

MEMORANDUM

TO: Governing Board

FROM: Megan Wetherington, P.E., Senior Professional Engineer *MW*

THRU: David Still, Executive Director *DM For*
Jon Dinges, Department Director *JMD*

DATE: June 7, 2011

RE: May 2011 Hydrologic Conditions Report for the District

RAINFALL

- Average rainfall in May was 1.35", which is 39% of the long-term average of 3.32" (Table 1, Figure 1). This was the ninth driest May since 1932. Localized areas along the coast saw almost no rain (Figure 2), while parts of Union, Bradford, and Alachua counties had near-normal totals (Figure 3). On average, ninety percent of the month's rain was delivered by one system on the 14th. The highest gaged total was 3.63" at Oleno State Park, while the lowest was 0.2" at Rosewood Tower near Cedar Key. The long-term gage in Perry reported 0.25" for the month, the third-driest May there in 80 years.
- The average 12-month deficit increased to 5.4". Deficits nearing 25" persisted in the upper Aucilla, Suwannee, and Santa Fe Basins (Figure 4). Figure 5 shows the change in annual deficits beginning in 1998.

SURFACEWATER

- **Rivers:** The Suwannee River at White Springs and the Suwannee River at Ellaville ended the month with flows in the bottom one percent of all daily flows, based on records beginning in 1927. The Suwannee River at Branford had flows lower than the 5th percentile of all records. The gage at Worthington Springs on the upper Santa Fe River reported no flow on the 31st, which was also in the lowest one percent of records. The Santa Fe River at Fort White finished the month below the 4th percentile of all records. Coastal rivers were below normal after 5 months of near-normal flow. Discharge statistics for six river stations are presented in Figure 6 and streamflow conditions for major gages are shown in Figure 7.
- **Lakes:** Levels at monitored lakes fell by an average of 5 inches. All 16 lakes were below their historical average level. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for 5 lakes.

- **Springs:** Average May flow relative to historical flows is shown for five spring systems in Figure 9.

GROUNDWATER

Levels fell in 92% of monitored upper Floridan Aquifer wells, dropping by an average of 3 inches since April (Figure 10). Average conditions across the District compared to historic May data were below the 25th percentile for the third consecutive month (based on records beginning no earlier than 1978). Conditions based on all monthly records since 1978 fell to the 25th percentile from the 33rd percentile in April. Averaged conditions in the Santa Fe Basin were near the 15th percentile of all observations, while in the Suwannee Basin conditions were at the 22nd percentile. Statistics for a representative sample of wells are shown in Figure 11, and Figure 12 shows statistics for 5 wells in or near the District with continuous records that predate the mid-1970's.

HYDROLOGICAL/METEOROLOGICAL/WATER USE INFORMATION

- The District monitors agricultural water use on 106 overhead irrigation systems. The average daily application rate in May was 0.14", double the rate observed in April. Figure 13 shows average daily application and evapotranspiration since 2008.
- The Palmer Drought Severity Index (PDSI), a climatological tool produced by the National Weather Service, evaluates the severity and frequency of abnormally dry or wet weather using precipitation, temperature, and soil moisture data. The PDSI indicated severe drought during the last week of May.
- The U.S. Geological Survey categorized the Suwannee River and its tributaries as being in severe hydrologic drought, and other basins in the District as below normal.

CONSERVATION

A Phase I Water Shortage Advisory is in effect. Users are urged to voluntarily reduce consumption. Landscape irrigation is limited to two days per week between March and October, based on a water conservation rule that applies to residential landscaping, public or commercial recreation areas, and public and commercial businesses that aren't regulated by a District-issued permit.

This report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using rainfall (radar-derived estimate), groundwater (113 wells), surfacewater (35 stations), agricultural water use (106 stations), and general information such as drought indices and forecasts. Data are provisional and are updated as revised data become available. Data are available at www.mysuwanneeriver.com or by request.

