

Thanks to our state-wide Soil and Water Science
Faculty Programs for sponsoring the
13th Annual Research Forum

Environmental Hydrology Laboratory
(James Jawitz)

Everglades Soils Research Laboratory- Belle Glade
(Alan Wright)

UF-Water Institute

Wetland Biogeochemistry Laboratory



PLAN TO ATTEND

14th Annual Soil & Water Science Research Forum
September 6, 2013
J. W. Reitz Union
University of Florida - IFAS
Gainesville, Florida

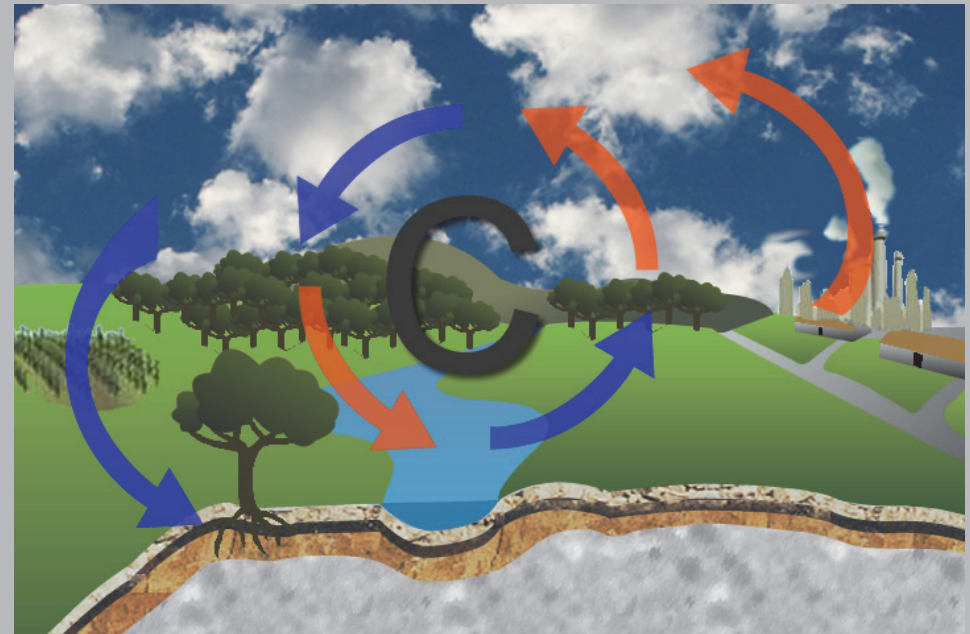
This is a Zero Waste Event!

The Soil and Water Science Department is working to reduce waste from
this year's Forum and aid the University of Florida's goal of producing
[Zero Waste by 2015](#).

For more information on Zero Waste Events, you can visit the websites of
the [UF Office of Sustainability](#) and [UF_Biogas – A Renewable Biofuel](#).

SOIL AND WATER SCIENCE

Carbon Cycle - Role of Soil and Water Science



13th Annual Research Forum
September 7, 2012

making a difference in quality of life ... for everyone

INTRODUCTION

Welcome to the 13th Annual Soil and Water Science Research Forum sponsored by the Soil and Water Science Department (SWSD), IFAS, University of Florida. The Forum is designed to bring together representatives from state and federal agencies as well as private industry, faculty, graduate students, and prospective students. The Forum provides an opportunity for all those interested in soil and water science to interact with our students, faculty, and administrators on campus.

The SWSD faculty are located both on the main campus in Gainesville and at several off-campus Research and Education Centers. The mission of the department is to conduct basic and applied research on soil and water-related problems associated with sustaining agriculture and protecting natural resources. Thus, our faculty and students conduct research and education in a wide range of ecosystems including: agricultural lands, urban lands, rangelands, forested lands, and wetlands and aquatic ecosystems, with emphasis on productivity, water quality, carbon sequestration, and greenhouse gas emissions. Research efforts are organized into the following thrust areas: Management of Nutrients, Pesticides, and Wastes, Soil, Water, and Aquifer Remediation, Carbon Dynamics and Ecosystem Services, Landscape Analysis and Modeling, and Wetlands and Aquatic Systems. This year's Forum will focus on Carbon Cycle – Soil, Water, and Environmental Sciences with invited presentations from Dr. Diane McKnight, University of Colorado. Dr. McKnight's biographical information is posted in this brochure.

Research conducted by graduate students and post-doctoral fellows is the core of the SWSD research programs. At present 132 graduate students (including 59 Ph. D and 73 MS students, 40 undergraduates (20 SWS and 20 EMANR) and 10 post-doctoral associates support current research activities in the department. For this year's Forum we offer you select examples of the research conducted by these young scientists. Presentations include 4 oral papers and 33 poster presentations. For those of you interested in our programs, please contact me or any one of our faculty members.

