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15<sup>th</sup> Annual Soil and Water Science Research Forum



Environmental Hydrology Laboratory [James Jawtiz]  
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Wetland Biogeochemistry Laboratory



### PLAN TO ATTEND

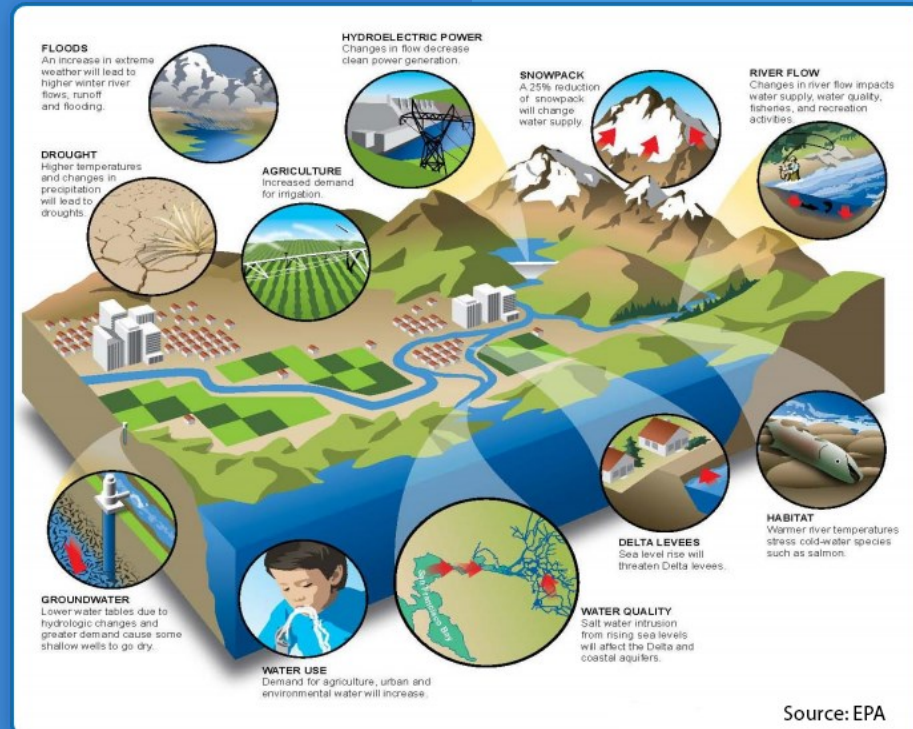
16<sup>th</sup> Annual Soil & Water Science Research Forum  
Friday, September 18, 2015  
J. W. Reitz Union  
University of Florida - IFAS  
Gainesville, Florida

#### 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 15<sup>th</sup> Annual Research Forum



September 18, 2014

J. Wayne Reitz Union - Grand Ballroom

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



## NON-JUDGED POSTER TITLES & AUTHORS

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30. ***Biochar Application Effects on Soil Phosphorus Sorption and Release.***  
Biswanath Dari, Vimala Nair, Rao Mylavarapu, and Willie Harris
31. ***An Energetic Perspective on Sweet Potato: Food versus Fuel.***  
Wendy Mussoline and Ann Wilkie
32. ***Drivers of Methanogenesis Pathways in Subtropical Wetlands: Florida Everglades as a Case Study.***  
Lucy Ngatia, Francisca Hinz, Anna Normand, Kanika Sharma Inglett, Patrick Inglett, Jeffrey Chanton, and K. Ramesh Reddy
33. ***Chromate and Phosphate Inhibited Each Other's Uptake and Translocation in Arsenic Hyperaccumulator *Pteris vittata* L.***  
Letuzia M. de Oliveira, Jason Lessl, Julia Gress, Rujira Tisarum, Luiz Guilherme, and Lena Ma
34. ***Comparison of Soil Organic Nitrogen Composition and Mineralization by Vegetation Type in Subtropical Wetlands.***  
Christine VanZomeran, Rupesh Bhomia, Malak Tfaily, Kanika Sharma Inglett, William T. Copper, and K. Ramesh Reddy
35. ***Toxicity of an Imidazolium-Based Ionic Liquid on Wheat.***  
Jun Wang, Lena Ma, Lusheng Zhu, and Tong Liu
36. ***Fate of Trace Organic Compounds Drip-Dispersal Septic System Drainfield.***  
Yun-Ya Yang, Gurpal Toor, and Chris Wilson
37. ***Root Colonization of *Exophiala pisciphila* Enhances Tolerance of Maize (*Zea mays* L.) to Cadmium.***  
Fangdong Zhan, Youngmei He, and Gurpal Toor