Table 1: Estimated Rainfall Totals

County	May-2011	May Average	Last 3 Months	Last 12 Months
Alachua	2.68	2.27	7.16	41.43
Baker	1.96	1.89	6.29	41.50
Bradford	2.62	2.22	6.20	35.02
Columbia	1.42	3.21	7.22	42.37
Dixie	0.81	3.43	8.89	63.54
Gilchrist	1.51	3.36	7.45	48.51
Hamilton	1.02	3.16	8.90	43.47
Jefferson	1.25	5.88	11.23	44.28
Lafayette	0.96	3.33	9.70	51.03
Levy	1.34	2.67	8.78	59.69
Madison	1.39	4.73	10.60	47.30
Suwannee	1.14	3.24	10.59	49.15
Taylor	0.87	4.16	10.90	52.68
Union	2.33	2.21	6.02	40.25

May 2011 Average: 1.35
 Historical May Average (since 1932): 3.46
 Historical 12-month Average (since 1932): 54.68
 Past 12-Month Total: 49.24
 12-month Rainfall Deficit: -5.44

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall

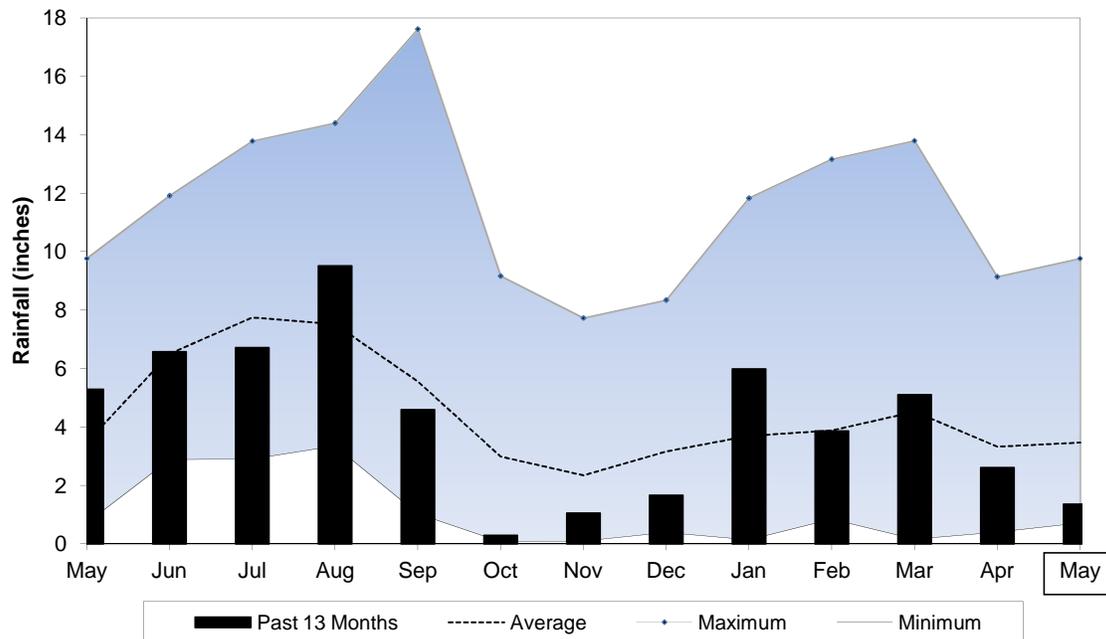


Figure 2: May 2011 Rainfall Estimate

