

**UNIVERSITY OF FLORIDA WATER INSTITUTE
2007 PROGRAM INITIATION FUND
REPORT**

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Introduction

The 2007 Water Institute Program Initiation Fund (PIF) provided funding for six new faculty-initiated research, extension, and outreach proposals that are multi-/inter-disciplinary and that have the expectation of ,and a reasonable plan for, becoming externally-funded programs at the University of Florida. Investigators were called to submit proposals for innovative projects and new collaborative partnerships that supported Water Institute Thrust Areas, and had strong potential for garnering future funding from external sources. Titles, investigators and funding levels for the projects are summarized below. Guidelines and review criteria for the 2007 PIF program are included in Appendix A.

<p>1. A Framework for Assessing The Hydrologic Footprint of Large-scale Biofuel Production</p> <p>Investigators: Matthew Cohen (PI), Jason Evans</p>	\$20,000
<p>2. Coupling of Advanced Oxidation and Adsorption Processes onto Silica-Titania Composites for Low Level Capture of Metals from Water Effluents</p> <p>Investigators: Jean-Claude Bonzongo, Lena Ma, David Mazyck (PI)</p>	\$40,000
<p>3. Environmental Consequences of Nutrients and Organic Matter Injection into Carbonate Aquifers; Implications for Water Quality in Aquifer Storage and Recovery (ASR) Technology</p> <p>Investigators: Jean-Claude Bonzongo, Willie Harris, Andrew Zimmerman (PI)</p>	\$40,000
<p>4. Protecting Florida's Water Quality: Identifying and Overcoming Barriers to Implementation of Low Impact Development (LID) Practices</p> <p>Investigators: Thomas Ankersen, Mark Clark (PI), Thomas Ruppert</p>	\$25,000
<p>5. Sediment Transport through Tidal Inlets During Extreme Forcing: Erosion or Accretion?</p> <p>Investigators: Tian Jian Hsu, Alex Sheremet, Arnoldo Valle-Levinson (PI), John Yeager</p>	\$40,000
<p>6. Water, Gender And Equity In India</p> <p>Investigators: Anita Anantharam, Vasudha Narayanan, Whitney Sanford (PI)</p>	\$35,000
TOTAL	\$200,000

PIF Grants

1. The Water Resource Implications of Large-Scale Bioethanol Production

Principal Investigator: Matthew Cohen – School of Forest Resources and Conservation

Other Investigator: Jason E. Evans - School of Forest Resources and Conservation

Objectives and Rationale: The most important outcomes of this work are to provide a portable and generic analytical framework of data requirements, indicators and metrics that can be used to examine a full array of biofuel options and to gain extramural funding to continue studies in life cycle assessment (LCA) and environmental accounting (EA).

Executive Summary:

In Florida, where we focus our attention, annual liquid fuel demand is nearly 30 billion liters, roughly 1650 liters/capita/yr. Infrastructure constraints and dependence on liquid fuels make energy replacement challenges particularly pressing for the transportation sector. Bioethanol is one alternative that has been widely proposed.

A common metric for evaluating energy sources is energy return on energy invested (EROEI), or the ratio output-to-input. Our analysis of four feedstocks suggests stark and important differences in net energy. Corn ethanol production in Florida would, under optimal conditions, have an EROEI of 1.26:1. By contrast, EROEI for ethanol based on sugarcane grown in the muck soils of the Everglades Agricultural Area (EAA) is 2.51:1. Sweet sorghum – a crop grown in similar climatic and soil conditions to corn, but converted into ethanol using a less intensive process – yields an EROEI of 1.94:1. Finally, pine to ethanol has an EROEI of 2.97:1.

Water use to produce bioethanol occurs during both feedstock production and industrial processing. Water used during fermentation and distillation ultimately amounts to a relatively small amount. Water use during feedstock production is more significant. The most water-use efficient feedstock on a net energy basis is sugarcane, which requires 10.1 m³/GJ_{net}. Sweet sorghum (30.6 m³/GJ) and wood (51.6 m³/GJ) are next, while corn is most water intensive (188 m³/GJ). Offsetting 20% of current gasoline use in Florida, approximately the magnitude mandated by the Energy Independence and Security Act (EISA), would increase total water use by 100% with wood, 60% with sorghum and 360% with corn.

