

**“Public Water Supply Utilities Climate Impacts
Working Group”**

WORKSHOP REPORT

WORKSHOP ONE

Wednesday, September 22, 2010

9:30 – 4pm

**Hosted by
Orlando Utilities Commission in Orlando, Florida**

WORKSHOP – “Public Water Supply Utilities Climate Impacts Working Group”
Wednesday, September 22, 2010, 9:30 – 4pm, Orlando Florida.

Purpose: Climate change is expected to present new challenges to the water industry in the future. To meet current and future water demands in the face of the challenges, uncertainties and risks presented by climate change and variability, public water supply utilities will need reliable information on probable impacts for Florida at local to regional spatial and temporal scales. There is a need for public water utilities to have access to the best available climate science and technology for use in their planning or decision making. Prompted by Alison Adams (Tampa Bay Water), the UF Water Institute (Dr. Wendy Graham, Director) and the Florida Climate Institute, a joint institute of the University of Florida and Florida State University (Dr. Jim Jones, Director) convened a workshop to bring representatives from public water supply utilities, water management districts and academia together to begin a shared dialogue to explore interests in and potential benefits of forming a “Public Water Utilities Climate Impacts Working Group” 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.

Workshop Goal: Determine if a “working group” will serve a purpose that is not being addressed through other venues, if there is business value in such a group, and whether it would be useful to continue to interact.

Workshop Participants: Representatives of the UF Water Institute, the FCI, the Southeast Climate Consortium (SECC), six major public water supply utilities and three Water Management Districts to focus specifically on issues of climate and public water supply. A total of twenty-two participants represented these partner institutions (see Table 1).

Workshop Outcome: The group agreed to continue to interact and further develop the idea of a working group. Quarterly face-to-face meetings of significant duration (more than ½ day) were preferred. It was agreed that future workshops should focus on key issues of concern. In addition, as the discussion moves forward, participants noted an interest in formalizing the working group structure (i.e., governance, organization and funding). It was suggested that the core planning committee for the next meeting be expanded to include representatives from both water supply utilities and water management districts. Volunteers for the planning committee included Jayantha Obeysekera (South Florida Water Management District), Mike Cullen (St Johns River Water Management District), Virginia Walsh (Miami-Dade County) and Alison Adams (Tampa Bay Water). Dr. Wendy Graham (UF Water Institute) agreed to convene the committee to plan the next meeting.

Table 1: Distribution of Participants by Stakeholder Group

Public Utilities (10 participants)	Water Management Districts (5)	Academic (6 Participants)
Gainesville Regional Utilities(1)	Saint Johns River Water Management District (2)	University of Florida (4)
Miami-Dade Water and Sewer Department(1)	South Florida Water Management District (2)	Florida State University (2)
Orlando Utilities Commission(3)	Southwest Florida Water Management District (1)	UF Water Institute
Palm Beach County Water Utilities (2)		Florida Climate Institute
Peace River Manasota Regional Water Supply Authority(1)		South East Climate Consortium
Tampa Bay Water(2)		

Workshop Summary: The workshop was designed to encourage interactive discussion drawing on the varied expertise of all participants to learn from and with each other. There were 5 sessions during the workshop.

Session 1: Context

As a pre-workshop exercise, participants were asked to reflect briefly on how they interpreted the term “climate change.” Each person was given a card upon which they were instructed to write words or phrases that came to mind in response to this term. The cards were collected and arranged on a flipchart according to stakeholder group (See Table 2) . These results illustrate the diversity of meanings that people associate with this complex topic. On-going research will engage stakeholders to further explore the extent to which meanings and values are shared within the group.

Table 2: Summary of responses to the term “Climate Change” classified by Stakeholder Group

