

North Carolina Space Grant Consortium
North Carolina State University
Dr. Christopher S. Brown, Director
(919) 515-4240
www.ncspacegrant.org
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PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The North Carolina Space Grant Consortium (NCSG) is a Designated Consortium funded at a level of **\$845,000** for fiscal year 2010.

PROGRAM GOALS

NCSG's FY2010 program goals and objectives listed below, are described in the Consortium's Strategic Plan (2010-15) and are aligned with NASA's Education Framework:

Goal 1: To deliver a competitive Fellowship/Scholarship program that provides research and education opportunities to students in science, technology engineering and mathematics (STEM) disciplines at NCSG Affiliate institutions. (NASA Outcome 1)

Objectives: (1.1) Support Graduate Research Fellowships and Undergraduate Research Scholarships; (1.2) Support Undergraduate Scholarships; (1.3) Support Community College Scholarships; (1.4) Support STEM Teacher Education Scholarships; (1.5) Ensure competitive distribution of F&S funds; (1.6) Leverage support from industry, research organizations, and other Space Grant partners for other F&S projects.

Goal 2: To strengthen North Carolina's aerospace-related research infrastructure and capabilities. (NASA Outcome 1)

Objectives: (2.1) Provide start-up funding to early career faculty; (2.2) Encourage research collaborations between faculty and NASA centers/industry; (2.3) Ensure competitive distribution of research funds.

Goal 3: To provide groups of students with opportunities to engage in NASA-mission and STEM-based academic research and coursework. (NASA Outcomes 1 and 2)

Objectives: (3.1) Engage student groups in NASA-related research/design projects; (3.2) Develop STEM courses aligned with NASA's research direction and corresponding Mission Directorates; (3.3) Ensure competitive distribution of higher education funds.

Goal 4: To deliver activities that facilitate the National Space Grant College and Fellowship Program's focus on involving underrepresented groups and persons with disabilities in all higher education program areas.

Objective: (4.1) Actively pursue and increase the participation of women, underrepresented minorities, and persons with disabilities in NC Space Grant program areas of Fellowship/Scholarship, Student Research and Course Development, and Research Infrastructure.

Goal 5: To equip NC pre-service and in-service educators with tools to inspire the future STEM workforce to pursue education and careers in aerospace-related fields. (NASA Outcome 2)

Objectives: (5.1) Provide professional development opportunities for precollege educators; (5.2) Ensure competitive distribution of precollege education funds.

Goal 6: To increase interest in and understanding of NASA-mission and STEM activities by inspiring and engaging individuals of all ages throughout North Carolina. (NASA Outcome 3)

Objectives: (6.1) Provide professional development opportunities for informal educators; (6.2) Ensure competitive distribution of informal education funds.

Goal 7: To expand the geographic diversity and awareness of NC Space Grant.

Objectives: (7.1) Increase the number of Affiliates and Partners; (7.2) Increase the funding base for NCSG to allow for expanded programming; (7.3) Increase public awareness of NCSG activities.

PROGRAM/PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

NCSG supports students and faculty in innovative, hands-on NASA-related research through the Fellowship and Scholarship, Higher Education, and Research Infrastructure programs (Outcome 1). Furthermore, NCSG supports precollege and informal education programs that provide tools for educators to inspire future student explorers. The following quotes from student and educator participants demonstrate the impact of NC Space Grant programs:

Outcome 1 – Fellowship/Scholarship Program:

“It is impossible to ignore the importance of funding, especially when your research requires travel to some of the world’s most unusual environments. Since 2008, the North Carolina Space Grant’s support has made it possible for me to join NASA expeditions from Arizona to the Arctic, and I could not be more grateful. Yet the most incredible gift the Space Grant has given me does not come with a price tag. Atop glaciers, in a lunar rover, deploying submarines, or simply in front of posters at conferences—the incredible people I’ve met and surreal landscapes I’ve seen because of the Space Grant have challenged and inspired me.” (Zena Cardman, Senior at UNC-Chapel Hill, 2010 Undergraduate Research Scholarship/Pavilion Lake Research Project - NASA Ames)

Outcome 1 – Research Infrastructure Program:

Dr. Scott M. Ferguson, NCSG New Investigator recipient (FY09-FY10), received a 2010 Faculty Early Career Development Award from the National Science Foundation (NSF). The award, known as the NSF CAREER Award, is one of the highest honors given by NSF to young faculty in science and engineering. NSF will provide \$400,000 in funding over a five-year period to support Ferguson’s research project entitled, “Giving You ‘Almost’ What You Want – Customizing Products through the Integration of Market Modeling and Engineering Design.” Ferguson’s project will try to determine whether improving the integration of preference modeling and engineering design can lead to customized products better suited to respond to different markets and changing needs. The idea is to help American manufacturing enterprises identify markets where giving a customer “almost” what they want – through manufacturer personalization and consumer customization – can deliver value to both customer and firm. The project will also involve working with high school, undergraduate and graduate students by focusing on the multidisciplinary, interdisciplinary and systems-level education of current and future engineers.

Research sponsored through the NCSG New Investigators Program (FY07) allowed Dr. Andrew Willis (UNC-Charlotte) to establish expertise in stereoscopic 3D reconstruction as performed by the Mars Exploratory Rovers *Spirit* and *Opportunity* by implementing a prototype next-generation stereoscopic system for future rover-based missions. This work was extended through a collaborative grant with Dr. Martha Eppes, a geologist from UNC-Charlotte, to the NASA MDAP (Mars Data Acquisition Program) to develop a data-mining tool capable of efficiently locating 2D and 3D images of interest for geological research on exposed surface rocks and rock outcroppings. The project was funded for \$161,648 and runs from August 2009 to July 2012.

Outcome 1 – Higher Education/Course Development Program

“Through the help and support of the NC Space Grant and the Mechanical and Aerospace Engineering Department, we have established the High Powered Rocketry Club as what will hopefully be a legacy student organization for years to come. The team provides opportunities for students of all disciplines to be involved in a real-world application of STEM principles in the design and construction of a high powered rocket and scientific payload to be launched at the NASA Undergraduate Student Launch Initiative competition. I am happy to announce that we reached over 1,000 K-12 students as well as a number of undergraduates with the message of staying committed to STEM fields for future progress.” (Isaac Owolabi, Senior/Team Leader of the HPRC, NC State University)

Outcome 2 – Pre-College Education Program

“The LEAP (Learn-Educate-Apply-Pioneer) Planets Project provided meaningful professional development opportunities and resources for elementary and middle school teachers with effective, up-to-date space science education activities and materials tied to the NC Standard Course of Study. Because of geographic and economic realities, our students and teachers would normally not be able to benefit from the excellent programming and training that Morehead Planetarium and Science Center can provide. We are excited that you were able to bring these resources to us and empower our teachers at the elementary and middle school levels.” (Nicholas King, Chief Academic Officer, Northampton County Schools)

Outcome 3 – Informal Education Program

“This might be the best experience I have ever had. The opportunity to work with others that enjoy science as much as I do was great. It opened my eyes to how the scientific method is used in real life. This has shown me that if you work as a team and bounce ideas off each other you can accomplish anything.” (Student from Mendenhall Middle School; his team was selected to send an experiment onboard Space Shuttle Flight STS-135 as part of the Student Spaceflight Experiments Program)

PROGRAM ACCOMPLISHMENTS

Below is a summary of NC Space Grant’s FY 2010 program accomplishments as they relate to the NASA Education Strategic Framework Outcomes:

OUTCOME 1:

Fellowships and Scholarships (NCSG Goal 1)

- Provided **22 Graduate Research Fellowships and 16 Undergraduate Research Scholarships** to students representing all of its member institutions. Seven of these research projects had significant partnerships with NASA centers that included a NASA research mentor and the students working on-site at the NASA center [NASA Ames, Kennedy, Langley and Marshall (3 students supported to participate in the NASA Undergraduate Student Research Project Program at MSFC)].
- Provided **4 Undergraduate Scholarships, 2 Community College STEM Scholarships, and 4 NCSG/ Women in Science and Engineering (WISE) Scholarships** enabling lower division students an opportunity to explore STEM-related research on their campus.
- NC Space Grant continued its **partnership with the LORD Corporation** to offer a summer internship program for undergraduate and graduate students. LORD is a worldwide leader in adhesives and coatings, vibration and motion control, and magnetically responsive technologies. NCSG leveraged funding from LORD to provide support for **six students** (counted in F/S student data) to participate in a 10-week internship at LORD.
- The partnership continued with the Pisgah Astronomical Research Institute (PARI) through support of **NC Space Grant/ J. Donald Cline Astronomy Scholarship**. The scholarship provides the student with academic year support and the opportunity to engage in summer research at PARI. The scholarship was awarded in 2010 to Mr. Nathan Stewart, undergraduate student in astronomy and physics at UNC-Pembroke, who presented his research at the 217th meeting of the American Astronomical Society in January 2011 (counted in F/S student data)

