NDSGC Aurora

North Dakota
Space Grant Consortium
2021 Edition

NORTH DAKOTA
SPACE GRANT CONSORTIUM

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Cover Photo:
A student uses a virtual reality headset while at the Northern Valley Career Expo in Grand Forks.

Inset Photo:
STEM Ambassador Kaelyn Knox with former NASA Adminstrator, Jim Bridenstine.

Notes from the Director

Dear colleagues-

Happy 2021! This past year came with a unique set of challenges, and the NDSGC team worked diligently to meet these challenges head-on. As with many other consortia and organizations around the world, we transitioned our programming from in-person to a virtual environment. Many of the successes highlighted in this year's newsletter are due to the creativity and initiative of the entire team, including our affiliate representatives around the state.

We recognize our privilege of access to technologies that allow us to connect to one another, and are fortunate that we were able to increase access to our programming for communities in rural areas across North Dakota, who otherwise would not have been able to join in-person events. We held informational Zoom sessions on NDSGC funding opportunities, conducted an online educator professional development workshop focused on robotics in collaboration with United Tribes Technical College, and developed new ways of sharing hands-on STEM and NASA content with the K-12 community. Our STEM Ambassador program also continues to thrive, largely due to the motivation of our enthusiastic college students. They consistently bring new and innovative ideas to the table, and we can't wait for you to see what they have planned for 2021!

Some of the biggest changes this past year came from within the core team. I moved into the role of Director in January 2020, as Dr. Jim Casler stepped down and retired this past year. His legacy of true leadership will be felt by the NDSGC for years to come. Marissa Saad was also promoted to the Deputy Director position, and we have been additionally fortunate to add a new member to the team, Tori McIntosh, as our Coordinator. We are proud to call ourselves a team of "Space Grant Kids" as we were all positively impacted by the Space Grant program as students, and now we each have the honor of serving the next generation of students in providing engaging programs in all things STEM and NASA.

Please enjoy perusing the many accomplishments of our talented North Dakota students, educators, and faculty from this past year. As always, our team effort involved the work of many.
These successes are shared by all, as we are #NASAinND.

Thank you for your continued support,

Caitlin Nolby
Director, NDSGC

Table of Contents

NASA initiated the National Space Grant College and Fellowship Program, also known as Space Grant, in 1989. Space Grant is a national network of colleges and universities. These institutions are working to expand opportunities for Americans to understand and participate in NASA's aeronautics and space projects by supporting and enhancing science and engineering education, research and public outreach efforts. The Space Grant national network includes over 950 affiliates from universities, colleges, industry, museums, science centers, and state and local agencies. These affiliates belong to one of 52 consortia in all 50 States, the District of Columbia, and the Commonwealth of Puerto Rico. The 52 consortia fund fellowships and scholarships for students pursuing careers in science, technology, engineering, and mathematics, or STEM, as well as curriculum enhancement and faculty development. Member colleges and universities also administer pre-college and public service education projects in their states.

Muriel Friday in Washington, D.C.

Space Grant Meetings

National Space Grant Meeting

In March of 2020, the NDSGC team attended the 2020 National Council of NASA Space Grant Directors' Annual Spring Meeting in Washington, D.C. While in D.C., NDSGC Director Cailtlin Nolby co-led a session titled, "Creating engaging websites, social media, and print materials". She was also elected to serve on the Nominating Committee for Space Grant. The team visited with United States legislators from North Dakota. They shared the successes of North Dakota students, educators, and programs from the last year. Senators Cramer and Hoeven, and Representative Armstrong were all receptive to the ND Space Grant program. Two NDSGC students, Muriel Friday (United Tribes Technical College) and Kaelyn Knox (University of North Dakota) also traveled to DC, where they shared their experiences as STEM Ambassadors. The students explored Capitol Hill, the Washington Monument, and (outside) the White House.

The NDSGC team met with Senator Kevin Cramer.

To celebrate the 30th anniversary of NASA Space Grant, twenty-two student groups presented their Space Grant projects at Rayburn Hall on Capitol Hill. To manage the logistics and coordination, the NDSGC Deputy Director served as co-chair and the Director served as a member of this committee. The NDSGC STEM Ambassadors, along with Nevada Space Grant, highlighted their work with virtual reality pedagogy. The committee also invited NASA Administrator, Jim Bridenstine (see image) as keynote speaker, secured a video recording from Astronaut and Space Grant alumna Jessica Meir while she was on the International Space Station, and compiled a video series of "I am NASA Space Grant" from nation-wide student awardees. To view Meir's message, please visit: https://youtu.be/RYRGSXe6LJo.

STEM Ambassadors, Kaelyn Knox and Muriel Friday, with the NDSGC Team

30th Anniversary of NASA Space Grant

Montana Regional Meeting - Fall 2019

In September of 2019, the NDSGC Director and Deputy Director attended the Regional Space Grant Meeting in Big Sky, Montana, which was hosted by the Montana Space Grant Consortium. The meeting was full of interactive sessions, hands-on design challenges, and networking opportunities. Along with NC and SC Space Grant Consortia, the NDSGC team led an interactive session that increased awareness for inclusive and accessible STEM education. All conference attendees participated in an “Apollo 13” style design challenge while simulating auditory, visual, and kinesthetic disabilities. The meeting began with an educational trip to Yellowstone National Park, and concluded with a geological field trip to the peak of Lone Mountain, where the Space Grant community continued to brainstorm inter-consortia collaborations.

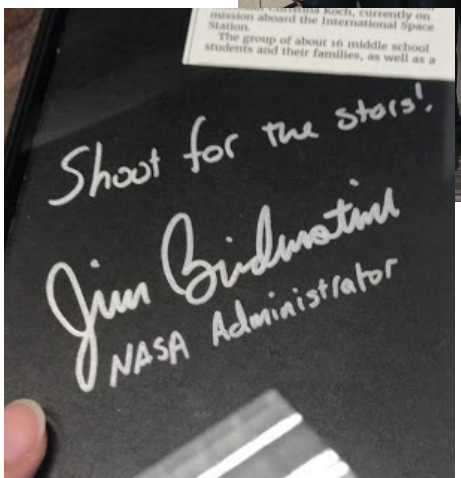
Space Grant Trip up Lone Mountain

Accessible and Inclusive Apollo 13 activity

NASA Administrator and ND Senator Visit the NDSGC

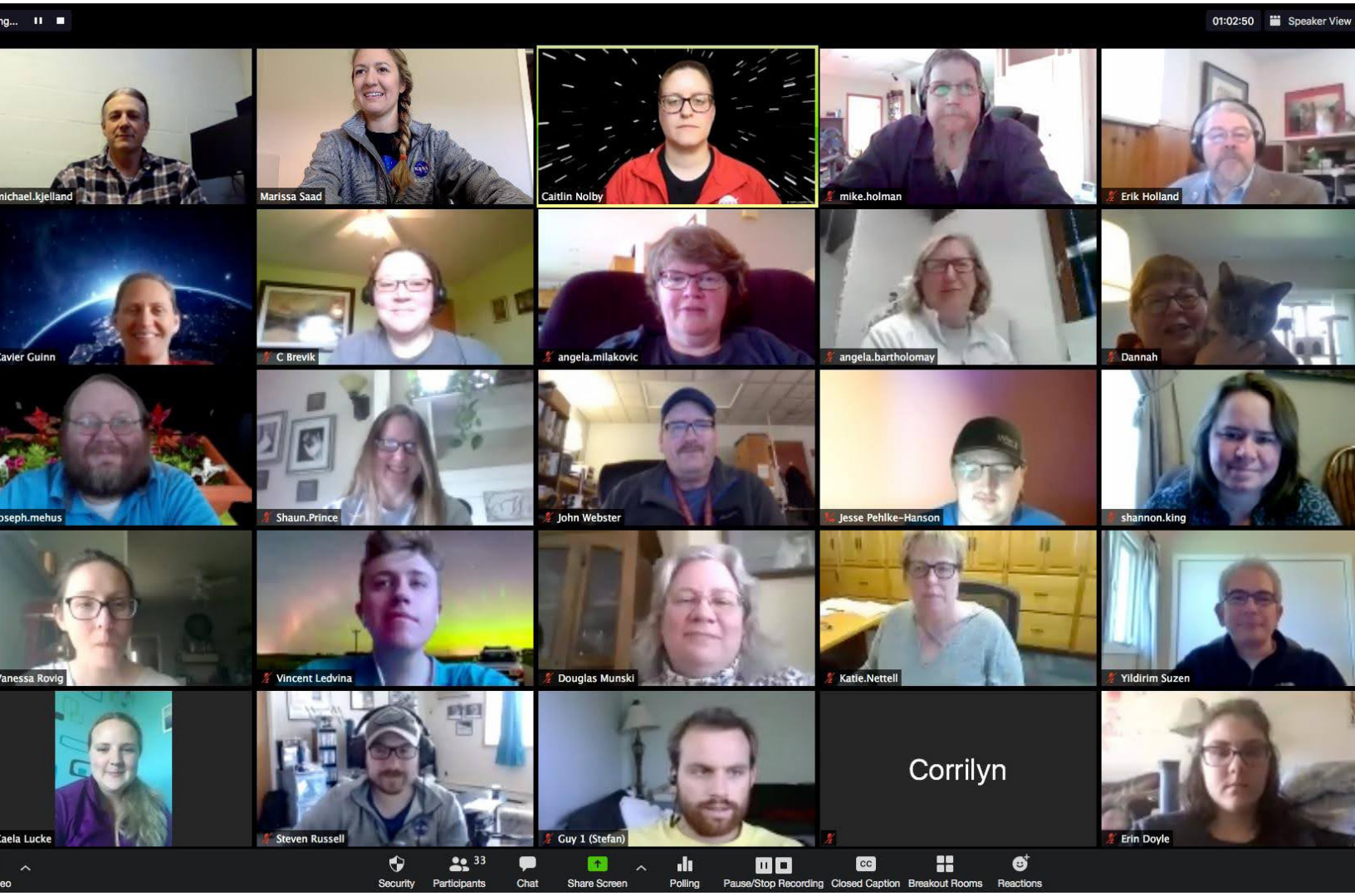
On September 4, 2019, the NASA Administrator, Jim Bridenstine, and ND Senator, Kevin Cramer, visited UND Aerospace and met with the NDSGC team. Here, they toured the Human Spaceflight Laboratory and other UND Aerospace facilities. We discussed ongoing collaborations with all 18 affiliate institutions, student engagement efforts, and student research.

From L to R: Space Studies student Steven Russell, former NASA Administrator Jim Bridenstine, Marissa Saad, Caitlin Nolby, United States Senator from North Dakota, Kevin Cramer.



Former NASA Administrator signed our newspaper article about the SciGirls call to the International Space Station.

Affiliate Involvement



Zoom Business Meeting

The annual NDSGC Affiliates Meeting was scheduled to meet in March of 2020 at United Tribes Technical College in Bismarck, ND. Due to the switch to remote interactions, the NDSGC held the business meeting over Zoom, in May. The NDSGC team presented 2019 accomplishments and new funding opportunities to faculty and staff. Student presentations are scheduled for the Spring 2021 semester.

From August 2019 to March 2020, the NDSGC team visited affiliate institutions to lead informational booth sessions, pre-service educator workshops, and Virtual Reality experiences. After March of 2020, the NDSGC led virtual informational sessions, career fairs, and pre-service educator workshops across the state.

