



Status of Salinity Network Workgroup (FWRMC)

February 12, 2013

Chair: Rick Copeland (FDEP)

Co-Chair: Dave DeWitt (SWFWMD)

Salinity Network Workgroup (SNW)

- Under the umbrella of the Florida Water Resource Monitoring Council (FWRMC)
- Audience
 - General Public
 - Policy Makers
 - Scientists
- Network of Existing Networks
- “Success is in our ability to cooperate”

Mission (Abridged)

- The mission...is to assist in the management, protection, preservation, and restoration of Florida's ground-water and surface-water resources, facilitated by the Council and the monitoring entities of the state...
- Emphasis on the encroachment of saline water into our freshwater resources:
 - GW levels, SW flows, Spring flows, Saline-related analytes

SNW

- Predominantly GW
- But committed to Working Closely with Surface-Water Monitoring Programs
- Considers GW/SW interactions if applicable

Major Participants (To Date)

- NFWFMD
- SRWMD
- SJRWMD
- SWFWMD
- SFWMD
- USGS
- USACO
- DEP
- DACS
- LAKEWATCH
- Broward Co
- Ala Co
- Miami-Dade Co
- Collier Co
- Palm Beach Co

Recent Action Items

1. Assist FWRMC as Needed
2. Develop Indices for **GWL** and **GWQ**
3. Develop a Glossary of Terms and Acronyms for the SNW
4. Develop a Framework Document for the SNW

Completed and Now Updating GW Monitoring Catalog Sites

- Well data
 - GWL (By Aq. System)
 - GWQ (By Aq. System)
 - Later will break down by aquifers
- Water Level and Quality data
 - *On hold* until WIN Database operational
- SNW will deliver well data, upon request of FWRMC

Objectives (Abridged)

- Monitor...Florida's freshwater ...as related to saltwater encroachment
- Encourage ...monitoring programs ...to participate in the FWRMC (Council) activities; work toward common goals
- Assist Council in developing methods for the easy transfer of relevant data as necessary (WIN)
- **Encourage the timely reporting of the status and trends (related to saltwater encroachment)**

Objectives (continued)

- **Develop and use indices...**to evaluate the status and trends of saltwater encroachment that... are uniform among monitoring entities...and are relatively easy to understand by the general public, policy makers and the scientific community.
- Indices used...to assist in evaluating the threat of encroachment to water supplies, and determining the cause of saltwater encroachment.



Potential Additional Objectives

(To be considered at a Later Date)

- Evaluate the best GW sampling methodologies for saline water given its physical properties,
- Develop SOPs to these methodologies,
- Periodically evaluate the quality of the sampling, by reviewing salinity sampling methods used throughout the state.
- Evaluate improvements in the technology used for salinity monitoring and... develop corresponding SOPs

Indices

- **GWL Index**

- 1. Why - Because lowering GWL increases potential for encroachment
 - (horizontally and vertically)
- 2. Easy to produce & to understand

