



MARS MISSION AND NASA EDUCATOR RESOURCES

CAITLIN NOLBY & MARISSA SAAD

NORTH DAKOTA SPACE GRANT CONSORTIUM



The image features a solid red background with decorative circuit-like lines in a lighter red color. These lines are located in the four corners, forming abstract patterns of lines and circles that resemble a printed circuit board or a network diagram.

ROCKETS TO THE RESCUE!









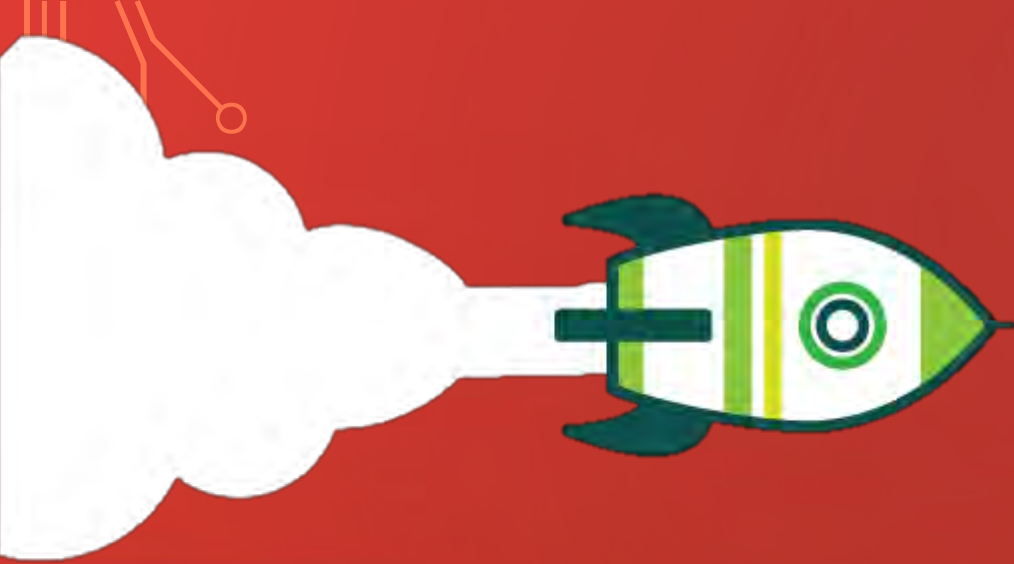
ROCKETS TO THE RESCUE

- Goal = Build and launch a rocket, keep your payload intact, and save Mark Watney!
- Launch your payload to Mars!
- What will be *your* team's strategy?



4 - H NATIONAL YOUTH SCIENCE DAY

**ROCKETS
TO
THE RESCUE**



YOUR TASK!

- In your groups, choose a **NASA center!**
- Design your own **rockets** and **payload containers** to save Mark Watney!



BLAST YOUR ROCKETS TO MARS!



ROCKETS TO THE RESCUE

CRITICAL THINKING QUESTIONS



HOW DO YOU
LAND ON MARS?

1. Was your rocket successful?
2. Take a look at other teams' designs. What materials did they use? Did their results differ from yours? Describe the outcomes.
3. How did gravity affect your design?
4. What should scientists consider when selecting materials? (think of sizes, weight, composition of the atmosphere, etc.)
5. Extra consideration: Integrate this activity into the classroom – add budgets, weight restrictions, competition between NASA centers, etc.
6. What shapes were the most aerodynamic? Are these necessarily the best designs?

NASA EDUCATION

The screenshot shows the NASA Education website interface. At the top, there is a navigation bar with the NASA logo and links for Topics, Missions, Galleries, NASA TV, Follow NASA, Downloads, About, and NASA Audiences. A search bar is located on the right. Below the navigation bar is a large banner featuring a pencil graphic with icons for a flask, a circuit board, a compass, and the equation $E=mc^2$. The main content area is divided into several sections:

- Follow:** Includes social media icons for Facebook, Twitter, and YouTube, and a list of links: About NASA Education, For Educators, For Students, NASA Kids' Club, Search Educational Resources, Latest NASA Education News Releases, For Educators: Grades K-4, Grades 5-8, Grades 9-12, Higher Education, Informal Education, Current Opportunities, and Related Topics: All Topics A-Z.
- Space Station:** A photo of astronauts in a space station with the caption "NASA Astronauts Headline Public Events in Washington Area".
- EXPRESS:** A graphic with the word "EXPRESS" and circular arrows, with the caption "Subscribe: Weekly Email Highlighting Education Opportunities".
- Current Opportunities for Educators:** A photo of a classroom with the caption "Browse the STEM-related professional development opportunities, webinars, workshops, and ways for you and your students to get involved with NASA.".
- Search Educational Resources:** A section with a magnifying glass icon and the text "Search hundreds of resources by subject, grade level, type and keyword. These lesson plans and teaching materials support your STEM curriculum." and a list of links: A-Z List of Publications, A-Z List of Websites, and Educator Resource Centers.
- Benefits to You:** A photo of an astronaut's helmet with the caption "NASA, UN Photo Competition Highlights #WhySpaceMatters on".
- Journey to Mars:** A photo of a Mars rover on a planet surface with the caption "NASA Celebrates Martian New Year in Mars, Pennsylvania".
- Editors K-4:** A photo of a young child with the caption "Editors K-4".

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NASA for Students

For Students



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For Students: Grades K-4

[Grades 5-8](#)[Grades 9-12](#)[Higher Education](#)

Related Topics

[All Topics A-Z](#)

Explore This: Planetary Explorer



NASA Kids' Club



Explore This: Technology



Now in Space! Expedition 44

Expedition 44 is part of a special mission. Scott Kelly and Mikhail Kornienko are staying on the space station for one year!

Planet of the Month: Jupiter -- King of the Planets

The screenshot shows the NASA Kids' Club website. At the top, there's a NASA logo and the text 'NASA KIDS' CLUB' with a 'Text Only Site' link. Below this is a navigation bar with five numbered buttons (1-5) and a 'kids' club' label. The main content area features three panels: a world map with a red line, a rocket launch with 'link confirmed', and a galaxy image. Below these are sections for 'Ready For A Challenge?' with an 'Exploration Design Challenge' (EDC) 'Join Now!' button, and 'Mars FunZone' with a 'Start Exploring' button. A cartoon character is on the right with the text 'For kids of all ages!'.

Space Math at NASA

The screenshot shows the Space Math @ NASA website. At the top, there is a NASA logo and the text "National Aeronautics and Space Administration" and "Goddard Space Flight Center". A search bar with a "GO" button is on the right. Below this is the "Space Math @ NASA" title in a stylized font. A navigation menu includes "Home", "Problem Books", "STEM Modules", and "Inquiry". A secondary menu has "Math by Grade Level", "Math in Science", "Math in Engineering", "Math in Press Releases", "Math by NASA Mission", and "Articles".