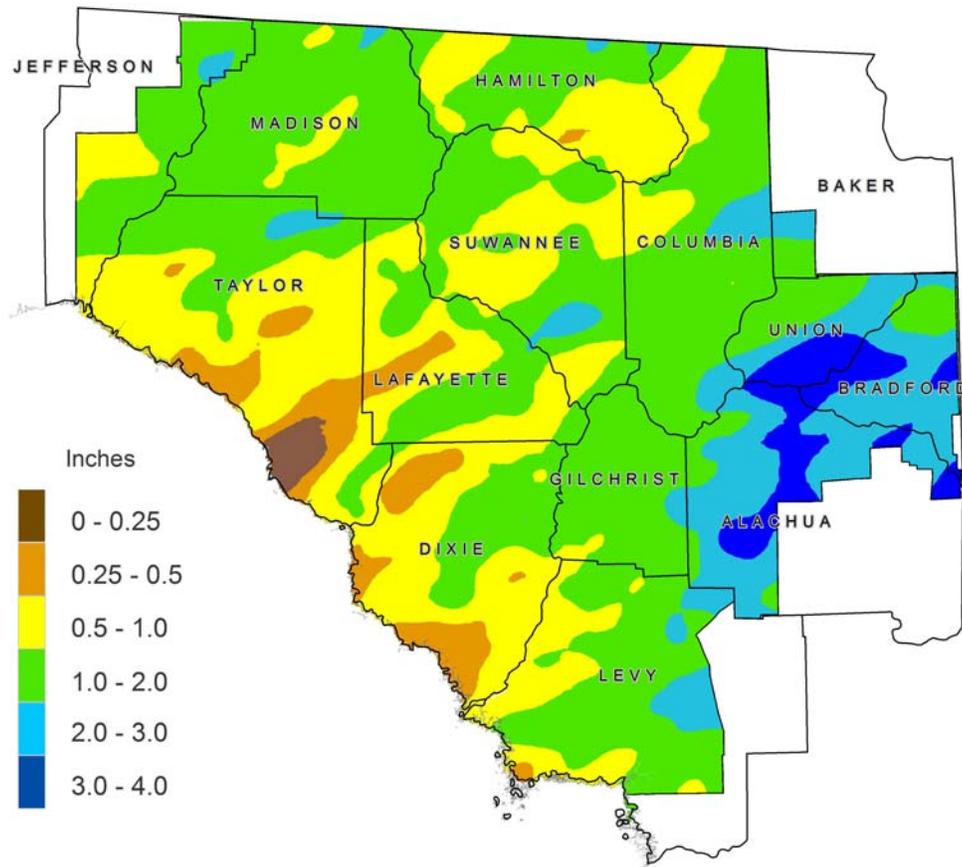


Figure 3: May 2011 Percent of Normal Rainfall

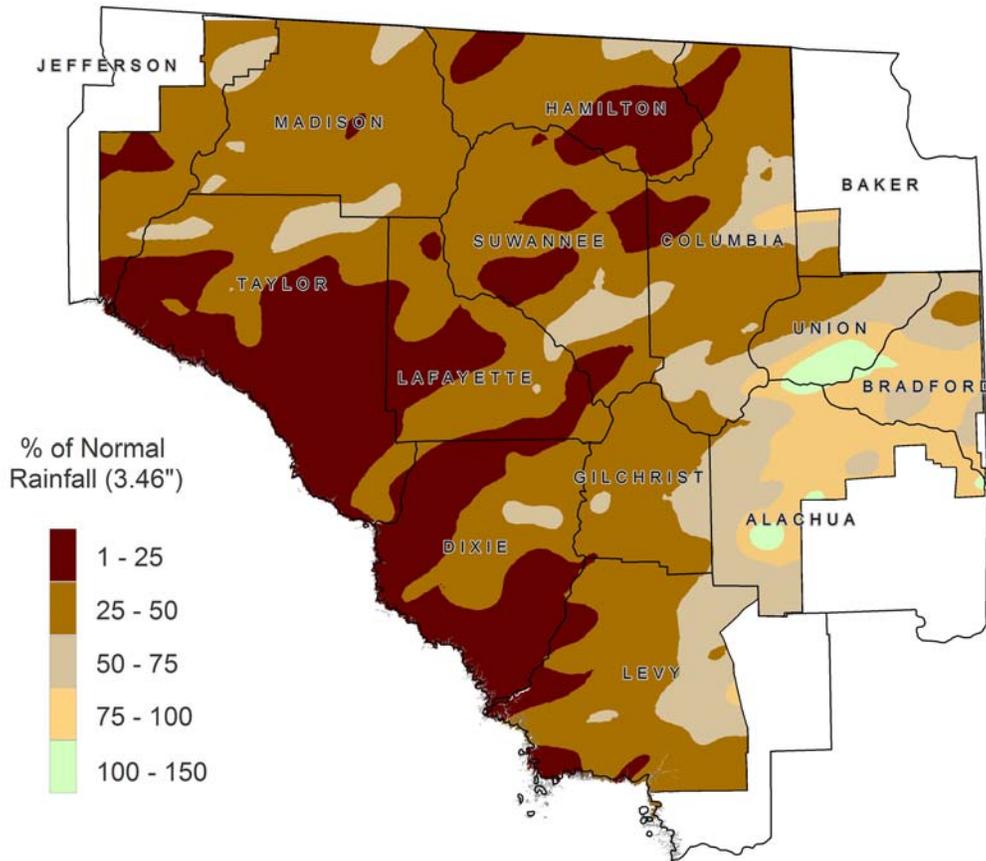


Figure 4: 12-Month Rainfall Surplus/Deficit by River Basin Ending May 31, 2011

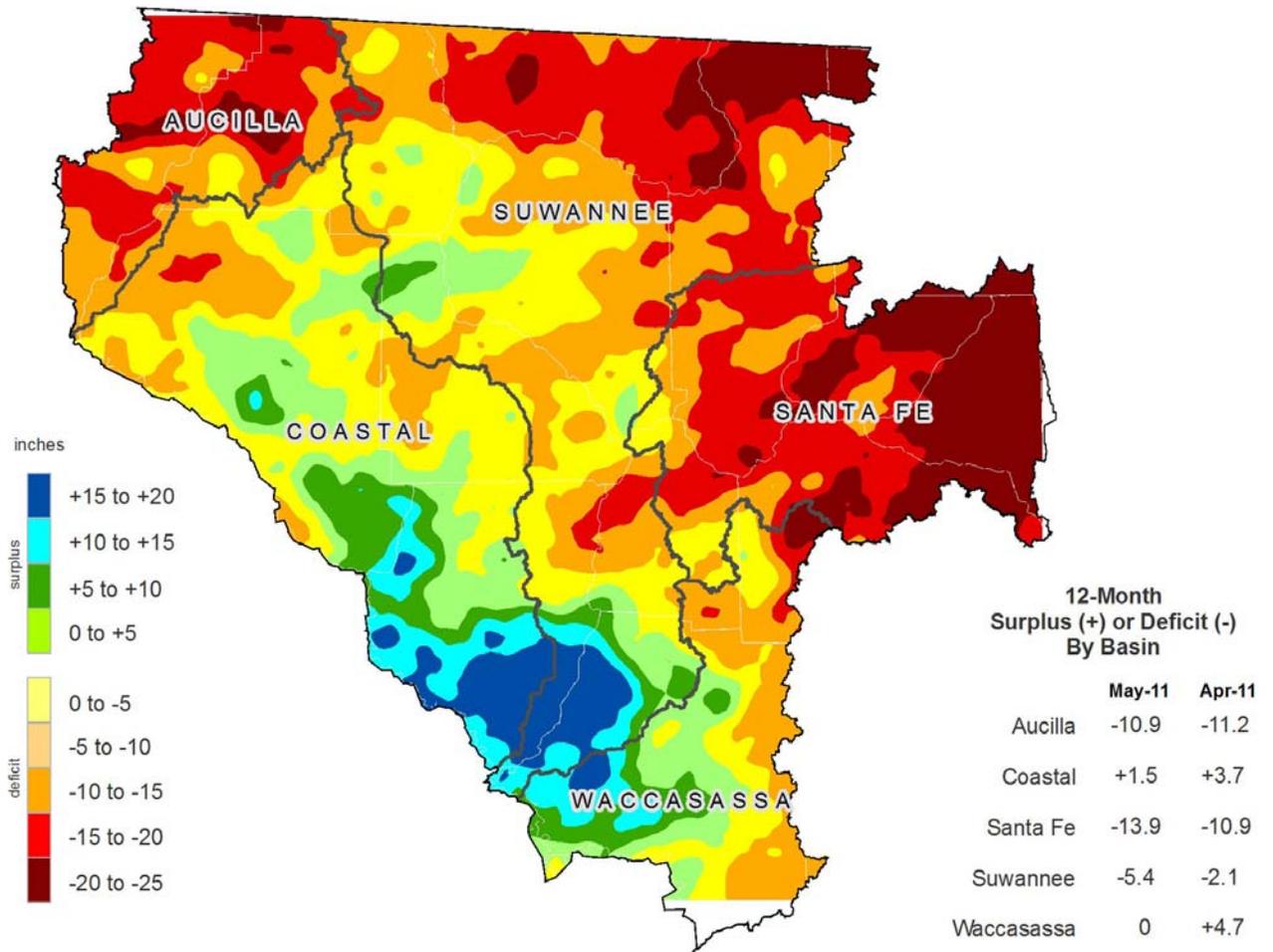


Figure 5: 12-Month Rolling Rainfall Deficit Since 1998

Difference between observed 12-month rainfall and the long-term average over the same period

