



ISS NATIONAL LABORATORY®

Follow-On Projects

ISS National Lab Research Announcement (NLRA) 2025-1

Instructions to Offerors

Center for the Advancement of Science in Space™

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Step 1: Letter of Intent Submission period: Rolling

Step 2: Full Proposal Submission: Rolling*

(* by invitation only)

Note: For any updates regarding submission deadlines, please visit [Current and Upcoming Opportunities - ISS National Lab](#). For general questions related to this research announcement, please email info@ISSNationalLab.org.

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I. SUMMARY

Since 2000, the International Space Station (ISS) has enabled humans to live and work in space, supporting research and technology development (R&D) that is impossible on Earth. Since its designation in 2005, the ISS National Laboratory[®] has expanded access to this unique laboratory for research communities from U.S. academic institutions, government agencies, and the private sector. ISS National Lab-sponsored research aims to increase fundamental knowledge; scientific application; science, technology, engineering, and mathematics (STEM) education; workforce development; and demand for sustainable, scalable innovation and production in low Earth orbit (LEO).

In partnership with NASA, the Center for the Advancement of Science in Space[™] (CASIS[®]) manages this national laboratory. CASIS awards funding and resources on the ISS through competitive grants to support non-exploration science and technology development as well as STEM education initiatives from U.S.-based institutions.

As a U.S. taxpayer-funded organization, CASIS contracts only with U.S. persons¹. This document will guide offerors in developing quality letters of intent (LOI) and proposals for follow-on work to leverage the ISS and space-based research to advance U.S. leadership in space.

II. DESCRIPTION OF RESEARCH

With frequent launches, real-time connectivity to data streams from in-orbit experiments, and crew activities, the ISS offers access to a unique perspective of Earth, persistent microgravity to explore its effects, and the environmental extremes of LEO. A global community of scientists, engineers, educators, and entrepreneurs is dedicated to transforming innovative R&D ideas in space into improvements for life on Earth, including those that support STEM education and workforce development.

This ISS National Lab Research Announcement (NLRA) invites proposals from past ISS National Lab principal investigators seeking to continue their previous scientific and technical projects or extend their programs in education and workforce development. Proposals are evaluated along four “lines of business,” which are strategic focus areas of the ISS National Lab: 1) fundamental science, 2) in-space production applications, 3) technology development/demonstration, and 4) STEM education and workforce development. Proposals will be accepted on a rolling basis.

The applicable line of business for a proposal is determined by the offeror based on the following definitions:

- **Fundamental Science:** Peer-reviewed science that will lead to new discovery and knowledge, or advance our current understanding or knowledge, in various scientific disciplines through the use of microgravity, the extreme environments of space, or the unique vantage point of the ISS. Economic output from project results is not required.
- **In-Space Production Applications:** LEO-based applied R&D microgravity applications seeking to demonstrate space-based manufacturing and production activities that enable new business growth and capital investment, represent scalable and sustainable market opportunities, and

¹ U.S. person: a natural person who is a lawful permanent resident as defined in 8 U.S.C. 1101(a)(20) or who is a protected individual as defined by 8 U.S.C. 1324b(a)(3). It also means any corporation, business association, partnership, society, trust, or any other entity, organization, or group that is incorporated to do business in the U.S. It also includes any governmental (federal, state, or local) entity.

produce reoccurring value with the potential to generate demand for and revenue from access to space.

- **Technology Development/Demonstration:** Applied R&D, technology demonstration, and technology readiness level (TRL) maturation to improve products and/or processes that will produce positive economic impact. All projects with an expressed commercial purpose or intent are included. Most of these will be sourced and/or serviced by Implementation Partners.
- **STEM Education and Workforce Development:** Programs, projects, and public-private partnerships that leverage the ISS and space-based research to advance U.S. leadership in space-based R&D and industry-related workforce development. Programs/partnerships should seek to extend the learning community, build a STEM-capable workforce, and include opportunities for post-secondary students, K-12 students, and/or educators while targeting underrepresented demographics.

Follow-on flight projects for fundamental science, technology development, and in-space production applications must justify the need for access to space for research, development, or demonstration. Fundamental science projects should focus on advancing knowledge and discovery in scientific disciplines through use of the unique environment of the ISS without the requirement for economic output. Technology development projects aim to improve products or processes with a focus on commercial application and positive economic impact, while in-space production applications projects should demonstrate scalable, sustainable manufacturing or production activities with the potential to generate business growth and recurring value. All projects should leverage the ISS to enhance knowledge, performance, or commercial viability.

