



The Aurora

Autumn 2011





Notes from the Director

North Dakota Space Grant Consortium

University of North Dakota
North Dakota State University
Dickinson State University
Mayville State University
Minot State University
Valley City State University
Cankdeska Cikana
Community College
Fort Berthold
Community College
Sitting Bull College
Turtle Mountain
Community College
United Tribes
Technical College
Bismarck State College
Lake Region State College
Dakota College at Bottineau
North Dakota State
College of Science
Williston State College
Grand Forks Herald
North Dakota Heritage Center
Gateway to Science Center

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Deputy Director:

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701-777-4856 701-777-3711 (fax)

Website:

<http://ndspacegrant.und.edu/>

Dear Colleagues,

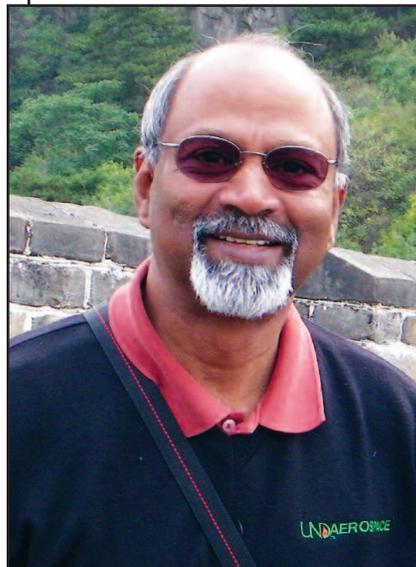
As I complete my first year as the Director of the North Dakota Space Grant Consortium (NDSGC), it gives me great pleasure to bring out some of the highlights of the past year through this edition of *The Aurora*. At the outset, I would like to acknowledge the efforts of Suzette Rene Bieri and Kathy Borgen in compiling this issue. The direct goal of the NDSGC continues to be on efforts to advance NASA's education priorities of STEM workforce development, student led projects, summer learning opportunities and strengthening ties with NASA Centers through focused research collaborations. Fittingly, this autumn 2011 issue of *The Aurora* contains information on our activities and achievements in these areas, particularly on our scholarship and fellowship winners, various research projects funded by Space Grant, as well as student participation in competitions. The hard work and dedication of our consortium members are evident through these achievements.

The past year has been exceptionally good for us. We were successful in all the grant proposals submitted including the two NASA CAN proposals totaling \$1.5m. The foundations for these NASA CAN projects were laid through Space Grant funding in the past.

As I write this, we are awaiting the results of our augmentation proposal to NASA for the current financial year. Included in this proposal are ideas that I received from many of you during my travels around the state in summer/fall of 2010 and during our annual meeting in spring 2011. For example, we have proposed enhancing the scholarship, fellowship and summer internship funds available to students; offering an introductory level space studies course from UND through the Interactive Video Network that will be available to students in our affiliate colleges; developing lab courses at affiliate colleges to complement this introductory space studies course; supporting a balloon payload competition involving middle school, high school, two year and four year college students; participation in national level space conferences by our students; and testing of the North Dakota developed inflatable lunar habitat, rover and space suits in the Badlands

with the help of students from across the state of North Dakota. I am confident that our proposal will be viewed favorably by NASA and we will have the resources to execute these ideas, leading to another successful year.

However, as you all know, Congress has cut the budget for several programs and Space Grant is also facing a small reduction in the budget for the next year. This also means that we have to be innovative in proposing new ideas to achieve the goals mentioned earlier. We need to be creative, flexible and at the same time keep it simple. I very much look forward to continued interactions with you all in coming up with great ideas for the future.



Santhosh Seelan

Cover Photo: Members of the UND Lunabotics team work in the lab on their robot. Pictured left to right are: Joshua Rogers; Ben Gunvalson; Kaylein Tradup; and Daniel Basom.

Lillian Goettler Scholarship Recipient 2010



Lillian Goettler Space Grant Scholarship

Lillian L. Goettler was a distinguished NDSU professor. Awarded a doctorate in Mechanical Engineering from the University of Massachusetts-Amherst, she came to NDSU with her husband in 1978.

Lillian Goettler became a trailblazer for women in science by being a role model for girls and young women. Her Ph.D. in Mechanical Engineering was unusual for a woman at that time. In addition, she had an intense interest in involving females in science throughout her career. Lillian Goettler died August 14, 1983.

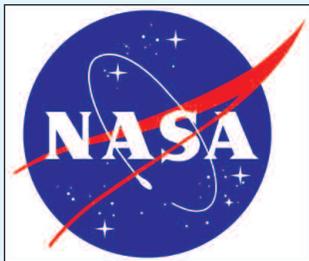
This scholarship is given each year to a female undergraduate student in engineering at NDSU who best exemplifies the academic and leadership qualities of Dr. Goettler and who shows the potential for a promising career in engineering. Recipients must be American citizens and have a minimum of a 3.5 grade point average.



Kassandra Almen
Electrical Engineering
North Dakota
State University

"My future goal is to specialize in biomedical engineering within the Electrical Engineering program. I am determined to pursue this field because it would allow me to fulfill my passion for helping other people. I think it would be highly rewarding to use my skills in math and science to design a device that would improve someone's quality of life. Following graduation I hope to find a biomedical engineering position that continues to give me that fulfillment of helping people in need."

