

**UF Water Institute Annual Report**  
**June 5, 2015**  
**Wendy D. Graham, Ph. D., Director**

**1. Center/Institute Overview**

**a. Narrative description of Center/Institute mission and goals**

Mission: The UF Water Institute brings together talent from throughout the University to address complex water issues through innovative interdisciplinary research, education, and extension programs.

Vision: Interdisciplinary UF Water Institute Teams, comprised of leading water researchers, educators and students, develop new scientific breakthroughs; creative engineering, policy and legal solutions; and pioneering educational and outreach programs that are renowned for addressing state, national, and global water problems.

Goals: The overarching goals of Water Institute research, education and outreach programs are to:

- Improve basic knowledge of the physical, chemical, and biological processes in aquatic systems (springs, rivers, lakes, estuaries, wetlands, soil and ground waters).
- Enhance understanding of the interactions and interrelationships between human attitudes and activities, and aquatic systems.
- Develop and promote the adoption of improved methodologies for water resource management, policy and public awareness (including quantity, quality and ecosystem services) based on a foundation of science, engineering, management and law.

Since its inception in 2006, the Water Institute has brought together interdisciplinary faculty and graduate student teams to develop proposals to external agencies worth over \$120 Million. These efforts have created new collaborative linkages among Water Institute faculty, students and external stakeholders; identified and prioritized critical water issues requiring interdisciplinary expertise; and provided expertise and support for addressing these issues. The Water Institute staff facilitates interactions among interdisciplinary teams; decreases transaction costs associated with interdisciplinary proposal writing and project execution; plans and executes Water Institute meetings, workshops, seminars, and symposia; and maintains a comprehensive [Water Institute website](#) with a searchable faculty expertise, awards, and publication database.

**b. Areas of research strength and focus**

Water Institute research is organized under four thrust areas: [Water, Land Use, and Ecosystems](#); [Water and Climate](#); [Water Resources Sustainability](#); and [Water and Society](#). Within these thrust areas current funded research foci include improving the science foundation for the protection of spring ecosystems; planning for a resilient water supply in a changing climate; understanding and predicting impacts of alternative land uses on water quality, with an emphasis on nutrients; and impacts of sea level change on coastal aquifers, water resources, and ecosystems. Research emerging from these research projects is transferred to practice via Water Institute facilitated scientist-stakeholder working groups such as the [Florida Water and Climate Alliance](#) (FloridaWCA) and [UF-IFAS Extension](#).

**c. Summary of Center/Institute participants**

**i. Center/Institute faculty members**

A total of 214 faculty members are currently affiliated with the UF Water Institute. A complete listing of these faculty members, along with contact information and a summary of their research interests can be found in the Water Institute’s on-line searchable Faculty expertise database: <http://waterinstitute.ufl.edu/FacultyExpertise/Expertise.aspx>

**ii. Demographics (by college, dept.) of faculty participants**

Table 1 provides a summary of Water Institute affiliate faculty membership by college. Table A1 in Appendix A provides a summary of faculty membership by Department.

**Table 1: Summary of Faculty Membership by College**

College	Total No.
IFAS	133
College of Liberal Arts and Sciences	33
College of Engineering	22
College of Design, Construction and Planning	6
Center for Latin American Studies	5
College of Law	4
Warrington College of Business Administration	4
College of Health and Human Performance	2
Florida Museum of Natural History	1
Pharmacy - Medicinal Chemistry	1
College of Public Health and Health Professions	1
Florida Sea Grant	1
International Center	1
<b>Total</b>	<b>214</b>

**iii. Water Institute Faculty Fellows Program**

The UF Water Institute Faculty Fellow awards program to recognize UF faculty who are making outstanding research, extension, or education contributions to the Water Institute. The purpose of the award is to recognize recent contributions that contribute significantly to UF’s interdisciplinary communities of science in water and to provide incentives for Fellows’ continued contributions to the goals of the Water Institute. Faculty Fellows receive a salary supplement of \$2,000 per year for a duration of three years. Funds used for the salary supplement are earned from retained indirect costs from external grant awards funded through the Institute. Faculty Fellows elected to date are included in Table 2 below:

