Thanks to our state-wide Soil and Water Science Faculty Programs for sponsoring 12th Annual Research Forum

Citrus REC Soil Microbiology Program, Lake Alfred (James Graham)
Environmental Hydrology Laboratory (James Jawitz)
Everglades BMP Program, Belle Glade (Samira Daroub)
Soil Fertility and Plant Nutrition Program (George Hochmuth)
Wetland Biogeochemistry Laboratory

PLAN TO ATTEND
13th Annual Soil & Water Science Research Forum
September 7, 2012
J. W. Reitz Union
University of Florida - IFAS
Gainesville, Florida

Soil, Water, and Climate Change

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

Welcome to the 12th 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 Soil, Water, and Climate Change, with invited presentations from Dr. Teresa Balser, Dr. Jim Jones, and Dr. Chris Field. Their 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 160 graduate students (including 68 Ph. D and 92 MS students, 54 undergraduates (24 SWS and 30 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 6 oral papers and 44 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 Rupesh Bhomia, Susan Curry, and Michael Sisk for their excellent work in making arrangements for the Forum. Special thanks to Drs. Jack and Kathy Ewel for hosting Dr. Chris Field. 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,

[Signature]

SOIL AND WATER SCIENCE LOCATIONS

<table>
<thead>
<tr>
<th>Location</th>
<th>Contact Information</th>
</tr>
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<tbody>
<tr>
<td>Soil &amp; Water Science Department</td>
<td>106 Newell Hall, P.O. Box 110510, Gainesville, FL 32611-0510, (352) 392.1803, <a href="http://soils.ifas.ufl.edu/">http://soils.ifas.ufl.edu/</a></td>
</tr>
<tr>
<td>Citrus Research &amp; Education Center</td>
<td>2169 McCarty Hall, P.O. Box 110290, Gainesville, FL 32611-0290, (352) 392.1951</td>
</tr>
<tr>
<td>Everglades Research &amp; Education Center</td>
<td>700 Experiment Station Road, Lake Alfred, FL 33850-2299, (863) 956.1151, <a href="http://www.crec.ifas.ufl.edu/">http://www.crec.ifas.ufl.edu/</a></td>
</tr>
<tr>
<td>Ft. Lauderdale Research &amp; Education Center</td>
<td>3200 E. Palm Beach Road, Belle Glade, FL 33430-8003, (561) 993.1500, <a href="http://erec.ifas.ufl.edu/">http://erec.ifas.ufl.edu/</a></td>
</tr>
<tr>
<td>Gulf Coast Research &amp; Education Center</td>
<td>3205 College Avenue, Ft. Lauderdale, FL 33314-7799, (954) 577-6300, <a href="http://flrec.ifas.ufl.edu/">http://flrec.ifas.ufl.edu/</a></td>
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<tr>
<td>Indian River Research &amp; Education Center</td>
<td>2199 South Rock Road, Fort Pierce, FL 34945-3138, (772) 468.3922, <a href="http://irrec.ifas.ufl.edu/">http://irrec.ifas.ufl.edu/</a></td>
</tr>
<tr>
<td>North Florida Research &amp; Education Center</td>
<td>155 Research Road, Quincy, FL 32351-5677, (850) 875.7100, <a href="http://nfrec.ifas.ufl.edu/">http://nfrec.ifas.ufl.edu/</a></td>
</tr>
<tr>
<td>Range Cattle Research &amp; Education Center</td>
<td>3401 Experiment Station Road, Ona, FL 33865-9706, (863) 735.1314, <a href="http://rcrec-ona.ifas.ufl.edu/">http://rcrec-ona.ifas.ufl.edu/</a></td>
</tr>
<tr>
<td>Southwest Florida Research &amp; Education Center</td>
<td>2686 State Road 29 North, Immokalee, FL 34142, (239) 658.3400, <a href="http://www.imok.ufl.edu/">http://www.imok.ufl.edu/</a></td>
</tr>
<tr>
<td>Tropical Research &amp; Education Center</td>
<td>18905 SW 280th Street, Homestead, FL 33031-3314, (305) 246.7000, <a href="http://trec.ifas.ufl.edu/">http://trec.ifas.ufl.edu/</a></td>
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INVITED SPEAKER

