



Environmental Sciences Seminar Series

Presents:

**COMBING ISOTOPIC AND MOLECULAR
BIOLOGY TOOLS TO STUDY NITROUS
OXIDE PRODUCTION**

Dr. Karen L. Casciotti

***Woods Hole Oceanographic Institution
Marine Chemistry and Geochemistry Department***

Date & Time: Wednesday, April 14, 2004, 5:00 PM

Location: Smittcamp Alumni House

(Reception at 5 PM, promptly followed by lecture at 5:20 PM)

All members of the professional, educational, and research communities are welcome. For additional information, please contact the Earth & Environmental Sciences Department office at (559) 278-3086 or vengieb@csufresno.edu

Parking restrictions will be relaxed in Lot V (at Shaw and Woodrow Avenues) between 4:30 and 7:00 PM for seminar participants. An online campus parking map is available at: <http://www.csufresno.edu/univrelations/map/>

Abstract

Combining Isotopic and Molecular Biology Tools to Study Nitrous Oxide Production

Nitrous oxide is a climatically important trace gas, whose atmospheric concentration has increased dramatically since preindustrial times. Natural sources of nitrous oxide include fundamental microbial processes (nitrification and denitrification) that are active in marine, terrestrial, and fresh water ecosystems. Human-induced acceleration of these processes is thought to play a significant role in the rising atmospheric concentration of nitrous oxide. To fully understand how these sources have changed in the past and may change in the future, we need to know more about how nitrous oxide production fits in with the normal metabolic processes of the bacteria that are its ultimate source. Recently, genetic evidence has shown the potential for a denitrification-like pathway in nitrifying bacteria. Through the combined use of genetic tools and recently developed isotopic techniques for nitrogen and oxygen isotopic analysis of nitrate, we can arrive at a clearer picture for how nitrous oxide is being produced in cultures of nitrifying bacteria, and ultimately, in the environment.

Upcoming lectures for Spring, 2004

- Professor Stan Finney of CSU Long Beach, "*Species diversification during a mass extinction - graptolites during the Late Ordovician*", Tuesday, May 4. (***Paleontological Society Distinguished Lecture***)

For more information, please visit: <http://www.csufresno.edu/geology/EES-seminars.htm> or call the Earth & Environmental Sciences Department at (559) 278-3086.