Public Utilities	Water Management Districts	Academic
<ul style="list-style-type: none"> • Sea-level rise • Sea level rise • Changes in rainfall patterns? • Reasonable estimate of sea level rise • Rainfall variability • Change in statistical distribution of atmospheric forcing • Science • A need for disruptive innovation and new perspectives on sustainable development • Energy water ‘nexus’ means something quite different to each group who is represented • Uncertainty • Extreme variability • Incremental 	<ul style="list-style-type: none"> • Lack of regional information • Sea level rise needs increased emphasis • Extremes? What will happen in Florida? • Lack of common set of planning scenarios for the state • Lack of modeling tools at regional level • Natural variability and global warming induced • Sea level rise • More extreme hydrology • Highly uncertain in Florida • Challenges to water resource management • Sea level rise • Salt water intrusion • Rainfall (more or less) • AMO (?) 	<ul style="list-style-type: none"> • Unpredictable • Storms • Steep ecological change rates • Extinctions • Uncertain • Important • Political • Spatially variable • Slow • Lots of information/misinformation • Spatially variable • Uncertainty • Vulnerability of society • Complexity of causes, impacts, responses • Politicized – extreme points of view • Critical importance to society • Natural <u>and</u> Anthropogenic • Highly uncertain with respect to when/how much; Highly certain in that it is nearly inevitable • Polarized: Politics of fear – action, Politics of status quo – inaction • Politically charged • Easily misunderstood • Natural + Anthropogenic • Climate predictability • ENSO variation • <u>Regional</u> climate change • Resource management • Al Gore and Jim O’Brien • Hot debate, strong opinions • Greenhouse gasses • “Hockey stick” • Sea level rise • Changes in snowmelt-driven river flows

Lisette Staal, UF Water Institute, facilitated the meeting. Participants introduced themselves (participant list attached). Dr. Wendy Graham, Director, UF Water Institute, then shared background on the UF Water Institute, on the idea for the “collaborative working group,” and steps taken so far to initiate this group. She referred to the synthesis of telephone discussions with the utilities (see attached) , briefly discussed the recent proposal submitted to NOAA-Climate and Societal Interactions with the partners represented at the workshop, and shared her hopes for the workshop. Dr. Jim Jones, Director, FCI and Co-Director of the SECC, introduced both the newly established Florida Climate Institute and the SECC, outlining some key areas of expertise.



Figure 1: Expectations

- *Share*
- *Tangibles/useful products*
- *Common set of climate scenarios useful for planning*
- *Useable information for the entire peninsula*
- *Not duplicate other activities*
- *Create efficiencies*
- *Inventories of what is going on*

Several participants then shared their expectations of what they hoped to accomplish at the workshop (and potentially longer term as a group). These reflections were captured on a flip chart (See Figure 1).

Session 2: Climate and Public Water Supply: Challenges

During the morning participants representing Florida water supply utilities shared examples of climate related issues they are already facing and strategies that they have used to address the challenges with each other. Representatives from academia and the water management districts actively listened to the exchange among the representatives of the water supply utilities and then engaged in an open discussion. The intent was to get a broad view of the types of challenges and climate drivers, planning horizons and tools currently used in doing the business of public water supply. Some of the comments reflected during the discussion were noted on flipcharts (see Figures 2 and 3).

Discussion focused around the unique institutional situations of each of the utilities and helped the group to jointly develop a better understanding of the diversity of organizational, political, and environmental challenges facing each utility and region. There was significant diversity in the types of issues described by the utilities depending on the source of water supply, geographic location, and the regional/institutional context. However, there was a broad, common interest expressed 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).



Figure 2: Planning horizons for Public Water Supply Utilities in Florida

- *multi decadal*
- *annual*
- *operational - 3 to 6 months*
- *capital – long term investment (20-50 years)*
- *historic*
- *decision makers (eg elected board members) - annual*
- *urgency and immediacy of the challenge varies by Utility*



Figure 3: Climate Challenges/Issues facing Public Water Supply Utilities

- *understanding variability*
- *rainfall uncertainty*
- *uncertainty*
- *storage*
- *groundwater limitations*
- *salinity*
- *baggage of the term and perceptions of “Climate Change”*
- *understanding “attribution”- determining the source of climate impacts*

The morning closed with a presentation by Dr. David Zierden, Florida State Climatologist on historical climate data for Florida – including El Nino Southern Oscillation (ENSO), Atlantic Multidecadal Oscillation (AMO), extreme events, and sea level as well as expectations for the future specific to Florida.

Session 3: Climate and Public Water Supply: Climate data, tools, and approaches

The afternoon session started with gaining an understanding of the data, tools and approaches that are currently available to address the water supply planning challenges that were discussed in the morning. Participants representing the academic community and the water management districts shared information on data, tools and approaches that they are currently using or developing that may be useful to address water supply challenges (See Figure 4) . Specific information was shared regarding projects underway, historical analyses, downscaling models, websites, and additional resources.