Land required for feedstock production, and resulting trade-offs that will ensue between competing priorities, have been insufficiently discussed. Our comparison among feedstocks does not consider stark differences in habitat value between corn or sweet sorghum fields (low) and production pine forests (high). On a gross basis, sugarcane and sweet sorghum require approximately 1,300 m² of land to produce 1000 liters of ethanol. For corn, it is 2,000 m² for 1000 liters and for pine waste, it is 3,500 m² for 1000 liters.

Analysis of ethanol production in the southeastern US, the presumptive epicenter of biofuel production because of long growing seasons and abundant rainfall, support several important conclusions. First, all four feedstocks (corn, sugarcane, sweet sorghum and wood) yield net energy over their life cycle. Second, even modest offsets of Florida's current liquid fuel consumption (e.g.,

EISA mandates of ~8.2 billion liters of ethanol annually, roughly 20% of current liquid fuel energy demand) would require irrigation volumes 5 times current water use (for corn) or 50% of current water use (for sorghum). While pine plantations in Florida aren't ordinarily irrigated, increased ET would be larger than total current water use to meet 20% of liquid fuel demand, with consequences for riverine base flows and regional aquifer levels. Potential nitrogen (N) use is equally problematic; total N use in Florida would double (to 550,000 kg) with ethanol replacing 60%, 37%, 18% and 2% of current fuel use given wood, sugarcane, sweet sorghum and corn, respectively as feedstocks.

While it is clear that fuel alternatives are needed most urgently for the transportation sector, it is likely that bioethanol production at a scale that can meaningfully offset current liquid fuel demand would engender environmental costs that are likely to be considered unacceptable. As such, we contend that any serious discussion of policies to incentivize ethanol production be coincident with equally aggressive measures to enhance efficiency and, in the long term, dramatically reduce demand.

Full report

Contact - Matt Cohen: mjc@ufl.edu

Deliverables:

Proposals: Developing proposal with USDA/ARS in Tifton, GA to use the life cycle analyses completed with this study as criteria in a regional (SE USA) land use change analysis, and then integrate with a hydrologic model to see what the predicted effects are.

Presentations:

- Water Institute Symposium (Gainesville FL in March 2008)
- Southern Leadership Tour (Fernandina Beach, FL in Nov. 2007; invited)
- Southeastern Bioenergy Conference (Tifton, GA in August 2008; invited)
- Georgia Conservancy meeting (Atlanta GA in Sept 2007; invited)

Publications:

- Journal article was accepted: Global Change Biology - expect publication early in 2009
- The Water Resource Implications of Large-Scale Bioethanol Production. AWRA IMPACT, July 2008, Volume 10, number 4.

2. Coupling of Advanced Oxidation and Adsorption Processes onto Silica-Titania Composites for Low Level Capture of Metals from Water Effluents

Principal Investigator: David Mazyck - Environmental Engineering Sciences

Other Investigators:

Jean-Claude Bonzongo – Environmental Engineering Sciences
Lena Ma – Soil and Water Science

Objectives and Rationale:

The objective of the project was to determine the effectiveness of a photocatalytic method and material for Hg removal. The technology, Silica-Titania composites (STC) was developed at UF and has been commercialized for air-phase Hg recovery. This project aimed to answer the following questions: 1) is STC technology effective at removing Hg from water? 2) What is the preferred

system configuration? 3) What is the optimal STC formulation? (e.g. pore size, surface chemistry, titania loading)

Executive Summary:

Metals are non-biodegradable pollutants with well-documented adverse impacts on both ecosystem functions and human health. Currently, the EPA's priority pollutants list includes 13 metals, with mercury (Hg) and arsenic (As) being the most difficult to reduce to sub-ppb levels in wastewater effluents. In this work, Hg was used as a case study to generate preliminary data that will support the development of a full proposal targeting competitive federal and/or state programs.

