

**FY 2004 PROGRAM PLAN**  
**SOUTH DAKOTA SPACE GRANT CONSORTIUM**  
<http://www.sdsmt.edu/space>

In the coming year, the South Dakota Space Grant Consortium (SDSGC) will progressively continue to leverage our growing resources through linkage of research, educational outreach, and public service efforts. The SDSGC has become one of the key organizational forums in South Dakota for bringing together talented people, their ideas, and collaborative projects in education, research, and technology-based economic development. The Consortium's 34 members and affiliates will continue to work together to expand opportunities for all the people in South Dakota to understand and participate in NASA's aeronautics and space programs by supporting and enhancing science and engineering education, research, and outreach programs. Our goals and planned projects for the coming year are described below in the following seven categories: 1) Research Infrastructure, 2) Higher Education, 3) K-12 Outreach, 4) Other Public Service, 5) Fellowships and Scholarships, 6) Workforce Development, and 7) Administration.

In addition to this FY2004 Program Plan, a valuable database of SDSGC goals, efforts, and activities is available at the SDSGC website <http://www.sdsmt.edu/space/>. Several website addresses are given throughout this document as sources for additional information on certain items discussed in the Program Plan, but none need to be accessed to complete a review of the Plan.

SDSGC will continue to make in-roads with the State of South Dakota and other potential funding entities in SD to enhance the mutual exchange of science, technology, and education. Similar to our successful partnership with former Governor William J. Janklow's office regarding the acquisition of State funds to help support Badlands Observatory's "Dark Skies & Bright Minds" telescope project, SDSGC will strive to find new sources of additional external funding and matching dollars for Consortium and NASA EPSCoR activities. Such outside funding and the new projects associated with that funding will be used as a measure of success (metric) by SDSGC in building educational, research, and public service projects in SD. One such effort in 2004 will be working with the offices of Governor Michael Rounds and Senator Tom Daschle to an effort to secure funds for continued support of pre-college robotics programs (i.e., FIRST and BEST Robotics) in South Dakota.

One of the strengths of the SDSGC is the partnership with the six Native American colleges and universities in our state, namely: Oglala Lakota College (OLC), Sinte Gleska University, Si Tanka College, Lower Brule Community College, Sisseton Wahpeton Community College, and Sitting Bull College. We will continue to place special emphasis on on-going outreach to Native Americans through our ties with the Tribal Colleges and several of the Native American K-12 schools in South Dakota. Examples include, but are not limited to,

- 1) SDSGC participation in the "NativeView" initiative described below in the Higher Education section of the Program Plan,
- 2) Partnerships with OLC and Sinte Gleska University to develop a broad base of expertise in remote sensing at the tribal institutions in South Dakota, to advance the use of remote sensing as a resource management tool for tribal lands, and to expand the pool of college and university students involved in the use of NASA Earth Science,
- 3) The Native American Honors Program, a cooperative pre-college program operated by OLC for six weeks on the campus of SDSM&T,
- 4) SDSU/Flandreau Indian School Success Academy,
- 5) The American Indian Science and Engineering Society (AISES), a national organization founded to increase the number of American Indians in SMET-related fields.
- 6) "Bridges to Success Program", an undergraduate American Indian Summer Research Program partnership between OLC and SDSM&T,
- 7) "Earth Systems Connections" K-5 elementary curriculum project (described below in the K-12 Outreach section) which includes Little Wound elementary school on the Pine Ridge Indian Reservation and Woodrow Wilson Elementary school in Rapid City. Wilson school has a significant Native American student population,
- 8) Augustana College's Science Day, with significant outreach to Native Americans, and

- 9) Continued support of Native American students at SDSGC member universities through Space Grant fellowships/scholarships. SDSM&T now has the highest number (84) of Native Americans attending classes in the history of the institution. In May 2003, SDSM&T graduated 7 American Indian students. In Fall 2003, SDSM&T enrolled 20 Native Americans as freshmen, which is a new record. There are 11 American Indian students currently involved in SDSM&T's Center of Excellence for Advanced Manufacturing and Production (CAMP) Project Teams.