Figure 4: Tools and Approaches

- *Monitoring/data collection*
- *modeling*
- *historical analyses*
- *ENSO forecasts*
- *AMO*
- *websites*

Open discussion focused on some of the limitations that might be prevent the use of existing climate tools (e.g. models, data, maps) by utilities. Some key reasons noted were lack of knowledge about the tools (and the need for an inventory); uncertainty and lack of confidence in reliability of the tools (spatial scales, timeframes, accuracy of information, source of tools); possible bias in the tools (incomplete story; “exaggeration of impacts”); and a desire to be sure they will “bring in real science.” In addition the need for development of decision strategies that can benefit from appropriate tools was noted. It was suggested that assessing the strengths and limitations of the available climate science tools and models from the perspective of the public water supply sector could help shape the development and implementation of science-based climate information for operational and longer-term planning and management decisions, and may help improve the adaptive capacity

of utilities.

Session 4: Why a “Working Group”?

In the NOAA proposal submitted in early September 2010, The UF Water Institute and FCI proposed to develop and implement a collaborative working group comprised of public water suppliers, water resource managers, climate scientists and hydrologic scientists to increase the relevance and use of climate variability, climate change and sea level rise data and models by public water supply utilities. The underlying assumption was that enabling a collaborative working group would improve both the regional relevance and usability of climate and sea level rise data and tools for water suppliers and resources managers in Florida, and improve their capacity to adapt to expected climate variability and change. The afternoon focused on determining if such a working group would serve a purpose that is not being addressed through other venues, if there is business value in such a group, and whether it would be useful for the group to continue to interact.

The session began by exploring, from each stakeholder group’s perspective (i.e. utility, water management district, academic institution) , what they “need” and what they “can provide” to help water utilities provide a reliable water supply in the face of climate uncertainties and risk. Each of the participants was asked to assume the role of a different stakeholder and to write on a flipchart (from the perspective of the role they were playing) what they believe they “need” and what they believe that they are able to provide to help utilities address the climate-related challenges. Participants then reassembled in their actual stakeholder groups, reviewed the lists developed for them by the other participants, and made changes to the lists, as necessary, to reflect what they believe reflects their needs and potential contributions.

Each of the stakeholder group’s then presented their list to the entire group, shared the items they had added following the role-play, and discussed whether or not they felt that any items put on the lists by others needed to be removed. No groups indicated that they had removed any of the original posts. The lists resulting from this exercise appear in Tables 3 and 4. These tables are not intended to be a complete listing of needs and contributions, nor are they listed in any priority order. Rather they are intended to give a general idea of the range of needs and potential contributions of different stakeholder groups from a number of different perspectives.

After the exercise and presentations, open discussion focused on what the participants thought that the group could DO together. Participants first revisited the expectations that they had noted for the workshop. Then they were asked to, based on the discussions during the previous sessions, suggest types of activities that a working group could do to help reach the stated needs (see Figure 5). In general it was suggested that a working group could provide included knowledge management (communication and access to information and data), science-based technical resources (data, monitoring, and expertise), collective evaluation of the relevance and uncertainty of climate tools, and leveraging of both professional and financial resources.

Table 3: What we “**NEED**” to help
Water Utilities plan for water supply in the face of climate impact uncertainties and risk

