UF | Water Institute
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Florida Climate Institute

"Public Water Supply Utilities Climate Impacts Working Group"

WORKSHOP REPORT

Workshop Three

Wednesday, May 4, 2011

9:00 – 4:00pm

Prepared by
Lisette Staal, Research Coordinator
UF Water Institute

Hosted by
Orlando Utilities Commission in Orlando, Florida

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WORKSHOP Three – "Public Water Supply Utilities Climate Impacts Working Group"
Wednesday, May 4, 9:00 – 4:00 pm, Orlando Florida

Background:

This is a report of the third workshop bringing together interested stakeholders from public water supply utilities, water management districts and academic institutions in Florida. The UF Water Institute, Florida Climate Institute and the UF IFAS Center for Public Issues Education in partnership with six major public water supply utilities, and three water management are focused on increasing the relevance and usability of climate change and variability data and tools to the specific needs of public water supply utilities in Florida. The partners are interested in understanding and addressing how climate variability/change and sea level rise may impact planning and operations of Florida's public water supply utilities.

Detailed information on the "Working Group" is available at the UF Water Institute website http://waterinstitute.ufl.edu/workshops_panels/PWSU-CIWG.html

Participants:

Participation in the effort has been steady, with each of the workshops attended by over twenty participants. Twenty-one people attended this workshop including individuals from several organizations that had not attended previous workshops (see Appendix 2 for workshop participant list). In addition, others from Broward County, USF and FAU expressed interest in participating in the effort, but were not available to participate in this workshop.

Goal:

The overall goal of the workshop focused on sharing knowledge, building partnerships, refining the identity, role, function, and interests of the working group, and defining next steps. The specific objectives were based on actions of task groups that were formed at the previous workshop. Workshop objectives are listed below (*Task Group specifics are noted in italics following the objective):*

1. Understand the current state of the art of science and practice within the group, and learn more details about particular climate-related projects in which the PWSU-CWIG participants have been engaged. (*Task Group 2: Plan a science workshop to highlight PWSU-CWIG members' recent climate change/climate variability/sea level rise projects relevant to Public Water Supply Utilities- Wendy Graham - Lead, Jayantha Obeysekera, Mike Cullen, Keith Ingram, Alison Adams)*

2. Present progress and solicit group input on developing a Research Agenda for climate change and variability impacts. (*Task Group 1: Develop a Florida Public Water Supply Utility Research Agenda for climate change and variability impacts, i.e. Scope research needs, timeframes and budgets for potential projects. Larry Johnson-lead, Doug Yoder, Kim Shugar, Tirusew Asefa, Vasu Misra, Jim Jones)*

3. Receive update on status of FAU's current effort to develop an SUS/FAU/FCI white paper, and potential links to the PWSU-CIWG group. (*Task Group 3: Explore ways to leverage SUS/FAU/FCI white papers to address the needs and interests of PWSU-CIWG. Nicole Hammer/Len Berry- Lead, Alison Adams, Jim Jones, Vasu Misra, Wendy Graham)*

Outcomes:

By the end of the workshop, it was agreed that we would schedule and plan another workshop – (workshop 4) to meet in the next quarter. In the meantime the original task groups will continue, and one additional task group was added to explore ways to share "our group" with others including smaller utilities. Specific actions include:

1. *Task Group 1, Larry Johnson is retiring so another lead for this task group should be identified,* -Incorporate written feedback that will be solicited from the larger working group and populate the Research Agenda matrix that presented by at the workshop.
2. *Task Group 2, Wendy Graham lead* - develop another "Science Workshop' to cover additional topic areas. The "Participants' Project Summaries document continues to be updated and is available on line (link to document).
3. *Task Group 3, Nicole Hammer, lead* - Clarify the purpose and target audience for the SUS/FAU/FCI management whitepaper activity, and provide the group a revised whitepaper outline. Nicole Hammer will work with Jim Jones accomplish this. Group participants will provide feedback directly to Nicole.
4. *Task group 4, Jessica Bolson. Lead* - Explore and suggest mechanisms to share "our group" with others including smaller utilities
5. *Lisette Staal will convene a planning team* to develop an agenda for the next workshop. The planning team will include representatives from each of the task groups as well as Wendylin Bartels. To increase outreach it was also suggested that non-academic participants bring a friend to the next workshop
6. *Participants* will review draft statement of collaboration/ declaration of collaboration for consideration and send any comment to lstaal@ufl.edu.
7. *Participants* will continue to suggest new acronyms/names for the working group.

Detailed Summary of Workshop 3:

Session 1 – Context

"What's in a Name?" During the previous workshop (workshop 2), it was suggested that we try to find a better acronym than PWSU-CIWG to reflect the working group identity. Several suggestions were made over email following the last workshop and shared with the group. In the opening session of workshop 3 Lisette Staal, the facilitator, asked the participants sitting in groups to consider all of the words that were included in each of the names that had been suggested and to add any words that were not already included that they felt reflected the group's identity. These were later linked to the introductions.