- The STEM Teacher Education Scholarship proposed in the FY10 Augmentation will be piloted during the 2011-12 academic year. These Scholarships are designed for students enrolled in STEM-related teacher education degree programs at the undergraduate and graduate level. Scholarship recipients will be required to work with a faculty mentor to develop a thematic unit that aligns with NASA education themes and missions.

Research Infrastructure (NCSG Goal 2)

- **Ten ‘New Investigators’ awards** were competitively granted to early career university faculty who are conducting research that is directly aligned with NASA’s research direction. Funded research areas include: earth science, aerospace engineering, physics, chemistry, astronomy, materials science, and life science. All projects involved undergraduate and/or graduate students, which provided practical training for future aerospace workforce opportunities (**12 students engaged through New Investigators program**).
- **NC Space Grant affiliates supported an additional 44 students** involved in STEM-related research on their respective campuses through research assistantships under the supervision of leading scientists in aerospace fields.

Higher Education Course Development (NCSG Goal 3)

- **Four ‘Higher Education/Course Development’ awards** were competitively granted in FY10 resulting in the development of two new courses (in the areas of robotics and astronomy) and two enhanced senior design courses (both in aerospace engineering). **33 students were engaged in Course Development activities**.
- NCSG Affiliates provided support for student groups to participate in a variety of higher education activities that emphasize student workforce development and the incorporation of interdisciplinary research collaboration. **57 students participated in design competitions or interdisciplinary higher education projects** that include:
 - o Student participation in Appalachian Atmospheric Interdisciplinary Research, a remote-sensing atmospheric science facility that engages Biology, Chemistry, Geology, Geography and Physics departments in conjunction with the only NOAA-certified atmospheric aerosol research facility in Southeastern U.S. (Appalachian State University)
 - o Support for student teams to design small scale power systems based on solar thermal energy powering a fluid thermal cycle for electricity generation. (Duke University)
 - o Support for students in the Center of Excellence in Remote Sensing Education and Research (CERSER) to present collaborative research projects on ice sheet, coastal, ocean, and marine research. (Elizabeth City State University)
 - o Student participation in radio astronomy design activities in partnership with PARI and Pisgah Astronomical Research and Science Education Center. (UNC-Asheville)
 - o Incorporation of space science components using NASA mission-based activities into senior level systems design courses. (Winston-Salem State University)
 - o Support for the High Powered Rocketry Club (HPRC) to compete in the 2010 NASA University Student Launch Initiative in Huntsville, Alabama. The team won the “Best Team Spirit Peer Award” as well as the “Rookie Award” and placed 3rd in the overall competition. The High Powered Rocketry Club was registered as an independent research course under the Mechanical & Aerospace Engineering Department. The team was comprised of ten undergraduate seniors. Support was also provided for the HPRC to compete in the 2011 USLI competition. (NC State University)

Summary of Participation in All Higher Education Activities (NCSG Goals 1-4)

- Of the **201 students supported, 58 (29.0%) went to students from historically underrepresented minority groups and 60 (29.9%) to females**. NCSG minority student participation exceeds the target of 28.3% set by the NCSG 2010-15 Strategic Plan and is consistent with the enrollment percentage of minority students in NC (28.3%) as published in the National Center of Education Statistics Digest (U.S. Department of Education, 2008).

- The percentage of female participants fell short of the 55% target set by the NCSG 2010-15 Strategic Plan (Outcome Indicator: 55% of awards will be made annually to female applicants. The 55% target was derived from the enrollment of students in NC degree-granting institutions as published by the National Center for Education Statistics (U.S. Department of Education, 2008). To help NCSG meet its target for female participation, a new program targeting females was piloted in spring 2011 (FY100). The NCSG/WISE (Women in Science and Engineering) Scholarship program offers first- and second-year students a chance to engage in faculty-mentored research early in their career and participate in an experience that mirrors how science and engineering is done professionally. Four students were selected to participate in the pilot NCSG/WISE Scholarship program; up to 15 students will participate annually once the program ramps up in fall 2011.