Inflatable Lunar/Martian Analog Habitat

Six years after the first mission in the Inflatable Lunar/Martian Analog Habitat (ILMAH), the Space Studies Department's Human Spaceflight Laboratory hosted four crewmembers in the first-ever international mission. UND is the only university in the United States to conduct this type of space exploration research, which helps prepare for long-duration Martian missions. In the Fall 2019 semester, four crewmembers, who traveled to UND from Argentina, Colombia, Mexico, and Peru, lived in this confined environment for fourteen days, studying psychological factors, biomedical research, and mission operations. Crewmembers lived in five ILMAH modules: the living quarters, a botany/greenhouse module, geology module, exercise module, and an extravehicular activity (EVA) module. Docked to the ILMAH via a tunnel is the Pressurized Electric Rover (PER), which students used to conduct EVAs outside of the habitat.

To learn more about the Human Spaceflight Program at UND, visit: https://goo.gl/9ZK9M3.

Bird's-eye view of the Inflatable Lunar/Martian Analog Habitat.

The first international crew gets ready to spend 14 days in the ILMAH. Photo courtesy of Patrick C. Miller/UND Today.

Students ingress the ILMAH. Photo courtesy of Patrick C. Miller/UND Today.

NASA Internships

Lori Waters

Space Studies Graduate Student,
University of North Dakota

Virtual Internship with NASA Ames

NASA Ames GeneLab for High Schools Program

"My virtual NASA internship inspired me to focus my career path on space biology, especially supporting food crop production, as well as planted a seed to pursue a PhD after I complete my Master of Science in Space Studies."

Kaela Lucke

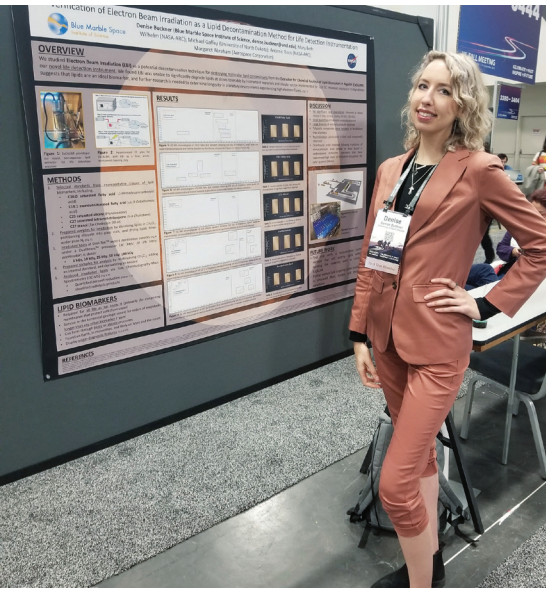
Atmospheric Science Graduate Student,
University of North Dakota

Virtual Internship with NASA Goddard

Agroclimatic Indicators of Extreme Weather and Climate Change

"My 2020 virtual internship was a once-in-a lifetime opportunity where I was able to accomplish project goals, fully network with NASA scientists and interns, and follow my passion for Climate Science by continuing my research into the fall/spring."

Research Fellowships



Denise Buckner

Fall 2019 Recipient
Space Studies,
University of North Dakota

Lipid Decontamination Procedures for Life Detection Instruments

"My NDSGC fellowship gave me the unique opportunity to work on my M.S. thesis research in a NASA laboratory and contribute to the search for extraterrestrial life."

Colton Hondl

Fall 2019 Recipient
Biology and Chemistry,
Dickinson State University

Natural Genetic Variation in Arabidopsis in Response to Bacillus Subtilis (GB03) Volatile Organic Compounds

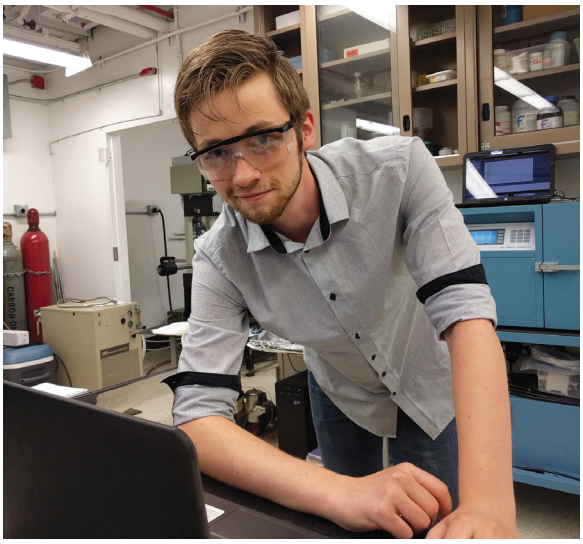
"This experience funded by Space Grant has helped me further both my career and academic goals by providing me with the experience and knowledge to design and execute my own in-depth scientific experiments."

Brian Teske

Fall 2019 Recipient
Aerospace Sciences,
University of North Dakota

Testing for Safety Management System (SMS) Attributes via a Survey Instrument: Preparing SMS for Commercial Space Operations.

"Being selected as a NASA North Dakota Space Grant Consortium fellowship recipient was truly an honor for me. This grant provided me the opportunity to probe deeper with my organizational culture research, widen the testing scope in commercial space, and contribute to shaping future changes to the NASA and commercial space industry's safety cultures."



Elias Holte

Fall 2019 Recipient
Space Studies
University of North Dakota

Atacama Desert: Photosynthetic Bacteria and Halite Nodules

Research Fellowships

Joe Allen

Fall 2019 Recipient
Biomedical Engineering,
University of North Dakota

Comprehensive Metabolic Panel (CMP) and Extreme Environments

"I'd like to thank the North Dakota Space Grant Consortium and NASA for their support. The fellowship provided the opportunity to conduct sensor-based AI medical device research for terrestrial and space flight purposes. It's an honor to contribute to NASA's mission while I complete my dissertation."

Brittany Zimmerman

Fall 2019 Recipient
Space Studies,
University of North Dakota

Biosphere 2: Regeneration of Life Support Commodities

Matthew Lein

Fall 2019 Recipient
Software Engineering,
Valley City State University

Deep Underground Neutrino Experiment (DUNE)

Vincent Ledvina

Spring 2020 Recipient
Physics,
University of North Dakota

Construction of the North Dakota Dual Aurora Camera (NoDDAC) to Aid in Citizen Science and Space Weather Applications

"I am grateful for my fellowship through the North Dakota Space Grant Consortium last year. The fellowship supported my research with the National Solar Observatory and studying magnetic cancellations. Originally an REU project during the summer of 2019, I was able to expand upon my project by studying more cancellation events and performing a more in-depth statistical analysis. Our results were presented at the 2020 AAS conference and with my fellowship, I was able to devote time to writing a research paper about my research which has now been submitted for review by The Astrophysical Journal."

Terry Rector

Spring 2020 Recipient
Aerospace Sciences,
University of North Dakota

Impacts on Cognitive Decay & Memory Recall During Long Duration Spaceflight

"Research including people subjects, when accomplished correctly, is costly. The NASA North Dakota Space Grant Consortium helped make my research possible."

James Stoffel

Spring 2020 Recipient
Space Studies,
University of North Dakota

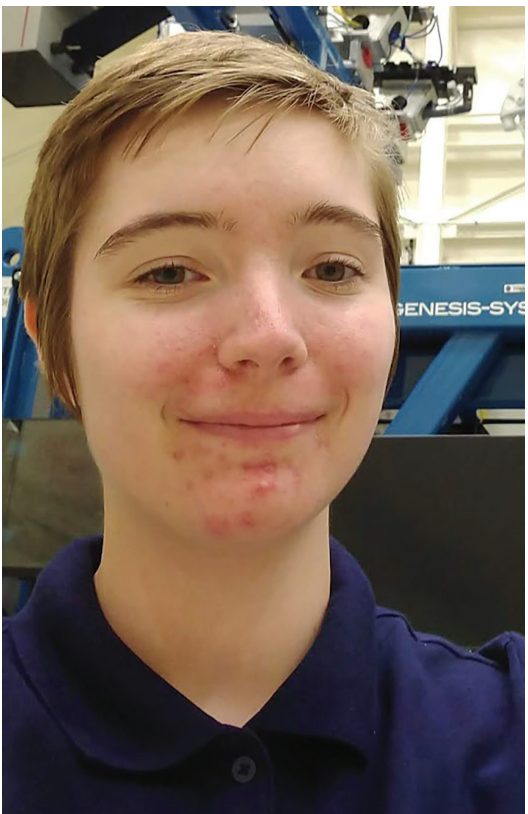
Critical Contingency EVA's for 3D-Printed Planetary Habitats

"The NASA NDSGC Research Fellowship Award provided critical support in the success of these endeavors towards the future of human space exploration. With these resources and the amazing support from Department of Space Studies at the University of North Dakota and NASA, modern and innovative terrestrial applications were applied to 3D printed habitation and concept of operations to survive on distant worlds. The results from this research lay the groundwork for ISRU habitation as we head back to the Moon and onward to Mars. With these lessons learned and future efforts, these exciting opportunities provide hope and a better way of life off the Earth, for the Earth, and beyond."

Holton Miller

Spring 2020 Recipient
Engineering,
North Dakota State University

Design and Characterization of Optically Clear PMMA/GOx Hybrid Rocket Propulsion System



Kimberly Whaley

Spring 2020 Recipient
Mechanical Engineering,
North Dakota State University

Manufacturing and Testing of Composites Made With Recycled Carbon Fibers

Trey Fischbach

Spring 2020 Recipient
Agricultural Studies,
Dickinson State University

Introducing Legumes as a Food Production System

The NDSGC research fellowships are awarded on a competitive basis to undergraduate and graduate students at NDSGC affiliate colleges.

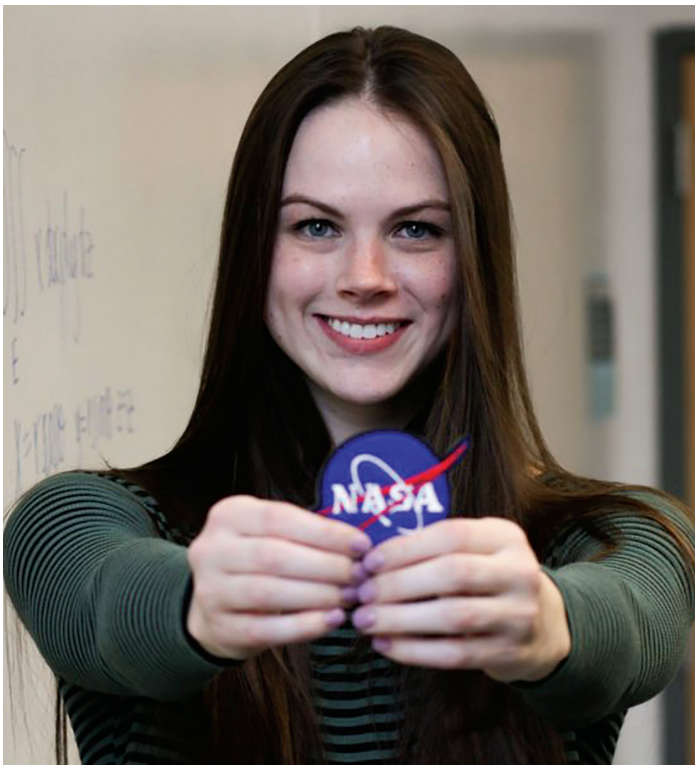
Research Fellowships

Manna Khan

Spring 2020 Recipient
Earth System Science and Policy,
University of North Dakota

Grand Forks Floods Vulnerability and Housing

"I was able to pay mandatory fees, books, and research supplies. The fellowship has allowed me to spend time researching relevant literature review and helped me narrowing my research project."



Emily Schlieff

Summer 2020 Recipient
Mathematics,
University of North Dakota

Modeling Inflatable Space Structures

"My fellowship with the NDSGC allowed me the opportunity to research a subject I am passionate about with readily available resources. I have not only learned a lot about inflatable space structures, but also various research methods and modeling techniques."