The SDSGC will continue to focus its educational and research activities on earth system science. This is especially relevant in South Dakota because of the close linkage that many of the state's inhabitants still have with their natural environment. We believe that South Dakota's inherent environmental and ecological heterogeneity provides an excellent opportunity to develop projects that can be directly linked to the programmatic interests of NASA's Earth Science Enterprise. An example of this is South Dakota's NASA EPSCoR project "The Use of Remote Sensing for Monitoring, Prediction, and Management of Hydrologic, Agricultural, and Ecological Processes in the Northern Great Plains". The focus of the remote sensing research at our three member universities will continue to be on applications to agriculture and natural resources, which comprise the largest economic activities in our state.

We will look for NASA-supported science and engineering programs that have only recently, or haven't yet, been implemented in South Dakota, and collaboratively promoting those programs to students, teachers, and the general public in our State. An example of this is the FIRST Robotics Program mentioned above, which for the past two years has accommodated ten high school teams from within the state of SD in a robotics competition, but this funding will sunset after the third year (2004). Likewise, we are looking at ways to implement a BEST ("Boosting Engineering, Science, and Technology") Robotics program in South Dakota. There are numerous NASA-sponsored learning opportunities that would bring more bright young people into the science and engineering world of NASA if additional people in our state were aware of them. We look forward to facilitating this awareness by announcing these opportunities via the SDSGC website and by personal contacts.

**Note:** For more detailed information on SDSU's work plan for FY2004, the reader is directed to the November 24, 2003 memo from SDSU's Kevin Dalsted, included with this report and budget request package. Likewise, Augustana College's "Year 4, 2004-2005" is also included in this package.

## 1) Research Infrastructure

As a "capability enhancement" state in NASA's Space Grant College and Fellowship Program, development of research infrastructure within South Dakota continues as one of the seven focus areas of SDSGC activities mentioned earlier. We feel that the environment in South Dakota for further research infrastructure development is favorable. Specifically related to NASA research, this is evidenced by South Dakota's successful continuation of our NASA EPSCoR Program <<http://www.sdsmt.edu/space/nasaepscor/>>, which is now in its third year of operation. We plan to pursue efforts to secure a two-year funded extension to our SD NASA EPSCoR Program.

In addition to SD's core grant for strengthening research infrastructure in the state [which has funded the nine SD NASA EPSCoR "Program Initiation Grant" (PIG) projects], we will work in collaboration with our partners on the following two projects funded under NASA EPSCoR. Both research projects, and the 9 PIG projects, are described in more detail in SDSGC's "Summary of FY2003 Progress" report, included in this report/budget package.

- "Cross-Calibration of Landsat and IKONOS Sensors for Use in Precision Agriculture".
- "Leaf Area Index for Fire Chronosequences of the Black Hills and Southern Siberia: A Comparative Study".

The SD NASA EPSCoR Program acknowledges the importance of building and maintaining effective linkages with NASA collaborators to assure the development of NASA EPSCoR research infrastructure within SD in areas of strategic importance to NASA's mission. We plan to sustain our collaboration with NASA personnel in follow-up to the 50 trips made to date by SD researchers to form collaborative linkages <<http://www.sdsmt.edu/space/nasaepscor/trips.htm>>. Various scientists and engineers from SDSGC universities have collaborators at the USGS Earth Resources Observation Systems (EROS) Data Center, which is a key Consortium member located in Sioux Falls, SD. Our Summer Faculty Fellowship program, which both stimulates

and augments this connection to the EROS Data Center, will be strengthened by SDSGC Workforce Development fellowships/internships planned for 2004 to EROS, Goddard Space Flight Center, and Horizons, Inc.

