

Selection Abstract

FY19 NASA Research Announcement (NRA) NNH18ZHA003N for the NASA Fellowship Activity Attachment: Summary of Selected Applicants

The National Aeronautics and Space Administration (NASA) Office of Science, Technology, Engineering, and Mathematics (STEM) Engagement (OSTEM) is ultimately focused on serving students. This NASA Fellowship Activity contributes to OSTEM's Focus Area 1: Create unique opportunities for students and the public to contribute to NASA's work in exploration and discovery, and Focus Area 2: Build a diverse future STEM workforce by engaging students in authentic learning experiences with NASA's people, content, and facilities.

The NASA Fellowship Activity awards are provided as NASA training grants to institutions in support of graduate candidates through a rigorous competitive process via the issuance of a NASA Research Announcement (NRA). Proposals are responsive to NASA graduate research opportunities that are published in the NRA. However, each proposal is conceived by the candidate and finalized in collaboration with the Faculty Advisor and a NASA Subject Matter Expert (SME). NASA Fellows perform NASA-relevant graduate research at their respective institutions during the academic year under the guidance of a Faculty Advisor, who also serves as the Principle Investigator (PI) for the award. Annually, each Fellow spends significant time at a NASA Center or Installation performing research with his or her NASA Technical Adviser who is associated with the research opportunity.

Each Fellow's research leverages the institution's capability and NASA's capacity to contribute to NASA's research objectives. During the three-year award period, each cohort of NASA Fellows participates in technical conferences and professional development activities designed to increase their ability to communicate science, establish and develop professional networks, and hone their professional skills.

The NASA Fellowship Activity directly contributes to:

STEM Engagement Objectives

- 1.1 Students contribute to NASA's endeavors in exploration and discovery;
- 1.2 Research and development capacity of educational institutions is enhanced, enabling broad and diverse contributions that directly address NASA priorities.

STEM Engagement Strategies

- 1.1a Provide internships, fellowships, and other experiences for students to conduct scientific and technical research, and perform design and development activities to fulfill NASA needs and priorities.

1.1b Create structured and widely-accessible experiential learning opportunities for students to engage with NASA's experts and help solve problems that are critical to NASA's mission.

1.1 c Increase visibility of and accessibility to NASA's portfolio of STEM engagement opportunities and activities to broaden participation through the use of innovative media tools and platforms.

1.2 a Create mission-driven opportunities and collaborative initiatives that enable institutions to conduct innovative research, design and technology development to address discrete NASA needs.

1.2b Provide direct support to colleges and universities to strengthen research and development capacity and capabilities that stimulate contributions critical to NASA's mission.

The most recent NASA Fellowship Program NRA was released in January 2019; proposals were due by May 24, 2019. NASA received a total of 130 proposals in response to this NRA. All compliant proposals were evaluated against the following factors for award:

- Scientific Merit of the proposed research: 1) proposal addresses in the scientific research and literature 2) proposal clearly describes a collaborative approach with a NASA installation 3) research is in alignment with academic goals;
- Academic Merit: 1) ability to synthesize and evaluate original thoughts into a clear and concise document 2) previous experiences conducting research and/or desire/potential to conduct research in an authentic lab setting 3) intrinsic motivation; and determination to complete an advanced degree, broader impact of research, and
- Funding Criteria (e.g. Minority University Research and Education Project (MUREP) requirement to execute activities to enhance the involvement of all MSIs in NASA's mission).

At the end of the evaluation process, NASA selected 19 of the most highly rated proposals; each proposal will receive a maximum of three (3) years of funding with a competitive option for a fourth year of performance. MUREP is the funding source for 14 of these proposals; the remaining five proposals are funded by the Aeronautics Research Mission Directorate (ARMD), for an overall award value of \$2,295,000. The individual award amount is \$50,000 each for a Master's degree candidate, and \$55,000 each for a Doctoral degree candidate for each year of the grant, based on the availability of NASA funds and satisfactory performance on the part of the recipient.

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Minority University Research and Education Project (MUREP) and Aeronautics Research Mission Directorate (ARMD) Selected 2019 NASA Fellowship Proposals

Institution/ NASA Center/ Funding Source	Proposal Title	Address of Institution	Principal Investigator	Student/ Degree Pursued/ Department
University of Hawaii System Goddard Space Flight Center MUREP	Rainbow Road: Mapping Multi-Wavelength AGN Variability in the Era of TESS	2680 Woodlawn Dr. Honolulu, HI 96822-1839	Dr. Benjamin Shappee	Anna Victoria Payne Dural Degree Institute for Astronomy
San Diego State University Langley Research Center MUREP	Prandtl-D Aerodynamic Load and Induced Thrust Validation Using Time Resolved Stereoscopic PIV Wind Tunnel Measurements	5500 Campanile Dr. San Diego, CA 92182-001	Dr. Xiaofeng Liu	Bradley Joseph Zelenka Masters Department of Aerospace Engineering
University of Washington Goddard Space Flight Center MUREP	Evaluating Camera Traps as Ground-Based Remote Sensing Networks Linking Snow and Wildlife	PO Box 352100 Seattle, WA 98195-2100	Dr. Laura Prugh	Katie Breen Doctoral School of Environmental and Forest Sciences
University of New Mexico Glenn Research Center MUREP	Automated Recognition and Classification of Martian Transverse Aeolian Ridges	Northrop Hall MSC03 2040 Albuquerque, NM 87131-001	Dr. Louis Scuderi	Tim Nagle McNaughton Doctoral Department of Earth and Planetary Sciences
New Mexico State Glenn Research Center MUREP	Large-Eddy Simulation of Super/Hypersonic Inlet and Isolator Flows	10555 W Flagler St Las Cruces, NM 88003-8001	Dr. Andreas Gross	John-Paul George Mosele Dural Degree Mechanical and Aerospace Engineering