**Table 2: Water Institute Faculty Fellows**

Year	Faculty Fellow
2013	<a href="#">Dr. Matthew Cohen, School of Forest Resources and Conservation, UF-IFAS</a>
2013	<a href="#">Dr. Rafael Munoz-Carpena, Department of Agricultural and Biological Engineering, UF-IFAS.</a>
2014	<a href="#">Dr. Jonathan Martin, Department of Geologic Sciences, CLAS.</a>
2014	<a href="#">Dr. Jim Jawitz, Soil and Water Sciences, UF-IFAS</a>
2015	<a href="#">Dr. Mark Clark, Soil and Water Sciences, UF-IFAS</a>
2015	<a href="#">Dr. Michael Dukes, Agricultural and Biological Engineering, UF-IFAS</a>

**d. Peer comparison: Identify top five centers/institutes in the US with similar missions**

The following are an alphabetized list of leading centers and institutes in the US with similar missions to the UF Water Institute:

- [Center for Watershed Sciences](#) – U.C. Davis
- [Colorado Water Institute](#) - Colorado State University
- [Desert Research Institute](#) - Nevada System of Higher Education
- [Institute for Water and Watersheds](#) – Oregon State University
- [Texas Water Resources Institute](#) – Texas A&M University

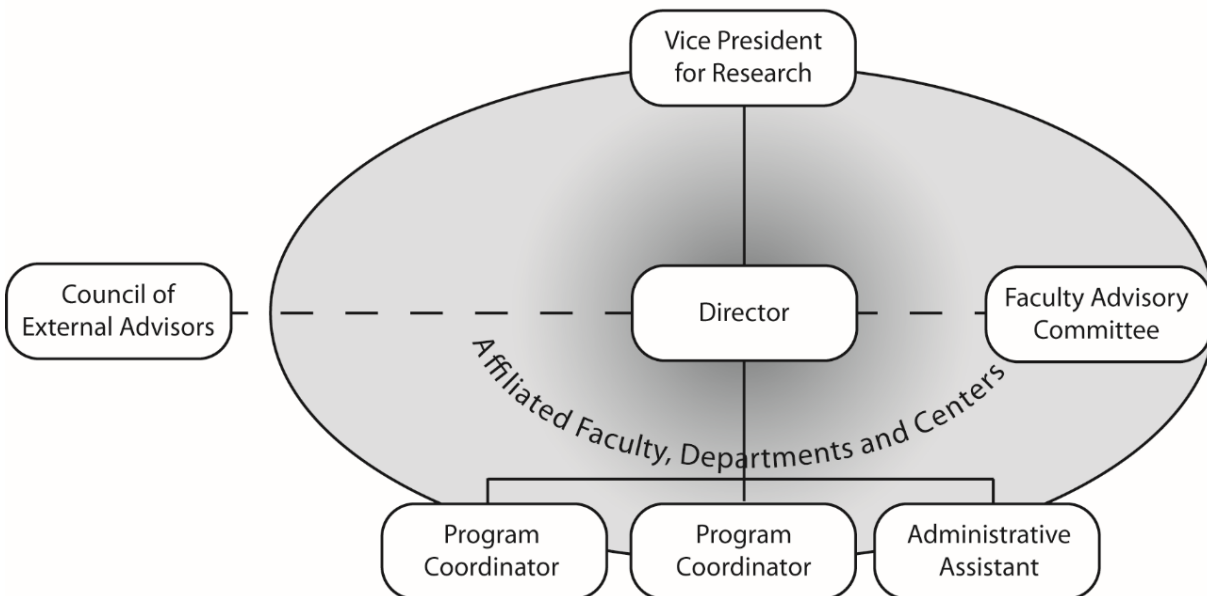
**2. State of the Center/Institute**

**a. Center/Institute leadership**

**i. Organizational chart**

The Water Institute is led by a full-time director, who reports to the Vice President for Research (Figure 1). Two program coordinators and an administrative assistant assist the director in the development, execution and evaluation of Water Institute programs.