Jason Hicks

Summer 2020 Recipient
Computer Science,
University of North Dakota

Automation and Visualization of Program Correctness for Automatically Generating Code

"This fellowship gave me valuable experience working on a software engineering project related to a NASA program. In the process I was able to network with both current and past members of NASA's Ames Research Center. The research funded by this fellowship has since turned into my master's thesis and aided in getting me a job as a Systems Engineer at Northrop Grumman."

Nick Thomas

Summer 2020 Recipient
Mechanical Engineering,
North Dakota State University

Computational Simulations of a Rotating Arrangement of Three Cylinders Using Hybrid Turbulence Models

"This fellowship allowed me to focus more time into my research which has strengthened many of the skills I continue to use after graduating."

Sydney Menne

Summer 2020 Recipient
Physics & Astrophysics, Mathematics,
University of North Dakota

Supernovae Distributions and their Relationships to Classes of Stars

"Thanks to the fellowship, I have gained experience conducting accurate and complete research. I've found a real passion conducting research and it has helped me narrow down what I want to focus my studies and research on!"

The North Dakota Space Grant Consortium proudly provides funding to students participating in national competitions such as NASA's Robotics Mining Competition and the Formula SAE Race Car Competition. It is imperative that students be given the chance to partake in these events as they challenge a student's collaboration and problem-solving skills while promoting innovation. Given the sudden COVID-19 pandemic interrupting scheduled competition dates, many of the national competitions adapted to holding virtual seminars instead of in-person competition events.

National Student Competitions

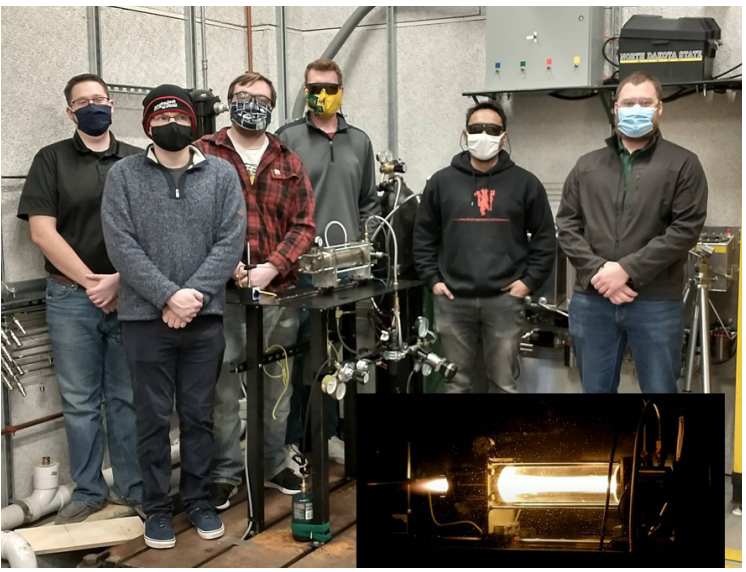
First Nation Launch's Logo, WSGC

UND FSAE Race Car:

The Formula SAE competition offers undergrad and graduate college students the chance to design, construct, and then test a prototype race car! During the competition, participants present their cars to automobile industry representatives. This allows students to practice their business and marketing skills in addition to showcasing their engineering skills. UND's FSAE Race Car team consists of 35 students, most of them coming from Mechanical Engineering backgrounds.

WSGC First Nations Launch:

The WSGC's First Nations Launch gives Tribal Colleges and Universities, Native American Non-Tribal Institutions and American Indian Science and Engineering Society college chapters the chance to showcase their engineering skills by requiring teams of undergraduate students to work together in the researching, designing, and building of a high-powered rocket. Since 2020, The First Nations Launch has been part of NASA's Artemis Student Challenges program. And since its inception, over 77 different tribes have been represented in the competition. It is United Tribes Technical College's second year participating in this high-powered rocket competition. Five of the six team members of the 2019-2020 team were first-time participants.



From left to right: William Refling, Porter Dixon, Gryphon Lillis, Charles Fabijanic, Al Habib Ullah, and Josh Yurek

NDSU Rocketry (MN High Power Rocket Team):

The NDSU Rocketry Team competes in NASA's Space Grant Midwest High-Power Rocket Competition. Their team consists of both new and returning team members. Rockets for the Midwest High-Power Rocket Competition potentially include data logging systems, cameras, and the ability to reach a target altitude of up to 3,456 feet above ground level.

NDSU Rocket Propulsion Design Team:

The NDSU Rocket Propulsion Design Team's objective is to design and build a working hybrid engine. They would like to capture a recording of the reaction taking place inside the engine's combustion chamber. This rocket propulsion design team hopes to take part in an AIAA (American Institute of Aeronautics and Astronautics) competition. AIAA Foundation competitions allow competing students to gain hands-on engineering experience while receiving constructive feedback from field experts.

NDSU NASA Rover Challenge:

The NASA Human Exploration Rover Challenge dares students to create a human powered rover that they then drive on an “extraterrestrial terrain” driving course. The driving course is half a mile long, scattered with various obstacles. This competition encourages students to create new technology or contribute to the existing technology for manned space missions. NDSU’s female-majority team for the NASA Rover Challenge hopes to build a rover that successfully navigates the competition’s half mile challenge course.

Robotics Mining Competition Logo, from NASA

NASA’s Robotics Mining Competition, now the NASA Lunabotics Competition, pushes students to engineer and build a functioning, out-of-this-world (literally), mining robot. Not only do students build a robot, they are also required to take part in K-12 STEM outreach for this competition. Around fifty different schools are represented each year at the Robotics Mining competition, where both undergrad and graduate students are represented.

NDSU Robotics Mining Competition:

NDSU’s Robotics Mining Competition team hopes to continue building their skill sets as future engineers. Collaboration and innovation while building will aid them in doing just that!

UND Robotics Mining Competition:

With team members coming from mechanical engineering and computer science backgrounds, UND’s Robotics Mining Competition Team will work towards building an even more autonomous mining robot.

Summer Faculty Fellowships

Summer faculty fellowships are awarded to ND faculty each summer so new STEM courses, with relevance to NASA, can be developed and existing ones can be revised. Faculty are encouraged to incorporate engaging educational techniques focused on improving student learning.

Michael Dodge

Space Studies/
University of North Dakota

Revision of Space Studies 545: Space and the Environment

Angie Milakovic

Geographic Information Systems/
Bismarck State College

GIS 215: Introduction to Remote Sensing and UAS

Julie Robinson

Teaching and Leadership/
University of North Dakota

TL 555: Issues of Equity and Motivation in STEM Education

Mikhail Bobylev

Chemistry/
Minot State University

Chemistry 442: Medicinal Chemistry

Tim Young

Physics and Astrophysics/
University of North Dakota

Rocket Design, Construction, and Launching

Shannon King

Biology/
North Dakota State College of Science

Anatomy in Clay Curriculum

Corinne Brevik

Physics/
Dickinson State University

Virtual Simulation Labs for College Physics

"After this summer's work, I have a full set of online labs for physics that can be used when students are unable to attend face-to-face labs as a result of illness or other excused absences. This has already proven to be very helpful this past semester, and more will get used in the spring."

Janelle Green

Biology/
Dakota College at Bottineau

General Biology Lab

Pearl I. Young Scholarship

The Pearl I. Young Scholarship is a $2500 scholarship competitively awarded to a UND female with a GPA of 3.5 or greater.

Hannah Park

Hi, my name is Hannah Park and I am so thankful to be a recipient of the Pearl I. Young Scholarship this year. I am a junior at the University of North Dakota, majoring in Air Traffic Management and Airport Management. I have loved learning at this University and being consistently pushed to be the best air traffic controller and manager that I can be. In addition to my academics, I am someone who is very involved on campus. I am on the UND Dance Team, am the founder and President of People of UND, a member of the Student Air Traffic Controllers Association, a Student Supervisor at Wilkerson Dining Commons, and a UND Student Ambassador, to name a few. In my free time, I enjoy dancing, photography, and riding and showing Quarter Horses in sorting, cutting, penning, and ranch pleasure. Once again, thank you so much for awarding me with this scholarship. I am excited for the rest of my journey at the University of North Dakota.

Michaela Neal

As a junior in University of North Dakota's Environmental Studies program, receiving the Pearl I. Young Scholarship is both an honor and an opportunity. I have been fascinated by space exploration for as long as I can remember, and NASA-themed camps and experiences throughout my childhood fueled my passion. These early exposures instilled in me that, at its essence, science applies teamwork and knowledge toward the betterment, safety, and future of humanity. I aim to learn how to use NASA remote sensing tools in environmental and planetary science, and perhaps, someday, participate on an interdisciplinary committee toward future colonies on Mars. Outside of coursework, I promote the joy of STEM and space exploration through volunteer work as a NASA/JPL Solar System Ambassador and NASA/UA OSIRIS-REx Ambassador. This space grant award propels me toward a future in which I will continue to do my part as an active citizen and contribute what I learn toward a quality future for all.

Lillian Goettler Scholarship

The Lillian Goettler Scholarship is a $2500 scholarship competitively awarded to an NDSU female with a GPA of 3.5 or greater.

Gina Blazanin

"I am a graduating senior at North Dakota State University, studying civil engineering. At NDSU, I'm involved with the Steel Bridge Team and volunteer my time as an Engineering Ambassador to give tours to prospective students. Outside of class, I really enjoy leading a bible study through Cru, meeting up with friends to play volleyball, and learning to cook new foods with my roommates! I've been a research assistant for the last three years where I've worked on various projects, the most recent being helping to develop a new electronics protective coating for NASA. I will be attending graduate school at the University of Texas at Austin, starting Fall of 2020 to continue pursuing education in the transportation side of civil engineering."

Anna Bahnson

I grew up on a small farm in Moorhead, MN and developed a passion for spending time in and learning more about the environment. Now, I am a STEM Education PhD student at NDSU and the Tribal Science Outreach Coordinator at United Tribes Technical College (UTTC) in Bismarck, ND. I help community members better understand the science research conducted at UTTC's Intertribal Research and Resource Center. I collaborate with tribal college students, faculty, cultural experts and tribal community members to co-design creative outreach programming. Prior to coming to UTTC and NDSU, I taught middle and high school science and also worked in place-based environmental programming with tribal members in MT. I am honored to receive the Lillian Goettler Scholarship to further my studies in STEM Education and I am excited to collaborate with NASA to inspire the next generation of scientists and engineers.

NDSGC Scholarships

Every academic year, the NDSGC provides each of the affiliate two-year, four-year, and Tribal colleges with scholarship funding. Students are selected by faculty at their home institution and must have an excellent academic record and be majoring in a STEM field.