Space Math @ NASA

SpaceMath@NASA introduces students to the use of mathematics in today's scientific discoveries. Through press releases and other articles, we explore how many kinds of mathematics skills come together in exploring the universe.

Partnering NASA Missions

Astrophysics:

- Chandra - [Click here](#)
- Kepler - [Click here](#)
- James Webb ST - [Click here](#)

Earth Science:

- SAGE-III - Under development

Heliophysics:

- Hinode - [Click here](#)
- IMAGE - [Click here](#)
- MMS - [Click here](#)
- RBSP - [Click here](#)
- THEMIS - [Click here](#)

Planetary:

- Cassini - [Click here](#)
- Dawn - [Mission Math](#)
- EPOXI - [Click here](#)
- InSight - [Click here](#)
- Juno - [Click here](#)

Partnering NASA Programs

- Eyes on the Solar System - [Click here](#)

SpaceMath@NASA News Updates

March: NASA Press Release about SpaceMath@NASA- [\[Read Press Release\]](#)
July: New math guide to Mars Exploration and the Curiosity Rover - [\[Click Here\]](#)
August: Expanded and updated math guide on Black Holes posted- [\[Click Here\]](#)
November: SpaceMath@NASA served 6,000,000th math problem at the website!
December: New multi-media Grade 6 Math Modules added- [\[Click Here\]](#)
February: New multi-media Grade 8 Math Modules added- [\[Click Here\]](#)
April: The 7 millionth Space Math problem is downloaded

Math in the News

A behind-the-scenes look at the math in NASA press releases

Problem 517: A Distant Supernova Remnant Discovered
Students explore the size and speed of a distant supernova remnant nebula and compare it to the speed of the International Space Station. (PDF)

Problem 516: Hinode Observes Solar Eclipse from Space
Students use the geometry of a solar eclipse to estimate the distance to the sun using simple proportional reasoning. (PDF)

Problem 515: Telling Time on Mars
Students learn about the difference in time between a martian day and an Earth day, and use this to explore how work schedules change for scientists working with the Curiosity rover on Mars. (PDF)

Problem 514: Solar Flares and the Stormy Sun
Students use simple averaging to explore the sunspot cycle and our sun's changing activity levels in 2012 and 2013. (PDF)

[\(More problems from 2012-2013\)](#)

Multi-Media Math Modules

Grades 6, 7 and 8: Standards-based, multi-media math resources featuring NASA eClips video segments, readings from NASA press releases, online interactive resources, and of course math problems! [\[click here\]](#)

Problem Archives

- I - Problems 1 to 38
- II - Problems 39 to 64
- III - Problems 65 to 101
- IV - Problems 102 to 148
- V - Problems 149 to 233
- VI - Problems 234 to 342
- VII - Problems 343 to 428
- VIII - Problems 429 to 478
- IX - Problems 479 to Current

International Space Station - Live!

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International Space Station

Space Station Overview Images Videos Media Resources


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 - Launches
 - Ground Facilities
 - Space to Ground
- One-Year Crew
- SpaceX
- Orbital
- Commercial Crew Program
- Media Contacts
- Space Station Tour

Related Topics

- Commercial Resupply

Space Station Updates



Station Science Ongoing as SpaceX Launch Slips to June 28
3 days ago

The three inhabitants of the International Space

INTERNATIONAL SPACE STATION

OFF THE EARTH, FOR THE EARTH

6058 : 10 : 19 : 10

Station Time in Orbit


Tweets

Follow

Scott Kelly @StationCDRKelly 1h
#MondayMotivation Color your world. Good morning from @Space_Station! #1YearInSpace pic.twitter.com/gp5sC
Retweeted by Intl. Space Station

Tweet to @Space_Station

Commercial Resupply



TV Coverage Set for Seventh SpaceX Resupply Mission to Space Station


Who's on the Space Station Now?

Expedition 44 & One-Year Crew

Commander Gennady Padalka
Scott Kelly
Mikhail Kornienko




One-Year Mission



USTREAM EXPLORE PRODUCT SEARCH Log in / Sign up Go live!

ISS HD Earth Viewing Experiment

Follow 85,923 followers



1198 / 51,039,431 LIVE

Load Tweet 1151 8+1 22k

Videos Social Stream


Say something...

- jojkitten minertyler100: no problem there's more ahead 12 minutes ago
- minertyler100 darn missed the sunrise 18 minutes ago
- minertyler100 WOOOAH 18 minutes ago
- jojkitten love a good sunrise! 27 minutes ago
- orion Pedro1961: you have right

FLIGHT ASTRONAUTS INTERNATIONAL SPACE STATION RESEARCH

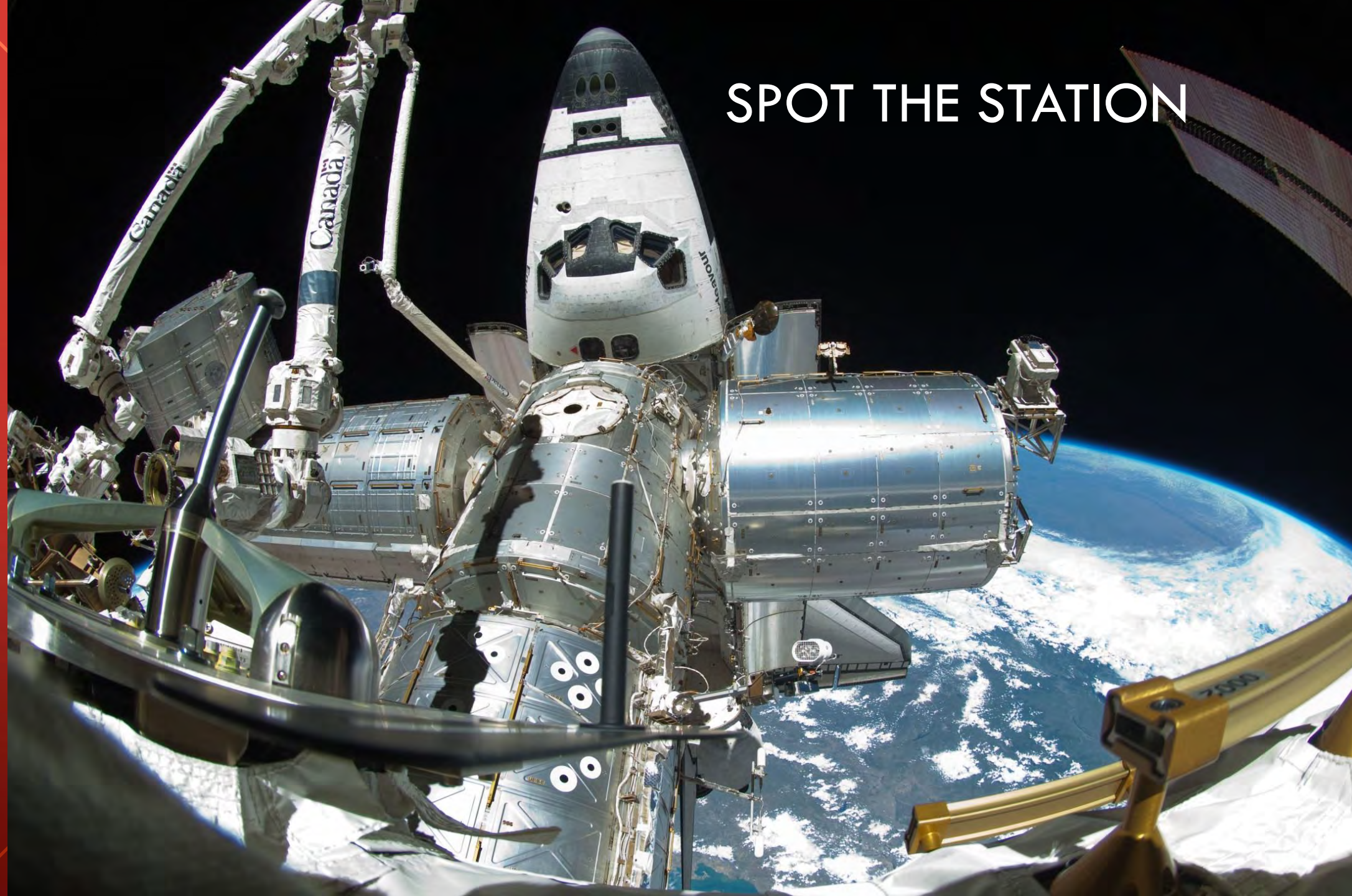
ESA > Our Activities > Human Spaceflight > International Space Station