SDSGC will continue to pursue efforts associated with the proposed National Underground Science and Engineering Laboratory at the Homestake Mine. A 5-year, collaborative proposal has been submitted to NSF to convert the Homestake Gold Mine in Lead, SD, which closed in 2001, into a National Underground Science and Engineering Laboratory (NUSEL) focusing on neutrino research <<http://mocha.phys.washington.edu/NUSEL/>>. In addition to subterranean physics, a whole range of "underground science" has become evident including solar, atmospheric, long-baseline, supernova and high energy astrophysical neutrinos, double beta decay, and dark matter searches; precision and sensitive assay of radionuclides; materials science and engineering; nuclear astrophysics cross-section measurements; hydrology, seismology, rock mechanics and other topics in geoscience; microgravity experiments via long drop tubes; and the study of the evolution and subsistence of biological organisms under extreme environmental conditions. In addition to an extensive outreach program for tourists visiting the Black Hills, if NUSL were to become a reality, it could potentially provide on-site and distance education curricular experiences for K-Ph.D. students, distance education opportunities for the general public, astrophysical data outreach to scientists around the world, and special participation opportunities for individuals and institutions in regional and national EPSCoR states. In its interpretative activities, NUSL could recognize the special significance of the Black Hills to the Native American community and could use both its special place and the excitement of its science to reach out to all communities, especially those underrepresented in U.S. science and technology. The existing outreach network contained within the National Space Grant College and Fellowship Program and the NASA EPSCoR Program will be relied upon extensively for this purpose.

SDSGC will remain involved with the Upper Midwest Aerospace Consortium (UMAC) Public Access Resource Center (PARC) project, which is related to Space Grant by virtue of subject area, and disseminate the practical products of this research to a broad audience via this partnership.

SDSGC will continue to provide administrative assistance for meetings of the Western Research Alliance <[www.w-research-alliance.org](http://www.w-research-alliance.org)>. The objective of this broad based organization is to provide a regional forum for academic researchers, entrepreneurs, state and federal agencies, and local economic developers who are interested in the promotion of research, technology transfer, and business development.

SDSGC will continue its successful affiliation with Badlands Observatory, a privately owned facility dedicated to Astronomical Research & Education in Quinn, SD <[www.sdsmt.edu/space/bo.htm](http://www.sdsmt.edu/space/bo.htm)>. Badlands Observatory is host to an f/4.8 Newtonian Telescope with a 26" diameter mirror, the largest telescope in the local three-state area. Badlands Observatory participates in the international Spaceguard Foundation, in which participating observatories around the world are cataloguing all of the Near Earth Objects (asteroids) that may represent a global impact hazard to the Earth. The dark skies in western SD, combined with the extremely sensitive research-grade telescope at Badlands Observatory, places the observatory in the company of some of the world's best astronomical research facilities.

Technical and financial support will be provided for GIS-remote sensing and image processing laboratories at member universities and educational affiliates, including Native American Tribal Colleges. This support is for research and educational projects involving GIS and remote sensing, precision agriculture, algorithm development for NDVI data, plant science, climate change, and land surface processes.

SDSM&T will continue research into the link between land management practices and carbon sequestration potential in South Dakota.

SDSGC will continue providing limited funding to stimulate the publication of NASA-related scientific papers and for similar presentations at research conferences.

## 2) Higher Education

SDSGC member universities will continue providing graduate, undergraduate, and faculty development fellowships and scholarships. Total awards in these areas over the FY04 project year will be approximately \$55,200 of NASA Space Grant funds. With \$28,000 in matched undergraduate fellowships from Augustana College, the total for fellowships and scholarships increases to \$83,200. When relevant, we will encourage students and faculty to present/publish the results of their research. The number of publications/presentations will be used as a measure of success (metric).

We plan to continue funding the SDSGC Program Initiation Grant (PIG) program in 2004. We will also continue our efforts to involve faculty and students from SDSGC's Tribal College affiliates in new and ongoing research and education projects with other Consortium institutions. These PIG projects function as a mechanism to build additional research collaboration among Consortium affiliates. Future research and technology projects that arise from PIG project seed funding will be used as a measure of success (metric) of the SDSGC PIG program. In addition to using \$3,500 in PIG funds made available through Space Grant, approximately \$45,000 of SD NASA EPSCoR core grant funds will be used during the 2004 calendar year to fund three meritorious PIG projects recently selected for awards.