Background of the National Space Grant College and Fellowship Program



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 850 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, mathematics, engineering and technology, or STEM, as well as curriculum enhancements and faculty development. Member colleges and universities also administer pre-college and public service education projects in their respective states.



NDSGC Scholarships

Fall 2009 through Spring 2011

Every academic year, Space Grant provides each of the affiliate two year, tribal and four year colleges with a set amount of funding for scholarships. Each college chooses its Space Grant scholarship recipients and the amount of money that each scholarship is worth.



Valley City State University

Caitlin Miller
 Ethan Fylling
 Nick Faure
 Trent Kosel
 Jenna Vrchota
 Shelby Wilhelm
 Ashley Gierke
 Jordan Backstrom
 John Lindstrom
 Kayla Jilek
 Erin McLean
 Margaret Wilson
 Jessica Halvorson
 Christine Gilbertson
 Candace Kraft
 Amy Field
 Trenton Kosel
 Adam Bommersbach
 Jordan Backstrom
 Luke Vaneps
 Jacob Mertes
 Larissa Plecity
 Mariah Westerhausen
 Megan Tompkins
 Margaret Wilson
 Eric McLean
 John Lindstrom
 Jenna Vrchota
 Nick Faure
 Josh Evans
 Amber Daugherty
 Dan Hepner
 Kayla Jilek
 Alecia Stark
 Michael Tomlinson



Lake Region State College

Josephene Maus
 Jessica Kurtz
 Teri Paine
 Britt Helten
 John Swiecichowski
 Nicholas Bittner
 Veronica Sanford
 Terri Moser
 Jonathan Tweet
 Mike Parker
 Casey Larson
 Mandi Binas
 Lindsey Homelvig
 Paul McKay
 Anna Nienhuis
 Mary Wald
 Heather Wang
 Brittany Wirth
 Ted Zuercher



Sitting Bull College

Marjorie Comeau
 Palani Luger
 Adam Rookey
 Harriet Black Hoop
 Marjorie Comeau
 Adam Rookey
 Ann Solano
 Adam Baker
 Derek Jamerson



Minot State University

Bethany Shehan
 John Reiner
 Rebecca Peters
 Carson Moen
 Scott Jones
 Chris Grey
 Jodi Edin
 Philip Eaton
 Brandon Devine
 Thomas Carreher
 Megan Brunkhorst
 Brandon Devine
 Jordan Hughes
 Rebecca Peters
 Christopher J. Schaefer
 Abby R. Schafer
 Camille Steen
 Theodore Thorsgaard



Dickinson State University

Kale Frederick
 Aaron Kelly
 Ryan Dukart
 Aaron Meyer
 Tyler Schmidkunz
 Keith Frederick
 Afton Garland
 Maggie McCoy
 Jenifer Murray
 April Robinson
 Alison Sadowsky
 Kathryn Jackson
 Aaron Kelly
 Chris Norman
 Jason Robbins
 Meredith Andrus
 Ryan Bogner
 Afton Garland
 Brittney Ridl
 April MillerRobinson



Mayville State University

Josh Berg
 Elizabeth Cakebread
 Hardy DeLong
 Jennifer Keating
 Jessica Ness
 Jake McLain
 Anthony Pohl
 Kelli Smart
 Josh Berge
 Hardy DeLong
 Krissandra Jentz
 Kelli Smart
 Patrick VandenBoss
 Thomas Creager
 Lori Gates
 Mike Gibson
 Jennifer Keating
 Laura Kilness
 Maggie Maroney
 Jake McLain
 Jessica Ness
 Anthon Pohl
 Christopher Strand



North Dakota State College of Science

Leslie Yellow Hammer
 Meg Claypool
 Hannah Schradick
 Cameron Sondreal
 Sydney Boschert
 Anthony J. Sand, Jr
 Daniel Rosenthal
 Nelson Aamodt
 Michael Skroch
 Sydney Boschert
 Alyssa Breuer
 Meg Claypool
 John Heidt
 Alexis Schick
 Trevor Thiele



Turtle Mountain Community College

David Grandbois
 Tyler Stein
 Daniel Flansburg
 Arlin Thomas
 Lee Davis
 Terry Poitra
 Nicole J. Azure
 Corey M. Morin
 Stacy Homes
 Marshall LaRocque
 Erin Trottier
 Valerie Malaterre
 Joseph Malaterre
 Sherry Crissler
 Harold Counts
 Kirsten Morin



Bismarck State College

Stacey Gerhardt
 Bradley Hoffman
 Kayla Jahner
 Kadra Kalamaha
 Ketia Louissaint
 Stephanie Morris
 Martina Simons
 Amanda Krieger
 John Kritzberger
 John Mittleider
 Matthew Klein
 Nicholas Opdahl
 Michael Schmidt
 Brendan Bohn

NDSGC Scholarships



Cankdeska Cikana Community College

Madeline Harrison
 Magdeline Harrison
 Waynita Chaske
 Demi Butts
 Joseph Robertson
 Thomas Weightman
 Samuel Merrick, Jr
 Leah DeMarce
 Craig Brown, Jr.
 Twyla Brown
 Waynita Chaske
 Dustin Dauphinais
 Anabel DeMarce
 Shantel DuBois
 Denise Frederick
 DeSawn Lawrence