**Figure 1:** Organizational Chart for University of Florida Water Institute



**ii. Internal and external advisory committees**

An internal Faculty Advisory Committee (FAC) for the Water Institute consists of 15 members of the Water Institute Affiliate Faculty. Ten members of the FAC are elected by members of the Water Institute Affiliate Faculty on staggered 3 year terms. Five members are appointed by the Water Institute director to ensure balance among disciplines. The current FAC membership is listed in Table 3 below. A list of previous FAC members is provided at:

[http://waterinstitute.ufl.edu/archives/FAC\\_Archives.asp](http://waterinstitute.ufl.edu/archives/FAC_Archives.asp)

**Table 3: Water Institute Faculty Advisory Committee**

<b>Faculty Member</b>	<b>Department</b>	<b>Term</b>
Mary Jane Angelo	Professor, Director of Environmental and Land Use Law Program, College of Law	(Term Ends 6/1/2018)
Mike Annable	Professor, Environmental Engineering Sciences, College of Engineering	(Term Ends 6/1/2016)
Treavor Boyer	Assistant Professor, Environmental Engineering Sciences, College of Engineering	(Term Ends 8/1/2017)
Mark Clark	Associate Professor, Soil and Water Science, IFAS	(Term Ends 6/1/2016)
Matthew Cohen	Associate Professor, School of Forest Resources and Conservation, IFAS	Chair (Term Ends 6/1/2018)
Peter Frederick	Research Professor, Wildlife Ecology and Conservation, IFAS	(Term Ends 8/1/2017)
Tracy Irani	Professor and Chair of Family Youth and Community Sciences, IFAS	(Term Ends 6/1/2016)
Jim Jawitz	Professor and Associate Chair, Soil and Water Science, IFAS	Past Chair (Term Ends 6/1/2016)
David Kaplan	Assistant Professor, Environmental Engineering Sciences, College of Engineering	(Term Ends 6/1/2018)
Jonathan Martin	Professor, Geology, College of Liberal Arts and Sciences	(Term Ends 6/1/2016)
Kati Migliaccio	Associate Professor, Agricultural and Biological Engineering, IFAS	(Term Ends 6/1/2018)
Sandra Russo	Director, Program Development, UF International Center	(Term Ends 8/1/2017)
Elizabeth Sreaton	Professor, Geology, College of Liberal Arts and Sciences	(Term Ends 8/1/2017)
Arnoldo Valle-Levinson	Professor, ESSIE, Dept. of Civil and Coastal Engineering, College of Engineering	(Term Ends 8/1/2017)
Thomas Waltzek	Assistant Professor, Department of Infectious Diseases and Pathology, College of Veterinary Medicine	(Term Ends 6/1/2018)

An ad-hoc External Council of Advisors consists of speakers who have participated in the Water Institute Distinguished Scholar Seminar Series. These individuals are representatives of leading academic institutions in a wide range of water-related fields, many of whom are National Academy members and two of whom are Stockholm Water Prize winners. In addition to presenting an interdisciplinary seminar Distinguished Scholars meet with the Water Institute Faculty Advisory Committee to discuss Water Institute programs and directions, as well as ideas regarding future strategic initiatives and partnerships, and meet with interested Water Institute affiliated faculty and graduate students to discuss research/education issues. A list of individuals who have participated in the Distinguished Scholar Seminar Series is provided at: <http://waterinstitute.ufl.edu/seminars/seminars.asp>.

