

Department of Applied Mathematics and Statistics
The Johns Hopkins University

THE SECOND JOHN C. AND SUSAN S. G. WIERMAN LECTURE

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November 30, 2006
Refreshments: 3:00 p.m.
in 301 Whitehead Hall
Lecture: 4:00 p.m.
in 110 Maryland Hall

**ENVIRONMENTAL STATISTICS: A NEW SOURCE OF DISCOVERY
FOR TOMORROW'S PROBLEM-SOLVERS**

ABSTRACT

How could a win-win strategy be used to train young people in environmental statistics and at the same time analyze environmental data, not analyzed until now, for federal, state, and local agencies? This presentation will discuss two courses that have been developed to train undergraduate students in environmental statistics, and the impact the courses have had. The courses address:

1. the need to train undergraduates in analyzing important complicated and messy data sets;
2. the national, state, and international need to analyze environmental data to make better environmental policy decisions;
3. the need to encourage students to pursue graduate degrees in statistics, keeping people in the pipeline to pursue Ph.D.s;
4. the need to analyze real data for real clients in the workplace and make the student a desirable candidate for employment upon graduation;
5. the need to foster collaboration between majority and minority institutions and contribute to diversity in environmental decision-making;
6. the need to develop statistical partners in academia, government, and industry.

For more about these courses, please see the next page.

The courses are entitled Environmental Statistics Practicum and Special Topics in Environmental Statistics. This training comes in support of a National Science Foundation grant, **Collaborative Research: Training Environmental Statisticians Using Complicated Data Sets to Make More Informed Environmental Decisions**. A collaborative effort is being undertaken with Spelman College, an historically black college for women in Atlanta, Georgia. This collaborative effort has shown that this approach is portable to other universities and colleges with an undergraduate statistics program—and at those without, as long as there are some courses in statistics and a statistician with an interest in environmental statistics. The collaborators have demonstrated that the environmental statistics program can be modified, adapted, and enhanced at Spelman College, which represents those colleges without a formal undergraduate statistics program. The objectives of the courses are to (1) provide a consulting opportunity for the students with federal, state, or local agencies; (2) focus on the application of the students' technical skills to a real problem; (3) have the students gain consulting experience; and (4) develop their oral and written communication skills. The students learn how to prepare a final report, brief a client at the client's office, present poster papers at technical conferences, and write papers for publication. Students have done work for fifteen client organizations. After six years at NCSU, 56 percent have gone on to graduate school. An even greater percentage (69 percent) of students taking both statistical classes go on to graduate school. Eleven students graduated with a master's degree in statistics and seven are continuing on for a Ph.D. Twenty-four students have gone on to graduate-school programs in statistics. Eight students are employed at the Research Triangle Institute as environmental statisticians and twelve students have worked or are working part time at the USEPA as statisticians. One student has been hired by the U.S. Environmental Protection Agency. The students have given over 120 professional presentations and have written 36 reports for their clients and scientific and technical papers. The students have won over \$33,000 in awards for their work. In summary, these classes have created a win-win situation for the students, the clients, and the university, and provide an alternative way to complete environmental data analysis. Examples of the students' work will be presented.