



**New Investigator Program
Grant Year 2017**

**Project Period:
July 1, 2017 – June 30, 2018**

REQUEST FOR PROPOSALS

**North Carolina Space Grant
New Investigator Program - Request for Proposals**

I. Summary

The New Investigator Program is designed to strengthen North Carolina's research infrastructure by providing startup funding to NC Space Grant university personnel who are conducting research that is directly aligned with NASA's mission. NASA's research interests embrace a wide range of science, engineering, computational and other disciplines. This opportunity is available to those who have yet to become established researchers. Awardees must be tenure track faculty who are within the first five years of their academic careers.

II. Background

The National Space Grant College and Fellowship Program was established by Congress under Title II of the National Aeronautics and Space Administration Authorization Act of 1988. Today the 52 Space Grant Consortia include over 1,000 affiliates from universities, colleges, industry, museums, science centers, and state and local government agencies.

NC Space Grant, established in 1991, is an active member of the National Space Grant College and Fellowship Program, and currently has 13 Affiliate member institutions (Appalachian State University, Duke University, East Carolina University, Elizabeth City State University, NC A&T State University, NC Central University, NC Community College System, NC State University, UNC-Asheville, UNC-Chapel Hill, UNC-Charlotte, UNC-Pembroke, Winston-Salem State University). Programs are conducted in areas of fellowships, scholarships, education, research, and public service to promote, develop and support aeronautics and space-related science, engineering and technology training and programs. A common focus is to involve women, underrepresented minorities and persons with disabilities, and to reach more citizens of North Carolina.

III. Project Overview and Guidelines

A. Award Range and Performance Period

NC Space Grant has allocated a total of \$75,000 to provide between 4-6 awards (\$12,500 maximum award) in the New Investigator program category, with a period of performance of 12 months (July 1, 2017 – June 30, 2018). Proposing institutions are required to provide 100% cost-matching (1:1) using non-federal funds. In other words, if \$12,500 is requested from NC Space Grant, then \$12,500 must be provided as match. Facilities and Administrative (F&A, or overhead) costs are not allowed. Note that indirect costs may not be charged for this award; however, they may be included as un-recovered IDC costs as part of the match requirement. *Awards are contingent on receipt of NCSG's receipt of NASA funds.*

B. Eligibility

The competition is open to tenure track faculty at active NC Space Grant Affiliate member institutions. Awardees must be in the first five years of their academic career, be qualified to serve as a principal investigator at their respective institution, and be U.S. citizens. Permanent residents, foreign nationals and resident aliens may apply for funding but with budget restrictions (see Section IV.F.). Any student(s) supported with award funds must also be a U.S. citizen(s).

NC Space Grant encourages proposals from females, members of underrepresented minority groups, and persons with disabilities. Submission is limited to one proposal per investigator; an investigator may receive only one NC Space Grant New Investigator Program award in his/her academic career.

IV. Proposal Content

A. Title Page (1 page)

The cover page must include the following items: Project title; period of performance (July 1, 2017 – June 30, 2018); PI name, institution, address, phone, fax, and email; concurrence signatures from the Principal Investigator and the Authorizing Official of the proposing institution (sponsored research officer); and the program name (New Investigator Program).

B. Project Description (5 pages maximum)

The PI is expected to use these discretionary funds to further establish his/her professional career through new research or expansion of existing research. Examples of things to consider include: support for graduate or undergraduate students; publication costs; travel funds to establish collaborative relationships with NASA/industry researchers; and disposable research materials (not an all-inclusive list). This section should include the following (refer to Section VII for evaluation rubric):

- Detailed description of the proposed research;
- Relevance of proposed research to NASA's Strategic Framework, Mission Directorates and NC Space Grant Strategic goals for research (refer to Appendices A-C);
- Number of students supported through research efforts*;
- Description of how funding will impact investigator's career;
- How funds will be leveraged to obtain additional research funding (and from whom); and
- Description of past projects supported by NC Space Grant (if applicable).

**Proposals that include support for students will be more favorably reviewed. All students supported must be US citizens (refer to IV.F).*

C. Current and Pending Support

Identify current and pending support of the Principal Investigator including: source of support; project title; amount of award; period covered by award; months or percent of time committed by the investigator during the award period; and location of research. Also include a description of start-up funds PI receives from their respective university and/or university department to support their research. *Do not include the current proposal on the list of pending proposals unless it has been submitted to another possible sponsor.*

D. Vita (2 pages)

The PI must include a biographical sketch (not to exceed two pages) that includes his/her professional experiences and positions and a bibliography of recent publications, especially those relevant to the proposed investigation. Those participants who will play critical management or technical roles in the proposed investigation should demonstrate that their qualifications, capabilities, and experience are appropriate to provide confidence that the proposed objectives will be achieved (no more than one page each).