Thanks to the Faculty Research Forum Committee (Dr. James Jawitz, Committee Chair) for coordinating activities related to the Forum. Thanks to Jing Hu, Eunice Eshun, Mary Lusk, Susan Curry, Michael Sisk and student volunteers for their excellent work in making arrangements for the Forum. Finally, I want to express my appreciation to all students, post-doctoral fellows, staff, and faculty for their active participation in the Forum. Assistance of judges in selecting best oral/poster presentations is greatly appreciated. We thank our collaborators from various state agencies and the industry for their support of our programs.

Sincerely,



SOIL AND WATER SCIENCE LOCATIONS

Soil & Water Science Department
106 Newell Hall
P.O. Box 110510
Gainesville, FL 32611-0510
(352) 392.1803
<http://soils.ifas.ufl.edu/>

2169 McCarty Hall
P.O. Box 110290
Gainesville, FL 32611-0290
(352) 392.1951

Citrus Research & Education Center
700 Experiment Station Road
Lake Alfred, FL 33850-2299
(863) 956.1151
<http://www.crec.ifas.ufl.edu/>

Everglades Research & Education Center
3200 E. Palm Beach Road
Belle Glade, FL 33430-8003
(561) 993.1500
<http://erec.ifas.ufl.edu/>

Ft. Lauderdale Research & Education Center
3205 College Avenue
Ft. Lauderdale, FL 33314-7799
(954) 577-6300
<http://flrec.ifas.ufl.edu/>

Gulf Coast Research & Education Center
14625 County Road 672
Wimauma, FL 33598
(813) 634.0000
<http://gcrec.ifas.ufl.edu/>

Indian River Research & Education Center
2199 South Rock Road
Fort Pierce, FL 34945-3138
(772) 468.3922
<http://irrec.ifas.ufl.edu/>

North Florida Research & Education Center
155 Research Road
Quincy, FL 32351-5677
(850) 875.7100
<http://nfrec.ifas.ufl.edu/>

Range Cattle Research & Education Center
3401 Experiment Station Road
Ona, FL 33865-9706
(863) 735.1314
<http://rcrec-ona.ifas.ufl.edu/>

Southwest Florida Research & Education Center
2686 State Road 29 North
Immokalee, FL 34142
(239) 658.3400
<http://www.imok.ufl.edu/>

Tropical Research & Education Center
18905 SW 280th Street
Homestead, FL 33031-3314
(305) 246.7000
<http://trec.ifas.ufl.edu/>

NON-JUDGED POSTER TITLES & AUTHORS

27. Allelopathic Effects of Aquatic Vegetation on Seed Germination and Root Growth.

Odiney Alvarez-Campos, Timothy Lang, Jehangir Bhadha, Calvin Odero, and Samira Daroub

28. Detection of Activity and Syntrophic Acetate-Oxidizing Bacteria along a Nutrient Gradient in the Florida Everglades.

Michelle Amit, Hee-Sung Bae, Aditi Banerjee, and Andrew Ogram

29. An Emergy Approach to Evaluate Impacts of Soil Subsidence on Biofuels Production Sustainability in South Florida.

Nana Y. Amponsah, Jose-Luis Izursa, John Capece, and Edward Hanlon

30. Bioremediation of Landfill Leachate: Utilizing Photosynthetic Algae to Assimilate Waste Nutrients.

Scott Edmundson and Ann Wilkie

31. Response of 'Floritam' St. Augustinegrass to Nitrogen Fertilizer and Reclaimed Water Application Rate.

Jinghua Fan, George Hochmuth, Jerry Sartain, and Jason Kruse

32. Predicting the Effects of Climate Change on Everglades Ecosystems.

Rajendra Paudel, Carl Fitz, and R. Shrestha

33. A Study on Cropland Organic Carbon Sequestration in Soil Aggregates of Long-Term Experimental Sites in the Northeast Plain of China.

Jiubo Pei, J.K. Wang, H. Li, and Patrick Inglett

INVITED SPEAKER

DR. DIANE McKNIGHT

Professor

**Civil, Environmental and Architectural Engineering
University of Colorado**



Diane M. McKnight is an INSTAAR Fellow and Professor of Civil, Environmental and Architectural Engineering at the University of Colorado. Dr. McKnight was elected a member of the National Academy of Engineering (NAE) which is among the highest professional distinctions accorded an engineer. The Academy honors those who have made outstanding contributions to “engineering research, practice or education” and to the “pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education.” She was cited for her research of the interrelationship between natural organic matter and heavy metals in lakes and streams.

McKnight’s research focuses on the aquatic ecology of algae in lakes and streams and biogeochemical studies of natural organic material and trace metals in freshwater systems. Her field research is conducted in alpine and polar environments, including the McMurdo Dry Valleys of Antarctica.

