

Most Exciting Moment Of the Recent Year
MEMORY



NASA Space Grant (Kentucky, Montana) and MUREP Interns design, build, and launch a prototype Mars glider off of a blimp as part of an internship at NASA Armstrong.

- Dave Berger



Let me think...
recent
memory... not
sure... so many
good memories
to choose from.

- Sophie Tarry

N E B R A S K A S G C



One of my best naps... Phil Tarry



The Wisconsin Space Grant Consortium supported its second Blue Origin New Shepard payload team, including Carthage College students Taylor Peterson, Cassi Bossong, and Bennett Bartel. The team successfully launched and recovered its Modal Propellant Gauging experiment on New Shepard Mission NS12/P9 on December 11, 2019.

- Kevin Crosby

Gerardo Morell attended the NASA Artemis Day at Michoud Assembly Facility in New Orleans, learned about the status of the Artemis program, the SLS Core was there ready to ship, talked to engineers working on the Orion crew capsule, and met NASA Administrator Bridenstine.

- Gerardo Morell



Virginia CubeSat Constellation



Members of the Virginia CubeSat Constellation team celebrate the launch of their three satellites built by Old Dominion University, University of Virginia and Virginia Tech as a Virginia Space Grant Consortium project on April 17, 2019 via the Northrop Grumman Antares rocket from the Mid-Atlantic Regional Spaceport. The satellites were placed into orbit on July 3 from the International Space Station. More than 170 students across 4 universities, including Hampton University, worked on the mission.

- Mary Sandy



As a former NASA Flight Director, I was invited to moderate a panel of Flight Directors who had all graduated from Purdue.

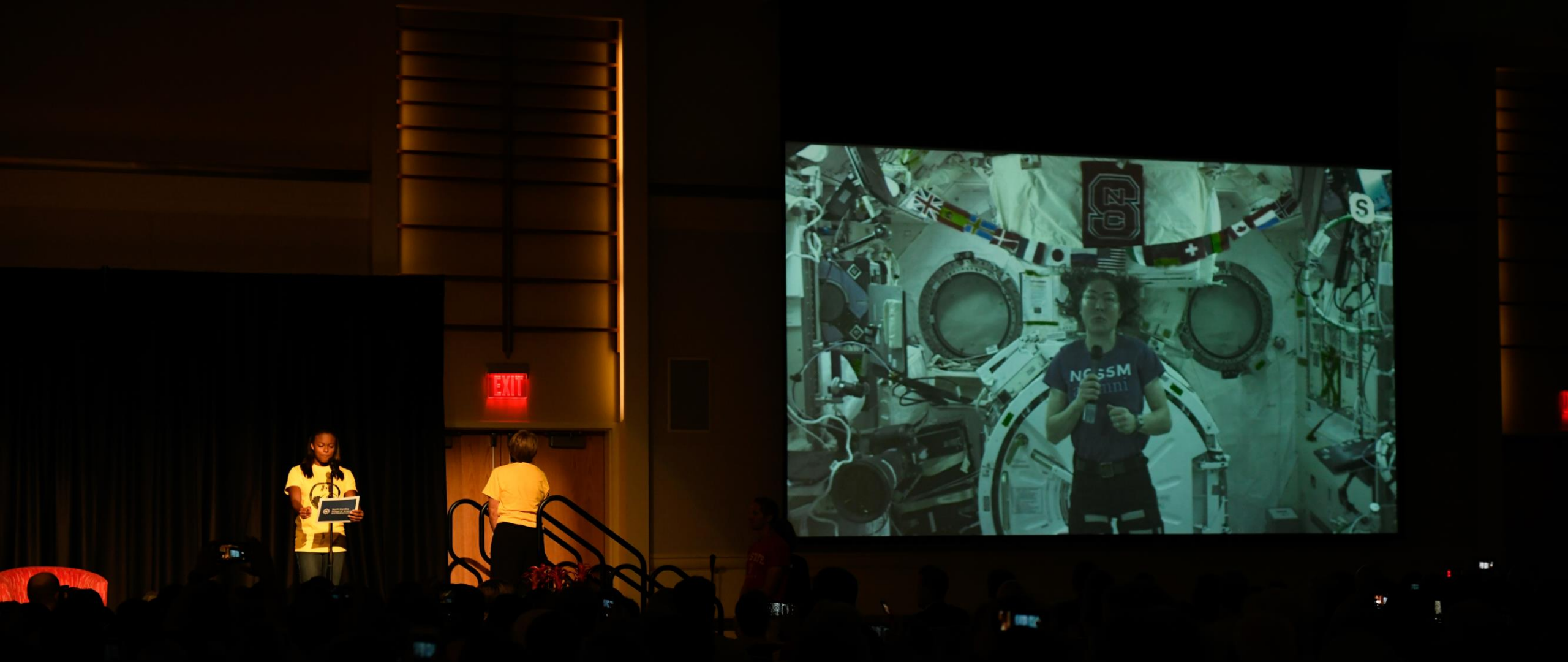
- Tomas Gonzalez-Torres





The Owensboro Community and Technical College (OCTC) (Kentucky Advanced Manufacturing students and amazing faculty Shawn Payne) became an affiliate of Kentucky Space Grant under our national community college initiative. At the Southeast Regional Meeting that Kentucky hosted, Frank Six talked to the OCTC students, encouraging them to consider the MSFC Rover Challenge. When they said, "We're just a community college, we couldn't do that," Frank set them straight saying, "Don't ever say that or think that!" In 2019, two OCTC teams competed (with Mike Kincaid encouraging them along the way). OCTC placed 4th and 9th (of 89 teams)! This MEMORY is a great example of Space Grant: the community college initiative made connections, Frank Six provided the spark, Mike Kincaid continued the encouragement, KYSG provided partial support, and OCTC excellence is recognized statewide!