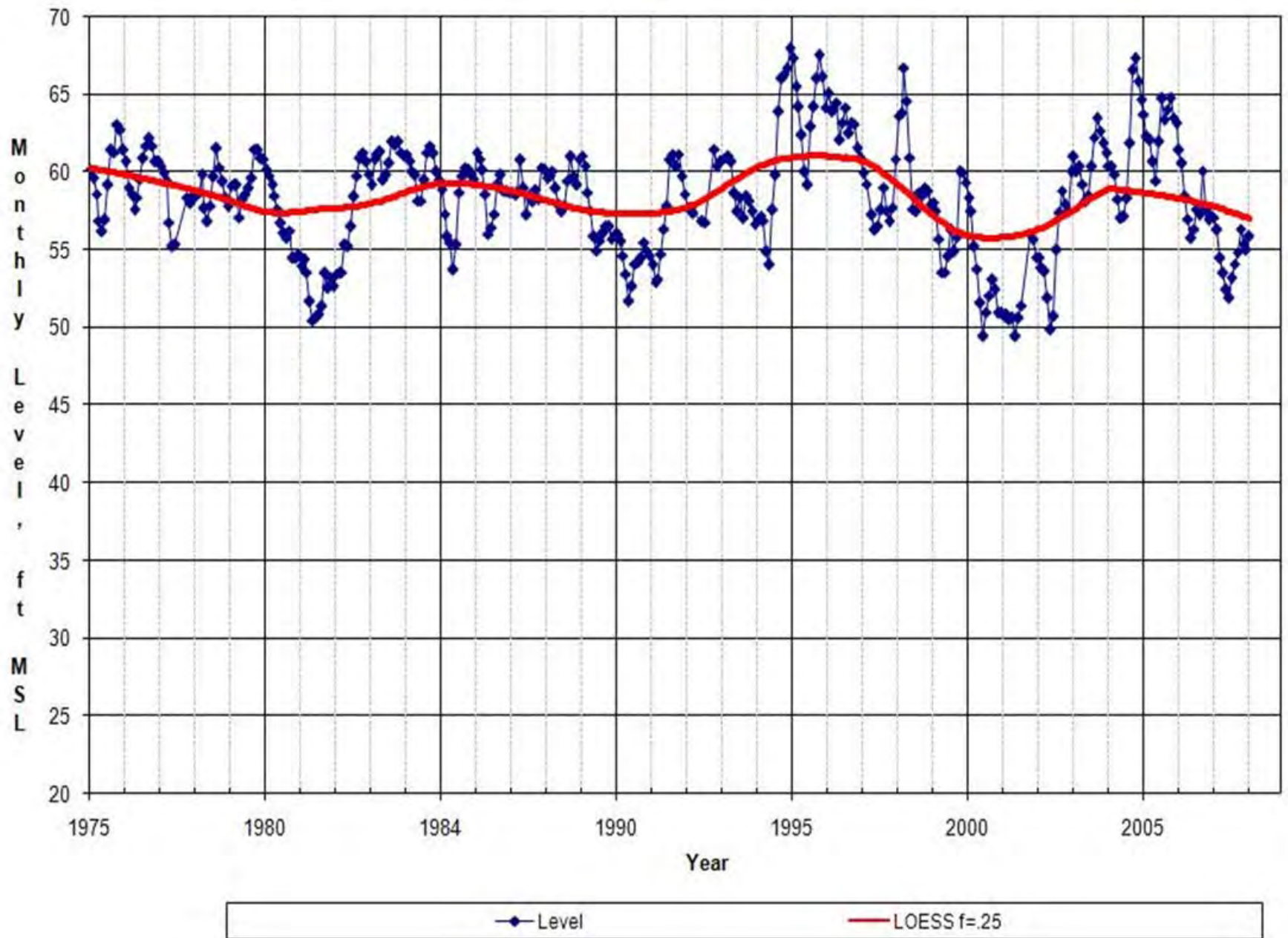
- **GWQ Index**

- 1. In beginning stages
- 2. Much more complex than GWL Index

