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14th Annual Soil and Water Science Research Forum

Environmental Hydrology Laboratory
(James Jawitz)

Everglades Soils Research Laboratory- Belle Glade
(Alan Wright)

UF-Water Institute

Wetland Biogeochemistry Laboratory



PLAN TO ATTEND

15th Annual Soil & Water Science Research Forum

September 19, 2014

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

Sustainability of Land & Water Resources



14th Annual Research Forum
September 6, 2013

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

INTRODUCTION

Welcome to the 14th Annual Soil and Water Science Research Forum sponsored by the Soil and Water Science Department (SWSD), IFAS, and the 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: Nutrient, Pesticide, and Waste Management, 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 "Sustainability of Land and Water Resources" with invited presentation from Dr. Linda Lee, Purdue University. Dr. Lee'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 124 graduate students (including 61 Ph. D and 63 MS students, 39 undergraduates (17 SWS and 22 EMANR) and several 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 5 oral papers and 37 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 Pasicha Chaikaew, Wade Ross, Jian Wu, 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
2181 McCarty Hall A
P.O. Box 110290
Gainesville, FL 32611-0290
(352) 392.1951
<http://soils.ifas.ufl.edu/>

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

30. ***Enhanced Cr(VI) Reduction and As(III) Oxidation in Ice: Important Role of Biochar Dissolved Organic Matter.***
Dr. Xiaoling Dong, Lena Ma, and Yuncong Li
31. ***Role of Physicochemical and Biochemical Soil Characteristics on Fate of Pathogenic Bacteria.***
Kimberly Dreaden, Aurelien Desaunay, Guillaume Paternostre, and Jeffrey Ullman
32. ***Influence of Arsenic and Phosphorus Competitive Uptake on Arsenic Tolerance in Bacteria and Arsenic-Hyperaccumulator Pteris vittata L.***
Dr. Piyasa Ghosh, Lena Ma, and Bala Rathinasabapathi
33. ***Temperature Sensitivity of Enzyme Kinetic Parameters in Subtropical Wetland Soils of Contrasting Nutrient Status.***
Swati Goswami, Patrick Inglett, Debjani Sibi, and Kanika Sharma Inglett
34. ***Carbon Dynamics, Productivity and Efficiency of a Beech Forest under Climate Change – A Simulation Study at Individual and Stand Level for a NW Europe Region.***
Yan Liao and Thomas Rotzer
35. ***Algal Bioremediation of Reverse Osmosis Pretreated Landfill Leachate: Optimization and Outdoor Growth.***
Carlos Lopez and Ann Wilkie
36. ***Denitrification Potential of Urban Impacted Riparian Zones throughout Tampa, FL. and Surrounding Areas.***
John Roberts, Michael Andreu, Kanika Sharma Inglett, Wayne Zipper, and Matthew Cohen
37. ***Assessing Stream-Mediated Seed and Shoot Dispersal of Invasive Plants in Florida.***
Jason Seitz and Mark Clark

INVITED SPEAKER

Dr. Linda S. Lee

Professor
Department of Agronomy
Purdue University



Linda S. Lee is Professor and Associate Head in the Agronomy Department at Purdue University; Program Head for the Ecological Sciences & Engineering Interdisciplinary Graduate Program; and a Faculty Affiliate in the Division of Environmental Ecological Engineering. She joined the faculty at Purdue University in 1993 after which she has garnered over 9.5 million dollars in funding from federal and state agencies as well as industry, published nearly 100 publications with most being in top tier environmental journals, and served as primary mentor of over 25 graduate students. She has an energetic, innovative, stimulating program of research and teaching in environmental soil chemistry grounded in fundamental concepts of chemistry with direct application to known environmental problems. Her research emphasis is on understanding the processes that govern environmental fate and remediation of contaminants for use in decision tools and management guidelines for industrial and agricultural settings. Current research involves contaminants of emerging concern including pharmaceuticals and perfluorinated compounds in soils, sediments, biosolids, streams and groundwater. She has two sons, and enjoys animals, music, the outdoors, and scuba diving.

Introducing Dr. Marc Kramer

Associate Professor
Environmental Pedology and Biogeochemistry



Dr. Kramer completed his graduate degree at Oregon State University in Corvallis, Oregon and was a post-doctoral fellow with the American Academy of Sciences through NASA Ames in Mountain View, California. He joins us from the Earth and Planetary Sciences Department at the University of California, Santa Cruz where he was an Associate Research Scientist. Marc plans to develop an interdisciplinary research program focusing on innovative applications of pedological principles to agricultural, environmental, and ecological issues as related to climate change and soils with a focus on mechanisms of soil carbon stabilization in temperate and tropical ecosystems. He has on-going field-based research projects in Georgia, Hawaii, the Pacific Northwest, California, and now in Florida. He is now settled in Gainesville with his wife Marie.