The applied treatment technology, Silica-Titania Composites (STC) (Mazyck et al., 2004), was developed at the University of Florida and has been commercialized for air-phase Hg recovery. The STC consist of a porous, high surface area silica-gel substrate ($> 600 \text{ m}^2/\text{g}$), which is transparent to UV light and impregnated with photocatalyst particles (i.e., TiO_2) (Mazyck et al., 2004).

Various STC formulations were tested in the batch reactor beginning with the 45 – 90 μm primary particle size fractions and mercury-deionized water solutions. As TiO_2 loading increased from 0% to 4% to 32% in the smallest pore size STC (targeted for 30 \AA in diameter), so did Hg removal under adsorption alone, reaching over 90% removal at 60 minutes for the 30 \AA 32% STC. Following batch adsorption only studies, the same experiments were repeated with UV illumination. UV illumination did not improve mercury removal for any STC formulation in the mercury-deionized water solutions. Testing was performed with water from the UF Water Reclamation Facility to present a real life water chemistry aspect. Mercury removal from the UF Water Reclamation Facility reached 75% with the 320 \AA 32% STC after 30 minutes.

Also investigated was mercury adsorption onto calcium sulfate (CaSO_4), a byproduct of the flue gas desulfurization (FGD) wet-scrubber technology installed for sulfur dioxide (SO_2) removal in the coal fired power industry. Adsorption experiments were performed in 60 mL bottles with 40 mL of various mercury (from HgCl_2) concentrations, with a 0.01 M NaCl background electrolyte concentration, and CaSO_4 solid for 24 hours on a shaking table. As CaSO_4 mass loading increased, the fraction of mercury adsorbed also increased. While the amount of mercury adsorbed increased with increased initial mercury concentration, the fraction of mercury adsorbed decreased.

In conclusion, STCs are capable of reducing mercury concentrations in low level mercury solutions. The most effective use of the STC would be in a slurry batch reactor utilizing 320 \AA 32% STC under adsorption alone. Studied here, mercury removal with this material reached between 75% and 90% in water reclamation facility effluent and deionized water solutions respectively. The spent material could then be regenerated with dilute hydrochloric acid or disposed of in a landfill without threat to the environment.

[Full report](#)

Contact - David Mazyck: dmazyck@ufl.edu

Deliverables:

Proposals:

- “Photochemical process for removal of Hg and Selenium to below 12 ppt” This proposal will be submitted to The **Environmental Engineering** program (Deadline Sept. 15, 2008) which supports fundamental research and educational activities with the goal of applying engineering

principles to understand and reduce adverse effects of solid, liquid, and gaseous discharges into land, inland and coastal waters, and air that result from human activity and that impair the ecological and economic value of those resources.

- Photocatalytic process with commercial potential for indoor air purification, NSF, \$281,197.00, Submitted 9/15/2008

Presentations: student Heather Byrne, submitted an abstract to conference Mercury 2009 in China

Publications: Submitted article: "Removal of Trace Level Aqueous Mercury by Adsorption and Photocatalysis on Silica-Titania Composites" to Journal of Hazardous Materials

3. Environmental Consequences of Nutrients and Organic Matter Injection into Carbonate Aquifers; Implications for Water Quality in Aquifer Storage and Recovery (ASR) Technology

Principal Investigator: Andrew Zimmerman - Geological Sciences

Other Investigators:

Jean-Claude Bonzongo – Environmental Engineering Sciences

Willie Harris – Soil and Water Science

Objectives and Rationale:

While subsurface aquifers deliver and purify one of Florida's most critical natural resource, freshwater, our understanding of the biogeochemical processes occurring there is relatively undeveloped. This research project proposed a set of laboratory experiments to examine the biogeochemical interactions between natural dissolved organic matter (NDOM), nutrients, microbes and minerals in a laboratory system that models Florida's groundwater (the carbonate Floridan and the apatite-rich Hawthorne aquifer).

The rationale for this research is driven by three impending environmental concerns:

- 1) release of major ions, heavy metals, arsenic, radionuclides, and other constituents from the aquifer matrix
- 2) potential risk of nutrient and organic contaminant delivery by groundwater
- 3) potential risk of carbon release from carbonate rocks in the subsurface

Executive Summary:

The funds supported research by graduate and undergraduate students that has resulted in two scientific presentations and will result in a research publication. The Program Initiation Fund has provided a venue for the formation of a new research collaboration between the three PIs and other UF scientists.