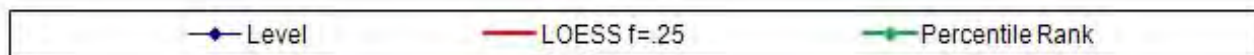
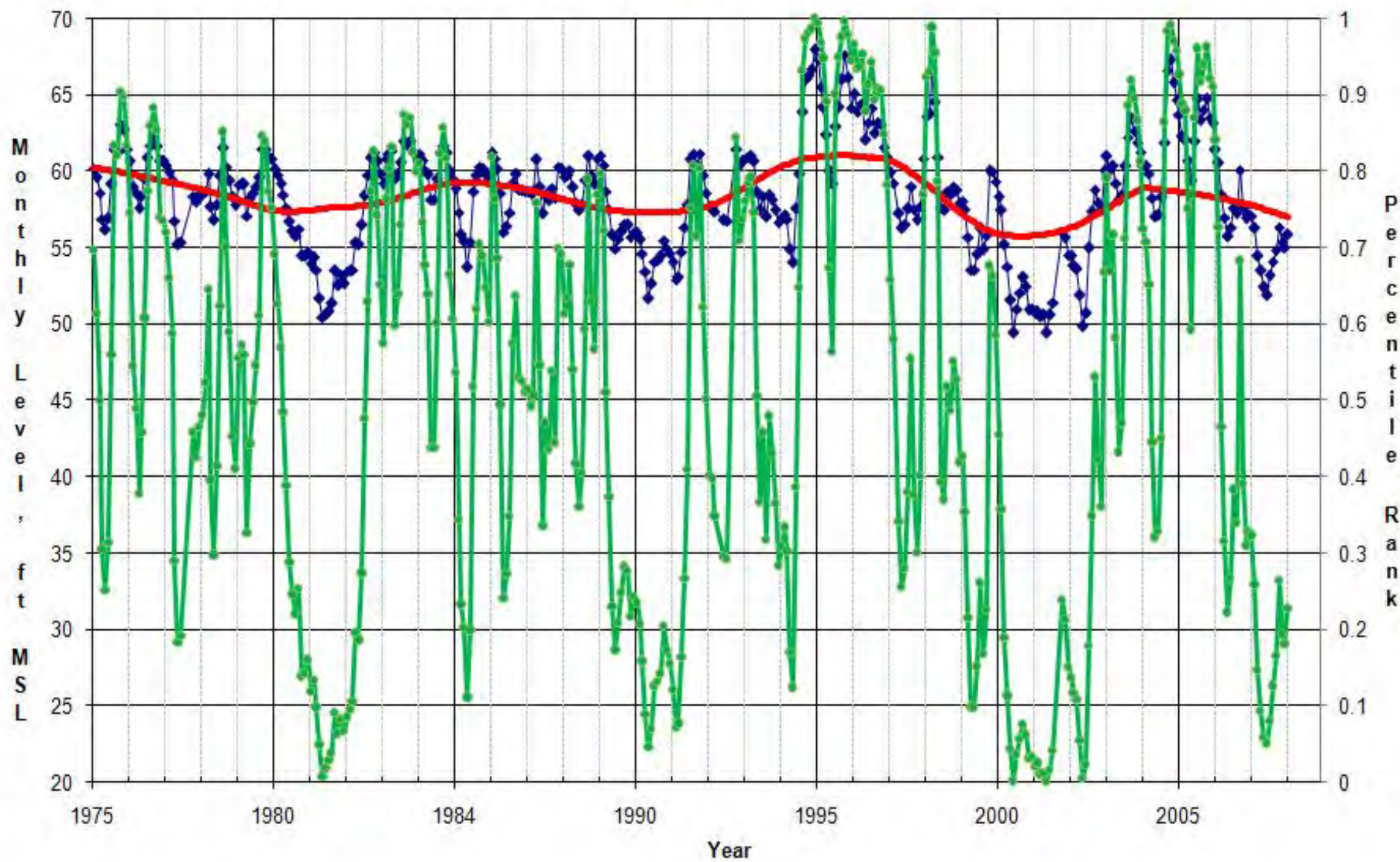
GWL Pilot Study

