

NASA South Dakota Space Grant Consortium

Strategic Plan



South Dakota Space Grant Consortium
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NASA South Dakota Space Grant Program

Vision

The vision of the South Dakota Space Grant Consortium (SDSGC) is to expand opportunities for all South Dakotans through education, research, and public service in the fields of aerospace, earth science, and supporting STEM disciplines.

Mission

As the link between NASA and the citizens of South Dakota, SDSGC's mission is to instill the spirit of exploration and discovery in students and educators and in the general public, with a special focus on the fields of science, technology, engineering, and mathematics (STEM) that are essential for the development of the nation's workforce.

Values

The NASA South Dakota Space Grant Consortium is committed to excellence in student and faculty research and to promoting STEM education and expanding projects across the state of South Dakota. We specifically seek to include women, Native Americans, and other underrepresented groups in all of the programs and activities supported by the SDSGC.

Time Frame

The specific goals and objectives listed under each of the program areas are long-term and apply to the current (FY2014) program year that has been approved for a one year, no-cost extension through May 25, 2016, and to the three-year FY2015-2017 Space Grant cycle. The strategies and outcome indicators to achieve those goals apply to the current year, with the understanding that they will be evaluated and updated as described under the Management Section.

A. Consortium Management

Goal: *To ensure quality and fairness in all Consortium programs and alignment with the needs of NASA, the affiliate organizations, and the state of South Dakota.*

Objective A.1: (Reporting) The Management Team will provide timely reporting and responses to NASA Headquarters regarding Consortium operations and finances.

Outcome indicator: *All reports will be submitted on time and in accordance with NASA guidelines.*

Objective A.2: (National network) The Management Team will work to strengthen relationships with NASA Centers, the national Space Grant network, and the NASA EPSCoR Program.

Strategy A.2.1: Maintain and expand relationships with NASA Centers through faculty visits and student internships.

Outcome indicator: *At least two faculty will visit NASA Centers or EROS each year to promote collaborative research, and at least three students will participate in internship programs at NASA Centers.*

Strategy A.2.2: The Management Team and other representatives of the Consortium will continue to play an active role in the national Space Grant network.

Outcome indicator: Representatives of the Management Team will be present at all national and Western Regional Space Grant meetings.

Strategy A.2.3: Provide effective coordination between the state Space Grant and NASA EPSCoR programs.

Outcome indicator: Members of the Management Team also hold positions on the Technical Advisory Committee [REACH Committee] and the Steering Committee of the state NASA EPSCoR Program. (See also B.2.3.1.)

Objective A.3: (Consortium network) The Management Team will faithfully represent the diverse interests and resources of the Consortium affiliates.

Strategy A.3.1: Establish two rotating positions on the Management Team, for a period of two years each, which will be filled by representatives of affiliate institutions.

Outcome indicator: Announce one position (one of two rotating 2-year positions) on Management Team to all Consortium affiliates and, if applications are submitted, select one member by the start of the appropriate program year.

Strategy A.3.2: Maintain effective communication with Consortium affiliates through teleconferences, scheduled meetings, electronic communications, and affiliate surveys.

Outcome indicator: Relevant electronic communication sent to all affiliates, teachers, and interested parties, as appropriate, and an additional affiliate survey will be available on-line and conducted as part of NASA's 25th Year Evaluation.

Objective A.4: (State government) The Management Team will ensure that Consortium programs are aligned with state priorities.

Strategy A.4.1: Provide annual briefing to representatives of state government on Consortium activities.

Outcome indicator: Members of the Management Team meet once per year with representatives of state government to discuss alignment with state priorities, such as South Dakota EPSCoR's "2020 Vision: The South Dakota Science and Innovation Strategy."

Strategy A.4.2: Maintain representatives of state government to participate on the Management Team.

Outcome indicator: At least one representative of state government (e.g., South Dakota Board of Regents) will serve as an ex-officio member of the Management Team.

Objective A.5: (Industry) The Management Team will foster interaction between the Consortium and industries involved in aerospace and related technologies.

Strategy A.5.1: Continue industry representative(s) to Management Team.

Outcome indicator: At least one representative of industry will be maintained on the Management Team.

Objective A.6: (Link to public) The Management Team will seek to maintain and improve the effectiveness of the Consortium as the link between the public and NASA in the state.

Strategy A.6.1: Develop and maintain electronic databases and mailing lists of contacts in formal and informal education, media, state and local government, non-profit organizations, clubs, and individual citizens.