OUTCOME 2: (NCSG Goal 5)

- **Three ‘K-12 Professional Development’ awards** were competitively awarded in FY10 (4 proposals submitted in response to this solicitation). Funded projects involved collaboration with partners to achieve its strategic goals of equipping the future STEM workforce and enhancing precollege educator knowledge of aerospace issues.
- NCSG serves as a partner on a NASA K-12 Cooperative Agreement Notice awarded to the NC Science, Mathematics and Technology Education Center (SMT Center) in 2010. *Flight Fellowships: STEM in Aerospace Science and Aeronautics* will build a sustainable coalition of high school teachers, research scientists and industry leaders in North Carolina to drive STEM instruction and outcomes for students. The program was conceived by a partnership between the SMT Center, Kenan Fellows Program, the NC Aerospace Initiative, and NC Space Grant. Over the next two years, 20 expert teachers will learn about contemporary aerospace science and will develop innovative, locally relevant curriculum using NASA educational resources to motivate students to pursue STEM study and careers in aerospace. Each Flight Fellowship will include a mentored summer research externship, professional development institutes, and a mid-year professional development workshop.

During summer 2011, a total of 10 teachers will be selected to participate in externship projects (mentored by researchers/faculty) at the following institutions: Wilkes Community College (Applied Engineering Technology); RDU International Airport Authority; Spirit Aerosystems, Inc.; Center for Aviation Safety at NC A&T State University; Guilford Technical Community College (Aviation Management/Career Pilot technology); NASA CAN-DOO Collaboration at Appalachian State University; Lenoir Community College (through NCSU’s College of Engineering); GE Aviation; Duke University; and Morehead Planetarium and Science Center. *A total of 27 teachers have applied for Flight Fellowships this summer; applications are currently being reviewed.*

- NCSG Affiliates provided support for NASA/STEM resource sharing and discipline training opportunities on their local campuses through activities such as teacher fellowships and interdisciplinary workshops. Projects include:
 - o Funding for an in-service teacher to become actively engaged in hands-on summer research. Support materials will be provided to aid teacher in sharing experience with his/her colleagues. (Appalachian State University)
 - o Development of workshop series on the geology of the solar system for pre/in service teachers (Geology, Chemistry, Physics) with a focus on earth processes and remote sensing. (Elizabeth City State University)
 - o Support professional development for secondary teachers related to Project OBSERVE (Observation Based Student Experience in Research via Exploration) – goal is to enhance teacher proficiency in teaching astronomy and successfully prepare teachers to implement Project OBSERVE curriculum. (UNC-Chapel Hill)
 - o Support professional development to middle and high school teachers related to using robotics in the middle school classroom. (UNC-Pembroke)

All NC Space Grant funded K-12 projects will conclude June 30, 2011. Complete participant data will be available after this date.

OUTCOME 3: (NCSG Goal 6)

- **Two ‘Informal Education and Public Outreach’ awards** were competitively awarded (3 proposals submitted in response to this solicitation) that were highly leveraged through partnerships with informal education venues and community groups.
- NCSG Affiliates provided funds to support local/regional events that engage students and the general public in STEM careers and NASA activities. Projects include:
 - o Astronomy programming support at the Elizabeth City State University Planetarium as well as Port Discover Science Center. (Elizabeth City State University)
 - o First Lego League Competition (NC A&T State University)
 - o STEM students serve as docents in conjunction with Momentum program to assist in facilitating public and school observations. (UNC-Asheville)
 - o Family Science Night presentations at the Morehead Planetarium and Science Center. (UNC-Chapel Hill)
 - o Support the aerospace section in the *Mobile Career Launch Pad*, which travels across the state highlighting hands-on scientific demonstrations and activities as well as computer-simulated learning stations to introduce high school and community college students to potential educational and career paths in STEM industries. (NC Community College System)
- NCSG provided leveraged support for the Guilford County School System to participate in the Student Spaceflight Experiment Program (SSEP). Approximately 79 students from five area middle schools participated in developing scientific proposals for SSEP. A local review committee of 17 scientists, educators, and community members judged the 22 entries submitted by students from Aycock Middle, Brown Summit Middle, Mendenhall Middle, Northeast Middle and Northern Middle and selected three finalists, including a cherry tomato seed proposal from Northeast Middle and an osteoblast proposal from Northern Middle. The National Center for Earth and Space Science Education selected the winning experiment by the team from Mendenhall. The Mendenhall Middle School team (9 students) developed an experiment proposal for comparing the growth of brine shrimp in space and on earth and will have their experiment included onboard the Space Shuttle Endeavour (STS-135) in April 2011. During the spaceflight, the student team will conduct two identical experiments – one on the space shuttle and one on Earth – to see how the zero-gravity environment of space affects the growth of brine shrimp. According to the students’ proposal, brine shrimp are a popular organism to study since they are known to be affected by certain toxins and temperature; the students wonder if microgravity could also affect brine shrimp development. *(A group of twenty-six, including the Mendenhall Middle School winning team and their teachers, will travel to Kennedy Space Center to view the launch of Endeavour as a direct result of this program).*
- NCSG collaborated with the Virginia Space Grant Consortium to serve as one of 12 host-sites for a NASA Funding Opportunities in Innovations in Global Climate Change Education (IGCCE) workshop in December 2010. This workshop featured distance education and site-based activities. The distance education broadcast provided information from NASA on the NASA IGCCE Cooperative Agreement Notice, which targets minority serving institutions and organizations, and included instructional sessions on proposal development (NNH11ZHA002C-IGCCE released 1/7/11). The site-based activities provided opportunities for networking with current GCCE awardees, other individuals who attend the workshop and with the hosting Space Grant.

