

# Water Resources Monitoring at St. Johns River Water Management District



*Research diver at Silver Springs, Marion County*

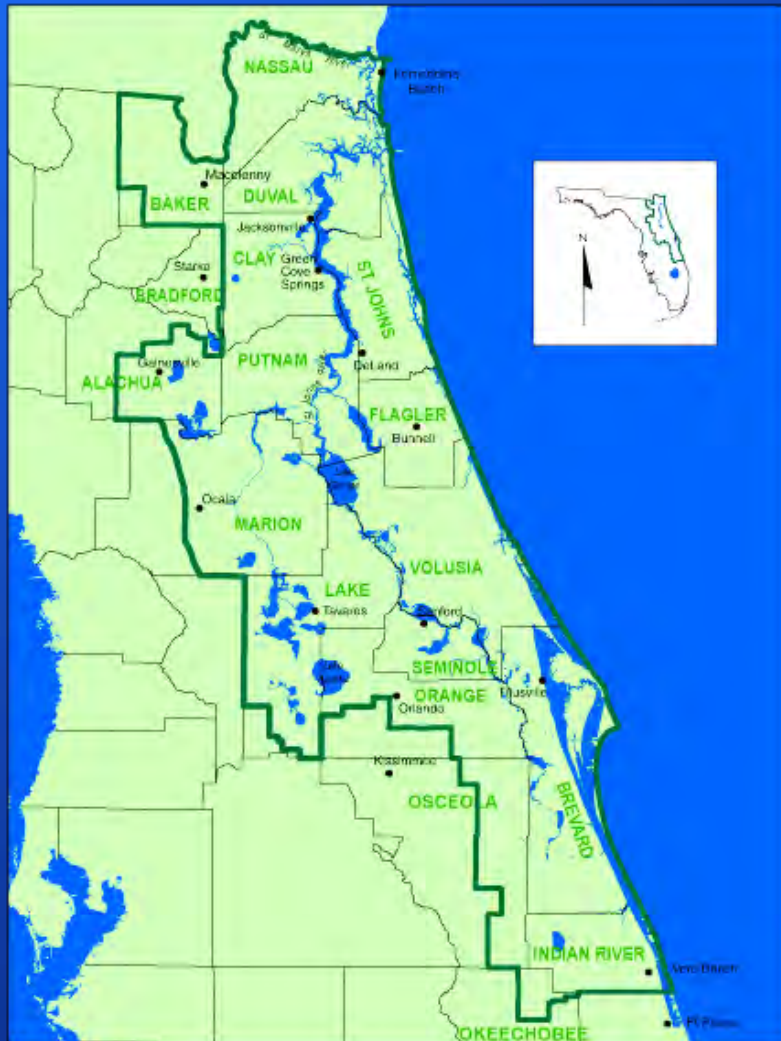


Aisa Ceric, WRI Data Manager  
FWRMC Meeting, June 13-14, 2012

# Water Management Districts



# The St. Johns River Water Management District (SJRWMD)



- 12,283 square miles
- 18-county service area
- Headquarters are in Palatka
- Service centers are in Jacksonville, Maitland and Palm Bay



# Mission Statement

*“We will ensure the sustainable use and protection of water resources for the benefit of the people of the District and the state of Florida.”*

## Core missions



Water supply



Flood protection



Water quality, natural systems protection and improvement



Organizational effectiveness



# Primary Tasks

- Resource monitoring, assessment and mapping;
- Conducting research and restoration projects;
- Managing public lands;
- Issuing permits;
- Sharing important information with the public and other agencies.



# Division of Water Resources

*Mission: “Delivering science and engineering to accomplish the District’s mission.”*



**Hal Wilkening,  
Director**



**Al Canepa,  
Assistant  
Director**



**Doug Munch,  
Bureau of  
Groundwater  
Sciences**



**Ed Lowe,  
Bureau of  
Environmental  
Sciences**



**Mike  
Cullum,  
Bureau of  
Engineering**



**Casey  
Fitzgerald,  
Bureau of  
Basin Projects**



**Tom Bartol,  
Bureau of  
Water Supply**

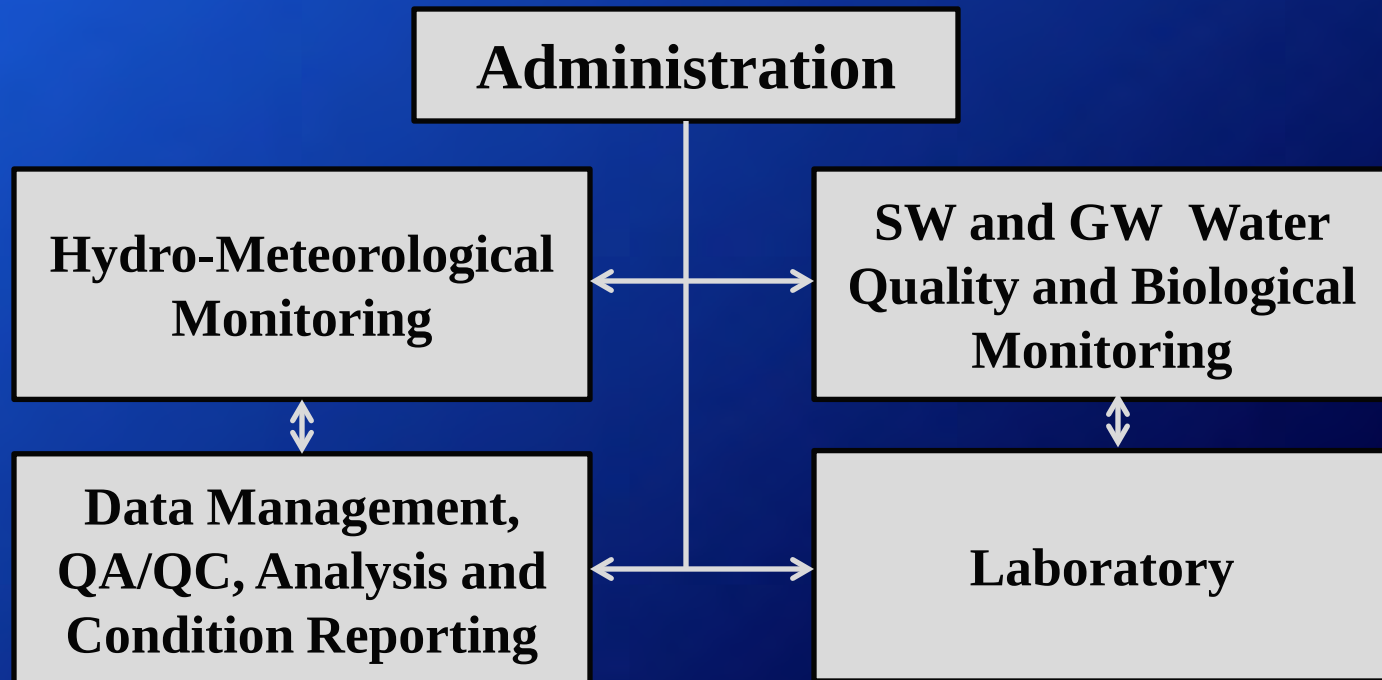


**Tom Mirti,  
Bureau of  
Water  
Resource  
Information**

# **Division of Water Resources**

## **Bureau of Water Resource Information (WRI)**

The bureau of WRI collects, processes, manages and disseminates hydrologic, meteorological and environmental data used for water use planning and management, environmental protection (TMDLs, source protection, and others) and restoration, and flood control.



WRI operates and maintains more than 1,500 hydro-meteorological monitoring stations throughout the SJRWMD and processes data from approximately 200 additional sites collected by other agencies through mutual agreements.



