

## A.39 EARLY CAREER INVESTIGATOR PROGRAM IN EARTH SCIENCE

**NOTICE: Amended May 5, 2023. This Amendment releases the final text for this program element, which was previously listed as TBD. Notices of Intent are requested by July 21, 2023, and proposals are due August 11, 2023. Two pages are allotted to a Statement of Leadership in Earth System Science, see Section 2.2.2. NASA will host two virtual informational session via Webex on A.39 ECIP-EC at 1 PM eastern time on June 14, 2023, and June 22, 2023. Connect via <https://nasaenterprise.webex.com/nasaenterprise/j.php?MTID=m4e4496780d22f4ba4d11ee281bcee41e>.**

### 1. Scope of Program

#### 1.1 Overview and Background

The Early Career Investigator Program in Earth Science (ECIP-ES) is designed to support outstanding scientific research and career development of scientists and engineers at the early stage of their professional careers. The program welcomes innovative research initiatives and seeks to cultivate diverse scientific leadership in Earth System Science.

The [Earth Science Division](#) (ESD) places particular emphasis on the investigators' ability to promote and increase the use of space-based remote sensing, the integration of space-based remote sensing data with other datasets (e.g., surface, air) and into models, and the delivery of actionable Earth science — making Earth science data more usable and impactful for the benefit of humanity. Proposals with objectives connected to needs identified in most recent Decadal Survey: [Thriving on our Changing Planet: A Decadal Strategy for Earth Observation from Space](#) are welcomed.

The early career program in Earth Science, was established in 1996 and the frequency of solicitation is currently every three years. Since it was last solicited in ROSES-2020 as the New (Early Career) Investigator Program in Earth Science (NIP), this program element has changed names to better reflect the nature of the solicitation. The Early Career Investigator Program in Earth Science (now ECIP-ES) supports all aspects of scientific, technological, data systems, and applications research aimed to advance NASA's mission in Earth System Science (see the [NASA 2022 Strategic Plan](#) for more details).

Proposals must demonstrate the relevance of the research activities to support four of the five ESD elements. The five elements of the ESD — Flight, Research and Analysis (R&A), Applied Sciences, Earth Science Technology Office (ESTO), and Earth Science Data Systems (ESDS) — work together from mission concept to conclusion to both enhance existing Earth observations and find new ways to analyze our living planet. While Flight is an important ESD element, responsible for building and operating the satellite and airborne missions, the ESD elements for which proposals are solicited here are:

- 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 research

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, see <https://science.nasa.gov/earth-science/programs/research-analysis>.

- Applied Sciences helps people and organizations apply insights from Earth science to benefit the economy, health, quality of life, and environment around the globe. Applied Sciences application areas include: Agriculture, Climate and Resilience, Disasters, Ecological Conservation, Energy, Health and Air Quality, Water Resources, and Wildfires. In addition, Applied Sciences has a Capacity Building Program, which includes projects focused on Equity and Environmental Justice, see <http://appliedsciences.nasa.gov>.
- ESTO fosters the creation and infusion of new technologies, both for instruments and for information systems. New instrument systems include advanced lasers, spectrometers, and radars that are smaller, require less power, and are more capable. Information systems technologies focus on areas such as data processing, interoperability, visualization, and analysis as well as autonomy, modeling, and mission architecture design – in order to enable new scientific measurements of the Earth system or reduce the cost of current observations, see <http://esto.nasa.gov>.
- ESDS aims to make NASA's Earth science data open and available to the public, interactive, interoperable, and accessible. ESDS is funding research to advance the management and analysis of Earth science data; much of this research is focused around 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, see <https://www.earthdata.nasa.gov/esds>.

See [A.1 the Earth Science Research Overview](#) for more detailed descriptions of specific topics align with ESD priorities.

## 1.2 Eligibility

The proposed research project must be led by a single, eligible early career investigator serving as the Principal Investigator (PI). Indeed, this individual must be the only essential team member; no Co-Investigators (Co-Is), paid or unpaid, are permitted. The ECIP-ES does not accept proposals with Co-PIs, nor two types of PIs, such as involving a Science PI or Institutional PI. Students and postdoctoral fellows may participate as paid team members. The proposed research may include collaborations. See [the 2023 NASA Proposer's Guide \(formerly called the Guidebook for Proposers\)](#) for the definitions of Collaborator vs. Co-Investigator. There is also a special restriction that apply to this program element on NASA funding and China, see Section III(c) of the [ROSES-2023 Summary of Solicitation](#).

To be eligible a PI must be a recent Ph.D. recipient, defined as having graduated on or after January 1 of the year that is no more than six years before the issuance date of this ROSES, i.e., after January 1, 2017, but see also bullet C below. The proposal PI must have successfully completed their Ph.D. defense prior to the due date for proposals to this program element.

Institutions and organizations are encouraged to submit proposals on behalf of their outstanding early career scientists and technologists in Earth System Science and associated applications, as long as the individuals are the proposed PIs.