Welcome, Introductions and Day's Agenda: Dr. Wendy Graham, Director, UF Water Institute, welcomed the participants to the workshop and reiterated the UF Water Institute's commitment to convening this group and welcomed new participants. Participants then introduced themselves and shared the one word that they considered most important to them when considering a name for this group. (The original name suggestions were then shared on a flipchart and participants were encouraged to add additional ideas for names throughout the day).

Words identified by participants as important to be in the name	Suggestions of a name (Acronym) for the working group before the workshop	Additional suggestions of a name (Acronym) during the workshop
Water – 2 Alliance – 2 Partnership- 2 Florida-2 Climate-2 Public Water Utilities Science Climate Change Collaborative Working Group Universities	FLOW – FLOrida Water (supply) utilities climate impacts working group GUCCI – Group of Utilities for Climate Change Impact GUCCIS – Group of Utilities for Climate Change Impact Studies FUSE or FUSES - Florida Water Utility and Science for Environmental Sustainability Florida CUP - Florida Climate Utility Partnership FAUCEt – Florida Alliance of University and Public Water Utilities for Climate Effect FAUUCET – Florida Alliance of University and Public Water Utilities for Climate PWSU-CIWG – Public Water Supply Utilities Climate Impacts Working Group	FLOW - FLOrida Water: Public Utilities and Climate Science Partnership CIGAR or CIGART - Climate Impacts Group Alliance for Research and Technology FLOWCSA - FLOrida Water Climate Science Alliance

The day's agenda was introduced by reviewing major milestones since the initial suggestion of starting a working group focused on climate impacts relevant to Florida's Water Supply Utilities. This helped to bring new people present at the workshop up to date on the group's history. In addition, a Draft Declaration of Collaboration May 2011 that had been prepared as an action item from Workshop 2 was distributed for consideration, but was not specifically discussed. See Appendices for documents: Appendix 1 - Agenda, Appendix 2- List of Participants, and Appendix 5 – Draft Declaration of Collaboration.

Session 2: Science Workshop

The majority of the morning was dedicated to the "science workshop" designed by Task group 2 (*Wendy Graham - Lead, Jayantha Obeysekera, Mike Cullen, Keith Ingram, Alison Adams)* and facilitated by Alison Adams. The task group agreed to base the presentations for the workshop on the two page project summaries that had been provided by participants, and compiled for workshop 2. The "Participants' Project Summaries document has been augmented with additional projects and is available on line (link to document).

The task group identified over 15 projects that should be of interest to the group. Based on the availability of presenters, the following 5 topics were selected for presentation at the first workshop. The task group recommended that the remaining topics be presented at future workshops.

Evaluation of Climate Predictions for Florida (2 presentations)

- COAPS Land-Atmosphere Regional Reanalysis: Dynamic Downscaling to 10km using NCEP-Scripps RSM 1979-2001, **Vasu Misra**, FSU EOAS, COAPS, SEC
- Summary of results of SECC downscaling projects by Katherine Hayhoe and Cynthia Rosenzweig, **Jim Jones** SouthEast Climate Consortium

Hydrologic Applications of Climate Data in Florida (3 presentations)

- Statistical and Dynamic Downscaling of GCM predictions for use with Tampa Bay Water's Integrated Hydrologic Model, **Wendy Graham**, UF Water Institute
- Use of Intra-seasonal and Seasonal Forecasts to Reduce Risk in Regional Public Water Supply Management, **Chris Martinez**, University of Florida
- Long-Term Climate Change Evaluation for the St. Johns River Water Management District (SJRWMD), Water Supply Impact Study (WSIS), **Michael Cullum**, P.E., SJRWMD

Discussion:

The workshop participants were asked to consider how the projects being presented might be relevant to their specific needs, how the projects might integrate with the research agenda being shared later in the day, and how the projects might contribute to the relevance of the working group as a whole. Several themes/issues emerged indicating importance of the projects to the group during follow-up discussion of the presentations. These included:

- **Availability/Sharing of information, data and products:** Are data and model predictions available? Can they be shared? What products can be provided for users? What is the utility of the information? How does the level of detail of studies/projects pertain to the issues with which utilities deal?

- **Model Fidelity**: How good are these model results? Do they incorporate all important variables (ex. Is urban landuse represented in the models…)? How to improve models?

Is there one model, or a need for ensembles? Can we get some measures of uncertainty or sensitivity for changes in climate to various anthropogenic sources (i.e. land use versus atmospheric CO_2 concentration)?

- **Vulnerability and Risk:** Should not have unrealistic expectations for any of these climate model downscaling techniques. It is important to understand your utility's vulnerability to climate variability and change. What are your utility system's limitations? Are you learning something that will change a management decision? What do you need to do to be responsive to a forecast?