Bismarck State University
Donna Hogue
Brooke Peterson
Steven Flemmer
Paul Vetter
Michael Schultz
Brooke Kohler

Cankdeska Cikana Community College
Starla Littlewind
Samantha Azure
Nicholas Bittner
Terry Dunn
Marlaysia Haskell
Bernadine Whiteshield

Dakota College at Bottineau
Rachael Buss
Anna Buzzerd
Lauren Gangl
Alexis Gullett
Taylor Keplin
Jonah Kvernum
Rebecca Leonard
Austin Tonneson
Kaitlyn Wilmot

Dickinson State University
John McDaniel
Lexee Craig
Karissa Bohn
Allison Buckman
Abigail Moberg
Marissa Svihl
Hallie Hoffer
Keven Pineda
Marissa Schatz

Lake Region State College
Jakenda Short
Wilson Howard
Breonna Rance
Trevor DeCoteau
Samantha Overend
Tucher Salander
Rachel Hill
Shad Mack
Joseph Deckert
Michaela Joy Osborne
Hannah Lundeby
Mark Nienhuis
Forrest Hanson

Mayville State University
Simon Barker
Jacob Bilden
Haley Boechler
Anna Bradner
Lexi Carpenter
Jerry Hernandez
Laura Jacobson
Victoria Johnson
Frida Nirvana Garcia Kjelland
Taylor Painter
Creighton Pfau
Taylor Stegman
Austin Urlaub

Minot State University
Michael Heck
Haley Hildenbrand
Alexander Taylor
Raylea Folstad
Je-Mario Jones
Keegan Summers
Trey Burk
Jacob Jensen
Madison Cooper
Matthew Winburn
Spencer Furniss
Salina Carter
Kellen Peat
Micah Winburn

North Dakota State College of Science
Victoria Vertin
Tori McIntosh
Andrew Johnson
Trent Herbert
Bryan Knapp
Emma Ogitchida
Isaac Wurst
David Caldwell
Aaron Erickson
Kyle VanderTuin

Nueta Hidatsa Sahnish College
Shayla Gayton
Michael Medeiros
Janna Steen
Ethan Wells
Makenna Murdoch-Moore
Tayla Bercier

Sitting Bull College
Wesley Craddock
Christina Turgeon
Floris White Bull

Turtle Mountain Community College
Presley Dionne
Tyra Jerome
Dario Vega
Gavin Parisien
Raymond Norquay
Cody Malaterre
Frank Decoteau
Kyle Mathiason
RaeAna Cromwell

United Tribes Technical College
Robert Sam
Kate Gates
Muriel Friday
Jayce Archambault
Kimberlee Blevins

Valley City State University
Rachel Blomquist
Kourtney Jean Hintz
Emma Jo Gamache
Sydeny Lynn Brunmeier
Ariyana Lynn Malec
Kelly Cahoy
Jaden Derek Scott
Anderson, Ellen
Brown, Jean
Dorsey, Spencer
Garcia-Vazquez, Melanie
Gehrig, Katherine
Goerke, Rachel
Hennings, Harmony
Longtin, Sage
Marty, Grayson
Molitor, Samuel
Rasset, Ethan
Reiten, Alex
Schaeffer, Noah
Schwanke, Danielle
Stueve, Konnor

Williston State College
Paul MacSteves
Kimberly Garvey
Trey Girard
Peyton Beyerle

American Indian Scholarships

American Indian Scholarships are given to students at each of the five tribal colleges who plan to complete a four-year degree in a STEM field.

Starla Littlewind
Cankdeska Cikana Community College

Shayla Gayton
Nueta Hidatsa Sahnish College

Floris White Bull
Sitting Bull College

Presley Dionne
Turtle Mountain Community College

Robert Sam
United Tribes Technical College

The NDSGC provides travel grants to North Dakota students to present papers or posters at conferences throughout the U.S. The students have the ability to not only share their research with others in the STEM community but also to network with others in their field. This allows them to eventually become employed in a STEM field as a result of their travel to the conference.

Student Travel Grants

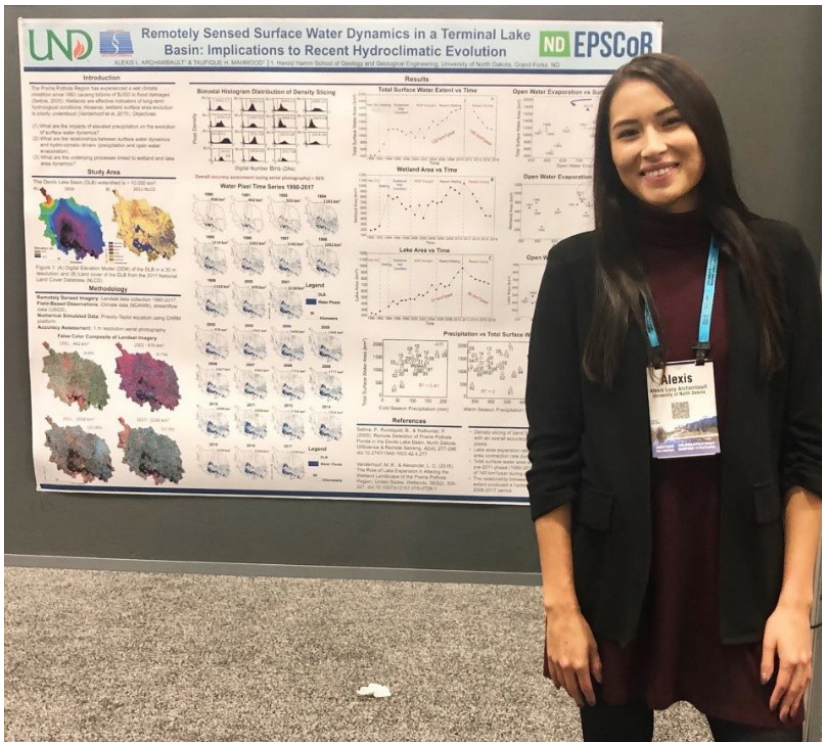
Alexis Archambault

Geological Engineering, University of North Dakota

Remotely Sensed Surface Water Dynamics in a Terminal Lake Basin: Implications to Recent Hydroclimatic Evolution

American Geophysical Union (AGU) Fall Meeting
December 2019
San Francisco, CA

"Thanks to the North Dakota Space Grant Consortium travel scholarship opportunity, I traveled to San Francisco, CA and attended the largest gathering of Earth and Space scientists in the world. I presented the final results from my master thesis research at the American Geophysical Union (AGU) Fall Meeting where I was able to connect with other hydro scientists from around the world. It was an amazing experience and I plan to attend future AGU Fall Meetings!"



Kaela Lucke

Atmospheric Science, University of North Dakota

Investigating the Impact of Land Cover Change on the Northern Great Plains

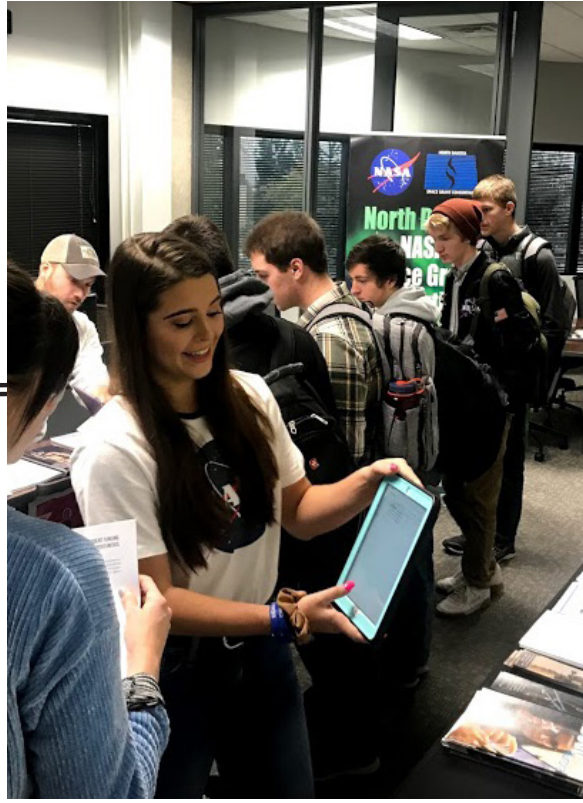
2020 American Meteorological Society Annual Conference, January 2020, Boston, MA

"The AMS conference let me create a great network of scientists for my future career and gave me experience in presenting my scientific research."

Community Outreach Events

The NDSGC held a multi-day open house for UND students, encouraging students to visit and learn about how they could apply for NASA internships, fellowships, scholarships, and other academic awards. Students could work 1-on-1 with the NDSGC team and talk to experienced NDSGC student awardees, such as Steven Russell (NASA Intern) and Kaelyn Knox (STEM Ambassador).

STEM Ambassadors contributed in our K-12 and informal education outreach all year long. From August 2019 to March 2020, they participated in Grand Forks' Comic Con event, Grand Forks Library's Astrocamp, Grand Forks and Fargo's Career Fairs, girl scout troop events, and led tours of the UND Space Studies Department's Human Spaceflight Lab. After March, when the safety guidelines were put into place, the dedicated STEM Ambassadors continued to virtually engage students through social media, online workshops, and other virtual challenges and programs. To learn about the STEM Ambassador program, please visit page 22.



2019 Fall Open House

Photo below: NDSGC Director, Caitlin Nolby offers students a copy of the Aurora newsletter.

Local students try out NDSGC's virtual reality headsets at the Grand Forks Career Expo.

STEM Ambassador Program

The STEM Ambassador program is designed for North Dakota college students to conduct NASA-relevant STEM outreach across the state with K-12 students, teachers, and the general public. Ambassadors participate in a hands-on training at the start of the academic year to become familiar with best practices for engagment and to build relationships with other students participating in the program.

In the 2019-2020 academic year, these students significantly contributed to the number of North Dakotans reached through informal and pre-college education initiatives. STEM Ambassadors worked with over 5,000 K-12 students and members of the public, despite an unparalleled year of remote and virtual demands.

The NDSGC would like to highlight STEM Ambassador Shae Skager, who graduated from UND this year. To date, Shae has been the only student to have worked as an Ambassador throughout all four years of college. Congratulations, Shae, on your position at the Pacific Science Center in Seattle! Thank you for all your hard work and dedication to grow and strengthen our outreach programs!

NDSGC student, Kaelyn Knox, learns how to use Oculus Go virtual reality headsets for future outreach events.

New 2019 STEM Ambassadors learn how to facilitate the Rockets to the Rescue activity

STEM Ambassadors

Meet the students that participated in our STEM Ambassador program from 2019-2020.

Muriel Friday: United Tribes Technical College
Alexis Gullett: Dakota College in Bottineau
Danielle Siverhus-Dinger: Valley City State University
Shae Skager: University of North Dakota
Ryan Kram: University of North Dakota
Samantha Rosario: Bismarck State College

Taylor Keplin
University of North Dakota

Danny Erdmann
University of North Dakota

Erin Doyle
University of North Dakota

Tori McIntosh
University of North Dakota
(now our Coordinator!)