**b. Research performance in 2014/2015**

**i. Research Highlights**

During 2014-2015 the Water Institute coordinated 9 active funded interdisciplinary projects (\$4.52M), supported 4 funded interdisciplinary projects (\$1.74M with potential up to \$8.74M) and submitted 3 new interdisciplinary proposals (\$16.8M), including a \$10M proposal to USDA-NIFA that was submitted July 16 2015. (See Table 4 below for details).

Highlights in 2014-2015 included the successful launching of the \$3M Springs Protection Initiative project funded by the St Johns River Water Management District and the successful completion of the \$250K Everglades Review project funded by the Florida Senate. The goal of the interdisciplinary Springs Protection Initiative project, which involves 11 faculty members from 3 colleges, is to provide a scientific basis for improved springs protection and remediation. The purpose of the Senate project, which involved 6 faculty members from 2 colleges, was to provide an independent scientific peer review of Everglades Restoration plans in order to inform state policy and funding priority. The report from this highly visible controversial project was acclaimed by water resource managers, environmental groups and agricultural constituents as thorough, balanced and informative.

**Table 4. Active Water Institute Projects and Grant Proposals Submitted 2014-2015**

<b>PI</b>	<b>Dates</b>	<b>Title</b>	<b>Amount</b>	<b>Co-PIs</b>	<b>Agency</b>	<b>Status</b>
<b>Water Institute Coordinated Projects</b>						
Graham, Wendy, WI	4/2007-12/2015	Use of Seasonal Climate Forecasts to Reduce Risk in Regional Public Water Supply Management	\$299,800	Martinez, Chris Jones, Jim	Tampa Bay Water	Funded
Graham, Wendy, WI	3/2011-2/2016	Watershed Management in the Face of EPA's Numeric Nutrient Criteria	\$73,600	Frazer, Tom	US Geological Survey 104(b) Program	Funded
Graham, Wendy, WI	8/2011-8/2014	Collaborative Development of Public Water Supply Utility Relevant Climate Information for Improved Operations and Planning	\$300,000	Martinez, Chris Irani, Tracy Ingram, Keith	NOAA Climate and Societal Interactions	Funded
Graham, Wendy, WI	10/2012-10/2014	Use of seasonal climate forecasts to minimize short-term operational risks for water supply and ecosystem restoration	\$150,000	Martinez, Chris Irani, Tracy Ingram, Keith	NOAA	Funded
Cohen, Matthew, SFRC	8/2013-8/2014	Kanapaha Water Reclamation Facility Denitrification Study	\$28,000	Graham, Wendy Henson, Wesley	Gainesville Regional Utilities	Funded

Dukes, Michael	8/2013-7/2014	Literature Review of Agricultural Water Quality BMPs	\$20,000	Graham, Wendy	Florida Department Agriculture & Consumer Services	Funded
Reddy, K. Ramesh, SWS	6/2014-9/2017	Springs Protection Initiative [SPI] - Collaborative Research Initiative on Sustainability and Protection of Springs [CRISPS]	\$3,000,000	Graham, Wendy Annable, Mike Cohen, Matthew Jawitz, James Frazer, Tom Kaplan, David Kramer, Marc	St. Johns River Water Management District	Funded
Graham, Wendy, WI	8/2014-3/2015	Technical Review of Options to Move Water from Lake Okeechobee to the Everglades	\$250,000	Angelo, Mary Jane Frazer, Tom Frederick, Peter Havens, Karl Reddy, Ramesh	Florida Senate	Funded
Michael Dukes, ABE	1/2015-12/2018	Evaluation of water use, water quality and crop yield impacts of corn and peanut irrigation and nutrient BMPs in the springsheds of Suwannee River Water Management District	\$406,277	Rowland, Diane Graham, Wendy	Suwannee River Water Management District	Funded
<b>Water Institute Supported Projects</b>						
Martin, Jonathan, GLY	8/2013-7/2016	Coastal SEES (Track 1): Planning for hydrologic and ecological impacts of sea level rise on sustainability of coastal water resources	\$441,125	Ogram, Andrew Valle-Levinson, Arnoldo Pen, Zhong-ren	NSF	Funded
Cohen, Matthew, SFRC	5/2014-4/2017	The Ecological Drill Hypothesis: Biotic Control on Carbonate Dissolution in a Low Relief Patterned Landscape	\$599,080	Martin, Jonathan Bianchi, Tom	NSF	Funded
Reddy, K. Ramesh, SWS	6/2014-9/2016	Collaborative Research Initiative on Everglades Stormwater Treatment Areas [CRESTA]	Up to \$7,000,000 (task order)	Graham, Wendy Adams, Carrie, Kaplan, David Gerber, Stefan Martinez, Chris Ogram, Andy Phlips, Edward	South Florida Water Management District	Funded
Grogan, Kelly	3/2015-3/2018	Innovative Policies to Optimize the Allocation of Water Quality and Conservation	\$659,676	Chris Martinez, Xiang Bi, Tatiana Borisova,	USDA NIFA	Funded