Accomplishments

- 1) Contact was made with Dr. Jonathon Arthur, an assistant state geologist and acting Director at the Florida Department of Environmental Protection/Florida Geological Survey in Tallahassee who agreed to collaborate on the project and provided us with materials from ASR sites from each of Florida's four major aquifer formations.

- 2) Analysis of the chemical properties of the four aquifer materials was spearheaded by Dr. Harris. X-ray diffraction confirmed a range in mineralogical composition, from calcite dominance (Ocala) to dolomite dominance (Avon Park) and with appreciable apatite in the Hawthorn limestone. Results from solid-state and chemical assessments confirmed that specimens were appropriate for use in pilot experiments.
- 3) We conducted dissolved organic matter (DOM)-mineral adsorption experiments on each of the four aquifer rock types using a variety of DOM sources and found a number of interesting contrasts between aquifer types and preferential adsorption of OM types. These findings indicate that more work is needed to examine the influence of DOM on subsurface biogeochemical reactions during ASR.
- 4) The four aquifer samples were analyzed in Dr. Bonzongo's laboratory for total arsenic, iron, and aluminum concentrations. Arsenic concentrations were greatest in the Hawthorn (~4.9 ppm) aquifer material, and similar in Avon, Suwannee, and Ocala aquifer materials were similar (~3 ppm).
- 5) Dr. Bonzongo also studied the release of As in static batch experiments as well as the influence of DOM on this process and found that As is released from solid minerals to the aqueous phase at different rates. The addition of organic carbon resulted in either increased As dissolution (Suwannee and Ocala) or decreased levels of As released (Avon and Hawthorn).

The research funds provided by the Program Initiation Fund has resulted in preliminary data that will serve as the basis of a research proposal to the South Florida Water Management District and perhaps other State of Florida Water Management Districts.

[Full report](#)

Contact - Andrew Zimmerman: azimmer@ufl.edu

Deliverables:

Proposal: "Evaluation of Pre-Treatment Techniques and Operational Schemes for Controlling Arsenic Mobilization during Artificial Recharge (AR) and Aquifer Storage and Recovery (ASR)"
December 1, 2008 - submitted to Southwest Florida Water Management District

Presentations and Publication: Jin Jin (graduate student) presented his DOM findings both at national meetings and the 2008 UF Water Institute Symposium and is preparing to submit these findings for peer-reviewed publication.

4. Protecting Florida's Water Quality: Identifying and Overcoming Barriers to Implementation of Low Impact Development (LID) Practices

Principal Investigator: Mark W. Clark - Soil and Water Science

Other Investigators:

Thomas Ankerson - Legal Skills Professor and Director, Conservation Clinic, Levin College of Law
Thomas Ruppert – IFAS Assistant in Environmental Law Conservation Clinic, Levin College of Law

Objectives and Rationale:

Amid growing concern about how to effectively protect and manage Florida's water resources, low impact development (LID) has emerged as a promising, yet seldom-adopted management strategy. Just as a biologist must assess the status of a water body before monitoring trends in water quality, the state of LID in Florida must be evaluated before effective strategies can be devised for promoting its adoption and implementation. To our knowledge, this has not yet been done in a comprehensive or systematic fashion. To fill this information gap we:

1. Conducted a cross-disciplinary, Florida-specific needs assessment to identify the current set of opportunities and barriers to successful implementation of LID practices;
2. Analyzed the needs assessment and determine intervention junctures, tools and data necessary for viable LID implementation
3. Developed the foundation of knowledge and collaboration of professionals that, in conjunction with findings from the needs assessment will target and support research and extension proposals.

Executive Summary:

The survey of professionals—primarily engineers—suggests that the greatest obstacle to greater implementation to LID is the existing status quo and apathy. The second most important obstacle identified was regulatory problems. Barely making the list of barriers were compliance and enforcement as well as maintenance. Respondents overwhelmingly identified “Education, Outreach, and Marketing to Promote Awareness” as the most important strategy to overcome the barriers identified, and “Real examples that work/case studies” as a need to complete future LID projects.