- Suzanne Smith



To have an NC Space Grant scholar on the International Space Station is exciting enough, but to be able to speak to her live – that was incredible!! We had the privilege to collaborate with NC State University and the NC School of Science and Math on a live downlink with NC Space Grant scholar and NASA astronaut Christina Koch in August 2019. The students were able to ask her questions, get live answers, watch her bounce around demonstrating life in microgravity, and tap into her passion for her home state. What an inspiration to see one of their own in space! I think it ignited fires in the students watching! - Lee Cannon

LaSPACE sent a crew of 15 people (all pictured) to the COSGC RockOn Workshop in June 2019. We had folks from 5 higher education institutions. The McNeese State University team took the experience further to land a RockSat-C spot AND one of the students also got a NASA internship for Spring 2020!

- Meaghin Woolie





In celebration of the 50th anniversary of the Apollo 11 Moon landing, NC Space Grant partnered with statewide museums and organizations to get the public excited to learn about space and North Carolina's role in the space race. It was a wonderful collaboration and culminated in a summer festival where we engaged thousands of people and spread the word about NC Space Grant and NASA learning opportunities.

- Susan White

Ohio Space Grant Consortium received NASA funding for a community college program we named CC-Stars! Through the assistance of Dr. M. David Kankam we were able to place community college interns at Glenn Research Center. This was the FIRST time community college students were placed at Glenn! One of those students was Ernestina (Tina) Schirmer who finished up her Associate Degree at Cincinnati State Technical and Community College and transferred to Purdue University. Tina did such a great job with her research in the Icing Branch that her mentor, Dr. Andrew Work, wanted her back the following Summer! Ohio partnered with the Indiana Space Grant to share internship costs. I just learned Tina is currently a NASA Pathways intern and hopes to return to Glenn to achieve her career dream!

It is so rewarding knowing that Space Grant provided the foundation for Tina's dream to come true!

- Laura Stacko

Oregon Coast Community College student Haley Dean receives Oregon Space Grant STEM Community College Opportunity for Research Experience (SCORE) award to search for micro-meteorites on the Oregon coast with her mentor geologist, Bill Lilley. Haley's tweet regarding the project was picked up by a NASA scientist at Johnson Space Center. Haley has been invited to JSC to talk more about the project and expand the research.

- Catherine Lanier





In April 2019, we held our inaugural NC Space Symposium and hosted 130 students – both funded and new to us – as well as NASA, industry and government representatives; student teams; faculty; and space fans from across the state. Apollo-era NASA flight engineer Gerry Griffin was our keynote speaker. The event was a huge success and we're hosting our second symposium this year!

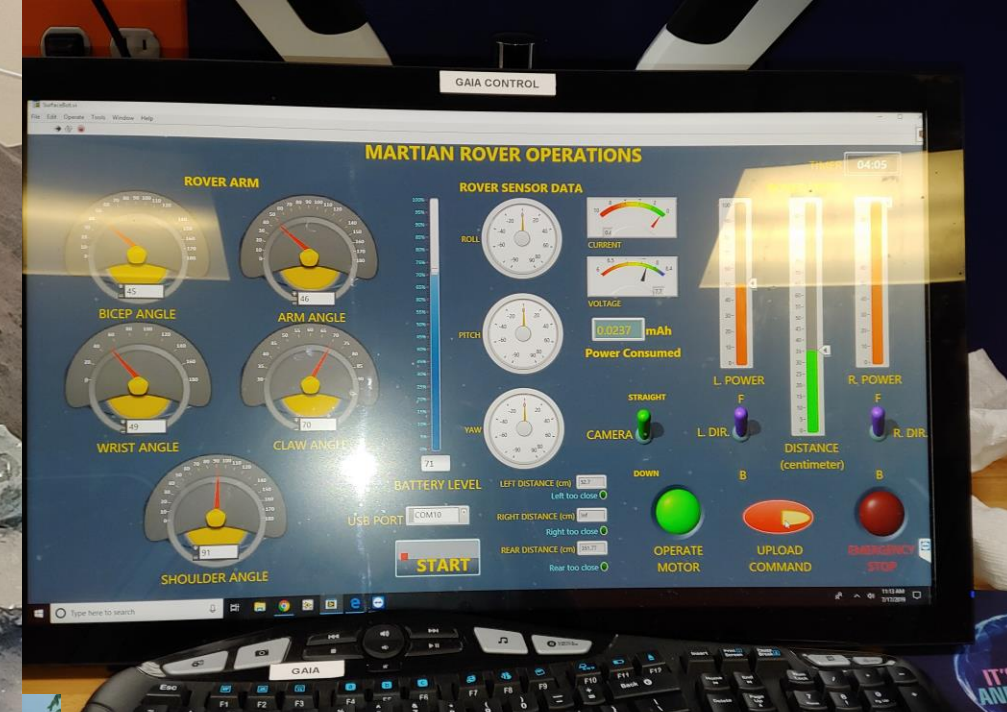
- Jobi Cook

6 groups of students from 2 rural public libraries in Florida remotely controlled a rover on a simulated planetary surface at the Kennedy Space Center Visitor Complex. The groups could only see the feed from the camera mounted on the rover and perform certain tasks with the least amount of "moves".