## INVITED SPEAKER

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### Dr. Peter M. Groffman

Senior Scientist & Microbial Ecologist  
Cary Institute of Ecosystem Studies



**Peter M. Groffman** is a Senior Scientist at the Cary Institute of Ecosystem Studies in Millbrook, NY, with research interests in ecosystem, soil, landscape and microbial ecology, with a focus on carbon and nitrogen dynamics. He received his PhD in 1984 in Ecology from the University of Georgia. Groffman is deputy director of the National Science Foundation funded urban long-term ecological research (LTER) project in Baltimore that includes watershed, soil, plant, historical, socio-demographic and education and outreach components. Other recent research efforts include studies of winter climate change effects on nitrogen dynamics in forests, effects of atmospheric nitrogen deposition on nitrogen gas fluxes, nitrate dynamics in riparian buffer zones, effects of a whole watershed calcium addition on soil nitrogen and carbon cycling, and the effects of exotic earthworm invasion on soil nitrogen and carbon cycling. Groffman was/is a member of the U.S. National Committee for Soil Science, the National Science Foundation Long-Term Ecological Research network Executive Board, the NOAA Gulf of Mexico Hypoxia Nutrient Reduction Workgroup, the working Group on Aquatic Terrestrial Biogeochemistry at the National Center for Ecological Analysis and Synthesis (NCEAS), the Working Group on Trace Gas Fluxes at NCEAS, and the Expert Group on N<sub>2</sub>O and CO<sub>2</sub> Emissions from Agricultural Soils, IPCC/Organization for Economic Cooperation and Development (OECD) Programme on National Greenhouse Gas Inventories. He was a lead author for the Second (Wetlands) and Third (North America) Assessment Reports of the Intergovernmental Program on Climate Change (IPCC) and a Convening Lead Author for the 2013 U.S. National Climate Assessment Chapter on Ecosystems, Biodiversity and Ecosystem Services. He currently serves on the editorial board of *Ecosystems* and was chair of the Biogeosciences Section of the Ecological Society of America (ESA) (2009 – 2011), of the Soil Ecology Section of the ESA (1997 – 1999), and of the Wetland Soils Section of the Soil Science Society of America (2002 – 2003).

In the Baltimore Ecosystem Study, one of two urban long-term ecological research (LTER) projects funded by the U.S. National Science Foundation, we are using “the watershed approach” to integrate ecological, physical and social sciences. Watersheds are a natural (and well-used) physical unit for bio-geo-chemical research and can also function as a focus for human-environment interactions, i.e. bio-geo-socio-chemistry. Suburban watershed input/output budgets for nitrogen (N) have shown surprisingly high retention which has led to detailed analysis of sources and sinks in these watersheds. Creating positive feedbacks between ecological restoration and human preferences can be key for achieving specific biogeosociochemical goals in urban and suburban watersheds.

## PROGRAM

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Grand Ballroom – J. Wayne Reitz Union

- 8:30 AM** Registration
- 9:20 - 9:30** **Dr. K. Ramesh Reddy**  
**Opening Remarks**  
Soil and Water Science Department Chairman
- 9:30 -10:30** **The Bio-Geo-Socio-Chemistry of Nitrogen in Urban Watersheds**  
Dr. Peter Groffman  
Senior Scientist & Microbial Ecologist  
Cary Institute of Ecosystem Studies
- 10:30 -10:50** **BREAK**

## SESSION I – Oral Presentations

Grand Ballroom – J. Wayne Reitz Union

- 10:50 – 11:50** **Invited Faculty Session**
- Session Chair: Dr. James Jawitz**
- 10:50 – 11:10** **Soil and Water Management of a Bacterial Disease Imperiling U.S. Citrus Production.**  
Dr. Jim Graham, Professor  
Citrus Research and Education Center – Lake Alfred, FL.  
Soil and Water Science Department  
University of Florida
- 11:10 – 11:30** **Biogeochemistry of Florida Springs.**  
Dr. Patrick Inglett, Associate Professor  
Soil and Water Science Department  
University of Florida
- 11:30 – 11:50** **Biogeochemistry of Contaminants: From Molecular Biology to Bioavailability to Plants and Humans.**  
Dr. Lena Ma, Professor  
Soil and Water Science Department  
University of Florida