Dakota College at Bottineau

Kara Davis
 Cayla Engh
 Janna Mikkelson
 April Moen
 Monica Pritchett
 Nick Sundahl
 Mark Henke
 Marleigh Kuchar
 Jacob Oster
 Kylie Thom
 Karly Brummond
 Veronica Sanford
 Andres Seeberg



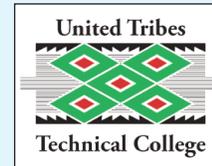
Fort Berthold Community College

Sasha Sillitti
 Tanya Driver
 Maurianna Loretto
 Edward Krueger
 Bennett Everett, Jr.
 Ron Craig



Williston State University

Kimberly Osburn
 Lucas Natwick
 Zachary Kjos
 William McCord
 Nicole Walther
 Eric Wilson
 Lucas Natwick
 Jordan Braun



United Tribes Technical College

Jessica Pumpkin Seed
 Deanna Small
 Joseph Lawrence
 Lora Grey Bear
 Jacob West
 Naomi Folson
 Genevieve Bullhead
 Shane Brunelle
 Amy Lee
 Daniel Myers
 Elizabeth Sam
 Deanna Small
 Mikell Starr
 Renee Thin Elk
 Cletis Wigon
 Aldrick Calabaza
 Amy Lee
 Alvin McLeon
 Christopher Montclair
 Jenna Skunk Cap
 Deanna Small



Madeline and Magdeline Harrison are twin sisters who were recipients of Space Grant scholarships in the spring of 2011. They are from St. Michael, North Dakota and are currently enrolled in the pre-nursing program at Cankdeska Cikana Community College. Both are on the President's List with nearly identical grade points.



Space Grant Fellowships

The NDSGC research fellowships are given on a competitive basis to undergraduate and graduate students at affiliate colleges who are doing research that is of particular interest to NASA.



Lane Azure
Education
Doctoral student
North Dakota State University
"Impact of Ethnomathematics on American Indian Students at Cankdeska Cikana Community College"

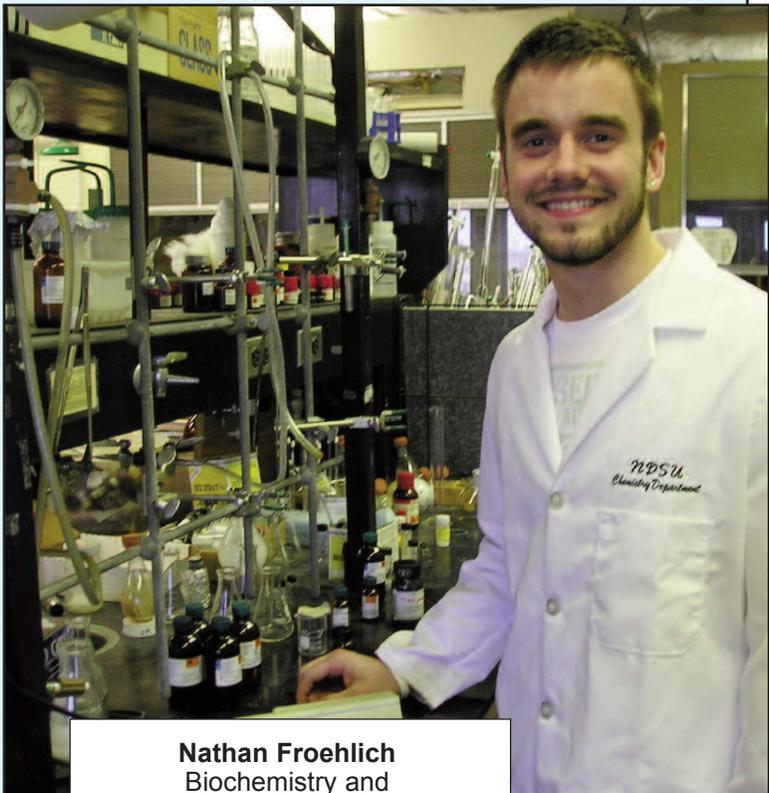
John Boucha
Space Studies
Graduate student
University of North Dakota
"High Altitude Balloon Imaging"

Aron Fisk
Mechanical Engineering
Graduate student
North Dakota State University
"Impact of Ultraviolet Light on Rigid Polyurethane Foam"

Nicholas Bittner
Wind Power
Undergraduate student
Lake Region State College
"GPS and Satellite Imaging for Use in Agriculture"

Thomas James
Electrical Engineering
Undergraduate student
University of North Dakota
"Sanbots/Lunabotics Mining Competition"

Otto Borchert
Computer Science
Doctoral student
North Dakota State University
"The 3D Virtual Mars Explorer"



Nathan Froehlich
Biochemistry and Molecular Biology
Undergraduate student
North Dakota State University
"Chiral Thioureas with Fluxional Groups/Application in Organocatalysis"

Space Grant Fellowships



Guy Hakanson
Computer Science
Graduate student
North Dakota State University
"The 3D Virtual Mars Explorer"

Korby Heinsen
Mechanical Engineering
Graduate student
University of North Dakota
"Process Optimization and Bond Classification in Transient Liquid Diffusion Bonding of Iron, Nickel and Titanium Alloys"