A total of 15 were in attendance at the workshop and represented the following educational groups: four universities (3 HBCU), 1 community college, 3 non-profit groups, and an informal science museum. Fayetteville State University, an HBCU represented at the workshop, collaborated with other attendees who are NCSG Affiliates to develop a proposal in response to this solicitation.
- NCSG partnered with the NC Grassroots Science Museums Collaborative, a network of 32 museums and science centers across the state that serve over three million people annually, to host NASA-themed events and exhibits. In 2010, NCSG partnered with the NCSU student chapter of AIAA to host an activity booth at Astronomy Days at the NC Museum of Natural Sciences. The students interacted with over 3,000 visitors during this two-day event.

All NCSG funded Informal Education projects will conclude June 30, 2011. Complete participant data will be available after this date.

NASA 2010 EDUCATION PRIORITIES:

NCSG contributes to the following *current areas of emphasis*:

- Authentic, hands-on student experiences in science and engineering disciplines: project examples described in ‘Program Accomplishments – Outcome 1’.
- Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise: project examples described in ‘Program Accomplishments – Outcome 2’.
- Community Colleges: In FY10, the NC Community College System (NCCCS) became an Affiliate of the NCSG Consortium. The Community College STEM Scholarship program was piloted in FY10 to encourage students to pursue studies and careers in technical fields, math, engineering and the sciences. Students enrolled at any of NC’s 58 Community Colleges are now eligible to apply for NCSG support. In the first year, 2 community college students were supported (out of 18 applications submitted); throughout the award period recipients were required to complete a series of four interviews with faculty (Community College and University level) and technicians in their STEM area of interest.
In addition to scholarships, the NCCCS supports informal education initiatives through their Mobile Career Launch Pad (described in ‘Program Accomplishments – Outcome 3’).
- Aeronautics research: five ‘New Investigators’ faculty awardees (described in ‘Program Accomplishments – Outcome 1’) are conducting aeronautics research in collaboration with NASA Langley and the National Institutes of Aerospace.
- Environmental Science and Global Climate Change: one ‘New Investigators’ faculty awardee (described in ‘Program Accomplishments – Outcome 1’) is conducting research on climate change and its impact on major ecosystems (Carolina Bays). Furthermore NCSG served as a host-site for a NASA Funding Opportunities in Global Climate Change Education (GCCE) workshop (described in ‘Program Accomplishments – Outcome 3’).
- Diversity of institutions, faculty and student participants: as described in NCSG Goal 4, a common thread throughout all programming areas is to increase the participation of women, underrepresented minorities, and persons with disabilities. The composition of NCSG Affiliates (4 of which are Historically Black and Minority Universities) provides opportunities for minority populations to engage in NCSG programs.
- Enhance the capacity of institutions to support innovative research infrastructure activities: the NCSG ‘New Investigators’ program is designed to strengthen North Carolina’s aerospace-related research infrastructure by providing startup funding to early career university faculty who are conducting research that is directly aligned with NASA’s Strategic Framework (described in ‘Program Accomplishments – Outcome 1’).

