GENERAL INFORMATION

Program sponsor: Princeton Environmental Institute

Position number: C1MYN

Project title: Predicting Environmental Conditions of the Past Using Soil Chemical Analyses

Organization/research group: Myneni Group

Primary location(s) of internship: Princeton University

Additional cities and/or countries to be visited (if applicable): Possible travel to Hawaii/Iceland/India

Note: If this internship is located in a country with an International SOS risk rating of High or Extreme, final candidates must participate in a travel review process overseen by the Travel Oversight Group (TOG), and obtain safety guidance prior to departure. The University reserves the right to revoke support and funding for travel at any time there has been a significant deterioration in the safety and security conditions surrounding travel arrangements, or in the sector of the country, or countries, where travel is to occur.

FACULTY SPONSOR(s)/HOST INFORMATION

Name(s): Satish Myneni

University Department(s): Geosciences

E-mail: smyneni@princeton.edu

Phone: 8-5848

Website: myneni.princeton.edu

INTERNERSHIP/RESEARCH PROJECT INFORMATION

Internship/project description:

Severe changes in climate have been attributed to mass migrations, and extinctions of organisms. However, predicting the intensity of climate variations that led to these in the past has not been accurate in many cases. The controversy that existed on dinosaur extinction and its links to climate variability is one of the best examples, and is the focus of this internship.

This study uses chemical and mineralogical variations in ancient soils as a way to evaluate the past climate- specifically the intensity and acidity of rain, and use this information to predict the climate during the time dinosaurs became extinct. In order to link the soil chemistry to climate we will evaluate the modern soil environments in Iceland and Hawaii, and compare these with the soils of the past in India.

We hope to conclude whether the climatic conditions 65 million years ago were similar to what we see today. If different, how different were they? Were they responsible for the extinction of dinosaurs?

Student’s role and responsibilities:

The students are expected to collect soil samples from at least one of the sites (if possible), analyze them for their chemical composition, and conduct high resolution microscopy and spectroscopy studies. Some studies will be conducted on campus using the facilities in our laboratory, and other will be conducted at the synchrotron X-ray facilities.
Internship/project learning objectives:
Students will learn how to sample soils for environmental chemistry related research, and learn different techniques related to chemical analyses.

PROGRAM REQUIREMENTS

Academic background and any course pre-requisites:
Chemistry background (CHM201, CHM202) is essential. Background in organic chemistry is helpful but not necessary.

Technical skills:
Laboratory skills from introductory CHM courses is essential.

Additional training(s):

Equipment:

Physical demands:
Laboratory skills from introductory CHM courses is essential.

Language abilities/competencies (if applicable):

Additional information about the internship/project:
If traveling to Iceland or India, visas may be required. Selected students will need to complete lab safety, workplace safety, and radiation safety trainings prior to the start of the internship. If traveling internationally, students should consult UHS for immunization/travel health requirements/suggestions.

INTERNATIONAL TRAVEL REQUIREMENTS (if applicable)

Visa(s) required? Yes ☐ No ☐
Research permit/pass required? Yes ☐ No ☐
Immunizations required? Yes ☐ No ☐

INTERNSHIP/PROJECT SUPERVISOR(S)

Name and title of primary supervisor: Satish Myneni

Email: smyneni@princeton.edu
Phone:

Name and title of additional supervisor, if applicable: n/a

E-mail: Phone:

PROGRAM DATES AND FUNDING INFORMATION

Weekly Stipend: $500 (plus int'l travel award, if applicable) Number of Positions Available: 2

Tentative Start Date (mm/dd/yyyy): 06/09/2019 Number of Weeks: 10-12

Tentative End Date (mm/dd/yyyy): flexible Note: PEI funding is for full-time work, 35 hours per week minimum, and for a period of at least 8 continuous weeks.

Application deadline: January 11, 2019