Outcome indicator: *Electronic databases maintained and updated/reviewed as necessary.*

Strategy A.6.2: Maintain Consortium website at <http://sd.spacegrant.org> to provide effective dissemination of information about NASA, the state Consortium, student fellowships, and other research and educational opportunities in STEM-related fields.

Outcome indicator: *Update Consortium website at least monthly.*

Objective A.7: (Increase resources) The Management Team will pursue opportunities to increase the resources available to the Consortium, to broaden participation within the state, to collaborate with other state Consortia in areas of mutual interest and capability, and to assure long-term sustainability.

Strategy A.7.1: Identify opportunities to increase funding and matching funds for the state program.

Outcome indicator: *Consortium Management Team will investigate and secure sources of outside funding and match as opportunities arise.*

Strategy A.7.2: Serve as a clearinghouse for information on funding opportunities from NASA and other agencies that support STEM-related research and education, especially in areas of aerospace and earth science.

Outcome indicator: *At least 20 targeted announcements of opportunity will be disseminated through electronic mailings and website each year.*

Strategy A.7.3: Coordinate submission of proposals to NASA and other agencies on projects in STEM research and education.

Outcome indicator: *Facilitate at least one multi-partner proposal each year to NASA or other agencies. (See also B.2.1.2.)*

Objective A.8: (Diversity) The Management Team will ensure diversity in all Consortium programs and activities by seeking to include women, underrepresented minorities, and persons with disabilities. (See also C.1.1, C.4.)

Strategy A.8.1: The Management Team will emphasize diversity in selection of participating organizations, programs, fellowships and scholarships, faculty awards, and Management Team members.

Outcome indicator: *Diversity will be modeled in all aspects of the Consortium and participation by underrepresented groups will meet the current diversity targets.*

Objective A.9: (Evaluation) The Management Team will continually monitor and seek to improve the quality and effectiveness of the state program.

Strategy A.9.1: Maintain the services of an external Program Evaluator from SDSU's Rural Sociology graduate program to provide assessment of the Consortium's strategic plan, activities, and outcomes, and to assist in establishing a long-term strategy for continuing evaluation.

Outcome indicator: *Program evaluator will participate in all monthly Management Team teleconferences and quarterly meetings.*

Strategy A.9.2: Institute long-term evaluation procedures that are consistent with the recommendations of the Program Evaluator, the Consortium's Logic Model and Strategic Plan, and with available resources.

Outcome indicator: *In consultation with the Program Evaluator, the Management Team will continue to determine appropriate data collection and evaluation procedures such as participant surveys that are consistent with available resources.*

Strategy A.9.3: Consortium's Program Evaluator and Longitudinal Tracking system contractor will collect and compile data on Consortium programs through online and mailed surveys, and produce subsequent reports, for analysis by the Management Team.

Outcome indicator: *Management annually reviews Longitudinal Tracking report and evaluation data/reports provided by Longitudinal Tracking contractor and Program Evaluator to assess effectiveness of state programs.*

Strategy A.9.4: Perform annual reviews of the Strategic Plan and issue annual updates, if deemed necessary.

Outcome indicator: *Strategic Plan and Roles and Responsibilities document (appendix of Strategic Plan) updated as needed.*

B. Primary Space Grant Programmatic Elements

These project and activities contribute to the development of the STEM workforce in disciplines needed to achieve NASA's Strategic Goals. These programmatic elements aim to **educate and employ**. These projects and activities also aim to **attract and retain STEM students** through a progression of educational opportunities provided to undergraduate/graduate students and faculty through significant and hands-on engagement.

B.1. Consortium Programs: NASA Internships, Fellowships and Scholarships (NIFS)

Goal: *To administer an internship/fellowship/scholarship program that offers educational and research opportunities to students from diverse backgrounds who are pursuing degrees in fields of science, technology, engineering, and mathematics (STEM) that align with NASA's mission and those of SDSGC affiliates.*

Objective B.1.1: (Competitiveness) Ensure the fair distribution of funds to member universities and educational affiliates.

Strategy B.1.1.1: A centralized, Consortium-wide annual Call for NASA Internship/Fellowship/Scholarship Applications is made available to all of the Consortium's higher education affiliates via e-mail and SDSGC website.

Outcome indicator: *Annual Call for NASA Internship/Fellowship/Scholarship Applications at all higher education affiliates, competitive review, and selection of awardees.*

Strategy B.1.1.2: Utilize the Consortium Management Team to ensure consensus on the distribution of internship/fellowship/scholarship awards each year, with emphasis on maintaining or increasing participation of Tribal Colleges.