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. Linda Lee**
Technology, Stewardship, & Quality of Life: Chemicals of Emerging Concern in the Balance.
Associate Department Head - Agronomy Department
Professor of Agronomy; Expertise: Environmental Chemistry
Program Head - Ecological Science & Engineering
Interdisciplinary Graduate Program
Purdue University

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

SESSION I – Oral Presentations

Auditorium – J. Wayne Reitz Union

Invited Faculty Session – Sustainability of Land and Water Resources
Session Chair: Dr. James Jawitz

10:50 – 11:10 **Global Agriculture Sustainability.**
Dr. George Hochmuth, Professor
Department of Soil and Water Science
University of Florida

11:10 – 11:30 **Land Use Change and Long-Term Sustainability of Citrus Production in Central Florida.**
Dr. Arnold Schumann, Associate Professor
Citrus Research and Education Center – Lake Alfred, FL
Department of Soil and Water Science
University of Florida

JUDGED POSTER TITLES & AUTHORS

20. ***Effect of Temperature and Fertilization Method on Soil Respiration and Fate of Maize Carbon in Cropland Soils of Northeast China.***
Jiubo Pei, Patrick Inglett, J.K. Wang, and H. Li
21. ***A Comparison of Analytical Laboratory and Optical In Situ Methods for the Measurement of Nitrate in North Florida Water Bodies.***
Alexandra Rozin and Mark Clark
22. ***Incorporating Microbial Physiology into Soil Organic Carbon (SOC) Decomposition Models.***
Debjani Sihi, Stefan Gerber, Kanika Sharma Inglett, and Patrick Inglett
23. ***Soil Carbon Storage and Persistence across a Chronosequence of Management Intensive Grazing Dairies, an Emerging Land Use Practice in East Central Georgia.***
Brandon Snook, Marc Kramer and Aaron Thompson
24. ***SbIII and SbVuptake and Efflux by Pteris vittata and Pteris ensiformis.***
Rujira Tisarum, Lena Ma, and Bala Rathinasabapathi
25. ***Characterization of Soil Organic Nitrogen Pools in Subtropical Wetlands.***
Christine VanZomerem, Malak Tfaily, Todd Osborne, William Cooper, and K. Ramesh Reddy
26. ***Sugarcane (*saccharum officinarum*) Water Use in Florida's Sandy Soil with Subsurface Drip Irrigation.***
Jose Villalobos and Kelly Morgan
27. ***The Interaction between Phytophthora spp. and Candidatus Liberibacter spp. Damage to Citrus Fibrous Root.***
Jian Wu, Evan Johnson, Diane Bright, and Jim Graham
28. ***Impacts of Land Use Change on Soil Carbon and Microbial Activities in Subtropical Grassland Ecosystems.***
Sutie Xu, Julius Adewopo, Maria Silveira, and Kanika Sharma Inglett
29. ***Light Reflection Visualization to Determine Solute Diffusion into Clay.***
Minjune Yang, Michael D. Annable, and James Jawitz

JUDGED POSTER TITLES & AUTHORS

11. ***Isolation and Identification of Glyphosate Degrading Microorganisms in the Florida Everglades and Belize Peatlands.***
Arnav Gupta, Elise Morrison, and Andrew Ogram
12. ***Methanotrophic Activity in Subtropical Freshwater Wetlands: Influence of Nutrients and Methane Availability.***
Francisca Hinz, Kanika Sharma Inglett, Patrick Inglett, and K. Ramesh Reddy
13. ***Sedimentary $\delta^{15}\text{N}$ Signal Represents the Labile Rather than Bulk Nitrogen Pool.***
Yuanyuan Huang and Stefan Gerber
14. ***Florida Wildfires during the Holocene Climatic Optimum.***
Kalindhi Larios, Stefan Gerber, Mark Brenner, and Francis Putz
15. ***Imidacloprid Fate and Transport in Florida Flatwoods Soils during Control of the Asian Citrus Psyllid.***
Jorge A. Leiva, Peter Nkedi-Kizza, Kelly Morgan, Jawwad A. Qureshi, and Thomas A. Obreza
16. ***Improving Algal Harvesting Methods: Cultivation of Filamentous Algae Spheroids.***
Tommie Brent Lovato and Ann C. Wilkie
17. ***Effects of Different Land Uses on Base-Flow Nitrogen Concentrations on the Main Campus of the University of Florida.***
Jiexuan Luo, George Hochmuth, and Mark Clark
18. ***The Response of Microbial Communities to Shifting Nutrient Limitations in the Florida Everglades.***
Elise Morrison, Hee-Sung Bae, Zhenli He, J. Zhou, and Andrew Ogram
19. ***Managing Expectations: Creating a Community Based Stormwater Pond Nutrient Management Program.***
Charles Nealis, Mark Clark, and Paul Monaghan