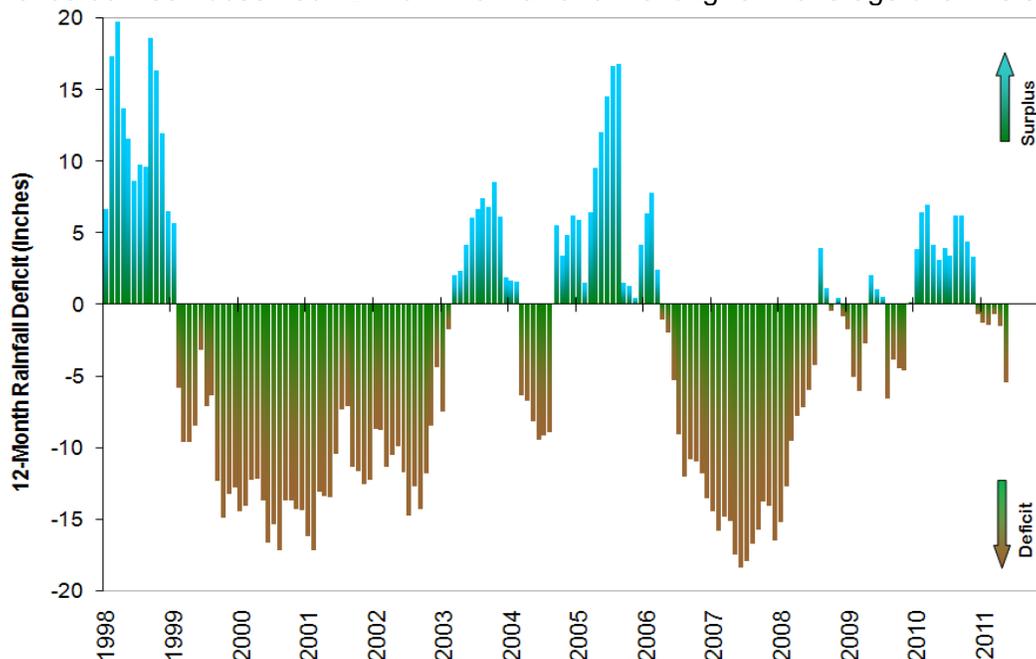
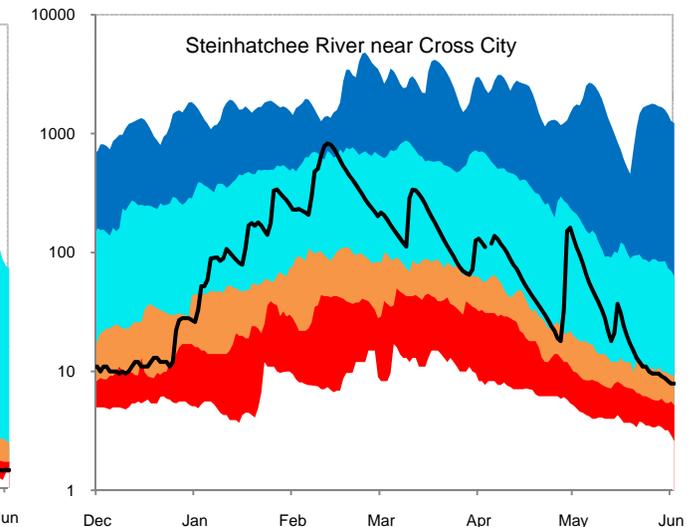
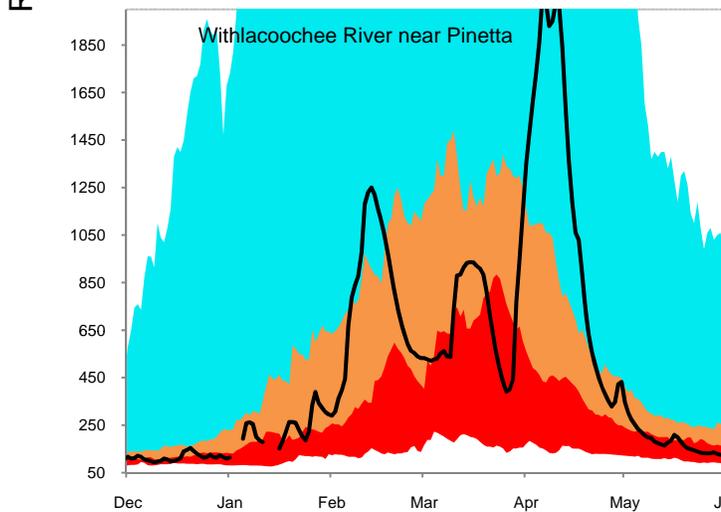
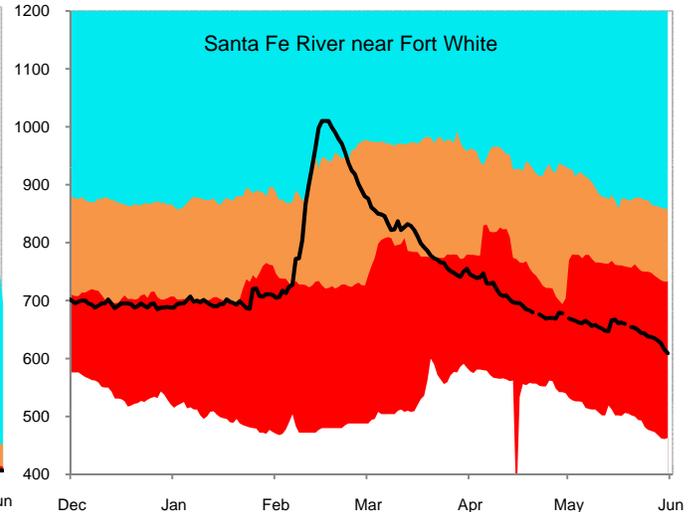