Outcome indicator: *Annually, awards will be made to students attending at least 50% of SDSGC's institutions of higher education including at least one Tribal-college affiliate.*

Objective B.1.2: (NASA, EROS, and aerospace industry ties) Offer hands-on, tangible research experiences to student research fellowship awardees at NASA Centers, EROS, and aerospace industries.

Strategy B.1.2.1: Offer internships that integrate training with interdisciplinary research at NASA Centers, EROS, and aerospace industries.

Outcome indicator: *At least five interns will be placed at NASA Centers, and/or aerospace industries.*

Objective B.1.3: (Diversity) Ensure funding for internships, fellowships, and scholarships to women, underrepresented minorities, and persons with disabilities. (See also C.1.2.)

Strategy B.1.3.1: Utilize intensive marketing techniques (personal visits, direct faculty contacts, email) to encourage women and minority students to apply to the Internship/Fellowship/Scholarship program.

Outcome indicator: *Awards to women and minorities equal or exceed 15% to minorities and 40% to females.*

Strategy B.1.3.2: Offer internships/fellowships/scholarships to qualified Native American students at Tribal College affiliates.

Outcome indicator: *At least three internships/fellowships/scholarships awarded annually to students at Tribal Colleges or to Tribal College students seeking to transfer to another SDSGC university.*

Objective B.1.4: (Longitudinal tracking) All students who have received significant internship/fellowship/scholarship assistance from SDSGC will be longitudinally tracked through first employment or beginning of advanced degrees. (See also C.3.1.)

Strategy B.1.4.1: Continue to participate in the Consortium's contractor-assisted longitudinal tracking system so that all students provided with "significant support" from SDSGC (defined as over \$1,000 in a single award) will be tracked in accordance with NASA's longitudinal tracking requirements.

Outcome indicator: *Annually, 75% of funded students will reply to longitudinal tracking survey.*

Objective B.1.5: (Evaluation) The Consortium will develop methods to document, measure, and assess the impact of the internship/fellowship/scholarship programs in conjunction with its implementation of an overall evaluation strategy. (See also A.9.)

Strategy B.1.5.1: Develop and administer simple follow-up surveys of students' knowledge and attitudes about the Consortium, their internship/fellowship/scholarship-funded experiences, NASA, and STEM careers.

Outcome indicator: *Annually, 75% of funded students will reply to evaluative survey which is part of the longitudinal tracking survey.*

B.2. Consortium Programs Research Infrastructure

Goal: *To promote the improvement of research programs and capabilities of Consortium affiliates with an emphasis on the fields of aerospace, earth science, and supporting STEM disciplines.*

Objective B.2.1: (Research proposals) Increase the number of research proposals submitted by SDSGC institutions in fields aligned with NASA's mission.

Strategy B.2.1.1: Distribute announcements of research opportunities in NASA related fields to faculty at affiliate institutions.

Outcome indicator: *At least ten research announcements are distributed among appropriate SDSGC institutions each year.*

Strategy B.2.1.2: Coordinate the development of research proposals among faculty at affiliate institutions, especially proposals that involve multiple disciplines and institutions.

Outcome indicator: *At least one NASA-related research proposal is submitted each year as a result of SDSGC coordination. (See also A.7.3.)*

Objective B.2.2: (Research support) Support new and developing research, especially multidisciplinary and collaborative projects, in fields aligned with NASA's mission.

Strategy B.2.2.1: Support new research initiatives through competitively awarded seed grants.

Outcome indicator: *At least two Project Innovation Grants are supported each year from SDSGC and/or state NASA EPSCoR funds.*

Strategy B.2.2.2: Support faculty and student travel to NASA Centers, EROS, and other institutions or events for the purpose of developing new research projects.

Outcome indicator: *At least five travel grants for research development are awarded each year from SDSGC and/or state NASA EPSCoR funds. (See also B.2.3.2.)*

Strategy B.2.2.3: Support graduate and undergraduate student research that is aligned with NASA's mission.

Outcome indicator: *At least two SDSGC fellowships or scholarships are awarded each year for students to work on NASA EPSCoR or other NASA-related research projects.*

Objective B.2.3: (Collaborations) Build research collaborations both within and outside the state.

Strategy B.2.3.1: Coordinate SDSGC research programs with the state's NASA EPSCoR program and other NASA research programs having similar objectives.

Outcome indicator: *Members of the Management Team also hold positions on the Technical Advisory Committee [REACH Committee] and the Steering Committee of the state NASA EPSCoR Program. (See also A.2.3.)*

Strategy B.2.3.2: Develop mutually beneficial research collaborations with NASA Centers and EROS.