WHERE IS THE INTERNATIONAL SPACE STATION?



human spaceflight and operations cesa

SPOT THE STATION



Mars Curiosity Rover

NASA Jet Propulsion Laboratory
California Institute of Technology

JPL HOME | EARTH | SOLAR SYSTEM | STARS & GALAXIES | SCIENCE & TECHNOLOGY
BRING THE UNIVERSE TO YOU: JPL Email News | RSS | Mobile | Video

Mars Science Laboratory Curiosity Rover

HOME | MISSION | NEWS | MULTIMEDIA | PARTICIPATE! | SEARCH | ALL MARS

FOLLOW YOUR CURIOSITY

Mars Missions to Pause Commanding in June, Due to Sun

Read More >>

More on Solar Conjunction >>

1 / 5

What's New? | Recent Videos | Fun | Ask Dr. C | Curiosity

FAVORITES

Raw Images | SEND A POSTCARD TO CURIOSITY

USA.gov
Government. Made Easy.

NASA – Lunar Reconnaissance Orbiter

NASA National Aeronautics and Space Administration
Goddard Space Flight Center

Flight Projects | Sciences and Exploration

LUNAR RECONNAISSANCE ORBITER

Home | The LRO Mission | Images and Multimedia | Science and Data | Education and Outreach

LRO KIDS!

Get animations, streaming video, cartoon characters, audio narration, interactive games!

Explore! Marvel Moon
Discover our scientific, cultural, and personal understanding of Earth's

NASA | Wall-E Learns About Proportions

LRO CRAFTS

Moon Concentration
How Good is Your Memory?

Moon Quiz
Is it a big hunk of cheese? Take quiz and find out!

Moon Cookies
Make these tasty cookies (no baking required)

Unscramble
Take the Challenge! Unscramble Moon-related graphics

Wordsearch
Help Us Find Our Lost Lunar Words

Moon Calculator
How much would you weigh you lived on the Moon?

Crossword Puzzles
Answer clues and solve the puzzle

Ask Dr. Marc
Dr. Marc answers questions asked by visitors about the LRO and other topics.

Lunar Cryptograms
Decode these important

Welcome to the Space Operations Learning Center (SOLC) [Back to Home](#)

SPACE OPERATIONS LEARNING CENTER

BEGINNER

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Did You Know?
Light from the Sun reaches Earth in around 8 minutes.

[Take Our Short Survey](#)

Kids Zone 2 Earth Science | **Kids Zone 3 Space Station** | **Kids Zone 4 The Moon** | **Kids Zone 5 The Sun** | **Kids Zone 6 Comets Meteors and Asteroids**

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Computing Environments and Collaborative Technologies Branch / Code 585

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SCaN

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EDUCATION *and* public outreach

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LPI K-12 Teacher Workshops, Institutes, and Field Trips
Exploration of the Moon and Asteroids by Secondary Students
LPI Summer Intern Program
Humans in Space Youth Art Competition
Educator Resources
Education Newsletter
LPI Higher-Education Faculty Programs



Find upcoming LPI teacher trainings in Earth and space science topics, and connect to resources from past workshops and field trips.

NEW AND UPCOMING

 <p>Cosmic Explorations: A Speaker Series The Universe is Out to Get Us and What We Can (or Can't) Do About It</p>	 <p>Solar System Exploration Pre-Service Teacher Institute June 23-27, 2014 Application deadline: June 2</p>	 <p>Mars Through Time Workshop July 8-11, 2014 at the University of New Mexico</p>
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Explore!

SciGirls Activities



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Activities

SciGirls has made a commitment to providing quality, gender-equitable, inquiry-based STEM activities that are fun for all! Check out the activities under the following topic areas:

- Earth & Space
- Engineering
- Health
- Life & Environmental
- Physics & Chemistry
- Technology

Download the complete guides from Season Three:



SciGirls Participate: Citizen Science Adventures
Public participation in scientific research, also known as citizen science, engages ordinary people (kids and adults) in the collection of data for use by research scientists. The activities in this book support and prepare your girls for participation in citizen science.

Download the complete guides from Season Two:

Welcome to SciGirls CONNECT

[Sign Up](#) or [Sign In](#)

SciGirls on Facebook

Like

SciGirls on Twitter

Tweets

Follow

PBS LearningMedia @PBSLrnMedia 8h

What kind of stuff is preserved in a bog?
@SciGirls activity/video describes functions of unique wetland environment.

Activity 4 Star Power

CREATE A STAR SHOW AND LEARN HOW YOU CAN PREVENT LIGHT POLLUTION.

The stars in the night sky have fascinated humans since we first walked the Earth. But today, electric outdoor lighting threatens our ability to see the stars. Light pollution is a real problem, and not just for astronomers. Animals become disoriented from the excess lights, which can disrupt their mating, migration, and predation behaviors. For example, sea turtle hatchlings follow light from the moon to find their way to the ocean, but coastline lighting can lure them toward roads and predators.

You'll Need:

- room that can be darkened
- desk lamp with lamp shade removed

Part 1 (for each small group):

- shoe box (the narrower, skinnier is best) or rectangular tissue box and tessa paperboard (e.g., cereal box)
- 3"x5" index card
- tape (duct or masking)
- scissors
- pushpin
- LED keychain flashlight
- optional: book that contains drawings of constellations, construction paper, glue, markers, crayons, colored pencils

Part 2 (for each small group):

- aluminum foil
- paperboard (e.g., cereal boxes)
- tape (duct or masking)
- scissors

2 hours

Activity 2 Insulation Station

DETERMINE THE BEST INSULATION TO KEEP ICE CUBES FROM MELTING

Insulation in the home is used for different purposes in different parts of the country. In warmer climates, insulation keeps the cool air in and the hot air out; in cooler climates it has the opposite effect. The purpose of insulation is to slow down the conduction of heat from one side of a wall to the other.