Regulatory officials at the state level expressed great interest in adopting LID but are concerned with long-term operation and maintenance (O&M) as well as compliance and enforcement issues. O&M of LID systems does present greater challenges than conventional, centralized stormwater systems. Assuming we understand the O&M procedures necessary to ensure the functional integrity of LID approaches, how to ensure compliance with appropriate O&M measures and take enforcement action when necessary remains a question.

With integrated LID, a development that may have contained one or very few conventional stormwater basins may now have hundreds of different LID elements spread across the landscape. Instead of a basin or two, compliance review would involve looking at all of the LID elements in the landscape. In addition to the resources necessary to conduct such an operation, regulators expressed concern that if such elements appear on private property, they might lack the legal right to conduct inspection and maintenance activities.

Proposed permitting of LID by local governments and WMDs must confront the frequent lack of financial and administrative resources to oversee thousands upon thousands of LID structures on individual parcels. Under current WMD practice, the O&M permit holder for centralized stormwater systems in new residential developments is usually the homeowners' association (HOA),³⁸ which incorporates covenants, conditions, and restrictions (CCRs) that give the HOA authority to accomplish this. Proper structuring of education, incentives and disincentives in conditions imposed on an HOA as permit holder, including third-party inspection and maintenance, should suffice to ensure proper O&M by the HOAs of large developments. To achieve this, HOA CCRs should include carefully crafted language to ensure the administrative, legal, and financial resources necessary to monitor and enforce LID-related CCRs.

Perceptions of engineers, developers, and other professionals that regulatory and permitting barriers are a problem is correct. However, these same professionals may not fully understand the *reasons* for

the regulatory barriers. Regulators do not need more education on LID to accept it; they want assurances of effective O&M and monitoring and enforcement of whatever system they permit. Yet the professionals surveyed barely noticed or mentioned O&M or compliance and enforcement as barriers to LID. Regulators lack the resources to conduct O&M or monitor and enforce hundreds if not thousands of LID elements spread across new residential developments. Thus, promotion of LID requires development of strategies that address O&M, compliance, and enforcement concerns of regulators.

[Report \(Clark\)](#)

[Report \(Ruppert, Ankersen\)](#)

Contact - Mark Clark: clarkmw@ufl.edu Tom Ankersen Ankersen@law.ufl.edu or Thomas Ruppert: ruppert@law.ufl.edu

Deliverables:

Proposals:

- Environmental Services Exchange: Evaluating Water Resources Management and Land Use Decision Making at the Agricultural-Urban Interface – USDA CSREES - \$399,401 (Clark)
- Low Impact Development Demonstration and Research at Hastings: Reengineering of IFAS Research Facilities – SJRWMD - \$4,935,000 (Clark)
- Completing work with Sarasota County to complete a legal/regulatory and operations & maintenance chapter of Sarasota's LID manual (\$68,200). Currently negotiating phase II. Review draft state-wide stormwater rule and develop fact sheet for IFAS extension agents; (Ankersen)
- Currently developing proposal to FDEP to fund creation of an LID operations and maintenance certification program in florida (U.S. EPA has expressed interest in such programs and recommended communication with FDEP); (Ankersen)

Presentations:

- “Identifying and Overcoming Barriers to Implementation of Low Impact Development Practices in Florida” - delivered February 2008 Water Institute Symposium (Clark)
- “From Rooftop to River: the Legal and Administrative Basis for Managing Stormwater Through Low-Impact Development” – delivered February 2008 UF Water Institute Symposium (Ankersen)
- “Understanding and Overcoming Legal and Administrative Barriers to LID: A Florida Case Study” - delivered November 2008 International Low Impact Development (LID) Conference in Seattle, Washington (Clark)

New Projects Resulting from this Grant:

The Program for Resource Efficient Communities (PREC) has an ongoing Local Government Workshop about water quality and integration of Low Impact Development practices. Survey results collected during this project have helped guide that effort which has now expanded from counties only within the St. Johns River Water Management District to include at least some counties in all the water management districts. Funding support for those programs from FDEP, WMDs and local Governments for the past two years is approximately \$100,000.