- **Implications:** Projects presented used 7 different downscaling techniques for Florida– is there a need to compare methods? No one model will fill all needs. Using suites of models will be needed to address specific interests/needs. Global climate models do not all resolve the FL peninsula. Problems with IPCC model prediction of loop current in the Gulf of Mexico are not resolved. It would be prudent to look across 23 models. There are systemic problems, i.e. all models have a cold bias for the gulf.

Lunch – Open Space

Participants were provided an opportunity to suggest topics for an open space discussion during lunch. No specific topics were suggested and participants met informally for lunch.

A brief icebreaker "Finding North" was facilitated by Wendylin Bartels to get the afternoon off to a start.

Session 3: Update from Task Group 3

Leveraging the SUS/FAU/FCI white paper for PWSI-CIWG - The SUS/FAU/FCI white paper on "Water Management" is part of a larger project, funded through the SUS Board of Governors, in which Florida Atlantic University together with the Florida Climate Institute (FCI) proposed to create resources that inform federal and state agencies on the basic and applied climate research activities of the State University System (SUS). The white paper on "Water Management" is one of the products and the prime responsibility of FAU. Task group 3 was interested in how the PWSU-CIWG might help inform/shape the SUS project white paper on "Water Management" to meet the needs of Utilities. *(Nicole Hammer/Len Berry- Lead, Alison Adams, Jim Jones, Vasu Misra, Wendy Graham).* The PWSU-CIWG task group met once by telephone prior to workshop 3 and agreed that it would be helpful to inform the group of the current status of the project/ paper during the workshop. Nicole Hammer briefly shared the outline with the group (Appendix 3). Several people noted that the purpose and audience for the SUS/FAU/FCI white papers were still not clear. Nicole Hammer will provide clarification, share a revised outline with the group and solicit comments.

Session 4: Utility Research Agenda

Task Group 1 *(Larry Johnson-lead, Doug Yoder, Kim Shugar, Tirusew Asefa, Vasu Misra, Jim Jones)* engaged in email discussions and had a conference call to begin to develop a Florida public water supply utility research agenda for climate change and variability impacts. Larry Johnson presented the group's results: a matrix developed by the group to help identify and document utility needs, available tools, research needs, current research projects, and additional research needs. Five climate research areas were identified including temperature, rainfall, storms/hurricanes, sea level rise, and carbon emissions. They anticipate that building this matrix will help the group to identify research gaps, strategies to initiate additional research, and ways to pursue funding. The outline of the matrix appears below. For partially completed matrices by climate areas see Appendix 4.

PUBLIC WATER SUPPLY UTILITIES-CLIMATE IMPACT WORKING GROUP
UTILITY RESEARCH AGENDA
May - 2011

CLIMATE AREAS	UTILITY NEEDS	AVAILABLE TOOLS	RESEARCH NEED	CURRENT RESEARCH PROJECTS	ADDITIONAL RESEARCH NEEDS
Temperature Impacts					
Rainfall Impacts					
Storms/ Hurricanes					
Sea Level Rise					
Carbon Emissions					

Larry Johnson also shared information on a recent WERF workshop that was focused on the future of research on climate change impacts on water and their key issues. (See presentation)

Discussion:

Larry Johnson asked for input on the matrix and solicited help from the full group to populate the matrix with appropriate information. The group responded positively to the work of the subgroup as a good start in helping to articulate Utility research needs. Carbon emissions were the only research area that had not been mentioned in earlier PWSU-CIWG meetings. In addition, it was noted that research areas currently represented in the matrix were biophysical; no education or communication needs were included. Larry Johnson is retiring and it was suggested that Doug Yoder would assume leadership of this task group.

Session 5: Building an agenda for future activities and next steps

Lisette introduced this session by reviewing briefly the "research agenda" and "science workshop presentations" in terms of how they linked to the needs that had been identified in the first workshop. She referred to the list of needs identified by utilities that had been developed during activities in the first workshop. Several of the key issues that emerged in the morning discussion on current projects and the research needs matrix resonated with that early list. See workshop report 1 page summary (provide link).

Discussion: "What did you hear this morning that was of interest/importance to you? To your organization? Again, there were several themes:

- **Fidelity of Models and Uncertainty; Data Standards and Sharing**
  - We have common questions about the use of predictive tools, what is out there--- still have questions about uncertainties and which tools to use. We are not going to have a perfect tool so what level of uncertainty are we willing to deal with?
  - To what extent can information from forecasts solve our problems? We can't get a perfect prediction; the science is not here yet.
  - Downscaling techniques and tools are still in development - what else is needed if we don't have perfect information? Every resource is useful if you understand the limitation of these approaches.
  - Can learn a lot from understanding the sensitivity of the system and which external forcing shocks the system most.
  - Communication and understanding each other is important
  - Understand what you are using the information for—what decision you are having to make
  - Need to understand different models methodologies—there is no perfect model.

