity

Gannon 6 Camera Video Streaming via One Rocket M2 Modem

"Gannon has successfully developed a video streaming payload with 6 cameras on one Rocket M2 (or could be M5) transmitting all 6 streams to the Gannon's own M2 ground station. Just tested in the lab. Its radio coverage is not confirmed but should be better than M5 as the frequency is just half. See below a screen capture with all 6 video streaming windows."



Note Although the M2 has a longer range than the M5, due to the high volume of 2.4GHz traffic, the M2 may experience interference and other conflicts.

Oregon Tornados 115K Feet Burst

The Oregon Tornados continue to amaze. During their full balloon launch on June 4th and they reached a staggering burst elevation of 115,000 to 120,000 feet!

"Our objective was to take two cameras to 100,000 feet. The launch was successful. We are still processing the data, but we believe we burst at around 115,000 to 120,000 feet. Two TV stations were there to record the launch and I have included the link to the Channel 5 NBC coverage on the evening news. I have also included

one of the early images we extracted that shows Crater lake. Colin.”



Check out their local news coverage of their team and the EBP: <https://kobi5.com/news/north-medford-h-s-students-launch-nasa-balloon-for-solar-eclipse-project-54230/>

Technical Activity

ProBoards

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

Having issues? Check out the ProBoards page. New troubleshooting tips/solutions and ideas are being shared on a near daily basis.

GitHub

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

New FAQs

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

Communication

- The next group **telecom** will be Thursday June 8 at 11 AM mountain daylight time. At the telecons, 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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- The June 20, 2017 project dry run is less than two months away! It is important for teams to participate in the event whether that be a flight (preferred), tethered launch, or bench test. Not only is the dry run a test/practice of the systems, websites and coordination, but also a practice of coordinating/communicating with the FAA. **If you have not already done so**, please fill out the attached spreadsheet titled **“June 20 Dry Run Launch Sites”** and email the spreadsheet back to Shane so we may organize our communication and coordination with the FAA for the dry run.
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