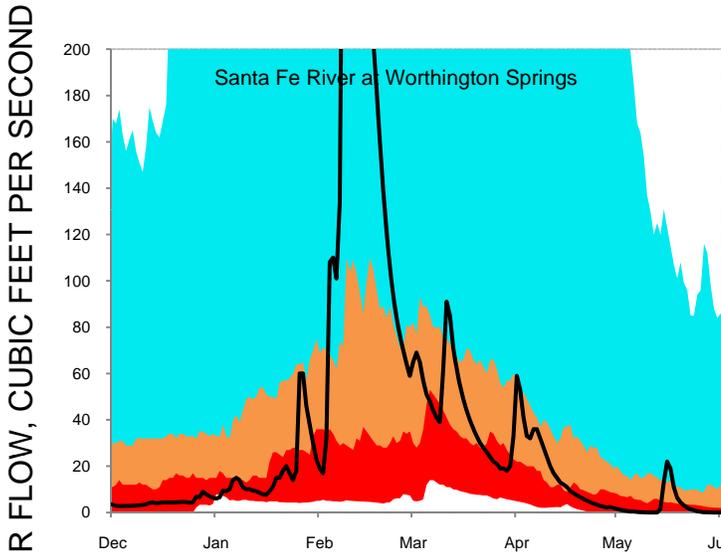
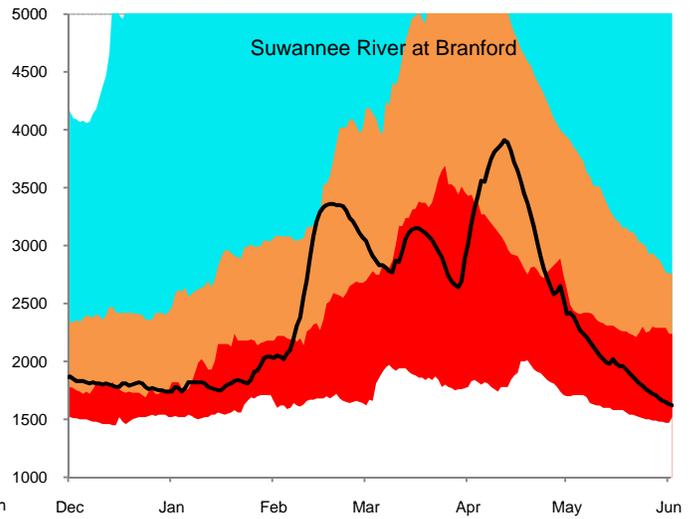
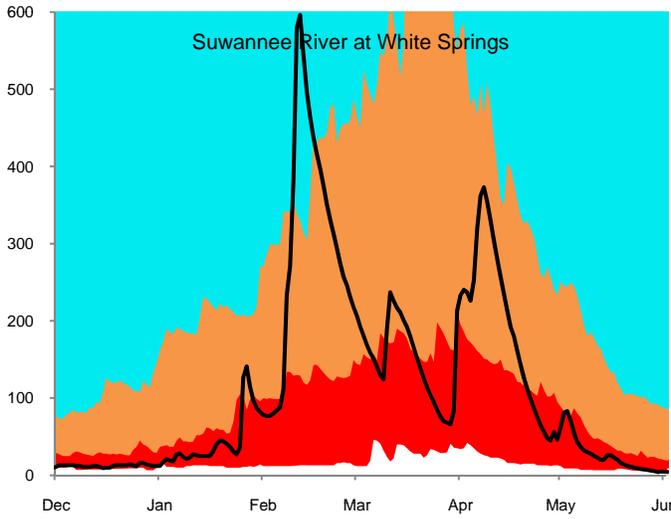
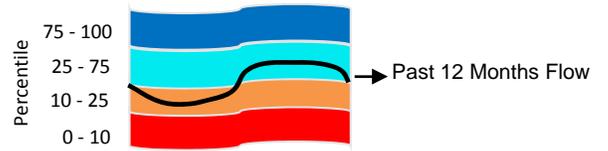