Jesse Henrikson
Mechanical Engineering
Graduate student
University of North Dakota
"Corrosion Fatigue Testing of Friction Stir Welded Aluminum"

Jeremy Hoffart
Chemistry
Undergraduate student
Lake Region State College
"Use of Satellite Imagery for Agricultural Applications"

Darren Grau
Space Studies
Graduate student
University of North Dakota
"Variable Stars: T Tauri Stars"



Tyler Jacobson
Mechanical Engineering
Undergraduate student
University of North Dakota
"NDX-2"

Jon Mason
Space Studies
Graduate student
University of North Dakota
"Relative Humidity Near Cloud Edges: Airborne Data Analysis"

Levi Kingery
Mechanical Engineering
Undergraduate student
North Dakota State University
"Predictions of Heat Transfer, Transition and Aerodynamic Loss at Low Reynolds Numbers in High Speed Flows"

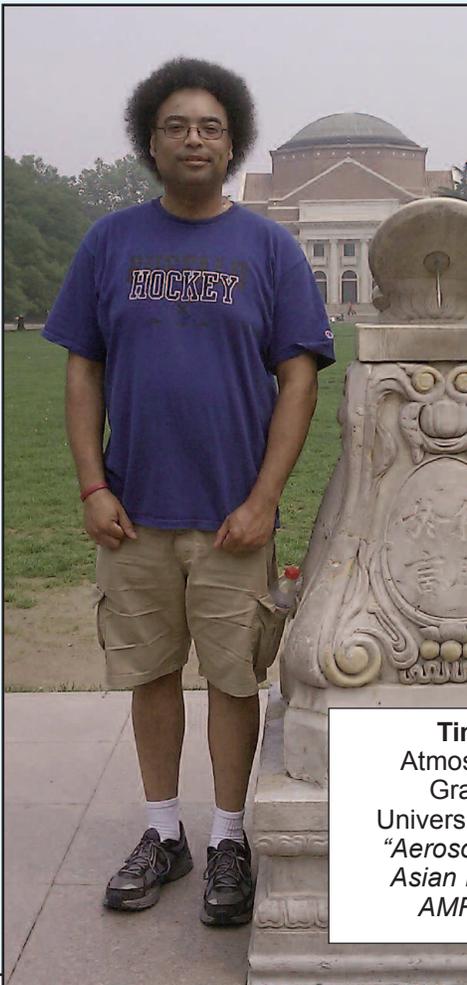


Space Grant Fellowships

Michael Dennis Sisk
Environmental Engineering
Doctoral student
University of North Dakota
*"Sustainable Design
for a Space Habitat"*

Jon J. Smith
Electrical Engineering
Graduate student
University of North Dakota
*"Wearable Space Suit
Antenna"*

Matthew Voigt
Space Studies
Graduate student
University of North Dakota
"Solar Astronomy"



Timothy Logan
Atmospheric Sciences
Graduate student
University of North Dakota
*"Aerosol Indirect Effect of
Asian Dust Events Over
AMR Site in China"*



Caitlin Nolby
Space Studies
Graduate student
University of North Dakota
*"Education Outreach
in Astronomy"*

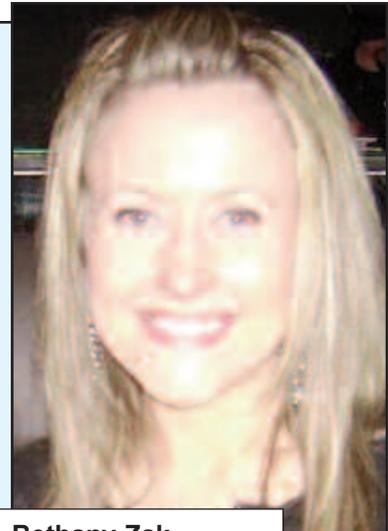
Abonga Zony
Electrical Engineering
Graduate student
University of North Dakota
*"Human Performance
Based on EEG Signals"*

Nicholas Goenner
Mechanical Engineering
Graduate student
North Dakota State University
*"Fire Retardancy of
Polyurethane Systems"*

Space Grant Fellowships



Drew Pavlacky
Materials and Nanotechnology
Doctoral student
North Dakota State University
"Advanced Polymer Matrix Composites"



Bethany Zak
Space Studies
Graduate student
University of North Dakota
"Solar Physics"

Per Jensen
Computer Science
Graduate student
North Dakota State University
"The 3D Virtual Mars Explorer"