SDSGC will continue to support Native American students at SDSGC member universities. It is noteworthy that SDSM&T now has 84 Native Americans attending classes, the highest number in the history of the institution. In May 2003, SDSM&T graduated 7 American Indian students. In Fall 2003, SDSM&T enrolled 20 Native Americans as freshmen, which is a new record. There are 11 American Indian students currently involved in SDSM&T's Center of Excellence for Advanced Manufacturing and Production (CAMP) Project Teams. Similarly, SDSU's Flandreau Indian School (FIS) "Success Academy" continues to recruit minorities to various fields of SMET. The Success Academy reaches about 400 Native American FIS freshman, sophomores, juniors, and seniors by enhancing their grasp of NASA career opportunities through a combination of hands-on SDSGC workshops, NASA events, and SD Space Days. In 2004, the program has added the senior class at FIS, but only seniors who are interested in attending an institution of higher education will be included.

SDSM&T will continue to assist Sinte Gleska University in developing a GIS lab.

SDSGC will continue to support the "SouthDakotaView" initiative, a component of AmericaView, in 2004. AmericaView is a locally controlled and nationally coordinated program to advance the availability, timely distribution, and widespread use of remote sensing data and technology through education, research, outreach, and sustainable technology transfer to the public and private sectors.

SDSGC will continue to support the "NativeView" initiative <<http://www.sinte.edu/nativeview/>> in 2004. Driven by relevant needs, NativeView is an innovative approach to technology-transfer and empowerment within Indian Country through access to geo-spatial/ spectral data and existing research.

Graduate and undergraduate students will continue to participate in research efforts at GIS-Remote Sensing and Image Processing Laboratories supported by our Consortium.

SDSGC will continue maintaining and updating its "Educational Opportunities (Higher Ed.)" website <<http://www.sdsmt.edu/space/EdOpp-HigherEd.htm>>.

In keeping with SDSM&T's successful 2003 NASA Academy undergraduate student participant John Keefner, SDSGC will continue to promote and support participation in NASA Academy 2004.

In a continuing evolution of KC-135 projects <[www.solarvision.org](http://www.solarvision.org/)> that began at SDSM&T in 2000, SDSGC will remain supportive of participation in NASA's Reduced Gravity Student Flight Opportunity Program.

Augustana College began to develop a relationship with Oglala Lakota College (OLC) in 2002. OLC is one of the Native American Tribal Colleges in South Dakota and an educational affiliate of SDSGC. Augustana College

would offer classes that would be available to students and OLC would offer classes that would be available to Augustana College students.

### **3) K-12 Outreach**

The tenth annual "South Dakota/NASA Space Days 2004" will be supported by SDSGC and hosted by Black Hills State University in Spearfish, SD on April 30 – May 1, 2004. The 2004 Space Days event will likely be large, as it will draw from the entire Black Hills area. Former Skylab astronaut Dr. Ed Gibson is the featured speaker. Dr. Gibson is a resident of South Dakota and is Corporate VP for SAIC and Manager of the USGS EROS Data Center Operation. We are also planning to have South Dakota's Solar System Ambassador, Dr. Bob Polcyn, speak at SD Space Days 2004. Due to the popularity of the International Space Station traveling exhibit from JSC at previous SD Space Days events, SDSGC has again requested it for 2004. Many other exhibits on space science, earth science, and technology from SDSGC members and affiliates, the local community, and NASA will be provided at the 2004 event. Students will be exposed to the excitement and opportunities of various careers in science, math and technology and the impact that NASA has on their lives.

