F.5 FUTURE INVESTIGATORS IN NASA EARTH AND SPACE SCIENCE AND TECHNOLOGY

NOTICE: Amended November 5, 2024. This Amendment releases the final text for this graduate student research program, which had previously been listed as "TBD".

Submissions must be formatted for Dual Anonymous Peer Review (DAPR), see Section 4.2. If additional, FINESST-specific, DAPR resources are made available then that information will be posted at https://go.nasa.gov/FINESST24, the link to the NSPIRES page for this program element.

Notices of Intent are not requested nor accepted. Proposals are due February 5, 2025.

An optional, pre-proposal web conference will occur on December 6, 2024, 3:00 PM Eastern Time, see Section 12.11. The Earth Science Division will hold optional office hours December 17, 2024, and January 22, 2025, via Teams, see Section 2.1.

Proposers are strongly encouraged to talk to their sponsored program offices or authorized organization representatives to ensure budgets align to changes to 2 CFR 200, see https://www.cfo.gov/coffa/uniform-guidance-coffa/2024/.

1. Introduction and Funding Opportunity Description

Future Investigators in NASA Earth and Space Science and Technology (FINESST) solicits proposals from accredited U.S. universities and other eligible organizations for graduate student-designed and performed research projects that contribute to SMD's science, technology, and exploration goals. The Future Investigator (FI), i.e., the student, shall have the primary initiative to define the proposed FINESST research project and must be the primary author, with input or supervision from the proposal's Principal Investigator (PI), as appropriate. The Future Investigator (FI) named on the proposal is primarily responsible for writing a FINESST proposal.

The proposal must present a well-defined research problem/activity and a justification of its scientific significance to NASA, as well as a detailed approach for its conduct. All FINESST proposals must address their relevance to at least one participating SMD division (see Section 4.1.1). The proposer should reference Section 2 below regarding suitable research topic(s).

Information on NASA's Strategic Goals and Objectives and SMD's high-level objectives is in the *NASA 2022 Strategic Plan.* The NASA Science Strategy or Plan for the Science Mission Directorate entitled *Science 2020-2024: A Vision for Scientific Excellence - FY 23 Update* articulates SMD's principles.

FINESST awards are research grants. See also Section 6, Award Information and Restrictions, and Section 13, Ancillary Information for awardees, at the end of this document.

Those who have never proposed to ROSES before may refer to Section 12.1 The Structure of ROSES and its Relationship to Other Guidance. The instructions in this

document supersede the default high-level guidance provided in *the NASA Grant and Cooperative Agreement Manual (GCAM)* and the *ROSES Summary of Solicitation*, see Section 12.

2. Scope of Program: Division Research Overviews

This section presents a partial overview of research funded by SMD relevant to this opportunity. Proposers may refer to the list of program element(s) solicited by a division(s) or across divisions in Table 3 of this year's ROSES solicitation to get an indication of topics. NOTE: Not all programs listed in Table 3 are eligible for this opportunity. Funding programs, such as the Planetary Science Division, may reduce the number of ROSES programs that are FINESST relevant.

Proposals for research that cross divisional boundaries, e.g., sun-climate connection, upper/lower atmosphere connection, comparative planetary atmospheres and/or atmosphere/surface interactions, Earth as an analogue for exoplanets, common physical/chemical data, and/or processes in support of modeling or observations may be considered by the relevant divisions.

Proposers should submit to the SMD Funding organization that seems most relevant or write to HQ-FINESST@mail.nasa.gov well in advance of the proposal due date if they have questions.

2.1 Earth Science Research Program

Compelled by our planet's rapid change, the Earth Science Division (ESD) is innovating, exploring, and collaborating to understand the Earth system, make new discoveries, and enable solutions for the benefit of all. ESD delivers the technology, global observation data, expertise, and applications that help us deliver trusted actionable Earth science. For that we need to cultivate the diverse communities of Earth science promoting early engagement. The ESD Early Career Research Program (ECR) creates opportunities to advance the development and implementation of the Earth Science to Action strategy. ECR is striving for excellence in Earth science by supporting outstanding and innovative scientific research, enabling greater participation through diverse scientific leadership, fostering a sense of belonging, developing sustained relationships, and making Earth science data more usable and impactful for the benefit of humanity. FINESST Earth is one of several projects within the ECR Program.

Proposals must demonstrate the relevance of the research activities to support one or more of the following ESD Programs; if a proposal is fully applicable to two or more programs, then that should be clearly indicated on the NSPIRES cover page:

- The Earth Science Technology Office (ESTO) fosters the creation and infusion of cutting-edge sensors, information systems, and a variety of other projects to develop breakthrough technologies that can improve Earth observations and make Earth science research easier, more efficient, more cost effective, and more robust. ESTO research focus areas include new instrument systems that are smaller, require less power, and are more capable, and information systems technologies such as data processing, interoperability, visualization, and analysis as well as autonomy, modeling, and mission architecture design – to enable new

scientific measurements of the Earth system or reduce the cost of current observations.

- Earth Science Data Systems (ESDS) oversees the life cycle of NASA's Earth science data—from acquisition through processing and distribution. The program aims to make NASA's Earth science data open, interactive, interoperable, and accessible to all. ESDS's research focus area includes the management and analysis of Earth science data using methods and tools such as Artificial Intelligence and Machine Learning (Deep Learning), big data, innovative data visualization, and cloud computing to address Earth science questions.
- Research and Analysis (R&A) uses satellite observations, data collected by airborne and surface-based missions, and computer modeling to turn measurements into understanding about the Earth system and interaction between processes. The R&A focus areas are: Atmospheric Composition, Weather and Atmospheric Dynamics, Climate Variability and Change, Water and Energy Cycle, Carbon Cycle and Ecosystems, and Earth Surface and Interior. Interdisciplinary proposals that address more than one of the focus areas also are encouraged.
- Earth Action (EA) helps people and organizations apply insights from Earth science to benefit the economy, health, quality of life, and environment around the globe. Earth Action focus areas include Food Security and Agriculture, Climate Resilience, Equity and Environmental Justice, Disasters, Ecological Forecasting (including conservation, sustainability and resource management), Energy, Health and Air Quality, Water Resources, and Wildland Fires.

Earth Science proposers should review ROSES-2024 A.1 Earth Science Research Overview for additional details. Proposals must demonstrate a clear linkage to past, present, or future NASA Earth science data and/or models (see the Earth Science to Action Strategy at https://science.nasa.gov/earth-science/earth-science-to-action/). This linkage could include, but is not limited to: NASA satellite remote sensing data (including joint missions of NASA and its interagency and international partners), remote sensing data that pertains to future NASA observing systems, remote sensing and *in-situ* data from NASA or NASA-affiliated suborbital activities such as airborne campaigns and surface-based networks, data acquired via NASA's Commercial SmallSat Data Acquisition (CSDA) Program, URL https://www.earthdata.nasa.gov/esds/csda, (available at no cost to U.S. Government-funded researchers), NASA models that incorporate satellite and/or suborbital data, and technology projects related to current and future NASA observing systems. Proposals that incorporate non-NASA data, including international satellite data, commercial satellite data, and social science data are also welcome but the main source should be NASA data. Any data proposed to be analyzed from any source, including NASA and other satellite data, ancillary data, and data from commercial sources, must be publicly available, in the sense that these data are openly accessible. Proposals should reflect the principles of Open Science as described on the Earthdata website.

NASA's ECR program will hold office hours to discuss FINESST, specifically related to ESD. Please join us either December 17, 2024 from 1-2 PM Eastern Time or January 22, 2025 1-2 PM Eastern Time by joining our Teams Link.

2.2 Heliophysics Research Program

NASA's Heliophysics Division (HPD) solicits proposals that would improve our understanding of the Sun, its interactions with the Earth and Solar System bodies, and space weather. Heliophysics encompasses science topics that range from the solar interior to investigating the Ionosphere-Thermosphere-Mesosphere regions of planetary bodies; potential topics that are within scope are outlined further in ROSES-2024 B.1 Heliophysics Research Program Overview. FINESST proposals to HPD must follow the Data Eligibility requirements found in Section 1.7 of the ROSES-2024 B.1.

The Heliophysics FINESST program seeks proposals that address NASA's Strategic objectives to understand the Sun, Earth, Solar System, and Universe, and to follow the guidance provided by National Research Council's most recent decadal survey, Solar and Space Physics, A Science for a Technological Society. To achieve these goals, proposed investigations to the HPD FINESST should address one or more of the following key objectives:

- Explore and characterize the physical processes in the space environment from the Sun to the heliopause and throughout the universe.
- Advance our understanding of the Sun's activity, the connections between solar variability and Earth and planetary space environments, the outer reaches of our solar system, and the interstellar medium.
- Develop the knowledge and capability to detect and predict extreme conditions in space to protect life and society and to safeguard human and robotic explorers beyond Earth.

The Heliophysics Research Program supports theory, modeling, and data analysis utilizing remote sensing and *in-situ* measurements. For further information, consult *Our Dynamic Space Environment: Heliophysics Science and Technology Roadmap for 2014-2033* (PDF).

2.3 Planetary Science Research Program

Planetary Science proposers should review ROSES-2024 C.1 Planetary Science Research Program Overview for complete information about the Planetary Science Research Program. For more information about mission data and astromaterials eligibility, please see Section 3.5 in C.1.

The Planetary Science Research Program, managed by the Planetary Science Division (PSD), supports investigations to help ascertain the content, origin, and evolution of the Solar System and the potential for life elsewhere, consistent with the Planetary Science Decadal Survey Origins, Worlds, and Life: A Decadal Strategy for Planetary Science and Astrobiology 2023 – 2032 and the strategy for Planetary Science Exploration embodied in NASA's Science Strategy.

Proposals that are relevant to PSD must demonstrate the relevance of the proposed work to at least one or more of the following:

- Select programs solicited by PSD (C.2 through C.11, C.15, C.16, C. 21).
- The C.12 Planetary Instrument Concepts for the Advancement of Solar System Observations (PICASSO); proposals relevant to other technology programs are

not solicited at this time. In addition, proposals relevant to C.12 must address specific scientific objectives of likely future planetary science missions.
- The cross-divisional programs F.3 Exoplanets Research Program, F.4 Habitable Worlds.

Proposals shall demonstrate relevance to one or more of these programs by including the program element title (e.g., Emerging Worlds) and/or number (e.g., C.2) and how the proposed work is relevant within the page limit for the Science/Technical/ Management (S/T/M) section of the proposal. Proposals that only refer to the Origins, Worlds, and Life planetary decadal shall be declined for noncompliance. Proposals that do not demonstrate relevance to one or more of the programs listed in Section 2.3 of this call shall be declined for noncompliance. Proposals relevant to other program elements or that propose mission concept designs are not solicited at this time.

2.4 Astrophysics Research Program

Astrophysics proposers should review the ROSES-2024 D.1 Astrophysics Research Program Overview for complete information.

The Astrophysics Research Program, managed by the Astrophysics Division, has the strategic objective to discover how the universe works, explore how it began and evolved, and search for life on planets around other stars. The science goals that shape efforts toward fulfilling these objectives are:

- Probe the origin and destiny of our universe, including the nature of black holes, dark energy, dark matter, and gravity.
- Explore the origin and evolution of the galaxies, stars and planets that make up our universe.
- Discover and study planets around other stars and explore whether they could harbor life.
- Develop cutting-edge technologies to support NASA Astrophysics research, including, but not limited to, detector developments, supporting technologies (e.g., optics, mirrors, coatings, or gratings), and laboratory Astrophysics investigations.