She has focused on the impact of metal contamination in acid mine drainage streams and the influence of climate change and nitrogen deposition on alpine surface water. McKnight has worked with many state and local groups involved in mine drainage and watershed issues in the Rocky Mountains. McKnight has been working in Antarctica since 1987 and is a principal investigator studying extreme life as part of the McMurdo Dry Valleys Long-Term Ecological Research (LTER) program.

McKnight is extensively involved in outreach activities. She was one of the originators of the LTER Schoolyard children’s book series. She wrote *The Lost Seal*, one of the first books in the series, that tells the true story of the rescue of a wayward seal.

McKnight earned three degrees from the Massachusetts Institute of Technology, including a bachelor’s degree in mechanical engineering in 1975, a master’s degree in civil engineering in 1978 and a doctorate in environmental engineering in 1979.

She was a research hydrologist with the U.S. Geological Survey’s National Research Program for 17 years. She was named a fellow of the American Geophysical Union in 2004 and of the American Association for the Advancement of Science in 2009. She is a former member of the National Research Council’s Water Science and Technology Board and Polar Research Board and received a Meritorious Service Award from the USGS.

PROGRAM

Auditorium – J. Wayne Reitz Union

8:30 AM Registration

9:15 - 9:30 **Dr. K. Ramesh Reddy**
Opening Remarks
Graduate Research Professor and Chair
Soil and Water Science Department

9:30 -10:30 **Dr. Diane McKnight**
**Summertime in the Rocky Mountains: A Biogeochemical
Perspective on Climate Change and Water Quality.**
Professor
Fellow of the Institute of Arctic and Alpine Research
National Academy of Engineering
Dept. of Civil, Environmental and Architectural Engineering
University of Colorado - Boulder

10:30 -10:50 **BREAK**

SESSION I – Oral Presentations

Auditorium – J. Wayne Reitz Union

**Invited Faculty Session – Carbon Cycle - Soil, Water, and
Environmental Sciences**
Session Chair: Dr. James Jawitz

10:50 – 11:10 ***Coupled Cycles and Life at the Bottom of the Food
Chain.***
Dr. Andrew Ogram, Professor
Department of Soil and Water Science
University of Florida

11:10 – 11:30 ***Hydrologic Linkages to Subsurface Carbon
Sequestration in Florida.***
Dr. Willie Harris, Professor
Department of Soil and Water Science
University of Florida

JUDGED POSTER TITLES & AUTHORS

19. **Assessing Terrestrial Carbon Dynamics and the Effects of Climate
Driven Changes on Carbon Stocks across the Southeastern United
States.**

Christopher Wade Ross and Sabine Grunwald

20. **Use of AI-WTRs in Ermeable Reactive Barriers to Limit Phosphorus
Movement in Groundwater in the Lake Okeechobee Basin.**

William Schmahl and James Jawitz

21. **Dislodgeable Residues of Endocrine Disrupting Chemicals on
Turfgrass Irrigated with Reclaimed Water.**

Harmanpreet Sidhu, Chris Wilson, and George O'Connor

22. **Temperature Sensitivity of Greenhouse Gas (CO₂ and CH₄)
Production and Flux in a Subtropical Wetland: The Importance of
Organic Matter Quality and Nutrient Availability.**

Debjani Sihi, Patrick Inglett, and Kanika Sharma Inglett

23. **Assessing the Fertilizer Value of Anaerobic Digester Effluent.**

Reginald Toussaint and Ann Wilkie

24. **Modified Method for the Characterization of Soil Organic Nitrogen in
Wetlands.**

Christine VanZomeren and K. Ramesh Reddy

25. **Impacts of Land Use on Ecosystem Carbon in Subtropical
Grassland Ecosystems.**

Sutie Xu, Maria Silveira, and Kanika Sharma Inglett

26. **Tracer Tests to Predict DNAPL Storage and Release from Low
Permeability Zones.**

Minjune Yang, Michael Annable, and James Jawitz

JUDGED POSTER TITLES & AUTHORS

10. **A Chemical Risk Reduction Education Program for Residents Living Near the Koppers Superfund Site in Gainesville, Florida.**
Julia "Ky" Gress and Lena Ma
11. **Hydrologic Modeling for Evaluating Restoration of Historically Isolated Subtropical Wetlands.**
Jing Guan and James Jawitz
12. **Nitrogen Use Efficiency of Silage Corn.**
Rebecca Hellmuth and George Hochmuth
13. **Nitrous Oxide Production and Consumption after the Rewetting of Soils in Isolated Wetlands and Surrounding Pasture Upland.**
Jing Hu, Kanika Sharma Inglett, Patrick Inglett, Mark Clark, and K. Ramesh Reddy
14. **Preliminary Analysis of Ecosystem Response to Anthropogenic Nitrogen Deposition in Remote Watersheds of the Northern Hemisphere.**
Yuanyuan Huang and Stefan Gerber
15. **Evaluation of Current and Alternative Nitrate Reduction Techniques in the Caloosahatchee River Basin.**
Travis Knight and Edward Hanlon
16. **Algae Nutrient Limitations in Reverse Osmosis Pretreated Landfill Leachate.**
Carlos V. Lopez and Ann Wilkie
17. **Utilization of Novel Analytical Approaches to Determine Soil Organic Matter Stability in Wetlands.**
Anna Normand and K. Ramesh Reddy
18. **Tracking Nitrogen using SUBSTOR: A Model Based Approach for Improving Nitrogen Management for Potato Cultivation in the Suwannee River Watershed.**
Rishi Prasad, George Hochmuth, and Christopher Martinez