E. Support Letters (2 letters)

Include a letter of support and commitment from each of the following:

- Research colleague - this letter should emphasize the importance of the proposed research to the field, as well as the ability of the PI to conduct research.
- Department Head or Research center/laboratory Director – this letter should outline the importance of the proposed research to the department and the direction of the university.

F. Budget and Budget Narrative (2 pages)

Provide a detailed budget using the format outlined in Appendix D (New Investigator Program – Proposed Budget for Grant Year 2017), along with a budget narrative. Each format should include expense summaries as well as the 1:1 non-federal cost match requirement. Specific budget details are noted below:

- Direct salary expenses for PI and students should be separated by titles or disciplines with hours, rates, and total amounts for each position.
- Proposed travel should include the number of trips, destination, duration, etc. International travel is not allowed.
- *NOTE: Permanent residents, foreign nationals and resident aliens may not charge salary or travel expenses to the grant; unrecovered salary and travel can be used to meet the cost-match requirement.*
- All students (graduate and/or undergraduate) supported must be permanent U.S. citizens.
- Requests for equipment are limited to equipment that has a direct impact on the research (computers, however, are not allowed). *NASA training grant funds cannot be used to purchase equipment. As a result,*

state funds will be used to support any equipment requests and will require a 1:1 cost-match. The budget format (Appendix D) contains a column for state funds; this is where equipment expenses should be shown. Any equipment request must be thoroughly justified in the budget narrative.

- The NC State University/NASA National Space Grant College and Fellowship Program grant does not cover facilities and administrative costs. Unrecovered facilities and administrative costs may be used for required cost-matching. The detailed budget must include a description of the required 1:1 (100%) non-federal matching funds.
- The NASA Grants and Cooperative Agreements Handbook, Sections A and B, located at http://prod.nais.nasa.gov/pub/pub_library/grcover.htm provides additional information on uniform administrative requirements for grants and cooperative agreements with institutions of higher education.

V. Proposal Format

The following guidelines and restrictions apply to all proposals. Proposals not meeting these requirements may not be considered.

- Proposals must be submitted in PDF format.
- Proposals should be one-sided, single-spaced on standard 8 ½ x 11 paper, no smaller than 12 point font and with no less than one inch margins throughout. Text restrictions are inclusive of all illustrations, tables, charts, exhibits, etc.
- All pages must be numbered sequentially.
- Proposals should contain only appendices and attachments specifically called for.
- All information you wish for reviewers to consider should be included in your proposal. It is not acceptable to refer reviewers to websites or other external sources for additional information or as evidence for your narrative. Additional appendices and attachments are not allowed.

VI. Proposal Submission

Proposal submission will be conducted via the NC Space Grant website at <http://www.ncspacegrant.org/proposals/> by February 24, 2017 at 5:00 PM (EST). One complete single electronic file in PDF format is required by the on-line system. **Electronically submitted proposal must contain all required signatures.**

VII. Proposal Review and Evaluation

Proposals will be reviewed by a panel of individuals who are scientifically literate, but not necessarily experts in the proposed field of research. Proposals will be grouped into 'research areas' based on information provided by the PI during proposal submission.

Special parameters have been established by the NC Space Grant for evaluation in the following major areas:

- Research Plan (30%)
- Alignment of research to NASA and NC Space Grant Strategic Goals (25%)
- Budget alignment to research plan (15%)
- Professional letter of support from research colleague; commitment by PI's institution to the investigator and the proposed research as indicated by the letter of support from the university and/or cost matching (15%)
- Compelling case for the need for this support to further the investigator's research career (15%).

VIII. Reporting Requirements

A. Financial Progress Report and Data Requests

Awardees will be required to maintain and provide data necessary for NC Space Grant to report to the NASA Office of Education Performance Measurement System (OEPMS). This data typically includes but is not limited to: description of work performed; evaluation of the impact of work performed; number of students, teachers, staff, faculty, and general public involved; gender/ethnic breakdown, birth date and contact information (email)

of all participants; list of papers published, presentations given, conferences hosted/attended. This information may be requested at any time throughout the award period.

