

NASA South Dakota Space Grant Consortium



*Inspiring the next
generation of explorers*

Consortium Description

The South Dakota Space Grant Consortium (SDSGC) seeks to increase the number of students in STEM education and careers through *coordinated programs* in higher education, precollege education, informal education, and public service. A major priority is to increase diversity in STEM fields by recruiting female students and students from underrepresented groups. The consortium's 18-member network includes public, private, and tribal universities; informal science centers; industry partners; and state and federal government agencies such as the Sanford Underground Research Facility and the United States Geological Survey's EROS Data Center.

Summary of SDSGC Programs

As an active participant in the national network of Space Grant consortia, SDSGC plays a critical role in implementing NASA's Office of Education programmatic priorities at the state level. This integrated structure—*national network and state focus*—results in strategic partnerships to address critical state and national priorities in STEM competitiveness.

Major SDSGC program areas include:

- Undergraduate and graduate fellowships for STEM students
- Support for NASA and aerospace internships
- College robotics and interdisciplinary engineering design teams
- Seed grants for innovative research and education projects
- K-12 teacher grants and student opportunities
- Precollege robotics teams

NASA investments in these areas are highly leveraged, with non-federal matching at a rate of at least 70% of NASA funds.

Through follow-on grants and competitive NASA awards, SDSGC and the closely related SD NASA EPSCoR program have delivered nearly a 10-to-1 return on NASA's base dollar investments.

Lead Institution:

South Dakota School of Mines & Technology

Affiliate Organizations:

Higher Education

- South Dakota State University
- University of South Dakota
- Black Hills State University
- Dakota State University
- Northern State University
- Augustana College
- Oglala Lakota College
- Sinte Gleska University
- Lake Area Technical Institute

Informal Education

- The Journey Museum
- South Dakota Discovery Center
- Badlands Observatory
- Black Hills Astronomical Society

State and Federal Research Centers

- Sanford Underground Research Facility
- USGS Center for Earth Resources Observation & Science (EROS)

Industry

- Raven Industries/Aerostar International
- RESPEC



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Student Research and Internships

Lilly Jones—Oglala Lakota College

Lilly Jones is a 2013 graduate in Earth Science from Tribal College affiliate Oglala Lakota College. Lilly received multiple SDSGC educational fellowships during her undergraduate career and in FY2012 was awarded a research stipend for her project titled *"A Resource Inventory of Selected Sites Adjacent to the White Clay Fault in Southwest South Dakota,"* located in the badlands of the Pine Ridge Indian Reservation. Lilly was one of only 12 students statewide selected to present her research to legislators at the 2013 Student Research Poster Session at the State Capitol Rotunda in February 2013. In March, Lilly was selected to receive a prestigious National Science Foundation Graduate Research Fellowship which will be renewable for up to three years. She will begin her MS program in Geology and Geological Engineering at South Dakota School of Mines & Technology in fall 2013 and eventually plans to earn her PhD in Earth and planetary sciences. Her research interests include stratigraphy, sedimentary geology, surficial processes, and the geology of Mars. Her goal is to become a planetary scientist and to work at NASA or a university conducting research on geologic data from NASA missions, for example, interpreting data from the Mars rovers in terms of sedimentary processes and past climate.



Travis Davis—South Dakota School of Mines & Technology

Travis Davis is a Mechanical Engineering senior at SDSM&T, raised on a ranch outside of Camp Crook, SD (population 100). After completing internships at John Deere and Caterpillar, he learned of NASA's

Undergraduate Student Research Program, and in 2011 was accepted to work on cryogenic propellant storage technology at Marshall Space Flight Center. Davis said, *"If we can hone this technology ... it will change the way we travel into and through space. The effect that this research could have on space travel and the world is astounding."* In 2012, Travis was accepted into the MSFC co-op program in the Valves, Actuators, and Ducts department. During his most recent co-op rotation, Travis helped to disassemble and refurbish an Apollo-era Saturn V F-1 engine in the center's Propulsion Research Development Laboratory. During hot-firing of the engine's gas generator, the team was able to record sensitive measurements that were not possible during the 1960s. These tests, and other industry research designed to mitigate risks, will enable NASA to build the most powerful and affordable rocket ever launched.