Investigations submitted to the Astrophysics research program should explicitly support past, present, or publicly announced future NASA astrophysics missions. These investigations may include theory, simulation, data analysis, laboratory astrophysics, and technology development.

Proposers are encouraged to consult the "Astrophysics Biennial Technology Report (pdf)" and the associated Technology Gaps.

See Section 3.2.1 (of this program element) "Data Eligibility" for further clarification.

2.5 Biological and Physical Sciences Research Program

Biological and Physical Sciences (BPS) proposers should review ROSES-2024 E.1 Biological and Physical Sciences Research Program Overview for complete information. Please see the Task Book: Biological & Physical Sciences Division and Human Research Program for present and past BPS research projects. BPS seeks advances in the biological and physical sciences through space-based research, and studies the

behavior and adaptation of physical processes, living organisms, and ecosystems to environments beyond Earth, to enable space exploration and pioneer scientific discovery. In September 2023, the National Academies released, "*Thriving in Space: Ensuring the Future of Biological and Physical Sciences Research: A Decadal Survey for 2023-2032*," which will provide a guide for the future BPS program.

BPS is divided into two parts: Space Biology and Physical Science and proposals may be submitted that are relevant to either.

Space Biology: Space Biology focuses on the effects of short and long duration spaceflight environment exposure on biological systems.

NASA Space Biology goals are to:

1. Discover how biological systems respond and adapt to the space environment
2. Develop integrated physiological models for biology in space
3. Identify the underlying mechanisms and networks that govern biological processes in the space environment
4. Promote open science through the NASA Open Science Data Repositories (including GeneLab and the NASA Ames Life Sciences Data Archive)
5. Develop cutting-edge biological technologies to facilitate spaceflight research
6. Develop mechanistic understanding to support human health in space
7. Enable the transfer of knowledge and technology to the understanding of life on Earth

For detailed information on experimental data from past space biology experiments please see the NASA Open Science Data Repositories (including GeneLab and the NASA Ames Life Sciences Data Archives).

Physical Sciences: Physical Science investigations focus on theory development, analysis, experimental research, or numerical simulation that contributes to an interpretive context for past, current, or potential future space experiments in one of NASA's Physical Sciences Research Program discipline areas: Biophysics, Combustion Science, Soft Matter/Complex Fluids, Fluid Physics, Fundamental Physics or Materials Science. Proposals may also be submitted to use the experimental data in the Physical Sciences Informatics System (PSI) to conduct research in any of the six areas listed above. For all proposals, the investigator should show how the proposed research is a precursor or will promote future reduced gravity studies.

NASA Physical Sciences Research Program objectives for the discipline areas include:

1. For fundamental physics the key focus area is quantum science. Quantum physics is a cornerstone of our understanding of the universe, from cosmology to quantum encryption. The importance of quantum mechanics is extraordinarily wide ranging, from explaining emergent phenomena such as superconductivity, to underpinning next-generation technologies such as quantum computers, quantum communication networks, and quantum encryption. Research areas include such as the discovery of phenomena at the intersection of quantum mechanics and general relativity that inform a unified theory, the direct detection of dark matter via atom interferometry or atomic clocks.

2. Provide mechanistic understanding of fundamental fluid physics processes such as: boiling and condensation, two phase flow with heat transfer, capillary flow, interfacial phenomena, cryogenic propellant storage and transfer, adiabatic two-phase flow, underlying future spacecraft and planetary habitat systems for power generation and storage, space propulsion, thermal management, such as oscillating heat pipes and water recovery and purification for life support systems.
3. Investigate fundamental combustion phenomena such as droplet, gaseous and high pressure transcritical combustion. Investigate applied combustion research in spacecraft fire safety such as NASA material flammability testing and material controls. Determine how the change in flammability limits depends on materials. Study fire growth and spread in a crewed habitat to understand the difference in the fire risk in the microgravity and the Lunar environment and also impact to the NASA STD 6001 1 g flammability test.
4. Soft Matter comprises a large class of deformable materials, including colloids, microemulsions, foams, liquid crystals, and granular material. Studying these systems focuses on gaining insight into many diverse fields such as phase transitions, nucleation and crystal growth, coarsening, glass formation, chaos, field theory, micro-rheology of active soft and bio soft materials, and much more. Complex fluids are a subset of soft materials that can flow and exhibit non-Newtonian rheology, including granular materials, polymeric liquids and colloidal suspensions. Research in soft matter and complex fluids can provide the underpinnings of translational research related to NASA's exploration of planetary surfaces, as well as terrestrial applications such as the pharmaceutical, chemical, plastics, soap and detergent, electronic display, and petroleum industries.
5. Investigate fundamental and/or applied materials science phenomena which include solidification and its resulting morphology, or accurate and precise measurement of thermophysical properties. In addition, to understand solidification, microstructural differences and physical properties of lunar regolith simulant construction materials. These studies can be applied to space exploration challenges such as, the utilization of *in situ* resources to produce feedstock materials for Lunar construction, in-space manufacturing, joining of materials, additive manufacturing and the recycling of spacecraft materials or these studies can be used to enable the development of higher-performing materials and processes for use both in space and on Earth.
6. Promote open science through data sharing.
7. The Physical Sciences Informatics (PSI) system (https://www.nasa.gov/PSI) is an online database of completed physical science reduced-gravity flight experiments conducted on the International Space Station (ISS), Space Shuttle flights, Free Flyers, or commercial cargo flights to and from the ISS, and of related ground-based studies. Proposals must present a compelling case of how the experimental data from the PSI system will be used to promote the advancement of further research. PSI proposals can be submitted in Biophysics, Combustion Science, Soft Matter/Complex Fluids, Fluid Physics, Fundamental Physics or Materials Science. Research can be proposed to enhance numerical models, conduct laboratory experiments, perform data analysis, etc.

2.6 Science Activation and Citizen Science

Proposers that seek to better understand or advance the art and practice of the Science Activation program, and/or the Citizen Science (also known as participatory science) should review the respective hyperlinks.

In addition, proposals that are relevant to Science Activation/Citizen Science must demonstrate the relevance of the proposed work to NASA Earth and/or space science (see Sections 2.1 through 2.5) and propose a research topic relevant to at least one of the following:

- questions that NASA science and/or data uniquely enable.
- activities that are currently underway in NASA Science Activation or citizen science.
- research that would improve NASA Science Activation or citizen science activities.

Proposers in science education, evaluation, social sciences (including psychology, sociology, gender studies, and other fields), data science, information science, human centered computing, user centered design, information management, library sciences, ethics, demographics, and other similar research areas are encouraged to apply.

Proposals to conduct participatory (e.g., citizen) science research are not relevant to this section but may instead be submitted to another division via FINESST, via another ROSES element based on the scientific topic, or to one of the existing citizen science program elements in ROSES, e.g., B.21 Heliophysics Citizen Science Investigations or F.9 Citizen Science Seed Funding Program. Proposals to do Science Activation must be submitted to the F.6 Science Activation Program.

Proposals also should demonstrate how the proposed research will have more than just a narrow impact on one particular activity in either citizen science or Science Activation. Proposals should contribute to advancing understanding of a broader question that relates to multiple citizen science and/or Science Activation approaches or the broader fields of science learning and education research.

2.7 Additional Information on ROSES Cross-Division Research Programs

FINESST primarily serves as a joint notice of funding opportunity for the SMD research areas listed in Section 2.1 through 2.6. Most program elements in Appendix F are eligible to be used as a relevance statement for a FINESST proposal. However, as a practical matter, proposers must pick one of the participating FINESST areas (listed in 2.1-2.6) when starting a proposal. Thus, a proposal relevant to a cross-divisional program should submit to the FINESST area most closely aligned with the specific nature of the proposal.

3. FINESST Program Eligibility

A principal investigator (PI) may submit an unlimited number of FINESST proposals, but a student shall only be named as a Future Investigator (FI) on one proposal to this competition.

Since there are many graduate degree types that are earth and space science or technology related, FINESST does not limit eligibility based on study discipline or

degree type. An FI may be pursuing a graduate degree in a department or school that does not have earth or space in the name, and be eligible to propose to FINESST as long as they meet the eligibility requirements listed below by the proposal due date:

- applied to, or
- been admitted to, or
- be enrolled as a graduate student, i.e., a Master's or Ph.D. degree student, or both, in a relevant discipline (see above), at an eligible, accredited U.S. university located within the United States, its territories or possessions, or the Commonwealth of Puerto Rico.

FIs who previously proposed to, but are not funded by, a prior FINESST or any another NASA solicitation such as the sunset Earth and Space Sciences Fellowship (NESSF), the NASA Space Technology Graduate Research Opportunities (NSTGRO) etc., are eligible. FIs who previously proposed to FINESST and were selected and then turned down the NASA funding also are eligible.

As a reminder to FIs who are applying concurrently for NSTRGO or any other federal funding such as the National Science Foundation's Graduate Research Fellowship (GRF), those applications/proposals must be listed in the current and pending.

Past or currently funded FIs, including those who are (or were) a successor FI to the original student, are eligible subject to budget limitations described in 4.1.10.

If the institution of higher education is willing to submit the research proposal for an FI 1) who is not yet at the university, 2) who is not a U.S. citizen or permanent resident, or 3) both 1 and 2, then those students are eligible. International students, defined as individuals with 1) a U.S. visa or with temporary protected status, 2) who are enrolled at a U.S. university, and 3) residing in the U.S. are FI-eligible only through that university.

The PI often is the FI's mentor and holistically supports the FI's research and professional development. However, SMD understands that there are some situations where the mentor named in the mentoring plan may not be the PI. In such cases, the mentor should be shown as a Co-I on the NSPIRES cover page. Unless the submitting institution has a requirement, NASA has no requirement that the mentor be at the proposing institution. The PI and, if different, the mentor(s) are determined based on the norms, policies, and practices of the proposing institution.

NASA does not advise on or assist in identifying who should be the PI or mentor. SMD, however, expects the PI/Mentor to support the FI during proposal development, and if awarded, during the conduct of the project.

NASA civil servants may not be an FI. Reminder to NASA Civil Servants Seeking to Propose as a PI or FI: Signing a FINESST proposal on behalf of third-party addressed to NASA would be a prohibited representation to the U.S. Government under current U.S. legal code. NASA civil servants/contractors may serve as mentors when they are listed as a Co-I, see Section 12.10

Most commonly, a university will submit the proposal. However, other institutions that may receive a grant may submit the proposal when they have a relationship with the accredited U.S. higher education institution at which the FI is or will be enrolled. In such a case, the budget justification or narrative must provide evidence from the accredited

U.S. education institution of the student's enrollment/good standing in an eligible degree program.

NASA Centers and other Federal entities that do not grant degrees are not eligible institutions for FINESST awards. Degree-granting Federal entities that are not able to accept federal financial assistance, that is a grant, also are not eligible.

All team members must be listed on the NSPIRES cover page and confirm their participation online so that NASA may manage organizational conflict of interest during peer review.

3.1 International Traffic in Arms Regulations, Export Administration Regulation, Foreign Institutions, and the People's Republic of China

Participation by non-U.S. organizations is welcome, but on a "no exchange of funds" basis; see ROSES FAQ #14 on this topic and the *NASA Grant and Cooperative Agreement Manual (GCAM) – October 2024* (PDF).