*Staff conducts a stream discharge measurement using an acoustic doppler current profiler .*

The following types of hydrologic data are collected and managed by the WRI staff:

**1. Rainfall:**

- Telemetry Stations
- Gage-adjusted radar rainfall

**2. Water Level:**

- Lakes
- Streams/Rivers
- Springs
- Groundwater

**3. Discharge:**

- Streams/Rivers
- Springs

Data are stored in District databases and posted on the Internet

Monitoring of water quality and other environmental parameters is crucial to meeting core missions of the District, and in particular the protection and/or restoration of water quality and natural systems. The following types of environmental data are collected and managed by the WRI staff :

### **1. Sampling:**

- Water Quality
- Sediment
- Benthos

### **2. On-site Assessment:**

- Stream Habitat
- Stream Condition Index
- Lake Vegetation Index

### **3. Biological Survey:**

- Vegetation
- Fish
- Avian
- Wildlife



*One field sampler sweeps for macrophytes while the other looks for good snags to sample.*



WRI operates a full service laboratory to conduct chemical and physical analyses on water quality samples collected by SJRWMD staff. Over 4,000 samples and 140,000 analytes are processed annually.

- ❑ Areas of analytical expertise are nutrients, metals and solids.
- ❑ The lab has many automated instruments.
- ❑ The lab is NELAC certified.
- ❑ The laboratory provides data to both internal and external clients.

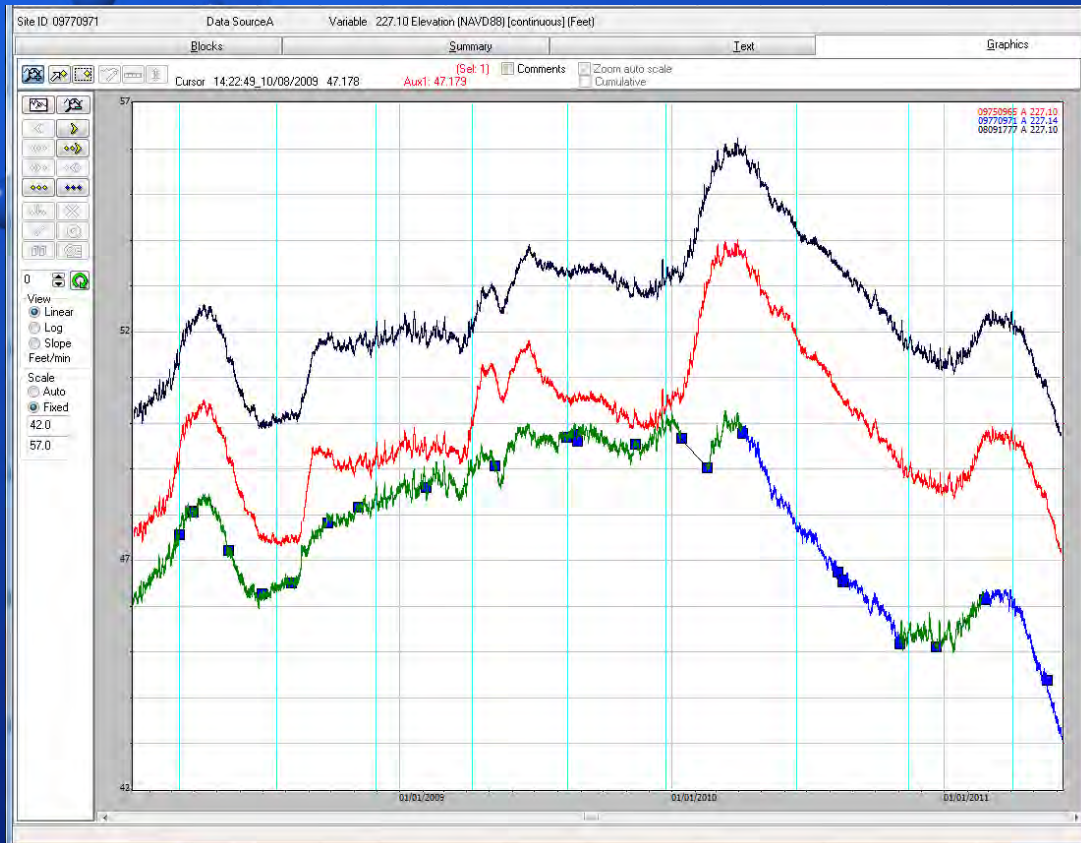


*Staff is conducting PO4/NO<sub>x</sub> lab analyses*



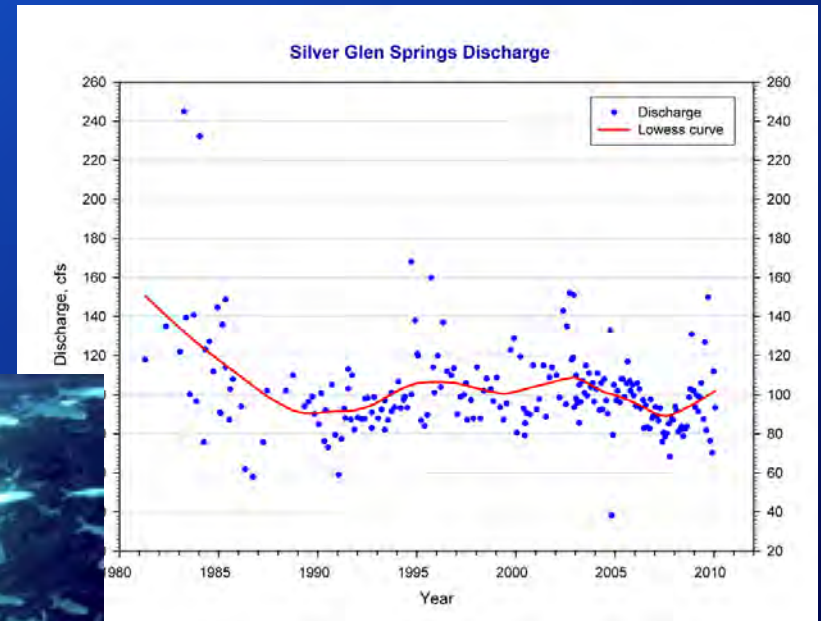
All data collected by WRI must be collected according to established and standardized methods. The quality assurance procedures are followed to verify all data stored in SJRWMD databases, published in reports, made available for public use are defensible.

- ☐ Recorded hydrologic data is compared to independent manual measurements and other wells/stations.
- ☐ Water quality samples and sampling procedures are checked using a variety of methods to obtain defensible data.
- ☐ The District employs telemetered rain gages to validate the radar rainfall estimates provided by a specialized contractor.



*Hydstra database is used to QA/QC hydro-meteorological data*

# What and where we are monitoring and how the data is used?

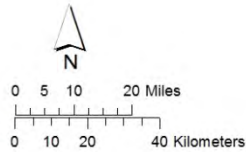


*Silver Glen Springs*

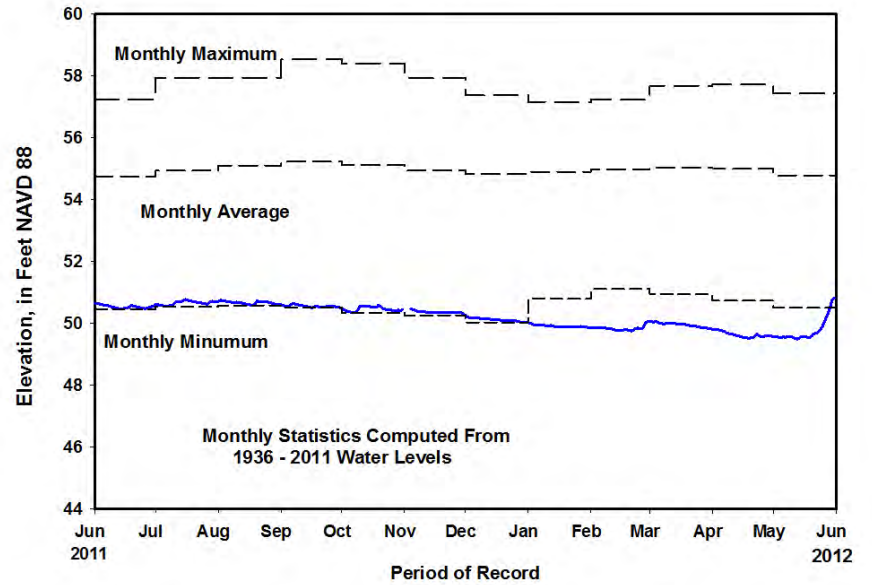
# Surface Water Water Level Stations (386 Stations)