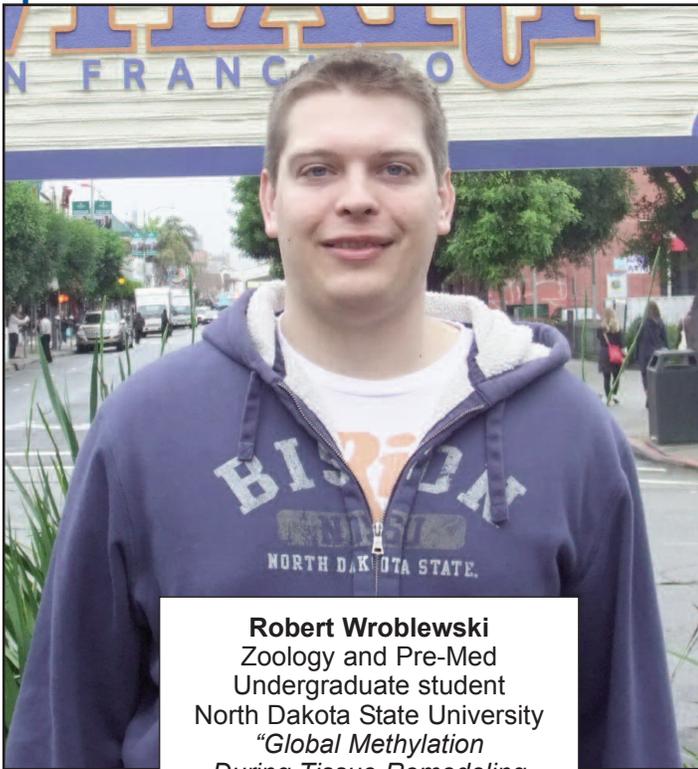
Kevin Ivanca
Electrical Engineering
Undergraduate student
University of North Dakota
"Human Performance Evaluation Based on Brain Signals During Planetary Space Suit Testing"



Behnjamin Zib
Atmospheric Science
Graduate student
University of North Dakota
"Arctic Climate: Investigating the Major Similarities and Differences in Atmospheric Variables Between Two Re-analysis Data Sets"



Space Grant Fellowships



Robert Wroblewski
Zoology and Pre-Med
Undergraduate student
North Dakota State University
*"Global Methylation
During Tissue Remodeling
and Growth"*

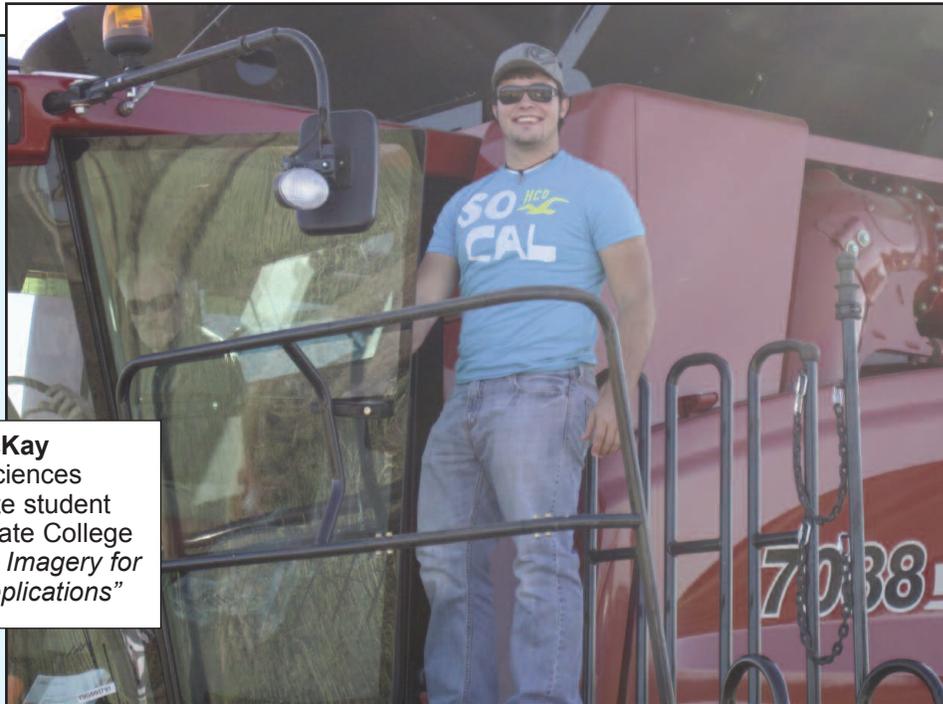
Thomas Kalinoski

Biochemistry
Undergraduate
student
North Dakota
State University
*"Chiral Bronsted
Acid Catalyzed/
Enantioselective
Diels-Alder
Cycloaddition"*



Kirk Bottelberghe
Mechanical Engineering
Undergraduate student
North Dakota State University
*"Fire Retardancy of
Polyurethane Systems"*

Space Grant Fellowships

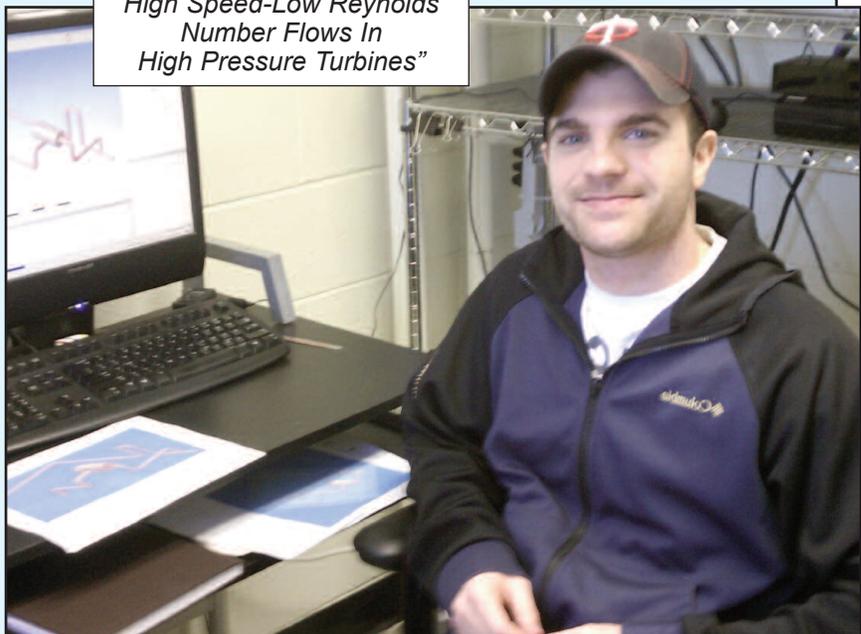


Paul McKay
Physical Sciences
Undergraduate student
Lake Region State College
*"Use of Satellite Imagery for
Agricultural Applications"*