PROGRAM

SESSION I – Oral Presentations

- 11:30 – 11:50 ***Soil Carbon and the Forest Soils Program – Summary and a Perspective on Biochar.***
Dr. Nicholas Comerford, Professor
Center Director of North FL. Research and Education Center
Department of Soil and Water Science
University of Florida
- 11:50 – 12:10 ***Carbon Sequestration in Florida's Wetlands: Past Lessons and Future Challenges.***
Dr. Todd Osborne, Research Assistant Professor
Department of Soil and Water Science
University of Florida
- 12:10 – 12:30 ***Soil Carbon Variability across Large Landscapes.***
Dr. Sabine Grunwald, Professor
Department of Soil and Water Science
University of Florida
- 12:30 – 1:30 **LUNCH**

SESSION II – Oral Presentations

Auditorium – J. Wayne Reitz Union

Graduate Student Presentations

Session Chairs: Jing Hu, Eunice Eshun, and Mary Lusk

- 1:30 – 1:45 ***Particle Matter and Surface Runoff Transports of Copper (Cu) from Land to Water Ways.***
Authors: Santanu Bakshi, Zhenli He, and Willie Harris
- 1:45 – 2:00 ***Influence of Wetland Vegetation on Stability of Accreted Phosphorus in the Everglades Stormwater Treatments Areas.***
Authors: Rupesh Bhomia, K. Ramesh Reddy, and Delia Ivanoff

PROGRAM

Auditorium – J. Wayne Reitz Union

SESSION II – Oral Presentations –Continued

2:00 – 2:15 ***Arsenic-Resistant Bacteria Solubilized Arsenic and Phosphorus from Insoluble Minerals and Enhanced Plant Growth.***

Authors: Piyasa Ghosh, Lena Ma, and Bala Rathinasabapathi

2:15 – 2:30 ***Imidacloprid Soil-Drench Application in Young Citrus Trees of Florida: Sorption, Degradation, and Systemic Effects on Asian Citrus Psyllid***

Authors: Jorge Leiva, Peter Nkedi-Kizza, Kelly Morgan, and Jawwad Qureshi

SESSION III

Student Presentations – Poster Viewing and Reception

East and West Gallery, J. Wayne Reitz Union

3:00 – 4:00 **Poster Session I**

Judging of Even Numbered Posters

4:00 – 5:00 **Poster Session II**

Judging of Odd Numbered Posters

JUDGED POSTER TITLES & AUTHORS

1. Assessment of Management Impact on Soil Carbon Dynamics in Subtropical Grasslands.

Julius Adewopo, Maria Silveira, and Stefan Gerber

2. Water Quality Monitoring at Model Watershed Nagulapally-Konapur, Medak District, Andhra Pradesh, India.

Cassandra Admire, Rao Mylavarapu, and Kanwar Sahrawat

3. Relations of Iron, Aluminum, and Carbon along Transitions from Udufts to Aquods.

Chumki Banik, Willie Harris, Scarlett Balboa, Larry Ellis, and Wade Hurt

4. Bioremediation of DDE, DDD, and DDT in Sandy Soil from Site ZSS3027 in Field ZSE-J in the Lake Apopka North Shore Restoration Area.

Ben Coppenger and John Thomas

5. Obtaining Langmuir Parameters from a Soil Test Solution.

Biswanath Dari, Vimala Nair, Dean Rhue, and Rao Mylavarapu

6. Fate and Transport of Nitrogen in Onsite Wastewater Treatment Systems.

Mriganka De and Gurpal Toor

7. Effect of Fertilizer Management Strategies on Color and Quality of St. Augustinegrass.

Rajendra Gautam, George Hochmuth, and Laurie Trenholm

8. Testing Organic Soil Amendments to Grow Sugarcane on Sandy Soils in the Everglades Agricultural Area.

Susanna Gomez, Samira Daroub, Jehangir Bhadha, and Timothy Lang

9. Impact of P Gradient and Anoxic Conditions on Temperature Sensitivity of Enzyme Kinetics in Wetland Soils.

Swati Goswami, Patrick Inglett, and Kanika Sharma Inglett