- **Need for hearing about additional science projects**
  - Presentations from the morning were informative and impressive but several topics that appear in the research matrix were not covered including sea level rise, extreme events, and carbon emissions.
  - It was noted by a member of the Science Workshop task group that that there are several other presentations to yet to be presented in these areas. The only one not mentioned previously in workshops, or in the project summaries we have to date, is carbon emissions.
  - Need better understanding of the state of the science.
  - Current situation is that climate predictions are not there yet. Filled with uncertainty… can we wait and see? When do we need to make our decisions? Risk management and focus on planning under risk.

- **Communicating to Stakeholders and decision making**
  - Need better techniques to communicating uncertainty to stakeholders.

- There is room for social science in the research matrix/agenda. Perceptions of risk —experts and other stakeholders
- Are there no regrets decisions--- can some decisions can wait. (give the scientists 10 – 20 years and postpone the decision)

Discussion: What would you like to see happen next?

- We need to do a more thorough job of documenting the projects that are going on? (For example - collecting project descriptions, incorporating existing projects into the Research Matrix, understanding SUS white papers and relevance to group).
- Share technology and information at home institutions, with staff and decision makers
- Continue research presentations in the next workshops (suggested that presenter consider annotating presentations for web). Listen to what others are doing and get summaries
- Develop and implement mechanism to share "our group" with others including smaller utilities
- Understand what is driving the decisions of utilities - the overall and political contexts in which the decisions are being made, who makes the decisions, understand from different roles. Addressing decision making under uncertainty. How to get discussions going with local governments.
- Address vulnerability and risk management regarding climate change and sea level rise
- Case studies of successes of climate change being used by/in a utility (e.g. Seattle?)
- Improve communication to decision makers/ framing relevance and addressing risk
- Pursue research opportunities linking $ and the identified needs of the group.
- Share data- how, what, how to support?
- Understand utilities' vulnerabilities in the past as a way to avoid repeating mistakes. One way would be to develop narratives of utilities retrospective experiences.
- The group members should provide feedback on research matrix
- The group members should provide feedback on the declaration of collaboration
- Plan another workshop for 'our group' (currently referred to as PWSU-CIWG but open for another acronym/name) in the next quarter. Include another "Science Workshop"
- Systematic way to invite people to join group- Non-academic participants can bring a friend to next meeting (is this systematic?)
- Links? Decide how engaged the PWSU-CIWG can be with the SUS/FAU/FCI white paper on water management given the timeline. Who is the audience, target, what is the purpose?
- Links? Nov 16-17 a workshop for the SUS/FAU/FCI project is planned and may be of interest to PWSU-CIWG participants. Jim Jones will share information.
- Links? June 10 workshop – Steve McGrew will share information on the upcoming workshop (Palm Beach/FAU) which will include people from Columbia University.

- Links? Jessica Bolson and Chris Martinez will be sending a survey they are carrying out as part of their SECC project to members of the group, and encouraged the participants to respond.

Next Steps: Specific ACTIONS – To Do List

1. Draft workshop Three report (Lisette Staal)
2. Plan another "Science Workshop' again as part of next Group Workshop (Science Task Group)
3. Provide written feedback and populate the Research Agenda matrix that was compiled and presented by Task group1. (All Participants)
4. Identify new lead for Utiltity Research Agenda Task Group since Larry Johnson is retiring from PBCU.
5. Send an email to clarify the SUS/FAU/FCI management whitepaper activity, including a revised outline. Nicole Hammer work with Jim Jones. Group participants can provide feedback directly.
6. Review draft statement of collaboration/ declaration of collaboration for consideration and send any comment to lstaal@ufl.edu. (All)
7. Continue to suggest new acronyms/names for the working group (All)
8. Bring a friend to the next workshop (Non – academic participants)
9. Explore and suggest Mechanisms to share "our group" with others including smaller utilities (Task group four (Jessica Bolson lead)
10. Schedule and Plan next workshop – workshop 4 in the next quarter – (Lisette Staal, task group representatives and Wendylin Bartels.
11. Provide information on specific workshops of interest to the group mentioned during the meeting:
    a. June 10 workshop – upcoming workshop (Palm Beach/FAU) which will include people from Columbia University(Steve McGrew will share information)
    b. Nov 16-17 a workshop for the SUS/FAU/FCI project is planned and may be of interest to PWSU-CIWG participants. (Jim Jones will share information).

Reflection and Evaluation:

Lisette Staal thanked the participants, OUC as the host, and distributed a feedback form and requested written input from the participants. A total of 13 participants responded. Respondents continue to express a high level of satisfaction with the workshop output, organization, use of time, level of participation ranging from 4.30 to 4.77 on a scale of 1-5 with 5 being the highest. Clarity of next steps received an average rating of 4.31 which was up from the previous workshops; however, it was lower for public water supply utility respondents and higher for academics.

