

Columbia University Department of Earth and Environmental Sciences

Lamont-Doherty Earth Observatory of Columbia University

Sponsored by **NSF Ocean Sciences REU Sites Program**

Summer Internship Program for Undergraduates (May 30th-August 7th, 2012)

Themes: Analyzing Global Databases

The Lamont-Doherty Summer Intern Program offers the chance to experience 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 with majors in earth science, environmental science, chemistry, biology, physics, mathematics, or engineering. **Neither graduating seniors nor international students are eligible for this internship.** Minorities and women are encouraged to apply.

Applicants should have an interest in conducting research in the Earth or ocean sciences. Two previous Earth- or ocean-science courses are desirable if they are available to the student. All students are required to have at least one year of calculus. Students choosing research in geochemistry and chemical oceanography are required to have at least two semesters of college-level chemistry. Students choosing research in marine biology are required to have at least two semesters of college-level biology. Students choosing research in geophysics 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-resolutional 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 and Bärbel Hönisch. Expertise: **Marine Geology, Impact Ejecta, Marine Geophysics, Marine Micropaleontology, Geochemistry.** Current Research: Did a tsunami generated by an oceanic impact produce major erosion in the Hudson River? Can we precisely date and source the late Holocene Carpentaria impact?

Timothy Creyts. Expertise: **Geochronology, Paleoclimate, Isotope Geochemistry.** Current Research: What happened to the water? Experimental investigations of subglacial drainage.

Timothy Crone. Expertise: **Marine Geophysics, Fluid Dynamics, Laboratory Modeling.** Current Research: How fast is your smokestack? Building an experimental laboratory apparatus to study turbulent buoyant jets using optical image analysis.

Allison Franzese. Expertise: **Geochemistry, Isotope Geology, Paleoceanography, Marine Chemistry, Deep-Ocean Sedimentary Processes.** Current Research: What controls the Agulhas Leakage? Assessing the role of the Subtropical Front in global climate.

Sidney Hemming and Dave Barbeau. Expertise: **Geochronology, Paleoclimate, Isotope Geochemistry.** Current Research: Did Antarctica host ice sheets in the Cretaceous?

Braddock Linsley. Expertise: **Paleoclimate, Coral Geochemistry, Oceanography.** Current Research: Can coral geochemistry be used to reconstruct salinity and temperature variability in the Indonesian Throughflow Current over the last 200 years?

Frank Nitsche and Tim Kenna. Expertise: **Marine Geophysics, Estuarine Sediments, Glacial Morphology, Sediment Transport and Geochemistry.** Current Research: Where is all the bad stuff? Study of deposition and distribution of sediments and contaminants in estuaries.

Pratigya Polissar. Expertise: **Paleoclimate and Climate Change, Organic Geochemistry, Isotope Geochemistry.** Current Research: Why did the tropical oceans cool 2 million years ago?

Richard Seager, Ben Cook, and Kevin Anchukaitis. Expertise: **Climate Dynamics, Climate Modeling, Tree Rings.** Current Research: Climate dynamics of late Victorian holocausts.

Trevor Williams, Sidney Hemming and Joel Gombiner. Expertise: **Marine Geophysics, Paleoclimate and Climate Change, Isotope Geochemistry.** Current Research: Can we collect K/Ar evidence of ice stream behavior at Prydz Bay Antarctica?

Xiaojun Yuan. Expertise: **Physical Oceanography, Air-Sea-Ice Interactions, Climate Studies.** Current Research: Does global thermohaline circulation slow down in a warm climate? An investigation of the long-term trend in water masses in Prydz Bay and adjacent regions.

STIPEND: Students will receive a stipend of \$5000 for this 10-week program. In addition, the student will receive free, air-conditioned housing at Columbia University in the City of New York. (Local students who are accepted to the program and who prefer to live at home will receive an additional \$1000.) Students will also receive free bus transportation between the Columbia 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 **March 15, 2012.**

There is an online application form. It is posted at: <http://webapp.ldeo.columbia.edu/interns>

The online application form asks for the following files:

-Resume with description of computer skills (if any).

-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 areas of current research 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.

-two letters of recommendation from your professors

In addition to the online application form, send the following material by regular mail (NOT email):

-Official college transcript(s);

The transcript(s) must be mailed on or before March 15, 2012.

Mail to:
Dr. Dallas Abbott
Summer Internship Program
Lamont-Doherty Earth Observatory
Palisades, New York 10964
Email: dallas@ldeo.columbia.edu

For more information, look at our web page: <http://www.ldeo.columbia.edu/education/programs/summer->

[internship/intern-program-faqs](#). Decisions for all but the waiting list will be made on or before April 15, 2012. The National Science Foundation is funding this program for the summer of 2012. Every year the research projects and advisors change. Please look for the yearly posting of new projects on the first of February.