DR. TERESA BALSER

Dean
College of Agricultural and Life Sciences
University of Florida

Dr. Teresa Balser is the Dean of College of Agricultural and Life Sciences and a Professor of Soil Microbial Ecology at the University of Florida. Dr. Balser earned her Ph.D. degree from University of California at Berkeley, followed by post doctoral research at Stanford University. In 2001, Dr. Balser joined University of Wisconsin as an Assistant Professor of Soil Microbiology in Soil Science Department. In 2007 she was promoted to Associate Professor and appointed as the Director for the Institute for Biology Education at University of Wisconsin. As Director, she was responsible to oversee administration and advising of three non-departmental majors: Biology, Molecular Biology, and Biological Aspects of Conservation; as well as provision of general support and advising for the ~6000 students on campus. Dr. Balser maintained an active collaborative, interdisciplinary research program in environmental science with funding obtained from the National Science Foundation (including 2006 NSF Early Career Award), USDA, US DOE, the University of Wisconsin Alumni Research Foundation, and the Howard Hughes Medical Institute.

Dr. Balser has a strong teaching/education record with incorporation of active learning, innovative curriculum design, and teaching-as-research to advance educational goals. Dr. Balser received numerous awards for her teaching accomplishments including: UW System Madison Teaching Fellow; National Biology Scholar; USDA National Excellence in College and University Teaching Award recipient; and 2010 U.S. Professor of the Year, Carnegie Foundation for the Advancement of Teaching Outstanding Doctoral and Research Universities. She was the Co-founder of the Society for Advancement of Biology Education Research (SABER). She published 50+ peer reviewed journal articles, several book chapters, and currently working on two books. Dr. Balser gave several invited presentations nationally and internationally. Topics included soil and climate change, carbon sequestration, and ecosystem ecology.
INVITED SPEAKER

DR. JAMES JONES

Director and Distinguished Professor
Florida Climate Institute
University of Florida

Dr. Jones is Director of the Florida Climate Institute, a joint institute of the University of Florida and Florida State University for interdisciplinary research and education aimed at providing information and technologies to guide societal responses to climate change. Dr Jones is also a developer and co-leader of the Southeast Climate Consortium (SECC), a NOAA Regional Integrated Science Assessment (RISA) Center of six universities in three SE states. This Center conducts research on climate change/variability for use in adaptive management of agriculture and natural resources. Also a Distinguished Professor at the University of Florida, he has conducted research and taught graduate classes for the last 34 years. His fields of study are mathematical modeling of plant growth and environmental interactions (with soil and atmosphere); analysis of agricultural systems for research and decision support applications; climate effects on cropping systems, including climate risk management and decision support for agriculture and water resources; the integration of crop models with other tools for application at field and broader spatial scales; and providing leadership in communities of agricultural systems modeling. He has conducted research for over 30 years on impacts of climate change on cropping systems, and for over 10 years on climate forecasts for agriculture and water resources risk management in the Southeast USA. During his career, he has been a leader in modeling cropping systems, including the widely used DSSAT cropping system model, and applying those models for improving agricultural productivity and resource use efficiency in a number of countries worldwide. He has also been an organizer and teacher in many courses worldwide on concepts and applications of agricultural systems models for assessment of climate and management responses during the last 25 years.

POSTER TITLES & AUTHORS

40. Colloid-Facilitated Hg Transport in Hg-Contaminated Soils: Effect of Ionic Strength, Humic Acid and Flow Interruption. Yingjia Zhu, Lena Q Ma, Willie Harris, J.C. Bonzongo, and Fengxiang X. Han


42. Effectiveness of Best Management Practices in Pb Stabilization and Weathering in Shooting Ranges.* Rui Liu and Lena Ma

43. Enhancing Model-Data Symbiosis to Improve Global Carbon-Sink Predictions.* Stuart Muller and Stefan Gerber

44. Effects of Chromate and Sulfate on Arsenic Uptake and Translocation by Arsenic Hyperaccumulator* Pteris vittata L. Letuzia M. Oliveira, Lena Q Ma, Luiz R. G.G.

* Non-judged entries

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.