5. Sediment Transport through Tidal Inlets During Extreme Forcing: Erosion or Accretion?

Principal Investigator: Arnaldo Valle-Levinson – Civil and Coastal Engineering

Other Investigators:

Tian Jian Hsu – Civil and Coastal Engineering
Alex Sheremet – Civil and Coastal Engineering
John Yeager – Geological Sciences

Objectives and Rationale:

Tidal inlets allow large volumes of water, transported by storm surges, to encroach on mainland areas leading to flooding during storms. Similarly, storm currents in tidal inlets should allow for episodic, large-scale transport of sediments into or out of coastal bays. It was hypothesized that strong wind forcing would produce a net transport of sediment through an inlet and into a lagoon. This was indeed an important finding. Over decades, episodic net landward sediment transport should tend to infill the bays near inlets.

Executive Summary:

The funds were used to carry out investigations on residual flows at tidal inlets. In order to characterize the lateral structure of tidal residual flows and the temporal variability of such lateral structure, underway current velocity profiles and water density profiles were combined with time series of current profiles at the entrance to a subtropical estuary, Ponce de Leon Inlet. Surveys were carried out at the entrance to Ponce de Leon Inlet to measure current profiles along three cross-channel transects using a boat-mounted 1200 kHz ADCP with bottom-track capability. The temporal coverage at each survey allowed separation of tidal from non-tidal signals through a least-squares fit to semidiurnal and sixthdiurnal harmonics. Also during the surveys, water density profiles were measured with a SeaBird SBE19-Plus CTD which allowed for the estimation of mean horizontal density gradients and their influence on the mean flows. Time series of current velocity profiles were obtained with bottom-mounted ADCPs, equipped with pressure sensors, deployed at three locations determined on the basis of the September survey results.

The following conclusions may be drawn from this study. 1) The net exchange flows observed at Ponce de Leon Inlet were consistent with theoretical tidal residual flows for a progressive wave. 2) The pattern of net outflow in the channel and net inflow over the shoals persisted under different tidal amplitudes and wind forcing conditions. 3) The magnitude of the subtidal flow at each station was modified by wind forcing but the strength of the exchange flows across the entrance was modulated by tidal forcing. 4) The strongest exchange flows occurred during spring tides.

These conclusions should help environmental managers in the sense that they suggest that strong winds from the north cause sediment losses through inlets. Therefore, beach erosion is likely exacerbated by the presence of adjacent inlets that act as sediment sinks during storms. The sediment volume that enters an embayment through an inlet should contribute to expand existing shoals in the embayment. Such findings should also be relevant for careful planning of dredging operations in inlets. They should also be relevant for coastal residents and boaters in the sense of understanding better the environment where they live and recreate. The conclusions contribute to validation of theoretical models that have been developed by other scientists.

[Full report](#)

Contact - Arnoldo Valle-Levinson: arnoldo@ufl.edu

Deliverables:

Presentations:

- Spatial Structure of Tidal and Residual Flows at a Tidal Inlet. Amy Waterhouse, Arnoldo Valle-Levinson. Ocean Sciences meeting in Orlando in March of 2008:
<http://www.sgmeet.com/aslo/orlando2008/viewabstract2.asp?AbstractID=975>
- Modulation of tidal residual flows in a North-Florida Inlet. Amy Waterhouse, Arnoldo Valle-Levinson. Physics of Estuaries and Coastal Seas held in Liverpool in August 2008. page 11 of: http://www.pecs-conference.org/docs/PECS2008_Programme.pdf

Publications: Finishing paper: "Subtidal flow in a weakly stratified subtropical tidal inlet" to be submitted soon to Journal of Geophysical Research.

Proposals:

- Collaborative Research: Hydrodynamics and Sediment Transport in a Shallow Hypersaline Estuary. National Science Foundation. Submitted 8/15/2008. \$366,836 (Pending).
- Circulation in Fringing Reef Lagoons drive by Wind-Waves. National Science Foundation. Submitted 8/15/2008. \$552,097 (Pending).

