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Fall 2008 Dr. Allen P. Davis, Director Dr. Phil Kearney, Assoc Director

How Can Maryland Agriculture and the Chesapeake Bay coexist?

Two of the State's most important economic resources are Agriculture and the Bay. With increasing interest in biofuels, agriculture production is expanding and changing, along with concomitant environmental impacts. The situation is further complicated since agricultural inputs to the Bay originate from several surrounding states. Nitrogen, phosphorus and sediments are major bay pollutants.

Additionally, our ability to measure minute amounts of many contaminants has increased dramatically over the past four decades and we are still struggling to ascertain the significance of parts per trillion contaminants in any ecosystem.

The one-day conference will discuss several of these issues on Friday, October 31st, 2008 at the Benjamin Banneker Room, Stamp Student Union, University of Maryland, College Park, MD. See page for details.

Inside the Newsletter

Request for Proposals – 2009 Funding

At the present time, federal FY09 appropriations for the National Water Institutes are not complete. As a result, funding for the program is not guaranteed at this time. Nonetheless, we will move forward with this request for proposals. Updated information on appropriations will be posted on the Center web page.

Proposals for the 2009 *Maryland Water Resources Research Center* funds are now being solicited. The Center is seeking requests for two types of proposals this year (with their estimated funding levels): regular Research Projects ($15k to $35k) and Summer Graduate Fellowships ($5.6k). Requirements for the 2009 summer fellowship program are presented below.

For information on proposal preparation, go to our web site at: *www.waterresources.umd.edu.* Specific questions may be addressed to the Associate Director at (301-405-6829) or e-mail *kearneyp@umd.edu. Proposals are due in the WRRC office (1147 Martin Hall, University of Maryland, College Park, 20742) by close of business (4:30 PM) on Friday, November 7th, 2008. Proposals must be signed by an authorized University Representative.*

Featured Scientists

Cherie Miller

Cherie Miller is the Water-Quality Specialist and a Supervisory Hydrologist at the MD-DE-DC Water Science Center of the U.S. Geological Survey. She has worked with the MWRRC to review proposals and to coordinate research that is supported by the MWRRC with ongoing USGS studies.

Cherie's background is interdisciplinary with a bachelor's degree in biology from Rollins College in Winter Park, Florida, an M.S. in Environmental Science from the University of Virginia, an M.A. in hydrogeology from Johns Hopkins University, and a Ph.D. in Chemistry from the University of Maryland in College Park. At the University of Virginia and under the direction of Dr.Mahlon Kelly, Cherie studied the bioavailability of iron sesquioxide-bound phosphates to phytoplankton in Peacock Hill Lake, Charlottesville, Virginia. At the Johns Hopkins University, in the Department of Earth and Planetary Sciences, Cherie studied thermodynamics and geochemistry under the tutelage of Dr. Hans Eugster and worked on the mobility of copper, lead, and zinc from red bed sandstone formations during diagenesis.

At the University of Maryland, Cherie and Dr. George Helz documented a history of water-column anoxia in the Chesapeake Bay using profiles of molybdenum in sediment cores. Molybdenum is sequestered from the water column in the form of ferrothiomolybdate solids during anoxic events and is deposited to the sediments. The structural forms of the solids that are formed in this process were examined using EXAFS and found to be similar to some cubane Fe-Mo-S structures found in nature, such as in nitrogenases. Also, as part of this research, Cherie worked on the history of sedimentation rates in the Chesapeake Bay collaborating with Dr. Grace Brush at Johns Hopkins on pollen-dating techniques and with Dr.Jeff Halka at the Maryland Geological Survey on coring and seismology. This dissertation research was supported by funds from the MWRRC and some very interesting work has followed with other graduates students of Dr. Helz, including Brit Erikson and Jordan Adelson.

In 1992, Cherie graduated from UMCP and took a temporary position to teach environmental science, hydrology, and geochemistry at Franklin and Marshall College in Lancaster, Pennsylvania. During this time, she began her career as a scientist at the USGS and has continued there to the present.

Currently, Cherie is leading a group of scientists at the USGS Water Science Center in Baltimore that focuses on real-time water quality. River stations are equipped with multiparameter datasondes that transmit information to satellites and deliver these data to USGS websites. Cherie is working with Brad Garner to develop models that use parameters like turbidity and discharge to estimate water chemistry in real-time, such as the concentrations of suspended sediment, total phosphorus, and total nitrogen. This information can be found on the web at http://md.water.usgs.gov/rtqwmodeling/

Cherie, Brad Garner and Holly Weyers are currently working on new and interesting applications of these data such as daily calculations of primary productivity from real-time diurnal profiles of dissolved oxygen.

Frank J. Coale

Dr. Frank J. Coale earned his bachelor's of science degree in Agronomy from the University of Maryland in 1981. He continued his education at the University of Kentucky where he earned a Master's degree in plant physiology and a Ph.D. in soil fertility and plant nutrition in 1986.

Dr. Coale began his research and Extension Education career in 1986 as an agronomist working with sugarcane and rice farmers in the Everglades Agricultural Area of southern Florida.

As an Assistant Professor and Extension Agronomist with the University of Florida, Dr. Coale began to focus his attention on agricultural drainage water management and off-farm nutrient transport. The management of phosphorus in farm drainage water and minimizing the phosphorus load in waters flowing from agricultural production areas into the Everglades National Park and adjacent conservation areas soon became the primary focus of Dr. Coale's research and Extension Education efforts.