## JUDGED POSTER TITLES & AUTHORS

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- 21. *Effects of Different Land Uses on Base-Flow Nitrogen Concentrations on the Main Campus of University of Florida.***  
Jiexuan Luo, Mark Clark, and George Hochmuth
- 22. *Shifts in Microbial Phosphorus Requirements within a Sub Tropical Peatland.***  
Elise Morrison, Andrew Ogram, Susan Newman, and K. Ramesh Reddy
- 23. *Soil Organic Matter Response to Climate Warming in a Subarctic Peatland.***  
Anna Normand, J. Hans Cornelissen, Mark Clark, and K. Ramesh Reddy
- 24. *Determining the Effect of Salinity on Nitrogen and Phosphorus Preference in Harmful Algal Bloom Species from the Northern Indian River Lagoon.***  
Joshua Papacek, Edward Philips, Margaret Lasi, and Patrick Inglett
- 25. *Field Study of the Use of Aluminum Water Treatment Residuals in a Permeable Reactive Barrier System to Reduce Soluble Phosphorus Movement in Groundwater.***  
William Schmahl and James Jawitz
- 26. *Removal of Arsenic by Magnetic Biochar Prepared from Pine Wood and Natural Hematite.***  
Shengsen Wang, Bin Gao, Andrew Zimmermann, Yuncong Li, Lena Ma, Willie Harris, and Kati Migliaccio
- 27. *Long-term (1890-present) Actual Evapotranspiration Estimates for Silver Springs and Rainbow Springs Basins using the Budyko Framework.***  
Antonio Yaquian and James Jawitz
- 28. *Irrigation Water Salinity Impacts in the Tri-County Agricultural Area, Northeast Florida.***  
Eunice Yarney and Mark Clark
- 29. *Nitrogen Starvation of Algae – A Stress for Lipids.***  
Brett Nelson and Ann Wilkie

## JUDGED POSTER TITLES & AUTHORS

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11. ***Greenhouse Gas Fluxes from Peatlands Influenced by Flooding and Draining Cycles.***  
Jing Hu, Christine VanZomeren, Kanika Sharma Inglett, Alan Wright, Mark Clark, and K. Ramesh Reddy
12. ***Nitrogen Speciation and Concentration Dynamics from Agricultural Fields to Indian River Lagoon.***  
Liguang Li, Zhigang Li, Suli Li, Zhenli He, Yongshan Wan, Xiaoe Yang, and Peter Stoffella
13. ***Rhizobacterial Community Structure in Two Chilean Volcanic Soils Revealed by Pyrosequencing.***  
Lorena Lagos Pailla, Oscar Navarrete, Fumito Maruyama, David Crowley, Maria de la Luz Mora, and Milko Jorquera
14. ***Mass Balance of Phosphorus in the Drip-Dispersion Septic Drainfield.***  
Sara Mechtensimer and Gurpal Toor
15. ***Florida Wildfires during the Holocene Climatic Optimum (9,000-5,000 BP).***  
Kalindhi Larios, Stefan Gerber, and Mark Brenner
16. ***Soil Water and Nutrient Use in Low-input Rhizoma Peanut-Bahiagrass Mixes.***  
Jennifer Shirley, Cheryl Mackowiak, Ann Blount, Diane Rowland, and Craig Stanley
17. ***Using Chitosan and Graphene Oxide to Produce Controlled Release Fertilizers.***  
Tiantian Li, Bin Gao, and Yuncong Li
18. ***Effects of Flood Level and Midseason Drawdown On Water Quality and Rice Yield.***  
Mohsen Tootoonchi, Timothy Lang, Jehangir Bhadha, Ronald Cherry, Dennis Odero, and Samira Daroub
19. ***Single Point Simulation Setup for Everglades using Community Land Model.***  
Yan Liao and Stefan Gerber
20. ***The Interaction between *Phytophthora* spp. and *Candidatus Liberibacter* spp. Damage to Citrus Fibrous Roots.***  
Jian Wu, Evan Johnson, Diane Bright, Kayla Gerberich, and Jim Graham

## PROGRAM

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11:50 – 1:00 LUNCH

### SESSION II – Graduate Student Oral Presentations

Grand Ballroom – J. Wayne Reitz Union

1:00 – 2:15 Graduate Student Oral Presentations

Session Chairs: Anna Normand and Debjani Sihi

1:00 – 1:15 ***Biochar Application Effects on Soil Phosphorus Sorption and Release.***

