

**Department of Geology
College of Arts & Sciences**

**WISE-REWU Project Proposal
Summer 2011**

Application Deadline: March 1st, 2011

The Department of Geology is pleased to offer the following research project for the summer of 2010. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

Title: Paleoceanographic Changes during the Permian-Triassic Boundary Mass Extinction

Project Description: The largest mass extinction event in Earth history occurred at the Permian-Triassic boundary ~251 million years ago, when ~90% of all species on land and in the seas disappeared. The causes of this biotic catastrophe remain poorly understood but are an area of active research internationally. Recent studies have shown that major changes were occurring in both shallow- and deep-sea environments during this event. The main goal of an NSF-funded project at the University of Cincinnati is to better understand spatial and temporal patterns of change in the global ocean at that time through analysis of geochemical variation in rock successions spanning the Permian-Triassic boundary. The student participating in this project will undertake analysis of samples from a section in southern China. The project will involve (1) processing and analyzing about 100 samples, (2) interpreting the resulting geochemical datasets, and (3) preparing a report and/or presentation of the findings. The student will learn a variety of useful laboratory techniques, including how to prepare samples and how to perform XRF (x-ray fluorescence), LOI (loss-on-ignition), and TOC (total organic carbon) analyses. We will assist the student in the interpretation of the resulting datasets and in preparation of materials for publication and/or for presentation at a professional meeting. Our goal is to provide the student with first-hand experience in some of the essential components of scientific research, i.e., laboratory techniques, data analysis, and professional communication.

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Previous WISE-REWU projects supervised:

2010: Jessi Dinan, Marine anoxia and changes in the seawater sulfur cycle during the Permian/Triassic boundary crisis

2008: Jessa Moser, A deep-ocean record of the Permian/Triassic boundary crisis in the Itadori and Ubara sections of central Japan

- 2007: Christina Smith, A high-latitude record of the Permian/Triassic boundary crisis in the Blind Fiord section of the Canadian Arctic
- 2006: Meghan Welch, Using sulfur isotopes to investigate the depositional cycles of the Kope Formation
- 2005: Jill Conway, High-grade metamorphic effects on massive sulfide deposits: the Elizabeth mine of Vermont and its host rocks
- 2004: Ashley McKendree, Improving the performance of constructed wetlands for treatment of acid mine drainage: Understanding the clogging of anoxic limestone drains