SDSGC will continue to support Badlands Observatory's "Dark Skies & Bright Minds" project in 2004. This project was pilot tested in 2003 with the help of numerous volunteers and then implemented at four K-12 schools in South Dakota. This project took advantage of about \$23,000 in State funds that SDSGC was successful in obtaining from former SD Governor William Janklow in 2002, allowing the 26-inch telescope at Badlands Observatory in Quinn, SD to be used online, via the internet as an educational and research tool. SDSGC provides \$5,000 per year in co-funding to help participating schools pay the use-rate costs for remote operation of the telescope. We will continue this program in 2004. The project takes advantage of the common attraction that most students have toward space, astronomy, and the study of the universe. The educational opportunities that have been made available to students within South Dakota through this program are both unique and exciting. The SDSGC will also continue to serve as the host for Badlands Observatory's website <[www.sdsmt.edu/space/bo.htm](http://www.sdsmt.edu/space/bo.htm)>. This website can be accessed at any time for detailed information about astronomy, the Badlands Observatory, and the astronomical research conducted there. Allowing students to experience the excitement of conducting their own astronomical observations at Badlands Observatory via the Internet under the "Dark Skies & Bright Minds" project will provide them with similar opportunities to expand their scientific interests beyond the classroom.

SDSGC will continue to support the High Plains Regional Science and Engineering Fair at SDSM&T in 2004 by providing judges and organizational assistance. SDSM&T hosts this Science and Engineering Fair on campus, which is consistent with NASA's educational focus on science, math, engineering, and technology.

The important activities to enhance interest in science and engineering topics and careers among elementary and secondary students in South Dakota will continue with the assistance of SDSGC's full time Deputy Director and Outreach Coordinator and part time Space Grant Workforce Development Coordinator at SDSM&T, as well as with those individuals involved in outreach activities at Augustana College and SDSU.

SDSGC will support SDSM&T's Engineer's Week in February 2004. SDSGC Headquarters Office will offer an open house and continuous presentations of "Satellite Remote Sensing and Space Technologies" to several hundred of middle and high school students visiting campus during the annual E-week celebration.

SDSGC will participate in and financially support three "Women in Science" (WIS) Conferences planned to be held throughout South Dakota in 2004. The planned conferences are designed to reach an estimated 100 high school girls and their parents and educators. The conferences will help recruit women for careers in science and technology, and will include a keynote speaker, breakout sessions led by professional women in SMET-related careers, vendor booths, and an optional field trip.

SDSGC will again participate in the "Student Signatures in Space" Program in 2004 and will maintain strong working relationships with the two NASA Educator Resource Centers (ERC's) in South Dakota to help assure their continuing use by teachers and students.

SDSM&T will continue to maintain and update SDSGC's useful "Educational Opportunities (K-12)" website <<http://www.sdsmt.edu/space/EdOpp-K-12.htm>> for SD teachers, students, and parents.

Middle and high school science teacher workshops in GIS, GPS, and Remote Sensing technology will be held across the State of South Dakota during the summer of 2004 under the UMAC EdPARC project. SDSGC personnel will help serve as instructors for these teacher-training workshops.

SDSGC will support the collaborative project titled "Earth Systems Connections" <<http://www.ias.sdsmt.edu/ESC/>> in 2004, which continues to develop curriculum for students in grades K-5. This project is funded by NASA's Earth Science Enterprise and co-developed at SDSM&T, Virginia Tech, and the University of Colorado. The educational goal is to show that the Earth's physical, chemical, biological, geological, economic and cultural systems are intimately intertwined. Earth Systems Connections is a hands on, multifaceted, interactive mathematics, science, and technology curriculum where elementary students are challenged to explore how many of the Earth's systems operate and connect with one another.

SDSM&T's Dr. Lee Vierling, the PI of the project, has incorporated Little Wound School (Kyle, SD) and Woodrow Wilson Elementary School (Rapid City, SD) into the project as pilot schools. To motivate children to learn about satellites and remote sensing, Dr. Vierling developed a cartoon character named "Pixel the Satellite" (see image at right) and has produced 10 short animated features for teachers and children to view in concert with or independently of the curriculum. SDSGC provided funds for the addition of Native American video clips into the curriculum of this project, an exciting way to include Lakota culture into a nationally-available curriculum for elementary children.