The workshop ran about 20 minutes overtime (to 4:20) with all participants remaining engaged. Each participant shared one word about how they felt at the end of this workshop. These words ranged from excited to anxious to impressed to encouraged.

A brief summary of exit feedback survey responses appears in Appendix 6.

APPENDIX 1 – Agenda

WORKSHOP – "Public Water Supply Utilities Climate Impacts Working Group"

Workshop Three, Wednesday, May 4, 2011 9:00 – 4:00pm

Location – OUC Downtown, 100 W. Anderson Street, Orlando

Objectives:

1. Continue to refine the identity, role, function and interests of the working group members.
2. Carry out Part I of a 'science workshop' organized by Task Group 2.
3. Present progress and solicit group input on Florida Public Water Supply Utility Research Agenda for climate change and variability impacts – Task Group 1.
4. Build on science workshop, research agenda, and group interests to inform working group future activities.
5. Determine next steps

Agenda:

8:30 – 9:00 Registration and Coffee

9:00 – 9:30 **Context:** Introductions, how we got here, where we go now? Day's agenda,

9:30 - 12:30

SCIENCE WORKSHOP I - Organized by Task-group 2 (Wendy Graham, lead)

Objective: Understanding the current state of the art/practice within the group in order to build an agenda for future activities.

Presentations: Projects in which PWSU-CIWG participants have been engaged.

Evaluation of Climate Predictions for Florida (3 presentations)

- COAPS Land-Atmosphere Regional Reanalysis: Dynamic Downscaling to 10km using NCEP-Scripps RSM 1979-2001, **Vasu Misra**, FSU EOAS, COAPS, SEC
- Summary of results of SECC downscaling projects by Katherine Hayhoe and Cynthia Rosenzweig, **Jim Jones** SouthEast Climate Consortium

Hydrologic Applications of Climate Data in Florida (3 presentations)

- Statistical and Dynamic Downscaling of GCM predictions for use with Tampa Bay Water's Integrated Hydrologic Model, **Wendy Graham**, UF Water Institute
- Use of Intra-seasonal and Seasonal Forecasts to Reduce Risk in Regional Public Water Supply Management, **Chris Martinez**, University of Florida
- Long-Term Climate Change Evaluation for the St. Johns River Water Management District (SJRWMD), Water Supply Impact Study (WSIS), **Michael Cullum**, P.E., SJRWMD

Discussion: Informing an agenda for future activities

12: 30 – 1:30	LUNCH (“open space” for participants to share topics of interest)
1:30 – 1:40	Task Group 3 Update: Leveraging SUS/FAU/FCI white papers for PWSU-CIWG. (Nicole Hammer, lead)
1:40 – 2:30	Utility Research Agenda Task Group 1 presentation/ discussion (Larry Johnson, lead)
2:30 – 3:00	Building an agenda for the PWSU-CIWG future activities-- linking Utility research needs and Science, including funding possibilities
Break	
3:15 – 3:45	Next steps: PWSU-CIWG identity, collaboration, communication, funding opportunities
3:45 -4:00	Reflection and Evaluation

APPENDIX 2 – List of Participants

Adams	Alison	Tampa Bay Water	AADAMS@tampabaywater.org
Asefa	Tirusew	Tampa Bay Water	tasefa@tampabaywater.org
Bartels	Wendylin	University of Florida/Florida Climate Institute	wendylin@ufl.edu
Bolson	Jessica	Miami University	jbolson@rsmas.miami.edu
Cullum	Mike	Saint Johns River Water Management District	mcullum@SJRWMD.COM
Graham	Wendy	University of Florida Water Institute	wgraham@ufl.edu
Hammer	Nicole	Florida Atlantic University	nicole.hammer@fau.edu
Hood	Jill	South West Florida Water Management District	jill.hood@swfwmd.state.fl.us
Hutton	Rick	Gainesville Regional Utilities	huttonrh@gru.com
Hwang	Syewoon	University of Florida	aceace111@ufl.edu
Ingram	Keith	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	ktingram@ufl.edu
Irani	Tracy	University of Florida Center for Public Issues Education	irani@ufl.edu
Johnson	Larry	Palm Beach County Water Utilities	tanlarry@aol.com
Shugar	Kim	South Florida Water Management District	kshugar@sfwmd.gov
Jones	James	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	jimj@ufl.edu
Martinez	Christopher	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	chrisjm@ufl.edu
McGrew	Steve	Palm Beach County Utilities	smcgrew@pbcwater.com
Misra	Vasu	Florida State University/Florida Climate Institute/ Southeast Climate Consortium	vmisra@fsu.edu
Staal	Lisette	University of Florida Water Institute	lstaal@ufl.edu
Teegarden	Robert	Orlando Utilities Commission	rteegarden@ouc.com
Wang	Dingbao	University of Central Florida	Dingbao.Wang@ucf.edu