PROGRAM

SESSION I – Oral Presentations

- 11:30 – 11:50 ***Sustainability of Agriculture in South Florida and the Everglades Restoration.***
Dr. Yuncong Li, Professor
Tropical Research and Education Center – Homestead, FL.
Department of Soil and Water Science
University of Florida
- 11:50 – 12:10 ***Thresholds in Soil Response to Climate Change and Land Use.***
Dr. Marc Kramer, Associate Professor
Department of Soil and Water Science
University of Florida
- 12:10 – 12:30 ***Urban Water Resource Sustainability.***
Dr. James Jawitz, Professor and Associate Chair
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: Pasicha Chaikaew, Wade Ross, & Jian Wu

- 1:30 – 1:45 ***Impacts of Management Intensification on Soil Carbon Stocks in Subtropical Grasslands.***
Julius Adewopo, Sutie Xu, Maria L. Silveira, Stefan Gerber, Lynn Sollenberger, and Timothy Martin
- 1:45 – 2:00 ***Response of Carbon and Metals to Experimentally-Controlled Water Tables.***
Chumki Banik, Willie Harris, Andrew Ogram, Vimala Nair, and Matthew Cohen

PROGRAM

Auditorium – J. Wayne Reitz Union

SESSION II – Oral Presentations –Continued

- 2:00 – 2:15** ***Socio-economic Valuation of Ecosystem Services in the Suwannee River Basin.***
Pasicha Chaikaew, Alan W. Hodges, and Sabine Grunwald
- 2:15 – 2:30** ***Land Use Effects on Nitrous Oxide Production and Consumption in Subtropical Peatlands.***
Jing Hu, Kanika S. Inglett, Alan L. Wright, and K. Ramesh Reddy
- 2:30 – 2:45** ***Employing a Nitrogen Budget and Crop Model SUBSTOR to Track Nitrogen Losses from Potato Production in Sandy Soil.***
Rishi Prasad and George Hochmuth

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. ***Allelopathic Effects of Dried and Composted Pistia stratiotes and Lyngbya wollei on Rice and Sorghum Growth.***
Odiney Alvarez, Timothy A. Lang, Jehangir H. Bhadha, Mihai C. Giurcanu, and Samira H. Daroub
2. ***Growth, Yield, and Nitrogen Accumulation by Sesame (Sesamum indicumL.) grown in North Central Florida.***
Annie Couch, George Hochmuth, Diane Rowland, and Jerry Bennett
3. ***Obtaining Model Input Parameters for Predicting Phosphorus Leaching using PLEASE Model.***
Biswanath Dari, Vimala D. Nair and Rao Mylavarapu
4. ***The Contributions of Nitrogen and Irrigation Management in Reducing the Risk of N Leaching in Florida Potato Production.***
Amanda Desormeaux and George Hochmuth
5. ***Nutrient Cycling in Upper St. Johns River Conservation Area Wetlands.***
Shannon L. Duffy, Angelique K. Bochnak, Kimberli J. Ponzio, and Todd Osborne
6. ***Feasibility of Using Nitric Oxide Donors for Removing Biofilms from Industrial Surfaces.***
Ian A. Durie, Charles Chen, Max Teplitski, and Massimiliano Marvasi
7. ***Evaluating Agricultural Irrigation Water Salinity and Implications of Water Conservation Practices on Future Water Management Decisions in the Tri-County Agricultural Area, Northeast Florida.***
Eunice Eshun and Mark Clark
8. ***Evaluation of Nitrogen Management Strategies for Impacts on Nitrate Leaching and Quality of St. Augustinegrass Turfgrass.***
Rajendra Gautam and George Hochmuth
9. ***The Role of Soft Rot Bacteria in the Proliferation of Salmonella in Tomatoes.***
Andree George, Jason Noel, and Max Teplitski
10. ***Children’s Exposure to As from CCA Wood Staircases.***
Julia “Ky” Gress, Lena Ma, and Jay Lessl