FINESST primarily supports fundamental research and/or technology development projects that normally are not subject to export control. However, should the FI's proposed research project fall under International Traffic in Arms Regulations (ITAR) or Export Administration Regulations (EAR), then only U.S. persons may be the PI and FI. Parts of the proposal that contain ITAR material must be identified as instructed in Sections 16.8 and 16.9 of the *GCAM*.

Read and respond to the NSPIRES Cover Page question on whether the proposal contains information or data subject to U.S. export control, (e.g., Export Administration Regulations (EAR) and International Traffic in Arms Regulations (ITAR). If the answer is "yes," add a front page clearly indicating which parts of the proposal (e.g., page number, section, figure) contain export control information. Describe and clearly highlight information and/or data that contain export-controlled material. The proposer's Authorized Organization Representative (AOR) or sponsored research office will be able to provide information about EAR and ITAR requirements, if any. If you think or don't know if this is an issue for your research, talk to your PI and AOR about how your organization manages proposals that contain EAR/ITAR.

Proposals involving bilateral participation, collaboration, or coordination in any way with People's Republic of China (PRC) or any PRC-owned company, whether funded or not, shall be ineligible for award. For more information, please see the ROSES PRC FAQ on the SARA web page at https://science.nasa.gov/researchers/sara/faqs/prc-faq-roses/.

Proposers whose research might occur outside of the U.S. or with organizations outside the U.S. should see Section 12 Ancillary Information for Proposers, below, regarding "Foreign Participation".

3.2 Data Limitations and Requirements

3.2.1 *Data Eligibility*

Data must be within the eligibility scope set by the Division(s) Research Program(s) described in Section 2. This may include 1) fee-free data, 2) data available for purchase, e.g., commercial, and 3) data to be collected as part of the proposed activity.

Proposing to use data that has not yet 1) been collected or 2) made public (see below) is not prohibited but is a risk.

For example, future data may come from airborne campaigns, field campaigns, fieldwork, CubeSats, International Space Station experiments, ground-based observations, data being collect by non-NASA activities, etc. If a proposal depends in any way upon data that has not yet been collected, then the proposal's Science/Technical/Management (S/T/M) section must 1) explain risks to the overall project due to the collection of the data and 2) any steps to be taken to mitigate such risks. Specifically, the S/T/M should explain whether the future data is necessary to successfully complete the proposed objectives.

If a project depends completely on not-yet-acquired data, then that 1) may be noted as a proposal weakness, and 2) prevent selection even if the proposal is highly rated.

Normally, projects that do not include data collection activities propose to use data that are available to the public at least 30 days prior to the proposal due date. For example, NASA mission data to be used in the proposed work must be available in a publicly accessible NASA science data repository. Public data from other sources including other federal and private agencies or international missions may be used 1) if relevant to SMD and 2) publicly available at least 30 days prior to the proposal due date. If a proposal depends in anyway upon data that has been collected but not yet made public 30 days prior, then the S/T/M must 1) explain the data accessibility risks and 2) any steps to be taken to mitigate such risks.

The proposal's Open Science and Data Management Plan (OSDMP) must describe the plan to make public 1) any data collected and 2) any data product generated from existing data. See Section 4.1.3.

4. Proposal Preparation and Submission

Proposals will consist of three primary sections (more details are provided in Section 4.1 below):

1. A Science/Technical/Management (S/T/M) Section
2. A Research Readiness Statement for the Future Investigator (FI)
3. A Mentoring Plan

Proposals must be formatted for Dual Anonymous Peer Review, see Section 4.2. In particular, the S/T/M section and the Mentoring Plan must be fully anonymous, as outlined in Section 4.2. The Research Readiness statement is not anonymous and included in the "Expertise and Resources Not Anonymized" Section. As outlined in Section 4.2, the anonymous sections will be peer-reviewed first, to eliminate any potential implicit bias. After the initial evaluation, panelist reviewers will then evaluate the Research Readiness statement and other non-anonymous sections.

All proposals must be submitted in electronic format via NSPIRES or Grants.gov. When creating the proposal, the proposer must choose a division (see Section 2) to which the proposal will be submitted, even if its interdivisional research; see Section 2.7.

The FI should be listed on the proposal's cover page in Section VI as a Team Member (Select "Graduate/Undergraduate Student" as the FI's "Team Member Role").

The main body text of proposals and captions must use an easy-to-read font of no more than 15 characters (including spaces) per horizontal inch (typical of 12-point Times New Roman) and no more than 5.5 lines per vertical inch (i.e., single-spaced). There must be at least one-inch margins on all sides, and the proposal must be sized for U.S. letter size (8.5x11) paper. The main body text of a proposal must include everything except the Expertise and Resources Not Anonymized document and HEC Appendix, and must conform to formatting (line spacing, etc.) just described. In accordance with Table 1 of ROSES-2024, no technical content may be put in the margins; page numbers or anonymous disclaimers are permitted. Proposals deemed non-compliant with respect to formatting requirements may be returned without review.

4.1 Content of a FINESST Proposal

The proposal will be composed of the NSPIRES "cover pages", see below, and two or three separately uploaded PDF files:

1. An anonymized technical proposal PDF containing the components described in Sections 4.1.1-4.1.4, below,
2. The non-anonymized "Expertise and Resources Not Anonymized" PDF containing the components described in Sections 4.1.5-4.1.10, outlined below, and
3. The optional non-anonymized HEC Appendix described in Section 4.1.11, below.

Do not submit a Summary Table of Work Effort or a separately uploaded "Total" Budget with a FINESST proposal. Neither is requested or required.

The NSPIRES "cover pages" are created automatically from information that the proposers put into the NSPIRES web forms, see this NSPIRES Online Help page for an introduction to the web interface.

All team members must be listed on the NSPIRES cover page. A proposal cannot be submitted if any listed team member, including unfunded collaborators, does not log into NSPIRES and confirm their role on the proposal. For information on the confirmation process please see this NSPIRES help page.

The FI is to be added to the Team member section of the cover page with the role "Graduate/Undergraduate Student" and can be given edit privileges to allow them to edit the cover page and upload the proposal.

4.1.1 *Science/Technical/Management Section*

The Science/Technical/Management (S/T/M) section of the proposal describes the proposed research project and should be self-contained without relying on other sections of the proposal, such as the Research Readiness Statement or Budget Narrative. Proposers may include figures and tables as appropriate. The S/T/M section, excluding citations, may total no more than six (6) pages conforming to formatting requirements detailed above. The S/T/M section must be formatted for Dual-Anonymous Peer Review as outlined in Section 4.2, and it should include the following elements:

a. A well-defined problem with a justification of its scientific significance and a detailed approach for its resolution.

b. A statement describing the relevance of the proposed work to the appropriate SMD Division and a program within that division. If the research is relevant to more than one division/program, please identify the other division(s).
c. A description of the approach to be taken to address the chosen problem. A schedule for the proposed project describing anticipated accomplishments and major milestones, including planned publications. In cases when the PI already has an ongoing research award from NASA, the research proposed under FINESST may address a similar topic, but the proposal must make clear, anonymously, how the proposed research goes beyond what NASA has already funded or selected for funding.

4.1.2 *References*

References and/or endnotes must directly follow the S/T/M Section and are not included in the S/T/M Section's 6-page limit. There is no required style or formatting for citations, but they must be easily understandable, using standard abbreviations for journals and complete names for books. In keeping with the requirements for the Dual-Anonymous Peer Review (see Section 4.2 below), reference callouts in the text (i.e., the callouts in the text that refer to a cited source) must numerical (e.g. [1], [2], etc.) rather than using author's names. Do not include references to documents unavailable to reviewers, see FAQ19. URLs are permitted in the references section, but reviewers are not obligated to follow any such links in the conduct of their evaluation.

Though the allowed content for References is not defined, they may not be used to introduce new/additional information about the proposed investigation that belongs in a page-limited Section such as the S/TM.

4.1.3 *Open Science and Data Management Plan*

Proposals must include an anonymized Open Science and Data Management Plan (OSDMP) of up to two pages that describes how any data, data products, publications and software created will be made public, see Section 2 of ROSES-2024 F.1 Cross Division Research Overview and the *SMD Open-Source Science Guidance*. Notable exceptions include work that is proprietary or may affect U.S. economic competitiveness; work that results in personally identifiable human subjects research data; export-controlled data; controlled unclassified information data; national security classified data; and SBIR/STTR contracts. An OSDMP must answer the following questions:

1. What are the data types, volumes, formats, and data standards, where relevant?
2. In what repository do the proposers intend to make these data available?
3. When will these data be made available?
4. Who will do the archiving and what experience do they have with this kind of data, archive, etc.?
5. How will software be developed and released (if applicable)?

Regardless of what the OSDMP submitted with the proposal says, grantees must still meet the mandatory minimum requirements that:

1. As-accepted manuscript versions of publications that derive from ROSES awards must be publicly available at the time of publication;

2. Data and software developed using ROSES funding in support of a peer-reviewed publication shall be made publicly available at the time of publication;
3. Scientifically useful data and software developed during the award that was not already published must be made publicly available by the end of the award; and
4. To be eligible to receive funding, PIs, FI, and Co-Is must provide their digital persistent identifier (e.g., ORCID) via NSPIRES under Account Management → Personal Profile. See the section on "Persistent Identifiers for Investigators" in the SMD Open-Source Science Guidance.

4.1.4 *Mentoring Plan or Agreement*

Proposals must include an anonymized Mentoring Plan or Agreement. This section should not exceed two pages. The Mentoring Plan/Agreement's purpose is to provide the FI with a holistic plan for developing skills and acquiring knowledge and experience necessary to complete the research project and/or personal professional development. This plan is reviewed under the research readiness criterion from Section 5.1. This mentoring plan should not need to restate information provided in response to Sections 4.1.1 - 4.1.3. The mentor(s) may explain in the mentoring plan why they have agreed to support this FI's research. See also Sections 12.20 and 12.21.

Both the FI and mentor(s) prepare this agreement. It may include more than one mentor; however, having additional mentors does not extend the page limit. Non-PI mentors do not have to be at the submitting institution. It is optional to include mentors beyond the PI, but if they are named, they must be added to the NSPIRES cover page as team members and must confirm their participation via NSPIRES.

4.1.5 *Research Readiness Statement*

A Research Readiness Statement (RRS) of up to one page authored by the FI must be included in the separate "Expertise and Resources Not Anonymized" document (see Section 4.2, below). The RRS must include a) and b) conforming to formatting requirements (line spacing, etc.) described above.

a) State and describe how the FI's undergraduate and/or graduate degree program and interactions with the mentor(s) prepare, or will prepare, the FI for the proposed research. Some possible questions to address include (but are not limited to): has the FI's past, current, and/or planned coursework and self-directed study given the FI a good foundational understanding of the general subject area related to the proposed research? If a particular computer programming language, statistical analysis tool, experimental technique is required for the proposed project, is the FI proficient or has a plan to become proficient?
b) Provide a graduate study timeline that states i) the degree type (Ph.D., Master's, both, or other type of graduate degree, e.g., M.D.); ii) the subject area, iii) how long the FI has been (or if not yet admitted, expects to be) enrolled in the program, and iv) the estimated graduation date in Month/Year format.