Outcome indicator: *At least five planning trips to NASA Centers or EROS are supported each year from SDSGC and/or state NASA EPSCoR funds. (See also B.2.2.2.)*

Strategy B.2.3.3: Facilitate research partnerships between the state's academic institutions and state and federal government agencies.

Outcome indicator: *At least five announcements of research opportunities at state and federal agencies are distributed annually to faculty at SDSGC academic institutions.*

Objective B.2.4: (Facilities) Promote acquisition of new facilities and shared use of existing resources.

Strategy B.2.4.1: In conjunction with SD NASA EPSCoR, provide funding for new equipment and facilities that support NASA-related research, especially if the equipment can be shared among SDSGC institutions.

Outcome indicator: Full or partial funding for new equipment and facilities is awarded to SDSGC institutions through SD NASA EPSCoR or SDSGC.

Strategy B.2.4.2: Develop and maintain remote-sensing test sites that promote long-term interdisciplinary research and training collaborations among SDSGC institutions and attract collaborations from external partners. (See also C.4.3.2.)

Outcome indicator: SDSGC institutions acquire new remote sensing data or collaborate on use of existing data at academic laboratories such as the NASA Remote Sensing/GIS Centers of Excellence at SDSM&T and SDSU.

Objective B.2.5: (Integrate research and education) Foster research groups and engineering design teams that integrate education, research, and development.

Strategy B.2.5.1: Provide funding to college and precollege research and design teams.

Outcome indicator: At least two college or precollege research or design teams receive SDSGC funds each year.

Strategy B.2.5.2: Encourage public and private partnerships to sponsor precollege engineering design teams such as robotics teams.

Outcome indicator: SDSGC annually sponsors precollege STEM competitions such as SD FIRST LEGO League regional and state tournaments for middle school robotics teams.

Objective B.2.6: (Diversity) Increase the participation of women and underrepresented groups in statewide research programs and facilitate their subsequent entry into STEM careers. (See also C.1.3.)

Strategy B.2.6.1: Work with SDSGC's network of K-12 and informal education contacts to improve recruitment of qualified female students and students from underrepresented groups.

Outcome indicator: SDSGC will sponsor activities that encourage women and students from underrepresented groups to enter STEM careers, including Women in Science Conferences, SD GEAR UP, and SD Space Days.

Strategy B.2.6.2: Assist in the placement of students from underrepresented groups in projects that provide hands-on research or design experience.

Outcome indicator: SDSGC fellowship/scholarship funds for research or design experiences at SDSGC academic institutions, EROS, and NASA Centers will equal or exceed 15% to minorities and 40% to females.

Strategy B.2.6.3: Longitudinally track progress of students from underrepresented groups in academic performance and research activities through first employment.

Outcome indicator: Annually use contractor-assisted longitudinal tracking system to track SDSGC scholars and fellows. (See also C.3.1.)

Objective B.2.7: (Evaluation) The Consortium will develop methods to document, measure, and assess the impact of the research infrastructure programs in conjunction with its implementation of an overall evaluation strategy. (See also A.9.)

Strategy B.2.7.1: Develop and administer simple before-and-after surveys of faculty and students involved in research infrastructure activities to assess their knowledge and attitudes about the Consortium, NASA research interests, and STEM careers.

Outcome indicator: Adjustments are made to the research infrastructure program to strengthen activities that are working and drop or improve activities that are not having the intended impact.

B.3. Consortium Programs: Higher Education

Goal: *To build interdisciplinary programs related to NASA's Primary Space Grant Programmatic Elements at the state's institutions of higher education and to support related programs that serve to strengthen STEM education in South Dakota.*

Objective B.3.1: (Curriculum and NASA content) Contribute aerospace and earth science materials to the higher education community in South Dakota and support interdisciplinary student design teams.

Strategy B.3.1.1: SDSGC webpage provides links to SDSGC student funding opportunities, NASA educational resources and successful education programs, as well as links to data, imagery, and general curriculum development guidance.

Outcome indicator: *The "Educational Opportunities (Higher Education)" section of SDSGC website is kept current and maintained as a user-friendly webpage.*

Strategy B.3.1.2: Distribute announcements of opportunities for education and curriculum enhancement in NASA-related fields to faculty at affiliate institutions.

Outcome indicator: *At least 10 NASA education announcements are distributed among appropriate SDSGC institutions each year.*

Strategy B.3.1.3: Support interdisciplinary student engineering design teams in NASA priority areas.