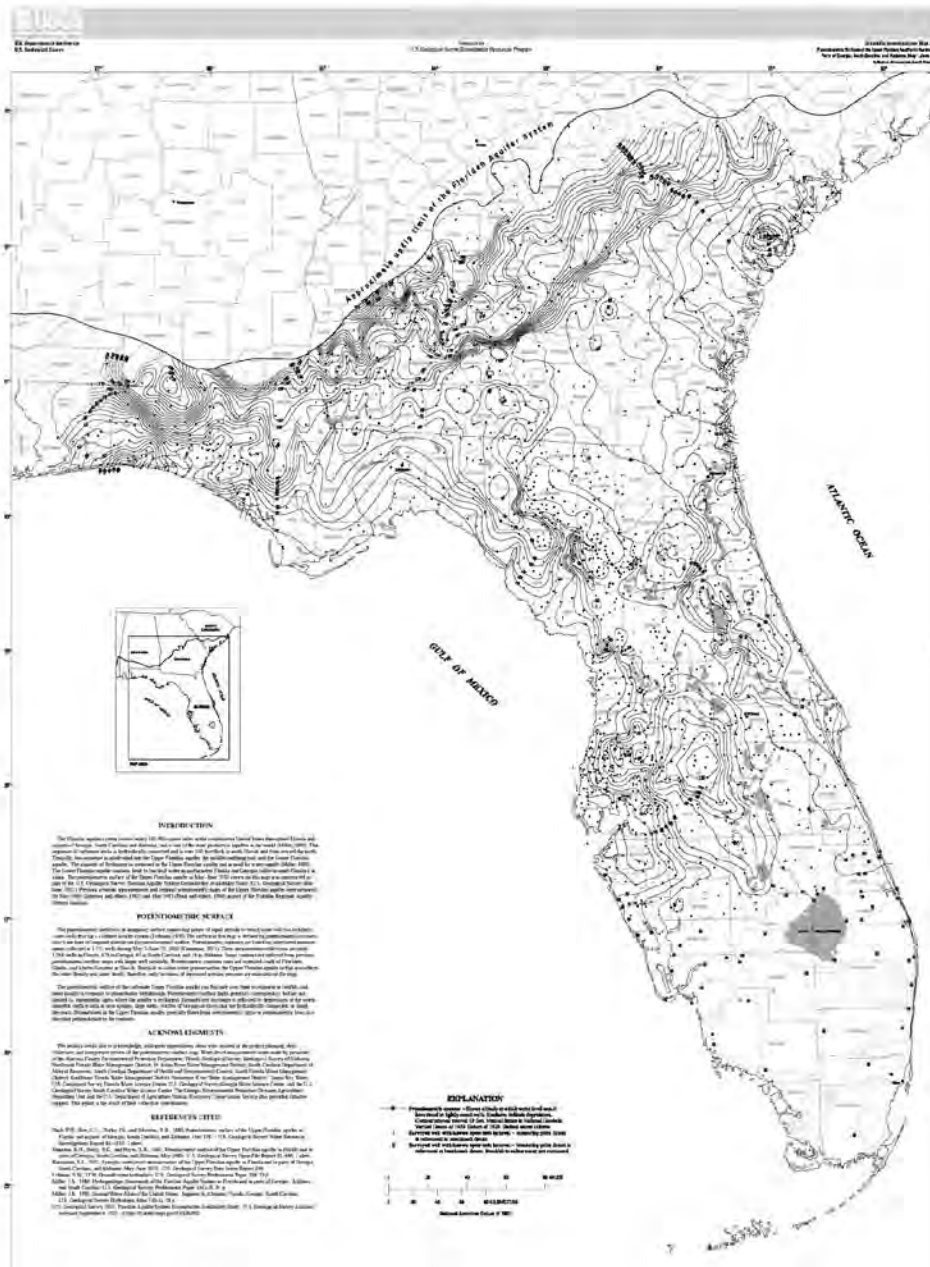
- Decided on a Percentile Ranking (PR)
- Pilot Study – Generate a PR Map
 - Spring 2010: Upper Floridan aquifer (UFA)
 - **Purpose** – To overcome obstacles
 - If so, periodically produce PR maps for aquifers, and at various scales
 - **Possibly** – Produce side-by-side potentiometric maps with PR maps