Public Water Supply Utilities	Water Management Districts	Academics
<ul style="list-style-type: none"> • Reliable predictive tools • Understanding of strengths/limitations of current climate models. • Reliable predictions and uncertainty analysis • Accurate predictions of precipitation variability • Realistic science based scenarios of climate at 10, 20, 30 + years • Rainfall projections (probabilistic at next 3mo, 6 mo, 1 year. • Accurate projections of socioeconomic, demographic change related to climate • Good quantitative estimates of climate projections of rainfall • Future estimates of extremes that projects should be planned for? • Decadal to multi-decadal scenarios of possible climate futures with probabilities • Short term 1-18 months forecasts with uncertainty bounds • Impact of sea level rise on wellfields and when • Projections of sea level rise over time with probabilities • Projections of demand based on demographics, socioeconomics temperature, rainfall projections. • Available Water Supply • Funding for Water Supply Development • Policies/regulations that are suited unique to each regions • In depth understanding of historical record (rain, temp, groundwater levels, riverflow) • Need regulations that allow utilities to <u>fully</u> achieve the benefits of conjunctive (groundwater/surface water) use • continued dialogue/communication among utilities and research community and WMD • Cooperative funding 	<ul style="list-style-type: none"> • Rainmaker • Regulations that recognize climate • Improved hydrologic models and data (e.g., topo) • Understanding of natural variability • Knowledge of acceptable environment impact • To come together and agree on State water resource policy • Utility Demands • Understand Utility needs • Quality requirements • \$ to address funding constraints • Land use regulations and planning • Common set of climate change planning scenarios 	<ul style="list-style-type: none"> • To come up with common language/definition (e.g. clearly define model) • Direction/focus • To understand utilities timeframes • Access to utility/local data and information • Help from stakeholder in understanding problem, time and space scales • To understand problem and scales: temporal and spatial • active participation by stakeholders-engagement in “product” evaluation • Funding, partnership, cooperation, community and process

Table 4: What we **“CAN PROVIDE”** to help to help Water Utilities plan for water supply in the face of climate impact uncertainties and risk

Public Water Supply Utilities	Water Management Districts	Academics
<ul style="list-style-type: none"> • Reliable public water • Sustainable water supplies through climate-informed designs (infrastructure and operations) • Alternative supplies • Info about demands • Monitoring data • Meter data • List of our needs • Water usage data and trends • Future projection of population • Reliable <u>economic</u> water supply to consumers • To minimize impact of climate change we will be very conservative in our policy decisions • Real world vetting of usefulness of academic/agency products • Research funding • Political support for funding for universities to do climate research • Engagement opportunities to help guide research 	<ul style="list-style-type: none"> • Overall vision, guidance for district • Regional solutions • Consumptive Use Permits that recognized climate variability and change • Sustainable yield • Water resource tools • Scientific guidance (extension) • Design standards not based on stationary climate 	<ul style="list-style-type: none"> • Common language/definition • Forecasts and predictions at timescales (operational 3-6 months, regulatory 20 years, infrastructure 30-50 years) • Forecasts of seasonal/ENSO shifts (useful for operational decisions) • Models, methods, approaches • Facilitation • User-focused information (extension) education • Synthesis and interpretation of science advances • Well-trained graduates • Better science • New understanding • Better quantification of climate model/data uncertainty



Figure 5: What can we do together

- ✓ Provide a common base for communication and information to serve the needs of the engaged stakeholders. A “clearinghouse” that would include vetted information, data, model assessments and scenarios, reports, quarterly newsletter, webinars, seminars and workshops.
- ✓ Identify and discuss/ address specific issues of particular relevance to the water supply utilities and help them understand what are the future conditions in which they will have to make decisions.
- ✓ Address different management/planning time horizons (which would require the inclusion of different actors, some of whom were not at this meeting)
- ✓ Share in the development of tools, decision strategies and strategies that are useful to water supply utilities.
- ✓ As a united group, better leverage funding opportunities, particularly at the Federal level.
- ✓ Provide access to tools and data, tap into useable information, find ways to identify what we all can agree on, and how to “filter” all information that is available
- ✓ Need to have institutional buy-in for participation
- ✓ Create a process or environment for collaboration

Session 5: Summary and Evaluation:

The group agreed to continue to interact and further develop the idea of a working group. Quarterly face-to-face meetings of significant duration (more than ½ day) were preferred. It was agreed that future workshops should focus on key issues of concern. The first one could include learning about group members' participation in various regional and national organizations that are focused on evaluating potential climate impacts to water utilities (i.e., WUCA, EPA, WRF, South Florida Climate Compact, etc.) . Goals may include understanding what the missions of these various groups are, how they function, how they are funded, and what we might do together that builds on and customizes these activities for Florida- specific issues. Participants noted the importance of getting institutional buy-in to the process and recommended that a letter from the conveners be sent to leaders of participants' organizations as needed and appropriate. It was suggested to expand the core planning group for the next meeting to include representatives from both water supply utilities and water management districts. Volunteers included Jayantha Obeysekera (SFWMD), and Mike Cullen (SJRWMD) . Virginia Walsh/Doug Yoder (Miami-Dade) and Alison Adams (Tampa Bay Water). In addition, as the discussion moves forward, participants noted an interest in formalizing the working group structure (i.e., governance, organization and funding)