Part of the RRS c) should be included as appropriate, and must conform to formatting requirements (line spacing, etc.) described above:

c) State and describe other experiences and/or self-directed learning activities that are relevant to the proposed research. This includes, but is not limited to, short courses offered at conferences, summer/winter schools, independent research projects, internships, work experience, volunteer experience, or teaching experience.

4.1.6 *Biosketch*

The proposal must provide separate biosketches for the PI and FI. There is no page limit. A biosketch is optional for any Co-I(s) who is also a mentor(s). Do not provide a biosketch for non-mentors. All biosketches are to be included in the separate "Expertise and Resources Not Anonymized" document, see Section 4.2, below. Proposers are encouraged to use the NASA Grants policy provided template for the Biographical Sketch (docx). If the NASA template is not used, the NASA Shared Services Center (NSSC) will contact selected proposers to collect updated biosketches prior to award.

4.1.7 *Current and Pending Support*

All PIs and FIs must provide a list of Current and Pending (C&P) support that identifies any current and potential funding external-to-the-proposing organization, e.g., from U.S. federal, U.S. non-federal, and non-U.S. sources such as any active applications for grants, fellowships etc., particularly those that have overlap with the proposed work. There is no page limit. Proposers should use the NASA Grants policy provided template for Current and Pending (docx). If the NASA templates are not used, then the NSSC will contact selected proposers to collect updated C&P prior to award.

If the FI and/or PI have no C&P to report, then include a joint statement or separate statements that there is "No C&P funding to report". C&P must be included in the separate "Expertise and Resources Not Anonymized" document, see Section 4.2, below.

4.1.8 Statements, Letters, and Special Documentation - If Applicable

Do not add Statements of Commitment from any team member who acknowledges commitment via NSPIRES; confirmation of participation via NSPIRES is sufficient. Statements of Commitment are only required when commitment cannot be made via NSPIRES, such as when a proposer is using Grants.gov.

See Section IV(e) "Demonstration of Access to Required Facility" of the ROSES Summary of Solicitation regarding the use of letters of "Resource Support" to demonstrate that a facility or resource is available for the proposed use. If the proposing team has regular access to a facility or resource, then no such letter is needed.

Special documentation, e.g., from a non-profit that is not an education organization demonstrating that the proposed FI is enrolled/in good standing at an eligible degree program at a university, may be included in this Section.

Any statements, letters*, and special documentation* must be included in the separate "Expertise and Resources Not Anonymized" document, see Section 4.2, below.

4.1.9 Acknowledgements

An acknowledgement statement of up to 150 words that affirms that the FI was the primary developer for the proposal must be included in the separate "Expertise and Resources Not Anonymized" document (see Section 4.2, below). In addition, the roles of the other team member(s) in preparing the proposal must be described. For example, when the FI discusses the proposed idea with others or receives editorial and/or graphic support from, a writing center, copy editor, large language model AI, PI, colleagues, and peers to improve the proposal (e.g., grammar, clarity, structure), such discussions, contributions, or editorial help must be acknowledged. For more information see https://science.nasa.gov/researchers/sara/faqs/#faq-32.

4.1.10 *Budget and Narrative*

While the NSPIRES cover page asks for summarized budget data, it is necessary to include a budget section within the proposal. FINESST awards are subject to the normal government and NASA policies regarding allowable costs, e.g., see 12.13 and 12.16.

The budget, located in the non-anonymized "Expertise and Resources Not Anonymized" PDF is not page limited but normally does not exceed two pages, see Section 10. Unlike other ROSES programs, FINESST does not request or allow a separate "Total Budget" file.

Proposers may request FI funding in ways that comply with 2 CFR 200 and the proposing organization's written policies, such as but not limited to:

1. As a direct labor cost;
2. As a scholarship or other student aid that shall comply with the requirements in 2 CFR 200.466, Scholarships and student aid costs; or
3. As a participant support cost as defined in 2 CFR 200.1, Definitions.

Per the definition of "Modified Total Direct Costs" in 2 CFR § 200.1, Definitions, facilities and administrative (F&A) costs, sometimes called indirect costs, are not permitted for scholarship awards.

Per § 200.456 Participant support costs: The classification of items as participant support costs must be documented in the recipient's or subrecipient's written policies and procedures and treated consistently across all Federal awards.

The FINESST grant may be up to three years in duration, contingent upon availability of funds and satisfactory performance as demonstrated through the annual progress report. Not all projects require three years. Proposers should request the time needed.

The start date should be no earlier than November and no later than one year after the proposal due date (See Section 11). NASA reserves the right to change the requested start date/end date for the award's period of performance (POP).

Proposers should choose a POP that makes sense for their project. NASA allows 90-day pre-award costs, but the recipient organization's written policies take precedence. Talk to your Authorized Organization Representative (AOR) or sponsored research office about whether your organization will allow pre-award costing. If you are at an institution that does not permit charging pre-award costs, then choose a start date accordingly.

The total amount proposed may not exceed $50,000 per budget year for all costs combined. Each proposal budget period may be a calendar year or some other logical period, i.e., academic year, summer-only, etc.

The budget narrative must provide justifications of the requested amount in each category. When requesting participant support costs, input the FI costs on the NSPIRES cover pages under letter E. Direct Costs-Participant/Trainee Support Cost. NSPIRES listed subcategories are: 1) Tuition/Fees/Health Insurance, 2) Stipends, 3) Travel, 4) Subsistence, and 5) Other. If you are not requesting participant support costs, then leave the items under E blank or enter zero.

The budget narratives must specify whether the institution is treating the FI as 1) an employee or 2) a participant; 3) a scholarship recipient, or 4) some other cost category, e.g. consultant or contractor, as this may impact what costs are reasonable, allocable, and allowable, including overhead, indirect or F&A.

Proposed budget/award size restrictions on students who have had prior FINESST or NESSF funding:

- If an FI was previously a named student on an awarded FINESST or NESSF grant as originally submitted, the new proposal submitted to this program element may not request support such that the time funded from both proposals exceeds 36 months. For example, if an FI was awarded a twelve-month FINESST grant for master's research, that FI may propose for up to 24 months of FINESST support for Ph.D. research but may not propose 36 months of support.
- If an FI was supported via a NESSF or FINESST grant where they were not listed as the original named student on the award – most commonly in the case where a PI requested that a new student be allowed to use funds remaining on a FINESST or NESSF grant originally awarded to a different student – the FI may request a full 36 months.

4.1.11 *Optional High-End Computing Appendix*

The High-End Computing (HEC) program (https://www.hec.nasa.gov/) provides a specialized computational infrastructure to support NASA's research community. Proposers to FINESST may apply for HEC resources to support their research by submitting a request to the HEC system and uploading the request form as a separate PDF file ("Optional HEC request"). Do not include this request form in either the anonymized main proposal PDF file or the "Expertise and Resources Not Anonymized" document. See 12.27-12.31 for details on how to pursue this option.

4.2 Preparing Proposals for Dual-Anonymous Peer Review

Proposals submitted to this program will be evaluated using a dual-anonymous peer review (DAPR) process in which not only are proposers unaware of the identity of the reviewers, but the reviewers are not provided with explicit knowledge of the identities of the proposing team during the evaluation of the proposal. The overarching objective of dual-anonymous peer review is to reduce unconscious bias in the evaluation of the proposal.

To implement dual-anonymous peer review, reviewers may not see any specific information that reveals the identity of the proposers or the proposing institution(s).

The forms filled out on the NSPIRES web pages with Proposal Summary, Budget, Proposal Team and Program Specific and Business Data known as the NSPIRES "cover pages" will be partly hidden for the peer reviewers. The Proposal Summary must be anonymized but all other sections of the NSPIRES cover page should be completed as normal; the NSPIRES system will automatically redact any identifying information from the system-generated cover pages. The main proposal document (see Sections 4.1.1-4.1.4 above) must be anonymized in accordance with the guidelines provided below. More detailed instructions together with examples for anonymizing your proposal are provided in the document, “Guidelines for Proposers to ROSES Dual-Anonymous Peer Review Programs” under other documents on the FINESST NSPIRES page.

Proposers must also upload a separate "Expertise and Resources Not Anonymized" document, that contains all the personally (and organizationally) identifying information (see Sections 4.1.5-4.1.10 above) and, if relevant, the HEC request (see Section 4.11).

Review panels will be instructed to evaluate the anonymized proposals without considering the qualifications and capabilities of the proposers. After the evaluation of the anonymized proposals has been finalized for all proposals, panelists will be provided with the "Expertise and Resources Not Anonymized" documents, typically for a subset of proposals that scored highly (i.e. those proposals that may reasonably be considered for selection under the program). The panel will then assess the Research Readiness Criterion (see Section 5.2.3).

A summary of the key requirements for anonymized proposals is listed below:

Item	Requirement
Proposal Document PDF file	In addition to anonymizing the content, ensure that any PDF bookmarks are anonymous, and the document properties do not reveal names of author or organization.
Science-Technical-Management (S/T/M) section of proposal	The S/T/M section must be anonymized per the instructions in the document, “*Guidelines for Proposers to ROSES DAPR Programs*” (see link on NSPIRES page for program element). Reference callouts in the proposal text must be in numerical format (e.g. [1], [2], etc.). It is recommended that the callouts appear in numerical order in the text.
References	Follows the S/T/M Section but is not included in the page limit for that section. Citations should use easily understandable, standard abbreviations for journals and complete names for books The full citations may include names of authors.
Open Science and Data Management Plan	The Open Science and Data Management Plan must be anonymized. Two pages are allotted for the Plan. See Section 4.1.3.
Mentoring Plan or Agreement	The Mentoring Plan must be anonymized. Two pages are allotted for the Plan. See Section 4.1.4.

Separate "Expertise and Resources Not Anonymized" document	Upload as a separate document in NSPIRES. Choose Attachment Type = "Expertise and Resources Not Anonymized". This document provides a list of all team members, their roles, institutional affiliations, expertise, and contributions to the work and the six components described in Sections 4.1.5-4.1.10 above. The document should also discuss any specific resources, including facilities and equipment, that are key to completing the proposed work
Research Readiness Statement	Do not include in main anonymized proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Biosketch	Do not include in main anonymized proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Current and Pending Support	Do not include in main anonymized proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Budget and Narrative	Do not include in main anonymized proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Statements, Letters, and Special Documentation	Do not include in main anonymized proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
Acknowledgements	Do not include in main anonymized proposal document. Include in separate "Expertise and Resources Not Anonymized" document.
High End Computing request	Submit optional not-anonymized PDF HEC form as attachment type "Optional HEC request" in NSPIRES. The S/T/M section in the main proposal must state that a HEC request is included and must provide an outline of the computing resources required in an anonymized fashion.

4.3 Late Proposals

Proposals must be submitted electronically by 11:59 p.m. Eastern Time on the due date given in Tables 2 and 3 of ROSES. NSPIRES generates an automatic email acknowledgement when any proposal is submitted. Proposals not submitted by the due date may be returned without review.

5. Proposal Evaluation

5.1 Compliance Check

Prior to peer review, SMD staff or contractors may conduct a compliance/relevance check. This may include verifying that the proposal includes required parts listed

Sections 4.1.1-4.1.10, compliance with formatting requirements, see Section 4, and checking whether the main proposal (including both S/T/M section and mentoring plan) is property anonymized, see Section 4.2.