## Legend

- ▲ Marsh (18)
- Lake (129)
- Rivers/Streams (239)



## Lake Weir

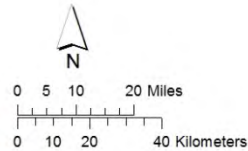


# Discharge Stations

(168 Stations)

## Legend

- ✱ Marsh (1)
- ▲ Springs (43)
- Surface Water (124)

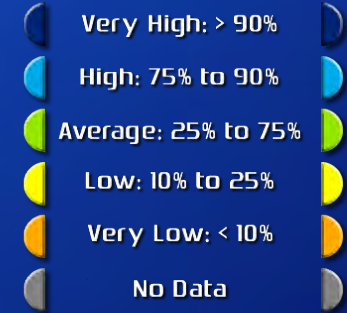


# Surface Water Flow Conditions as Compared to Historical Statistics

May 2012

May 1

May 31



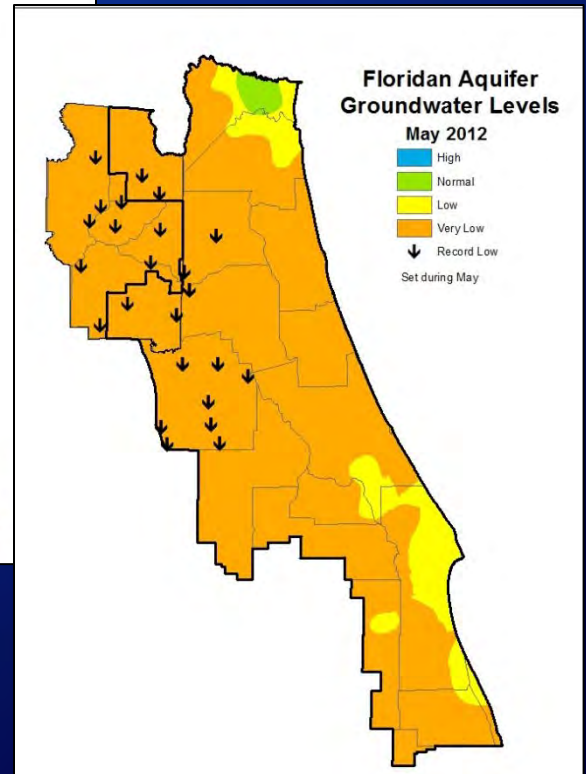
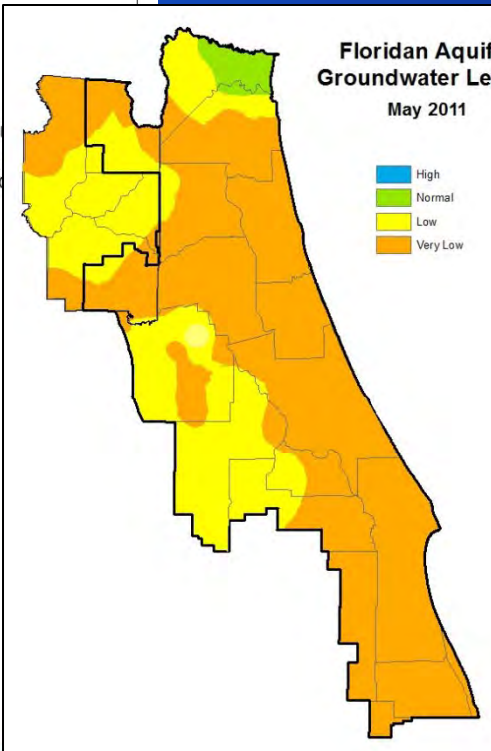
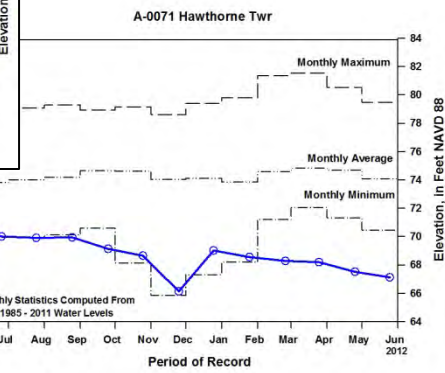
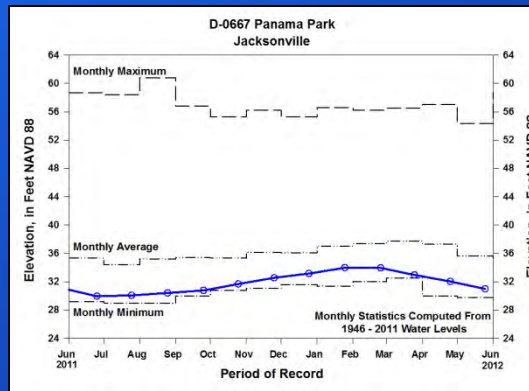
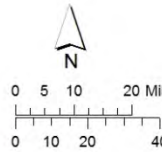
St. Johns River Water Management District  
Hydrologic Conditions Report  
Hydrologic Conditions Report



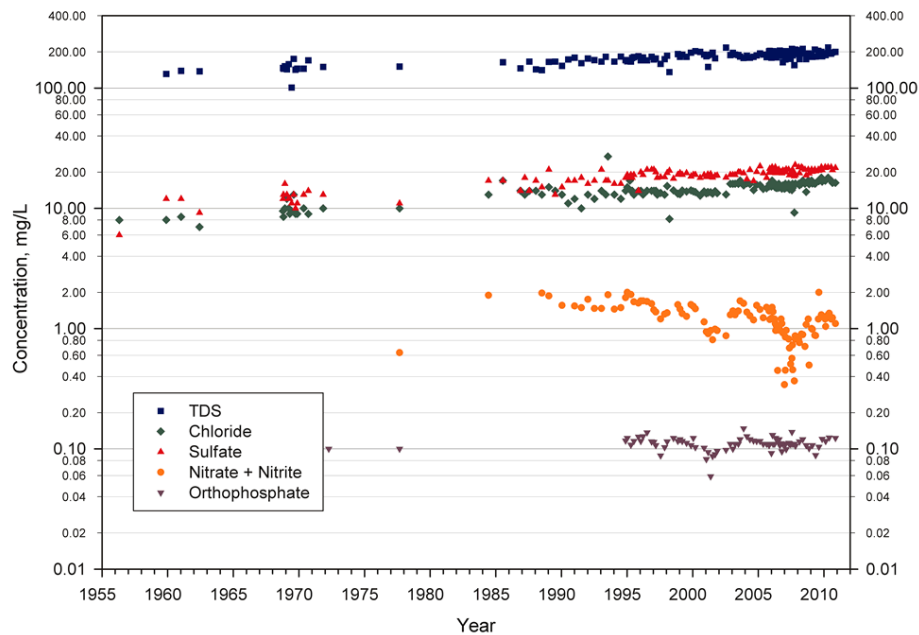
# Water Level Well Stations (710 Wells)

