

Department of Geology
COLLEGE OF ARTS & SCIENCES

SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: March 2, 2009

The Department of Geology is pleased to offer the following research project for the summer of 2009. 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.

**THE ROLE OF FELSIC VOLCANISM IN THE PERMIAN-TRIASSIC BOUNDARY
MASS EXTINCTION**

Dr. Thomas Algeo
Department of Geology
email: Thomas.Algeo@uc.edu
phone: 513-556-4195

Project Description

The mass extinction at the Permian-Triassic boundary ~251 million years ago was the single largest event of its kind in Earth history, resulting in the disappearance of ~90% of all species on land and in the seas. The event is widely regarded as a consequence of eruption of the Siberian Trap flood basalts and consequent changes in global climatic conditions. However, work now in progress in my lab shows that the geochemical character of the volcanic ash layers associated with the boundary point toward an origin in explosive felsic volcanism, rather than in large-scale (but relatively quiescent) flood basalt volcanism. Further, paleogeographic reconstructions also point toward a regionally proximal source in the South China region, rather than a source in the more remote Siberian Craton. Further analysis of Permian-Triassic boundary sections across South China is required to test elements of this new hypothesis. The student participating in this project will undertake geochemical analysis of samples from two sections, one at Chaohu in eastern China and one at Dongpan in southwestern China. The project will involve (1) processing and analyzing samples from each section, (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. I 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. My 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.

Previous WISE-REWU projects supervised:

2007: Christina Smith, Geochemical events at the Permian/Triassic boundary in the Blind Fiord section of the Canadian Arctic.

2008: Jessa Moser, Geochemical events at the Permian/Triassic boundary in the Itadori and Ubara sections of central Japan