Outcome indicator: *At least four engineering design teams such as SDSM&T Aero Design, NASA Robotic Mining Competition (Moonrockers,) and Hybrid Sounding Rocket teams, and SDSU Collegiate Robotics Team.*

Objective B.3.2: (NASA and EROS ties) Enhance faculty and undergraduate/graduate student development through planning visits, internships, and co-ops/NASA Pathways Program at NASA Centers and EROS.

Strategy B.3.2.1: SDSGC higher education affiliates will continue to promote NASA leadership and educational opportunities made available through NASA Academy, USRP, GSRP, and other NASA programs that integrate training with interdisciplinary research.

Outcome indicators: *At least two faculty or students from SDSGC affiliates will participate in NASA educational programs each year.*

Objective B.3.3: (State government) Establish and maintain linkages between SDSGC and higher education and state government.

Strategy B.3.3.1: Develop strong collaborations with the South Dakota Board of Regents, Governor's Research Centers, and new Ph.D. programs (in areas related to NASA's mission).

Outcome indicators: *Directors of new research centers and new Ph.D. programs are informed of SDSGC fellowship/scholarship and other programs.*

Outcome indicators: One SD Board of Regents representative serves as ex-officio member on Management Team.

Objective B.3.4: (Industry involvement) Establish and maintain linkages between SDSGC and higher education and aerospace industry in South Dakota.

Strategy B.3.4.1: Encourage educational partnerships between the state's academic institutions and private industry.

Outcome indicator: At least two SDSGC fellows are placed in internships through aerospace industry, such as L-3 Communications West, each year. (See also C.2.4.2.)

Objective B.3.5: (Diversity) Increase the participation of women and underrepresented groups in all aspects of SDSGC's higher education program and facilitate their subsequent entry into STEM careers. (See also C.1.4.)

Strategy B.3.5.1: Engage women and members of underrepresented groups in all aspects of the SDSGC higher education programs; advertise that fellowships encourage minority and women applicants.

Outcome indicator: Participation by women and minorities will equal or exceed 15% to minorities and 40% to females. (See also C.1.4.1.)

Objective B.3.6: (Evaluation) The Consortium will develop methods to document, measure, and assess the impact of the higher education programs in conjunction with its implementation of an overall evaluation strategy. (See also A.9.)

Strategy B.3.6.1: Develop and administer simple before-and-after surveys for faculty and students to assess their knowledge and attitudes about the Consortium, NASA, and STEM careers.

Outcome indicator: Adjustments are made to the higher education program to strengthen activities that are working and drop or improve activities that are not having the intended impact.

C.1. National Program Emphases Diversity of Participants

Goal: *To model diversity in all Consortium programs and activities, with an emphasis on Native Americans, which make up the state's largest minority group.*

Objective C.1.1: (Diversity in Management) The Management Team will ensure diversity in all Consortium programs and activities by seeking to include women, underrepresented minorities, and persons with disabilities. (See also A.8.)

Strategy C.1.1.1: The Management Team will emphasize diversity in selection of participating organizations, programs, fellowships and scholarships, faculty awards, and future Management Team members.

Outcome indicator: Diversity will be modeled in all aspects of the Consortium and participation by underrepresented groups will meet or exceed the current diversity targets for women and minorities.

Objective C.1.2: (Diversity in Fellowships and Scholarships) Ensure funding for fellowships and scholarships to women, underrepresented minorities, and persons with disabilities. (See also B.1.4.)

Strategy C.1.2.1: Utilize intensive marketing techniques (personal visits, direct faculty contacts, email) to encourage women and minority students to apply for funding.

Outcome indicator: *Awards to women and minorities equal or exceed 15% to minorities and 40% to females.*

Strategy C.1.2.2: Offer fellowships to qualified Native American students at Tribal College affiliates.

Outcome indicator: *At least three fellowships awarded annually to students at Tribal Colleges or to Tribal College students seeking to transfer to another SDSGC university.*

Objective C.1.3: (Diversity in Research Infrastructure) Increase the participation of women and underrepresented groups in statewide research programs and facilitate their subsequent entry into STEM careers. (See also B.2.6.)

Strategy C.1.3.1: Work with SDSGC's network of K-12 and informal education contacts to improve recruitment of qualified female students and students from underrepresented groups.

Outcome indicator: *SDSGC will sponsor at least 10 activities annually that encourage women and students from underrepresented groups to enter STEM careers, such as five Women in Science Conferences, SD GEAR UP, and SD Space Days.*

Strategy C.1.3.2: Assist in the placement of students from underrepresented groups in projects that provide hands-on research or design experience.