The second image is a screenshot of the software that controls the rover. The rover has a camera and an arm.

The third and 4th images are students from the 2 libraries during competition day.

- Jaydeep Mukherjee



The singer-songwriter roundtable at the 2019 Southeast Regional meeting in Nashville. The meeting was a great experience- I loved sharing Tennessee Space Grant programs and accomplishments as well as local Nashville flavor with our Regional jurisdictions and NASA personnel.

- Ellie Weiss Rosenbloom

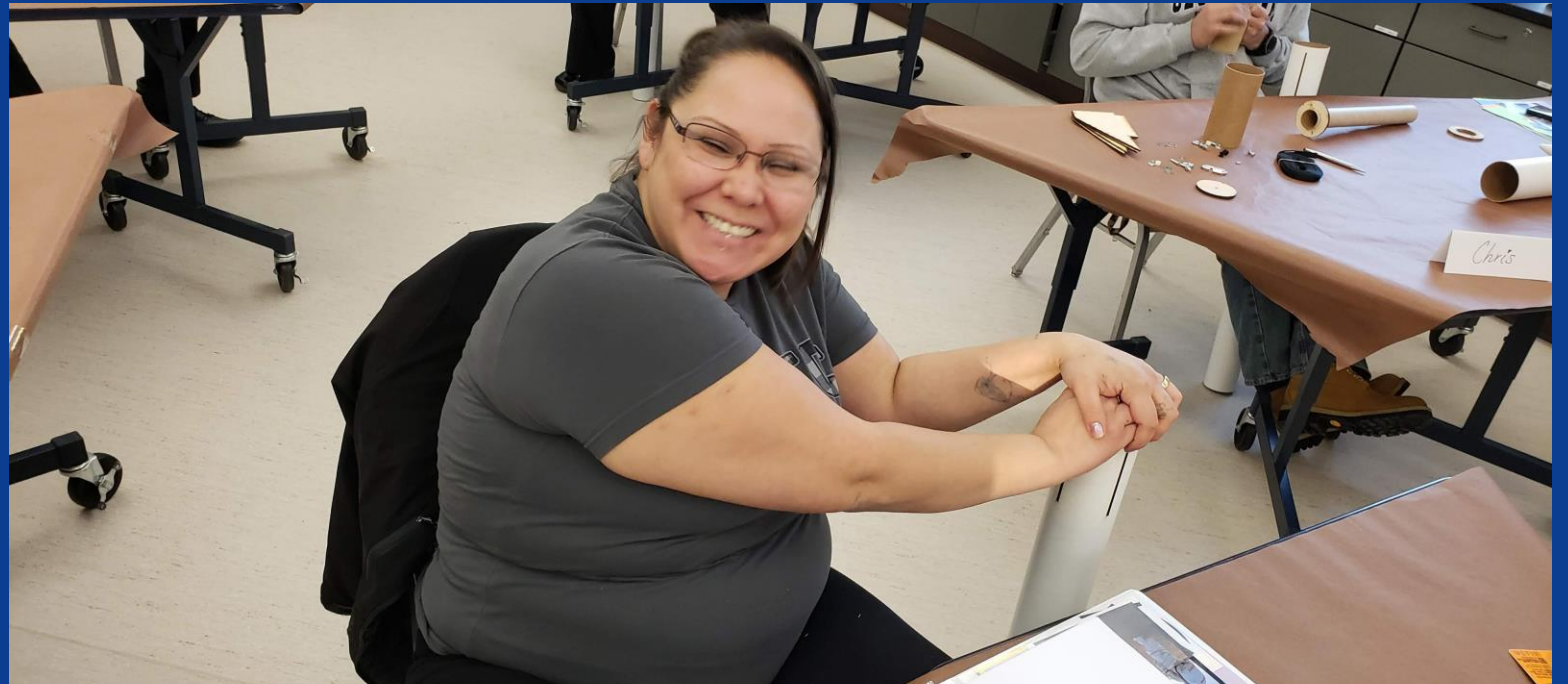


We sent a team to Chile for the July 2019 total solar eclipse to study eclipse-driven gravity waves. The team became the first to ever show evidence of the eclipse waves in the lower atmosphere! As a result of this success, we were able to garner NSF support for a broader effort in December 2020.

- Angela Des Jardins

First Nations Launch Rocket Workshop in Oklahoma and North Dakota. Students, mentors, and Space Grant connections.