		Investments and Maximize Multiple Benefits		Alan Hodges, Paul Monaghan		
Shukla, Sanjay	4/2015-4/2016	Quantification of Ranchland Water Retention Effects on Flows and Nutrient Loads in the Northern Everglades	\$43,750	Graham, Wendy	South Florida Water Management District	Funded
<b>Proposals Submitted</b>						
Graham, Wendy, WI	Due 7/16/2015	Agricultural Water Security for Florida, Georgia and Alabama through Sustainable Use of the Floridan Aquifer: An Integrated Assessment of Economic and Environmental Impacts	\$10,000,000	Kaplan, David Adams, Damian Dukes, Michael Rowland, Daine Fraisse, Clyde Irani, Tracy Monroe, Martha, plus faculty from AU, ASU and UGA	USDA	Pending
Munoz-Carpena, Rafael, ABE	11/18/2014	CNH: Fast and slow - Reconciling conflicting response times of human decisions and natural systems	\$1,777,402	Kiker, Gregory Murcia, Carolina Ballesteros, Andrea Brown, Mark	NSF	Pending
Graham, Wendy, WI	8/13/2014	Agricultural Water Security and Upper Florida Aquifer Sustainability: An Integrated Assessment of Economic and Environmental Benefits	\$5,000,000	Kaplan, David Adams, Damian Cohen, Matt, Irani, Tracy Monroe Martha	USDA	Recommended for funding (top 7%), insufficient funding available, Resubmission Encouraged
Martinez, Christopher, ABE	4/30/2014	Integrating NASA Earth Systems Data into Decision-Making Tools of Member Utilities of the Florida Water and Climate Alliance	\$1,748,987	Misra, Vasu Adams, Alison Asefa, Tirusew Morris, Kevin	NASA	Not funded

In addition to the projects tabulated above in 2014-2015 Water Institute affiliated faculty members received new sponsored water-related research awards totally approximately \$34.4 million. For more information on these projects see the on-line searchable [Water Institute research database](#).

**ii. Seminars and conferences hosted by the Center/Institute**

The Water Institute Distinguished Scholar Seminar Series invites high profile scholars to UF to conduct a Water Institute seminar of interest to a broad audience; meet with the Water Institute

Faculty Advisory Committee to discuss strategic planning and partnering opportunities; and meet with interested Water Institute faculty and graduate students to discuss specific research/education issues. Six Distinguished Scholar speakers and two UF speakers were hosted during 2014-2015 (see Table 5 for details). For a complete listing of speakers, who represent leading experts in the fields of engineering, biophysical sciences, social sciences and law see <http://waterinstitute.ufl.edu/seminars/seminars.asp> .