OR0047 - Orlo Vista - FA



OR0047 - Orlo Vista - FA

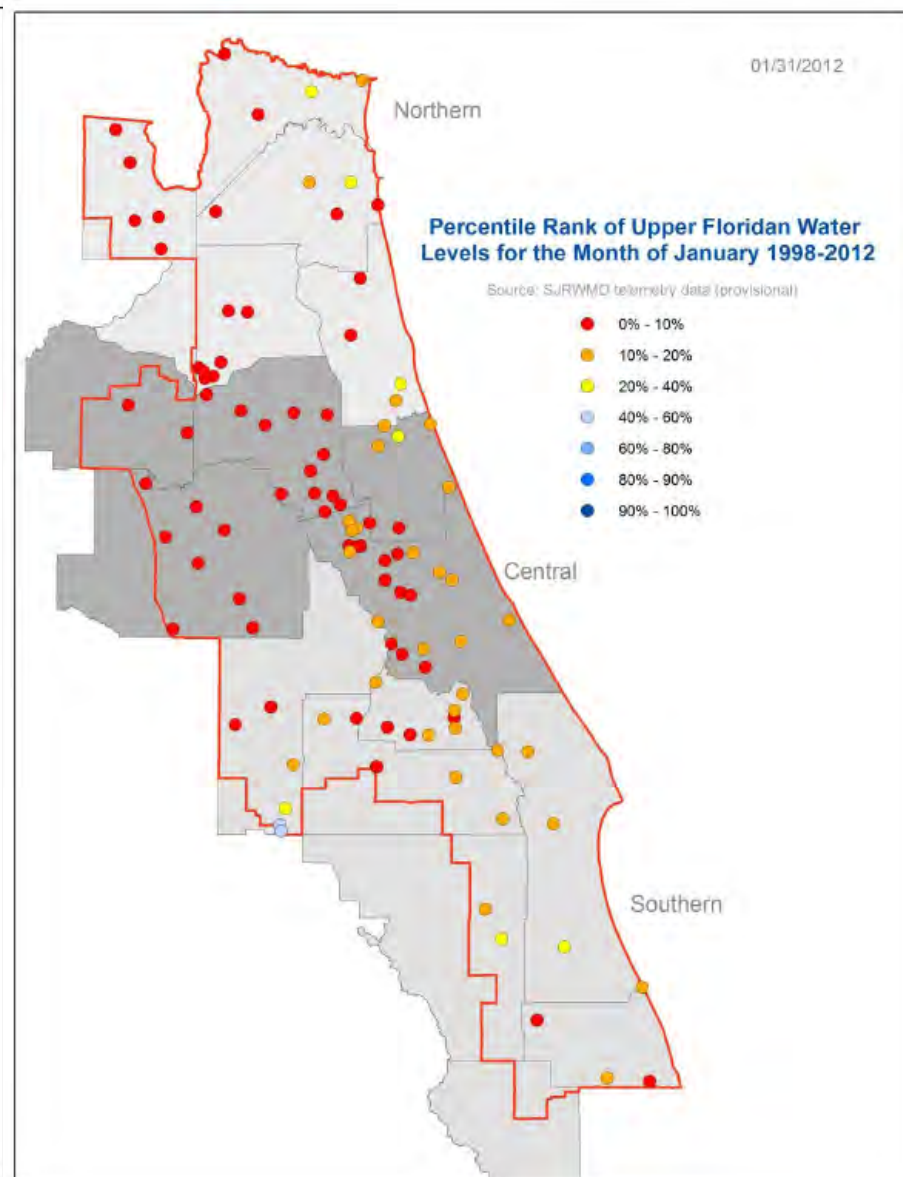
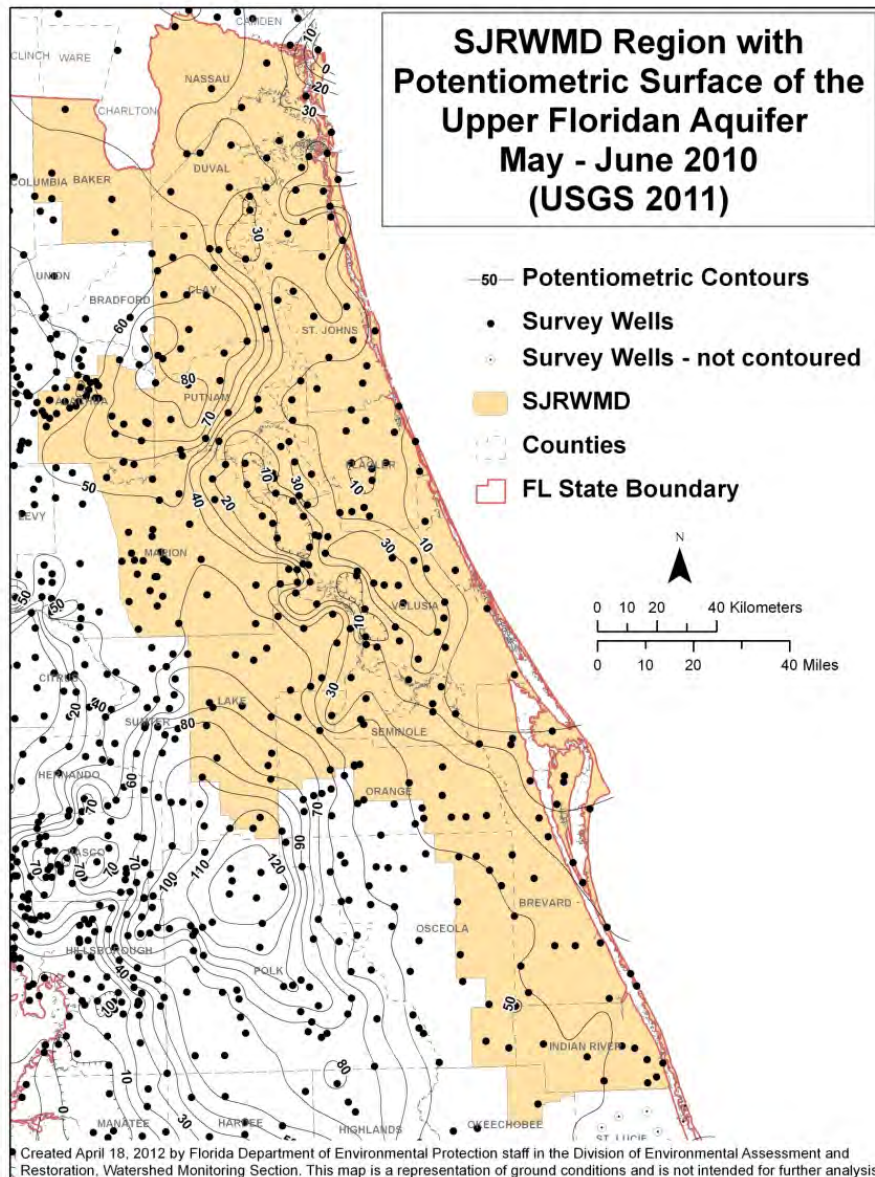