Jamison Huber
Mechanical Engineering
Undergraduate student
North Dakota State University
*"Predicting the Heat Transfer
and Aerodynamic Losses in
High Speed-Low Reynolds
Number Flows In
High Pressure Turbines"*



Corey Bergsrud
Electrical Engineering
Graduate student
University of North Dakota
"Small Antenna Design"





Meet an Affiliate



Donna Seaboy **Sitting Bull College**

Donna Seaboy has been employed at Sitting Bull College for 32 years (30 of them as the Financial Aid Director). She received her BS in College Studies from Minot State University in 1994 and her Masters in Management from the University of Mary in 2007.

Donna has served in various capacities with the North Dakota Association of Student Financial Aid Administrators (President Elect-2007; President-2008; Past President-2009; Treasurer-2010; Volunteer Chair for College Goal Sunday-2009, 2010, current; as well as various committees in NDASFAA). She has also served as the ND Representative on the Rocky Mountain Association of Student Financial Aid Administrators in 2008 and has also served on committees with RMASFAA. She is a charter member of HEROS (Higher Education Resource Organization for Native American Studies) and Mandan Dollars for Scholars. Donna is a representative for Sitting Bull College serving on the North Dakota Space Grant Consortium committee.



Sitting Bull College, founded in 1971 and chartered under the Standing Rock Sioux Tribe, is a federally recognized 501(c)3 charitable organization with federal tax exempt status - EIN# 23-7373765. With an open enrollment policy, Sitting Bull College is a fully accredited institution of higher learning, offering two-year Associate degrees and four-year Bachelor of Science degrees, with the main campus located in Fort Yates, North Dakota and one remote site in McLaughlin, South Dakota.

Summer Faculty Fellowships 2010-2011



The following faculty at Space Grant affiliate colleges and universities were awarded Summer Faculty Fellowships for 2010-2011. These fellowships were given so that faculty could develop new courses or revise already existing courses in the fields of science, technology, engineering or mathematics.



David Dvorak
University of
North Dakota

Ron Fevig
University of
North Dakota

Donald Hoff
Valley City
State University

**Victoria
Johnston Gelling**
North Dakota
State University

Paula Martin
Dickinson
State University

**Angela
Bartholomay**
Dakota College
at Bottineau

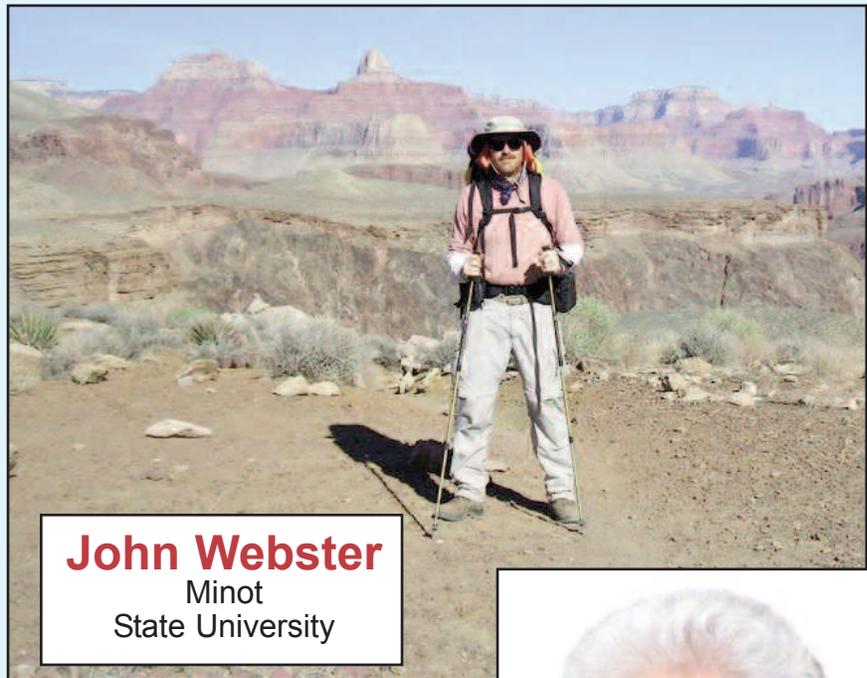
Corinne Brevik
Dickinson
State University