**Table 5: 2013-2014 Distinguished Scholar Seminar Speakers**

<b>Date</b>	<b>Distinguished Scholar Seminar Speaker</b>
<b>March 30, 2015</b>	<a href="#">Dr. Rainer Helmig</a> , Department of Hydromechanics and Modelling of Hydrosystems, Institute for Modelling Hydraulic and Environmental Systems, University of Stuttgart, Germany, 2015 Darcy Lecturer
<b>March 17, 2015</b>	<a href="#">Dr. Chad Staddon</a> , Professor of Resource Economics & Policy, Department of Geography and Environmental Management, University of the West of England, Bristol, UK
<b>February 11, 2015</b>	<a href="#">Dr. Clifford Voss</a> , Research Hydrologist-National Research Program, U.S. Geological Survey (USGS), 2015 Birdsall-Dreiss Distinguished Lecturer
<b>January 29, 2015</b>	<a href="#">Prof. Marnik Vanclooster</a> , Earth and Life Institute - Environmental Sciences, Universite catholique de Louvain, Belgium
<b>January 14, 2015</b>	<a href="#">Dr. James Jawitz, Professor</a> , Water Institute Faculty Fellow, Soil and Water Science Department, University of Florida
<b>January 14, 2015</b>	<a href="#">Dr. Jonathan Martin, Professor</a> , Water Institute Faculty Fellow Department of Geological Sciences, University of Florida
<b>September 30, 2014</b>	<a href="#">Shannon Estenoz</a> , US Department of the Interior, Director of Everglades Restoration Initiatives
<b>September 18, 2014</b>	<a href="#">Dr. Peter Groffman</a> , Senior Scientist & Microbial Ecologist, Cary Institute of Ecosystem Studies

In addition to the Distinguished Scholar Seminar Series the Water Institute sponsored Philip Fernside (National Institute of Amazon Research, Brazil) to speak at the Center for Latin American Studies 65<sup>th</sup> Annual Conference in Gainesville in March 2015, and sponsored the American Society of Agricultural and Biological Engineers 1st Climate Change Symposium held in May 2015.

**iii. List of peer-reviewed journal publications by Center/Institute members**

The Water Institute does not maintain an exhaustive list of peer reviewed articles published by all Water Institute Affiliate faculty members at this time. A partial listing of publications most closely associated with Water Institute Coordinated and Assisted Projects can be found at [http://waterinstitute.ufl.edu/news/publications/Pubs\\_textSearch2.asp](http://waterinstitute.ufl.edu/news/publications/Pubs_textSearch2.asp) . This on-line database is searchable by thrust area, ecosystem, author, title, or year.

**c. Public outreach and communication activities**

Biennial Water Institute Symposium: UF Water Institute Symposia bring together researchers, engineers, policy makers, water managers, industry representatives, lawyers, students and citizens to consider the challenges to water resources sustainability; explore solutions for pressing issues; and provide broad-based recommendations for research, education, technology and policies to ensure water resources sustainability for Florida and beyond. A program committee is currently planning the 5th Water Institute Symposium that will be held at the UF Reitz Union in Gainesville on February 16th -17th, 2016.



UF-IFAS Extension: The UF Water Institute continues to expand its outreach efforts throughout the state with greater engagement with UF/IFAS Extension. The UF Water Institute directly supports the UF-IFAS Extension Water Initiative that includes three priority areas: Water Conservation, Water Quality, and Public Awareness of Water Issues. In particular, Water Institute staff are actively engaged with facilitating the Water Initiative Leadership team, contributing to the comprehensive Water Extension Website development effort, and participating in key programs of the Public Awareness Priority by a) providing input to program and curriculum development for a statewide Watershed Stewards Program, b) liaising with Water Schools for agricultural stakeholders, and c) providing initial inventory to DROPs (*Delivery-Ready Outreach Plug-ins*) workgroup. Dr. Graham and WI also staff participated in Extension conferences.

In addition the Water Institute is working with Dr. Michael Dukes, Agricultural and Biological Engineering and Dr. Kelly Morgan, Soil and Water Science to provide a synthesis of Agricultural BMP research conducted by UF-IFAS and other SE land grant institutions, produce executive summaries of BMP effectiveness by commodity, and identify knowledge gaps and develop priorities for extension BMP programs and future research needs.

