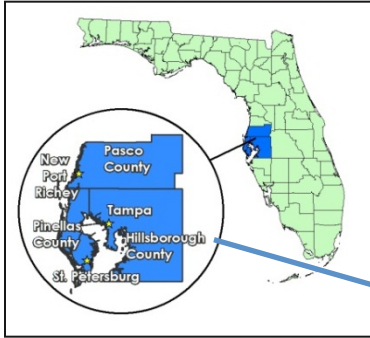


# Tampa Bay Water's Climate Change Impact Assessment Research Overview

Tirusew Asefa, Ph.D., P.E., D.WRE  
Modeling and Systems Decision Support Manager  
Tampa Bay Water

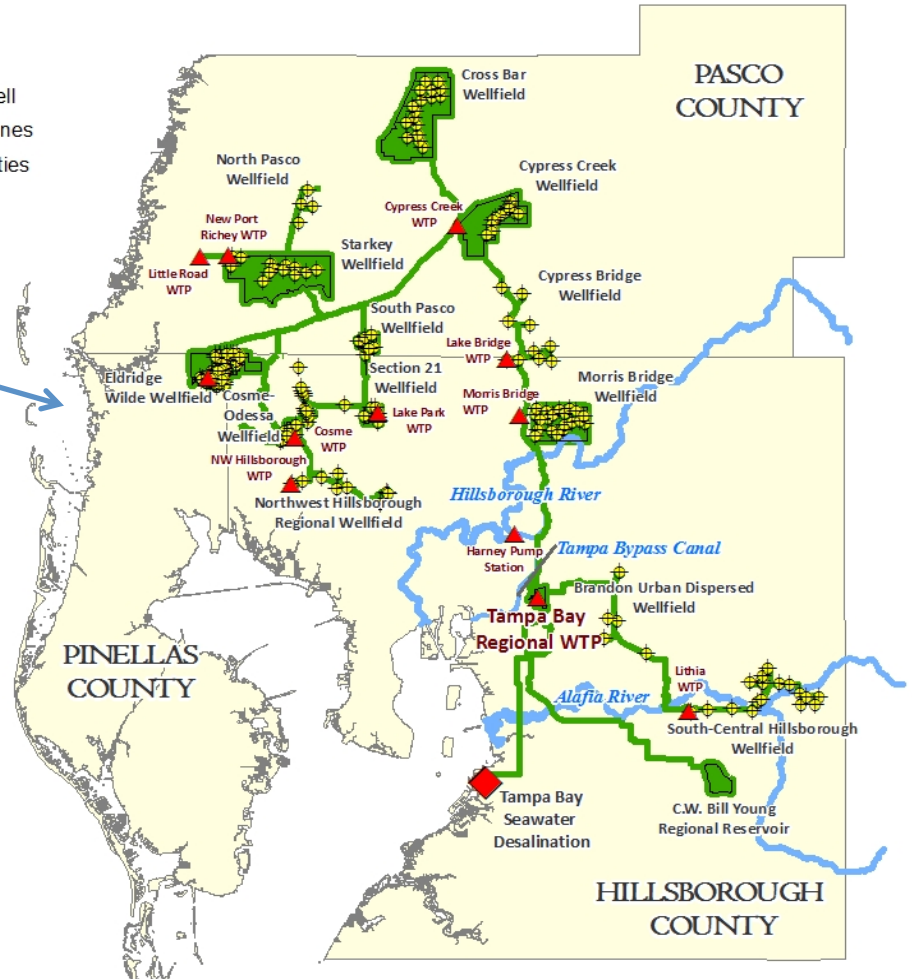
5/2/2016  
Boulder, CO

# One of the Largest Wholesale Provider in the Southeast US



**Legend**

- Production Well
- Existing Pipelines
- Existing Facilities
- Rivers



Wholesale drinking water  
to six governments

2.5 Million Residents

220-250 mgd annual  
average

Seasonal to multi-year  
variable climate

# Historical Background

- 2007- Tampa Bay Water initiated applied research collaborative effort with UF
- 4-phases of projects
- Phase I:
  - ✓ In-house Climate Model (MM5)
  - ✓ Developed statistical downscaling approach that was driven the unique Tampa Bay/Florida spatial-temporal correlation
  - ✓ Demonstrated the use of Climate Change data into the agency's integrated hydrologic model

# Historical Background (cont.)

- Phase II
  - ✓ Collaboration with FSU COAPS
  - ✓ Dynamically downscaled reanalysis and retrospective simulations *required bias-correction*
  - ✓ Three future Dynamical model simulations (CLARENCE10)
  - ✓ Streamflow, spring flows, and groundwater levels of select location

# Phase I and II work were highlighted in PUMA

Water Utility Climate Alliance

Search WUCA Online

ABOUT US ACTIONS PUBLICATIONS PRESS ROOM CONTACT

Delivering reliable, high-quality water requires a delicate balance between water supplies and customer demands.

