



2021-2022 Delaware NASA EPSCoR RID Seed Grant Program

Open to Delaware Researchers

Proposal Deadline May 7, 2021

INTRODUCTION

The NASA EPSCoR Program will sponsor a Research Infrastructure Development (RID) grant to the state of Delaware. A principal goal of the program is to develop competitive research and technology for the solution of scientific and technical problems in areas of strategic importance to NASA's mission: *to pioneer the future in space exploration, scientific discovery, and aeronautics research*. The areas that are considered important by NASA are defined by the Mission Directorates (see Appendix A). A second goal of the Delaware program is to contribute to the overall research structure, science and technology capabilities, higher education, and economic development of Delaware.

The Delaware NASA EPSCoR Seed Grant Program is aimed at promoting research and development in NASA-related areas among Delaware scientists and engineers. The goal is to stimulate scholarly initiatives by supporting junior faculty, researchers, and postdocs who have not yet received significant government funding. Consideration will also be given to more senior faculty who are embarking on a new research direction, but who have not yet received funding for that new research. The seed grant program is intended to support proposal development, pilot research, and other activities that advance a NASA-related research project to the point at which it can attract competitive extramural funding. The relation between the proposed research and NASA's mission can be demonstrated by identifying a committed collaborator from a NASA center, or a collaborator who is already successful in obtaining NASA research funding.

Seed grant awards will be in amounts up to a total of \$20,000. UD applicants should submit a budget for direct costs only. External applicants should submit a budget not to exceed \$20,000 including overhead *at their own institutions*. Funding requests can include the following categories of direct costs: graduate student stipend (use the graduate student stipend rate for your college); research supplies (excluding large equipment); summer support for junior faculty/researchers, maximum of one month; and a summer undergraduate intern. The duration of each award is 12 months, from 7/1/2021 – 6/30/2022. We anticipate that five awards will be made in connection with this announcement; 2 at \$17,000 and 3 at \$20,000.

SEED-GRANT PROPOSALS

Seed grant proposals should include the following elements. Note page specifications: text should be single-spaced, minimum 11-pt Times New Roman font.

1. **Cover page.** Include the project title, and the department, mail and email address, and phone number for each investigator.
2. **Abstract.** Include a 150-word abstract, suitable for use in public reports, that describes the research, why it is important to NASA, and why it is of interest to the state of Delaware.
3. **Narrative.** Articulate the research question, theoretical grounding, existing literature, research plan, names of collaborators, and the significance of the larger project that the seed grant will help you develop. Maximum length: two pages excluding references.
4. **Plan for Seeking External Funding.** Describe plans for seeking external funding, including: what government agencies or foundations you might approach ; what contacts if any (e.g., prior application, conversations with program officer) you have with those agencies; what contacts you may have with staff at NASA Centers, or with Principal Investigators (PIs) on funded NASA grants, or with NASA-related contractors; when you expect to apply for funds; the expected scale of the larger project; and how the seed grant activities enables prospects for additional external funding. Maximum length: half page.
5. **Relevance of Proposed Activities to NASA EPSCoR RID mission and relation to Existing Research (if applicable).** Address how the proposed research addresses NASA’s strategic goals, as well as into the EPSCoR theme of “contributing to the overall research infrastructure, science and technology capabilities, higher education, and/or economic development of Delaware”. Describe what types of linkages will take place with other institutions, NASA-related contractors, NASA Centers, NASA PIs, and/or state agencies. Maximum length: half page.
6. **Budget and budget justification.**
7. **A vita for each investigator.** List academic credentials, appointments, and relevant publications. Maximum length: two pages for each investigator.

ELIGIBILITY

Faculty and research personnel working in areas of interest to the NASA Mission in the state of Delaware are eligible to apply.

LEVEL OF FUNDING

Seed grants will be funded in the amounts of \$20,000 to each of three successful proposers and \$17,000 to each of two successful proposers. Include fringe benefits (where applicable) in the total budget; only applicants outside of UD need to include indirect costs.

ELIGIBLE EXPENSES

Funding for senior faculty summer salary is discouraged. NASA EPSCoR funds may not be used for equipment purchases or foreign travel. All other expenses directly related to seed grant activities may be included in the budget.

REPORTING REQUIREMENTS

Seed grant recipients will be asked to provide the NASA EPSCoR Director with a brief semi-annual report describing activities funded by the seed grant. A final report on the work performed, and on progress toward obtaining external support, will be due one year following the award date.

DEADLINES

Proposal deadline for seed grants for 2021-2022 is **May 7, 2021**.