Lisette Staal revisited the goals set for the day, noting that the workshop was designed as a deliberate collaborative learning process based on educational and organizational theories and approaches. She mentioned the integral role that research plays as part of implementing and sustaining a working group process. Wendy-Lin Bartels and Tracy Irani were reintroduced as part of the facilitation team whose focus is on helping to both understand and improve the group process. Wendy-Lin shared with the participants her interest in contacting the participants after the workshop for brief interviews by telephone. Lisette Staal thanked the participants, OUC as the host, and distributed a feedback form and requested written input from the participants. A brief summary of exit feedback survey responses appears in Table 6.

Next steps:

Short term action items include:

1. Prepare and share a summary of the meeting (Water Institute, Lisette Staal).
2. Communicate with and convene the planning group for the next meeting (Water Institute, Dr. Wendy Graham).
3. Contact participants by telephone for a follow-up interview as part of the effort to continually improve the working group process (Florida Climate Institute, Dr. Wendylin Bartels).

Table 6: Brief summary of exit feedback survey responses (1 low-5 high)

	Public Water Supply Utility	Water Management District	Academics	TOTAL
Output	4.3	4	4.2	4.15
Organization	4.4	4.3	4.8	4.57
Use of Time	4.4	4.3	4.7	4.46
Participation-involvement	4.2	4.6	4.3	4.39
Next Steps clear	3.5	3.3	3.8	3.61
The most important thing that you are taking away from this meeting	<ul style="list-style-type: none"> * Starting the process-getting involved * People are interested in furthering the idea * Communication with others involved in climate science/ consensus on issues of data prediction and validity/ consensus on a need and interest to move forward * Uncertainty is the one thing we can all agree on * Knowledge of what others are doing on Climate Change * Potential for coordinating climate change efforts of local governments and universities, etc. * Sense of next steps * No matter how much interest there is, political support is necessary for institutional change in Utilities. A Utilities group could gain political clout. * Planning other meetings * What others are doing/ The need for collaborative effort * Enterprising ways of engagement/ There are broad common grounds from the "list of needs and provided" activities by the groups * The feeling of willingness for collaboration on what to do about climate change by the various stakeholders. 			
Additional Comments	<ul style="list-style-type: none"> * Great meeting! * I've been in many climate change meetings and this has been by far the most worthwhile. Time well spent. Thank You. * Ultimate focus needs to be on a product utilities can use and rely on, not simply and academic/scientific exercise. * Good job! * Thank you for organizing this! * Overall, the meeting was very informative, especially in letting me know what I don't know. * Thank you for making this excellent meeting. How we can use the product on climate change/variability test if it works at our scale. * I suggest you look at the Water Reuse Group, which has worked on a state-wide level for the last 2 years 			
<i>Total # of responses</i>	5	3	5	<i>14 (1 affiliation not identified)</i>

WORKSHOP – “Public Water Supply Utilities Climate Impacts Working Group”

Wednesday, September 22, 2010, 9:30 – 4pm

Location – [OUC Downtown, 100 W. Anderson Street](#), Orlando

Purpose: In the face of challenges, uncertainties and risks presented by climate change and variability, bring together stakeholders to explore the interest in and potential benefits of a “Public Water Utilities Climate Impacts Working Group” 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.

Outcomes:

- ✓ Recognize needs for climate change and variability data, information, and models relevant to public water supply planning in Florida.
- ✓ Identify what is currently being done and what is available to address those needs.
- ✓ Identify what could be done better to address the needs based on shared strengths and resources of the represented institutions.
- ✓ Determine if a “working group” will serve a purpose that is not being addressed through other venues, if there is business value in such a group, and whether it would be useful to continue to interact.

9:30 – 10:30 **Context**

- Introductions, Agenda Review, Facilitation Process (Lisette Staal)
- Why we are here (Drs. Wendy Graham and Jim Jones)
- Expectations

10:30 – 12:00 **Climate and Public Water Supply: Challenges**

Participants representing Florida Water Supply Utilities will share examples of climate related issues already faced or anticipated by the Public Water Utilities, and any strategies that they have used to address these challenges. Water Management District and Academic participants will initially be listeners with an opportunity to contribute. This will be followed by full group discussion.