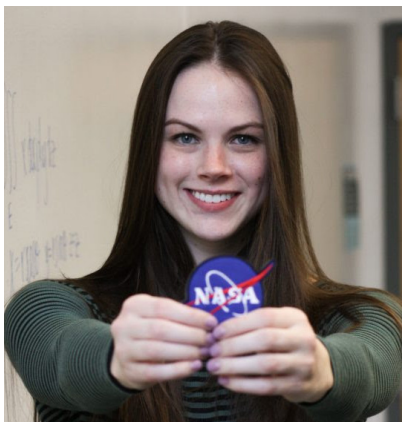
Michaela Neal
University of North Dakota

Kimberlee Blevins
Sitting Bull College

Alexis Hesse
University of North Dakota

Kaelyn Knox
University of North Dakota

Jacquelyn Emery
University of North Dakota



Emily Schlieff
University of North Dakota

Cando FIRST Robotics team

FIRST Robotics

Cando Robotics Team

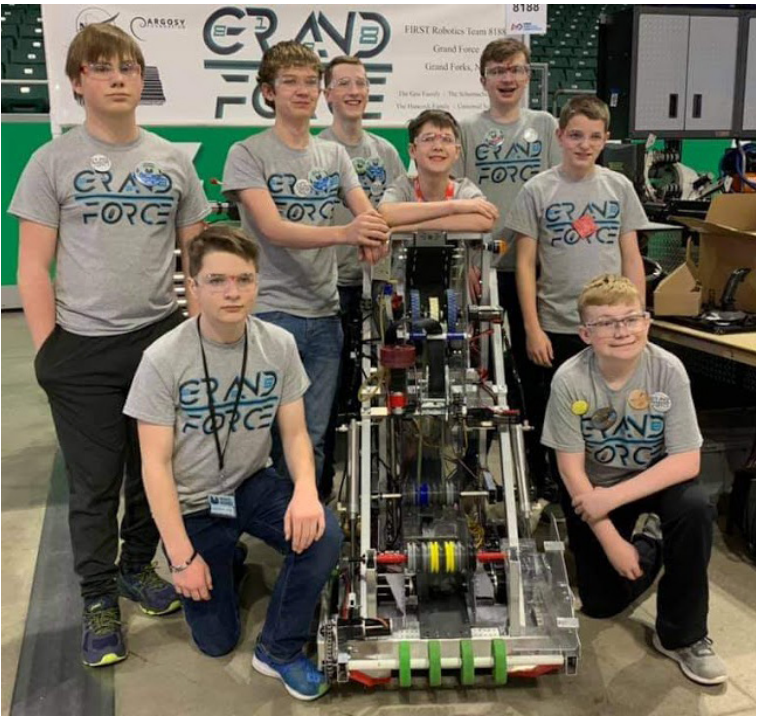
Cando's FIRST Robotics Team consists of high school students who proudly represent STEM in their community. They've held a robotics demonstration at their local nursing home and reach out to younger students via a Junior Robotics program. Cando was ranked 55/60 in the FIRST Robotics Great Northern Regional Event in February of 2020. Cando's FIRST Robotics team even stays busy during their off-season. Last year, they spent the off-season building a functioning 3-D printing machine, sourcing parts from two non-functioning 3-D printers.

Jamestown FIRST Robotics Team

Jamestown's FIRST Robotics Team has school faculty & administrators, parents, and STEM community members that mentor the team and help guide them on the road to success. Experienced student team members lead mini-teams to help with project completion. Jamestown was ranked 49/60 in the FIRST Robotics Great Northern Regional Event in February of 2020. In the future, Jamestown's FIRST Robotics Team wants to advance to the World Championships.

Fargo FIRST Robotics Team

The FIRST Robotics Program in Fargo is open to all students enrolled in a Fargo school. Fargo's FIRST Robotics Team dedicates twenty working hours a week to prepare for their competitions. To help facilitate the process experienced students take on the role of manager, leading other team members. The role of manager comes with responsibilites such as defining goals, setting timelines, monitoring progress, and integrating the work they are responsible for into the team's master design. Fargo was ranked 57/60 in the FIRST Robotics Great Northern Regional Event in February of 2020.



Grand Forks FIRST Robotics team

Grand Forks FIRST Robotics Team

STEAM, the notion of incorporating art into STEM is what the Grand Forks FIRST Robotics Team aims to do. The team and its mentors fuse art, hard work, community pride, and STEM to complete their robot. Grand Forks was ranked 38/60 in the FIRST Robotics Great Northern Regional Event in February of 2020. Next year, this diverse team hopes to advance to the regional competition with the guidance of community STEM mentors.

The FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition promotes inclusivity and hopes to inspire students to engage in STEM activities, in order to become future STEM leaders. All students, whether they possess technical or non-technical skills, are encouraged to be part of these competition teams. The FIRST Robotics Competitions combine STEM and sports. Past regional qualification rounds have put robots to the test of playing basketball! The North Dakota Space Grant Consortium is thrilled to fund FIRST Robotics Teams across the state of North Dakota. In the past, North Dakota teams have advanced to the FIRST Robotics World Championships. Although most teams were able to compete in regional events, the remaining FIRST Robotics Competitions for the 2019-2020 season were suspended in May of 2020 due to the sudden onset of COVID-19.

Rolla Robotics Team

The Rolla Robodogs were ranked 15/60 in the FIRST Robotics Great Northern Regional Event in February of 2020, where they recieved the Highest Seeded Rookie award! The team couldn't be prouder. Rolla's FIRST Robotics Team is excited to compete again, incorporating all that they learned from their first year of competition into their second.

Bismarck Robotics Team

Bismarck's brand new team is ready to promote STEM and NASA in North Dakota. The FIRST Robotics Team of Bismarck is eager to have funding from the North Dakota Space Grant Consoritium so they can be on their way to establishing their FIRST Robotics program for local students in Bismarck.

Hatton-Northwood Robotics Team

The Hatton-Northwood FIRST Robotics program allows rural community members to come together and engage in STEM activities. The mentors and leaders of Hatton-Northwood's FIRST Robotics program aim to encourage a variety of students to participate. The Thunder Robotics team was awarded the Martin Luther King Dream in Action Award by the University of North Dakota for their work in building a robotic wheelchair for a local 4-year-old girl. At the FIRST Robotics Great Northern Regional Event in February of 2020, team 876 won the Championship with a record of 12-4. They also were given the Judges Award and the Woody Flowers Finalist Award.

Hatton/Northwood integrating inclusivity and engineering

Hatton/Northwood group picture

View from the stratosphere.

Near-Space Balloon Competition

The ninth annual Near-Space Balloon Challenge (NSBC) occurred on November 15-16, 2019 and was coordinated by Steven Russell, a Space Studies graduate student. Nine schools participated, involving over 100 middle and high school students! The participating teams were based out of Alexander, Flasher, Garrison, Langdon, Maple Valley (Tower City), New Town, Richardton-Taylor, Shiloh Christian (Bismarck), and Williston schools. Upon arrival at UND, the students presented their projects to judges and integrated their payloads (Integration Night). The next day, the Space Studies balloon team launched and tracked two helium-filled high altitude balloons via satellite and radio data (Launch Day). This was the first year the balloons were filled indoors, keeping the students warm and more involved. While waiting for the payloads to be returned back to campus, the teams toured the Human Spaceflight Laboratory, learned about Space Suits and rovers, flew spacecraft simulators, and explored virtual reality. The NDSGC STEM Ambassadors helped lead this session and were great role models for the young students. Both 1500-gram balloons rose to nearly 90,000 feet and the experiments were successfully returned. Student teams analyzed their data and produced a final report. Shiloh Christian School students earned the first place prize of a sponsored STEM field trip.

NSBC was made possible by UND students.

Two helium-filled balloons were launched to approximately 90,000 feet, as part of a student launch program.

The Langdon team brings their payload home to start their analyses.

Both balloons were recovered in NW Minnesota.

STEM Ambassador, Kaelyn Knox, helps students track their balloon.

Students have fun making final adjustments on their payload.

As the balloons ascended, students could see I-29 and UND Aerospace (lower right).

This was the first year we filled the balloons indoors, staying warm.

This was the first year we filled the balloons indoors, staying warm.

Aerospace Dean, Paul Lindseth, looks on as a young student explores a tactile book about the Moon.

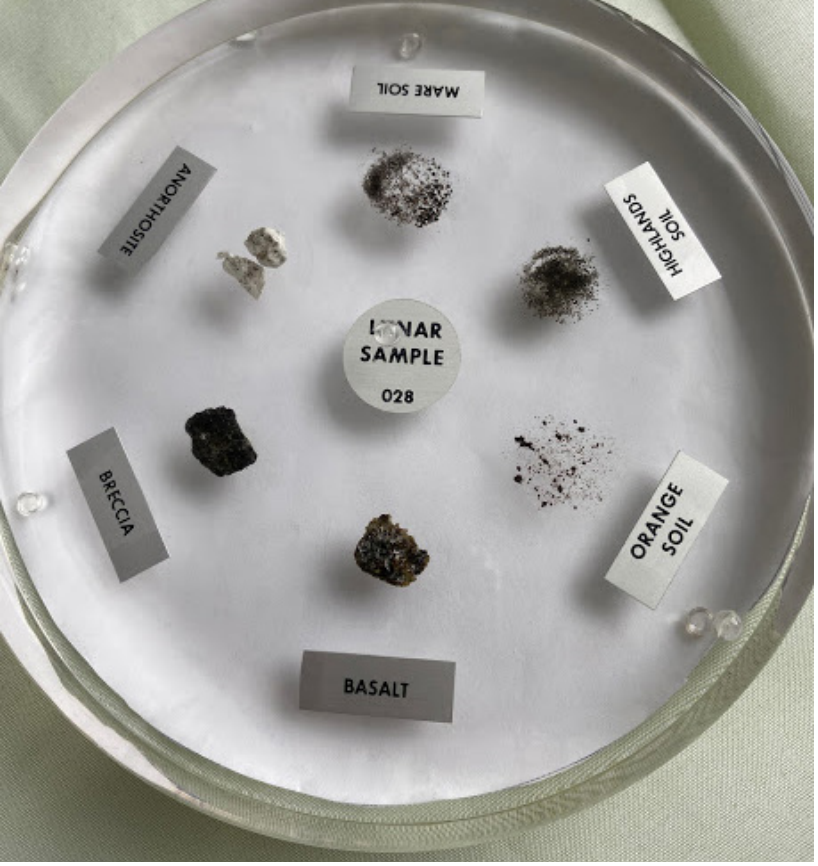
UND Aerospace Community Day

This was the third year that the NDSGC team helped organize and host UND Aerospace Community Day, where over 3,000 guests visited the “open house” outreach event. Children, adults, and industry members visited UND to immerse themselves in aviation, space, sustainability, meteorology, and flight operation activities. Guests stamped their “UND Aerospace Passports” at various stations throughout the day, exploring aerospace and NASA opportunities available at UND. Families could explore static displays of helicopters and airplanes, fly aircraft and spacecraft simulators, take flying lessons in unmanned aircraft vehicles (UAV/drones), check out space suits, experience virtual reality and the 360° air traffic control tower simulator, and view planetarium shows in the UND Atmospherium, along with other demonstrations and hands-on investigations. NDSGC’s STEM Ambassadors and Space Studies graduate students offered tremendous assistance with other Aerospace volunteers throughout the event, conducting hands-on STEM activities, showcasing meteorites, and leading tours of the Human Spaceflight Laboratory. This was the first time the NDSGC presented a Lunar Sample Disk to the public, which consisted of real lunar regolith from Apollo 16 and 17 missions.

Photos by Caleb Wilkinson

STEM Ambassador Erin Doyle looks on to real lunar rock samples.

Space Studies student, Justin Germann, teaches young students about meteorites.



A lunar sample disk with real lunar regolith

A young visitor carefully holds the lunar sample disk while Director Caitlin Nolby supervises.

Young children hold real meteorites

ND SciGirls listen to Astronaut Koch answer their submitted questions. Photo courtesy of Caleb Wilkinson

SciGirls®
Space Camp

The NDSGC concluded its SciGirls Space Camp program with a downlinked interview with NASA Astronaut Christina Koch in August of 2019. Earlier that year, ND middle school students composed and delivered interview questions to NASA; some of these questions were answered by Dr. Koch, as the International Space Station passed over America! The live downlink was watched by the NDSGC team, ND SciGirls, and their families from Clifford Hall at UND. After the interview, the girls completed NASA- and space-related virtual reality missions on the NDSGC's Oculus Go headsets.

To watch the recording of the downlink, please visit: https://youtu.be/tEU8xCa-Re4?t=108.

The NDSGC SciGirls. Photo courtesy of Caleb Wilkinson

SciGirls attend the culminating event to their semester-long space camp. Photo courtesy of Caleb Wilkinson

Did you know Christina Koch is eligible to be the first female astronaut to walk on the Moon?