Follow-on efforts in STEM education and workforce development are not required to include a flight component but must provide innovative learning programs and resources for K-12 students, educators, higher education institutions, and the public. These initiatives may offer opportunities for student-led experiments that launch to space, serve as ground controls, or use data from flight experiments. The ISS National Lab seeks to broaden its partner programming, such as Space Station Explorers, and expand the learning community to support initiatives that develop a STEM-capable workforce, with a focus on higher education and future workforce development, particularly among underrepresented demographics.

Background

Research and technology development on the ISS benefit from unique conditions in LEO.

Microgravity: The ISS National Lab allows long-duration research in persistent microgravity, where gravity-driven forces are nearly absent. The environment provides new insights and benefits across life sciences, physical sciences, engineering, and industrial applications.

Extreme Conditions: The space environment exposes materials to harsh conditions:

- Atomic oxygen, which is highly reactive with plastics and some metals, causing severe erosion
- Ultraviolet radiation, which deteriorates and darkens many plastics and coatings
- Vacuum conditions, which alter the physical properties of many materials
- Impact from meteoroids and orbiting man-made debris, which can damage materials exposed in space
- Continuous cycling between extreme high and low temperatures, which can result in accelerated thermal degradation of materials

Vantage Point: The location of the ISS in LEO offers unique opportunities for technology development and demonstration in remote sensing:

- The ISS orbits at an average altitude of 400 km (250 miles), offering a wide range of Earth viewing geometries and spatial resolutions for sensors mounted on the externally attached platforms. Sensors may also be mounted inside the ISS with access to observation windows offering Earth-facing or other orientations.
- The orbital inclination of 51.6 degrees covers approximately 90% of the Earth's populated area every 90 minutes and allows revisits of the same targets every three to five days.
- The ISS offers variable illumination conditions for Earth viewing and similar solar illumination conditions approximately every 63 days.
- The ISS provides power, communications, and data handling infrastructure to hosted payloads.
- Payloads may be returned for post-mission analysis; however, this is a heavily constrained resource, so payload return requests should include a strong rationale for this experiment requirement.

For more information about ISS research areas and benefits, see [Research Areas - ISS National Lab](#).

ISS National Lab Implementation Partners, Facilities, and Capabilities

Offerors of follow-on flight projects should familiarize themselves with the flight hardware capabilities for their proposed scientific and technical objectives. Information about existing flight hardware can be found on NASA's [Space Station Research Explorer website](#) and in the NASA's [ISS Researcher's Guides Series](#).

For details about Implementation Partners and their specific hardware and services, consult the [Implementation Partner directory](#). Offerors are encouraged to contact an Implementation Partner before submitting a Step 1: Letter of Intent to obtain accurate information for budget and schedule estimates. The ISS National Lab can assist in facilitating these contacts if needed. Proposals utilizing commercial facilities owned and operated exclusively by international partners on the ISS will not be considered for this research announcement.

Offeror Eligibility

To be eligible for this NLRA, all of the following criteria must be met. Projects that do not satisfy these criteria may apply under another recurring NLRA offered by the ISS National Lab.

Prior Project Eligibility Criteria:

1. A successful fundamental science, technology development, in-space production applications (InSPA), or STEM education and workforce development project through a grant or user agreement with the ISS National Lab must have been completed by the PI or the proposing organization. A successful project is defined as:
 - For flight projects, completion of the operational workplan with no major anomalies and achievement of all operational objectives.
 - Successful completion of the majority of the science research or educational objectives as identified in the original proposal or agreed upon by the principal investigator and an ISS National Lab Program Director before the flight.

- For technology development and in-space production applications projects, the previously completed project on the ISS needs to provide validation that the economic and commercial merits, as previously proposed, can be met. These projects must also demonstrate tangible progress toward the development and commercialization of an economically viable solution with the scope and timelines discussed in the prior flight proposal.
2. The preceding grant or user agreement must be in good standing, meaning that all milestones and reports were delivered on a timely basis and were of acceptable quality.
 3. The proposed follow-on project must be a continuation or advancement of the previous project, building on its results and objectives, rather than introducing entirely new and unrelated work.
 4. For proposals in the technology development or InSPA lines of business, letters of support from potential customers and cost matching of at least 1:1 must be provided with Step 2: Full Proposal submission. These elements are crucial for the consideration of the proposal. (Letters of support are not required at the time of submitting the Step 1: Letter of Intent.)
 5. Offerors must provide justification for any unmet criteria, citing reasons such as significant, unexpected findings from the prior project or the inclusion of new or modified procedures or measures that demonstrably improve technology readiness or lead to substantial improvements in technical data.