Biswanath Dari, Vimala Nair, Rao Mylavarapu, and Willie Harris

1:15 – 1:30 ***Residential Exposure to Arsenic & Hexavalent Chromium from CCA Wood.***

Ky Gress and Lena Ma

1:30 – 1:45 ***Molecular-level Characterization of Dissolved Organic Nitrogen in Urban Waters.***

Mary Lusk, Gurpal Toor, and Patrick Inglett

1:45 – 2:00 ***Temperature Sensitivity of Anaerobic Carbon Processing under Two Contrasting Rates of Warming.***

Debjani Sihi, Patrick Inglett, Stefan Gerber, and Kanika Sharma Inglett

2:00 – 2:15 ***Back-diffusion from Thin Low-Permeability Layers.***

Minjune Yang, Michael D. Annable, and James W. Jawitz

## PROGRAM

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### SESSION III – Graduate Student Oral Presentations

Grand Ballroom – J. Wayne Reitz Union

#### 2:15 – 2:45 Graduate Student Lighting Talk Competition

***The Influence of Eutrophication Status on the Kinetics of Methane Oxidation in Soils from a Subtropical Freshwater Wetland.***

Francisca Hinz

***Greenhouse Gas Fluxes from Peatlands Influenced by Flooding and Draining Cycles.***

Jing Hu

***Molecular Ecology of Microbial Phosphorus (P) Cycling in Oligotrophic Peatlands.***

Elise Morrison

***Carbon Chemistry of Peatland SOM across Climate Zones.***

Anna Normand

***Field Study of the Use of Aluminum Water Treatment Residuals in a Permeable Reactive Barrier System to Reduce Soluble Phosphorus Movement in Groundwater.***

Bill Schmahl

***Understanding Spatial and Temporal Changes in Central Florida Waterbodies and Their Causes.***

Antonio Yaquian

### SESSION IV – Poster Viewing and Reception

Grand Ballroom, J. Wayne Reitz Union

#### 3:00 – 4:00 Poster Session I

Judging of Even Numbered Posters at This Time

#### 4:00 – 5:00 Poster Session II

Judging of Odd Numbered Posters at This Time

## JUDGED POSTER TITLES & AUTHORS

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1. ***Characterization of Coal Combustion Residuals in Florida.***  
Evandro Barbosa da Silva, Xiaoling Dong, Julia Gress, and Lena Ma
2. ***Use of Biochars Produced from Local Residue Feedstocks to Grow Sugarcane on Sandy Soils in South Florida.***  
Odiney Alvarez, Samira Daroub, Jehangir Bhadha, Bin Gao, Barry Glaz, and Timothy Lang
3. ***Fitness of Tetracycline-Resistant Escherichia coli O:157 H7 Exposed to Sub-Lethal Doses of Tetracycline in Soil.***  
Alexandra DeBose-Scarlett, Massimiliano Marvasi, and Max Teplitski
4. ***Cadmium (Cd) Contamination of Cacao (Theobroma cacao, L.) Beans in Southern Ecuador: Its Nexus with Soil-Cd.***  
Eduardo Chavez, Zhenli He, Virupax Baligar, B. Moyano, and Peter Stoffella
5. ***Genes Involved with Nitric Oxide Biofilm Dispersal.***  
Ian Durie, Massimiliano Marvasi, Keith Jenkins, and Max Teplitski
6. ***Nitrogen Transport from Drip-Dispersal Septic System Drainfield to Shallow Groundwater.***  
Mriganka De and Gurpal Toor
7. ***Are We Getting Closer to or Further from Water? An Analysis of Human Distance to Water in the USA, 1790-2010.***  
Yu Fang and James Jawitz
8. ***Nutrient Recovery from Small Wastewater Treatment Plants.***  
John Hallas, Cheryl Mackowiak, and Ann Wilkie
9. ***The Influence of Eutrophication Status on the Kinetics of Methane Oxidation in Soils from a Subtropical Freshwater Wetland.***  
Francisca Hinz, Lucy Ngatia, Patrick Inglett, K. Ramesh Reddy, and Kanika Sharma Inglett
10. ***Developing Sustainable Soil Management Practices for Shallow Organic Soils of the Everglades Agricultural Area.***  
Stephen Jennewein, Samira Daroub, Jehangir Bhadha, Maninder Singh, Mabry McCray, and Timothy Lang