- Christine Bolz



In July of 2019, the nation celebrated the 50th anniversary of the Apollo 11 mission. The hometown of Neil Armstrong is Wapakoneta, Ohio, which is about 25 miles from my home. The town put on a great celebration in memory of their "hometown boy". NASA and the Ohio Space Grant Consortium contributed to the days of celebration, in which hundreds of young people were exposed to the history and to the concepts of spaceflight, some perhaps for the very first time. Many of my students from Ohio Northern University helped out at the booths and activities. It reminded me of what happened to me as a young boy of eleven years old, in 1969. My family took a camping vacation to Florida that summer, and my parents decided that we should tour the Kennedy Space Center. That was fine with me! On the bus tour, we drove very close to a rocket which was on the launching pad, just a few days from launch. That rocket was the Apollo 11 mission! The attached picture is one of the photos that I took from the bus. We were back home before the first steps on the moon occurred, but we followed the accomplishments with great interest. That early exposure to spaceflight cemented my desire to become an engineer and to work in the aerospace field. It is exciting now to be a part of Space Grant, and to hopefully encourage many more young people to gain the excitement and wonder that I was blessed to experience.

- Jed Marquart



California Space
Grant
Community
College
students
attending a
science and
engineering
robotics project
review at
SpaceX in
Hawthorne,
California and
NASA
Armstrong
Flight Research
Center,
Palmdale,
California

- John Kosmatka





My favorite memory was of two Georgia Tech female aerospace engineering students presenting about their experience participating on a student team that designed, built, and successfully recovered a nearly 14 foot 2 stage rocket after winning 1st place in their category and 2nd place overall (over 100 international teams) at the 2019 Spaceport America Cup. They were presenting to a group of 25 Georgia K-12 educators during a “Space Innovation Academy” problem based learning workshop that was co-sponsored by GSGC. They were one of 4 special guests at the workshop, including a 4 star general over GPS globally, a retired NASA chief technologist, and a representative from the Civil Air Patrol, and the teacher had more questions for these two young ladies about their experience, etc than for any of the other presenters. And they were all interested in knowing how to arrange for them to bring the rocket to their schools to present to their students.

- Lori Skillings

SCSGC's Jess was chosen to be apart of the NASA Social experience for Space X Launch in July. A ton of great things happened - other than Jess finally visiting KSC (lifelong dream), she was featured with Netflix Host, Nick Uhas for Nickelodeon's mini series about their slime being send to space. Lastly, the goal was to maximize social media views and SCSGC's tweet about the "slime in space" for STEM Education received more retweets/likes than the account had ever seen.

- Jessica Arenas





Recent Montana State University graduate wearing the MTSGC sash (recognizing his involvement with our program) and his proud momma.

- Chris Harmon

New Mexico
Congresswoman
Xochitl Torres Small
visiting with NM
Space Grant Fellows
Jacob Piper and
Isaac Kassim (NMSU
students) at the
30th Anniversary of
Space Grant.

- Paulo Oemig



- CCP Crew Launches
- NASA Space Grants, to nominate educator(s) to attend launches at NASA KSC who have shown "innovative" uses
- Teacher Launch Experience (TLE)
 - A three day event, culminating with a VIP Launch viewing
 - First one for Late FALL 2019 (Pending Launch Schedule)
 - NASA Tours
 - KSC Visitor Center
 - Meet CCP-SME-chats...and more!



Nebraska Space Grant hosted the first CCP Virtual Reality training in Nebraska. Kennedy Space Center presented me the You Rock Award which includes a rock from the NASA Crawler Pathway for hosting the training along with my colleague Amelia Tangeman.

- Michaela Lucas

Visiting the wind tunnel at Glenn at
the mega-PI meeting.

- Melanie Page



- Robert Winglee



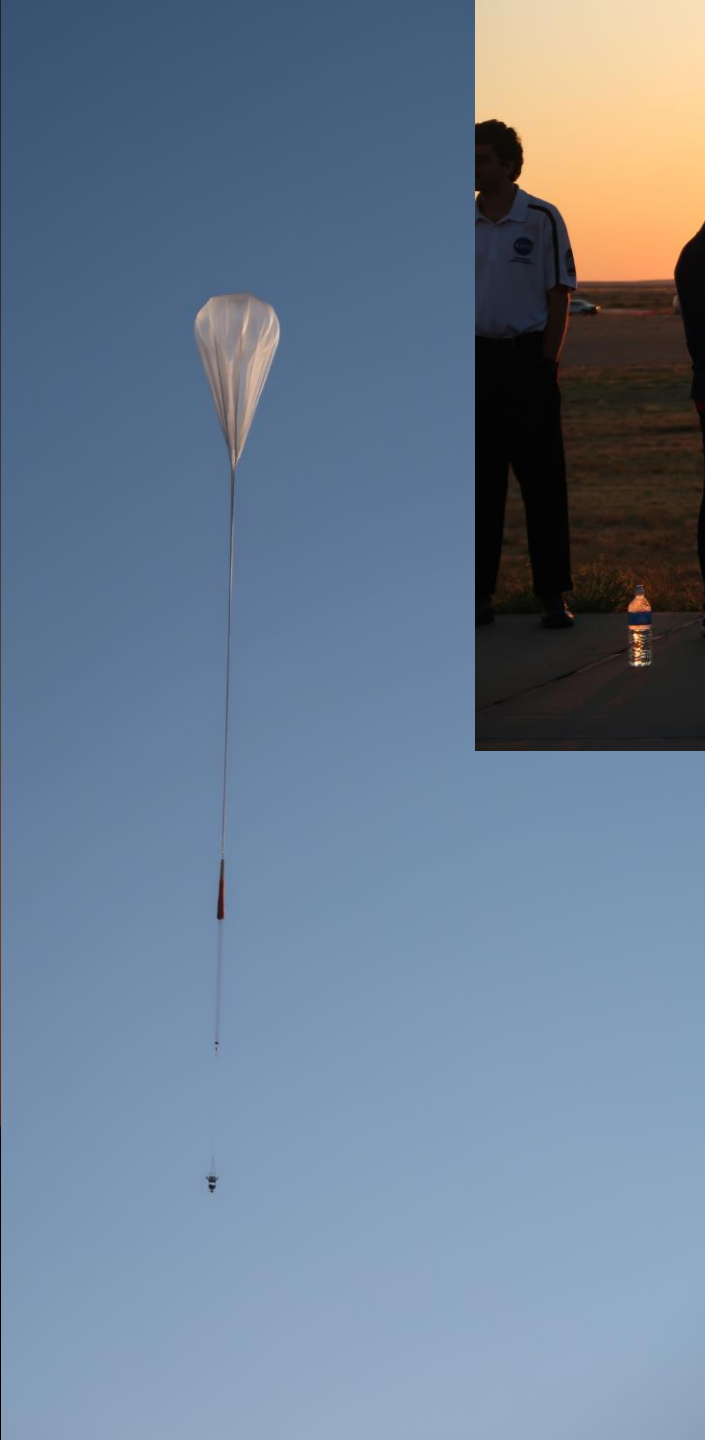
LiftOff 2019 educators in Mission Control and Saturn V tour with NASA engineer Norm Chaffee.