Proposals that do not meet the eligibility, page length, formatting, and/or other requirements (see Section 5.1), and/or that propose topics out of scope for the reviewing division (see Section 2), may be returned without review.

However, if, far enough in advance of the review, SMD staff suspect that a proposal has been submitted to the wrong division, then the proposer will be given the opportunity to have their proposal moved to another SMD division or shared with another SMD division for additional review when it is practical to do so.

Do not include undergraduate or graduate transcripts for the FI and letters of recommendation from the PI or from anyone else in the proposal. Proposals containing unsolicited appendices or attachments may be returned without review.

5.2 Review

The standard proposal review process includes an assessment of a proposal's strengths and weaknesses for each review criterion. The default definitions of evaluation criteria are given in Section 12.3.1 of the *GCAM*. These criteria are applied as described in Section V of the *ROSES Summary of Solicitation* and are slightly modified as described below.

The criteria for evaluation of FINESST proposals are scientific merit, relevance, Research readiness, and Cost reasonableness, see 5.2.1-5.2.4 below. The first two criteria will be applied to the anonymized portions of the proposal. Research readiness and Cost reasonableness will be based on the separately uploaded "Expertise and Resources Not Anonymized" document.

5.2.1 *Scientific Merit Criterion*

Assessment of the merit includes:

1. The compelling nature of the research topic.
2. The exhibited depth of understanding of the research topic.
3. The expected impact of the research, should it succeed.
4. The feasibility of the proposed research plan, including the availability of resources for successful completion of the project.
5. The robustness of the research plan to anticipated setbacks.
6. The adequacy of the OSDMP or of the explanation for why an OSDMP is not provided/required.

5.2.2 *Relevance Criterion*

Assessment of the relevance will be based on the extent to which the proposed addresses:

1. Objectives as described in Section 2: Division Research Overviews.
2. How the proposal describes the relevance of the proposed work to the division(s) to which it was submitted.
3. If applicable, how the proposed research relates to one or more of the four cross-cutting priorities: Exploration and Scientific Discovery, Innovation,

Interconnectivity and Partnerships, and Inspiration in *Science 2020-2024: A Vision for Scientific Excellence - FY 21-22 Update*.

Peer reviewers may comment on relevance and may even provide a rating, but the funding SMD Division makes the ultimate determination on relevance.

5.2.3 *Research Readiness Criterion*

The Research Readiness criterion focuses on how the FI's research design and approach correlate with their actual research skills/capabilities as described in the:

1. FI's research readiness statement.
2. The PI-FI Mentoring Plan/Agreement.
3. The FI's Biosketch.
4. The PI's Biosketch.

Assessment of the research readiness may include:

i. Demonstration of a good understanding of the general subject area and background science related to the proposed research
ii. FI's involvement in any activities that make them particularly capable of conducting the proposed research.
iii. Whether the FI has the required technical skill(s) to carry out the project currently, or whether the FI and/or the mentor(s) have plans for the FI to gain such skill(s).
iv. Whether the PI and other research mentor(s), if applicable, possess qualifications suited for the proposed research project.
v. Whether the proposed mentoring activities will advance the ability of the FI to conduct the proposed research.

5.2.4 *Cost Reasonableness Criterion*

Reviewers may be asked to comment on whether the requested costs appear sufficient to implement the project or whether the requested budget exceeds the maximum annual $50,000 allotment, or the total budget for the entire performance period, see Section 6.

NOTE: The comparison of the proposed cost to available funds and compliance with 2 CFR 200 will be performed by NASA program and grant officer personnel.

6. Award Information and Restrictions

The start date for new awards normally is no earlier than November and no later than one year after the proposal due date (See Section 11 for specific dates).

Students funded by a FINESST grant may receive funding from other sources for any expenses not covered by this award.

The maximum amount of a FINESST award is $50,000 per 12-months and up to $150,000 total for a maximum period of performance of up to 36 months, not including any hiatus or leave without stipend or other form of direct compensation to the FI, if applicable, or any no cost extension (NCE).

From the awarded FINESST funds, SMD suggests a student receive compensation of $40,000 per 12 months; however, the compensation or stipend, when applicable and possible, should be comparable with the institution's prevailing policies and practices.

The written policies of the awardee institutions and the most current 2 CFR 200 Cost Principles take precedence at the time of the award. It is possible that a student may be funded as an employee or a consultant or some other direct cost category using NASA funds.

FIs may take a hiatus to pursue other activities such as internships, family leave, military leave, etc. When a student is on hiatus of more than three months, the student will not receive a FINESST stipend, and the institution shall not draw down/spend the FINESST stipend funds during the FI's hiatus. If the compensation paid to the FI is not a stipend, but is paid as salary or some other type of direct cost, then the awarded institution's written policies related to hiatus take precedence.

During the period that a FINESST proposal is under consideration or during the period of performance of a FINESST grant, the funded institution's Authorized Organization Representative (AOR) must inform NASA if the student has accepted any Federal or non-Federal fellowship or traineeship that 1) provides stipend and other costs, e.g., tuition that overlap with the FINESST award, and 2) is longer than three months in duration. In an instance when such a proposal is selected to receive a FINESST grant, NASA may require a revised budget and, if appropriate, a revised proposal for any active award to ensure that the FI can devote sufficient time to the FINESST research.

A PI may have FINESST and other (e.g., ROSES, NSF, DoD) proposals with overlapping scope of work submitted at the same time. In this case, the PI should acknowledge in the budget justification or note in the C&P that funds are requested elsewhere. If accepting a FINESST grant, the PI must alert the FINESST technical officer of any overlap so that budget negotiations/adjustments may ensue. The bottom line is that NASA will not fund duplicative work.

7. Reporting Requirements

In accordance with any award terms and conditions provided by the NSSC at the time of award, a progress report is due no later than 60 days prior to the anniversary date of the award. If an adequate progress report is not received, then the NSSC will not send funds. For details see Section 13.4.

8. Collection of Demographic Information

NASA requests and collects demographic data from principal investigators, future investigators, and other NSPIRES users for the purpose of analyzing demographic differences associated with its award processes. Information collected will include name, gender, race, ethnicity, and disability status. Submission of the information is voluntary, confidential, and is not a precondition of award.

9. Points of Contact and Frequently Asked Questions

The participating SMD funding organizations have representatives on the FINESST Team. Email questions to: HQ-FINESST@mail.nasa.gov, being sure to include the division or funder to which your proposal would likely be submitted in the subject line.

10. Proposal Preparation: Item Check List, Page Limits and Number of PDF Files

All FINESST proposals must include the materials listed below. First, the NSPIRES-generated proposal cover pages are created by filling out the required fields such as name of the FI, electronic commitments from Co-Is or any Collaborators, answering other questions and providing an anonymized abstract suitable for public posting upon selection. There is no page limit but some fields, e.g., the abstract, have character limits. NSPIRES will generate the required number of pages and automatically place a cover page at the front of the proposal when the fields are filled out. Do not download the cover page and attach it to the uploaded PDF file.

Checklist of Items to be included in the anonymized proposal document (all page limits maximum, unless specified):

- Table of Contents – 1 page.
- Science/Technical/Management Section (authored by the FI) – 6 pages, including illustrations, tables, figures, and foldouts, see Section 4.1.1.
- References No page limit, see Section 4.1.2.
- Open Science and Data Management Plan (OSDMP) – 2 pages, see Section 4.1.3.
- Mentoring Plan – 2 pages, see Section 4.1.4

Checklist of Items to be included in the second separately uploaded "Expertise and Resources Not Anonymized" PDF file (all page limits maximum, unless specified):

- Research Readiness Statement (authored by the FI).
- Biosketch for the PI (mentor) and the FI.
- Biosketch for Co-I(s) Optional. Do not include for collaborators other than mentors. See Section 4.1.6.
- Current and Pending Statements for the PI and the FI (one statement each, as needed; if no Current and Pending, state "No current and pending to report.") No page limit, see Section 4.1.7.
- Statements of Commitment, Letters of Resource Support, and Special Documentation - If applicable, e.g., if a submitting institution is not an education organization, proof will be needed that the proposed FI is enrolled/in good standing in an eligible degree program at a university. See Section 4.1.8.
- Acknowledgements (authored by the FI) at minimum include an acknowledgement regarding the FI's contributions to proposal, see Section 4.1.9.
- Budget and Narrative – Typically 2 pages, but may be exceeded, if necessary, see Section 4.1.10.

Note: For further details on checklist items, please reference Section 4.

Third PDF File - only when applicable:

- Optional High-End Computing (HEC) Appendix, See Sections 12.27-12.31 for details.

11. Summary of Key Information

Expected annual program budget for new awards	No dedicated budget: selected proposals will be funded by the relevant SMD Division or program.

Number of new awards pending adequate proposals of merit	Awards by division may range from 1 to ~60. See "Historical Numbers of New Awards" in Section 12,
Maximum duration of awards	3 years and see Section 6.
Due date for Notice of Intent to propose (NOI)	Not Applicable. Notices of Intent are not requested/accepted for this program element.
Due date for proposals	Proposals may be submitted at any time until 11:59 pm Eastern Time on the due date given in Tables 2 and 3 of ROSES
Planning date for start of investigation	No earlier than November and no later than one year after the proposal due date. Proposers may request an earlier start date, but see Section 13.1 that explains NASA's automatic approval for 90 days of pre-award spending and why it may or may not work.
Page limit for the central Science/Technical/Management section of proposal	6 pages; see also Sections 4.1 and 10 of this program element.
Relevance	See Section 2. Proposals that are relevant to this program element are, by definition, relevant to NASA.
General information and overview of this solicitation	See the *ROSES-2024 Summary of Solicitation*.
Award information	See Section 6
General requirements for content of proposals	See Section 4.1 The Elements of a FINESST Proposal.
Submission medium	Electronic proposal submission via NSPIRES or Grants.gov is required; no other type of submission is permitted.
Instructions for proposal preparation	See Sections 4 and 10
Website and detailed instructions for the submission of proposals via NSPIRES	https://nspires.nasaprs.com See NSPIRES Online Help (help desk available at nspires-help@nasaprs.com or (202) 479-9376)
Web site for submission of proposal via Grants.gov	https://www.grants.gov/ (help desk available at support@grants.gov or (800) 518-4726)
Funding opportunity number for downloading a proposal package from Grants.gov	NNH24ZDA001N-FINESST
Coordinating point of contact concerning this program	The HQ-FINESST Team Email: HQ-FINESST@mail.nasa.gov

Funding Points of Contact.	FINESST Program Scientists by funding organization: Earth Science: yaitza.luna-cruz@nasa.gov, cynthia.r.hall@nasa.gov Planetary Science: HQ-PSDFINESST@mail.nasa.gov Shared address for Amanda Nahm and Julie Ziffer Astrophysics: antonino.cucchiara@nasa.gov roopesh.ojha@nasa.gov Heliophysics: jared.m.bell@nasa.gov Biological & Physical Science: ursula.m.koniges@nasa.gov Science Activation/Citizen Science: Lin.h.chambers@nasa.gov

12. Ancillary Information for Proposers

12.1 The Structure of ROSES and its Relationship to Other Guidance

A "program element" in ROSES, such as this one, F.5 FINESST may contain specific requirements that supersede the common requirements found in the *ROSES Summary of Solicitation* and the requirements for all NASA solicitations in the *NASA Grant and Cooperative Agreement Manual (GCAM) – October 2024* (PDF). The order of precedence is the following: F.5 FINESST takes precedence, followed by F.1 Cross Division Research Overview (or a division research overview if appropriate) followed by the ROSES *Summary of Solicitation*, followed by the *GCAM*. That is, if FINESST tells you to do something different than what ROSES or the *GCAM* says, do what FINESST tells you to do. If you have a question, write to HQ-FINESST@mail.nasa.gov.

