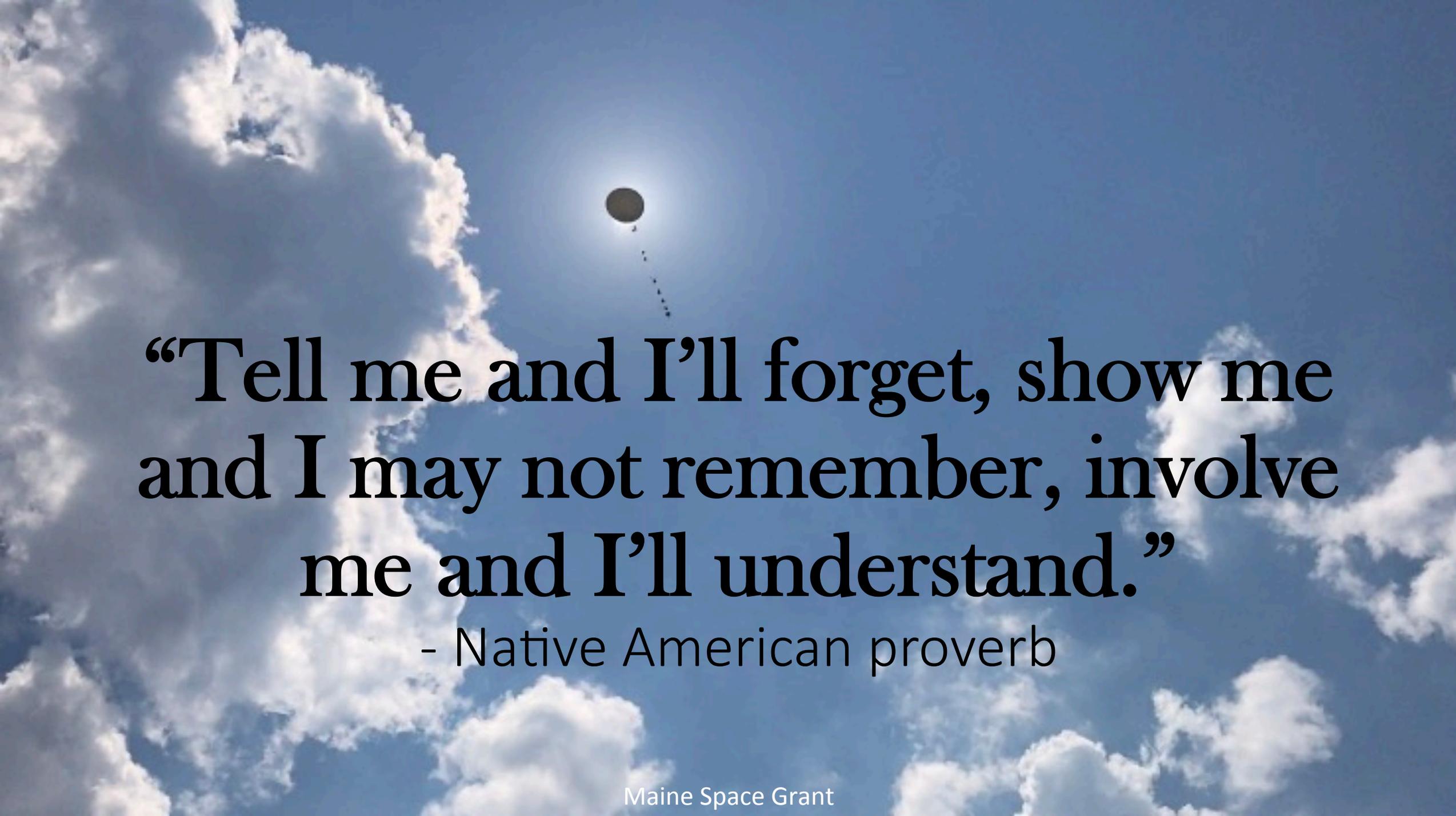


Eclipse Ballooning Project

Academic High Altitude Conference

University of Minnesota

Friday, October 27, 2017



**“Tell me and I’ll forget, show me
and I may not remember, involve
me and I’ll understand.”**