- Margaret Baguio

Our 2019 Annual Statewide Meeting took place in Gunnison, Colorado in September 2019. This meeting is always a big highlight for me because it reminds me of the big impact our program makes in our state. This picture captures a bit of the spirit of what makes our program possible.

- Chris Koehler





HASP 2019 Launch
Photos. Students eagerly
await the launch of
HASP2019.

- Greg Guzik

In celebration of
Apollo's 50th
anniversary
students made a
model of the lunar
module and flew it
to near 100,000
feet.

- Matthew Nelson





During our Apollo 11 50th Anniversary celebration, I had six flight directors (including Gene Kranz, Apollo "White Flight" and Tomás Gonzalez-Torres (now IASGC) sign my vest. Executive Producer for "Armstrong" in background.

- Barrett Caldwell

- Raji Patel





Alexia H. designs her own 3D printed rocket and launches it at PA Space Grant's Apollo 11 50th Anniversary Rocket Launch Event.

- Caitlin Teti

In March 2019, the NC Space Grant team hunkered down in a conference room to sweat and cheer through NC Space Grant alumna NASA astronaut Christina Koch's launch to the International Space Station!

- Sandy Canfield





Kelly Poteet and
Madeline Baugher at
Rocket Building
workshop put on by
Christine Bolz in
Oklahoma

- Madeline Baugher

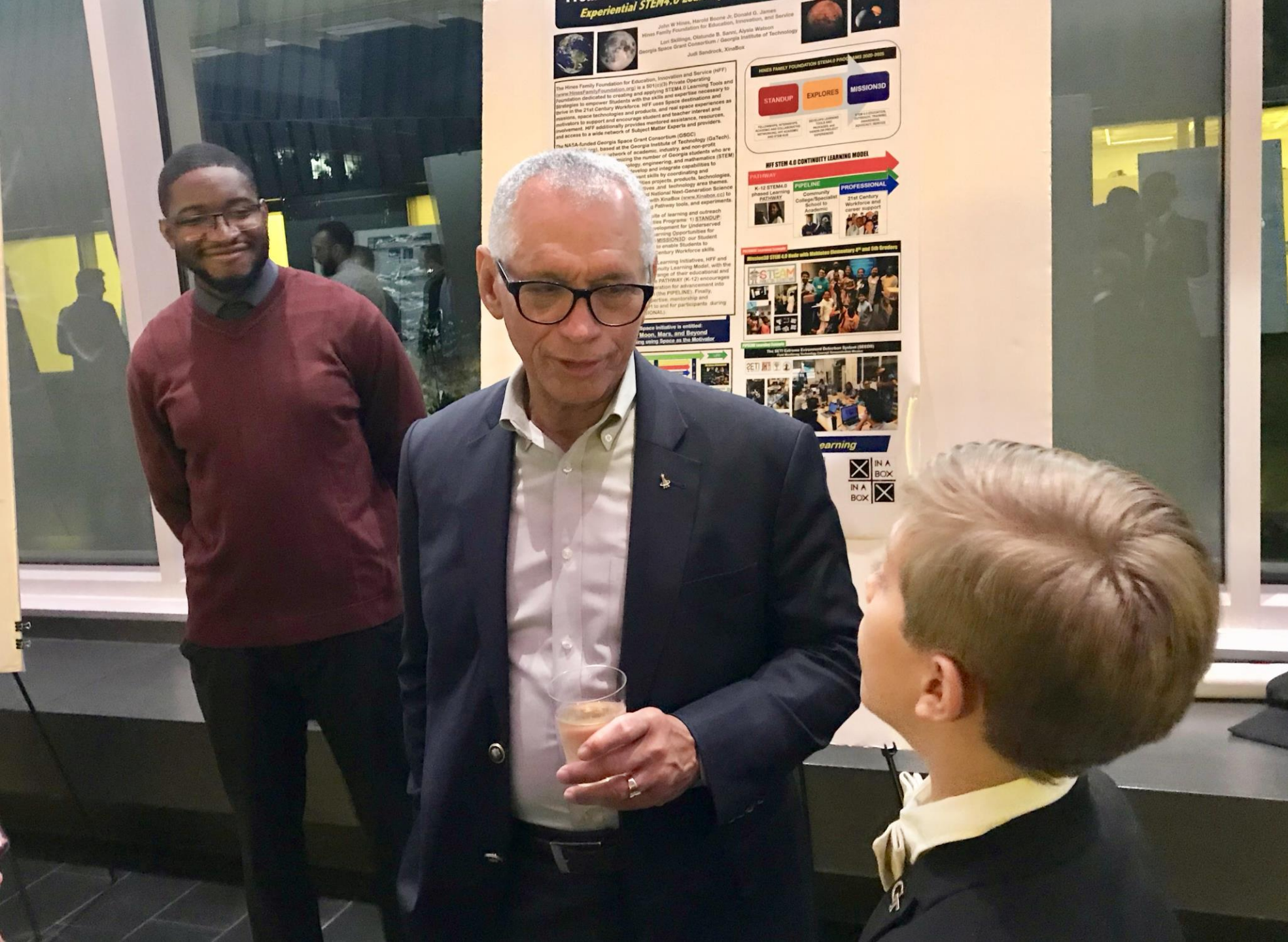
Two NASA MSGC -
South African National
Space Agency
Undergraduate
Researchers spent 8
weeks in South Africa
doing space weather
research. Travel
supported by other
funds while NASA
fellowships supported
stipends. Both first
generation female
Hispanic STEM
students.