REVIEW PROCESS

Seed grant applications will be reviewed by a panel composed of members selected from Delaware's NASA EPSCoR Technical Advisory Committee, the Delaware Space Grant Consortium (DESGC) program advisors, and/or other faculty colleagues.

CRITERIA FOR EVALUATION

The most important evaluation criteria for seed grant proposals are intellectual merit, potential for generating interdisciplinary innovation, development of new collaborations, consistency with NASA's mission, and potential for future fundability. Specifically, the proposer must demonstrate how the proposal is aligned with one or more of the strategic goals which are listed in [NASA's Science 2020-2024: A Vision for Scientific Excellence](#). Proposals that request funding for a stand-alone project only, or do not describe plans for seeking external funding, or fail to demonstrate specific links with NASA's strategic goals, or poorly justify their budget, will be considered non-responsive to this Call for Proposals. Proposals submitted by junior faculty and/or junior researchers will be given priority.

SUBMISSION PROCEDURES

Submit all proposal materials as a single PDF file to the NASA EPSCoR Deputy Director, Professor James MacDonald, at jimmacd@udel.edu with a copy to ccathell@udel.edu. Only electronic submissions will be accepted. Questions regarding the seed grant program should also be directed to jimmacd@udel.edu.

Appendix A: 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.

- **Aeronautics Research Mission Directorate (ARMD)** works to solve the challenges that still exist in our nation's air transportation system: air traffic congestion, safety and environmental impacts. Solutions to these problems require innovative technical concepts, and dedicated research and development. NASA's ARMD pursues the development of new flight operation concepts, and new tools and technologies that can transition smoothly to industry to become products.

Through green aviation, NASA is helping create safer, greener and more effective travel for everyone. Our green aviation goals are to enable fuel-efficient flight planning, and reduce aircraft fuel consumption, emissions and noise. NASA aeronautics' four research programs conduct fundamental, cutting-edge research into new aircraft technologies, as well as systems-level research into the integration of new operations concepts and technologies into the Next Generation Air Transportation System (NextGen). A fifth program manages a portfolio of wind tunnels and other testing facilities (icing, propulsion), flight research and support aircraft, and the evolution of test technologies at NASA centers around the country. Additional information on the Aeronautics Research Mission Directorate (ARMD) can be found at: (<https://www.nasa.gov/aeroresearch>)

- **Human Exploration & Operations Mission Directorate (HEOMD)** 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. The International Space Station, currently orbiting the Earth with a crew of six, represents the NASA exploration activities in low-Earth orbit. 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. The directorate is similarly responsible for Agency leadership and management of NASA space operations related to Launch Services, Space Transportation, and Space Communications in support of both human and robotic exploration programs. Additional information on the Human Exploration & Operations Mission Directorate (HEOMD) can be found at: (<https://www.nasa.gov/directorates/heo/index.html>).
- **Science Mission Directorate (SMD)** leads the Agency in four areas of research: Earth Science, Heliophysics, Planetary Science, and Astrophysics. SMD, using the vantage point of space to achieve with the science community and our partners a deep scientific understanding of our planet, other planets and solar system bodies, the interplanetary environment, the Sun and its effects on the solar system, and the universe beyond. In so doing, we lay the intellectual foundation for the robotic and human expeditions of the future while meeting today's needs for scientific information to address national concerns, such as climate change and space weather. At every step we share the journey

of scientific exploration with the public and partner with others to substantially improve science, technology, engineering and mathematics (STEM) education nationwide. Additional information on the Science Mission Directorate (SMD) can be found at: (<https://science.nasa.gov/>).

- **Space Technology Mission Directorate (STMD)** is responsible for developing the crosscutting, pioneering, new technologies and capabilities needed by the agency to achieve its current and future missions.

STMD rapidly develops, demonstrates, and infuses revolutionary, high-payoff technologies through transparent, collaborative partnerships, expanding the boundaries of the aerospace enterprise. SMD employs a merit-based competition model with a portfolio approach, spanning a range discipline areas and technology readiness levels. By investing in bold, broadly applicable, disruptive technology that industry cannot tackle today. STMD seeks to mature the technology required for NASA's future missions in science and exploration while proving the capabilities and lowering the cost for other government agencies and commercial space activities.

Research and technology development takes place within NASA Centers, in academia and industry, and leverages partnerships with other government agencies and international partners. STMD engages and inspires thousands of technologists and innovators creating a community of our best and brightest working on the nation's toughest challenges. By pushing the boundaries of technology and innovation, STMD allows NASA and our nation to remain at the cutting edge. Additional information on the Space Technology Mission Directorate (STMD) can be found at: (https://www.nasa.gov/directorates/spacetech/about_us/index.html).