## Legend

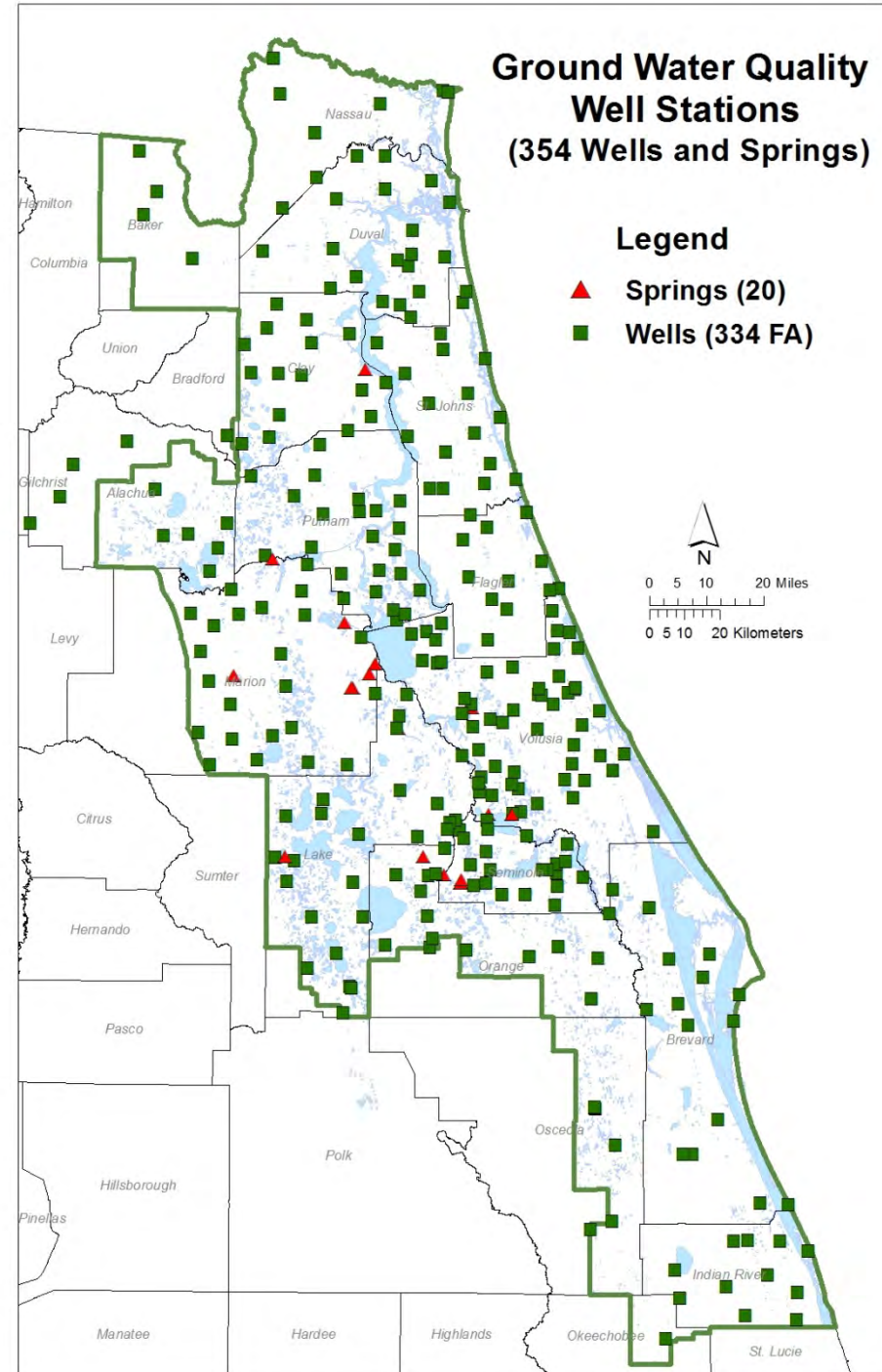
- + Floridan Aquifer System
- x Intermediate Aquifer
- o Surficial Aquifer



Wekiwa Springs Water Quality



Ground Water Quality Well Stations (354 Wells and Springs)

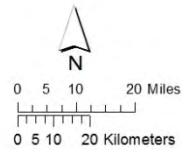


Wekiwa Springs main view

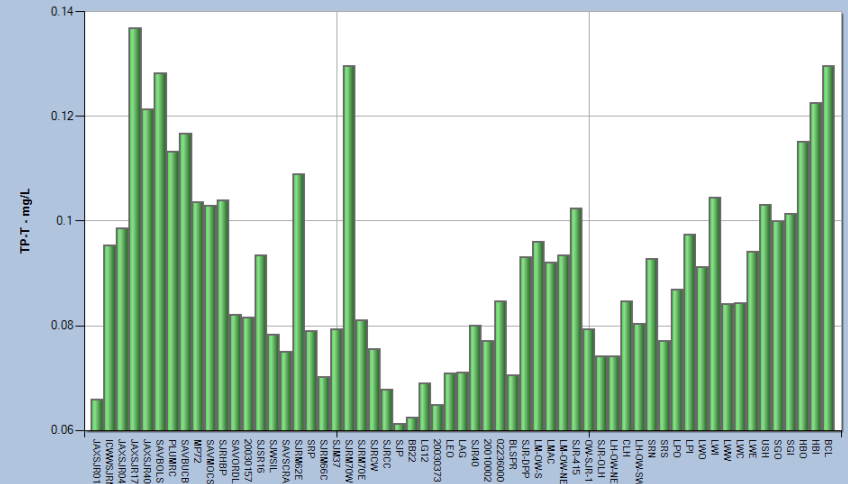
# Surface Water Quality Stations (350 Stations)