Potentiometric Surface of the Upper Floridan Aquifer in Florida and Parts of Georgia, South Carolina, and Alabama, May - June 2010

David L. Korman and James J. Davis

2017



U.S. Drought Monitor

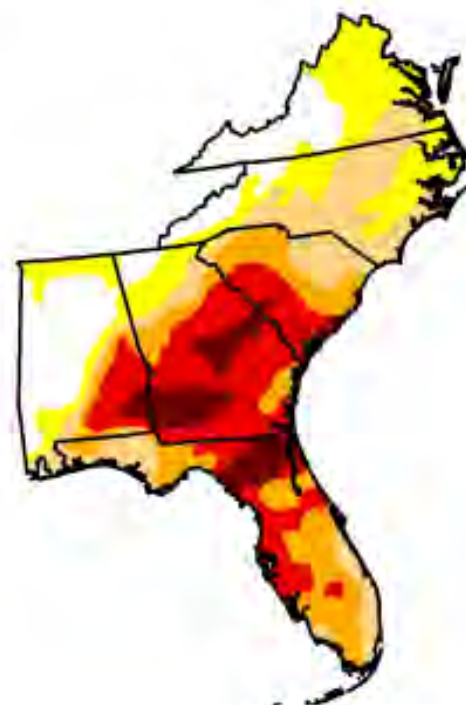
Southeast

April 17, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.04	82.96	63.56	43.54	27.65	7.14
Last Week (04/10/2012 map)	17.84	82.16	63.41	39.97	25.35	5.29
3 Months Ago (01/17/2012 map)	28.63	71.37	52.85	33.73	23.65	1.50
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (04/12/2011 map)	30.65	69.35	48.75	15.15	4.60	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, April 19, 2012
Anthony Artusa, Climate Prediction Center/NCEP/NWS/NOAA

Major Issues

- PRI methods differ among WMDs
- If a statewide PRI map is generated, it may be slightly different from the analogous PRI map produced by a WMD
- For a statewide map, verbiage must make this clear to its readers.

Issues: Resolved and Unresolved

- Adopted PR method: in **Excel**
$$PR(x) = [\# \text{ obs} < x / (n-1)] \cdot 100$$
- Will Compare PRs (Excel, Hydstra)
 - FDEP to supply example data
 - Participants will calculate PRs
 - SNW then compares results

Issues: Resolved and Unresolved

- Color schemes and # of classifications
 - Use USGS schemes
 - Five categories
 - < 10 10 - 24 25-75 76-90 > 90
 - If min - red symbol
 - If max - blue symbol

Issues: Resolved and Unresolved

- **Prefer 1980-2010 POR: Accept up to 1985**
Referred to as “1985”-2010
- 1980-2010 (313 wells) (Ala, SF, FDEP - no wells)
- 1985-2010 (449 wells)
 - 1991-2010 (605 wells) (Ala, SF, FDEP - included)
- Two Pilots?
 - A. “1985” – 2010
 - B. 1991-Present (Ala, SF, FDEP included)
 - Compare results and then make final decision

Issues: Resolved and Unresolved

- Contin Recorders vs Discrete Samples
 - How do we treat Continuous recorder data?
 - Daily Maximum, Daily Minimum, Daily Mean, Daily at Noon, Monthly mean, Mean for the 25th of the Month
 - A sub pilot study – Compare PRs between Monthly and Daily data. Are there differences?

Issues: Resolved and Unresolved

- Should data be de-trended?
 - **We will not de-trend**
 - We know trends are present. We simply want to capture PRs that cover past few decades

Issues: Resolved and Unresolved

- Min # obs for the selected POR?
- Missing segments in time sequence
- Biannually, Quarterly, Monthly, Continuous recorders
- We will need to test
 - Compare PRs – Daily, with M, Q, and Biannual data, where data are available



Issues: Resolved and Unresolved

- How to address seasonality and climate-related effects?
 - SNW Needs to discuss/work out
 - One suggestion is to simply ignore

Issues: Resolved and Unresolved

- In Final Document , Clarify purpose of the PR analysis
 - Overall status of GW levels within aquifer
 - Will discuss areas of low PRs in text
- Avoid conflicting with assessments routinely being reported by WMDs for hydrologic conditions

Issues: Resolved and Unresolved

- Should we adjust GWLs for salinity?
 - For now we will use water levels unadjusted for salinity
 - WMDs are looking into this issue and will let SNW know if future refinements are needed