While water managers continually strive to maintain this supply-and-demand balance through long-term water resources planning and demand management, new challenges exist due to the impacts of climate change, putting the world's water resources at risk.

The Water Utility Climate Alliance (WUCA) is dedicated to enhancing climate change research and improving water management decision-making to ensure that water utilities will be positioned to respond to climate change and protect our water supplies.

**Water utilities on the front line of climate change**

Two white papers recently released by the Water Utility Climate Alliance feature case studies of water utilities addressing the threat of climate change. These white papers advance understanding of how the relatively new enterprise of climate change assessment and adaptation is developing. They also provide feedback from the front lines of climate change planning to guide future investment in this rapidly growing field of inquiry.

[Actionable Science in Practice: Co-Producing Climate Change Information for Water Utility Vulnerability Assessments: Final Report of the Piloting Utility Modeling Applications \(PUMA\) Project](#)

The PUMA project features four water utilities (New York, Tampa Bay, Seattle and Portland) working in collaboration with local climate science consortiums to hand-pick or develop locally appropriate tools, projections and approaches to understand the impact of climate change on drinking water supplies.

These utilities pursued customized approaches based on specific utility needs and learned important lessons in conducting assessments that may be of interest to the wider adaptation community. In addition, these projects attempted to create "climate-resilient" water systems in which utilities

## [Actionable Science in Practice: Co-Producing Climate Change Information for Water Utility Vulnerability Assessments: Final Report of the Piloting Utility Modeling Applications \(PUMA\) Project](#)

Tampa Bay Water  
Portland Water Bureau  
Seattle Public Utilities  
NYC DEP

# Results are Extensively Documented

The screenshot shows a web browser window displaying the Florida Water & Climate Alliance website. The browser's address bar shows the URL <http://floridawca.org/>. The website features a dark blue header with the Florida Water & Climate Alliance logo on the left and navigation links (LOGIN | SITE MAP | CONTACT |) on the right. Below the logo is a search bar with the placeholder text "TYPE IN KEYWORD(S) TO SEARCH ENTIRE SITE" and a "SEARCH" button. A horizontal menu below the search bar includes links for HOME, LEARNING NETWORK (highlighted in orange), PROJECTS, CLIMATE, WATER, COMMUNICATION, DATA, and RESOURCES. The main content area features a large photograph of a group of people in a meeting, with navigation arrows below it. Below the photo is a section titled "The Florida Water & Climate Alliance (FloridaWCA)" with a paragraph of text. To the right of this text is a green-bordered box titled "FloridaWCA CURRENTS" containing a paragraph of text and a link "To access previous FloridaWCA workshop reports & presentations". Below this box is a red heading "Items of Interest".

**FLORIDA Water & Climate Alliance**

LOGIN | SITE MAP | CONTACT |

TYPE IN KEYWORD(S) TO SEARCH ENTIRE SITE

SEARCH

HOME LEARNING NETWORK PROJECTS CLIMATE WATER COMMUNICATION DATA RESOURCES

**The Florida Water & Climate Alliance (FloridaWCA)**

Climate change, climate variability, sea level rise and associated uncertainties and risks pose complex challenges to the planning and operations of Florida's public water supply utilities. **The Florida Water and Climate Alliance** is a stakeholder-scientist partnership committed to increasing the relevance of climate science data and tools at relevant time and space scales to support decision-making in water resource management, planning and supply operations in Florida.

According to FloridaWCA utility stakeholders the most important drivers that they currently face relative to climate change and variability are related to a) changes in precipitation, temperature and evapotranspiration patterns/extreme events and b) sea level rise. Utilities need climate/sea level rise information, data and models to understand, predict and adapt to potential impacts of climate change and variability including impacts on demand, impacts of source water availability, impacts on water quality, and impacts on infrastructure capacity. Click the following links to learn more about pressing questions and areas of research needs expressed by participating utilities:

**FloridaWCA CURRENTS**

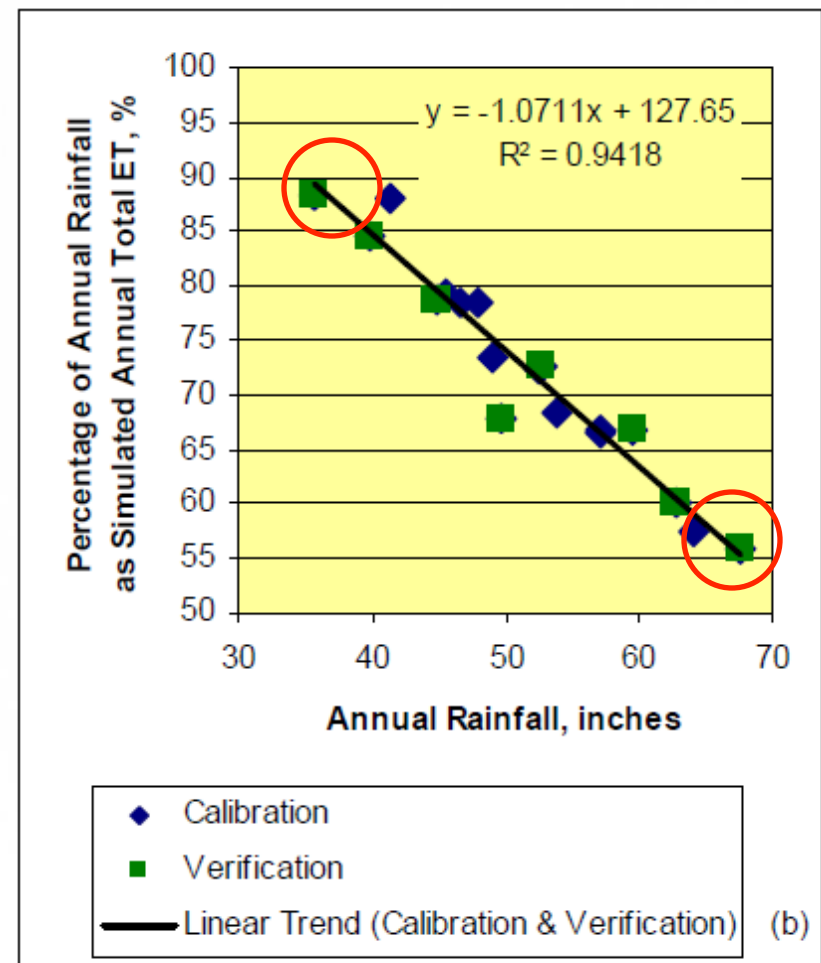
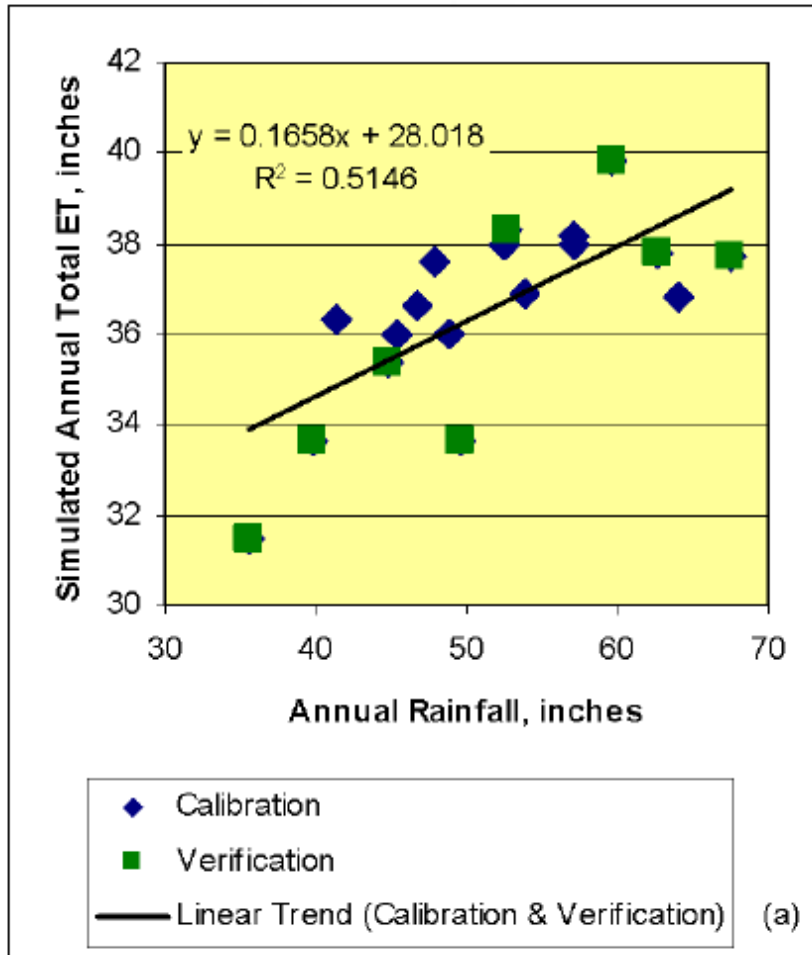
FloridaWCA Steering Committee is exploring options to build the network. Next FloridaWCA workshop in summer/fall, 2015!

[To access previous FloridaWCA workshop reports & presentations](#)

**Items of Interest**

US EPA Clean Drinking Water Initiative

# Since PUMA (Phase II and IV) Relationship Between ET-Rainfall



# How Do We Do This?

- Have been sponsoring a full time PhD/post-doc student with University of Florida
- Continuity of work is maintained by
  - Same University researchers, continued engagement through Florida Water and Climate Alliance
  - Same Tampa Bay Water Senior technical staff oversees Integrated Hydrologic Modeling (IHM)
    - Provide intensive course on (IHM) and parallel computing using our in-house cluster
  - Applied research work is part of department work plan (one to two man months over the course of a project)
- Challenge: IT



Question ?