31. Soil Morphological Indicators of Seasonal High Saturation along a Udult-Aquod Catena. Alexandra G. Rozin, Larry R. Ellis, and G. Wade Hurt


33. The Role of Roots and Litter in Maintaining Forest Soil Carbon. Aja Stoppe, Nicholas Comerford, Eric Jokela

34. Role of Arsenic-Resistant Bacteria in Enhancing Tomato Growth. Rujira Tisarum, Lena Ma, Piyasa Ghosh, and Bala Rathinasabapathi

35. Investigation of Alternative Sources of Inocula for Anaerobic Digestion. Reginald Toussaint and Ann C. Wilkie


37. Screening of Plant Growth Regulators (PGRs) to Confer Plant Heat and Salt Stress. Shengsen Wang and Arnold W. Schumann

38. Characterization of Diverse Naphthalene Degradative Pathways among Soil Actinobacteria. C. Weidow, A. Chauhan, and A. Ogram


KEYNOTE SPEAKER

DR. CHRISTOPHER B. FIELD

Director
Department of Global Ecology
Carnegie Institution of Washington
Stanford University

Chris Field is the founding director of the Carnegie Institution's Department of Global Ecology, Professor of Biology and Environmental Earth System Science at Stanford University, and Faculty Director of Stanford's Jasper Ridge Biological Preserve. Field's research emphasizes impacts of climate change, from the molecular to the global scale. He has, for nearly two decades, led major experiments on responses of California grassland to multi-factor global change. Field has served on many national and international committees related to global ecology and climate change. He was a coordinating lead author for the fourth assessment report of the Intergovernmental Panel on Climate Change and a member of the IPCC delegation that received the Nobel Peace Prize in 2007. In September, 2008, he was elected co-chair of working group 2 of the IPCC, and will lead the next assessment on climate change impacts, adaptation, and vulnerability. He is a fellow of the American Association for the Advancement of Science and an elected member of the American Academy of Arts and Sciences. Field received his PhD from Stanford in 1981 and has been at the Carnegie Institution for Science since 1984.
**PROGRAM**

Room 282 – J. Wayne Reitz Union

8:00 AM  Registration

8:30 - 8:40  Dr. K. Ramesh Reddy  
Opening Remarks  
Graduate Research Professor and Chair  
Soil and Water Science Department

8:40 - 8:50  Dr. Teresa Balser  
Welcome Message  
Dean - College of Agricultural and Life Sciences

8:50 - 9:10  Dr. James Jones  
Advancing Agricultural Sciences for Climate Change Assessments  
Director and Distinguished Professor  
Florida Climate Institute  
University of Florida

9:10 - 10:00  Dr. Christopher Field  
Climate Change in a Skeptical Era  
Keynote Speaker  
Director, Department of Global Ecology  
Carnegie Institution of Washington  
Stanford University

10:00 - 10:30  BREAK

**SESSION I – Oral Presentations**

Room 282 – J. Wayne Reitz Union

10:30 – 12:00  Invited Faculty Session - Soil, Water & Climate Change  
Session Chair: Dr. James Jawitz

10:30 – 10:50  Dr. H. Carl Fitz: Modeling Coastal Everglades Ecology under Current and Future Sea Level Forcings  
Fort Lauderdale Research and Education Center  
Department of Soil and Water Science  
University of Florida

**POSTER TITLES & AUTHORS**


21. Using Polynomial Modeled LiDAR Elevation Data to Identify Wetland Boundaries. William D. Mahler, L. Rex Ellis, and Travis C. Richardson

22. Effect of Topsoil Created from Spodic Materials on Turfgrass. Drew McLean, Amy Shober, and Rex Ellis

23. Effect of Fire Residues (Ash and Char) on Microbial Activity, Respiration and Methanogenesis in Three Subtropical Wetland Soils. CA Medvedeff, B. Hogue, PW Inglett

24. Effects of Supporting Electrolytes and Fertilizer Mixture on Sorption Behavior of Phosphorus in Immokalee Soil Used for Sugarcane Production. A. Muwamba, P. Nkedi-Kizza, K.T. Morgan and W. Harris