- Mark Moldwin





Rhode Island celebrated the Apollo 50th Anniversary over the entire month of July, starting off with the Museum of the Moon, an art installation by Luke Jerram. By the end of July, we reached more than 130,000 people in RI and demonstrated how NASA is in every corner of the state.



GSGC sponsored the Symposium on Space Innovations at Georgia Tech. This image shows GSGC Space Grant Fellow, Olatunde Sanni (Phd student) with Charlie Bolden (former NASA Administrator and astronaut) with Hugh (9 yr old participant in several of our outreach activities)

- Stephen Ruffin

Kansas hosted an anniversary event with Ulrick Museum of Art showing work of Lowell Nesbitt, a NASA commissioned artist. The unique, rare, and original art specifically focused on the Apollo program. It was well attended by people of all backgrounds and well celebrated the anniversary.

- Scott Miller



Lowell Nesbitt
Apollo 11 Launch, 1969
This painting was commissioned by NASA for the Apollo 11 mission. It depicts the Saturn V rocket launching from the launch pad, viewed from below through the complex structural framework of the launch complex. The artwork is characterized by its geometric, almost cubist style, using a palette of black, white, and gold. The piece is displayed in a gallery setting with spotlights.



Michigan SGC students attending the Air Force Association Business over Breakfast in September. A networking opportunity for them to connect with industry leaders. Including Gavin Brown from the Michigan Launch Initiative.

- Katie Klink

SC's ANGLEs Challenge Winners. They were a summer basketball group that were unofficially adopted into the robotics camp. Long story short, they hated it until they were handed a LEGO Mindstorm - the rest was history & they ended up winning the competition. All are from a Title I community and most in the group traveled for the first time out of their hometowns.

- Jessica Arenas



Ring



GREATEST STORIES NEVER TOLD



We sponsored a performance at a MD high school of The Flying Hobos, a living history play about James Herman Banning, a pioneering African American aviator. The play tells the story of Banning's quest to complete a cross country flight from California to New York through a segregated America. It is an inspirational story with a powerful message about resilience, determination and ingenuity that still resonates today!

- Matt Collinge

Ami Hashimoto and Anastasia Martinez measure the diameter of one of the trees inside the tropical rain forest at Biosphere 2 during the first 'Space Camp' where Kyoto University and AZSGC students worked collaboratively during a 7-day camp acting as a Space Flight Crew.

- Michelle Coe





Frosty Freeze in Big Timber MTBOREALIS interns after a successful balloon flight and recoverycall the order in ahead of time or they run out of the fixings for milkshakes ... now a team tradition!

- Randy Larimer

Solar Orbiter launch Feb 10 2020. Joint ESA/NASA mission. I'm Co-I on the magnetic field instrument. Picture taken by an Italian colleague on her iPhone at the moment of "ignition".

- Bill Matthaeus





Iowa Space Grant Consortium (ISGC) interns and teachers at the Space Exploration Educators Conference (SEEC) at Space Center Houston.

- Tomas Gonzalez-Torres



WE ARE NASA SPACE GRANT!

We had 85 students at our Design Challenge competition shout 'We Are Space Grant!' for the video. The power and feeling of that moment resonated as deeply as watching a rocket launch.

- Tim Urban

Siobhan Whittle, a sophomore mechanical engineering major at George Washington University that the DCSGC supported in a NASA Ames Research Center internship in Summer 2019, designed a locking landing device that will be used on the Mars helicopter that is scheduled to be deployed in 2021.