12.2 Foreign Participation

Participation in ROSES-funded research by non-U.S. organizations is welcome on a "no exchange of funds" basis, see ROSES FAQ #14 on this topic and the *GCAM*.

Proposals that involve research or collaboration outside the United States in "Designated Countries" that also are "State Sponsors of Terrorism" will be subject to additional levels of review by the Office of International and Interagency Relations (OIIR) that may result in a proposal's denial. NASA's "Designated Country (DC) List" is hosted on the NASA Export Control website at https://www.nasa.gov/oiir/export-control. The relevant part of the list is Column II, i.e., Countries determined by the Department of State to support Terrorism. The DC list is updated regularly; therefore, please consult the website to ensure use of the most up-to-date list.

12.3 Historical Number of New Awards

The number of proposals selected will be dependent on the number and quality of proposals submitted and on the availability of funds from the relevant SMD Division or program. The selection statistics for 2019 – 2022 are included in the spreadsheet on the SARA GrantStats Webpage. See also 12.5, below.

12.4 Biosketch and Current and Pending Format

Proposers are encouraged to use the NASA Grants policy provided templates for the Biographical Sketch (docx) and Current and Pending Support (docx), see Sections 4.1.6 and 4.1.7 Both C&P and the bio sketch must be unlocked and readable when merged into the file uploaded to NSPIRES. Do not submit image only files; files must be searchable. Applicants must not digitally sign these disclosure forms submitted to FINESST via NSPIRES. Instead, after the certifications, type the individual's name and date of signing for NSPIRES submission. Award recipients, however, shall maintain signed, originals of the completed disclosures in accordance with their entity's record keeping policies and make them accessible to NASA upon request in accordance with 2 CFR § 200.334, Retention requirements for records, and § 200.337, Access to records. NASA does not specify the nature of the signatures to be used.

For proposals that are selected for award that don't use these templates, NASA will contact proposers for these documents. For more information see Grant Notice 24-01. Questions on the Grant Notice may be directed to HQ Grants Policy and Compliance at hq-dl-grants-policy-compliance@nasa.gov.

Proposers should not use SciENcv for either the bio sketch or C&P document creation nor NSF's fillable PDF, entitled "NSF Current and Pending (Other) Support OMB-3145-0058". Either the completed form will be editable when presented to reviewers or, if the proposer locks it, text may be cut off and NSPIRES will be unable to generate a complete proposal document for the reviewers.

12.5 Where can I find information about past selected proposals?

The titles and abstracts of selected proposals to the most recent FINESST competitions, presented by the participating divisions, are posted on the NSPIRES page for FINESST from ROSES-23, the NSPIRES page for FINESST from ROSES-2022, the NSPIRES page for FINESST from ROSES-2021 and the NSPIRES page for FINESST from ROSES-2020 as PDF files under the heading "Selections".

12.6 What if my proposal is relevant to multiple SMD funding organizations?

Proposal submission requires choosing just one reviewing division/program. However, proposals that are relevant to more than one part of SMD are welcome. Note: If the research is relevant to more than one division/program, please identify the other funder in the abstract. In addition, following submission of the proposal and no later than 30 days following the due date, please email HQ-FINESST@mail.nasa.gov using a subject line that states: "FINESST Proposal <insert number> Potential for Multi-Division Review". If, prior to a proposal's review, NASA determines that a submitted proposal belongs to a different division entirely, then it may suggest to the proposer that the proposal be reassigned to another division rather than be shared for additional review.

12.7 May I propose to do research that may overlap work previously funded by NASA or work that is currently submitted to NASA and is under review?

In cases when the PI already has an ongoing research award from NASA, the research proposed under FINESST may address a similar topic, but the proposal should make clear that the proposed research does not duplicate the existing award and how the proposed research goes beyond what NASA has already agreed to support. It is OK if a proposal to another ROSES program and under review has overlap with the proposed FINESST work, but both of the proposals must be listed in the "Current and Pending Funding" section of the proposal, and if both are selected, it is up to the discretion of the program officer(s) whether both proposals are selected for full funding or if one (or both) budgets are decreased.

12.8 May I resubmit a FINESST proposal?

Yes, a DAPR-compliant resubmission of any prior declined proposal will be treated the same as an entirely new submission. There is no requirement to identify that a proposal is a resubmission. Given the change to DAPR, we don't recommend referencing prior submissions. If the FI desires to identify the proposal as a resubmission, then put that information in the "Acknowledgements" Section.

12.9 If I previously received a FINESST or NESSF grant originally awarded to another student am I eligible to apply for a new FINESST grant?

Yes, see award value limitations in section 4.1.10.

12.10 May NASA Civil Servants Participate? What about Civil Servants at Other Agencies?

NASA civil servants (CS) who also have a qualifying student affiliation at an eligible degree-awarding institution may not be proposed as an FI. NASA CS who have questions about their potential FI eligibility options must consult their Center's General Counsel or other qualified Center authority.

Non-NASA CS must talk to their own agency legal counsel about whether they can be proposed or serve as FIs.

Federal civil servants, contractors, or federal contractor equivalents who are proposing through an eligible institution to serve as PIs shall only use non-NASA email addresses to demonstrate qualifying status at the proposing institution. Civil servants seeking to propose as PIs should seek advice for their agency counsel before committing to a proposal.

Civil servants/ federal contractors may serve as mentors when they are listed as a Co-I.

12.11 Will there be a Pre-Proposal Teleconference or Webinar? Will it be recorded for those who miss it and available for replay on demand?

Yes, on a no-advance-reservation, first-to-dial-in basis callers may attend the pre-proposal event with the FINESST program scientists. This optional event will be December 6, 2024, starting at 3 p.m. Eastern Time.

Join link:

https://nasaevents.webex.com/nasaevents/j.php?MTID=m3e84bca96b41429acdd1f195f1ce3a30
Webinar number:
2829 500 0256
Webinar password:
icMCjwpr446 (42625977 when dialing from a phone or video system)
Join by phone
+1-415-527-5035 United States Toll
+1-312-500-3163 United States Toll (Chicago)
Access code: 282 950 00256

For TTY-equipped callers or other types of relay services in the United States, no earlier than 15 minutes before the start of the event, call 711 and provide the same join by phone number; the Webinar phone password 42625977, and Access code, 282 950 00256 if prompted.

To preserve anonymity of callers, callers should not disclose their names or institutions. Anonymous questions may be posted to the public at https://nasa.cnf.io/sessions/sjts/#!/dashboard.

Email HQ-FINESST@mail.nasa.gov with non-public agenda suggestions and questions using "FINESST Telecon" in the email's subject line on or before December 2, 2024. SMD will post the presentation charts no later than 12 p.m. Eastern Time on the conference day under "Other Documents" on FINESST's NSPIRES page.

The FINESST Team expects to establish an accessible location where the event may be replayed on demand. If that happens, then a notice will be posted on the NSPIRES page for this program element and link will be posted under other documents.

12.12 May visa costs be included in the proposal's budget?

Short-term visa costs may be requested only when such costs qualify as "Recruiting costs" per 2 CFR 200.463. For these costs to be directly charged to a FINESST award, however, the budget narrative must demonstrate that the non-U.S. FI:

1. Is critical and necessary for the conduct of the proposed FINESST research;
2. Is allowable under the applicable cost principles;
3. Is consistent with the non-Federal entity's cost accounting practices and non-Federal entity policy; and
4. Meets the definition of "direct cost" as described in the applicable cost principles. For additional information see Subpart E - Cost Principles in 2 CFR 200.

12.13 What is the expected amount of the FI Stipend or other direct compensation?

SMD suggests an FI's maximum stipend or other direct compensation is $40,000 in any 12-month period. However, if the standard student compensation is greater than $40,000, then up to $50,000 may be requested provided that the other cost categories are reduced to cover the increased payment to the FI.

In cases where the FINESST $50,000 is 1) not enough to cover the standard student stipend or other form of compensation or 2) not enough to cover the standard FI costs

at the university for a 12-month period, the university may choose to cover expenses from other sources and may show in the proposed budget the amount and source of the cost share. Alternatively, the proposal budget narrative can plan that the FI take a hiatus to work on something funded by a non-FINESST source. Other creative FI support strategies may be proposed, particularly in cases where the institution treats the FI as an employee, as a consultant, or as a contractor, and not as a participant.

12.14 May the $40,000 be put toward other costs like teaching, research travel, conference attendance, equipment, etc.?

Yes, if an FI's NASA-funded compensation will be zero or less than $40,000, then the amounts in the other budget categories may be adjusted/exchanged up to $50,000. Proposers who request neither stipend nor salary nor other direct compensation for the FI, may request up to $10,000 annually for travel and other allowable costs, including any allowable indirect. See 12.18 regarding equipment costs.

Tuition-only budgets are permitted as long as they comply with the written policies of the proposing institution and do not exceed the annual cap of $50,000.

Note, costs related to an FI's teaching to further the proposed FINESST research, such as on teaching or learning of science, may be allowable. If the Department or University sets a teaching requirement as a degree requirement unrelated to the FINESST research, then that is probably not allowable. Talk to your AOR. Remember you may plan in your proposal to take a funding hiatus to meet a teaching requirement. If you don't make the plan in advance, it may be more complicated and require approval later from the NSSC Grants Officer.

12.15 Is overhead, indirect or F&A costs allowable on a FINESST proposal?

The answer to whether overhead is allowable is case-by-case. Sometimes, for administrative convenience, organizations propose FINESST payments to students or on behalf of students via specialized, existing financial systems, such as but not limited to, 1) an employee payroll system or 2) a non-employee or "fellowship" system or 3) some other unique system.

Budgets should specify how the institution is treating the FI as 1) an employee or 2) a participant or 3) some other cost category, e.g., scholarship, consultant or contractor, as this impacts what costs are reasonable, allocable, and allowable, including overhead. Grants Officers (GO) at NASA Shared Services Center, not the FINESST Team, will have the final word on all and any costs in the budget. F&A is allowable when they are included within and do not exceed the annual cap of $50,000. F&A only budgets are not permitted.

Reminder: NASA does not permit indirect costs (overhead) to be requested or recovered on participant support costs.

12.16 Post award may the budget be adjusted to cover overhead or other costs not originally requested?

Yes, when handled in accordance with Appendix A: NASA Prior Approval Matrix for Research Awards in NASA's General and Special Terms and Conditions (T&Cs). For example, in cases where post award an organization wants to move money from

participant support costs into direct or overhead cost categories, per NASA's award conditions some budget revisions must be approved by the GO at the NSSC before such budget changes are implemented. The AOR will need to provide a revised budget and justification to the Technical Officer and the NSSC. The NSSC has an "Administrative Supplement Request" website at: https://www3.nasa.gov/centers/nssc/forms/grantcooperative-agreement-administrative-supplement-request. Be sure to include a budget adjustment that shows the original budget and the new budget in a PDF file.