Jeffrey Sieg
Mayville
State University

Kevin Gyolai
North Dakota
State College
of Science

Eric Brevik
Dickinson
State University

James Casler
University of
North Dakota



John Webster
Minot
State University



Shannon King
North Dakota State
College of Science

James Ibriq
Dickinson
State University



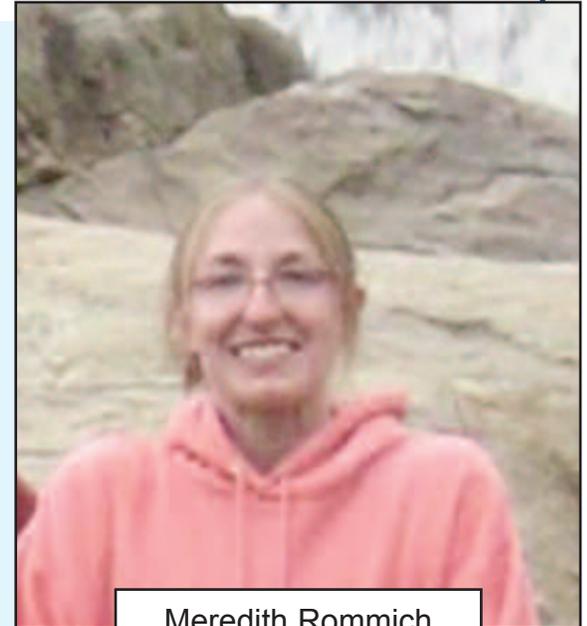


Research Focus Areas

Space Grant provides funding at its affiliate colleges for research projects that are of particular interest to NASA. Projects have been funded at Dickinson State University, North Dakota State University and the University of North Dakota.

Dickinson State University

Dr. Eric Brevik, Department of Natural Sciences at Dickinson State University, received funding for a RFA project titled, "Undergraduate Research Collaboration with NASA Goddard Space Flight Center." This project, which involves an undergraduate student from DSU, Meredith Rommich, has the goal of using Landsat data to detect cover crops in North Dakota. Dr. Brevik and Rommich worked with a NASA Goddard collaborator, Eric Brown de Colstoun, to develop an implementation plan for the project. This was the first RFA-funded project and was an important step forward in developing NASA research in North Dakota.



Meredith Rommich

University of North Dakota

John Nordlie, Research Associate, UND, received funding for a RFA project entitled "UAS Based Remote Sensing for Precision Agriculture." This project involved working with farmers in the region to detect changes in the agricultural fields due to damage caused by insect, fungus, water, hail, wind, etc. The project is expected to lead to operationalization of the use of small, easy to use, unmanned aerial systems by farmers so that they can collect their own remote sensing data when and as needed, without having to depend on the satellite data providers.

Fort Berthold Community College

Dr. Kerry Hartman of the Fort Berthold Community College, an institution tribally chartered by the Three Affiliated Tribes of the Mandan, Hidasta and Arikara Nations, received RFA funding for the project "Utilizing Remote Sensing to Investigate the Surface Impacts of Oil Development on the Fort Berthold Indian Reservation." The project which involves students from the college and USGS scientists from EROS Data Center, aims to create a baseline database of information regarding the environmental impacts of surface activities of oil development on the Fort Berthold Indian Reservation.

University of North Dakota

Dr. Xiquan Dong and Tim Logan, graduate student in Atmospheric Sciences at UND, received funding for RFA project entitled "Investigation of the Physical and Chemical Properties of Asian Dust and Pollution using NASA Surface-Satellite and DOE ARM Mobile Facility Observations in China." The research investigates the properties of Asian dust/pollution within the Asian continent.



Dr. Xiquan Dong
Professor, Atmospheric Sciences
University of North Dakota

Research Focus Areas



North Dakota State University

Dr. Ghodrat Karami of North Dakota State University received RFA funding to continue the design of a Human Powered Vehicle (HPV). The group of students at NDSU Mechanical Engineering developed a conceptual design, implemented their design in drawings, selected materials and manufactured and assembled the vehicle. They examined and challenged the vehicle under loading and in practice. The group attended the 2011 HPV Competition sponsored by ASME which was held April 29 - May 1, 2011 at the Indianapolis Motor Speedway, Indianapolis, IN.



Human Powered Vehicle



Human Powered Vehicle and Crew



FIRST Robotics

FIRST--For Inspiration and Recognition of Science and Technology “The Varsity Sport for the Mind”

Each year Space Grant sponsors three FIRST Robotics teams in the state. The teams the last two years have been from Hatton/Northwood, Minot and Cando. All teams have performed admirably at the regional level and Hatton/Northwood has done well at the national level.

The FIRST Robotics Competition is an international high school robotics competition organized by FIRST. Each year, teams of high school students compete to build robots weighing up to 120 pounds (54 kg), not including battery and bumpers, that can complete a task, which changes every year. Teams are given a standard set of parts and the game details at the beginning of January and are given six weeks to construct a competitive robot, that can operate autonomously as well as when guided by wireless controls, to accomplish the game's tasks.

The mission of FIRST is to inspire young people to be science and technology leaders, by engaging them in exciting mentor-based programs that build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership.



Team 876
Hatton/Northwood Thunder Robotics
(Hatton, Northwood and Aneta)



Team 2418
Boeing/University of North Dakota/
Northern Lights Council-Boy Scouts
(Minot)



Team 877
North Star Public High School/
North Dakota Space Grant Consortium
(Cando)

Research Projects



RockSat

RockSat is a payload canister that provides a standard payload volume and weight for launch on a sounding rocket for a relatively low cost. The RockSat payload canister is a modular system of cans designed for suborbital flights at Wallops Flight Facility. A standardized approach provides customers low cost access to space. Payloads are designed by students.