- Megan Kemble

Conceptual Mars Helicopter Designs

Oklahoma State University, Oklahoma Space Grant

George Washington University, District of Columbia Space Grant



Objectives

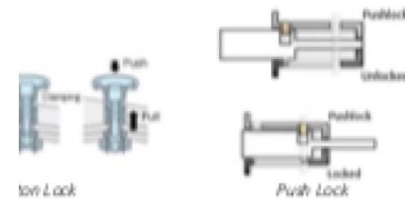
Investigate methods for components of the vehicle to

create conceptual helicopter models to meet constraints prior designs and create locking mechanisms to use more efficiently by reducing helicopter model span. 4D models of locking mechanisms and compare

Methodology

Investigated existing designs to develop appropriate locking for the models. Inspiration for these designs came from ranging from a simple bike helmet clasp to a pocket lock system.

Types of unlocking and actuation designs were a single spring force with actuation by geometry and two manual forces. Locking mechanism designs could be the scope of this project by reducing the number of needed to move and lock the model arms.



Coupling System



Triad Lock

Results

Several actuation/locking mechanism designs were produced.



Quick Release (Open)



Quick Release (Closed)



Tension Latch (Open)



Tension Latch (Closed)

Works Cited

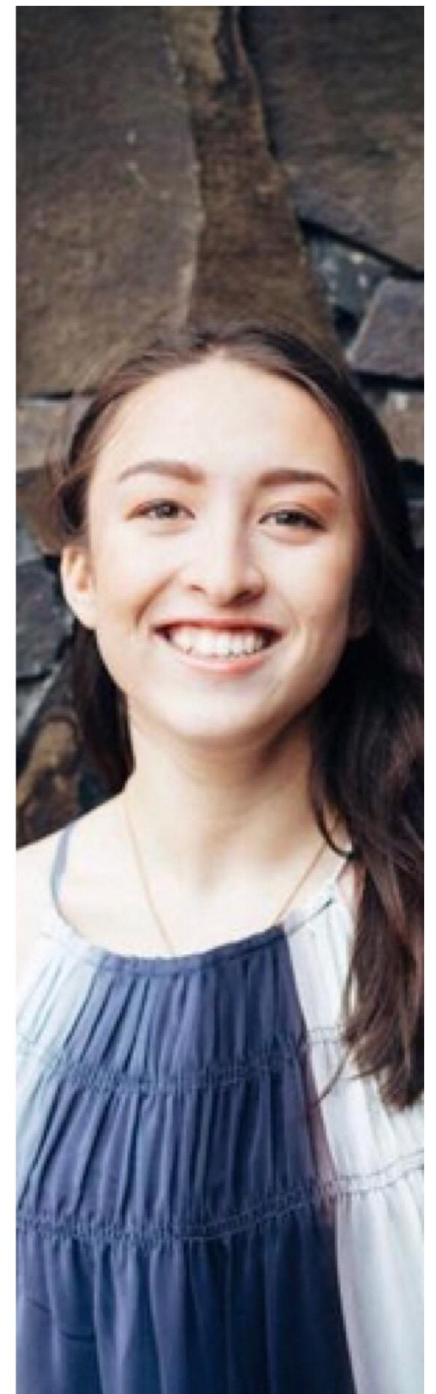
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Acknowledgements



THE GEORGE
WASHINGTON
UNIVERSITY
WASHINGTON, DC

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Witnessed my first launch: SpaceX CRS-18, at Kennedy Space Center in July 25, 2019! What was very exciting for this particular launch was that our ESPCoR funded Nebraska researcher Gloria Borgstahl had her crystal experiment fly on this launch up to the ISS.

- Amelia Tangeman

Colleen Fava &
Louisiana Middle
School teacher Jennifer
Green at Johnson Space
Center during the 2019
Liftoff Educator
workshop run by
Margaret Baguio of
Texas Space Grant.

- Colleen Fava





Conneticut Space Grant High Altitude Robotic Puppet(USIP) at the Student Poster Session during the Space Grant 30th Anniversary celebration.

- Frank McDonald

The MTSGC 2019
BOREALIS team floats
with joy after
recovering high-altitude
balloon payloads.
During the flight, all of
our projects worked
successfully at 100,000
feet

- Sierra MacLeod





K-12 outreach
Museum Partner -
Montshire Museum
50th Apollo 11th
Anniversary
celebration. Montshire
Museum opened up
their doors for an all
day free event.

- Debra Fraser

Being offered a intern position at Marshall Space Flight Center thanks to a Space Grant opportunity.

- Jackson Burt





Freshman seminar lighter-than-air rc vehicles in flight at U of MN - Twin Cities.

- James Flaten

During the Apollo 50th Anniversary celebration, we successfully launched 5,000 Estes rockets simultaneously at the Space and Rocket Center in Huntsville, AL on July 16, 2019. World record broken!

- Brooke Graham



In 2020 the USVI has worked together with South Carolina Space Grant to propose an increased Virgin Islands role in Space Grant activities as administered through South Carolina Space Grant. This increased Virgin Islands role will greatly benefit the territory through increased student research and STEM education activities.

- David Morris



V. Hunter Adams was a NY space grant fellow. After graduate school, he founded a startup, Cosmoptera, which uses the technologies Hunter developed in his research on chipsats (literally satellites the size of computer chips) to bring advanced sensing to agricultural applications in New York. Thanks to the NY Space Grant, Cosmoptera was able to hire Rodrigo Taipe for a summer 2019 internship. We are incredibly proud of this two-generation Space Grant success!