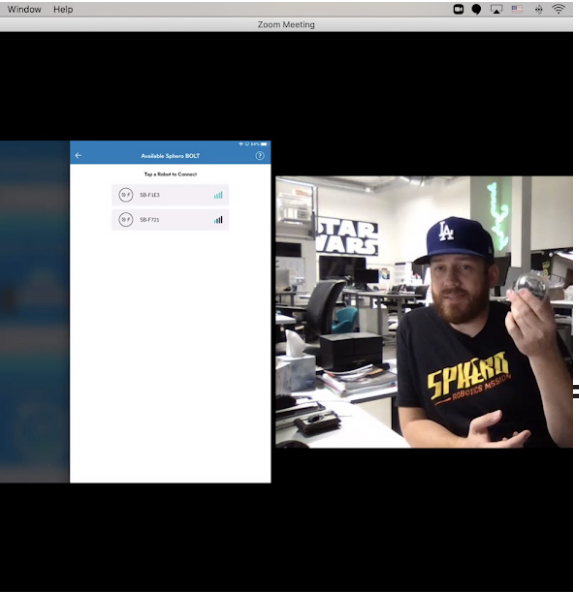
Educator Professional Development

The NDSGC conducted six educator workshops for North Dakota pre-service teachers this year. These education students were enrolled at Minot State University, the University of North Dakota, Lake Region State University, and Valley City State University. Workshop participants worked in teams on hands-on activities such as Mars Rover Lander challenges, GLOBE Citizen Science missions, development of “Bristle Bots,” and stomp rocket missions to save Mark Watney on Mars. The NDSGC also shared NASA and STEM resources and engaged these college students with innovative teaching strategies. UND education majors also experienced the UND Atmospherium (see image) and the Human Spaceflight Lab, learning how they could integrate UND’s space research into their future curricula.

Educators experienced a NASA show in the UND Atmospherium, a resource for their future students.

UND pre-service educators learn how to facilitate hands-on STEM activities for their future classrooms.

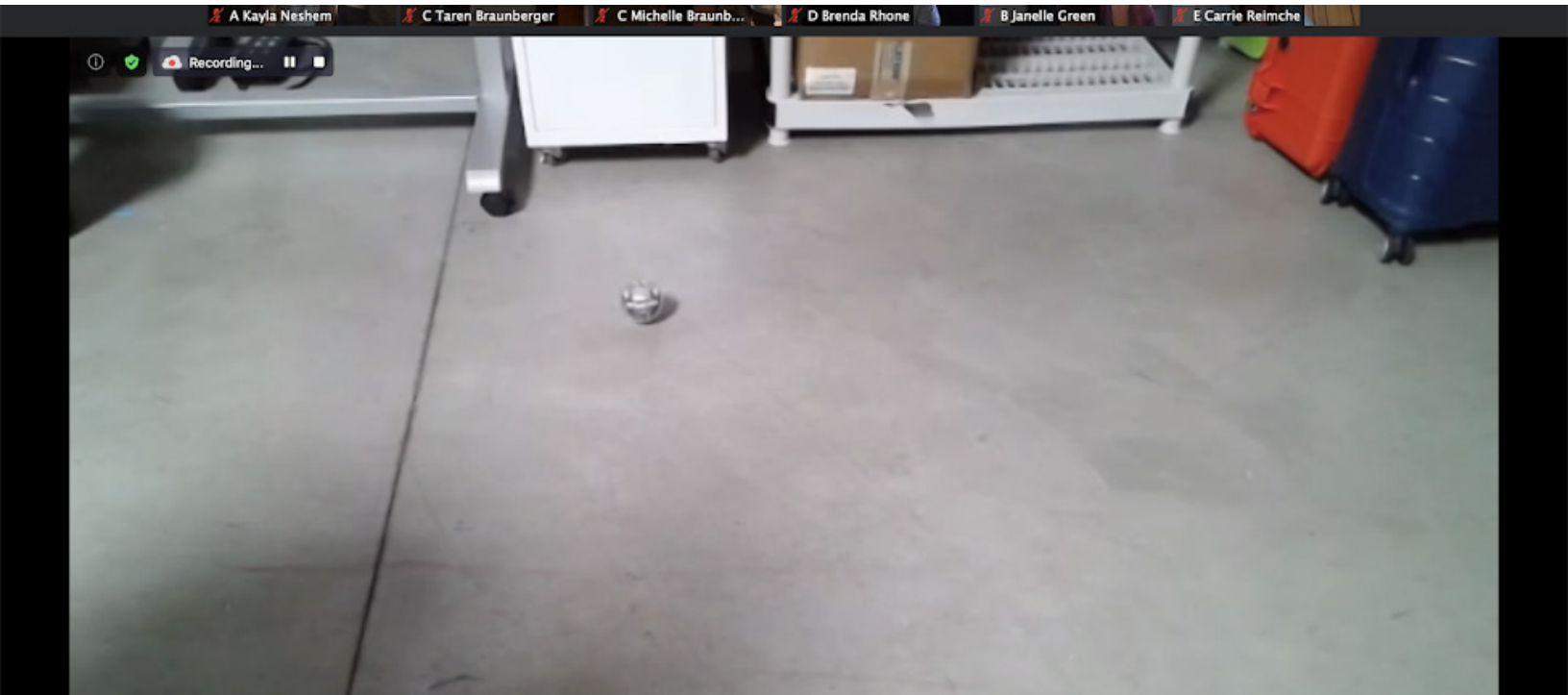
Educator Professional Development



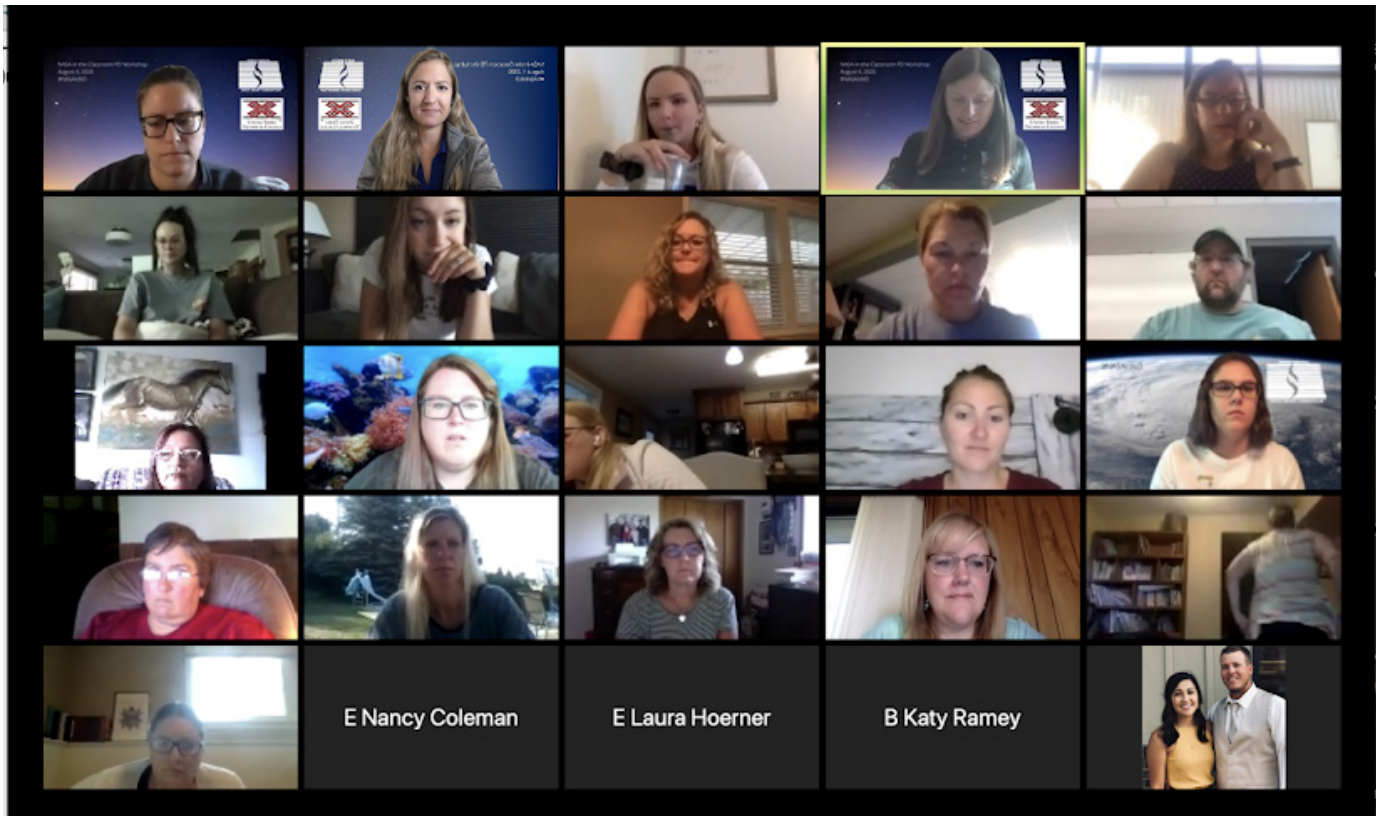
Sphero education lead, Jeremy, teaches our participants how to use their robots hands-on.

NASA's Langley's Elizabeth Joyner presented as our keynote speaker.

To make online learning hands-on and experiential, the NDSGC team partnered with Anna Bahnson (United Tribes Technical College, Intertribal Research & Resource Center) to lead a 15-hour professional development teacher workshop on coding, NASA, and inclusivity for rural and Tribal communities. Twenty K-12 teachers received one Sphero Bolt robot before the start of our synchronous Zoom sessions. Our team worked with Sphero's education team, who led coding tutorials with the Bolts, guiding teachers in real-time to follow along and learn block coding, Javascript coding, content-specific coding, and more. Our keynote speaker, Elizabeth Joyner, from NASA Langley, introduced teachers to My NASA Data, a resource for virtual instruction. Teachers left the workshop with a greater understanding of Sphero robots, online teaching strategies and pedagogical tools (such as Zoom's chat features, Mural workspaces, and Kahoot quizzes), and NASA educator resources. Teachers also earned one professional development credit, which they can use to renew their teaching licenses. Through a competitive process, these teachers also earned classroom sets of Sphero robots. The lessons learned and best practices from this workshop were presented at the National Space Grant Virtual Learning Workshop and the virtual Astronomical Society of the Pacific (ASP) conference during the Fall of 2020 semester. An IRB-approved study is ongoing, capturing teachers' levels of self-efficacy of implementing Spheros and coding within their own classrooms.



Synchronous teacher workshops look slightly different in 2020.



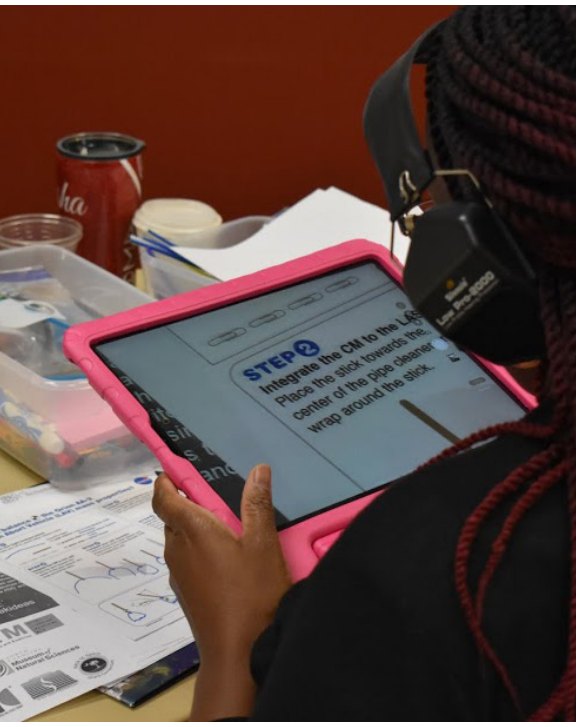
Teachers reflect on Universal Design for Learning with NASA content.