Center for Excellence in Watershed Management (CEWM): CEWM at the University of Florida was established in summer 2011 within the UF Water Institute under a Memorandum of Understanding with EPA and FDEP. Started in 2007 by EPA's Region 4 Office, the Centers of Excellence for Watershed Management Program utilizes the diverse talent and expertise of colleges and universities from across the Southeast to provide hands-on, practical products and services so communities can better identify watershed problems and develop viable solutions. Faculty, researchers, students and extension personnel work with stakeholders to seek funding and/or additional resources for selected watersheds and water quality projects. This year the Water Institute staff helped connect faculty with a variety of stakeholder groups to explore potential proposals and activities (i.e., Florida Department of Agriculture and Consumer Services, Withlacoochee Aquatic Restoration (WAR) and The Lawrence E. Will Museum, a private museum in Belle Glade)

Public Outreach: This year the Water Institute initiated new public relations efforts through social media and our website to inform a broader audience of recent research and innovative programs. Highlight stories are put "[in the spotlight](#)" on the WI website. In addition WI has established a Twitter account.

#### **d. Graduate Education Programs**

The Water Institute Graduate Fellows (WIGF) program supports interdisciplinary faculty-graduate fellow teams to conduct integrative research in emerging areas of water science, including the social, natural, and engineering sciences. The Deans of the UF-IFAS College of Agricultural and Life Sciences, UF College of Liberal Arts and Sciences, and the Directors of the School of Natural Resources and Environment, and the Engineering School of Sustainable Infrastructure and the Environment have committed UF Graduate School Fellowships for biennial cohorts of 6 Ph.D. students to participate in this program. The Water Institute leverages this UF investment using gifts provided by the Swisher Foundation and the Sherwood-Stokes

Foundation to support field, laboratory and computer analyses by the student cohorts. In addition Water Institute staff members coordinate integrative activities to support the cohorts' development into a cohesive interdisciplinary cadre of professional researchers. Details regarding the topics and faculty associated with each WIGF cohort are included in Table 6 below:

**Table 6: Water Institute Graduate Fellows Cohort**

<b>Year</b>	<b>Cohort focus</b>	<b>Faculty Leader</b>	<b>Participating Faculty</b>
2011	Watershed Management in the face of EPA's New Numeric Nutrient Criteria for Florida Waters	Mark Brown, Environmental Engineering Sciences, ESSIE, COE	Mark Brenner, GLY Mark Clark, SWS Matt Cohen, SFRC Tom Frazer, SNRE Wendy Graham, ABE
2013	Impacts of Sea Level Change on Coastal Aquifers, Water Resources, and Ecosystems	Jon Martin, Geologic Sciences, CLAS	Andrea Dutton, GLY Andrew Ogram, SWS Zhong-Ren Peng, DCP Bill Pine WEC Arnoldo Valle-Levinson, ESSIE
2015	Hydrologic transformation in the Amazon basin: reconciling economy, society, and the environment in the world's largest watershed	David Kaplan, Environmental Engineering Sciences, ESSIE, COE	Stephanie Bohlman, SFRC Kai Lorenzen, SNRE Cynthia Simmons, GEOG Denis Valle, SFRC Robert Walker, GEOG, LATAM

In addition to coordinating the WIGF program, the UF Water Institute also provides administrative services to the Hydrologic Sciences Academic Cluster (HSAC), an interdisciplinary program designed to broaden the skills of science and engineering students who are interested in all aspects of water. Currently 55 faculty members and 25 graduate students from 9 departments and 3 colleges participate in the HSAC. Water Institute support services include coordinating HSAC faculty meetings, managing student applications to the program, maintaining an on-line database for the HSAC student, faculty and meeting records, and maintaining the [HSAC website](#). In addition The UF Water Institute Director serves as a permanent voting member on the Hydrologic Sciences Academic Cluster Faculty Coordinating Committee.