Outcome indicator: *SDSGC fellowship/scholarship funds for research or design experiences at SDSGC academic institutions, EROS, and NASA Centers will equal or exceed 15% to minorities and 40% to females.*

Strategy C.1.3.3: Longitudinally track progress of students from underrepresented groups in academic performance and research activities through first employment.

Outcome indicator: *Annually use the Consortium's contractor-assisted longitudinal tracking system to track 100% of SDSGC scholars and fellows. (See also C.3.1.1.)*

Objective C.1.4: (Diversity in Higher Education) Increase the participation of women and underrepresented groups in all aspects of SDSGC's higher education program and facilitate their subsequent entry into STEM careers. (See also B.3.5.)

Strategy C.1.4.1: Engage women and members of underrepresented groups in all aspects of the SDSGC higher education programs; advertise that fellowships encourage minority and women applicants.

Outcome indicator: *Participation by women and minorities will equal or exceed 15% to minorities and 40% to females. (See also B.3.5.1.)*

Strategy C.1.4.2: Expand participation and support of geospatial and geoscience workshops, training, and related projects at Tribal Colleges.

Outcome indicator: *Co-sponsor at least one Tribal College geospatial and geoscience initiative annually.*

C.2. National Program Emphases Workforce Development

Goal: *To use the Consortium's statewide network of scientists, engineers, and educators to provide talented students a pathway to careers that will contribute to a highly-trained and diverse workforce for NASA and expand the nation's research and development capacity.*

Objective C.2.1: (Recruitment) Increase participation in SDSGC and the STEM workforce.

Strategy C.2.1.1: Support NASA and SDSGC educational outreach programs and workshops across the state.

Outcome indicator: *Co-sponsor at least five precollege programs that encourage entry into the STEM workforce and participation in NASA and SDSGC.*

Strategy C.2.1.2: Promote participation in the STEM workforce through existing programs that target Native American college and precollege students such as the South Dakota GEAR UP Program. (See also C.4.4.1.)

Outcome indicator: *At least 200 Native American college and precollege students each year are informed of STEM workforce opportunities in NASA and SDSGC.*

Objective C.2.2: (Fellowships and Scholarships) Encourage students to enter the NASA pipeline and the STEM workforce through the SDSGC Fellowships/Scholarships Program.

Strategy C.2.2.1: Award fellowships and scholarships, in part, based on students' demonstrated interest in entering a NASA career or the STEM workforce.

Outcome indicator: *One hundred percent (100%) of fellowship and scholarship awardees will be students planning to enter the STEM workforce or STEM education.*

Objective C.2.3: (NASA placement) Offer hands-on, tangible research experiences at NASA Centers to SDSGC student fellows.

Strategy C.2.3.1: Provide all SDSGC student fellowship applicants with information on NASA internships and co-op programs and provide NASA Center Personnel Officers and University Affairs Officers with information on SDSGC student fellows.

Outcome indicator: *At least two SDSGC student fellows will be placed in internships at NASA Centers each year.*

Objective C.2.4: (Industry placement) Increase industry participation in the SDSGC student programs and increase internships and job placement.

Strategy C.2.4.1: Provide SDSGC industry affiliates (including EROS) and other aerospace industry contacts with information on SDSGC student fellows to promote internships or job placement.

Outcome indicator: *At least two SDSGC student fellows will be placed in industry internships or jobs each year.*

C.3. National Program Emphases Longitudinal Tracking

Goal: *To acquire and maintain accurate longitudinal data on all students and faculty who have received significant support from SDSGC in order to assess the impact of the support on their education, career, and professional development.*

Objective C.3.1: (Longitudinal tracking – students) All students who have received significant fellowship or scholarship assistance from SDSGC will be longitudinally tracked through first employment or beginning of advanced degrees. (See also B.1.5, C.1.3.3.)

Strategy C.3.1.1: Continue to participate in the Consortium’s contractor-assisted longitudinal tracking system so that all students provided with “significant support” from SDSGC (defined as over \$1,000 in a single award) will be tracked in accordance with NASA’s longitudinal tracking requirements.

Outcome indicator: *Use of a web-based tracking system will improve SDSGC’s ability to assess the impact of its student programs and to maintain better contact with graduates of the program.*

Objective C.3.2: (Longitudinal tracking – faculty) All faculty who have received significant research, curriculum development, or travel assistance from SDSGC will be required to submit reports on the impact of the award on research capacity, education, economic development, and professional development.

Strategy C.3.2.1: Develop and implement a simple, web-based or otherwise electronic reporting tool for gathering consistent data from faculty on funded activities and the impact of the activities.