- Native American proverb

Primary Challenges

Technology

Weight

Cost

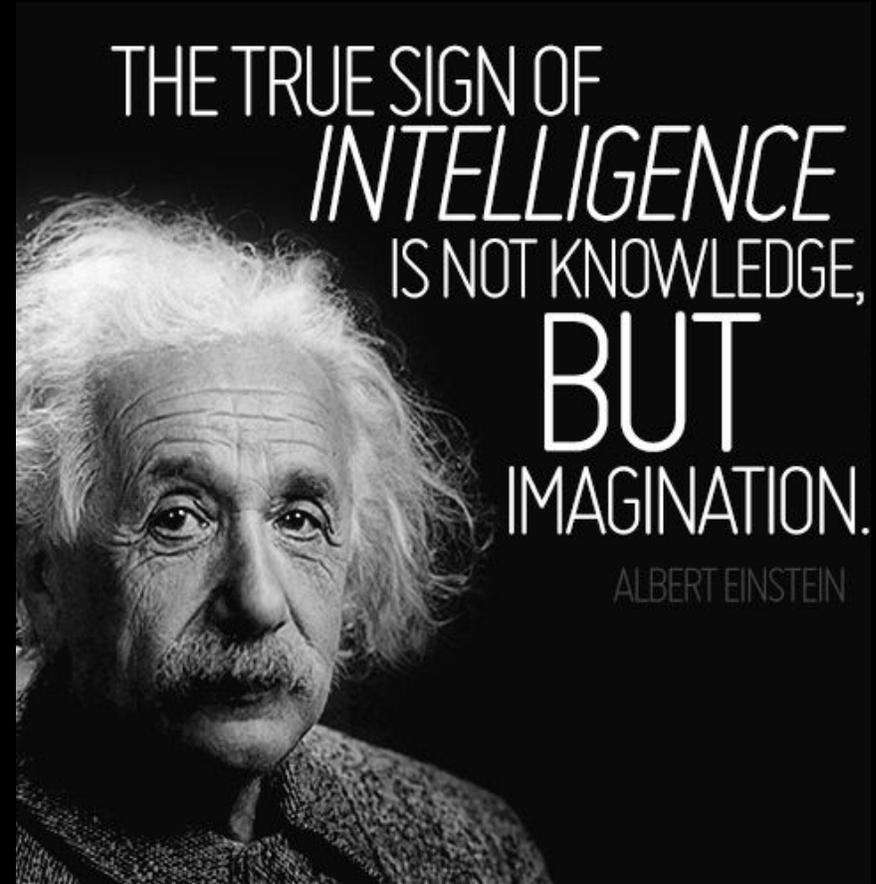
Regulations

Bureaucracy

Massive collaboration

Time

Pressure



Primary Challenges

Technology

Weight

Cost

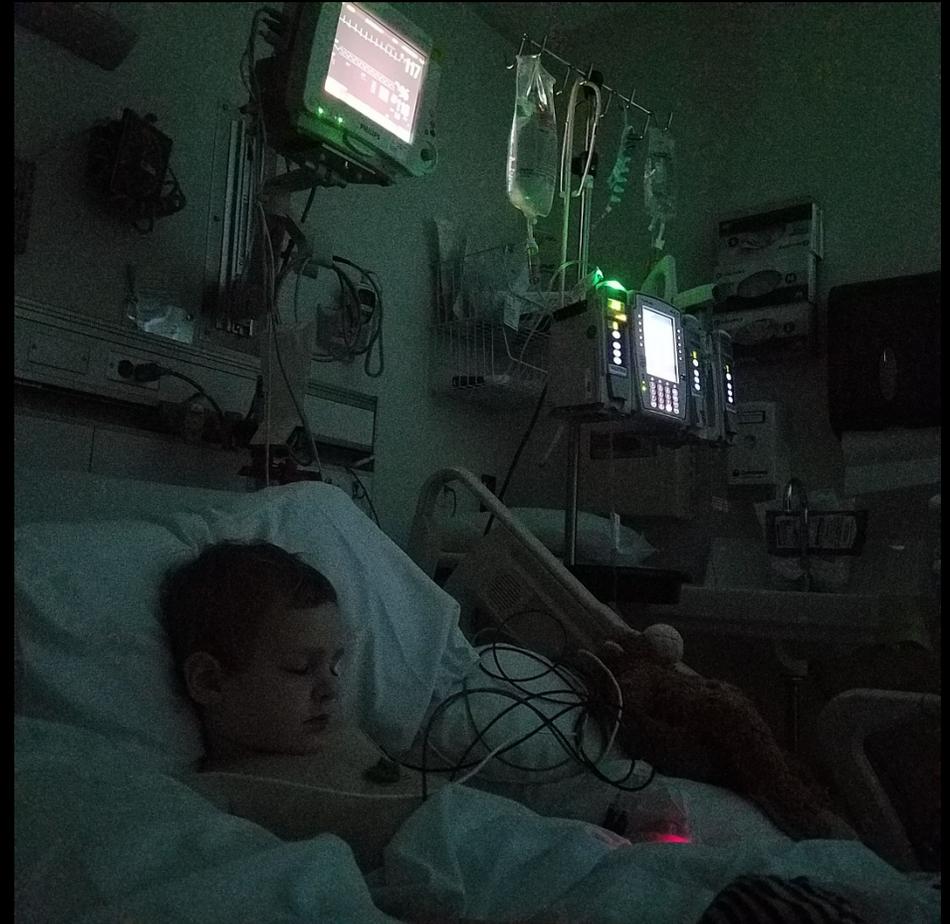
Regulations