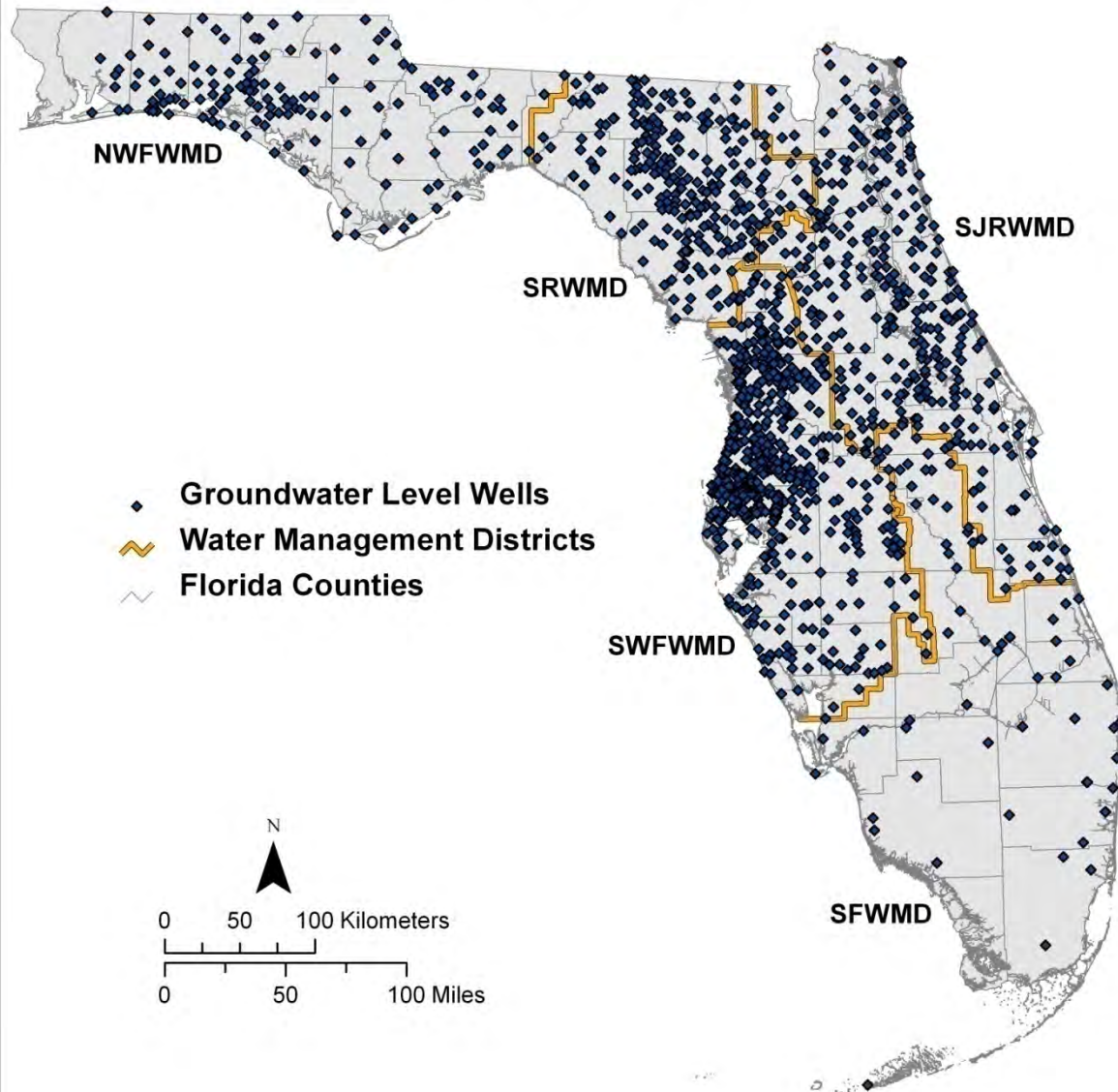


Pilot Study

Once Draft Map is Complete

- SNW will review and comment on pros/cons of using the PR map
- For WMDs currently using PR maps
 - Compare Draft Stateside map to district maps for the same time period
- Draft Preliminary Map by Aug-Nov?
- Work out “kinks”

GROUNDWATER LEVEL FLORIDAN AQUIFER SYSTEM



Created January 10, 2012 by Florida Department of Environmental Protection staff in the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. This map is a representation of ground conditions and is not intended for further analysis.

Closing Remarks

- SNW Wants to be Product Driven
- Want the public to be aware of GW and SW as related to saltwater encroachment
- I want to thank all SNW participants as for giving their time to SNW activities,
- Rick.Copeland@dep.state.fl.us