Educator Professional Development

The NDSGC traveled to North Carolina in October of 2019, co-facilitating a hands-on teacher workshop for NC educators. This was the pilot workshop called Innovative Differentiated Exploration Activities in Space Science (IDEAS). IDEAS involves education experts at NASA Langley, South Carolina Space Grant, and North Carolina Space Grant, who work towards integrating accessible and inclusive space science activities for students with disabilities (specifically, students who are blind or low vision, hearing impaired, and/or nonverbal). While wearing simulators, these participants explored NASA lesson plans and the NC Science Museum, reflecting on how all methods of science pedagogy can improve for students with disabilities. This was one of many workshops, which will be held at NASA Langley, and involve North Dakota, North Carolina, and South Carolina educators over the next four years.

ND School for the Blind

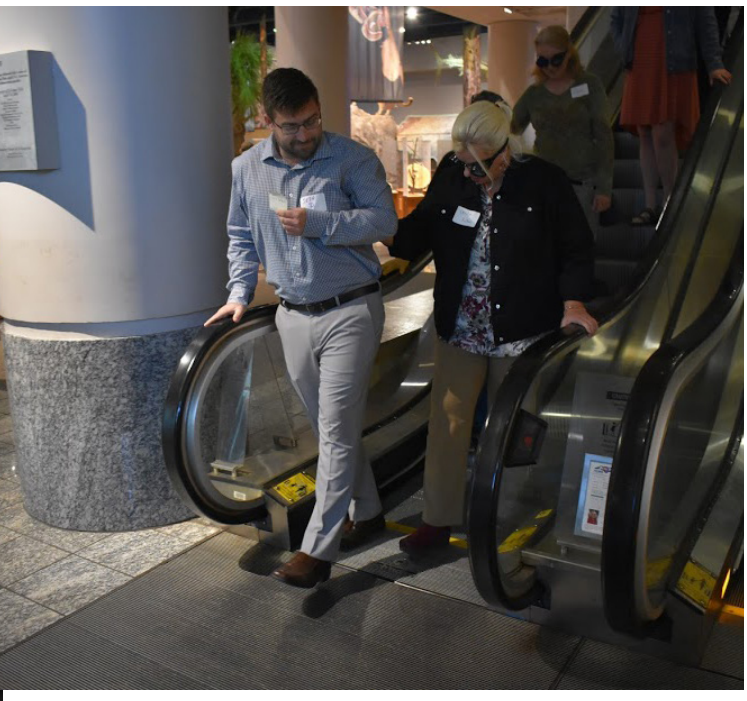
The NDSGC continues to collaborate with students and educators at the ND Vision Services/School for the Blind (NDVS/SB). By visiting their school, the NDSGC engages visually impaired students in NASA-related experiential activities throughout the year. Throughout 2019 and 2020, the NDSGC and NDVS/SB worked together to establish a competitive scholarship for students who qualify for the NDVS/SB services. We are pleased to announce that the first scholarships were successfully awarded in Spring of 2021. To apply, students who are eligible may visit the informational page, found here: https://ndspacegrant.und.edu/scholarships/ndvssb.html.



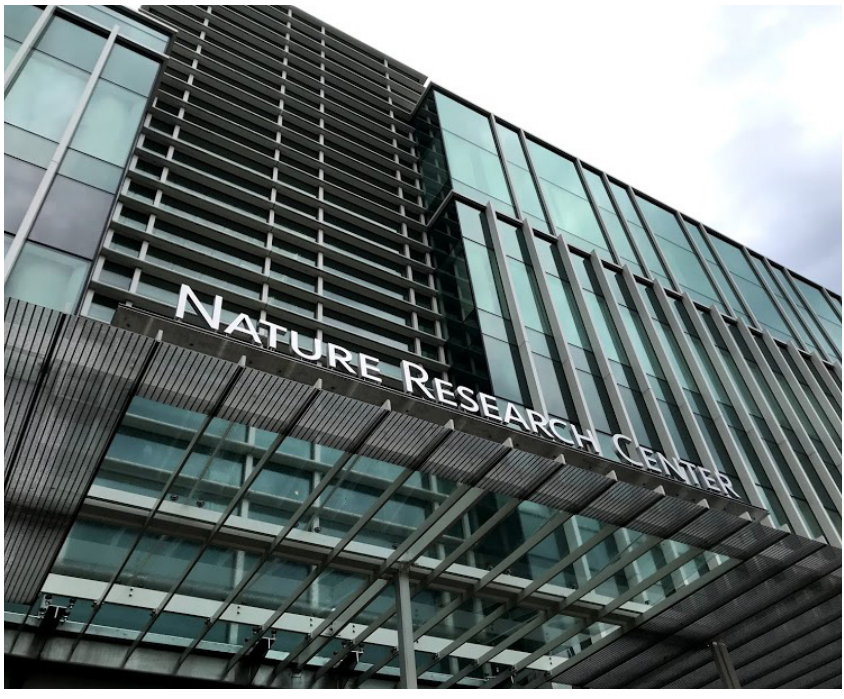
Some inclusive tools include increasing font size using a tablet's camera

Teachers provide feedback on how lessons can be improved to be inclusive for all students.

Teachers learn techniques from expert Gail Henrich (center) on how to be a human guide for students with low vision.



Teachers explored the museum while wearing simulators. Here, a teacher simulating low vision practices using the escalator.



Teachers toured NC's Nature Research Center.

Five of the six teachers, having a great time at SEEC.

Space Exploration Educators Conference

Through a competitive application process, the NDSGC awarded six North Dakota teachers a travel award to the Space Exploration Educators Conference (SEEC), a hands-on NASA professional development conference at Space Center Houston in Texas. Selected teachers were Allison Ziebarth (Dickinson), Anna Bahnson (UTTC, Bismarck), Emily Schaefer (Glenburn), Jennifer Davis (Grand Forks), Marci Johnson (Bismarck), and Mary Jane Jeske (Dickinson). At SEEC, the teachers participated in hands-on STEM activities, networked with other teachers from around the world, and met NASA Astronauts and Administrators. We are so pleased to learn that this group of ND educators have remained in touch with each other, holding meetings online throughout 2020 (especially during this trying time of remote K-12 instruction).

Teachers earned PD credit towards their licenses while having a fun time!

Teachers (Marci Johnson, front row, fourth from right) learns about the Neutral Buoyancy Laboratory

Teachers (Jennifer Davis, third from the left side) had fun participating in NASA's survival course.

Teachers learned from NASA experts on escaping a submersion.

Houston, we have a problem

By Mary Jane Jeske

"Houston, we have a problem." Well, I guess having five hundred plus educators invade your city for the Space Exploration Educators' Conference or SEEC, isn't a problem! I was one of the six educators from North Dakota selected to attend the conference after submitting a lengthy application to the North Dakota Space Consortium out of the University of North Dakota. It was held February 6-8th in Houston, Texas, at the Johnson Space Center.

The experience was incredible, and getting my head wrapped around everything I learned is challenging. While at the conference, we heard three keynote speakers; NASA astronaut Joe Acaba, NASA Johnson Space Center deputy program manager for the Gateway Program Lara Kearney, and the chief flight director for NASA Johnson Space Center Holly Ridings. The information these three leaders shared with educators was astounding. I remember sitting in the auditorium feeling so privileged to be in this audience hearing the latest updates on where our country heads with space.

Joe Acaba dramatically announced, "We are going to the moon and then to Mars!" This new endeavor by our country is known as Artemis. The following day, Kearney laid out the details for the 2022-2023 Gateway Program. Gateway will be an orbiting platform that will dock with Orion as it carries humans to the moon in 2024. Our final keynote speaker, Holly Ridings, the 62nd chief flight director and the first woman in this position, challenged educators with inspiring our students/classrooms with a passion for space.

Following each keynote, we excitedly attended sessions with NASA scientists and engineers for six to eight hours daily. I was involved in some amazing sessions; Target Mars, Human Body Experience, Invention and Diffusion of Neutral Buoyancy, Tour-Neutral Buoyancy Lab, Space Helmets, History of Manned Flight, Tour-Planetary Analog Test Site, Tour-Space Vehicle Mockup Facility, Saturn V Rocket-Tour and more! I also had the opportunity along with my North Dakota associates and other educators to have lunch with astronaut Tom Jones. He wowed us with stories and patiently answered lots of questions.

The North Dakota Space Consortium gifted me with an experience of a lifetime, and now I will say thank you by paying it back to my students and my community. It was an honor to do this for our city, our state, and our country. I haven't even been home a week, but I am already sharing new space ideas with my students. I have also begun to prepare a program for outreach in Dickinson and outlying towns, brainstorming for a 'Girls in STEM Conference', and STEM space lessons in my classroom are all part of my plan for paying it forward. Continuing to learn is important to me, and I am excited to share my NASA experience with young and old. Let's get started...if you're interested in visiting with me, my email is mjeske@dpsnd.org. ■

SEEC Teacher, Mary Jane Jeske, shared her experience in the Dickinson Newspaper.

Meet an Affiliate

Shannon King

North Dakota State College of Science

Shannon King grew-up in Georgetown, Minnesota. She earned a of Bachelor of Science in Athletic Training and Biology from the University of Mary in Bismarck, North Dakota in 1996 and a Master of Science in Natural Resources Management from North Dakota State University in Fargo, North Dakota in 2007. Mrs. King is in her 22nd year at North Dakota State College of Science where she is an associate professor of Biology and Department Chair of Mathematics and Science. She has been a North Dakota Space Grant affiliate representative since 2005.

Mrs. King loves history and science, so she frequently connects the two in her classes. Most of her classes are taught for non-science majors, where the best part of teaching can be found in the 'lightbulb' moments; those moments where students who don't like science, or think science is hard realize they can do science and science can be fun. In her General Biology II class, first- and second-year students get the opportunity to stretch themselves by working with the Chahinkapa Zoo on an assigned topic to create 24"x 36" posters that the Zoo uses as signage.

In more than 15 years as an affiliate representative Mrs. King has seen first-hand the diverse and amazing impact that Space Grant has on the lives of our students and employees. Personally, there are too many highlights for her to number, but three that top the list are the Planetary Space Suit tests near Fryburg, North Dakota in May 2006, meeting Senator John Glenn at the National Director's Meeting in Washington DC in March 2006, and working with former students professionally.

Personally, she and her family enjoy traveling, camping, fishing, and kayaking.

Shannon and a student working on a Chahinkapa Zoo signage poster.

Space Grant Alumni Success Stories

Where Are They Now?

Monica Hilton

NDSGC Involvement:
NDSGC Undergraduate Fellowship Recipient

Education:
Dickinson State University:
Bachelor of Science in Environmental Science

Where are you now?
Insight Environmental as the OGI Service Line Manager

Advice to Students:
Find your passion and never stop learning. Set goals for yourself and don't be afraid to reach out to fellow students and professors to help you meet those goals. Not only will it help you become a great student, but it will help you be a positive influence for those around you.

Annadine Rendon

NDSGC Involvement:
NDSGC Scholarship Recipient

Education:
Turtle Mountain Community College: Bachelor of Science in Secondary Science Education

Where are you now?
Science Teacher at Turtle Mountain Community High School

Advice to Students:
Don't ever let bumps or hard times in your life prevent you from reaching your goals. Grasp every opportunity to expand your knowledge and personal network. The more you know, the more you can do.

We Are #NASAinND

#NASAinND allows North Dakota students, faculty, and community members to share STEM and NASA involvement on social media. Take a look at all the activites and hard work from the past year!