Dr. Ron Fevig

Assistant Professor
Space Studies
University of North Dakota

High Altitude Student Platform (HASP)

The High Altitude Student Platform (HASP), sponsored by NASA, is designed to carry up to twelve student payloads to an altitude of about 36 kilometers with flight durations of 15 to 20 hours using a small volume, zero pressure balloon. It is anticipated that the payloads carried by HASP will be designed and built by students and will be used to flight-test compact satellites or prototypes and to fly other small experiments.

By getting the students involved with every aspect of the program HASP hopes to fill the gap between student built sounding balloons and satellites, while also enhancing the technical skills and research abilities of the students.



Wade Snaar

Electrical Engineering
Undergraduate
University of North Dakota



Research Projects



BalloonSat

A BalloonSat is a simple package designed to carry lightweight experiments into near space. They are a popular introduction to spacecraft engineering for middle school, high school and college students.

Often the design of a BalloonSat is constrained by weight and volume. This encourages good engineering practices and introduces a challenge. The airframe material is usually Styrofoam or Foamcore, as they are lightweight, easy to machine, and provide reasonably good insulation.

Most carry sensors, data loggers and small cameras operated by timer circuits. Popular sensors include air temperature, relative humidity, tilt, and acceleration.

Generally, the BalloonSat carries multiple payloads that together total no more than twelve pounds. The helium filled balloon can ascend to an altitude of over 100,000 feet.

University Student Launch Initiative

The University Student Launch Initiative (USLI) is a competitive rocketry program sponsored by the Marshall Space Flight Center in Huntsville, Alabama. The competition is open to all colleges and universities in the United States. Teams from UND have participated for the past several years with students from the Departments of Mechanical Engineering, Space Studies and Physics designing, constructing and testing the rocket. Once the rocket has been deemed flight ready, the team transports it to Huntsville. Rules of the competition are that the rocket must be re-useable, go to an altitude of one mile and carry a science payload.



UND Observatory

The UND Observatory is located 17 miles west of Grand Forks. Its mission is: to conduct basic, but diverse, astronomical research projects; to serve as a training facility for undergraduate and graduate students; to assist in the development of advanced astronomical research at UND; and to serve as an educational resource for K-12 teachers and students throughout North Dakota.

Research Projects



Lunabotics

Engineering Team Wins NASA Joe Kosmo Excellence Award in Lunar Mining Competition

Competing against 45 other teams from universities around the world, UND students from the School of Engineering and Mines took top honors--the Joe Kosmo Award of Excellence--for scoring the most points in the competition, which took place May 26-28, 2011 at the Kennedy Space Center Visitor Complex in Florida. The competition's objective was to design and build a robot capable of collecting and depositing lunar soil, called "regolith."

UND's team, which consisted of 12 students and two professors, constructed a skid steer-type robot for the competition.

The Joe Kosmo Award of Excellence combined the scores (points earned) from all competition categories. It included a school trophy, Kennedy launch invitations, and up to \$1,500 travel expenses for each team member and one faculty advisor to attend NASA Desert RATS. The team also placed second in the on-site mining competition earning a \$2,500 cash award.

The competition also required the teams to conduct outreach activities for K-12 students to increase the public's understanding of NASA's importance and to generate interest in math

and science. The UND team excelled in its outreach activities which included presentations, mentoring, and providing learning activities to elementary, middle, and high school students. The team consisted of mechanical engineering students Daniel Basom, Andrea Dickason, Michael Gereszek, Benjamin Gunvalson, Jacob Hultberg, and Kaylein Tradup; electrical engineering students Jason Eisenzimmer, Craig Kennedy, Joshua Rogers, and Chul Ho Yang; computer science students Sanchit Goyal and Bharat Kulkarni. Faculty advisors for the team are Dr. Jeremiah Neubert (ME) and Dr. Naima Kaabouch



UAV Remote Sensing for Agricultural Purposes

Small UAVs (Unmanned Aerial Vehicles) can be used by farmers themselves to provide for a view from above for monitoring field conditions. The UAV shown here has just been hand launched by Jeremy Smith, a graduate student in the UND Department of Space Studies. This UAV is eight feet by four feet and weighs only six pounds.





Bismarck State College



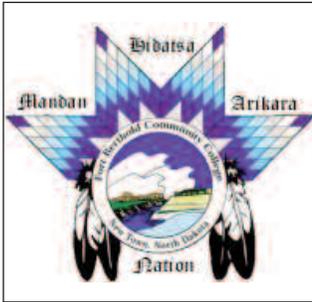
Cankdeska Cikana Community College



Dakota College at Bottineau



Dickinson State University



Fort Berthold Community College



Gateway to Science Center



Grand Forks Herald



Lake Region State College



Mayville State University



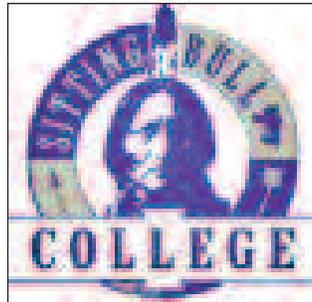
Minot State University



North Dakota State College of Science



North Dakota State University



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