12.17 Are PI or Co-I Costs Allowable on a FINESST proposal?

In most cases, no. FINESST awards are intended to support only student projects and research and therefore no salary, travel, or other costs shall be requested for SMD for the PIs, Co-Is, or Collaborators. Additionally, it is expected that a PI's, Co-I's, or Collaborator's current employment will include compensation and continues whether or not the proposal is selected by NASA. When noted in the budget, exceptions for joint publication or similar costs may be permitted to the PI.

12.18 Are equipment costs allowable on a FINESST proposal?

Yes, with limitations. Equipment may be allowable as long as the costs are $10,000 or less total for the entire period of performance. For example, if $10,000 is needed in the first year for equipment costs, then that's all the costs allowed for equipment. The purchase or lease of equipment or services in excess of $10,000 normally is not permitted through FINESST awards. If an institution's policy permits the purchase of computers, software, digital devices, or services or materials, such as to support mentoring or research activities for the FI or to construct a CubeSat, then these purchases are allowable. Regarding what is and is not allowable or who owns the equipment, e.g., a computer for the FI's use, is left up to the policies at the awarded institution.

Proposers who request these purchase types, or who propose to contract with a service provider for videoconferencing, augmented reality, telepresence robots, communications software/licenses, etc., in lieu of the FI's travel to events or to conduct the research must explain the importance of these purchases/services and how they relate to the success, accessibility, and safety considerations for the research performance in the budget narrative.

12.19 Are the proposal's budget categories strictly fixed, or is there any flexibility?

As long as the total amount requested does not exceed $50,000 in a 12-month period, then there is flexibility. Talk to your AOR or sponsored programs about how to create a budget that meets your institution's policies and that advances the purpose of the proposed project. Budgets should be designed to support the FI's proposed research and related activities, such as the FI's compensation, professional development, fieldwork, etc. Any costs proposed for award must comply with the cost principles in 2 CFR 200, Subpart E. For example, 2 CFR 200 contains information on participant support costs at §200.456; consultants at §200.459, Professional service costs; and prizes at §200.438.

12.20 What is a mentoring plan?

A mentoring plan or an agreement is not a confidential recommendation; rather, it sets respectful, reasonable expectations or goals for the collaboration between the PI/Mentor and FI and, thus, may help to foster a good working relationship that will further the FINESST research and the development of the FI as a scientist. The FINESST mentoring plan/agreement should set appropriate expectations for the working relationship early, be reviewed regularly, and be easily revisable, providing an opportunity for FIs to request adjustments that they may otherwise find uncomfortable bringing up with the PIs.

Through the mentoring plan, the PI/Mentor and FI will identify and work toward research career development goals designed to deepen the FI's understanding of the FINESST research, career pathways, broaden resource networks, and facilitate growth as new professionals. A non-exhaustive list of mentoring activities that a plan may include, but is not limited to, includes: 1) training in the preparation of data, publications, presentations, etc.; 2) opportunities to collaborate with researchers from diverse backgrounds and/or disciplinary areas; and/or 3) responsible professional practices.

12.21 Where can I find some examples of a Mentoring Plan?

Your organization may have mentorship resources or templates available. Go to your institution's website and search for keywords, such as, "mentor", "mentee", "mentor resources", etc., and communicate with your PI/Mentor and organization about mentorship resources. If your proposing organization has mentorship information, please use it and refer to it. If your organization has no mentorship resources, then adapting a mentoring plan designed originally for another purpose (such as a postdoctoral fellowship, NSF award) for use with FINESST is acceptable.

For resources related to STEM mentoring, selected URLs include:

American Association for the Advancement of Science STEM Mentor Resources: https://www.aaas.org/stemmentoring

Pathways to Science: Mentoring Manual: https://www.pathwaystoscience.org/manual.aspx?sort=6#pagetop

Committee on the Status of Women in Astronomy's Mentoring Page: https://aas.org/comms/cswa/resources/mentoring

12.22 How can I learn to use NSPIRES?

Find instructions and FAQs at NSPIRES Online Help.

12.23 How do I know NASA got the proposal? What if my proposal is marked late?

NSPIRES generates an automatic acknowledgement when any proposal is submitted. If the institution did not receive an email confirming submission of a proposal, check spam filters and junk boxes. If unable to locate the email acknowledgement log in to NSPIRES to check the submission status.

NSPIRES marks FINESST proposals submitted after the due date or deadline as "late". Late proposals will be handled in accordance with the SMD Policy on Late Proposals. SMD does not pre-approve the submission of a late proposal. The decision to submit a late proposal is solely that of the proposer, and it is then NASA's decision whether to accept it or not. Late proposals are rarely accepted. The FINESST program scientists/administrators are not empowered to authorize the submission of a late proposal.

When the FINESST solicitation completely shuts down on NSPIRES, the proposer is prevented from finishing a submission.

12.24 How are FINESST proposals reviewed?

SMD scientist(s) and program managers/executives, or their designees, conduct proposal evaluations through one or a combination of the following methods: individual (non-panelist) reviews, virtual panels, or face-to-face panels. Reviewers can be from the external community and/or from NASA Centers. While reviewers may not be experts in every subtopic or discipline within the FI's proposed research field, the reviewers will be experts in the broader research. Thus, it is recommended that proposers write their proposals for a general scientific audience appropriate to their field.

12.25 How are proposals selected?

The Directors of the participating SMD funding organizations at NASA Headquarters or their designees make the respective award selections. The Selection Officials will select proposals as judged against the evaluation criteria in Section 5.1, division objectives, and those in this announcement, programmatic considerations, and the available financial resources.

Many proposals will receive ratings that make them selectable but still may not be selected for programmatic reasons, e.g., either because the proposed work is redundant with another funded FINESST or other NASA project, or the topic is deemed by NASA to be of lower priority for funding/selection. Other programmatic considerations include, but are not limited to, balance across subdisciplines and institution types, technologies, methodologies, data accessibility, etc.

12.26 How will I be notified whether my proposal is selected or declined?

At the conclusion of the review and selection process, an email will be sent to the PI and the Authorized Organizational Representative (AOR) from NSPIRES and the university asking them to log into the NSPIRES. PIs/organization representatives are responsible for downloading NASA letters and evaluation forms and sharing with the FI.

12.27 Are high-end computing resources available for FINESST proposals?

SMD provides computational infrastructure to support its research community, managed by NASA High-End Computing (see the HEC website at https://www.hec.nasa.gov/). Two computing facilities are offered: the NASA Center for Climate Simulation (NCCS) at the Goddard Space Flight Center (GSFC) and the NASA Advanced Supercomputing (NAS) facility at the Ames Research Center (ARC).

Available computing resources are summarized at https://www.hec.nasa.gov/about/overview.html. These systems are periodically updated and expanded, but the resources are still highly constrained.

Any need for HEC resources must be justified by completing a request for resources for inclusion with a FINESST proposal (see below).

There will not be a HEC telecon or webinar.

12.28 How do I generate a request for HEC Resources?

The PI (not the FI) completes and submits a request in the HEC Request Management System (RMS) at https://request.hec.nasa.gov.The purpose of this step is to inform FINESST reviewers at NASA of your computational needs, and if the FINESST proposal is selected, establish eligibility to use HEC resources. The form includes a written justification of how the computational resources would support the investigation as well as a multi-year resource-phasing plan, in annual increments, identifying the computing time and data storage requirements covering the duration of the proposed award period.

NOTE: In the RMS, the PI may delegate responsibility for the computational project by identifying the FI as their "Computational PI." To identify a Computational PI, from the main menu, select "Management", "Team Members," and scroll down to the request number. Click the "Click to Add Member" button. Add the FI's information. Ensure that the "Computational PI" role is selected and click the "Add Member" button. This will send an invitation to the FI to create an RMS account to manage the allocation on the PI's behalf. For more information, see the RMS User Guide.

About the RMS User Interface: The RMS asks for information in six different sections.

Some RMS items within these sections will capture responses in a text box and some items provided restricted or limited choices. When RMS asks:

- NASA Sponsoring Directorate, select NASA Science Mission Directorate (SMD).
- NASA Sponsoring Program, select the proposal's reviewing/funding division, e.g., Astrophysics Division (APD), etc.
- Requested Start Date, enter the start date from your NSPIRES cover page. Otherwise use 11/1/2025, which is the suggested start date for FINESST grants Project Duration (in years), enter either 1 or 2 or 3.
- Funding Type, select Research Opportunities in Space and Earth Science (ROSES). Funding types are listed in alphabetical order. You may need to scroll to make the correct selection.
- ROSES Year, select 2024
- Program Element, select Future Investigators in NASA Earth and Space Science and Technology (FINESST).
- Funding Manager, select the name of funding division's FINESST Program Scientist, i.e., Astrophysics (APD) = Roopesh Ojha, Earth (ESD) =Yaitza Luna-Cruz, Heliophysics (HPD) = Jared Bell, Planetary (PSD) = Julie Ziffer, Biological and Physical Science (BPS) = Ursula Koniges, and Science Activation/Citizen Science = Lin Chambers.

Computing time must be described in the request using Standard Billing Units (SBUs), a common unit of measurement employed by the HEC program for allocating and tracking computing usage across its various computing architectures. The RMS has a built-in calculator to help convert processor (CPU) hours to SBUs. SBU Conversion Factors are also available at https://www.hec.nasa.gov/user/policies/sbus.html, or proposers may contact HEC support staff for further assistance calculating SBUs. Contact information can be found at https://www.nas.nasa.gov/hecc/support/user_support.html for NAS User Support and https://www.nccs.nasa.gov for NCCS User Services Group.

Proposers also may submit requests for time on the Graphics Processing Units (GPUs) at either center. The unit for GPUs is GPU hours.

If you are having difficulties using RMS and need technical support, then please email to support@hec.nasa.gov and specify in the subject line "NNH24ZDA001N-FINESST HEC Request". Please allow 72 hours for a response before sending a second email.

Upload Request for HEC Resources
Save a PDF copy of your request after submitting it using the link provided in RMS. During the proposal submission in the NSPIRES system:

- Upload the PDF version of your computing time request as a separate file from your proposal and select "Optional HEC request" as the document type when uploading.
- On the NSPIRES Cover Page:
  - Check the box indicating that a request for HEC resources is included in the proposal, and
  - Enter the HEC Request Number (specified on the PDF). Reminder: Be sure to answer the HEC Program Specific Data questions with the NSPIRES Cover Page.

For further information (no how-to-use-RMS nor what-is-involved-with-identity-verification type questions) about NASA-provided High-End Computing resources, please contact Dr. Tsengdar Lee at Tsengdar.J.Lee@nasa.gov or 202-358-0860.

12.29 What must be done in NSPIRES when submitting a proposal with an HEC appendix?

During the proposal submission in the NSPIRES system, upload the PDF version of your computing time request that you saved using the button provided in RMS as a separate file from your proposal and select “Optional HEC request” as the document type when uploading.

Check the box on the proposal cover page indicating that a request for HEC resources is included in the proposal and enter the HEC Request Number (specified on the PDF). Reminder: Be sure to answer the HEC Program Specific Data questions with the NSPIRES Cover Page.

12.30 How are the HEC Requests Reviewed?

During the review of the proposed investigation, NASA will consider whether the computing time requested is an appropriate use of the highly constrained resources dedicated to FINESST and factor this into HEC selection decisions.