Figure 6: Daily River Flow Statistics
 December 1, 2010 through May 31, 2011



RIVER FLOW, CUBIC FEET PER SECOND

Figure 7: May 2011 Streamflow Conditions

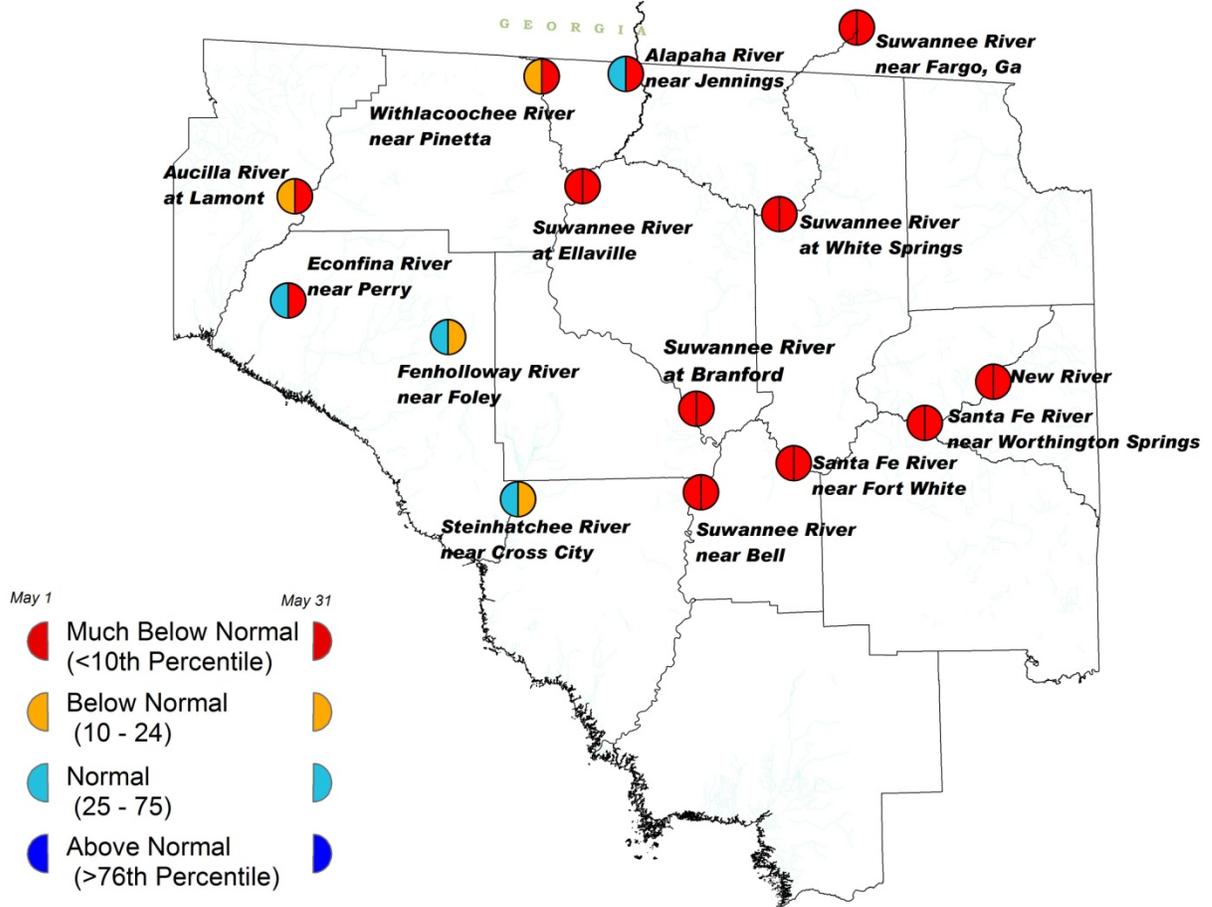


Figure 8: Lake levels relative to historic maximum, minimum, and average levels.