You'll Need:

- large pitcher
- water
- several insulating materials (styrofoam peanuts, sponges, cotton balls, scraps of fabric)

For each small group:

- 2 ice cubes
- 1 91 radiused cylinder (50 ml. or larger)
- plastic wrap
- 2 large paper cups
- scissors
- rubber bands (masking or cheery)
- paper and pencil
- 1 work light with clamp (or desk lamp capable of holding a 120 watt bulb)
- 1 stopwatch or clock

1 hour

SMART START: Prepare one paper cup testing station to display by cutting off the top (approximately 3 cm) of a paper cup and filling with one of the test materials. Use the plastic wrap to cover and keep the "insulation panel" inside the top of the second whole cup (testing cup). Once the group has seen this sample, remove the test material and insulation.

Fill a large pitcher with water and allow it to reach room temperature.

Here's how:

1. **Question.** Divide the girls into small groups, and introduce the idea of insulation. Have them brainstorm different materials that might provide good insulation for different needs (insulating clothing, food storage, etc.). Deliver the SciGirls Challenge: How can you keep ice cubes in a cup from melting?
2. **Design the experiment.** Show your example paper cup testing station and ask your girls to choose one material to test. Explain to the girls

www.go.to/scigirlsconnect.org/

Activity 5 Deep Sea Diver

THINK LIKE AN OCEAN ENGINEER AND DESIGN YOUR OWN MODEL DEEP SEA DIVER.

Buoyancy is the ability to float. When you put an object in water, it pushes water out of the way to make room for itself. An object floats when it weighs less than the water it displaces; an object sinks when it weighs more than the water it displaces.

SMART START: Here's one way to start this activity. Get your girls thinking about buoyancy. Show them a group of objects and ask them to predict which will sink and which will float. Then, test their ideas using a plastic container filled with water. Do the girls' predictions match the results?

Here's how:

1. **Explore buoyancy.** Can you think of things that don't float on the water and don't sink to the bottom (cork, a diver, submarine, balloons, plastic, beach toys, drinking straw, craft sticks, wooden skewers, plastic foam, balloon, ping-pong balls, sponge, craft foam)? How to hold the diver together (rubber bands, duct tape, or a hot glue gun).
2. **Design and build.** Engineers will often build models before they design full scale. The models help them understand the factors that may be key to the success of the design. Deliver the SciGirls Challenge: Build a small diver (no larger than 3 in. by 3 in.) that is neutrally buoyant. In small groups, have girls brainstorm what materials they'd like to use, then design and build their diver.

You'll Need:

- Items to adjust buoyancy (assorted metal washers, pennies, paper clips, binder rings, Styrofoam packing peanuts, small balloons)
- Items for the body of the diver (Styrofoam balloons)
- Items for the diver's drinking vessel (craft sticks, wooden skewers, plastic foam, balloon, ping-pong balls, sponge, craft foam)
- Items to hold the diver together (rubber bands, duct tape, or a hot glue gun)
- Optional: objects that sink or float (marbles, metal spoon, Ping Pong balls, sponges, plastic spoon, pieces of fruit)

For each small group:

- sturdy clear container at least 6 in. x 6 in. that can hold water
- water
- washers
- scissors
- paper and pencil

45 min

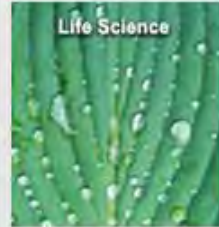
Watch the SciGirls test a neutrally buoyant underwater robot on the SciGirls Invert DVD. (Select Aquabots: Test and Redesign 1.)

Use caution when working with hot glue.

NASA Summer of Innovation

What to Consider When Selecting Content

Themed Units



Grades 4-6

Life Science

- Body
- Food
- Life Out There?
- Plants
- Survival

Physical Science

- Aeronautics
- Force and Motion
- Gravity
- Properties of Matter
- Waves and Optics

Grades 7-9

Earth and Space Science

- Climate and Seasons
- Destination Mars
- Earth Moon Systems

Engineering

- Aeronautics
- Challenges
- Design Process

Themed Camp Guides



Aeronautics Camp

This camp centers on the mathematical and design principles of flight design.



Designing for Space Camp

This camp centers on developing an appropriate learning progression that focuses on the concepts necessary to learn about engineering.



Life Science Camp

This camp centers on the characteristics of living things, astrobiology, exoplanets and adaptations to the space environment.

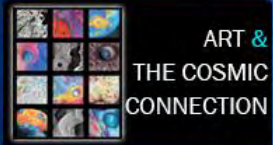
NASA Discovery Program

Discovery Program

- Home
- Program
- Missions
- News
- Education
- Multimedia
- Small Worlds

Upcoming Mission Events

Dawn Orbit Insertion



ART & THE COSMIC CONNECTION



Mission Milestone Interactive



Discovery & New Frontiers Newsletter Archives

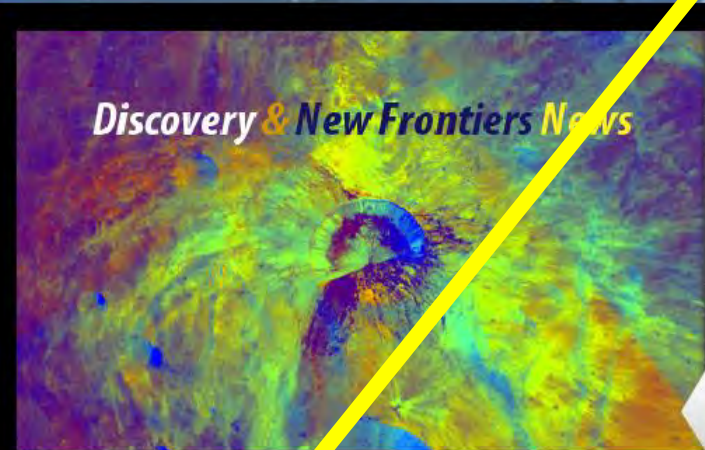


Space Thrills POSTER

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Discovery & New Frontiers News

Cosmic Art in Action!
New Activity Blends Science and Art, Spurs Creative Thought Processes

Onward to Ceres
Ion Propulsion Powers Dawn Through the Asteroid Belt

Looking Back at Us
MESSENGER Takes Image of the Earth

MESSENGER to Snap Earth
Mercury Orbiter Will Take Images of Earth and Moon

Read All about It!
Latest Discovery and New Frontiers Newsletter Now Online



Space School Musical
The solar system comes alive!



Exo's Discovery
Take the controls and explore with Exo!

