ECR Excellence

FIES2A | SARP | FINESST | ECIP

QUARTERLY NEWSLETTER OF NASA'S EARLY CAREER RESEARCH PROGRAM IN EARTH SCIENCE

ABOUT US

The **NASA Earth Science Early Career Research (ECR)** Program's vision is to empower the next generation of Earth science researchers to create a workforce that enables solutions to benefit society, respond to changes in the Earth's system, and to support the Earth Science to Action Strategy. ECR is "*Striving for excellence in Earth Science*" with the following projects:

- **First Immersion in Earth Science to Action (FIES2A)**
- **Student Airborne Research Program (SARP)**
- **Future Investigators in NASA Earth and Space Sciences and Technology (FINESST)**
- **Early Career Investigator Program in Earth Science (ECIP)**

ECR also serves as Earth Science Division representative in other NASA opportunities: Engagement Office, RIA, MUREP, COMPASS, EPSCoR, Space Grants, & Space Apps.

ECR 2025-2026 HIGHLIGHTS

3046 (2007– 2026)

~Total number of high school students, undergraduates, graduates, and early career professionals supported by the NASA ECR Program

35

Over 35 students finished PhDs

100

Over 100 presentations

70

~70 publications in review

78

~78 publications in peer-reviewed journals

CONNECT WITH US!

UPCOMING OPPORTUNITIES

For General Public: NASA Space Apps Challenge on November 14–15

- Registration Link Opens August 26, 2026

For Community College Students: NASA Community College Aerospace Scholars (NCAS) Student Challenge

- Registration is 8/17/26 - 9/28/2026

For Undergraduates: NASA Internships offer short-term, hands-on opportunities for students to work on real NASA projects.

- Applications for Spring semester due September, 2026

For Post-docs: NASA Postodctoral Program provides unique research opportunities to engage in ongoing NASA research projects at a NASA Center or NASA HQ.

- NPP Applications due November 1, 2026.

For Researchers: ROSES solicitations in the Earth Sciences:

- A.14 Atmosphere
  - Proposals due October 20, 2026
- A.15 Biosphere
  - Step 1 due September 04, 2026
- A.13 Accelerating Earth Solutions
  - Proposals due October 15, 2026



Black Sea reflect high primary productivity in upper layers from PACE. June 25, 2025

SHOUT OUTS

FIES2A

Inaugural Cohort

The final presentations for the First Immersion in Earth Science to Action (FIES2A) 2026 Cohort are now available at NASA Science YouTube.

SARP

2025 West Cohort

Graduate mentor Megan Ward-Baranyay, with Faculty mentor Dan Sousa published in AGU Advances | Pre-fire fuel conditions are dominant drivers of burn severity in the 2025 Los Angeles County fires

FINESST Earth

2021-2024 Cohort

FI Mollie Gaines with PI Marila Tilburg published in Geophysical Research Letters | Impact of Spatial Scale on Optical Earth Observation- Derived Seasonal Surface Water Extents

ECIP-Earth Science

2024 - 2027 Cohort

PI Bruce Grunert published in Frontiers in Marine Science | A hyperspectral approach for retrieving inherent optical properties, phytoplankton pigments, and associated uncertainties from non-water absorption

WHERE IN THE WORLD IS ECR?

ESD Research Sphere Meetings

- Biosphere: July 7-8, 2026
- Hydrosphere: September 1-3, 2026

III Central America Space Congress

September 16-18, Guatemala City

American Geophysical Union 2026 Fall Meeting

December 7-11, San Francisco, CA

- NASA ECR Townhall
- NASA Booth



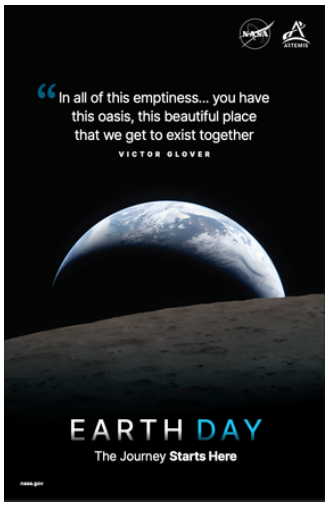
American Meteorological Society 2026 Annual Meeting

January 10-14, 2027, Denver, CO

- NASA ECR Meetup
- NASA Booth

Stay tuned for more information to join us at one of these events!

NASA EARTH DAY 2026 *The Journey Starts Here!*



In 2026, NASA is showcasing how our ability to see and study Earth from space has advanced from the earliest missions to the moon to the latest Artemis flyby. No matter how far we travel, the journey starts here.

Download Here!





2013 UAVSAR of flood-prone area of the Amazonian jungle in Peru indicative of NISAR.

Striving for Excellence in Earth Science:

MEET SOME ECR AWARDEES

NASA ECRs in Earth Science are doing amazing things all to benefit this world in which we live, here we share their stories.

Meet Yoana Vargas...