Questions posed to the Public Water Supply Utility participants will include:

- What is a climate related issue that you have already had to deal with at your utility affecting public water supply? When and why?
- What information, data, tool, or strategy did you use to address the challenge?
- Were you successful?

12:00 – 12:30 **Florida Climate and Sea level - historic trends and expectations for the future**

Presentation by the Florida State Climatologist, Dr. David Zierden, that will provide information on Florida’s historical climate cycles, extreme events, and expectations for the future. (Dr. David Zierden, Florida State Climatologist)

12:30 – 1:30 **LUNCH**

1:30 – 2:30

Climate and Public Water Supply: Climate data, tools and approaches

Participants representing the academic community and the Water Management Districts will share information on data, tools and approaches that they are using or developing that may be useful to address water supply challenges. Utility representatives will initially be listeners with an opportunity to contribute. This will be followed by full group discussion.

Questions posed to the Water Management and Academic participants will include:

- What additional specific tools, models, and approaches currently exist that you believe would be helpful to water supply utilities?
- What additional specific tools, models, and approaches will be available in the next 2-5 years that you believe would be helpful to water supply utilities?

2:30 – 3:30

Why a “Working Group”? What can we do together? What similar groups exist?

Explore how a “working group” could provide added value and serve a purpose that is not being addressed through other venues. Decide if, and/or how, it would be useful to continue to interact. Consider any next steps.

3:30 – 4:00

Bringing it all together and Evaluation

LIST OF PARTICIPANTS

Last name	First name	Organization	email	Stakeholder group
Adams	Alison	Tampa Bay Water	AADAMS@tampabaywater.org	PWS Utility
Asefa	Tirusew	Tampa Bay Water	tasefa@tampabaywater.org	PWS Utility
Bartels	Wendylin	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	wendylin@ufl.edu	Academic/facilitation
Bartol	Tom	Saint Johns River Water Management District	TBartol@sjrwmd.com	WMD
Coates	Mike	Peace River Manasota Regional Water Supply Authority	Mcoates@regionalwater.org	PWS Utility
Cullum	Mike	Saint Johns River Water Management District	mcullum@SJRWMD.COM	WMD
Graham	Wendy	University of Florida Water Institute	wgraham@ufl.edu	Academic
Ingram	Keith	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	ktingram@ufl.edu	Academic
Irani	Tracy	University of Florida Center for Public Issues Education	irani@ufl.edu	Academic/facilitation
Johnson	Larry	Palm Beach County Water Utilities	ljohnson@pbcwater.com	PWS Utility
Jones	James	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	jimi@ufl.edu	Academic
Keener	Victoria	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	vicko@ufl.edu	Academic
Kelly	Marty	South West Florida Water Management District	Marty.Kelly@swfwmd.state.fl.us	WMD
Martinez	Christopher	University of Florida/Florida Climate Institute/ Southeast Climate Consortium	chrisjm@ufl.edu	Academic
McKee	Kathleen	University of Florida Water Institute	katmckee@ufl.edu	Academic/facilitation
Merriam	Chip	Orlando Utilities Commission	cmerriam@ouc.com	PWS Utility
Misra	Vasu	Florida State University/Florida Climate Institute/ Southeast Climate Consortium	vmisra@fsu.edu	Academic
Obeysekera	Jayantha	South Florida Water Management District	jobey@sfwmd.gov	WMD
Richardson	David	Gainesville Regional Utilities	RICHARDSODM@gru.com	PWS Utility
Staal	Lisette	University of Florida Water Institute	lstaal@ufl.edu	Academic/facilitation
Szaro	Jennifer	Orlando Utilities Commission	Jszaro@ouc.com	PWS Utility
Teegarden	Robert	Orlando Utilities Commission	rteegarden@ouc.com	PWS Utility
Todd	Ken	Palm Beach County Water Utilities	KTodd@pbcgov.org	PWS Utility
Trimble	Paul	South Florida Water Management District	ptrimble@sfwmd.gov	WMD
Walsh	Virginia	Miami-Dade Water and Sewer Department	WALSHV@miamidade.gov	PWS Utility
Zierden	David	Florida State University/Florida Climate Institute/ Southeast Climate Consortium	zierden@coaps.fsu.edu	Academic