Space School Musical

Hannah is trying to finish her science project - a model of the solar system. But there's a problem: it's due tomorrow, she's not finished yet, and it's past her bedtime. How will she get it done? With a little help from her friends - the most talented troupe in the Milky Way!

SONGS
WATCH VIDEOS & SING ALONG

ACTIVITIES
CROSS-CURRICULAR & FUN

GALLERY
PHOTOS & VIDEOS

PRODUCE
YOUR OWN MUSICAL




Watch ★ Laugh
★ Learn ★ Perform ★

Join Hannah on a trip through the solar system in this ultra-cool edu-tainment "hip-opera" that is out of this world! Move and groove along with the planets, moons, meteors, comets, asteroids and even some rockin' scientists as they sing, dance and serve up the freshest facts in the galaxy. *Space is definitely one cool place.*



North Dakota Space Grant Consortium



Facebook page for the North Dakota Space Grant Consortium. The page features a cover image of a satellite in space. The profile picture is the consortium's logo, which includes the text "NORTH DAKOTA SPACE GRANT CONSORTIUM" and "Education". The page has 178 likes and 133 post reaches. A post from June 18 at 4:11pm in Grand Forks, ND, is titled "Rockets for 200 kids at Grand Forks Public" and includes a collage of photos showing children and adults participating in a rocket launch event.



Twitter profile for NASA ND Space Grant (@NDSGC). The profile picture is the consortium's logo. The bio states: "Part of NASA Space Grant program promoting STEM education and research throughout North Dakota through K-12 and college programs and public outreach efforts." The location is North Dakota, and the website is ndspacegrant.und.edu. The profile has 64 tweets, 3 photos/videos, 366 following, 123 followers, and 6 favorites. A tweet from June 6, 2018, reads: "2mrw we're launching sensors 2 the #thermosphere! JK-it's a balloon not a spaceship! #spacejoke #cyaninthestratosphere". The tweet includes a photo of a large white balloon being launched with a string of sensors attached.



Screenshot of the North Dakota NASA Space Grant Website. The header includes the UND Aerospace logo and navigation links. The main content area features a welcome message: "Welcome to the North Dakota NASA Space Grant Website Congratulations MPCG Science Geeks!". Below this is a photo of five students in grey t-shirts, one of whom is holding a small model of a spacecraft. The website also includes a navigation menu with links to Home, About, Scholarships, Fellowships, NASA Internships, Research, University Student Projects, Pre-College, Outreach, Applications, Annual Meetings, News, Newsletters, and Contact Us. A news section titled "NDSGC Moves Forward to Next Stage of ARISS Selection" is visible.

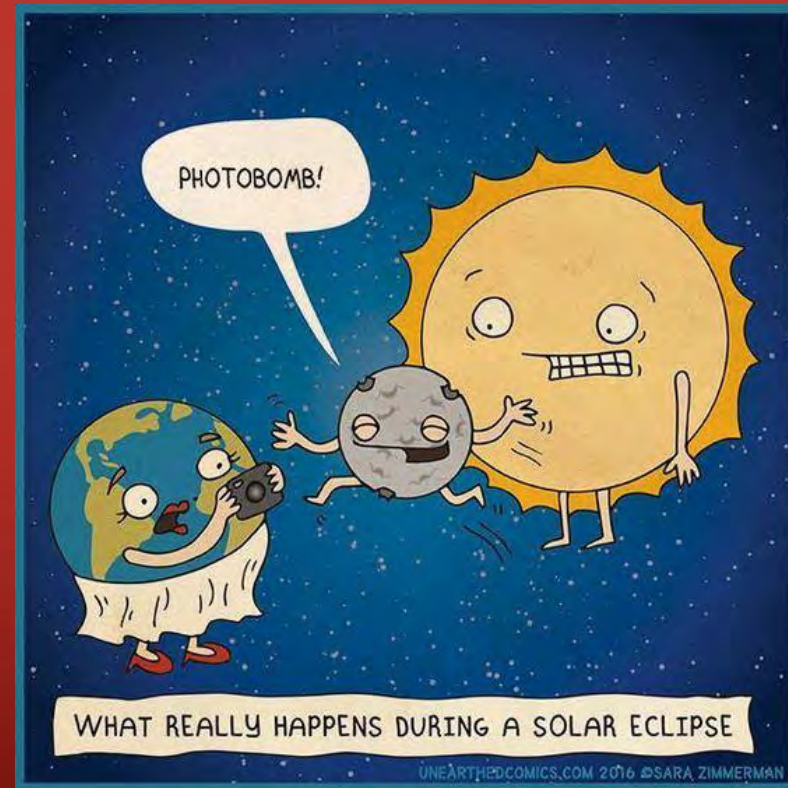
@ndsgc
@nd_space_grant

NDSGC K-12 Educator Email Listserv

- Workshop opportunities
- New STEM education resources for the classroom
- NASA student contests/team competitions
- Professional Development opportunities
- Emails ~once a week