27. Subaqueous Podzolic Carbon Resulting From Sea-Level Rise. Ashley N. Phillips, L. Rex Ellis and Todd Osborne


29. Evaluation of Nutrient Leaching From Simulated Residential Mixed Landscapes. Zhixuan Qin, Amy Shober and Vimala Nair
11. Fluorescent Arsenic-Resistant Bacteria Enhanced Solubilization of Arsenic and Increased Growth of Arsenic Hyperaccumulator Pteris vittata L. Piyasa Ghosh, Bala Rathinasabapathi, and Lena Q. Ma


15. Nitrogen Mass Budget of a Silage Corn Field at the University of Florida’s Dairy Research Unit in Hague, FL. Rebecca Hellmuth and George Hochmuth

16. Effects of Laboratory Combustion on Impacted and Native Plant Biomass from a Subtropical Calcareous Wetland. Benjamin A. Hogue and Patrick W. Inglett


18. Soil Phosphorus Forms in Tree Island Ecosystems of the Central and Southern Everglades. Daniel L. Irick, Yuncong Li, Patrick W. Inglett, Binhe Gu, Michael Ross, Willie Harris, and Alan Wright


POSTER TITLES & AUTHORS

10:50 – 11:10 Dr. Stefan Gerber: Probing the Land Uptake of Anthropogenic CO2 with Global Models
Department of Soil and Water Science
University of Florida

Department of Soil and Water Science
University of Florida

11:30 – 11:50 Dr. Maria Silveira: Carbon Sequestration in Grassland Ecosystems
Range Cattle Research and Education Center
Department of Soil and Water Science
University of Florida

12:00 – 1:10 LUNCH

SESSION II – Oral Presentations
Room 282 – J. Wayne Reitz Union

Session Chair: Rupesh Bhomia

1:15 – 1:30 Post-Doctoral Associate Presentation
Quantitative Approach for Assessment of Phosphorus Loss Risk from Aeluquod and Paleudult Soil Profiles
Debolina Chakraborty and Vimala Nair

1:30 – 1:45 Student Presentation
Impact of Simulated Storm Surge on Organic Carbon Loss in Coastal Wetland Soils
Lisa G. Chambers and K. Ramesh Reddy
Room 282 – J. Wayne Reitz Union

1:45 – 2:00  Student Presentation
Optimizing Cultural Practices for Saving Water and Fertilizer for Rice-Maize Cropping System in Semi Arid Tropics

2:00 – 2:15 Student Presentation
Dynamic Interactions between Commensal Bacteria and Opportunistic Pathogens of the Coral Holobiont
Cory J. Krediet and Max Teplitski

2:15 – 2:30 Student Presentation
Effects of Phosphate Rock on Long-Term Arsenic Removal by Pteris vittata
Jason T. Lessl and Lena Q. Ma

2:30 – 2:45 Student Presentation
Transferability of Soil Carbon Models across Regions and Scales within Florida
Xiong X., S. Grunwald, D.B. Myers, W.G. Harris, A. Stoppe, N.B. Comerford

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

POSTER TITLES & AUTHORS

1. Drainable Porosity of Unconfined Aquifers during Evapotranspiration from the Shallow Water Table. Subodh Acharya; R.S. Mylavarapu; J.W. Jawitz; J.W. Jones; L. Zotarelli; K.T. Morgan; W.G. Harris

2. Performance of Global and Local Models in Predicting Soil Carbon at Different Scales in a Subtropical Watershed. Julius B. Adewopo, Sabine Grunwald, Pasicha Chaikaew, Baijing Cao, Xiong Xiong


5. Effects of Cu and Ca on Ciprofloxacin Transport in Saturated Porous Media. Chen Hao, Bin Gao, and Lena Q Ma

6. 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

7. Assessment of Nutrient Reduction Capabilities of an Algal Based Technology for Pollution Control. Kimberleigh Dinkins Patrick Inglett, PhD, Mark Clark, PhD, Mark Zivonovich, Allen Stewart, Robinson Bazurto

8. Effectiveness and Mechanisms of Mercury Sorption by Biochars from Invasive Brazilian Pepper at Different Temperatures. Xiaoling Dong, Lena Q Ma*, Yingjia Zhu, Yuncong Li, and Binhe Gu


10. Effects of Sources, Rate and Timing of Nitrogenous Fertilizers on Nitrate Leaching and Aesthetic Quality of St. Augustinegrass. Rajendra Gautam, George J. Hochmuth and Laurie E. Trenholm