Investigator Eligibility Criteria:

1. Proposals must be submitted by a principal investigator or an authorized official of the proposing organization. Any individual business entity or institution capable of executing the proposed research may submit a proposal. However, CASIS will **ONLY** consider proposals from U.S. persons (as defined above) from a U.S.-based institution. Regardless of who submits the proposal, all individuals listed as the principal investigator or co-principal investigator, as well as the proposing organization, must qualify as U.S. persons.
2. In addition, the principal investigator's curriculum vitae (CV) must demonstrate relevant expertise necessary to lead the investigation.

III. SUBMISSION AND SELECTION PROCESS

This research announcement will follow a two-step proposal submission process. Before being invited to submit a full proposal, all interested investigators must first complete and submit a Step 1: Letter of Intent for review. The Step 1: Letter of Intent consists of a brief description of the completed project and the proposed follow-on project, including its activities, timeline, and budget.

Applications will be accepted and reviewed on a rolling basis, without fixed deadlines.

Step 1: Letter of Intent Submission

- All offerors must complete and submit a Step 1: Letter of Intent for review. Letters of intent must be submitted electronically through the letter of intent portal using the link available on the research announcement webpage. Offerors must complete all sections of the online letter of intent form.
- Letters of intent will be evaluated based on the following criteria: scientific merit for non-education proposals or STEM education/workforce development merit for education proposals; implementation feasibility and ISS utilization for submissions involving substantial flight operations; and, for submissions in the technology development and InSPA lines of business,

business and economic merit. Compliance with the research announcement will also be assessed.

- Letters of intent approved based on Step 1 evaluation will proceed to Step 2 by invitation only.
- Letters of intent not invited to submit a Step 2: Full Proposal will receive feedback.
- Offerors whose letter of intent has been rejected may revise and resubmit the letter of intent.

Step 2: Full Proposal Submission

- The Step 2: Full Proposal is submitted after review of the Step 1: Letter of Intent and invitation to submit a proposal. Full proposals are accepted on a rolling basis. An invitation to submit a full proposal does not ensure that an organization will receive funds.
- The process for developing full proposals is set forth in greater detail within the proposal instructions corresponding to the line of business.
- Full proposals will be evaluated in accordance with proposal evaluation documents corresponding to the line of business.
- Proposals recommended for selection will be presented for final determination to the CASIS chief executive officer, who is the selecting official.
- At the end of Step 2: Full Proposals, offerors will be notified of the decision made by CASIS via email.

Proposals for flight projects must include a statement defining how the scientific aims will benefit from being executed in space and why the proposed investigation can only be performed in space.

Prospective offerors seeking additional guidance on submitting a letter of intent may contact info@ISSNationalLab.org. Detailed information and requirements for Step 1: Letter of Intent and Step 2: Full Proposal submission, including instructions, templates, and proposal evaluation criteria, are available in the zipped file on the research announcement webpage.

Award Information

CASIS may award a funded or unfunded agreement for a selected proposal. For the STEM education and workforce development line of business, funding is available for both ground-based and flight efforts. For the fundamental science, technology development, and InSPA lines of business, grant funding is available for flight efforts only. All awarded flight proposals will receive ISS National Lab sponsorship of ISS resource utilization, payload launch to the ISS, in-orbit ISS crew time, data return, and payload return, if required.

Funds Availability: The obligation of CASIS to make an award is contingent upon the availability of funds from which payment can be made. The number of grants awarded and the amount of grant funding for each award will depend on the number of meritorious applications.

Funding for this Research Announcement: CASIS will review follow-on projects for this research announcement and make selection decisions on an ongoing basis throughout the year. CASIS reserves the right to refuse award of grant if no meritorious offers are received. Matching funds are required for the technology development and InSPA lines of business, but not for STEM education and workforce development or fundamental science proposals. However, in all cases, proposals that include contributions of resources, whether financial or in-kind, will be reviewed more favorably than those requesting full funding from CASIS.