Yoana Vargas, a graduate student at the University of Texas in San Antonio in the Environmental Sciences and Engineering Department, served as a research associate in the 2025 CCRI cohort studying urban heat and air quality and their impacts on residents in New York City (NYC). By leveraging data from Landsat 8 and 9, Terra/Aqua MODIS, Sentinel-5 Precursor TROPOMI, and PM2.5 from ground sensors, her team analyzed the interactions between temperature and air pollutants Aerosol Optical Depth (AOD-derived PM2.5), PM2.5 modeled from ground, Nitrogen Dioxide and Formaldehyde to understand how their combined effects correlated with health outcomes, specifically asthma, chronic obstructive pulmonary disease, myocardial infarction, and mental health across NYC's five boroughs. The results indicated that the warming trend in NYC since 2019 intensified air quality degradation, and heat and pollution hotspots aligned with socially vulnerable neighborhoods.

Meet Katie Wilson...



Katie Wilson, a student in Meteorology and Marine Science at North Carolina State University, participated as a student researcher in the SARP East 2025 cohort within the ecohydrology group.Katie looked at how antecedent soil moisture (ASM) Influence flooding in the Southeastern U.S., specifically Athens, GA. Using precipitation datasets from NOAA weather stations, streamflow data from the USGS, ASM data from the Soil Climate Analysis Network (SCAN), and NASA's Soil Moisture Active Passive (SMAP) satellite, she confirmed that wetter antecedent conditions increase runoff and flood potential, and concluded that by incorporating ASM into flood forecasting models, along with tools like SMAP, decision makers can improve early warning systems in the Southeast U.S. and enhance flood preparedness. Currently, Katie is completing an internship working for U.S. Senator Maggie Hassan, focusing largely on issues related to environment, conservation, energy, and public health and in the Fall will start her Master's at NC State. In the future, she wants to bridge the gap between scientists and the public so that Earth science research can better inform real-world decisions.



Jebel Kissu plateau, Sudan, is an eroded remnant of a granite dome in the Sahara.

Meet Michael Burnett...



Michael Burnett, graduate student in the Department of Ecology, Evolution, and Marine Biology at the University of California, Santa Barbara, received a FINESST award to examine the distribution and environmental impacts of coconut plantations on Pacific atolls. His research contributed to the first comprehensive map of coconut palm agriculture scattered across Pacific atolls. He shows that over half of the tree cover on these low islands is now taken up by coconut palms, leaving formerly widespread native broadleaf trees only small portions of their natural range. The replacement of broadleaf forests with coconut monocrops has been linked to groundwater depletion, declining seabird populations, and adverse impacts on adjacent coral reefs. Michael's research emphasizes the urgent need to understand and confront the sustainability challenges posed by these monocultures for Pacific atoll communities. Michael's research has been published across various media outlets, including earth.com and nature.org. Before startign his PhD, Michael worked as a marine coordinator with the Nature Conservancy in Hawaii.

Meet Kyle Mattingly...





Kyle Mattingly, research scientist in the Space Science and Engineering Center at the University of Wisconsin-Madison was selected for a NASA 2024 Early Career Investigator Program in Earth Science Award. His research uses remote sensing data from CloudSat-CALIPSO, PREFIRE, and EarthCARE to analyze cloud characteristics and atmospheric radiation within cold air masses and atmospheric rivers and the linkage with those to increasing melt in Greenland. Kyle is also passionate about supporting students in the Cryospheric sciences by planning and hosting the annual Flash Freeze student competition at AGU. The Innovation Award for Cryospheric Sciences is granted once a year to students showing great potential and innovative work within the field. The award is designed to provide the student with resources, in the form of a mini-grant, to advance their innovation. The student competitors for this past year are pictured in the photo to the right.

EMAIL US WITH YOUR NASA ECR STORY SO THAT WE CAN SHARE WITH OTHERS

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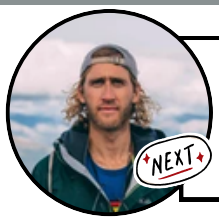
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LIFE AFTER

Our mission is to empower your success and celebrate every step of your journey!

NASA's ECR is extremely proud of all the awardees that successfully completed their projects. Remember you will always be part of ECR family -
Striving for Excellence in Earth Science!





BEN SULLENDER
Earned PhD from Univ. of Wash. Seattle
Dir. Geospatial Sci. Nat. Audubon Society



EMILY ELLIS
Earned PhD from Virginia Tech.
Postdoc at North Carolina, Chapel Hill



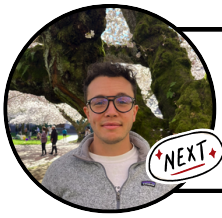
EMMA MARSHALL
Earned PhD from Univ. of Utah
Climate Sofware Dev. Rhodium Group



BEN TONELLI
Earned PhD from UC, Los Angeles
Postdoc at Clemson university



SHUYU CHANG
Earned PhD from Pennsylvania State
Asst. Professor at Univ. of Conn..



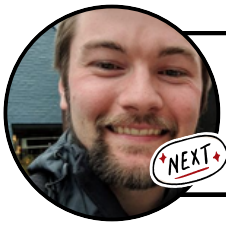
AODHAN SWEENEY
Earned PhD from Univ. of Washington
Data Engineer Planette.ai



RICHARD RACHMAN
Earned PhD from Boise State Univ.
GIS Analyst at Calif. Dept of Trans.