6. Water, Gender and Equity in India

Principal Investigator: Whitney Sanford – Department of Religion

Other Investigators:

Dr. Anita Anantharam - Women's Studies Department

Dr. Vasudha Narayanan, Department of Religion and Director, CHiTra (Center for the Study of Hindu Traditions)

Objectives and Rationale:

The proposed symposium and lecture series had two primary goals, both of which it achieved: first, it educated scholars about the role of gender, religion and social hierarchy in water disputes, and second, it led to innovative interdisciplinary collaborations by building on existing partnerships within the International Working Water Group (IWWG).

Executive Summary:

During the academic year 2007-8, we coordinated a symposium and lecture series to address the critical problem of Gender, Water and Equity in India. This program brought eminent scholars to the University of Florida to participate in symposia and discussions on the general topic of water and society and, more specifically, to discuss these issues emerge on the Indian sub-continent. In doing so, this series built on intellectually-stimulating interdisciplinary partnerships among faculty from diverse backgrounds.

Dr. Kelley Alley, Anthropology, Auburn University

Topic: Hindu reverence for key river Goddesses in India and connect faith, ritual, social organization and political movements to illustrate the centrality of sacred water to everyday life

Dr. Aaron Wolf, Geo-science, Oregon State University

Topic: the process of environmental conflict resolution, particularly as related to shared water resources

Dr. Sarah Ahmed, Institute for Social and Environmental Transition (ISET-USA)

Topic: women's participation in water user committees with research partners in Maharashtra and Gujarat as part of a larger program on decentralization and gender rights in South Asia, Africa and Latin America

Dr. Amita Baviskar, Institute of Economic Growth, Delhi, India

Topic: environmental politics, with a focus on social inequality and natural resources conflicts, environmental and indigenous social movements, and urban environmental politics in South Asia

Dr. Hermann Kreutzmann, Geography, Free University, Berlin

Topic: relationships between the distribution of water and religion, languages, politics, globalization, and development issues in the high mountain environments of Pakistan

See webpage: http://www.religion.ufl.edu/water_symposium.html

Speaker Report

Contact – Whitney Sanford: wsanford@ufl.edu

Deliverables:

This speaker series is leading (or has led) to additional funding initiatives regarding water and equity. The Interdisciplinary Water Working Group has met with all the speakers, and these interactions have helped our group rethink and refocus our objectives.

Bron Taylor, (editor, Journal of the International Society for the Study of Religion, Nature and Culture) has expressed interest in publishing a special volume of articles from speaker in the series. They have contacted presenters and are collecting papers for this volume.

New Projects Resulting from this Grant:

Collaborative Research Projects:

“Eating Cultures: Gender, Globalization, and the Politics of Consumption in South Asia” (2K)

PI: Anita Anantharam; Co-PI: Whitney Sanford

Funding Agency: Center for the Humanities in the Public Sphere, University of Florida, 2007-2008

“Global Religion in Practice” (5K)

PI: Vasudha Narayanan; Co-PI: Anita Anantharam and Philip Williams

Funding Agency: Transnational Studies Center, University of Florida, 2008-2009. This grant will enable us to apply for larger funding from the Ford Foundation.

Individual grants:

“Gandhi’s Environmental Legacy: Food Democracy and Social Movements”

PI: Whitney Sanford

1. Humanities Scholarship Enhancement Grant, CLAS, UF - Funded for summer 2008 (9k)
2. American Academy of Religion Research Grant - Funded, \$4400
3. NEH Summer Stipend, elected by UF as one of two candidates to go forward, for Summer 2009
4. ACLS Ryskamp Fellowship - Applied 10/08
5. ACLS Fellowship - Applied 10/08

“Bodies that Remember: Women’s Indigenous Knowledge and Cosmopolitanism in South Asia” (10K)

PI: Anita Anantharam

Funding Agency: Humanities Scholarship Enhancement Fund, University of Florida, 2008-2009

PIF “Munch Bunch” Presentation/Discussion Series

During academic year 2008-09, the Water Institute will host a PIF “Munch Bunch” Presentation/Discussion Series: Building Sustainable Water Initiatives Together.

Target audience: UF faculty and students particularly WI Affiliated , WI Strategic Initiative teams, and external stakeholders

Purpose: To share the results of the PIF projects that have been completed. To give an opportunities for the WI network to meet the 2007 PIF faculty, discuss the PIF activities, results and future potential, and to contribute to the UF Water Institute PIF strategic initiatives for 2008 and beyond.