Bureaucracy

Massive collaboration

Time

Life and being human

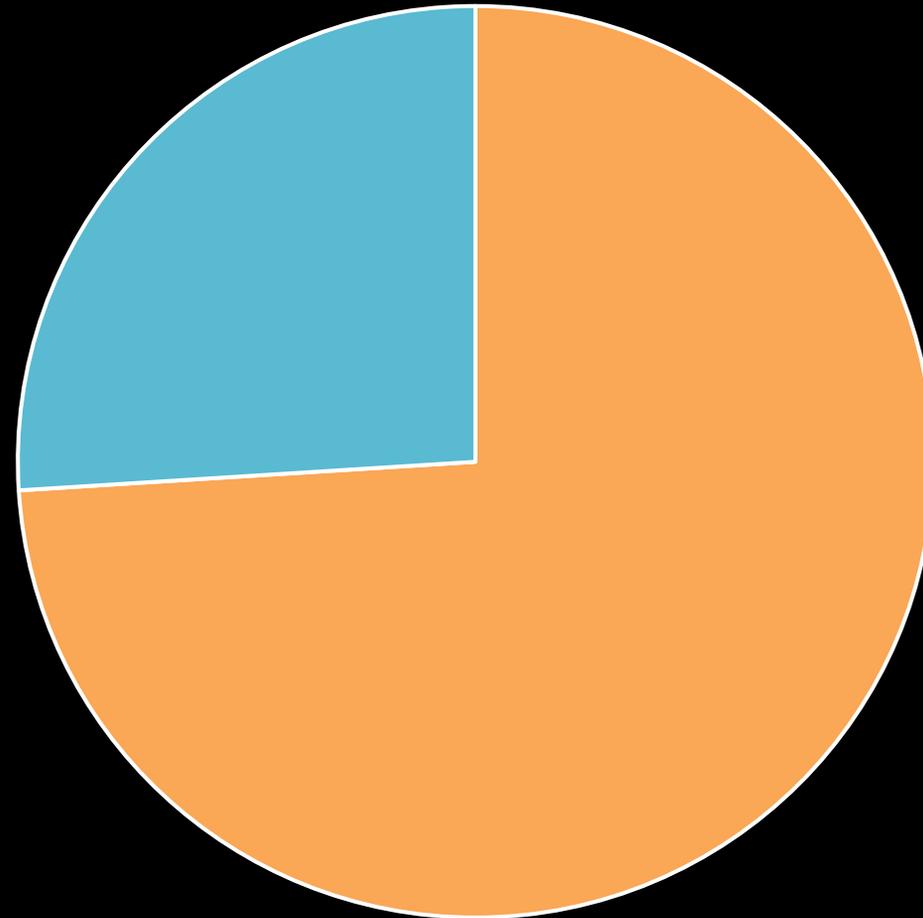


Perseverance

US General Public

■ Earth around Sun

■ Sun around Earth



How it all works

900 MHz still

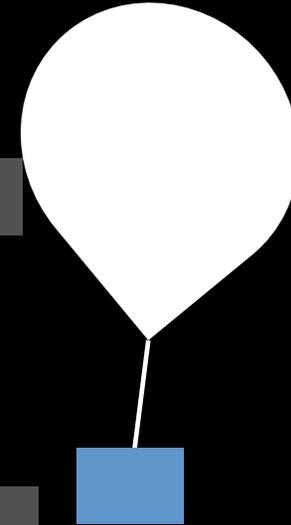
5.8 GHz video