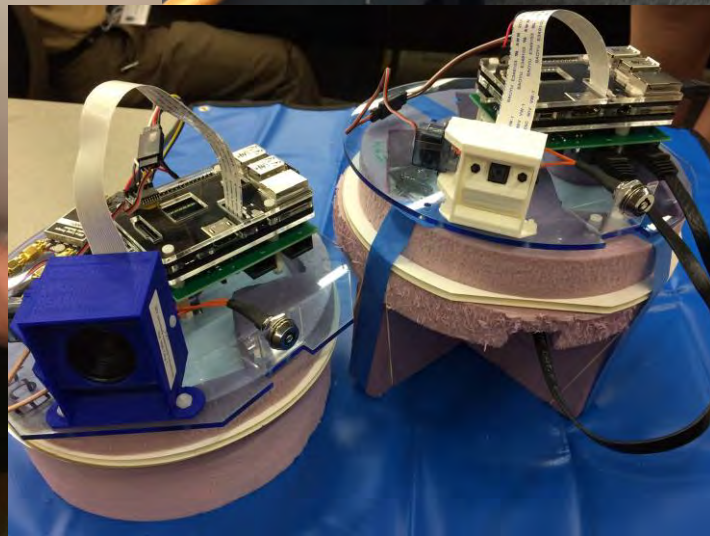
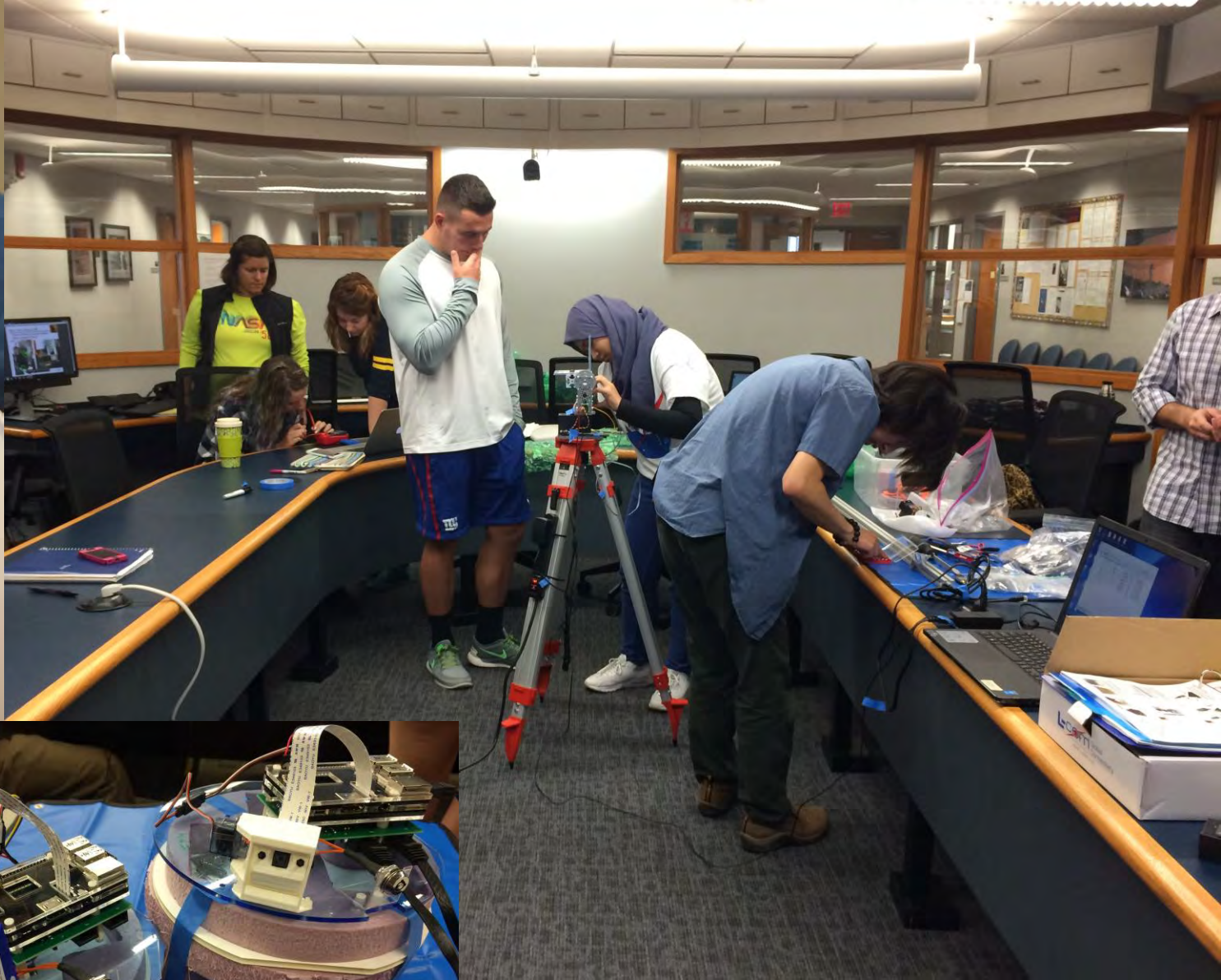
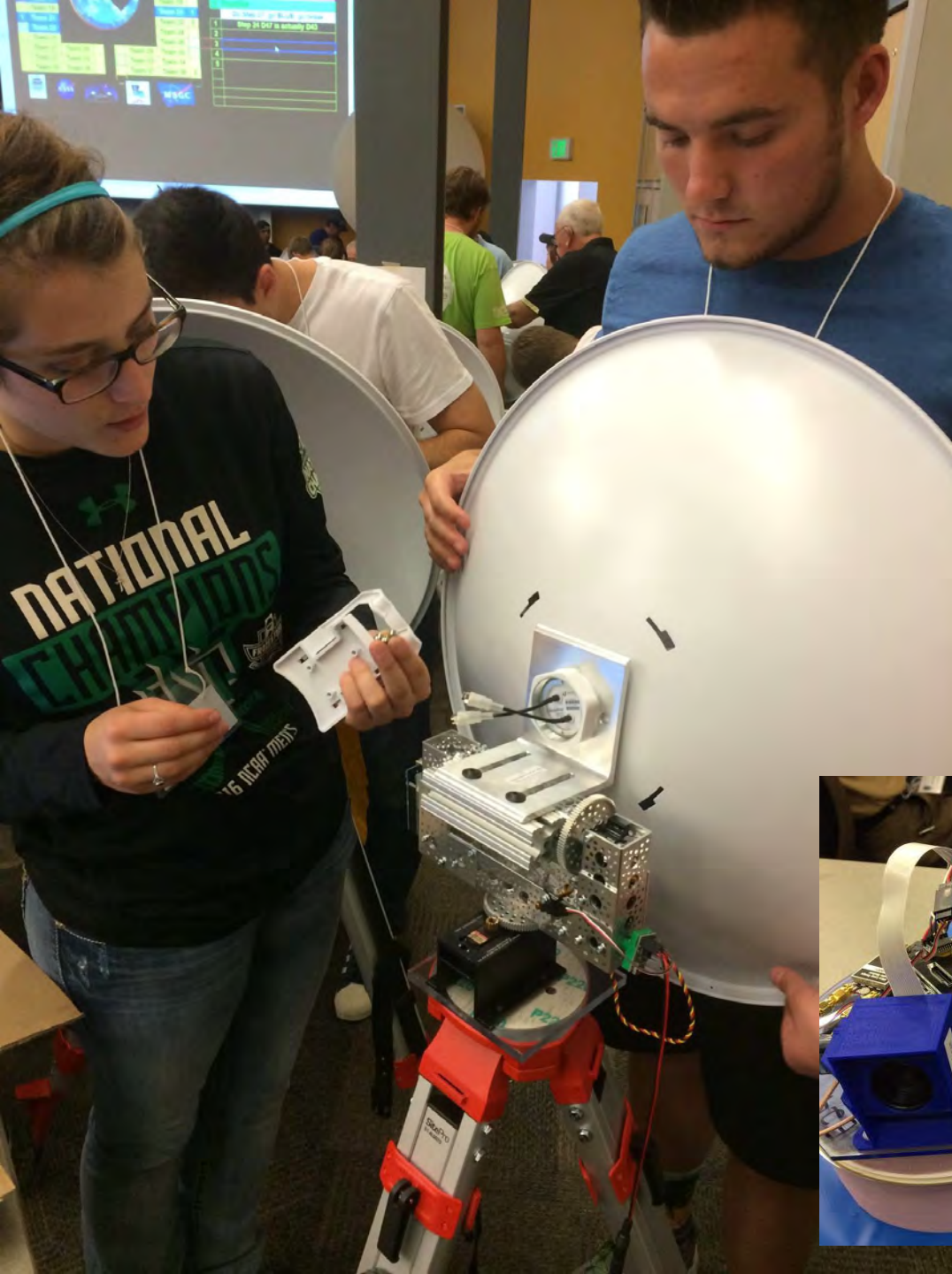
WHERE WERE YOU DURING THE TOTAL SOLAR ECLIPSE?