Outcome: Increase awareness of PIF projects and potential linkages. Identify potential interested faculty to compliment the newly developing strategic initiative working groups. Networking and building linkages.

Description: During a one-hour lunch break participants will come with their lunches to participate in a seminar featuring one PIF team to present for 30 minutes each. A 20-minute question and answer session will follow. Emphasis will be put on what have we learned from the initiative, how is it relevant to the strategic initiatives, and future potential.

Appendix A: Program Initiation Fund Guidelines

The Water Institute Program Initiation Fund provides funding for *new, faculty-initiated research, extension and outreach programs that are multi-/interdisciplinary* and that have the expectation of and a reasonable plan for becoming externally-funded programs at the University of Florida.

Projects should be innovative, support Water Institute Thrust Areas (see <http://waterinstitute.ufl.edu/thrustareas.html>), and have strong potential for garnering future funding from external sources. Program Initiation Fund awards are not intended to support on-going projects - they should support new ideas (projects) and/or new collaborative partnerships. To be competitive, proposals must be multi-/interdisciplinary and must involve faculty from at least two departments/units/colleges. Single-investigator and single-unit proposals are not eligible.

Fundable activities include but are not limited to:

- Innovative activities that build intellectually-stimulating interdisciplinary partnerships among faculty within and across Water Institute Thrust Areas that have strong potential to result in externally funded programs (specific external funding program(s) should be identified).
- Projects that position faculty teams with preliminary data necessary to be successful with large-scale national or international grant applications (specific external funding program(s) and proposal submission deadline(s) should be identified).
- Projects to produce refereed synthesis papers or data analyses that have the potential to result in long-term funded state agency or industry partnerships (target journal and/or supporting letter from external partner required).

Proposals may be submitted by any faculty group that meets the following criteria:

- Each member of the faculty group must be affiliated with the Water Institute (i.e. registered in the Water Institute faculty expertise database <http://waterinstitute.ufl.edu/expertise.html>)
- The Project PI must meet the University's PI eligibility requirements for submitting proposals to external funding agencies (see *Policy on Eligibility to Submit Proposals*: http://rgp.ufl.edu/research/handbook/researcher_handbook/section2.html#RTFToC1).
- The Project PI must not have received funds from the UF Office for Research Opportunity Fund or from the IFAS Dean for Research Innovation Fund in 2006.

REVIEW CRITERIA – 2007 WATER INSTITUTE PROGRAM INITIATION FUND

Program Initiation Fund proposals received by the Water Institute will be reviewed by the Faculty Advisory Committee who will make funding recommendations to the Water Institute Director. The Water Institute Director will make final funding decisions. Each of the following criteria will be addressed and considered in assessing the application, weighting them as indicated below.

Significance and Innovation (30%): Does this study address an important problem within or across the UF Water Institute Thrust Areas? Is the project original, multi/interdisciplinary and innovative? Does the project represent a new direction of investigation for the faculty involved, or is it a new collaborative partnership?

Approach (25%): Does the project develop or employ novel concepts, approaches, methodologies, tools, or technologies? Is the proposed interdisciplinary approach likely to yield new insights into the problem being addressed? Are the conceptual framework, design, methods, and analyses adequately developed, well integrated, well reasoned, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics?

Likelihood of obtaining external support (25%): Do the investigators present reasonable plans to garner extramural support from specific funding agencies? Is the proposed timeline reasonable?

Investigators (10%): Are the investigators appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers? Does the investigative team bring complementary and integrated expertise to the project? Is there evidence of the ability of the team of investigators to work together in an interdisciplinary fashion?

Environment/Resources (5%): Do the proposed studies benefit from unique features of the scientific environment or employ useful collaborative arrangements? Do the PIs have the additional resources (e.g., equipment) to successfully accomplish their goals?

Budget (5%): Is the requested budget appropriate for the scope of work? Is the award period of 1 year appropriate?

Proposals will be ranked according to the scale:

- 4: Excellent
- 3: Very Good
- 2: Good
- 1: Fair