

25th ANNUAL NATIONAL CONFERENCE ON MANAGING ENVIRONMENTAL QUALITY SYSTEMS

APRIL 24-27, 2006

Marriott Renaissance, Austin, Texas

Technical Papers

Environmental Statistics: A New Source of Discovery

- W.Hunt, Overview of Environmental Statistics Courses at NCSU - 8:30 AM
- NCSU Student Presentations: B.Hare, E.Holland, F. Hornsby and W.Jackson - 9:00 AM
- B. Nussbaum, EPA Perspective on Student Projects - 9:30 AM

TECHNICAL SESSION:
Environmental Statistics: A New Source of Discovery

Environmental Statistics: A New Source of Discovery

William F. Hunt, Jr.
Visiting Senior Scientist
North Carolina State University
Raleigh, NC

Dr. Barry Nussbaum
Branch Chief, Office of Environmental Information
U. S. Environmental Protection Agency
Washington, DC

Students:
Brian Hare, Emily Holland, Fawn Hornsby and Wilma Jackson
NCSU Undergraduate Program in Statistics

How could a win-win-win strategy be used to train young people in using statistics to solve environmental problems, simultaneously analyze environmental data for Federal, State and local agencies and increase the number of undergraduate students going on for advanced degrees in statistics and other sciences? Two courses have been developed to train undergraduate students in environmental statistics and provide them with a consulting experience by William F. Hunt, Jr., Visiting Senior Scientist in the Department of Statistics at North Carolina State University. He has over 38 years experience in working on the analysis of environmental data and using important results to make national air pollution policy decisions. He has been active in the AWMA and served as chair of the Environmental Measurements Division and Data Analysis and Quality Assurance Committee. During his long tenure with the USEPA, Mr. Hunt made many efforts to encourage the hiring of statisticians and data analysts to analyze environmental data at the Federal, State and local levels, but these efforts were met with very limited success. The government continues to collect data, which largely go unanalyzed.

The environmental statistics courses developed at NC State University are intended to make a dent in this problem and reinvigorate the relationship between universities, colleges and environmental agencies. Mr. Hunt and his colleague, Dr. Kimberly Weems, are currently collaborating with Dr. Nagambal Shah and Dr. Monica Stephens of Spelman College in Atlanta, GA to reproduce the program at Spelman College. The Spelman College team works with the U. S. Environmental Protection Agency Region 4 Office in Atlanta, GA and the Georgia Department of Natural Resources. The collaborative effort of both universities has demonstrated that their approach can be used at universities and colleges with an undergraduate statistics program and at those without, as long as there are some courses in statistics.

The objectives of the environmental statistics courses are: (1) to provide a consulting opportunity for the students with Federal, State or local agencies; (2) focus on the application of the student's 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 clients at the client's office, and present poster papers at technical conferences and write papers for publication. NCSU students have done work for sixteen client organizations: (1) the Southern Oxidant Study at North Carolina State University (NCSU); (2) the U. S. Environmental Protection Agency's (USEPA) National Exposure Research Laboratory; (3) the USEPA's Office of Air Quality Planning and Standards; (4) the Air Division of the North Carolina Department of Environment and Natural Resources (NCDENR); (5) the Forsyth County Environmental Affairs Department; (6) the U. S. Department of State; (7) the USEPA's Office of Environmental Information in Washington, DC ; (8) Environment Canada; (9) Texas Commission on Environmental Quality; (10) the University of Texas, (11) the Water Division of the North Carolina Department of Environment and Natural Resources (NCDENR); (12) the North Carolina State Climate Office, (13) USEPA Region 4 in Atlanta; (14) The Georgia Department of Natural Resources; (15) Mid-Atlantic Regional Air Management Association; and (16) the New Jersey Dept. of Environmental Protection. Spelman College students are doing work for both USEPA Region 4 and the Georgia Department of Natural Resources.

Hunt will provide an overview of the course at NCSU and comment on the impact the course has had on the university - more students pursuing graduate study, the faculty developing new contacts. Brian Hare, Emily Holland, Fawn Hornsby and Wilma Jackson will give a short (10 minutes) presentation on their work. Dr. Barry Nussbaum, who has worked extensively with the students as a client, will provide the clients perspective on the student projects. The titles of the student's talks are as follows:

Brian Hare, "Creating an Emission Standard."

Emily Holland, "Examining Year to Year Changes in the Toxic Release Inventory."

Fawn Hornsby and Wilma Jackson, "An Analysis of Continuous Mercury Air Pollution Data Collected in Elizabeth and New Brunswick, NJ."