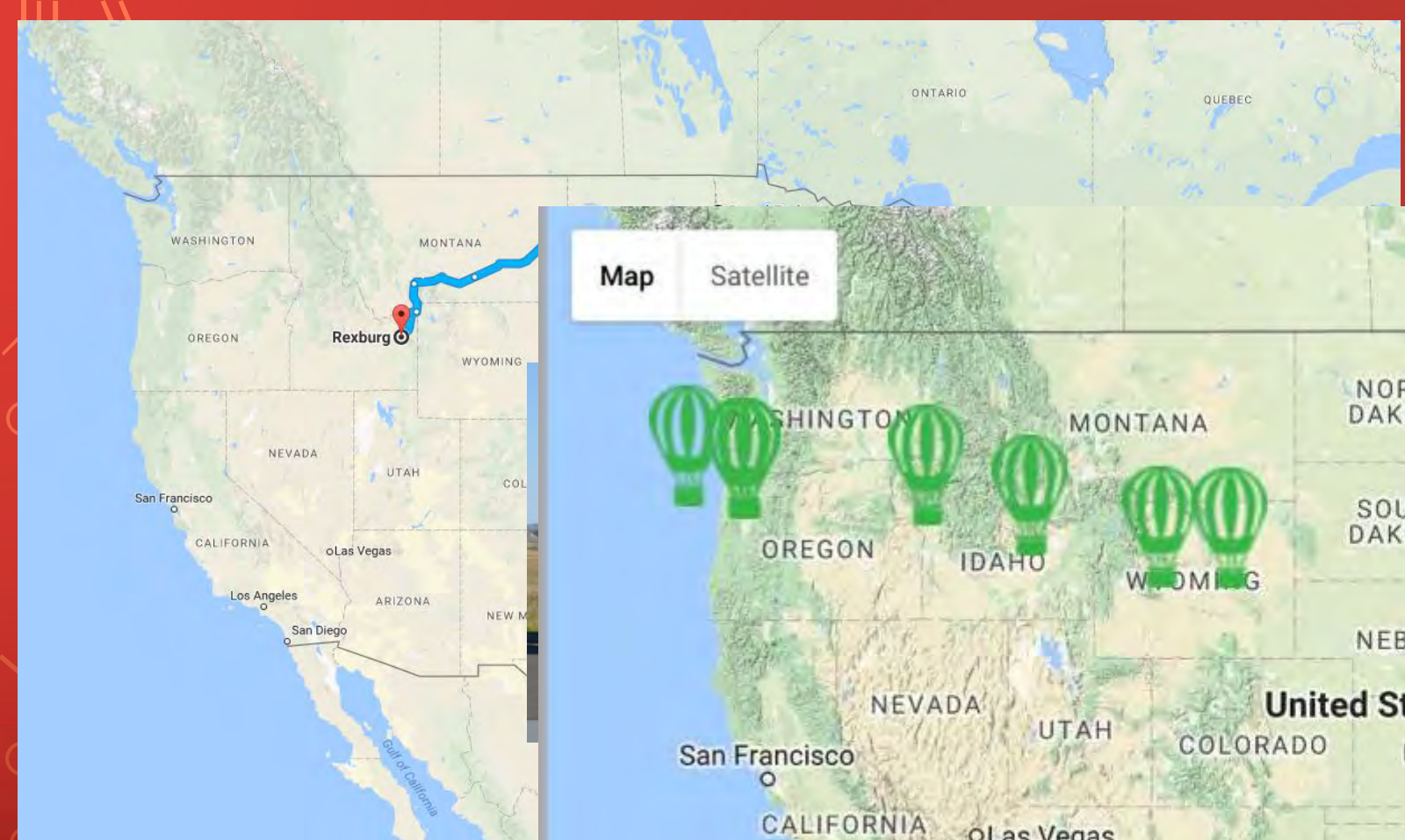
JULY

BOZEMAN, MT





2016-2017



August 16th – August 23rd







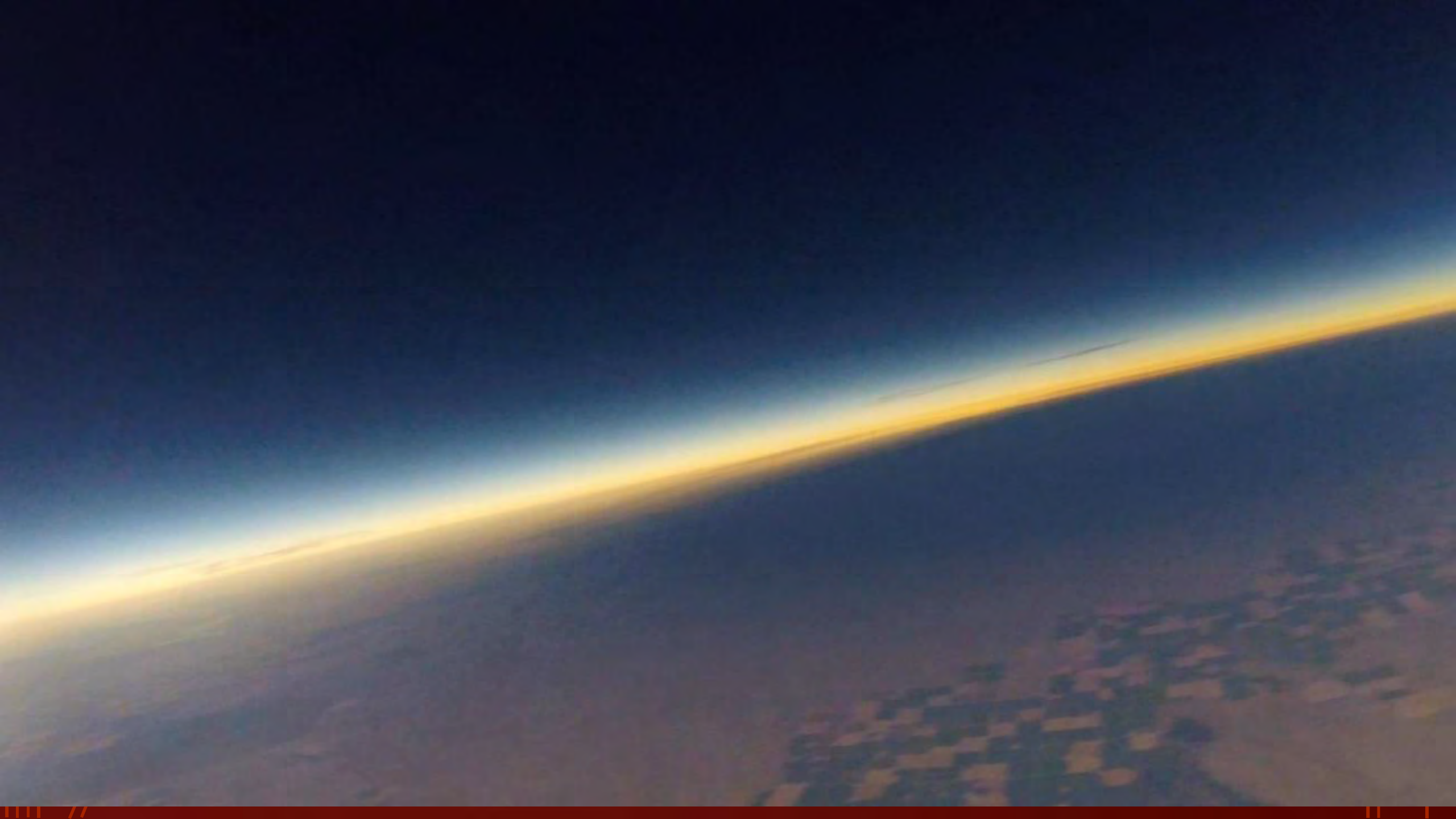
<https://www.youtube.com/watch?v=AukZvL-VYa8>