## Legend

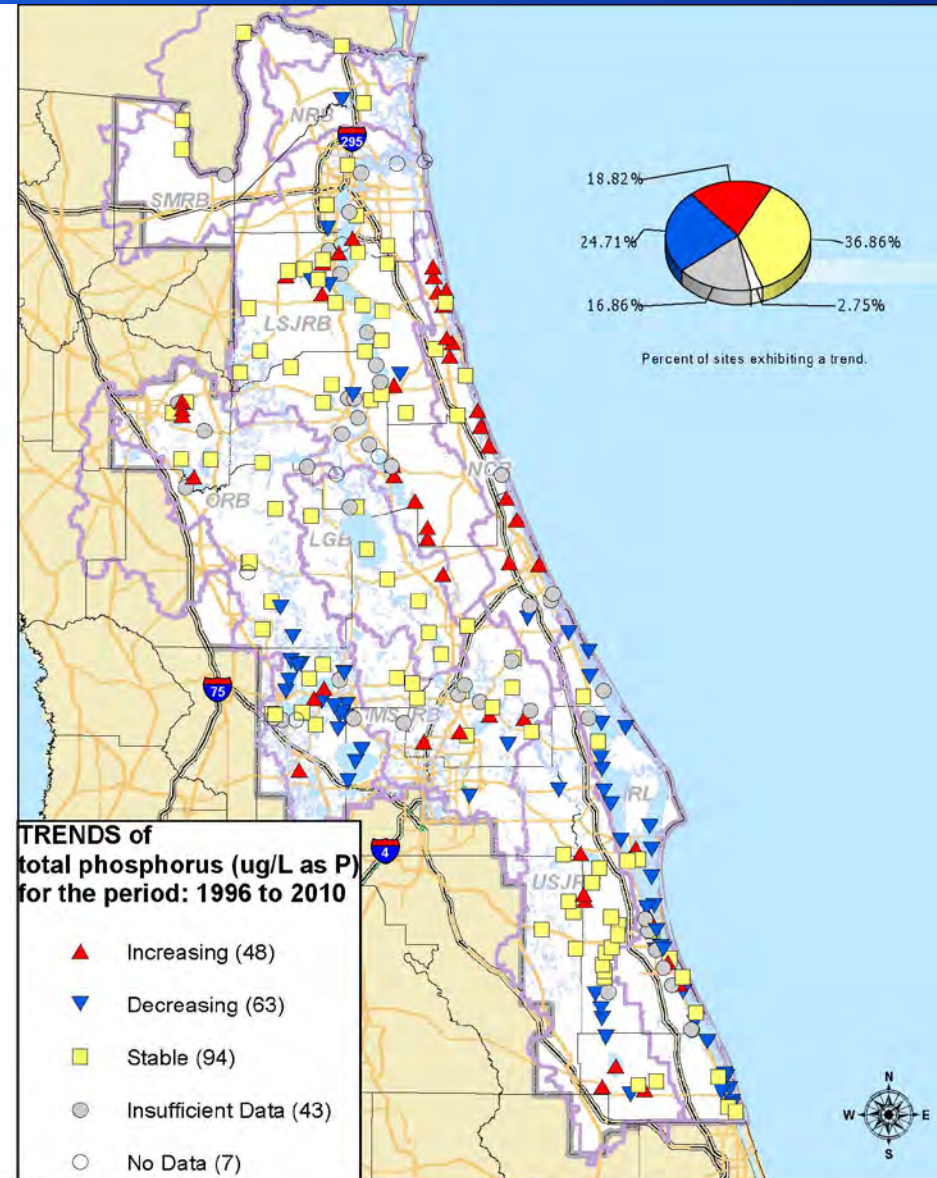
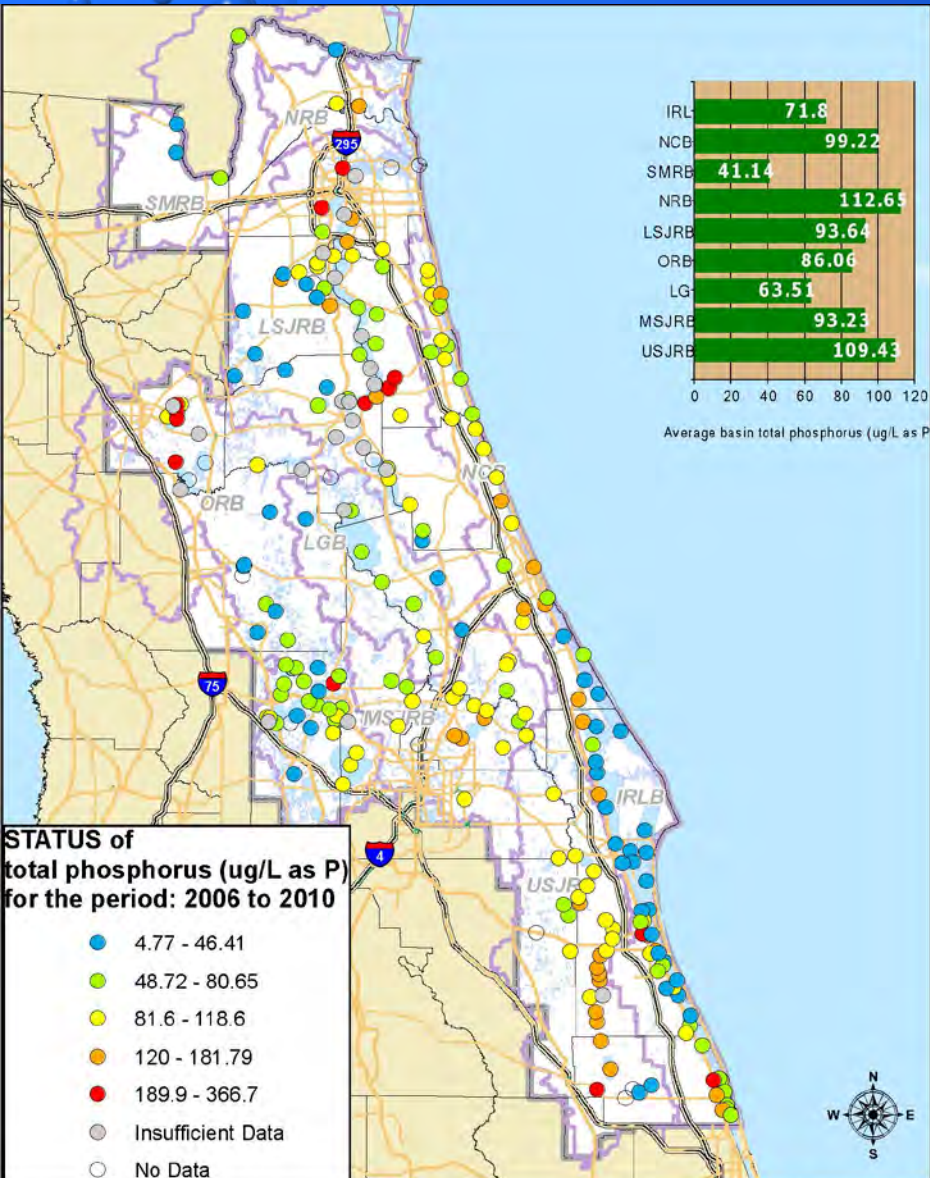
- Estuary (52)
- Lake (98)
- ▲ Springs (37)
- Streams/Rivers (163)



St. Johns River Median values for TP-T  
Period of Record 06/10/2002 - 06/10/2012



# SW Water Quality Status and Trends Reporting



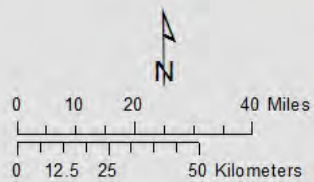
SJRWMD Status and Trends  
Assessment at Selected Ambient  
Water Monitoring Sites

Scale 1cm = 16 km  
0 16 32 64 96 Kilometers  
0 10 20 40 60 Miles

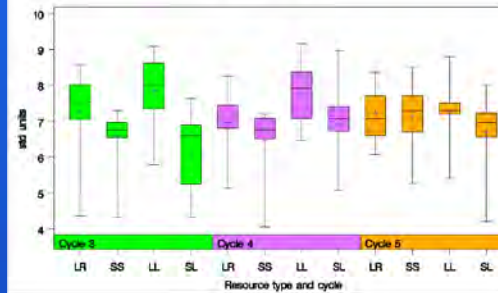
# SW Status Network (2009 to 2011)

## Zone 3, SW Sampled Sites (Cycle # - Resource Type)

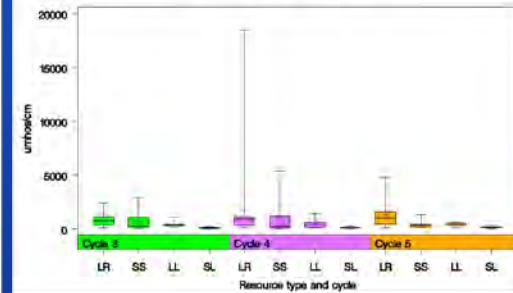
- ▲ 3 - LR
- ▲ 3 - SS
- 3 - LL
- 3 - SL
- ▲ 4 - LR
- ▲ 4 - SS
- 4 - LL
- 4 - SL
- ▲ 5 - LR
- ▲ 5 - SS
- 5 - LL
- 5 - SL
- Zone 3 - SJRWMD



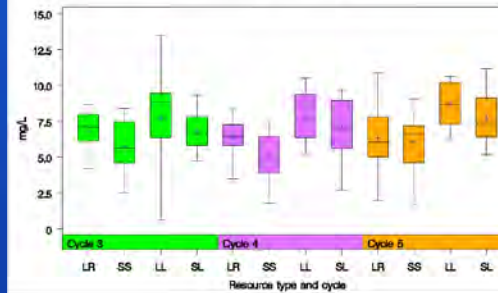
### pH - Field



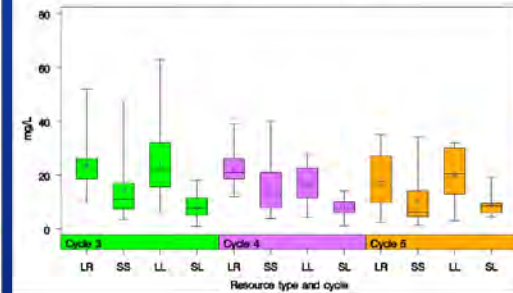
### Conductivity - Field



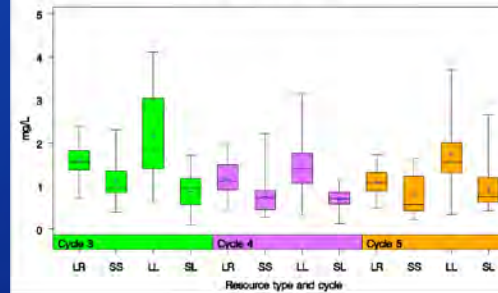
### Dissolved Oxygen



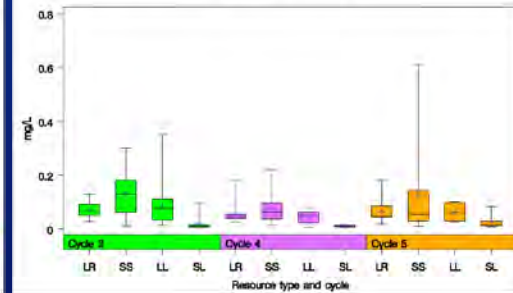
### Total Organic Carbon



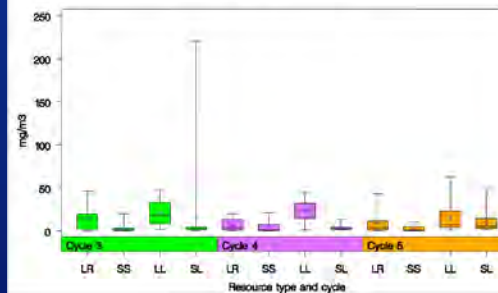
### Total nitrogen (as N)