University of Texas at Arlington Goddard Space Flight Center MUREP	Studies of Magnetopause Structure and Motion	502 Yates, Science Hall Rm 108 Arlington, TX 76019-0059	Dr. Ramon Lopez	Pauline Marie Dredger Direct Doctoral Department of Physics
Montclair State University Goddard Space Flight Center MUREP	Exploring the Role of Evaporation and Precipitation on Mangrove Island Morphology	1 University Ave, Ste 1 Montclair, NJ 07043-1624	Dr. Jorge Lorenzo-Trueba	Isamar Marie Cortes Direct Doctoral Department of Earth and Environmental Studies
Florida International University Goddard Space Flight Center MUREP	Sub-THz Phased Array with Low Power and Reduced Hardware Beamformer	10555 W Flagler St Miami, FL 33174	Dr. Elias Alwan	Alfredo Gonzalez Direct Doctoral Department of Electrical Engineering
University of California, Irvine Glenn Research Center MUREP	Thermal Radiation Control by Reconfigurable Emitters Based on Nano-Textured Micro-Pyramids	4200 Engineering Gateway Irvine, CA 92697-3975	Dr. Jaeho Lee	Johnathan Sullivan Dural Degree Department of Mechanical and Aerospace Engineering
University of Houston System Langley Research Center MUREP	Synthesis Analysis of Multi-Dimensional Ozone Measurements in Coastal Environments Toward Improving Ozone Simulation and Advancing Geostationary Satellite Products	3507 Cullen Blvd. Houston, TX 11204-5004	Dr. Yuxuan Wang	Claudia M Bernier Direct Doctoral Department of Earth and Atmospheric Sciences
University of Maryland Goddard Space Flight Center MUREP	Improving Sub-seasonal-to-Seasonal Climate Prediction Using Non-Gaussian Land Surface Assimilation of Satellit Data	5825 University Research Ct College Park, MD. 20740-3822	Dr. Xin-Zhong Liang	Emmanuel Dibia Dual Degree Department of Atmospheric and Oceanic Science

<p>Regents of the University of California at Riverside</p> <p>Goddard Space Flight Center</p> <p>MUREP</p>	<p>Calibrating Novel Perspectives on High pH, High Salinity, and Impact-Induced Hydrothermal Activity in Crater Paleolake Systems</p>	<p>900 University Ave. Riverside, CA. 92521-9800</p>	<p>Dr. Timothy Lyons</p>	<p>Christopher Tino</p> <p>Direct Doctoral</p> <p>Department of Earth Sciences</p>
<p>University of Minnesota</p> <p>Goddard Space Flight Center</p> <p>MUREP</p>	<p>Investigating Small-Scale Flaring NuSTAR Analysis & Hard X-Ray Detector Development</p>	<p>116 Church St SE Minneapolis, MN. 55455-0149</p>	<p>Dr. Lindsay Glesener</p>	<p>Jessie Duncan</p> <p>Dual Degree</p> <p>School of Physics Astronomy</p>
<p>University of Minnesota</p> <p>Langley Research Center</p> <p>MUREP</p>	<p>Launch Vehicle Control Design on a Quadcopter Testbed</p>	<p>110 Union St. SE Minneapolis, MN. 55455-0153</p>	<p>Dr. Demoz Gebre-Egziabher</p>	<p>William Elke</p> <p>Direct Doctoral</p> <p>Department of Aerospace Engineering and Mechanics</p>
<p>University of Florida</p> <p>Langley Research Center</p> <p>ARMD</p>	<p>Modeling Sonic Boom Propagation Through Atmospheric Turbulence and Around the Lateral Extent of the Boom Carpet</p>	<p>PO Box 116250 Gainesville, FL. 32611-6250</p>	<p>Dr. Steven Miller</p>	<p>Alex Carr</p> <p>Direct Doctoral</p> <p>Department of Mechanical and Aerospace Engineering</p>
<p>Ohio State University</p> <p>Glenn Research Center</p> <p>ARMD</p>	<p>High-Fidelity Simulations of the Flow Path in a Turbine-Based Combined Cycle Inlet</p>	<p>E403 Scott Laboratory Columbus OH, 43210-1142</p>	<p>Dr. Datta Gaitonde</p>	<p>Matthew Schwartz</p> <p>Doctoral</p> <p>Department of Mechanical and Aerospace Engineering</p>
<p>Pennsylvania State University</p> <p>Glenn Research Center</p> <p>ARMD</p>	<p>Topology Optimization of Multifunctional Thermal Management Systems for Aerospace Applications</p>	<p>331 Reber Bldg. University Park, P/a. 16802-5018</p>	<p>Dr. Stephen Lynch</p>	<p>Bashir S Mekki</p> <p>Dual Degree</p> <p>Department of Mechanical & Nuclear Engineering</p>

<p>Georgia Institute of Technology Langley Research Center</p>	<p>Advance Model Development for Coupled Treatment of Fluid Structure Interactions and Heat Transfer in Scramjet Propulsion Systems</p>	<p>270 Ferst Drive NW Atlanta, GA. 30332-0001</p>	<p>Dr. Joseph Oefelein</p>	<p>Julia Muller Doctoral Department of Aerospace Engineering</p>
<p>Pennsylvania State University Langley Research Center ARMD</p>	<p>Modeling Sonic Boom Propagation From Supersonic Aircraft: Prediction of Off-Track Focus Booms</p>	<p>201 Applied Science Bldg. University Park, PA. 16802 5018</p>	<p>Dr. Victor Sparrow</p>	<p>Lucas Wade Direct Doctoral Applied Science - Acoustics</p>