Indirect Cost Rates: CASIS will allow any previously approved federal indirect cost rate that has been negotiated between the grantee and a U.S. government agency. If no such rate has been negotiated with a U.S. government agency, CASIS shall apply a de minimis indirect rate of ten percent (10%) for those seeking indirect costs in a grant award. Also, CASIS will allow a grantee to voluntarily waive indirect costs or charge less than the full de minimis indirect cost rate should they choose to do so.

All proposal submissions seeking funding from CASIS are subject to this policy. All grantees are required to provide satisfactory written evidence in or accompanying their proposal submission of a previously approved federal indirect rate. Such evidence shall demonstrate the existence of an approved federally recognized indirect cost rate negotiated between the grantee and a U.S. government agency. In the absence of this evidence, CASIS will apply the de minimis indirect cost rate stated above.

Notice of Award: For selected proposals, a CASIS officer will contact the principal investigator named in the proposal. Offerors have the right to be informed of the major factor(s) that led to the acceptance or rejection of their proposal.

Period of Performance: It is anticipated that the period of performance will be no longer than three (3) years from date of award.

CASIS assumes no liability (including bid and proposal costs) for cancelling this research announcement or for any entity's failure to receive notice of cancellation.

IV. PROPOSAL PREPARATION AND CONTENT

Step 1: Letters of Intent must be submitted using the online form for this solicitation. All sections of the form must be completed. Incomplete submissions may delay processing or result in disqualification.

When submitting a Step 2: Full Proposal, follow the provided outline exactly. Ensure each question is answered thoroughly, and clearly label each section of the proposal to assist evaluators. Proposals must be prepared in PDF format and submitted through the online proposal submission form, which will also include additional questions to be completed. Proposals that do not adhere to this format may be disqualified.

For detailed proposal requirements, refer to the ISS National Lab proposal instructions specific to the project's line of business, available in the Step:2 Full Proposal download link on the solicitation webpage.

V. PROPOSAL EVALUATION AND SELECTION

Proposals will be evaluated based on the ISS National Lab's criteria for each CASIS line of business (e.g., fundamental science, technology development and demonstration, in-space production applications, or STEM education and workforce development). The evaluation factors are:

- **Fundamental Science:** Scientific and technical merit, implementation feasibility, and operations and ISS utilization.
- **Technology Development and Demonstration and InSPA:** Scientific and technical merit, implementation feasibility, operations and ISS utilization, and business and economic merit.

- **STEM Education and Workforce Development:** STEM education and/or workforce development are the primary factors. If substantial flight operations are involved, implementation feasibility and flight operations and ISS utilization are also considered.

Project cost is not scored but is a factor in the final selection. A clearly defined budget is required to complete the evaluation and selection process.

CASIS will not accept or consider proposals submitted by NASA and/or NASA civil servants.

The proposal review focuses on the anticipated impact of the project upon successful completion of its objectives. CASIS oversees reviews, presents relevant information for final decisions, and ensures adherence to defined procedures. For details on proposal evaluation and selection, including how evaluation factors are prioritized, refer to the ISS National Lab Proposal Evaluator Instructions in the information packet linked to the research announcement webpage.

VI. CONTRACTING

Offerors whose proposals are accepted will be required to enter into either a User Agreement (unfunded) or Grant Agreement (funded) with CASIS, at the sole discretion of CASIS. CASIS is required contractually by the NASA Cooperative Agreement and by United States federal law, rules, and regulations to flow down various contractual terms and conditions to any award recipients. These terms and conditions are regulated in part by the Federal Acquisition Regulations (FAR), Title 48 of the C.F.R., as well as by NASA-specific rules, regulations, and policies. The terms and conditions in the agreements are non-negotiable. If invited to submit a full proposal, offerors will be required to agree and accept the terms and conditions by signing and returning the proposal cover page. Offerors that do not accept or fail to comply with the terms and conditions will not be considered for award and may also be rejected, at the sole discretion of CASIS, for non-compliance to any other terms and conditions. Additionally, if the offeror's organization intends to work with any collaborators, the offeror must contract with those collaborators and include the CASIS flow down clauses. The terms and conditions from the NASA Cooperative Agreement will apply to all Grant Agreements and User Agreements. A copy of the standard Grant Agreement will be provided as a PDF file titled CASIS - Grant Agreement Template for Offerors 12.1.23.pdf in the zipped documents made available to offerors via the research announcement webpage.