Outcome indicator: *Use of a consistent reporting tool for faculty awards will facilitate compilation of participant data, scientific and educational products, new collaborations, and new funding that result from the program.*

C.4. National Program Emphases Minority Serving Institutions

Goal: *To ensure that Minority-Serving Institutions in South Dakota, which are exclusively Tribal Colleges and Universities, are represented in the planning and implementation of all Consortium programs.*

Objective C.4.1: (Management) Tribal College needs and priorities will be more effectively served by SDSGC programs.

Strategy C.4.1.1: SDSGC will actively seek representation from Tribal College faculty and staff on the Management Team. (See also A.8.)

Outcome indicator: *At least one permanent or rotating member of the Management Team will be a representative of a Tribal College.*

Objective C.4.2: (Fellowships and Scholarships) The Management Team will ensure a broad distribution of fellowship and scholarship awards, with an emphasis on awards to qualified students at Tribal Colleges. (See also B.1.4.)

Strategy C.4.2.1.: Members of the Management Team will provide assistance to Tribal College students and advisors to help them develop competitive proposals for fellowships and scholarships.

Outcome indicator: *Management Team staff will present fellowship/scholarship funding opportunities in the fall of each year to 100% of the STEM degree seeking students at Oglala Lakota College and Sinte Gleska University.*

Objective C.4.3: (Research Infrastructure) SDSGC will promote research opportunities and collaborations targeting Tribal College affiliates. (See also B.2.6.)

Strategy C.4.3.1: Distribute NASA, SDSGC, and SD NASA EPSCoR research and education opportunities to SDSGC contacts at Tribal Colleges.

Outcome indicator: *At least one research and education proposal submitted by Tribal College affiliates or in collaboration with Tribal College affiliates.*

Strategy C.4.3.2: Develop and maintain remote-sensing test sites that promote long-term interdisciplinary research and training collaborations among SDSGC institutions, Tribal College affiliates, and external partners. (See also B.2.4.2.)

Outcome indicator: *SDSGC institutions acquire new remote sensing data or collaborate on use of existing data.*

Objective C.4.4: (Higher Education) Support Higher Education programs that strengthen STEM education at Tribal College affiliates. (See also B.3.5.)

Strategy C.4.4.1: Support programs that help prepare Native American students for Tribal College (or other post-secondary education) and programs that help students at Tribal Colleges to make a successful transition to advanced undergraduate and graduate STEM programs at other SDSGC affiliates. (See also C.2.1.2.)

Outcome indicator: *Annually, SDSGC provides support for STEM programs in at least three Tribal College affiliates and tribal K-12 schools that provide college preparatory programs (e.g., St. Francis Indian School, SD GEAR UP, Consortium Development Grant with Minority Institutions, etc.).*

Strategy C.4.4.2: Promote NASA and industry student opportunities, such as internships, to students and advisors at Tribal College affiliates.

Outcome indicator: *At least one Tribal College student is placed in a STEM internship or provided a STEM research/educational opportunity each year.*

D. Secondary Space Grant Programmatic Elements

These projects and activities aim to **attract and retain** precollege students, pre-service/in-service teachers, as well as **build strategic partnerships** between formal and informal education providers. These activities should promote STEM literacy and awareness of NASA's mission, and aim to **inspire and engage participants**.

D.1. Precollege Education

Goal: *To increase student and teacher awareness and access to educational and career opportunities in aerospace, earth science, and supporting STEM disciplines.*

Objective D.1.1: (NASA dissemination) Disseminate information on NASA and SDSGC precollege activities and opportunities to teachers and students statewide.

Strategy D.1.1.1: Develop and maintain electronic databases and mailing lists of contacts in precollege educators in STEM fields. (See also A.6.1.)

Outcome indicator: *Electronic databases of precollege contacts updated as necessary.*

Objective D.1.2: (Partnerships) Facilitate partnerships for grant applications that aim to strengthen precollege STEM education.

Strategy D.1.2.1: Participate in preparation of proposals to NASA or other organizations that support precollege STEM education.

Outcome indicator: *Annually, SDSGC affiliates will participate in at least one precollege education proposal.*

Objective D.1.3: (In-service teacher training) Increase teacher capacity to effectively incorporate aerospace and earth science into the curriculum.

Strategy D.1.3.1: Provide professional development workshops for educators on topics related to aerospace and earth science.

Outcome indicator: *At least 100 teachers will participate in workshops facilitated by SDSGC such as NASA AESP training, GIS/GPS training, E-missions, GEMS, and StarLab/Digitalarium/Uniview Planetarium astronomy training.*

Strategy D.1.3.2: Maintain “K-12 Educational Opportunities” section of the SDSGC website as a teacher resource directory.