DANIELLE LINDSAY
Earned PhD from UC, Berkeley
Fulbright Scholar New Zealand



CONNOR STEPHENS
Earned PhD from Univ. Wisc.-Madison
Ecologist at CAL FIRE



JENNA ABRAHAMSON
Earned PhD from NC State University
Postdoc at Pacific Northwest Nat. Lab



YE MU
Earned PhD from UC, Santa Barbara
Postdoc at UC, Irvine



SHELBY SUNDQUIST
Earned PhD from Northern Arizona
Postdoc at University of Oslo

Congratulations CLASS OF 2026



FIES2A 2026



SARP 2026

deep DIVE with ECR Early Career Research

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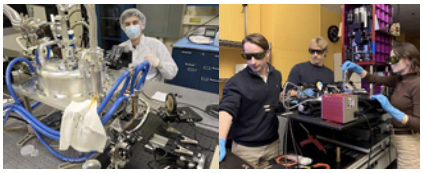
Empowering Emerging Talent Across NASA Earth Science

T. Kauffman, C. Aaron, Y. Luna-Cruz, and C. Hall

The Earth Science Division empowers emerging talent by transforming early-career researchers into tomorrow's scientific leaders through dedicated mentorship, cutting-edge resources, data, technology, and hands-on mission involvement. These activities go beyond ECR and extend across other program elements within the Earth Science Division. ECR want to acknowledge and highlight successful early career interactions with different programs. Here we highlight the **Technology** and **Data** program elements!

Earth Science Technology Office (ESTO)

Students are integral to the work and success of technology development teams. Since ESTO's founding, at least 1,415 students from 186 institutions have worked on various ESTO-funded projects. Aided by their experiences, these students have often gone on to work in the aerospace industry and in related fields. In FY25 alone, at least 282 students from 74 institutions were involved with active technology development projects.

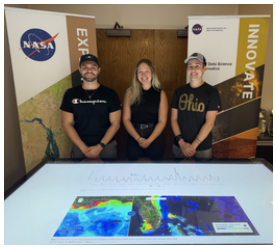




Notable software and artificial intelligence accomplishments include Phoebe Pan and Aashish Panta developing AI-driven models and pipelines to analyze aerosol data from wildfires, and process large Earth science datasets. On the hardware and systems engineering side, Humphrey Chen designed and fabricated Photonic Integrated Circuits; Jaiden Luna built and integrated optical ground support equipment for airborne flights; and Laela Bitahey evaluated critical long-wave infrared camera components. Additionally, students played key roles in modeling and instrument testing, with Leila Freitag developing custom system design models for space-based lidars; Luke Jacobs creating radar algorithms and forest models for drone-based wildfire monitoring; and the University of Iowa's Global Orbital Research with a Diurnal Observing Network (GORDON) team testing components and data collection algorithms for a new spaceborne lidar system.

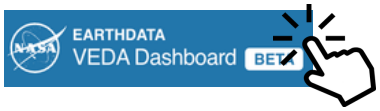
Earth Science Data Systems (ESDS)

The Visualization, Exploration, and Data Analysis (VEDA) platform, developed under NASA's Earth Science Data Systems (ESDS) program by the Office of Data Science and Informatics (ODSI) at NASA Marshall Space Flight Center, is empowering early-career researchers from the University of Alabama in Huntsville (UAH). From 2022 to 2025, UAH graduate research assistants produced 14 VEDA Data Stories and seven peer-reviewed publications inspired by them. Additionally, 3 students leveraged their Data Story research to develop their Masters' theses: Andrew Blackford, worked on how *Wildfires Affect Local Weather, Climate, and Hydrology*; Trent Cowan, worked on *How Hurricane Ida's Impact on Wetlands Endangers Inland Communities*; and Aaron Serre, worked on *How Expanding Cities Alter Weather Patterns*.





Data Stories transform complex NASA Earth science datasets into immersive, guided narratives with interactive mapping components. These visualization-based, frontend applications do more than deliver actionable insights to the public; they also serve as the foundation for peer-reviewed research and graduate academic milestones. Ultimately, this initiative bridges academic research and operational data systems work, establishing a pipeline from graduate research to a professional career within the NASA ecosystem.



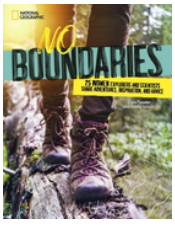
Explore Data Stories to discover how NASA satellites and other Earth observing resources reveal a changing planet.

Thank you ESTO and ESDS for empowering early career researchers in innovative Earth Science!

STEP UP *yourgame* EARLY CAREER DEVELOPMENT RESOURCES

BOOK

Meet 25 female scientists in these inspirational stories of exploration, courage, and girl power. They share lessons learned and words of wisdom sure to inspire the next generation of scientists, adventurers, and world-changers.



FREE TRAINING

coursera

People & Soft Skills: Essential for Professional Success Specialization: Communicate effectively, work agilely

PODCAST

NASA's "Curious Universe" Earth Series explores Earth's land, oceans, and atmosphere, focusing on NASA data, climate science, and environmental studies.