To be eligible for an award, PIs must meet the following requirements:

- A. Be affiliated in NSPIRES with an institution in the U.S., its territories or possessions, or the Commonwealth of Puerto Rico, that awards a baccalaureate or advanced degree in a field supporting the objectives of NASA Earth System Studies or be affiliated in NSPIRES with any research institution or other organization that performs work in fields of research supporting the objectives of NASA's Earth Science Division. Such organizations could include museums, observatories, government, or research laboratories, as well as nonprofit or for-profit entities in the private sector.
- B. Not hold or have held tenure (or equivalent) on or before the submission deadline of this program. Proposers are not required to be in a tenure track position.
- C. Despite being more than six years beyond the receipt of their Ph.D. degrees, individuals who have interrupted their careers for reasons such as military service, family leave, or serious health problems may also be eligible. These applicants should submit a written email request to the NASA point of contact listed below to obtain prior concurrence from NASA before the due date for Notices of Intent to propose. NASA will provide a written response within three weeks. Such an exception is not intended for individuals who have had successful employment in technical fields in science and engineering, even though the employment is not a direct continuation of their Ph.D. research, nor is it intended for individuals who recently obtained a Ph.D. degree after having already established a successful career in Earth System Science or related disciplines.
- D. Not be a current or former recipient of the ECIP-ES (formally known as NIP) or Presidential Early Career Award for Scientists and Engineers (PECASE) award.

## 2. Programmatic Information

### 2.1 Funding, Schedule, and Award Type

ECIP-ES proposals are solicited approximately every three years. Awards to non-governmental organizations will be grants. The anticipated average award is \$100K per year for a period of up to three years, subject to satisfactory progress and availability of funds. See also the budget restrictions in Section 2.3.

### 2.2 Proposal Content and Format

Proposals must be prepared in accordance with the instructions given in this program element, in [Table 1 of ROSES-2023](#), and in the [ROSES-2023 Summary of Solicitation](#). The Science/Technical/Management (S/T/M) section of the proposal should contain a detailed statement of the proposed research and may be no more than 15 pages including figures and tables.

In addition to and outside of the 15-page S/T/M section, two pages are allotted to the Open Science and Data Management Plan (OSDMP) and two pages to the Statement of Leadership in Earth System Science (SLESS). The OSDMP and the SLESS must be included in the main proposal PDF, see below for more information.

### *2.2.1 Open Science and Data Management Plan*

All proposals must provide an "Open Science and Data Management Plan" (OSDMP) of up to two pages in length, immediately following the references and citations for the Science/Technical/Management section of the proposal. The OSDMP must address how publications, data, and software will be made available, see Section 1.1 of [A.1 Earth Science Research Program Overview](#), the [ROSES Open Science and Data Management Plan FAQ](#) and the [SMD Open-Source Science Guidance](#).

All data and information acquired and data products produced as part of the solicited research must be made publicly available, with no period of exclusive use, in compliance with the [NASA Earth Science Data Policy](#). A template for the OSDMP may be found at [Templates for ESD](#).

### *2.2.2 Statement of Leadership in Earth System Science*

All proposals must provide a "Statement of Leadership in Earth System Science" (SLESS) of up to two pages in length, immediately following the OSDMP. The SLESS must clearly discuss the past and current impact of leadership activities; anticipated future impacts may also be addressed, though proposers should make clear that such impacts have not yet been realized. PIs should explain how leadership activities go beyond what would typically be expected in their current or previous appointment(s). Examples of Earth System Science leadership activities could include, but are not limited to cutting-edge, original, creative, and/or large-scale efforts concerning:

- Education or mentorship of undergraduate or graduate students,
- Fostering of Diversity, Equity, and Inclusion (DEI) practices,
- Participation in public outreach,
- Involvement in academic or policy-related committees or organizations,
- Invited and/or public lectures,
- Scientific program committees, conference, or workshop organization,
- Contributions to open-source scientific software,
- Development of open data sets,
- Professional society activities,
- Special (e.g., international, interagency, private-public, or intergovernmental) partnerships,
- Reviewing or editorship activities, or
- Other actions, awards received, or endeavors that might demonstrate Earth System Science leadership.

## **2.3 Budget Requirements and Restrictions**

ECIP-ES awards are up to three years in duration. Salary for up to three months per year of PI time is allowable. NASA will not reimburse the salary if the PI is a civil servant at an agency other than NASA, except in a limited number of cases as described below.

NASA will only pay portions of civil servant salaries that are not normally fully covered as part of agency budgets. NASA will cover salary (up to three months) for scientists whose compensation must be won through competitive proposals to their employing agency or other agencies. NASA salary support for scientists at other agencies is NOT intended to be provided "in lieu of" salary that would normally be paid by the employing agency. If the salary for other agency civil servants is requested as part of the proposal, the budget page must specifically outline the compensation approach that the agency uses to cover its civil servants and verify that any NASA salary support would not be replacing that normally paid by the employing agency.

