

Lamont-Doherty Earth Observatory of Columbia University
Department of Earth and Environmental Sciences

Sponsored in part as an REU Site by the National Science Foundation. Half the students accepted for the REU Site will be from community colleges.

Starred research projects** are supported by U.S. scientific ocean drilling programs. At least two out of the five students supported by these projects are required to be from community colleges and/or first generation college students.

Summer Internship Program for Undergraduates (May 28th-August 6th, 2025)

Theme: Interdisciplinary Cutting-Edge Research through the Analysis of Global Data

The Lamont-Doherty Summer Intern Program offers the chance to experience cutting-edge scientific research as an undergraduate. **The program is open to US citizens or permanent residents** who have completed their junior or sophomore year in college or community college with majors in earth science, environmental science, chemistry, biology, physics, mathematics, or engineering.

Graduating seniors are not eligible. DACA students and international students attending colleges and universities located in the United States are eligible for the five projects that are starred (), which are sponsored by U.S. scientific ocean drilling programs.** Students from community colleges and those of first-generation in particular are encouraged to apply.

Applicants should have an interest in conducting research in earth, ocean or atmospheric science. One previous earth, ocean, or atmospheric science course is desirable if they are available to the student. All students should have at least one year of calculus (high school or college) and/or good grades in college level mathematics. Students choosing research in geochemistry and chemical oceanography should have at least two semesters of college-level chemistry. Students choosing research in marine biology should have at least two semesters of college-level biology. Students choosing research in geophysics, physical oceanography or atmospheric science should have at least three semesters of college-level physics.

The Marine Geoscience Data System group at Lamont provides a freely available tool called GeoMapApp that allows the exploration and visualization of global data sets (www.geomapapp.org). With GeoMapApp, users can create custom maps and grids, import their own data sets and grids, and explore and visualize a wide range of global data sets. These include a multi-resolution digital elevation model of the oceans and continents; plate tectonic information; undersea feature names; shipboard topography, gravity and magnetics data; earthquake catalogues; deep sea core data; Alvin submersible photos around hydrothermal vents; rock sample geochemistry; satellite-derived gravity and geoid grids; seismic reflection profiles, and more. GeoMapApp is written in Java and works on any type of computer. All interns will be instructed in the use of GeoMapApp during the second

week of the intern program. Interns will be encouraged to use GeoMapApp during their research projects, as well as after they have returned to their undergraduate institutions. However, both the student and the supervisor will design the research program, and therefore individual projects may contain variable amounts of data collection and data analysis.

The following members of the Lamont research staff will act as research mentors:

Dallas Abbott, Ben Bostick. Expertise: **Marine Geology and Geophysics, Geochemistry, Volcanology, Diagenesis.** Research Project: How Did the Younger Toba Ash Affect Biological Productivity and Alteration of Marine Microfossils?

Dallas Abbott. Expertise: **Geochemistry, Sedimentology, Impacts, Marine Geology and Geophysics.** Research Project: What Are the Best Methods of Finding and Verifying Oceanic Impact Craters?

****Apollonia Arellano, Jerry McManus.** Expertise: **Paleoclimate, Paleoceanography, Geochemistry, Sedimentology, Micropaleontology.** Research Project: How Has Atlantic Deep Ocean Circulation Changed Since the Last Glacial Maximum?

Dhruv Balwada, Andrew Fagerheim. Expertise: **Physical Oceanography, Data Science, Machine Learning, Climate Science.** Research Project: What Is the Structure of the Ocean Barrier Layer Depth in the Southern Ocean?

Nathalie Boelman, Ian Shuman. Expertise: **Arctic Ecology.** Research Project: Does Arctic Warming Change Vegetation and Insect Communities in Ways That Impact the Reproductive Success of Songbirds Migrating to Northern Alaska?

Benjamin Bostick. Expertise: **Geochemistry.** Research Project: What Are the Markers of Photosynthesis in the Rock Record?

Benjamin Bostick, Steve Chillrud. Expertise: **Geochemistry.** Research Project: What Are the Connections Between Surface Water Hydrology and Drinking Water Quality in Native American Communities?