Iridium Modem

terminate

Xbee

Xbee



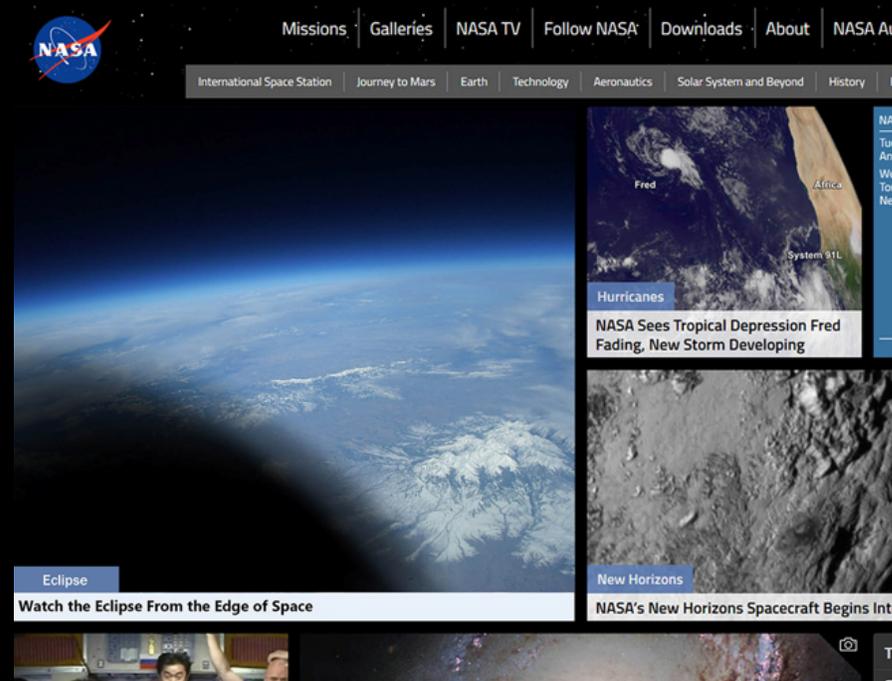
Ground station antennas

Ground station computer

Ethernet

Data server

Web

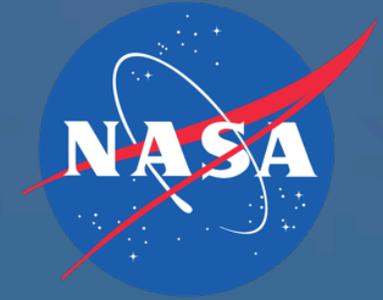


Workshops and practice



NASA Eclipse Metrics Highlights:

“A really big deal”



- NASA’s biggest digital event ever measured, **Seven times higher** than the previous highest traffic event (New Horizons at Pluto)
- Audience comparable to Super Bowls
- Estimated TV content reach: more than 600 million.
- More than 60 million unique views of live streams
- NASA’s most-watched and most-followed event on social media to date, with reach of more than 5 billion non-unique users



Eclipse Ballooning highlights: Public reach

- Featured as part of NASA's pre-eclipse and live coverage on TV and streaming platforms
- Included in TV programming such as the *Great American Eclipse* special on the Science Channel.
- Media coverage in over 50 national stories and over 50 local stories and counting, including several front-page stories



Wall Street Journal, August 15, page A3

Eclipse Ballooning highlights: Partnerships

- Developed partnerships with companies such as Google Loon, World View, and Raven
- Deepened partnerships with NASA's Balloon Program Office and with FAA air traffic control



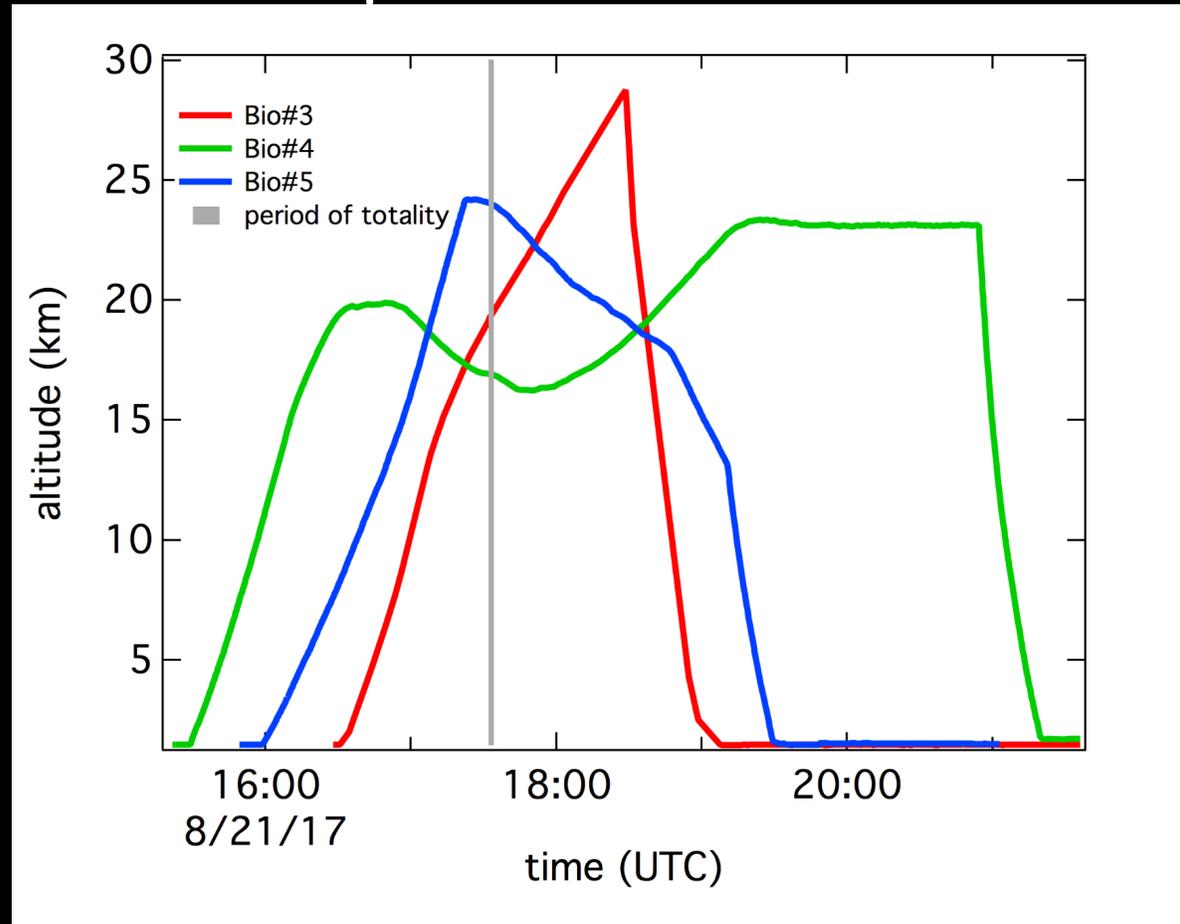
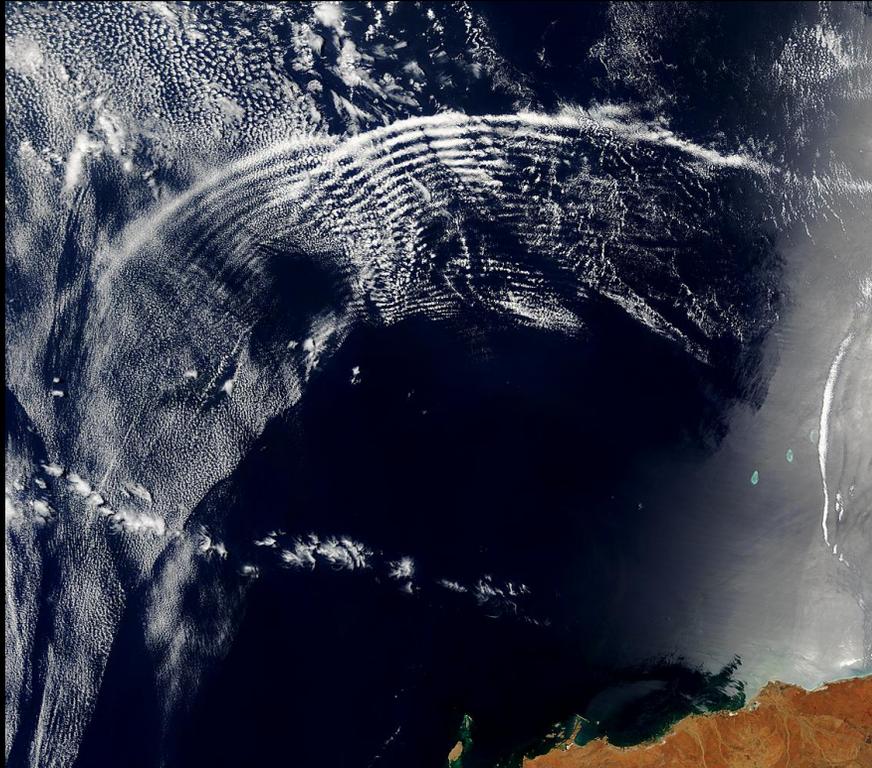
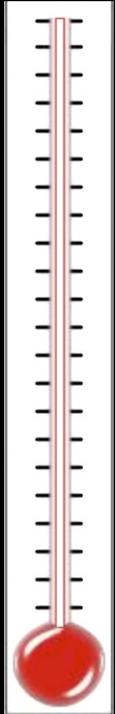
Eclipse Ballooning highlights: Students

Engaged hundreds college and high school teams from 32 states in a meaningful hands-on experience