Selection of your FINESST proposal does not guarantee that your HEC request will be fully allocated; it means that your HEC request is eligible to progress to the next step for evaluation by the HEC Program. While you are guaranteed some HEC time, it may differ from your request given resource and other constraints.

12.31 How are HEC Resources Allocated?

If your proposal is selected for funding, your HEC request will be evaluated by the SMD's HEC Allocation Authority. SMD allocates quarterly in October, January, April and July. Out of cycle allocation requests are handled on a case-by-case basis. The HEC program will then issue letters identifying yearly allocations of HEC resources for the duration of the project, which again, may differ from your request due to limited availability of resources. However, PIs may submit requests to increase or decrease allocations of HEC resources if there are unexpected changes to computational needs. Requests for modifications must be submitted via RMS.

Note: You may experience delays between selection, allocation and access to the systems. Your FINESST grant award agreement issued by the NSSC must be in place before HEC resources will be allocated. To access NASA High-End Computing systems, you must also establish a NASA identity and set up an account at the computing center.

There is also a separate identity verification process conducted by other authorities at NASA who work in various security- and export control-related offices. Most identity verifications are processed within 9-14 business days or 3 to 4 calendar weeks. However, verification processing is case-by-case and may be longer if there is a foreign national from a designated country involved. Scenarios that cause extended processing time include:

- -FI or PI delayed responses for additional information. Typically, this is for additional information related to the work description but can also be related to documentation of a foreign national's (FN) visit or their identity.
- -Delays in providing proof of a FN's valid entry into the U.S. Part of the NASA check requires determining how long FNs are allowed to remain in the U.S. and/or to determine they entered the country legally.
- -Affiliation with China. If a U.S. person or foreign national is affiliated with China (whether as a Chinese citizen or through some organization or educational institution) the request may be submitted for review to individuals outside of NASA, i.e., Congressional Committees, etc. This is the most significant cause of delays and can add many, many months to the HEC allocation process.

The HEC program will then issue letters identifying yearly allocations of HEC resources for the duration of the project, which again, may differ from your request due to limited availability of resources. However, PIs may submit requests to increase or decrease allocations of HEC resources if there are unexpected changes to computational needs. Requests for modifications must be submitted via RMS. Allocation in full cannot be guaranteed, but SMD will make every attempt to satisfy the needs in the context of the overall set of requirements, resource constraints, and science priorities.

Please read the allocation letter carefully, as it will contain instructions for setting up your account at NAS or NCCS. PIs must provide the name of the FI participant who may use the account and identify foreign national status in the HEC request abstract, where appropriate.

12.32 When a non-degree-granting institution proposes an FI, what kind of "evidence" is SMD looking for "from the accredited U.S. education institution of the student's enrollment/good standing in an eligible degree program."

This is administrative requirement, not an endorsement or recommendation. Do not include student transcripts. Canned letters from a qualified source included in the Statements, Letters, and Special Documentation Section, see 4.1.8 is the evidence, i.e., proof that the proposed FI is enrolled/in good standing at an eligible U.S. university.

12.33 What if there is a lapse in NASA operations before proposals are due? Will the due date be extended? What about after proposals are due?

In the event of a lapse in NASA operations, please visit http://nspires.nasaprs.com/. Not all lapses require a due date be extended. If the due date must be extended, a formal amendment will be issued that provides the new date. A NASA operation lapse after proposals are due may impact the timely review of proposals and award. Normally during a lapse, the NSSC may make no funding increments nor new awards.

13. Ancillary Information for Awardees

FINESST awards are subject to the standard policies and provisions identified in the regulations at 2 CFR 200 and 2 CFR 1800 and please also see the "NASA Grant and Cooperative Agreement Terms and Conditions" and the October 2024 version of the NASA Grant and Cooperative Agreement Manual (GCAM).

13.1 Pre-award Costs

All new awards receive an automatic 90 days of pre-award spending approval. However, the FI's institution may choose not to exercise this option, their written policies take precedence. Expenses incurred more than 90 calendar days before the award require prior written approval from a NASA Grant Officer at the NSSC. All costs incurred before NASA makes the award are at the recipient's risk (i.e., NASA is not required to reimburse such costs if for any reason the recipient does not receive an award or if the award is less than anticipated and inadequate to cover such costs). Note that a proposed project's proposed start date may or may not be the same as its award date.

13.2 Period of Performance and Other Administrative Changes

Changes to the period performance, including no cost extensions (NCEs), will follow normal NASA grant procedures. Please visit https://www3.nasa.gov/centers/nssc/forms/grantcooperative-agreement-administrative-supplement-request. The PI and FI are to work with the university's Office of Sponsored Research, or its equivalent, to determine the appropriate allocation in each budget category at the time of proposal and any subsequent changes to the budget post award in the annual progress report. For NCEs the NASA Grant and Cooperative Agreement Manual and Provision 2 CFR 200.308, requires that the recipient notify the NASA Grant

Officer in writing with the supporting reasons and revised period of performance at least 10 calendar days before the end of the period of performance specified in the award.

13.3 Personnel and Institution Changes

In the event that an FI leaves the institution prior the completion of the awarded research project or ceases to participate in the FINESST research for any other reason, and prior to an official change request, the PI and FI should email the grant's technical officer, and if different, the Division's point of contact listed in Section 11, to let them know of the anticipated request so that the Division can weigh in on the best course of action, and make recommendations on a case-by-case basis.

FINESST awards sometimes may follow a student to a new institution, or the original institution may propose that an eligible graduate student at the current institution, who is pursuing similar research, be named to expend the balance of the FINESST funds already with the institution. FIs who have not used the full three years of FINESST funding may be proposed from the new institution with a new PI. The Science Mission Directorate may consider funding such a FI on a single source proposal, i.e., a non-competitive, invitation-only mechanism or, if time permits, ask that a follow-on or transfer proposal be submitted to an open FINESST solicitation.

The request to change the student comes from the PI and the Office of Sponsored Research in the form of an email to the award's technical officer at HQ, the grants officer at the NSSC, and to HQ-FINESST@mail.nasa.gov.

If there is no award in place and there needs to be a change to the personnel originally proposed, have the AOR email HQ-FINESST@mail.nasa.gov. If it is a simple PI change, the AOR should be able to submit a request to change the PI by providing the proposed new PI's CV, C&P and an updated mentoring plan uploaded to NSPIRES as a revised proposal before the proposal is transferred to the NSSC.

If post-selection notification but prior to a NASA award, the proposing institution does not intend to name a new PI and prefers to allow the selected proposal to move or transfer to a different institution, then the AOR should contact the selecting division and email HQ-FINESST@mail.nasa.gov and officially turn down the selection.

If a FINESST proposal is selected after the PI and FI together have changed organizations and the selecting division has been notified, the transferring PI and FI and a new AOR must submit a proposal using the same topic as the selected research via NSPIRES using F.99 "Principal Investigator Organization Change".

This decision is made on a case-by-case basis with approval required from the funding SMD Division's Selecting Official and the NASA Shared Services Center. If NASA has already awarded the funding to an organization and the FI wants that money to move to a new recipient, that is not usually possible.

13.4 Progress Reports

Progress reports are due no later than 60 days prior to the anniversary of the award made by the NSSC. Some divisions request them annually by March 15, regardless of the award POP. As is normal for NASA grants under 2 CFR 200, this program requires the standard mandatory minimum Research Performance Progress Report (RPPR), see

Section 29.1 and Appendix C of the *GCAM*. Regardless of initial performance start date, progress reports are due annually.

All FINESST progress report emails must have a subject line that states 1) the NSSC-issued award number, which is a combination of 13 alphanumeric characters, that will start with "80NSSC", 2) the PI Name, and 3) the Institution Name. Failure to use and include the three items in the email subject line may significantly delay processing.

Email an annual progress report as PDF attachments to NSSC-Grant-Report@mail.nasa.gov and the technical officer (TO) identified on NASA Form 1687. If you don't have the NASA form may look the TO up by searching on the PI name at: https://www3.nasa.gov/centers/nssc/forms/grant-status-form

The progress report includes the components given in Appendix C of the *GCAM* and an optional template is available at https://science.nasa.gov/researchers/sara/faqs/#faq-11

13.5 Future audits and "transaction testing"

Expenditures under any NASA grant, including FINESST, are subject to inspection sometimes called transaction testing (see GCAM section 27.1) and other audits during the period of the grant and for three years thereafter. Records at the awarded institution must be maintained in sufficient detail to demonstrate prudent management and to facilitate the preparation of the required reports for determining whether expenditures are being/were made for the purposes for which the funds were granted.

13.6 Is there NASA support for individuals receiving funding who experience discrimination or harassment during their work?

NASA does not offer "support" services; however, depending on the individual's employment status at the grantee institution, local support resources may be available through a union, a Veteran and Military Affairs (VMA) Office; the State-level equivalent of the Equal Employment Opportunity Commission (EEOC), etc. Many higher education institutions have support resources for non-employees, e.g., students, such as but not limited to health services, Offices of Diversity, Equity and Inclusion, and community service officers. A search of the recipient institution's website may help to locate resources related to bias, bullying, harassment, etc.

Assault or threats of assault of any kind are criminal offenses over which NASA has no authority. NASA strongly encourages assault victims and witnesses to report to the local police, and if applicable campus police, and the NASA Office of the Inspector General at https://oig.nasa.gov/contact.html. Always report immediate threats to 911.

Students, faculty or staff in programs receiving NASA financial assistance, such as grant awards from this program, may raise allegations of discrimination, including harassment, by contacting the NASA Office of Diversity and Equal Opportunity. Find information on filing a complaint through ODEO at https://missionstem.nasa.gov/filing-a-complaint.html or send email to hq-civilrightsinfo@mail.nasa.gov or phone 202-358-2180.

13.7 Does NASA offer U.S. tax guidance to students receiving FINESST funding?

No, NASA does not provide tax advice to any of our grantees.

13.8 What if the FI graduates or leaves the project early for any reason? What if the FI graduates but still has project work to do? May they stay as the FI?

Make sure the organization's sponsored research office (i.e., the grant's AOR) is notified before reaching out to NASA. Some institutions enforce written policies that do not permit the naming of a successor FI. In the event that an FI leaves the institution prior the completion of the research project or ceases to participate in the FINESST research for any other reason, and prior to an official change request (e.g. to name a new student as the FI), the PI and FI should email the grant's technical officer, and if different, the Division's point of contact listed in Section 11, to let them know of the anticipated request so that the Division can weigh in on the best course of action, and make recommendations on a case-by-case basis.

If an FI obtains a master's degree in under three years and is continuing as a Ph.D. student at the awarded institution, then the FINESST grant can continue. Continued studies is not a change in scope.

After completing a terminal degree (e.g., master's or Ph.D.), if there is a year or less remaining on the FINESST award, and if it is acceptable to the awarded institution, the FI may remain at the grantee institution to continue the research, but no additional funds will be sent for the award. If there are no changes to the budget cost categories, it is not necessary to contact NASA. Please include this information in the final performance report, or if requesting a no-cost extension (NCE), in the progress report submitted as part of the NCE.

However, should the awarded institution need to move funding from participant support costs to another direct cost category or to indirect, then a revised budget must be provided to the Grant Officer at the NSSC to approve before proceeding. It is not considered a change in scope for the same FI to continue with the same project at the same institution because the FI graduated.