Philip C. LaPorta, Margaret Brewer LaPorta, Scott A. Minchak. Expertise: **Stratigraphy, Structural Geology, Tectonics, Carbonate Stratigraphy, Archaeology.** Research Project: Does the Leithsville Formation Preserve Evidence for High Latitude to Low Latitude Wandering of Laurentia During the Lower to Middle Cambrian?

George Lu, Jonathan Kingslake, Andrew Hoffman. Expertise: **Glaciology, Polar Sciences, Machine Learning.** Research Project: Building a Novel Inversion Method for Ice-Penetrating Radar Data.

****Jerry McManus.** Expertise: **Paleoceanography, Geochemistry, Sedimentology, Micropaleontology.** Research Project: How Did Past Ice Age Cycles Affect the Pacific and Atlantic?

****Brendan Reilly.** Expertise: **Paleoclimate, Paleomagnetism.** Research Project: Constraining Pliocene Arctic Climate Variability With a Robust Magnetic Stratigraphy.

Cassandra Seltzer, Christine McCarthy. Expertise: **Experimental Deformation, Glaciology, Geophysics.** Research Project: How Does Meltwater Affect the Flow of Glaciers?

Adam Sobel. Expertise: **Atmospheric and Climate Science.** Research Project: Quantifying the Value of Climate Information for Adaptation.

Redmond Stein, William D'Andrea. Expertise: **Paleoclimatology, Organic Geochemistry.** Research Project: What Can Oxygen Isotopes in Aquatic Plants Tell Us About Arctic Climate?

****Susanne Straub.** Expertise: **Igneous Geochemistry.** Research Project: Do Catastrophic Explosive Volcanic Eruptions Affect the Long Term Evolution of the Global Climate?

Yushu Xia. Expertise: **Soil Health, Carbon Sequestration, Greenhouse Gas Fluxes, Water and Nutrient Dynamics.** Research Project: What Factors Drive Forest Soil Health and Soil Water?

Program Information:

STIPEND: Students will receive a stipend of \$7000 for this 10-week program. Students who choose to live at home will have \$1000 added to their stipend. The ten weeks extends until Wednesday August 7th, when final papers are due.

HOUSING and TRAVEL BENEFITS: The student will receive free housing in a college dorm room. Students will also receive free bus transportation between the college campus and Lamont. Students who are traveling to New York for this internship from more than 200 miles away will be reimbursed for a round-trip supersaver fare.

APPLICATION DEADLINE: Application form must be submitted by **February 23rd, 2025.**

There is an online application form. It is posted at:

<https://etap.nsf.gov/award/7344/opportunity/10242>

The online application form asks for the following files:

- Resume with description of scientific skills.
- A statement of interest. This statement can include a description of a particular research

project that the student wishes to undertake or it can be a more general statement of the three research projects that interest the student most. We recognize that students with no prior research experience may have difficulty formulating a research project and we will not penalize students who do not submit a detailed project description. The goal of our program is to teach students about the research process and we encourage students with no prior research experience to apply. The student should also include a statement of the characteristics of a good scientist and the availability of undergraduate research opportunities at their home institution.

- Two letters of recommendation from your professors. Additional letters are not required or desired. They will not be accepted by the online application system.
- Scanned transcript(s). Transcripts need not be official but must be legible and in English. If you have more than one undergraduate transcript, combine them into a single document for upload.

If transcripts are not available to append to the online application form, send scanned transcript(s) by email to:

**Laisa Sevilla
Summer Internship Program
Lamont-Doherty Earth Observatory
Palisades, New York 10964
Email: lsevilla@ldeo.columbia.edu**

For more information about the program, please visit the following webpage:

<https://lamont.columbia.edu/education-outreach/student-summer-opportunities-intern-programs>.

Decisions for all but the waiting list will be made on or before April 1st, 2025. The National Science Foundation is designating this program as an NSF REU Site for the summer of 2025. The research projects and advisors change annually. The yearly posting of new projects is in early-mid January.

*\$750 cap on travel reimbursement.