Sen. Kevin Cramer
@SenKevinCramer Follows you

Spoke about how to inspire the next generation of North Dakota students through growing #STEM education and @NASA research with Caitlin Nolby, Marissa Saad and Muriel Friday of @NDSGC.

Thank you for visiting with me!

@ndspacegrant

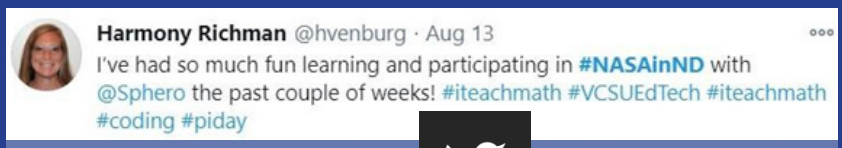
The North Dakota Space Grant Consortium team and student affiliate met with Senator Kevin Cramer to discuss STEM education in North Dakota and the NDSGC. #NASAinND #STEMeducation

@ndspacegrant

“Has space suit, willing to travel.” UND Space Studies PhD student, Will Green, stands next to the NDX-2 Advanced Lunar Suit while wearing a replica of the SpaceX spacesuit and a 3D printed helmet! #NASAinND #spacesuit #letsgo

@ndspacegrant

A young astronaut enjoys UND’s Aerospace Community Day. Aerospace Community Day is a free community event for all ages. Those who attend can tour Aerospace facilities, get their Aerospace Passport stamped, win prizes, and be part of hands-on activities. #NASAinND #FutureLeader #undaerospacecommunityday



Harmony Richman @hvenburg · Aug 13

I’ve had so much fun learning and participating in #NASAinND with @Sphero the past couple of weeks! #iteachmath #VCSUEdTech #iteachmath #coding #piday

@ndspacegrant

Harmony was one of the twenty teachers who participated in Space Grant’s virtual professional development teacher workshop. The workshop focused on exploring Sphero and integrating Sphero into STEM classrooms across North Dakota. #STEMteachers #NASAinND #Sphero

@ndspacegrant

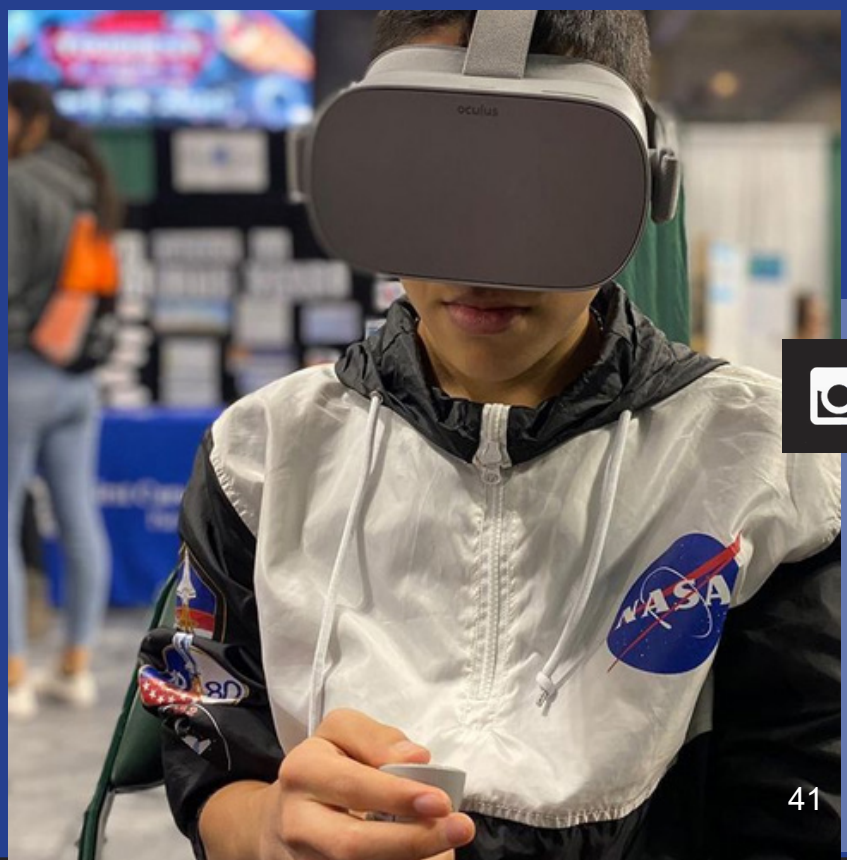
The NDSGC had a great time celebrating the 30th anniversary of NASA Space Grant at Rayburn Hall, in Washington D.C. These four individuals represented North Dakota at the celebration. #NASAinND #WomenInSTEM

@ndspacegrant

Two North Dakota Space Grant representatives pose with Mike Kincaid, the Associate Administrator of the Office of STEM Engagement. Mike is holding a lunar and meteorite sample disk.

@ndspacegrant

Good Morning! A beautiful North Dakota sunrise can be seen behind the UND Inflatable Lunar-Mars Analog Habitat. #Mars #NASAinND #sunrise



@ndspacegrant

U of North Dakota @UofNorthDakota · Sep 3, 2019

The North Dakota Space Grant Consortium at UND hosted a call with @NASA astronaut Christina Koch, currently aboard the International Space Station.

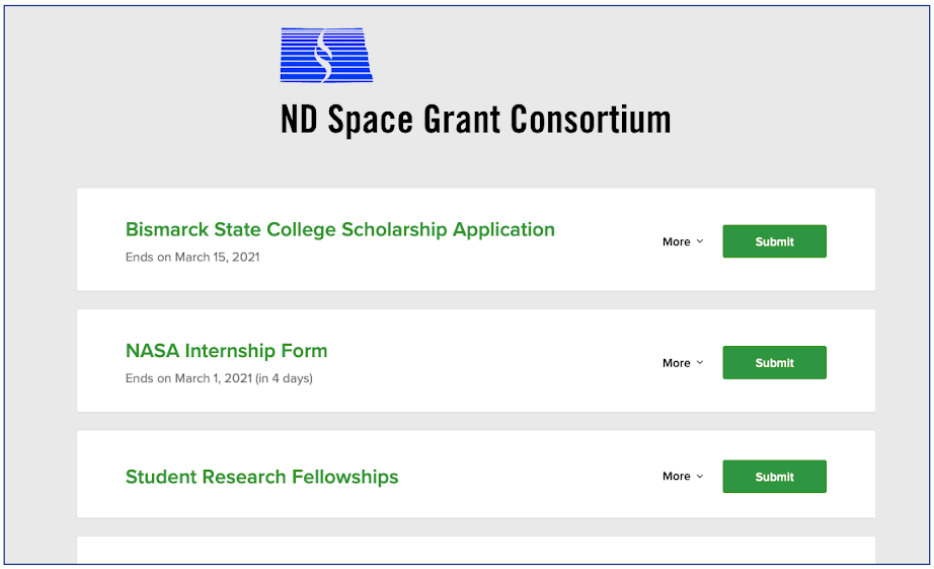
@ndspacegrant

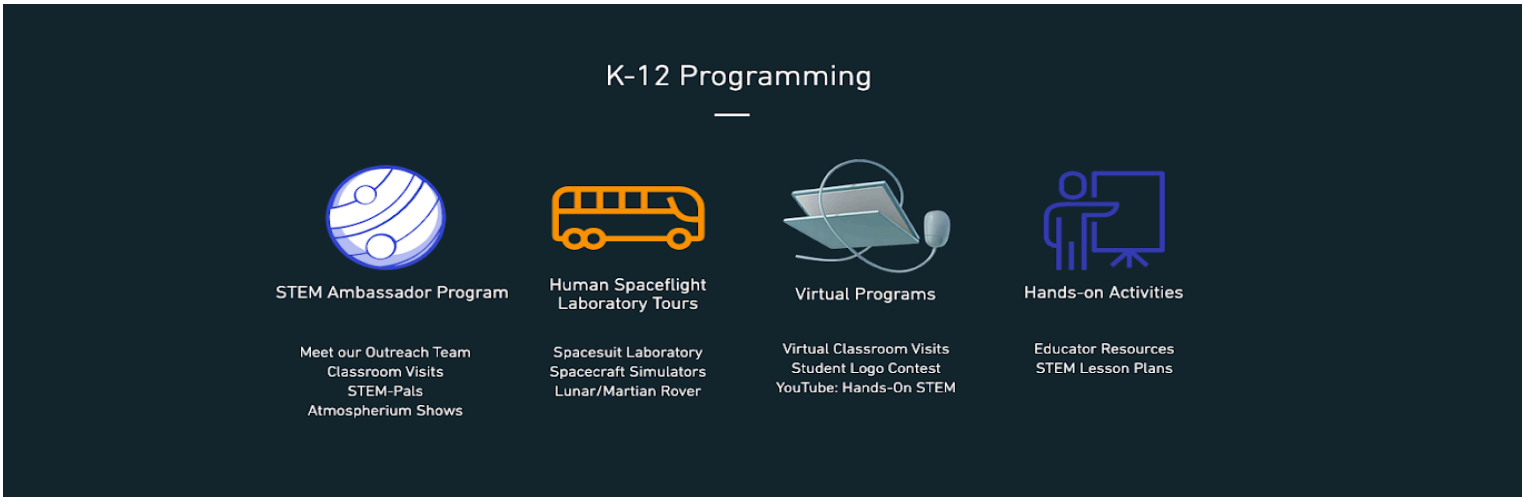
A young student uses a virtual reality headset while at the Northern Valley Career Expo in Grand Forks. #VirtualReality #GrandForks #NASAinND

We Want You!

The NDSGC is always looking to expand its reach with students and educators across North Dakota. If you are interested in any of the opportunities described in this newsletter, want to engage your students or colleagues, or want to contact us, please reach out to any member of the NDSGC team. Contact information is listed on the inside of the front cover.

To view all of the active NDSGC applications, please visit our Submittable application site: https://ndspacegrant.submittable.com/submit. This list of programs change throughout the year and reflect open application windows. You can find each application form on it's respective webpage, within https://ndspacegrant.und.edu.





Educator activities can be found on our K-12 Engagement website. Visit this to get involved with e-field trips to the Human Spaceflight Lab, find STEM lesson plans, request classroom guest speakers, and more!

Social Media

Connect with the NDSGC via social media platforms. Tag us in your posts with #NASAinND. Follow us on the following platforms to stay up to date on events, funding, opportunities, deadlines, exciting projects, and much more!

- NorthDakotaSpaceGrant
- @NDSGC
- @ND_Space_Grant
- North Dakota Space Grant
- @ndspacegrant
- ndspacegrant.und.edu
- NDspacegrant

Thank You!

None of these events would be possible without the amazing work of representatives at the NDSGC affiliate institutions (listed on the back cover). Their efforts allow the NDSGC to expand its reach statewide and ensure that students across North Dakota are able to participate in a number of programs. The NDSGC would like to thank each of them for their dedication to NDSGC programming, promotion of opportunities, and continued involvement.

Thank you also to Kathy Borgen (Graphic Artist in the Department of Space Studies at the University of North Dakota) for designing the Aurora Newsletter each year. Her creativity allows the NDSGC to share successes of the past year and highlight opportunities for more North Dakotans to get involved in future endeavors.

Bismarck
State College

Cankdeska Cikana
Community College

Dakota College
at Bottineau

Dickinson
State University

Gateway to
Science Center

Lake Region
State College

Mayville
State University

Minot
State University

North Dakota State
College of Science

North Dakota
State University

Nueta Hidatsa
Sahnish College

Sitting Bull
College

State Historical Society
of North Dakota

Turtle Mountain
Community College

United Tribes
Technical College

University of
North Dakota

Valley City
State University

Williston
State College