SDSGC will continue its support for the "Scientific Knowledge for Indian Learning and Leadership" (SKILL) Program on SDSM&T's campus as well as student participation in the local chapter of the American Indian Science and Engineering Society (AISES).

Augustana College's annual Science Day 2004 will provide high school juniors and seniors a day filled with hands-on science opportunities/experiences. Special invitations will be sent to Native American and female students.

SDSU will offer the annual Aerospace Career and Education (ACE) Camp in July 2004 and will seek guidance from some of their collaborators on how to locate additional funds. Attendance is currently capped for 24 participants. Approximately 60% of attendees are girls.

With the third and last year of planned funding from NASA to help support the FIRST Robotics program in South Dakota, SDSGC plans to mentor ten high schools throughout the state that will participate in the 2004 FIRST Robotics Competition, an exciting, nationwide competition that teams professionals and young people to solve an engineering design problem in an intense and competitive way. Mentoring universities for the 10 high school teams from the following towns include SDSU (6 teams), SDSM&T (3 teams), and Augustana College (1 team): Rapid City Central, Rapid City Stevens, Sioux Falls O'Gorman, Sturgis, Sisseton, Brookings, Woonsocket, Volga, Faulkton, SD, and a self-funded team from Flandreau Indian School. The FIRST Robotics Program gives the students from these ten high schools an excellent appreciation of the importance of science, engineering, and technology, and of how mastering these subjects benefits society. SDSGC is proud to support this unique educational program. Additional details are on the web at <<http://www.sdsmt.edu/space/first.htm>> for SDSMT, <<http://www.sfcss.org/OgormanHS/Departments/robotics/>> for Augustana, and <<http://www3.sdstate.edu/Academics/CollegeOfEngineering/EngineeringResourceCenter/FIRSTRobotics/>> for SDSU. Significant efforts were undertaken by SDSGC management in 2003 to request additional funding from the Governor's Office and Senator Daschle's office to continue robotics programs in South Dakota (both FIRST and BEST Robotics programs) after the NASA FIRST funding sunsets.

SDSU's Dr. MaryJo Lee will continue her efforts to recruit minorities and underserved populations into fields of science, math, engineering, and technology. SDSU's Flandreau Indian School (FIS) "Success Academy" reaches about 400 Native American FIS freshman, sophomores, juniors, and seniors by enhancing their grasp of NASA career opportunities through a combination of hands-on SDSGC workshops, NASA events, and SD Space Days. In

2004, the program has added the senior class at FIS, but only seniors who are interested in attending an institution of higher education will be included. NASA Workforce Development funds are planned to co-support this activity.

SDSGC plans to assist in developing a "Space Science Lecture Series" at South Dakota's three science centers in 2004, which builds on the success of a well-received Space Science Lecture hosted in 2003 by the South Dakota Discovery Center & Aquarium.

#### **4) Other Public Service**

SDSGC will continue to support the Community Education Program in the Black Hills by providing a course titled "Introduction to Astronomy and Current Events in Space" taught by SDSGC Deputy Director & Outreach Coordinator Tom Durkin and other SDSGC affiliate representatives in 2004.

We will maintain support to the Black Hills Astronomical Society (BHAS) and related Star Parties that are open to the public at Hidden Valley Observatory during the summer of 2003 <<http://www.sdsmt.edu/space/BHAS.htm>>.

SDSGC will continue supporting StarDate's PBS radio broadcast in South Dakota as part of the McDonald Observatory astronomy program.

SDSGC will support programs at the Children's Science Center in Rapid City and to school/youth groups by providing staff to conduct 1) presentations on space, remote sensing, and the International Space Station, 2) presentations on SDSM&T's KC-135 reduced gravity student flight opportunities and NASA educational opportunities for the K-12 community, and 3) astronomy or Starlab Planetarium shows.

Press releases and various informational presentations about Consortium activities, noteworthy celestial events, aerospace programs, etc. will continue to be disseminated to the public by SDSGC.