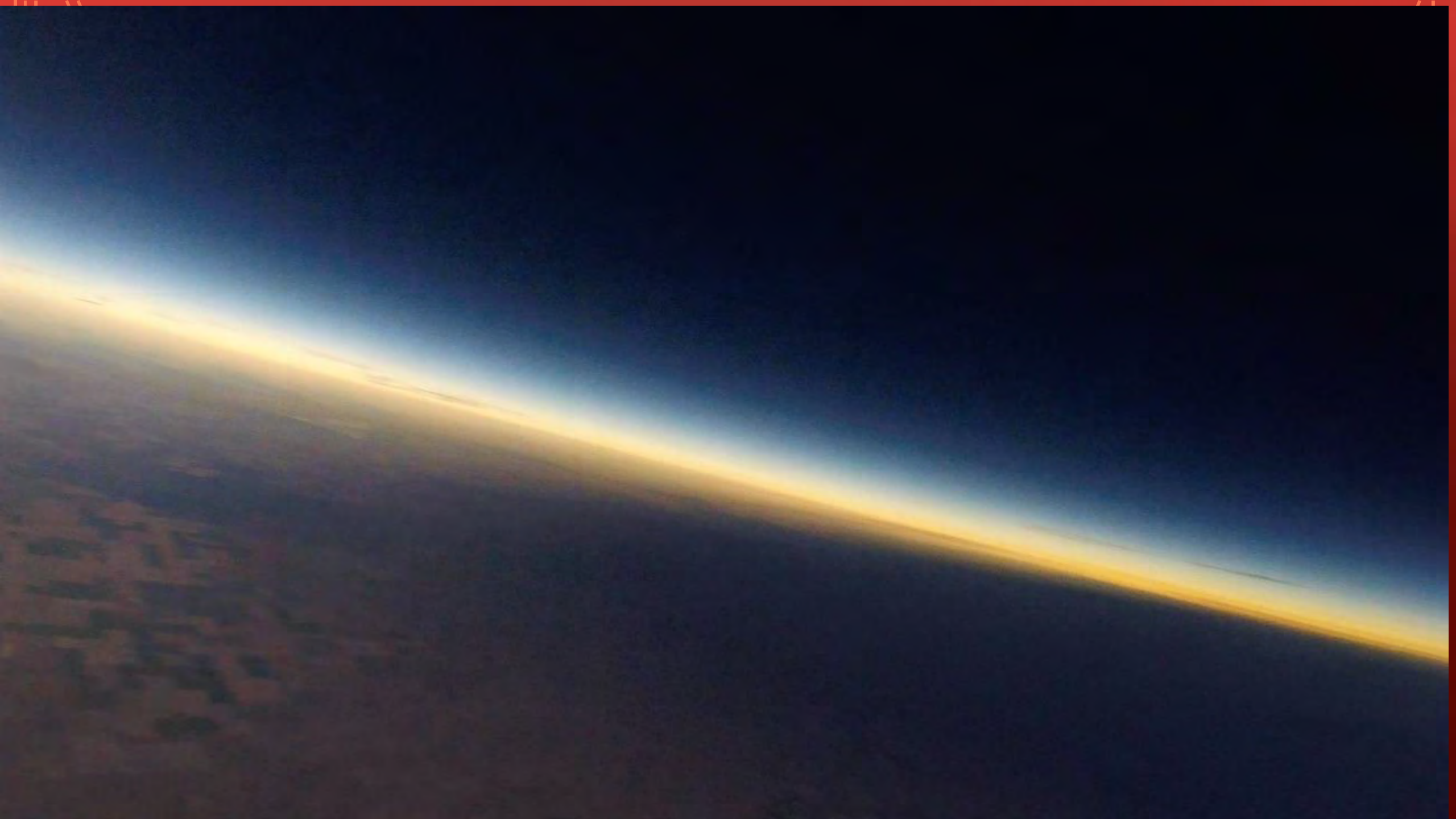


<https://youtu.be/hweuYA3z7lk>













video



Next eclipse?

2024



The screenshot shows the NASA website's navigation bar with links for Topics, Missions, Galleries, NASA TV, Follow NASA, Downloads, About, and NASA Audiences. A search bar is on the right. The main content area features a news article titled "NASA Invites You to Become a Citizen Scientist During US Total Solar Eclipse" with social media sharing icons. Below the article is a video player for the "GLOBE Observer Eclipse App" featuring a woman holding a smartphone. The video player shows the app's interface with options for "GLOBE Eclipse" (temperature and clouds) and "GLOBE Observer" (clouds and mosquitos). A "Latest" sidebar on the left lists various NASA news items.

Latest

- How Scientists Used NASA Data to Predict the Corona of the Aug. 21...
- A RAVAN in the Sun *22 days ago*
- Using NASA Satellite Data to Predict Malaria Outbreaks *a month ago*
- NASA's Lunar Mission Captures Solar Eclipse as Seen From the Moon *2 months ago*
- Chasing the Sun *2 months ago*
- Aug. 21 Solar Eclipse, From Ground and Space *2 months ago*
- NASA's EPIC View of 2017 Eclipse Across America *2 months ago*
- NASA Earth Observatory: Eclipse Shadow Darkens the... *2 months ago*
- SDO Views 2017 Solar Eclipse *2 months ago*

Related

NASA Invites You to Become a Citizen Scientist During US Total Solar Eclipse

Learn how you can participate in a NASA experiment

GLOBE Observer Eclipse App

The public will have an opportunity to participate in a nation-wide science experiment by collecting cloud and temperature data from their phones. NASA's Global Learning and Observations to Benefit the Environment (GLOBE) Program Observer (NASA GO) is a citizen science project that allows users to record observations with a free app. On Aug. 21, NASA GO will feature a special eclipse experiment. With the app and a thermometer, citizen scientists can help observe how the eclipse changes atmospheric conditions near them, and contribute to a database used by students and scientists worldwide in order to study the effects of the eclipse on the atmosphere. Observers in areas with a partial eclipse or outside the path of totality are encouraged to participate alongside those within totality.