- Dmitry Savransky

30th
Anniversary
Speedfest
planes on
display

- Andy Arena





Rowan Parker, Brandon
Foote and Eve Klopf
outside NASA
headquarters & having a
great time representing
the Oregon Space Grant
Consortium and Oregon
Tech. =)

- Eve Klopf

Former HASP
participant now at
Goddard Space
Flight Center
permanently
honors the HASP
program with a
tattoo of his launch.

- Doug Granger





This is the day that we received our Oculus Go headsets to pilot the NASA Commercial Crew VR experience in Nevada. In a few short months of deployment we've reached over 1600 students with an enthusiastic response!

- Craig Rosen



NASA Administrator Bridenstine taking a selfie during a visit that motivated NVSGC and other NV Students at UNLV.

- Lynn Fenstermaker

I moderated the sonic boom webinar. Shout out to Mary Sandy and Chris Carter for their work on pulling the Aeronautics Webinar series together.

- Scott Tarry

The NASA Administrator joined Space Grant on the Hill to celebrate 30 years of our partnership!

- Mike Kincaid



Congratulations!
You successfully completed
your NASA training!



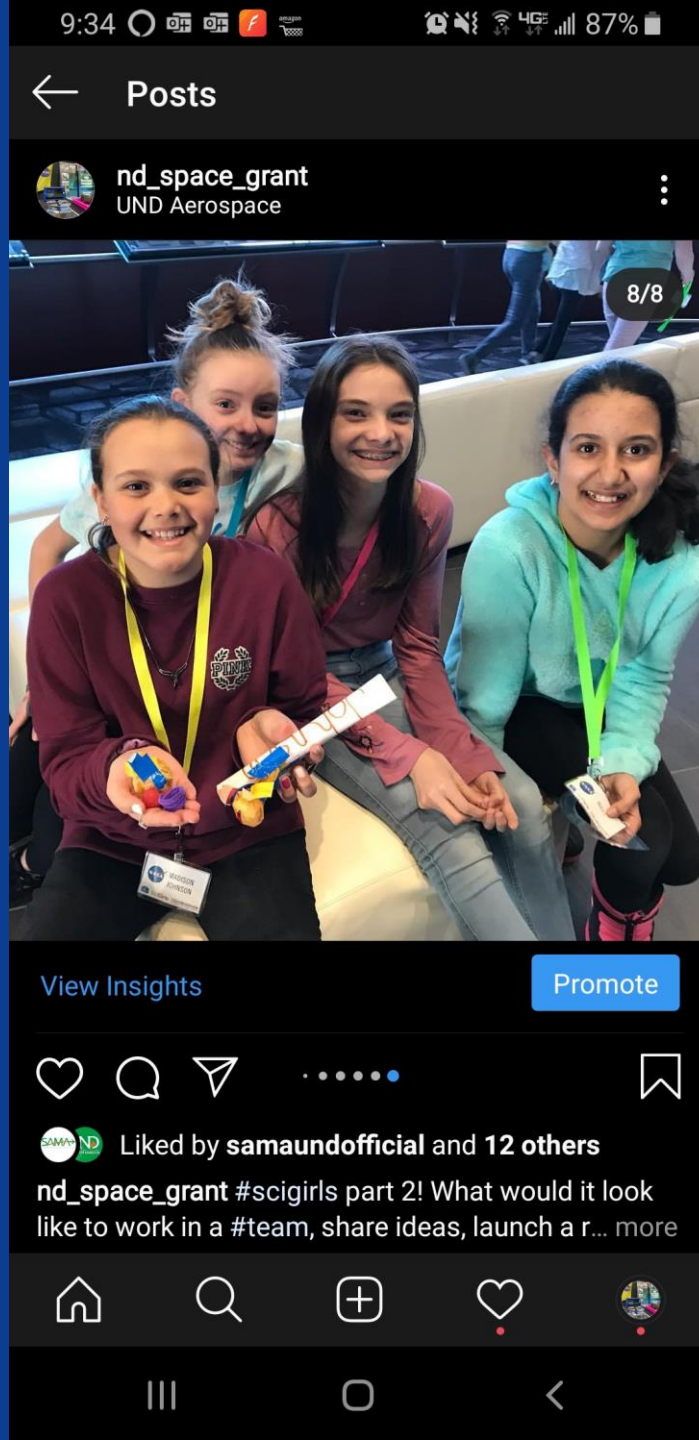
NDSGC hosted a middle school girls' space camp through the SciGirls program, where 20 girls met female role models, conducted hands-on STEM investigations, and interviewed Astronaut Christina Koch while she was on the ISS. :)

- Marissa Saad

Last radiosonde launch for the Montana team during the 2019 total solar eclipse in Chile while doing research on eclipse driven atmospheric gravity waves.

- Jen Fowler





We conducted a space camp for 20 middle school girls in 2019, with hands-on team-based challenges and female role models in STEM. We partnered with PBS SciGirls to participate in a live downlink with Astronaut Christina Koch, the 2nd ever ISS call in North Dakota.

- Caitlin Nolby

Best Space Grant
memory from last
year - high-altitude
balloon launch
recovery near Devil's
Tower in
northeastern
Wyoming..

- Shawna McBride





Hanging out with space grant family at the Western Regional Meeting.

- Cass Runyon



New Memories . . .

Celebrating upcoming 2020 marriages!!!