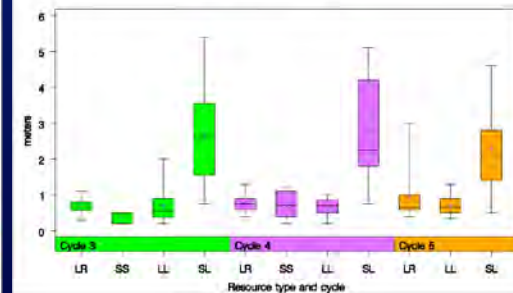
### Total Phosphorus

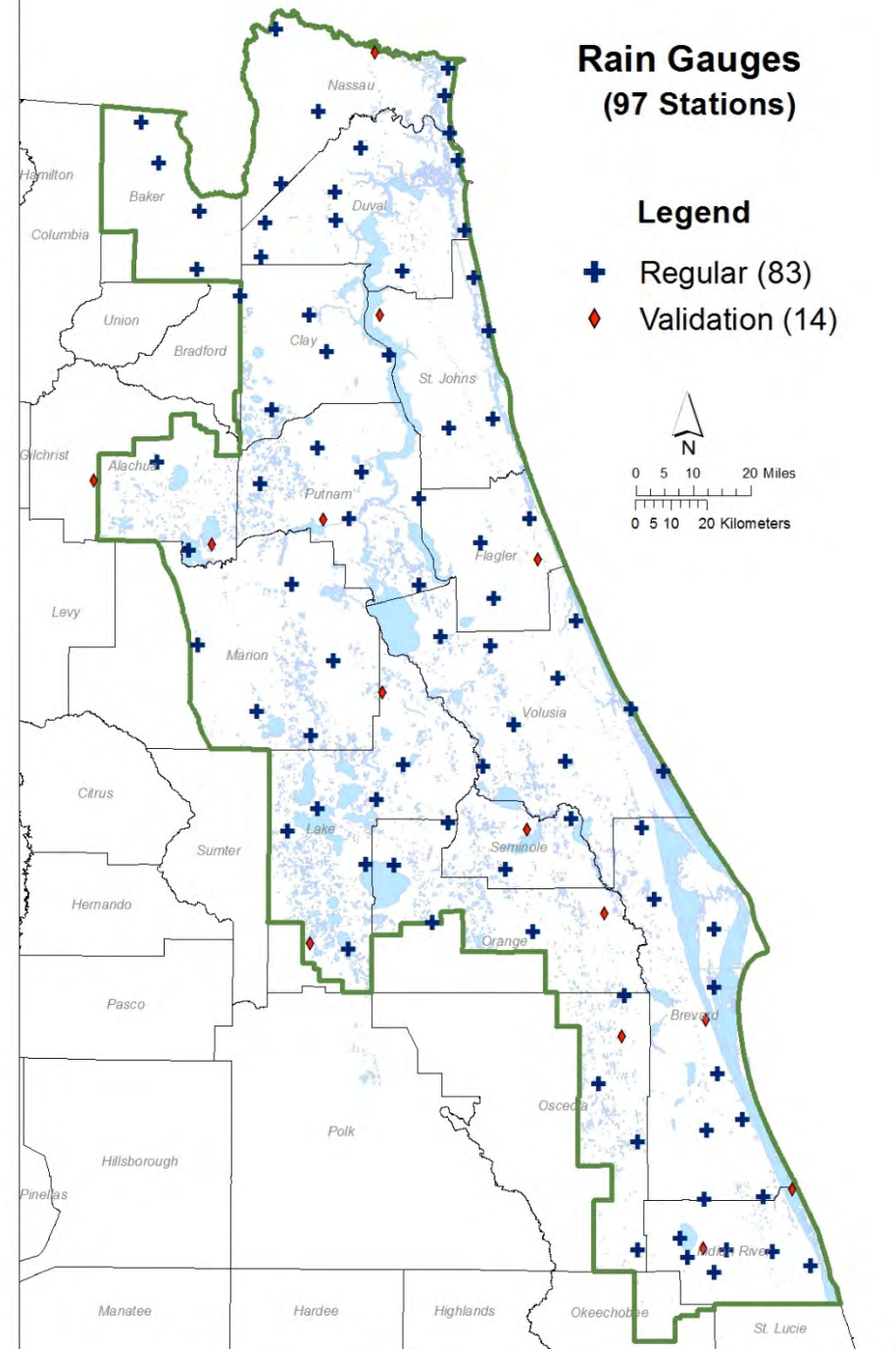
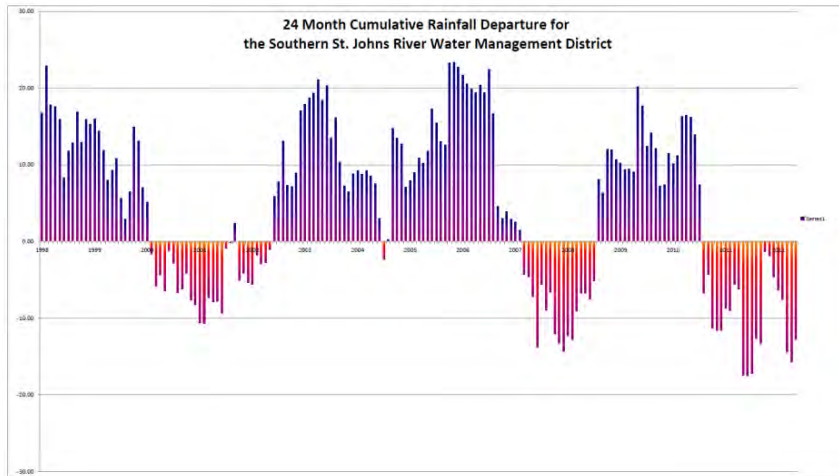
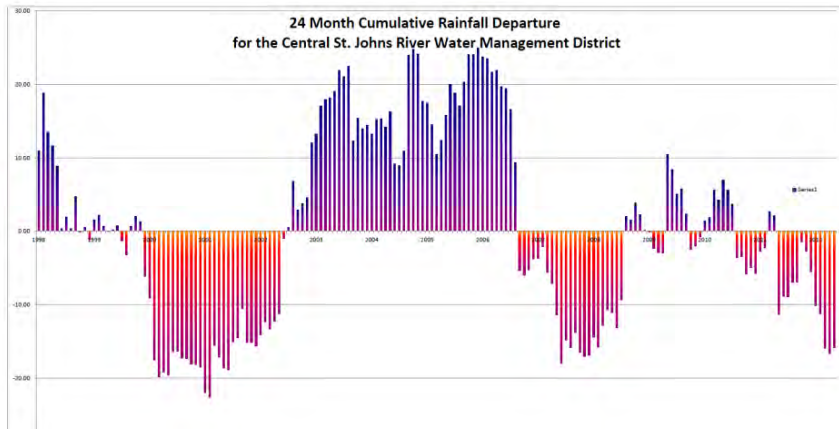
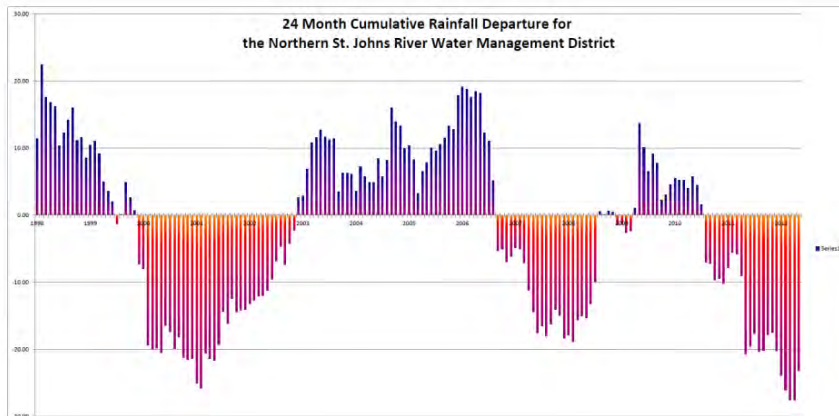