B. Final Report

A final report is due within 30 days of the completion of the award. This report must contain the following (format will be provided):

1. Executive summary of the project that is suitable for publication. The executive summary should no more than 250 words.
2. Statement on how funding assisted investigator.
3. List of papers submitted for publication during the period of this award. Include title, publication, date of publication, author list, and an electronic copy of the paper.
4. List of all presentations delivered during the period of this award. Include presentation title, location, date, and a copy of the presentation.
5. List of all conferences attended during the period of this award. Include conference title, location, dates, and if investigator presented.
6. List of all proposals submitted during the period of this award. Include proposal title, announcement of opportunity title, name of sponsor, proposal due date, role of investigator, and funding status.
7. List of all patents that were applied for and/ or approved during the period of this award.
8. List of pending and actual support for investigator. Include source, PI, % time, and role of investigator.
9. Budget summary that details all project expenditures and includes a comparison of the proposed budget to actual expenditures for all budgeted categories.
10. Signed statement of cost sharing from PI's Office of Sponsored Programs.

IX. Other Requirements

A. Acknowledgment of Support

An acknowledgment of NC Space Grant support (logo and/or written) must appear in all publications of any material based on this funding in the following terms: "Supported by the North Carolina Space Grant."

B. Post Award Reporting Requirements

The Principal Investigator agrees to submit a current vita to NC Space Grant Consortium once per year in January for at least five years after the completion of this award. This allows the NC Space Grant Consortium to assess the longitudinal impact of this program on the career of the investigator.

C. Audit and Records

Financial records, supporting documents, statistical records, and other material pertinent to this grant shall be retained by the grantee for a period of at least three years following submission of the final project report and shall be made available to NC Space Grant upon request.

D. Payments

Contingent upon NC Space Grant's receipt of NASA and State funds, a sub-agreement will be established between the grantee's institution and NC State University. Funds awarded may come from mixed sources (federal and state funds). The grantee institution shall receive payments under this grant through that institution's Office of Sponsored Programs. Invoices must be submitted no later than 30 days after the last day of the month in which the expense was incurred. Late invoices may not be honored.

E. Notification of Absence

NC Space Grant shall be notified prior to the Principal Investigator's absence from campus for a period of four months or more. Prolonged absences from the campus for non-project related purposes are subject to NC Space Grant review.

F. Transfer of Awards

If the principal investigator leaves the grantee institution or otherwise relinquishes active direction of the project, the institution must notify NC Space Grant as soon as possible and the award will be terminated.

Awards may not be transferred if the PI leaves the grantee institution to another institution that is not an active academic member of the NC Space Grant.

G. Suspension or Termination

This grant may be suspended or terminated if the grantee fails to comply with all the terms and conditions of the grant.

H. Nondiscrimination

No person shall be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination under this grant on grounds of race, color, national origin, religious affiliation, physical disability, gender, or sexual orientation.

I. Compliance with Regulations

The investigator must abide by all state and federal regulations related to research.

X. Point of Contact

Questions regarding this announcement should be directed to:

Jobi Cook, NC Space Grant Associate Director

jobi_cook@ncsu.edu

(919) 515-5933

Applicants are encouraged to contact their local NC Space Grant Campus Director, listed below:

University	Campus Director	Email
Appalachian State University	Dr. Anthony Calamai	calamaia@appstate.edu
Duke University	Dr. Josiah Knight	jknight@duke.edu
East Carolina University	Dr. Tarek Adbel-Salam	ABDELSALAMT@ecu.edu
Elizabeth City State University	Dr. Kuldeep Rawat	ksrawat@ecu.edu
North Carolina A&T State University	Dr. John Kizito	jpkizito@ncat.edu
North Carolina Community College System	Dr. Matthew Meyer	meyerm@nccommunitycolleges.edu
North Carolina Central University	Dr. Shawn Sendlinger	ssendlinger@ncsu.edu
North Carolina State University	Dr. Andre Mazzoleni	a_mazzoleni@ncsu.edu
University of North Carolina at Asheville	Dr. Brian Dennison	dennison@unca.edu
University of North Carolina at Charlotte	Dr. Jim Conrad	jmconrad@uncc.edu
University of North Carolina at Chapel Hill	Dr. Daniel Reichart	reichart@physics.unc.edu
University of North Carolina at Pembroke	Dr. Jose D'Arruda	jose.darruda@unpb.edu
Winston-Salem State University	Dr. Elva Jones	jonese@wssu.edu

APPENDIX A: Strategic Framework for NASA

NASA Mission Directorates

NASA's Mission to *pioneer the future in space exploration, scientific discovery, and aeronautics research*, draws support from four Mission Directorates, each with a specific responsibility.