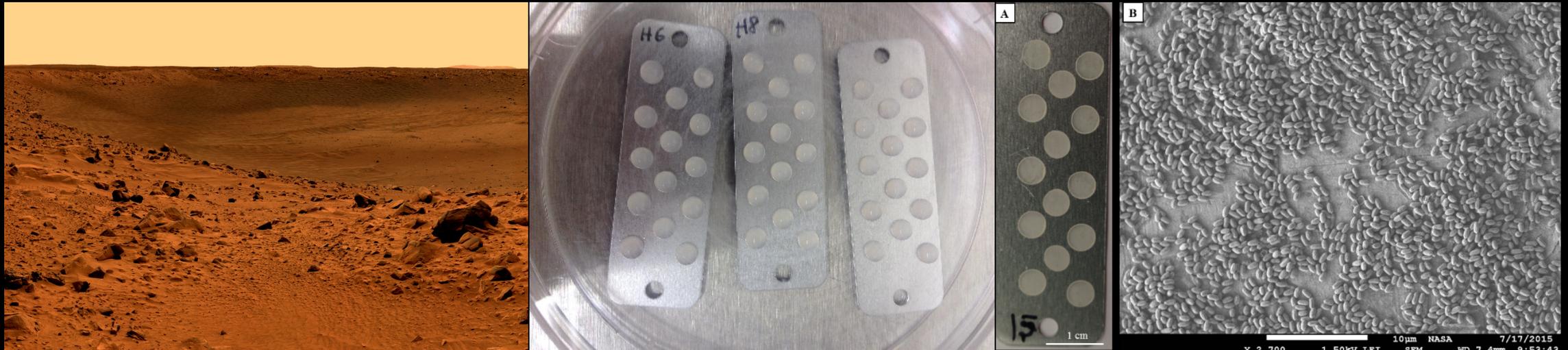
Eclipse Ballooning Science: Atmospheric Science

What happens in the atmosphere as the eclipse shadow blasts across 3,000 miles in 90 minutes?



Eclipse Ballooning Science: Space Biology

Stratospheric conditions are analogous to the Martian surface, especially during an eclipse



Eclipse Ballooning highlights: The big day

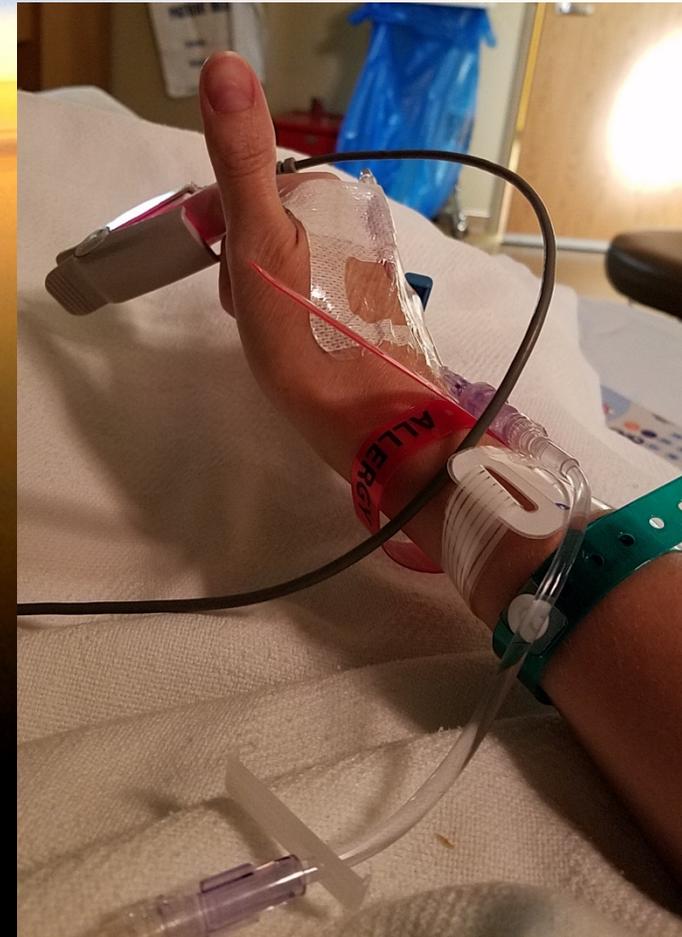


Kelly Gorham (Montana State)

Eclipse Ballooning
highlights:
Awesome footage!!

Thank you

- Students
- Advisors
- Space Grants
- Leadership team
- Montana Space Grant students and staff



Thank you

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Thank you

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Thank you

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What's next?

Presenting results

Evaluation

Lessons learned

2024