Dr. Bob Polcyn, retired physician in Hot Springs, SD will continue his appointment as South Dakota's Solar System Ambassador in 2004 by offering numerous presentations to the public and school children on NASA missions and space-related topics. SDSGC will continue to support Dr. Polcyn in this endeavor.

SDSGC's extensive website <<http://www.sdsmt.edu/space/>> provides excellent resource information to the public. This website will be routinely updated in 2004.

#### **5) Fellowships and Scholarships**

SDSGC member universities will continue providing graduate, undergraduate, and faculty development fellowships and scholarships. Total awards in these areas over the FY04 project year will be approximately \$55,200 of NASA Space Grant funds. With \$28,000 in matched undergraduate fellowships from Augustana College, the total for fellowships and scholarships increases to \$83,200. When relevant, we will encourage students and faculty to present/publish the results of their research. The number of publications/presentations will be used as a measure of success (metric).

#### **6) Workforce Development**

Because SDSGC's workforce development plan for FY2004 is explained in detail in the November 6, 2003 proposal to NASA entitled "An Expanded NASA Workforce Development Program in Science, Engineering & Technology for South Dakota", there seems little point to reiterate it here. SDSGC's proposed 2004 WFD Program is a continuation of a successful 2002/2003 WFD Program. For information on SDSGC's WFD efforts during the past year, the reader is referred to Section 6 (Workforce Development Augmentations) of the "Summary of FY2003 Progress" report included with this report/budget package.

## 7) Administration

The Consortium will be represented in 2004 at all the National Council of Space Grant Directors' meetings and the Space Grant Western Regional Meeting.

Dr. Sherry Farwell, Dean of Graduate Education and Sponsored Programs at SDSM&T, will continue as the Consortium Director. Mr. Tom Durkin will continue to serve as SDSGC's full-time Deputy Director and Outreach Coordinator at SDSM&T. Mr. Kevin Dalsted will continue as the Associate Director at SDSU. Dr. Daniel Swets remains the Associate Director at Augustana College. Gregg Johnson will continue to serve as the USGS EROS Data Center Coordinator for Space Grant Consortium activities.

The leadership of the SDSGC will build on our success to date and explore new ways to stimulate further participation by the Tribal College affiliates in Consortium activities. We will continue focusing on competitive allotment of SDSGC funds and the goal of nurturing projects that can attract external support.

Consortium management personnel will be intimately involved with the SD NASA EPSCoR Program's Steering Committee, Technical Advisory Committee, and other activities. Likewise, we will endeavor to improve research collaboration with the USGS EROS Data Center and industry affiliates. We will also continue efforts to promote effective outreach associated with the proposed National Underground Science and Engineering Laboratory at Homestake.

Some of the meetings of the SDSGC will utilize teleconferencing and the Digital Dakota Network (DDN). We plan to continue meeting at least quarterly to more effectively coordinate and evaluate program progress.

### Metrics:

The metrics by which many of the goals mentioned in the seven categories above will be measured include, but are not limited to, the following.

- 1) The number of individuals from SD (student interns, faculty fellows, and others) and NASA that become engaged in the new workforce development project as a consequence of SDSGC activities and funding.
- 2) The number of undergraduate students and graduate students from SDSGC institutions whose senior capstone or research projects are related to earth system science, space science and/or remote sensing.
- 3) The number of people that attend SD Space Days 2004 and the related feedback from representative participant groups.
- 4) The quantity of presentations given by SDSGC members to civic groups, K-12 schools, universities/colleges, state organizations, and the general public.
- 5) The number of students and teachers that participate in SDSGC-sponsored workshops and courses.
- 6) The number of reports in newspapers, radio, and TV that describe SDSGC projects and personnel.
- 7) The number of professional publications and presentations related to SDSGC projects and personnel.
- 8) Both the continuation of current SDSGC projects and the initiation of new SDSGC activities with Native American institutions in SD.
- 9) The procurement of new projects and funding that are associated with SDSGC projects and personnel.
- 10) The preparation of required Space Grant reports and timely responses to other requests from NASA Headquarters and Centers.

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