Antarctic Field Research and Immersion Project
Fall 2023 to Summer 2024
Application due March 10, 2023 by 5:01 pm

Project Title: Unlocking the glacial history of the McMurdo Dry Valleys, Antarctica by fingerprinting glacial tills with detrital zircon U-Pb age populations

Principal Investigator: Dr. Dan Morgan, Department of Earth and Environmental Sciences

To apply, please complete this pdf application and email it to: dan.morgan@vanderbilt.edu.

Project Goals: This project will utilize new techniques to ascertain the history of glacial ice flow in the McMurdo Dry Valleys of Antarctica. Deposits in these valleys preserve at least 15 million years of glacial history, which come from multiple glacial events and sources. We will spend about two months in Antarctica to sample these glacial deposits. Back at Vanderbilt, we will perform lab work to geochemically characterize these deposits, including bulk geochemistry, grain size analysis, and uranium-lead radiometric dating of zircon sand grains. With these data, we can reconstruct past ice sheet behavior in Antarctica and better inform how the ice sheet will influence future global climate change and sea level rise. For a more detailed description of the project, its scientific goals, and schedule, see https://my.vanderbilt.edu/danmorgan/Antarctica. This project is federally funded by the National Science Foundation and the U.S. Antarctic Program.

Field Work Description: Fieldwork for this project will occur from approximately October 30, 2023 – January 2, 2024. During the fieldwork, participants will be camping in extreme conditions in the McMurdo Dry Valleys for about six weeks. Temperatures are constantly below freezing at about 0 – 20°F, winds can be very strong, and the sun does not set. Days will consist of hiking on rocky terrain, mapping glacial deposits, and collecting rock and sand samples. Each person will have their own tent for sleeping, and we will have one large tent for cooking and office space. While camping, a satellite phone will allow brief phone calls home, but there is no internet access. For about two weeks before and one week after the fieldwork we will stay at McMurdo Station in Antarctica. At McMurdo Station we will sleep in dorms, eat at a dining hall, and have limited access to internet. To get to Antarctica, we will travel through Christchurch, New Zealand. All members of the field team are required to receive medical clearance to participate in the field work by completing medical and dental exams, which are reviewed by the U.S. Antarctic Program.

Project Timeline:

- Spring 2023: three undergraduate students selected to join team
- Summer 2023: participants train physically and complete medical and dental exams, optional summer research
- Fall 2023:
    - August-October: “module” courses in EES, academic, physical, mental, technical training
    - November-December: field work in Antarctica
- Spring 2024: Return in time for normal semester, option to begin lab work
- Summer 2024: $5,000 summer stipend for research on campus
- Beyond: Immersion projects, presentations at conferences, possible senior thesis projects

Please complete the following sections and submit your application by emailing it to: dan.morgan@vanderbilt.edu by Friday, March 10, 2023 by 5:01 pm.

Basic Information:
Name:

Student ID #:

Expected graduation date:

Planned major(s) and any minor(s):

Relevant coursework that you have taken so far at Vanderbilt:

We are asking all applicants to do two additional things before applying.
1. Attend an information session. What information session did you attend (date and time)?

2. You must either attend a group fitness class at the Vanderbilt Rec Center or do a workout on your own. Please either give the class name, instructor name, and date you attended the class, or briefly describe the workout you completed.

By submitting this application and signing below, you agree that you would be able to participate in the project as described in this application, including the necessary medical and dental qualifications, the physical training, the course work, the fieldwork, and the lab work in summer 2024:

Signature:

Date:

References:
Please provide the information below for two references. We will only contact references for a subset of applicants.

Reference 1
Name:

Employer and position:

Relationship to applicant:

Email:

Phone:

Reference 2
Name:

Employer and position:

Relationship to applicant:

Email:

Phone:

Responses: Please answer the questions below within the space provided.
1. Describe a time that you worked as part of a team to successfully achieve a shared goal. Describe the challenge(s) the team faced and how you helped to overcome those challenge(s).

2. Briefly describe your outdoors experience.

3. Briefly describe how you take care of your physical and mental well-being.

4. Describe an experience where you had to overcome a difficulty and be resilient.

5. What are your interests and goals that motivate you to want to participate in this project?