Funds may be used for support of students (undergraduate or graduate) and/or postdoctoral researchers at the proposing institution who are involved in the proposed research. Other expenses by the proposing institution (such as costs incurred in field experiments, purchase of equipment and/or supplies, computing, travel, etc.) are allowable consistent with 2 CFR 200. By definition, collaborator(s) have their own means of research support. Proposals may not request expenses for subawards (for personnel or activities to other institutions), nor salary costs for senior personnel, consultants, or subcontractors.

Peer reviewers need to see the individual effort that will be spent on the project to evaluate the cost reasonableness of ROSES proposals, but not salaries or overhead rates. Thus, proposals must include a Table of Personnel and Work Effort for key personnel, but not costs of salary, fringe, or overhead (\$ or %) anywhere in the uploaded proposal PDF that will be seen by peer reviewers. All information, including salary, fringe, or overhead is to be included in the NSPIRES cover page budgets and separately uploaded "total" budget file. For more information see Section IV(b)iii of the [ROSES-2023 Summary of Solicitation](#) and the web [walkthrough on this subject](#).

## 2.4 Proposal Review and Evaluation

Proposals will be evaluated against the three evaluation criteria: Intrinsic Merit, Relevance, and Cost, as defined in Appendix D of [the 2023 NASA Proposer's Guide](#) and implemented as described in Section V of *the ROSES-2023 Summary of Solicitation*.

In addition to the definitions given in Appendix D of the *Proposer's Guide*, the evaluation of Merit will include the following factors:

- A. The evaluation of the impact/significance factor of merit will include the extent to which the proposer appropriately describes their leadership in Earth science. Leadership will be evaluated based on the PI's contributions and services to the Earth System Science community, as articulated in the Statement of Leadership see Section 2.2.2. Leadership may be demonstrated at an institutional, community, state, regional, national, or international level (with no preference given to a particular level).
- B. The evaluation of the impact/significance factor of merit will include an assessment of the OSDMP (see Section 2.2.1), i.e., the extent to which the proposers appropriately describe how the proposed research will be openly available. Peer reviewed data and software will be recognized as having value commensurate with that of peer reviewed publications.

### 3. Summary of Key Information

Expected annual program budget for new awards	~ \$3.0 M
Number of investigator awards pending adequate proposals of merit	~ 30
Maximum duration of awards	3 years
Due date for Notice of Intent to propose	See Tables <a href="#">2</a> and <a href="#">3</a> of this ROSES NRA
Due date for proposals	See Tables <a href="#">2</a> and <a href="#">3</a> of this ROSES NRA
Planning date for start of investigation	6 months after proposal due date
Page limit for the central Science/Technical/Management section of proposal	15 pp; see also <a href="#">Table 1 of ROSES-2023</a> and <a href="#">the 2023 NASA Proposer's Guide</a> . See also Section 2.2 for the Statement of Leadership (2 pp) and the Open Science and Data Management Plan (2 pp).
Relevance	This program is relevant to the Earth science questions and goals in <a href="#">the NASA Science Plan</a> . Proposals that are relevant to this program are, by definition, relevant to NASA.
General information and overview of this solicitation	See the <a href="#">ROSES-2023 Summary of Solicitation</a> .
General requirements for content of proposals	See <a href="#">A.1 the Earth Science Research Program Overview</a> , and Section IV and <a href="#">Table 1</a> of the <i>ROSES-2023 Summary of Solicitation</i> .
Detailed instructions for the submission of proposals	See <a href="#">NSPIRES Online Help</a> , Sections 3.22-4.4 of the <a href="#">NASA Guidebook for Proposers</a> and Section IV(b) of the <i>ROSES Summary of Solicitation</i> .
Submission medium	Electronic proposal submission is required; no hard copy is required or permitted.
Web site for submission of proposal via NSPIRES	<a href="http://nspires.nasaprs.com/">http://nspires.nasaprs.com/</a> (help desk available at <a href="mailto:nspires-help@nasaprs.com">nspires-help@nasaprs.com</a> or (202) 479-9376)
Web site for submission of proposal via Grants.gov	<a href="https://www.grants.gov/">https://www.grants.gov/</a> (help desk available at <a href="mailto:support@grants.gov">support@grants.gov</a> or (800) 518-4726)
Funding opportunity number for downloading an application package from Grants.gov	NNH23ZDA001N-ECIPES



<p>Points of contact concerning this program both of whom share this address:</p> <p>Earth Science Division  Science Mission Directorate  NASA Headquarters  Washington, DC 20546-0001</p>	<p>Yáitza Luna-Cruz  Email: <a href="mailto:yaitza.luna-cruz@nasa.gov">yaitza.luna-cruz@nasa.gov</a>  Telephone: (202) 480-0038</p> <p>Cynthia Hall  Email: <a href="mailto:cynthia.r.hall@nasa.gov">cynthia.r.hall@nasa.gov</a></p>
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