Outcome indicator: *Website is updated at least bi-monthly. (See also A.6.1)*

Strategy D.1.3.3: Participate in NASA Summer of Innovation (SoI) Program provided by SDSGC affiliate SD Discovery Center.

Outcome indicator: *Annually, at least one five South Dakota schools (preferably Tribal schools) participate in South Dakota’s NASA SoI Program.*

Objective D.1.4: (Science and education events) Support programs that expose K-12 students and teachers to hands-on experiences and to educational and career opportunities in the fields of aerospace, earth science and technology.

Strategy D.1.4.1: Present annual South Dakota Space Days event. (See also D.2.2.2.)

Outcome indicator: *At least 1,000 people will attend “NASA South Dakota Space Days”.*

Strategy D.1.4.2: Support organizations that provide K-12 students and teachers with educational and career opportunities in the fields of aerospace, earth science, and technology.

Outcome indicator: *Over 3,000 students and teachers each year participate through Women in Science Conferences, K-12 science fairs, Aerospace Career and Education Camp, NASA Summer of Innovation, SD GEAR UP, and related programs.*

Objective D.1.5: (State standards) SDSGC will promote and support programs that align with state and national education standards.

Strategy D.1.5.1: Provide support for the “E-missions” Program, GEMS (Great Explorations in Math & Science) Program, and similar curriculum enhancement projects.

Outcome indicator: *These teacher-training programs embrace state education standards in math, science, and language arts and will introduce at least 50 teachers to NASA and space science curricula annually.*

Objective D.1.6: (Diversity) Inspire and motivate women, underrepresented minorities, and persons with disabilities into STEM careers.

Strategy D.1.6.1: Support programs that inform, inspire, and motivate students from underrepresented groups about educational and career opportunities in the fields of aerospace, earth science, and supporting STEM disciplines.

***Outcome indicator:** Over 1,000 females and students from underrepresented groups participate each year through Women in Science Conferences, K-12 science fairs, Aerospace Career and Education Camp, SD GEAR UP, and related programs.*

Objective D.1.7: (Evaluation) The Consortium will develop methods to document, measure, and assess the impact of the precollege education programs in conjunction with its implementation of an overall evaluation strategy. (See also A.9.)

Strategy D.1.7.1: Develop and administer simple before-and-after surveys of participants' knowledge and attitudes about the Consortium, NASA, and STEM careers.

***Outcome indicator:** Adjustments are made to the precollege education program to strengthen activities that are working and drop or improve activities that are not having the intended impact.*

D.2. Informal Education: Public Service

Goal: *To enhance public scientific literacy in aerospace and earth science; to complement community efforts in STEM education; and to inspire citizens of diverse backgrounds through the excitement of scientific exploration and discovery.*

Objective D.2.1: (NASA dissemination) The SDSGC will increase public awareness of the Space Grant program and its activities and engage the public in the excitement of NASA missions.

Strategy D.2.1.1: Maintain SDSGC webpage to provide the public easier access to the latest information about NASA and SDSGC activities.

***Outcome indicator:** Website is updated at least bi-monthly.*

Strategy D.2.1.2: SDSGC will sponsor *StarDate* on South Dakota Public Radio.

***Outcome indicator:** NASA and SDSGC will be featured twice daily during the work week in space/science education broadcasts.*

Objective D.2.2: (Science and education events) The SDSGC will support activities of scientific discovery across the state.

Strategy D.2.2.1: SDSGC will support NASA's commitment to renewing a spirit of exploration and discovery and will use the excitement of space exploration to promote this policy to the general public.

***Outcome indicator:** Annually, SDSGC staff will produce and give at least five presentations to various public groups, and will generate press releases about Consortium activities.*

Strategy D.2.2.2: Present annual South Dakota Space Days event. (See also D.1.4.1.)

***Outcome indicator:** At least 1,000 people will attend "NASA South Dakota Space Days".*

Objective D.2.3: (Diversity) SDSGC will seek to inspire and motivate women, underrepresented minorities, and persons with disabilities through the excitement of NASA missions.

Strategy D.2.3.1: Support programs that inform, inspire, and motivate members of underrepresented groups about the excitement of NASA missions.

Outcome indicator: Participants in South Dakota Space Days and science fairs will include at least 15% Native Americans and 40% females.

Note: The most current version of SDSGC's "*Roles & Responsibilities of Members*" document can be found online at:

<http://sdspacegrant.sdsmt.edu/RolesandResponsibilities7-22-05.pdf>