- The Aeronautics Research Mission Directorate (ARMD) conducts vital research to make air travel more efficient, safe, green, and to uncover leading-edge solutions for the Next Generation Air Transportation System (NextGen) in the United States. ARMD's fundamental research in traditional aeronautical disciplines and emerging disciplines helps address substantial noise, emissions, efficiency, performance and safety challenges that must be met in order to design vehicles that can operate in the NextGen. (<http://www.aeronautics.nasa.gov>)
- The Science Mission Directorate (SMD) leads the Agency in four areas of research: Earth Science, Heliophysics, Planetary Science, and Astrophysics. SMD works closely with the broader scientific community, considers national initiatives, and uses the results of National Research Council studies to define a set of "Big Questions" in each of these four research areas. These questions, in turn, fuel mission priorities and the SMD research agenda. The SMD also sponsors research that both enables, and is enabled by, NASA's exploration activities. SMD has a portfolio of Education and Public Outreach projects that are connected to its research efforts. (<http://nasascience.nasa.gov>)
- The Human Exploration and Operations (HEO) Mission Directorate provides the Agency with leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit. HEO also oversees low-level requirements development, policy, and programmatic oversight. Exploration activities beyond low-Earth orbit include the management of Commercial Space Transportation, Exploration Systems Development, Human Space Flight Capabilities, Advanced Exploration Systems, and Space Life Sciences Research & Applications. (<http://www.nasa.gov/directorates/heo/home/index.html>)
- The Office of the Chief Technologist (OCT) serves as the NASA Administrator's principal advisor and advocate on matters concerning agency-wide technology policy and programs. The Office of the Chief Technologist (OCT) is responsible for direct management of NASA's Space Technology programs and for coordination and tracking of all technology investments across the agency. The office also serves as the NASA technology point of entry and contact with other government agencies, academia and the commercial aerospace community. The office is responsible for developing and executing innovative technology partnerships, technology transfer and commercial activities and the development of collaboration models for NASA. (http://www.nasa.gov/offices/oct/about_us/index.html)

Please visit each NASA organization website to find detailed information about current projects and current areas of interest.

APPENDIX B: NASA Education Strategic Coordination Framework

The Mission of NASA, as stated in the NASA 2014 Strategic Plan stresses education: *“Drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth.”* NASA contributes to national efforts for achieving excellence in STEM education through a comprehensive education portfolio implemented by the Office of Education, the Mission Directorates, and the NASA Centers. NASA will continue the Agency’s tradition of investing in the Nation’s education programs and supporting the country’s educators who play a key role in preparing, inspiring, exciting, encouraging, and nurturing the young minds of today that will manage and lead the Nation’s laboratories and research centers of tomorrow.

http://www.nasa.gov/sites/default/files/files/FY2014_NASA_SP_508c.pdf

NASA Education Areas of Emphasis that relate to this call for proposals:

- Authentic, hands-on student experiences in science and engineering disciplines-the incorporation of active participation by students in hands-on learning or practice with experiences rooted in NASA-related, STEM-focused questions and issues; the incorporation of real-life problem solving and needs as context for activities.
- Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise. Capabilities for teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines.
- Summer opportunities for secondary students on college campuses with the objective of increased enrollment in STEM disciplines or interest in STEM careers.
- Diversity of institutions, faculty, and student participation.

APPENDIX C: NC SPACE GRANT STRATEGIC PLAN, 2015-2018

The NC Space Grant 2015-2018 Strategic Plan is available online:

http://ncspacegrant.org/uploads/images/images/about%20us/2015-2018_Mission%20and%20Strategic%20Plan.pdf

**APPENDIX D: New Investigator Program – Proposed budget for Grant Year 2016
(July 1, 2017 – June 30, 2018)**

Institution: _____

PI: _____

AWARD AMOUNT: \$ _____; **COST SHARE COMMITMENT:** \$ _____

(The award amount and cost-share commitment should match what is reported below)

Budget Category	NASA Funding	Cost-Share	TOTAL
Salaries	\$ _____	\$ _____	\$ _____
Travel	\$ _____	\$ _____	\$ _____
Supplies	\$ _____	\$ _____	\$ _____
Services	\$ _____	\$ _____	\$ _____
Equipment**	\$ _____XXX_____	\$ _____	\$ _____
Student Salaries/Stipend	\$ _____	\$ _____	\$ _____
Other (Explain)	\$ _____	\$ _____	\$ _____
Indirect Costs*	\$ _____XXX_____	\$ _____	\$ _____
TOTALS:	\$ _____	\$ _____	\$ _____

**The NC State University/NASA National Space Grant College and Fellowship Program grant does not cover facilities and administrative costs. Unrecovered facilities and administrative costs may be used for required cost-matching.*

*** NASA training grant funds cannot be used to purchase equipment.*

Budget Narrative: (please attach on a separate sheet)