In 1993, Dr. Coale returned to his undergraduate alma mater, the University of Maryland, as an Associate Professor and Extension Specialist in the Department of Agronomy. At the University of Maryland, Dr. Coale continued his work in soil fertility and agricultural nutrient management with a shift in focus to grain crop production systems and efficient animal manure utilization. While concentrating on nitrogen and phosphorus, the two crop nutrients that are most frequently associated with water quality concerns, Dr.Coale began to build a research program in Maryland that identified farm management practices that struck a balance between agronomic efficiency and environmental protection. Working with both commercial synthetic fertilizers and animal manures, Dr. Coale's agricultural nutrient management efforts have been widely recognized and adopted by the agricultural industry in the Mid-Atlantic region. At the same time, Dr.Coale's research and Extension Education activities have helped shape water quality protection guidelines that strike a balance between efficient agronomic production and environmental protection.

The development of the Maryland Phosphorus Site Index was a prime example of Dr. Coale's efforts to provide science-based guidance to farmers to help ensure agronomic prosperity while identifying production fields that pose a potentially high risk for phosphorus loss in field drainage water. When sites that are at high risk for phosphorus loss are identified, alternative farm management options are offered.

In 2005, Dr. Coale was named Chair of the University of Maryland's Department of Natural Resource Sciences and Landscape Architecture. As a result of reorganization within the College of Agriculture and Natural Resources in 2006, Dr.Coale was appointed as the inaugural Chair of the newly formed Department of Environmental Science and Technology and continues to serve in that role.

MWMC 14th ANNUAL CONFERENCE

The Maryland Water Monitoring Council will hold its 14th Annual Conference at the Maritime Institute, North Linthicum, on Thursday, December 4, 2008. This is **the First Call for Contributed Papers and Posters.** They are requesting titles and abstracts for contributed papers (oral presentations in the technical sessions) and posters. Preference will be given to papers/posters that relate to the conference themes. Abstracts submitted for oral presentations should describe completed projects with documented results. Abstracts that focus on project plans or updates to projects in progress are more suitable for posters. www.marylandwatermonitoring.org

2008 Mid-Atlantic Regional Water Resources Research Conference

The Mid-Atlantic Regional Water Resources Research Institutes (WRRI) invites you to join us at the 2008 Mid-Atlantic Regional Water Resources Research Conference: *The Water-Energy Nexus: A Necessary Synergy for 21st Century* from November 17-19, 2008. For more information, please visit: http://wvwri.nrcce.wvu.edu/conferences/2008/WRRI/

How Can Maryland Agriculture and the Bay Coexist?

October 31, 2008

Benjamin Banneker Room
Stamp Student Union Building
University of Maryland
College Park, MD 20742

8:50 - 9:00	Welcome + Opening Remarks
9:00 - 9:30	**"*Maryland's Agricultural Ecosystem,Yesterday,Today and Tomorrow"***, Robert Kratochvil**,** Associate Professor & Extension Specialist, Plant Science & Landscape Architecture, University of Maryland, College Park.
9:30 - 10:00	**"*Managing Phosphorus on the Farm*"**, Frank J. Coale, Environmental Science & Technology, University of Maryland, College Park.
10:00 - 10:15	Break
10:15 -10:45	**"*Adaptive Nitrogen Management for Improving Water Quality: Challenges and Opportunities*"**, Jack Meissinger, Environmental Management & Byproducts, ARS USDA, Beltsville, MD.
10:45 -11:15	**"*NAWQA has Provided a Wealth of Information on Pesticides & Nutrient Movement"***, Judith Denver, Hydrologist/Study Unit Chief, USGS Dover, Delaware.
11:15 -11:45	***"Nutrient Management in Maryland: A Recent History"***, Patrica Steinhilber, Agricultural Management Program, University of Maryland, College Park.
11:45 -1:00	Lunch
1:00 -1:45	***"The Water Quality Improvement Act of 1998 – 10 Years Hence"***, Royden Powell, Assistant Secretary, Conservation, Maryland Department of Agriculture.
1:45 -2:15	**"*Agricultural Policies for Restoring the Bay: Successes and Failure"***, Russell Brinsfield, Wye Research and Education Center, Queenstown, MD.

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Lunch will be served at noon in the Jimenez Room which is located directly next to the Benjamin Banneker Room. Registration required at www.waterresources.umd.edu.

Our Fall Conferences are cosponsored by the USGS MD-DE-DC, Maryland Sea Grant College, the University of Maryland Center for Environmental Science and the Maryland Water Resources Research Center.

2009 Summer Fellowship Program

The Center will offer $5600 Summer Fellowships to selected outstanding graduate students. Selection of awardees will be made in late November based on: a) evaluations of student's record. b) strength of advisor's recommendation, and c) prospects that the research will benefit our understanding and management of Maryland's water resources. Advisor matching funds will be required. Interested applicants should contact Dr. P. C. Kearney for details at kearneyp@umd.edu.
Summer Fellowship proposals must be submitted to our office by November 7, 2008. Guidelines can be found at the Center Website.

Logo Contest

The Maryland Water Resources Research Center is looking for a unique and attractive logo to identify our organization. We will award 50$ for the best logo developed and submitted to the center by December 1st, 2008. Please contact Dr. Philip C. Kearney at Kearneyp@umd.edu or 301-405-6829.

Maryland Water Resources Research Center

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