### Chlorophyll - a Corrected



### Secchi Depth



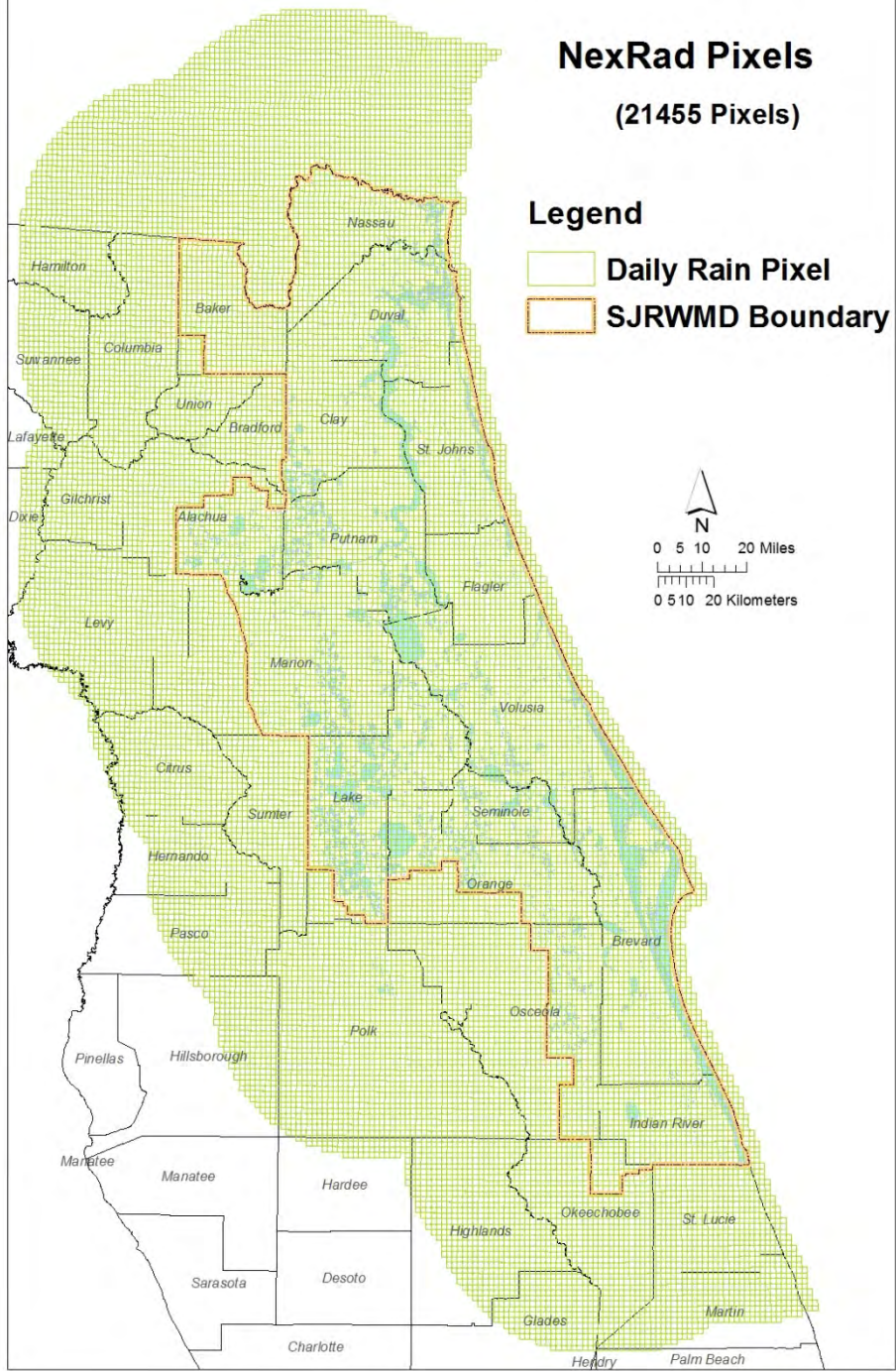
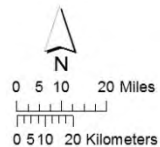


# NexRad Pixels

(21455 Pixels)

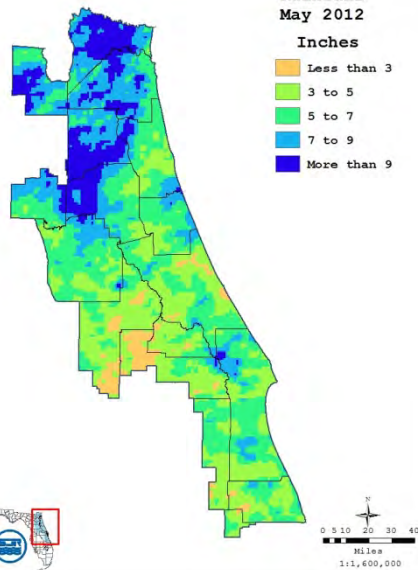
## Legend

- Daily Rain Pixel
- SJRWMD Boundary



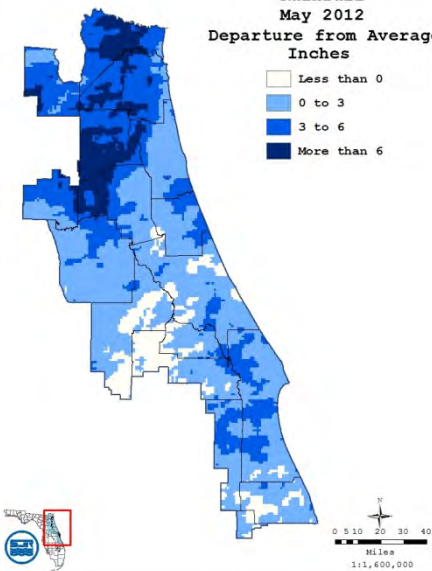
## Rainfall May 2012

- ### Inches
- Less than 3
  - 3 to 5
  - 5 to 7
  - 7 to 9
  - More than 9



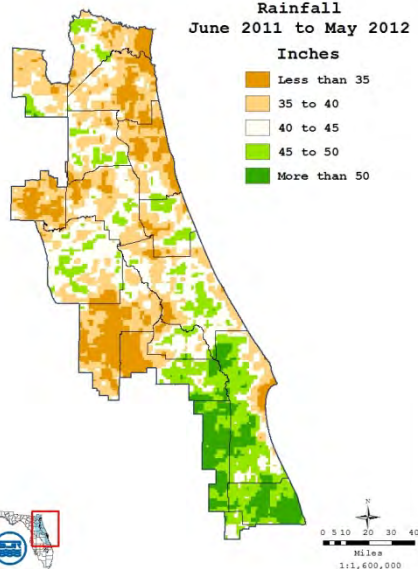
## Rainfall May 2012 Departure from Average Inches