APPENDIX 3 – SUS/FAU-FCI whitepaper DRAFT outline (Nicole Hammer, FAU)

Proposed Project Outline For The White Paper on Water Management:

Title: Challenges, available resource and needs for future water management infrastructure in Florida

Introduction

Executive Summary

1. Problem statement (overview paragraphs narrative-~1-2pgs) (flood protection, water supply, water quality)
1.1. Supporting Science (several sections with figures-high quality provide figures & images as jpeg- 5-8 pages).
1.1.1. Increase confidence impacts through future Research Adaptive Management

1.2. Resources for Water Management Adaptation Responses (overview paragraphs narrative ~1-2pgs) (Below should be covered but could be organized by topic rather than entities)
1.2.1. Available Resources (below 10-12 pages)
1.2.1.1. Academic
1.2.1.2. Governmental
1.2.1.3. Industry
1.2.1.4. NGO etc.
1.2.2. Collaborative Programs and Synergistic Activities

1.3. Future Needs for Water Management Adaptation

1.4. Economic Opportunities

1.5. Administrative Challenges to Future Water Management

1.6. Conclusions

1.7. Literature cited

1.8. Appendixes (will be separate document, but include in drafts)

APPENDIX 4 – Research Agenda Matrix – presented by Task Group 1

PUBLIC WATER SUPPLY UTILITIES- CLIMATE IMPACT WORKING GROUP
UTILITY RESEARCH AGENDA DRAFT
May-11

CLIMATE AREAS	UTILITY NEEDS	AVAILABLE TOOLS	RESEARCH NEEDS	CURRENT RESEARCH PROJECTS	ADDITIONAL RESEARCH NEEDS
Temperature Impacts	Seasonal Temp. Change	NOAA forecasts			
	Irrigation Demand Changes				
	1. How seasonal temp. forecasts impact irrigation demands				
	2. Proportion of water demand for irrigation				
	Cooling Demand changes				
	1. How could cooling water demand change with temp?				

PUBLIC WATER SUPPLY UTILITIES- CLIMATE IMPACT WORKING GROUP
UTILITY RESEARCH AGENDA DRAFT
May-11

CLIMATE AREAS	UTILITY NEEDS	AVAILABLE TOOLS	RESEARCH NEEDS	CURRENT RESEARCH PROJECTS	ADDITIONAL RESEARCH NEEDS
Rainfall Impacts	Regional rainfall predictions				
	1. Long term rainfall forecasts - 10, 20, 50 years, downscale global climate models to Florida regions	Global Climate models - AR4, NARCAST	Downscale models to Florida, calibrate w/ FI data		
	2. Long term changes in rainfall patterns in Florida	Change in ENSO pre and post 1960			
	2. Short term forecasts for winter-spring dry season, available Jan 1 for 3/1-6/15	IASCLIP FORECAST FORUM - IFF, winter forecasts better			Better predictions in spring
	3. Length of wet or dry season	ENSO effects			

PUBLIC WATER SUPPLY UTILITIES- CLIMATE IMPACT WORKING GROUP
UTILITY RESEARCH AGENDA DRAFT
May-11

CLIMATE AREAS	UTILITY NEEDS	AVAILABLE TOOLS	RESEARCH NEEDS	CURRENT RESEARCH PROJECTS	ADDITIONAL RESEARCH NEEDS
Storms/Hurricanes	Predict Nos./ Likelihood of Florida hurricane impacts	Good models for total nos. of hurricanes			Predictions for nos. hurricanes to hit Florida
	Model inundation and damage	GIS inundation model	Climate Compact doing Action Plans		
	Storm surge impacts	Storm surge models			
	(regional or local)				
	Impact of Storm/inundation on salt water intrusion				Hydrodynamic model for salt water intrusion
	Forecast hurricane tracks with 10-15 day lead time				

PUBLIC WATER SUPPLY UTILITIES- CLIMATE IMPACT WORKING GROUP
UTILITY RESEARCH AGENDA DRAFT
May-11

CLIMATE AREAS	UTILITY NEEDS	AVAILABLE TOOLS	RESEARCH NEEDS	CURRENT RESEARCH PROJECTS	ADDITIONAL RESEARCH NEEDS
Sea Level Rise	Monitor SLR data vs. models to develop statewide concensus	SE Climate Commission developing white paper			
	How do temp and SLR forecasts correlate?				
	Florida SLR predictions	SE Climate Commission developing white paper			
	Salt water intrusion boundary	USGS has models			
	Building Coastal Construction Line	Available for coastal counties			Needs to be updated
	Drainage/Storm water impacts	Climate Compact developing Action Plan			