‘Summer opportunities for secondary students on college campuses’ was the only area of emphasis not addressed in FY2010.

PROGRAM CONTRIBUTIONS TO PART MEASURES

- **Student Data and Longitudinal Tracking:** Total awards = 201; Fellowship/Scholarship = 55, Higher Education/Research Infrastructure = 146; 58 of the total awards represents underrepresented minority F/S and HE/RI funding. During the FY10 program year, 9 pursued advanced degrees in STEM disciplines, 1 accepted a STEM position at a NASA contractor, 8 accepted STEM positions in industry, and 2 accepted STEM positions in academia.
- For all students receiving significant support in the period spanning FY06-FY10, 27 are pursuing advanced degrees in STEM disciplines, 5 accepted STEM positions at NASA contractors, 3 accepted positions at NASA, 42 accepted STEM positions in industry, 8 accepted STEM positions in academia, and 5 went on to positions in non-STEM disciplines. The remaining students have not yet received the degree that they were pursuing when they received their Space Grant award.
- **Course Development:** Two new courses were developed and two courses were enhanced in FY2010. These include courses in astronomy, robotics, and aerospace engineering.

- **Matching Funds:** In FY2010, the NC Space Grant was required to match \$610,000. In fact, NC Space Grant provided \$832,800 in matching support, which is approximately 36% more than required. Matching funds came primarily from waived overhead from the member universities and from funds provided by the NC General Assembly.
- **Minority-Serving Institutions:** The composition of the NC Space Grant Consortium fosters diversity across all program elements. Four of the 12 Affiliate institutions are classified as HBCUs. Although UNC-Pembroke is not designated as a historically minority institution, it serves the Lumbee Indian population in southeastern NC. In FY10, NC Space Grant provided research support for 53 students attending HBCU Affiliate universities, an increase of 10% from FY09.

IMPROVEMENTS MADE IN THE PAST YEAR

- In FY10, NCSG solicited proposals from accredited North Carolina colleges and universities with significant STEM programs to expand its Affiliate membership and increase the organization’s geographic footprint and expand its services to more NC citizens. As a result of this call and competition, East Carolina University (ECU) was awarded Affiliate Status. The Affiliate program at ECU, under the direction of Dr. John Rummel, will use space science and technology as a vehicle to “inspire the next generation of explorers” by leveraging ongoing NASA-related research and educational programs at ECU with NCSG-focused activities to promote and develop space-related STEM. The ECU Space Grant mission is to increase the interest, awareness, and opportunities brought by ECU faculty to develop astrobiology, space science, planetary sciences, and exploration opportunities for university students, first, and thereby reach K-12 teachers, students, and the public. As an Affiliate, ECU is now eligible to compete (in FY11) with other Affiliate members of the NCSG for up to \$350,000 in program funds in the areas of research seed grants, higher education initiatives and public outreach programs, and up to \$235,000 in fellowship/scholarship funds.
- NCSG made great strides in cultivating relationships between students, faculty, and industry in FY10. Through leveraged partnerships with industry and research centers, NC Space Grant leveraged an additional \$70,000 beyond its core funding to student internship programs providing more hands-on research opportunities for students in industrial settings.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

NCSG has an efficient organizational structure that proactively enables each Affiliate member to play a significant role in management of the program. Overall direction, policies, rules of governance, and budgetary priorities are established through consensus by the Consortium Executive Board, which consists of the Campus Directors from each of the following institutions:

Appalachian State University	NC State University, Lead Institution
Duke University	UNC - Asheville
East Carolina University	UNC - Chapel Hill
Elizabeth City State University (HBCU)	UNC - Charlotte
NC A&T State University (HBCU)	UNC - Pembroke
NC Central University (HBCU)	Winston-Salem State University (HBCU)
NC Community College System	

In addition, the consortium has key partners throughout the state and region that provide programmatic advice and support to help NCSG achieve its strategic goals and objectives. Consortium partners include:

- Kenan Institute for Engineering, Technology & Science (Nonprofit)
- LORD Corporation (Aerospace industry)
- NASA Langley (Government)
- NC Aerospace Initiative (Nonprofit)
- NC Science, Mathematics and Technology Center (Nonprofit)
- Pisgah Astronomical Research Institute (Nonprofit)
- University of North Carolina General Administration (Education)
- Virginia Space Grant (Education)