- Less than 0
- 0 to 3
- 3 to 6
- More than 6



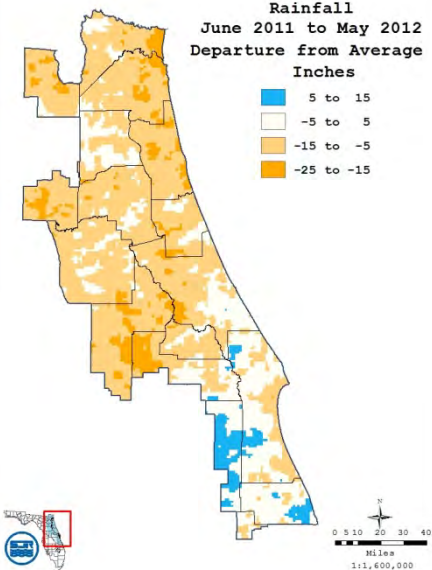
## Rainfall June 2011 to May 2012

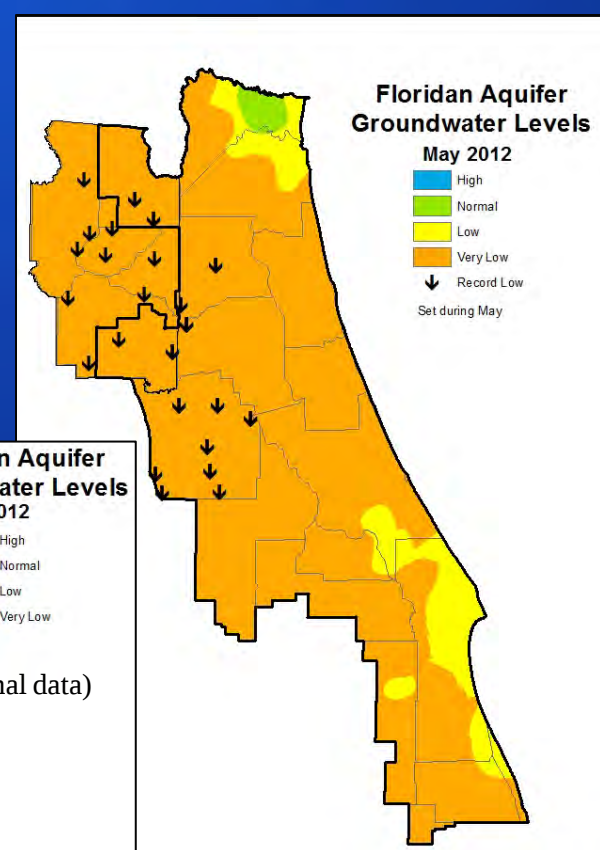
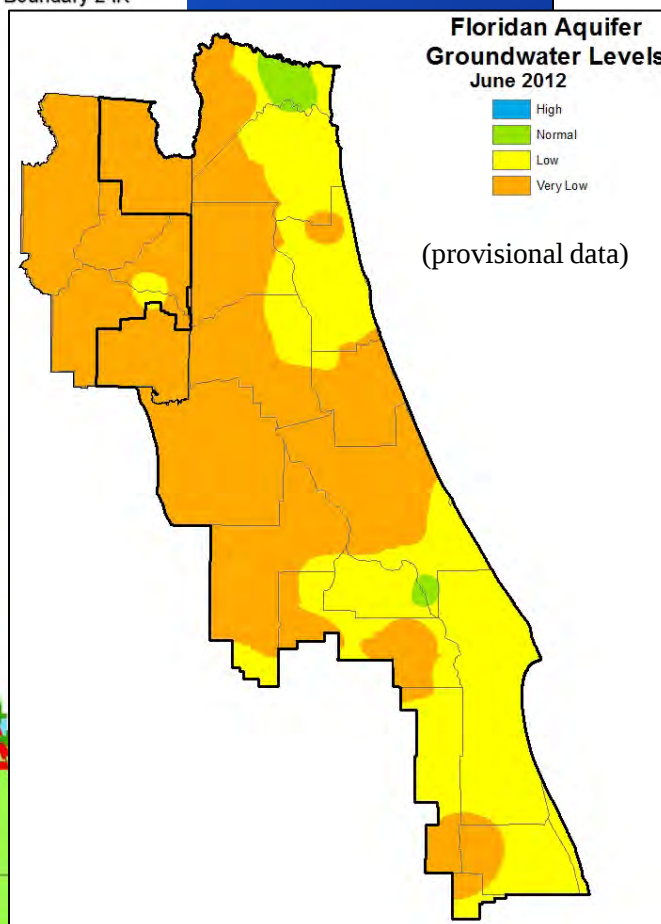
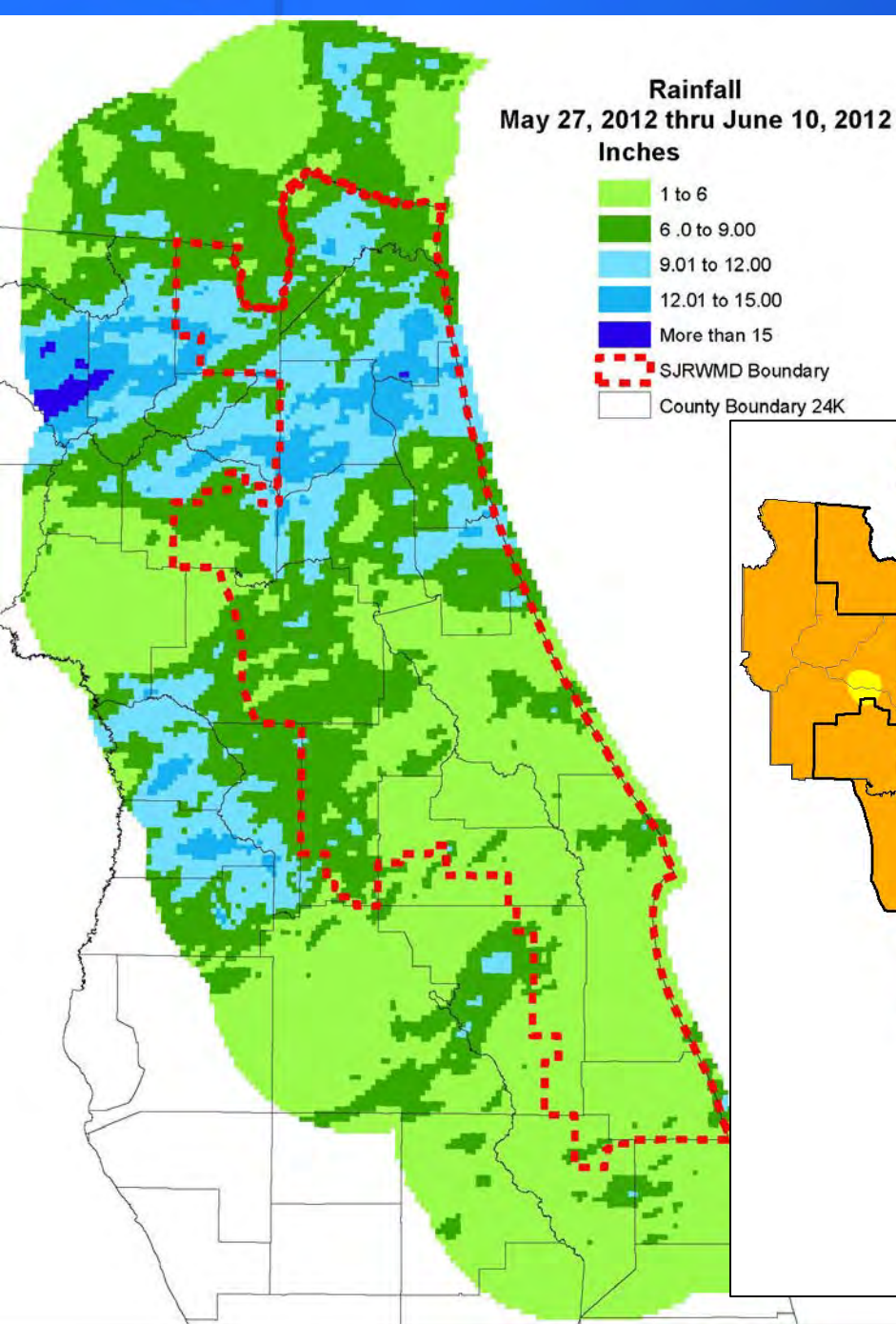
- ### Inches
- Less than 35
  - 35 to 40
  - 40 to 45
  - 45 to 50
  - More than 50



## Rainfall June 2011 to May 2012 Departure from Average Inches

- 5 to 15
- 5 to 5
- 15 to -5
- 25 to -15





# Questions?



*Scenes from Blue  
Spring*

*floridaswater.com*