PUBLIC WATER SUPPLY UTILITIES- CLIMATE IMPACT WORKING GROUP UTILITY RESEARCH AGENDA DRAFT May-11					
CLIMATE AREAS	**UTILITY NEEDS**	**AVAILABLE TOOLS**	**RESEARCH NEEDS**	**CURRENT RESEARCH PROJECTS**	**ADDITIONAL RESEARCH NEEDS**
Carbon Emissions	Utility methods to reduce carbon footprint	WERF research - Utility reduction methods			
	Nitrous oxide impacts from ww plants on climate				How to measure nitrous oxide emissions

APPENDIX 5 – Draft Declaration of Collaboration

Public Water Supply Utilities Climate Impacts Working Group (PWSU-CIWG)

Draft

Declaration of Collaboration

May 2011

Stakeholders representing several Water Supply Utilities, Water Management Districts, and Academic Organizations in Florida have mutually agreed to establish a COLLABORATION that will focus on increasing the relevance of climate change and variability information, data and tools to the planning and operations of Florida's public water supply utilities.

Participating Organizations include

Water Supply Utilities	Water Management Districts	Academic Organizations
Gainesville Regional Utilities	Saint Johns River WMD	University of Florida Water Institute
Miami-Dade Water and Sewer Department	South Florida WMD	Florida Climate Institute
Palm Beach County Water Utilities	Southwest Florida WMD	Florida State University, COAPS
Peace River Manasota Regional Water Supply Authority	Others?	South East Climate Consortium
Tampa Bay Water		UF/IFAS Center for Public Issues Education
Others?		Others?

Statement of Need

The impacts of climate variability and climate change on water supply reliability, and adapting to changing hydrologic conditions is becoming a particularly pressing challenge for major public water suppliers in Florida. In addition to these uncertainties, the Florida utilities face multiple issues including: a push toward the use of alternative water supplies; environmental, social, fiscal and regulatory challenges; and implementing both short and long range solutions complicated by risks and uncertainties. To meet current and future water demands in the face of uncertainties and risks presented by climate change and variability, public water supply utilities will need reliable information on probable impacts for Florida at local and regional spatial and temporal scales.

A lack of climate change models with probable scenarios for sea level rise, temperature change, and altered rainfall patterns for Florida is a challenge to updating water supply

planning. The uncertainty of the information, the credibility, complexity, and scales of existing data and models present significant challenges. Understanding, monitoring and modeling climate variability/change and sea level rise at the local to regional scale, and assessing the relevant uncertainties in this information, is important before this information can be used to improve operations/forecasting/ planning.

Timeframe

The collaboration will be for 24 months, from _____through _____; however, the Partners acknowledge the right of the other to extend or discontinue the collaboration at any point.

Interests served by Collaboration

Partners are interested in the unique opportunity and potential benefits that this unique collaboration could provide to inform the water industry, water resource management, and climate science to better address the need for locally relevant quantitative information. It will help to jointly define research and activities focused on areas that are closely aligned to specific interests of water utilities and to explore innovative ways to better prepare for and adapt to the potential effects of climate change climate variability/change and sea level rise on Florida's water resources.

Participating utilities want to address uncertainty in climate predictions (rainfall, temperatures, extreme events and sea level rise) at time scales relevant to operations (3-12 months), permitting (20 years) and capital planning (20-50 years). There is also a need for decision strategies that can benefit from appropriate climate tools and models. This requires the best available climate science and technology for use in their planning or decision making. Several Utilities have been substantially engaged in various regional, state and national programs to assess potential impacts climate change on the water industry and to establish research and education programs to address these potential impacts and bring considerable expertise to the collaboration.

Participating Water Management Districts want

Participating Academic Organizations want

Goals

Our goals in establishing this collaboration include:

- Increasing relevance of climate science, tools and models to the public water supply sector, making them more useable for planning both the supply of and demand for water
- Helping shape the development and implementation of science-based climate information for operational and longer-term planning and management decisions.
- Promoting cross-institutional/organizational recognition of the unique institutional situations of each of the utilities and diverse needs and responses to the climate challenges.
- Expanding and enhancing membership of all stakeholder types;
- Attracting new funding sources to the collaboration.

Areas of Mutual Benefit

Recognizing that regional and institutional differences exist, we will strive to create an environment that facilitates a common base for communication and will provide mutual benefits to encourage institutional buy-in for participation by all represented stakeholders. As a united group we can:

- Identify and address specific issues of particular relevance to the water supply utilities and help inform the future conditions in which they will have to make decisions.
- Share in the development of tools, decision strategies and strategies that are useful to water supply utilities.
- Provide access to tools and data, tap into useable information, explore ways to "filter" all information that is available and find ways to identify what we all can agree on. A "clearinghouse" that would include vetted information, data, model assessments and scenarios, reports, quarterly newsletter, webinars, seminars and workshops.
- Identify opportunities to harmonize methods when they are technically feasible, legally permissible, and consistent with program objectives.
- Share information that will be useful for more comprehensive policy analysis for budget and resources.
- Provide a network for dissemination of research findings to Florida Water Utilities.
- Influence research priorities of those doing relevant research, funding relevant research and posing research questions
- Better leverage funding opportunities, particularly at the Federal level.

Examples of Collaboration

Several activities can advance knowledge and to inform viable and useful outputs of the collaboration.

- Periodically share information on partners' and other scientific research projects
- Develop a research agenda and form and facilitate research coalitions to fill gaps in research pertinent to Florida
- Explore options for active technical level collaboration as appropriate.
- Access or develop improved prediction tools for Florida (North, Central, and South) at seasonal (1-12mo.) and Midterm (10-50yrs)
- Develop working/white papers that synthesize and disseminate national research pertinent to Florida Water Resources and Demand and Climate Science and Impacts.
- Contribute to the development of the project proposals
- Exchange of information
- Plan and coordinate joint seminars, workshops, meetings, consultations;
- Share scare materials, samples, resources, and provide any technical assistance as required;

Ways to Evolve the Collaboration

- Organize information and data sharing discussions, meetings, website, conference calls, publications
- Identify and engage new partners and donors
- Define level of commitment of partners
- Identify possible beneficiaries and possible benefits (resilient water supply)
- Identify opportunities to work collaboratively
- Establish lead points of contact for interest areas as they are identified
- Develop strong mission statement and strategic plan
- Establish a steering committee, staff, roles and responsibilities
- Identify and solicit funding jointly for the Partnership whenever appropriate and advantageous. Develop strategies for federal funding to support climate model research specific to the southeast and coastal Florida.

STATEMENT OF SUPPORT

In a spirit of collaboration and shared interest, we the undersigned representatives of

the _____ undertake this unprecedented collaboration to better advance our missions and serve the people of Florida. Focused on climate related impacts on urban water resource planning, this effort comes at an important time. As a key stakeholders in Florida's water resources including providing a safe water supply, managing water resources and regional water supply plans and providing relevant climate and hydrologic science, we sincerely believe that this Collaboration will provide an opportunity for our organizations to both contribute to and gain expertise that is essential to reaching our mutual, and mutually exclusive goals of addressing the uncertainties and risks presented by climate variability and change. We look forward to growing and continued collaboration.

Sincerely,

All organizations signatures follow,,,

Gainesville Regional Utilities_____

NAME …. from our organization will serve as representatives to the Collaboration.

Miami-Dade Water and Sewer Department_____

NAME …. from our organization will serve as representatives to the Collaboration.

Palm Beach County Water Utilities_____

NAME …. from our organization will serve as representatives to the Collaboration.

Peace River Manasota Regional Water Supply Authority _____

NAME …. from our organization will serve as representatives to the Collaboration.

Tampa Bay Water _____

NAME …. from our organization will serve as representatives to the Collaboration.

Saint Johns River WMD _____

NAME …. from our organization will serve as representatives to the Collaboration.

South Florida WMD _____

NAME …. from our organization will serve as representatives to the Collaboration.

Southwest Florida WMD _____

NAME …. from our organization will serve as representatives to the Collaboration.

University of Florida Water Institute _____

NAME …. from our organization will serve as representatives to the Collaboration.

Florida Climate Institute _____

NAME …. from our organization will serve as representatives to the Collaboration.

Florida State University, COAPS _____

NAME …. from our organization will serve as representatives to the Collaboration.

South East Climate Consortium _____

NAME …. from our organization will serve as representatives to the Collaboration.

UF/IFAS Center for Public Issues Education _____

NAME …. from our organization will serve as representatives to the Collaboration.

OTHERS???

NAME …. from our organization will serve as representatives to the Collaboration.

APPENDIX 6 – Summary of feedback survey responses (1 low - 5 high)

	Public Water Supply Utility	Water Management District	Academics	NA (affiliation not indicated)	TOTAL
Output	4.5	4.0	4.86	4.0	**4.54**
Organization	4.5	4.67	4.86	5.0	**4.77**
Use of Time	4.5	4.0	4.43	5.0	**4.38**
Participation-involvement	4.5	4.67	4.29	5.0	**4.46**
Next Steps clear	3.5	3.67	4.5	4.0	**4.31**
The most important thing that you are taking away from this meeting	∗ better understanding of science- current status (WMD) ∗ a greater sense of community (Academic) ∗ the group's enthusiasm is encouraging(WMD) ∗ what others were doing in terms of their climate related projects (Utility) ∗ the network and collaborative aspect on this issue (Academic) ∗ better understanding of data needs (Academic)				
The most important thing the group should do next….	∗ continue (WMD) ∗ devise mechanism for regular (no less or more than once every one to two week) communication among members (Academic) ∗ include more utilities (WMD) ∗ the science workshop should continue and refining the research project and priorities (Utility) ∗ follow through on goals set and stay in contact.(Academic) ∗ next steps for the working group(Academic)				
Additional comments:	∗ great job in meeting organization and facilitation ∗ thank you for the excellent workshop preparation				