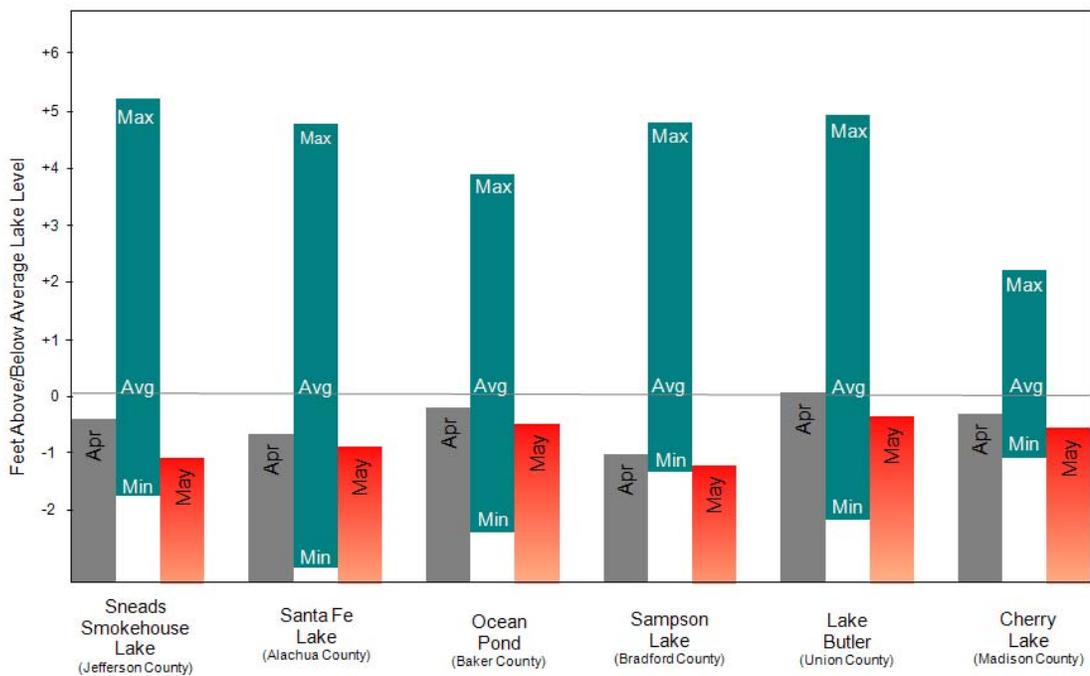
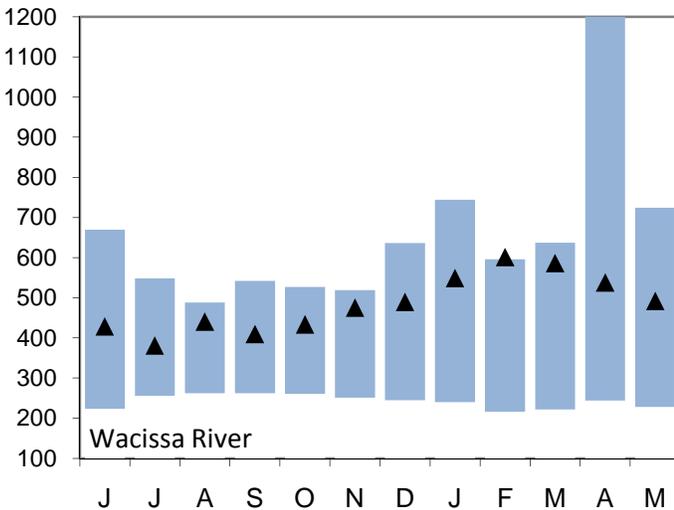
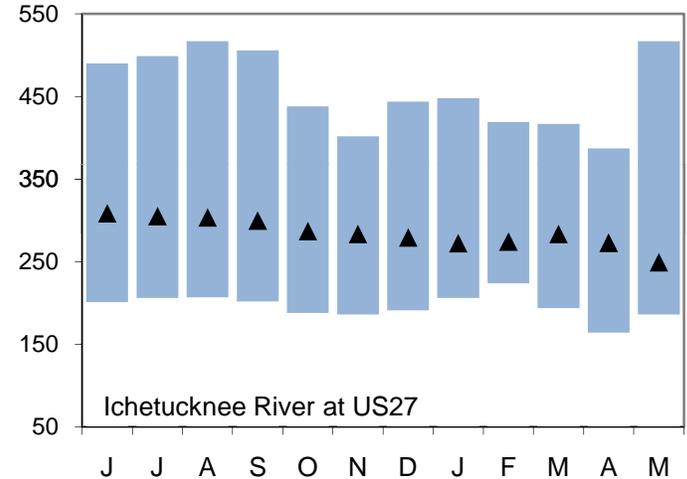
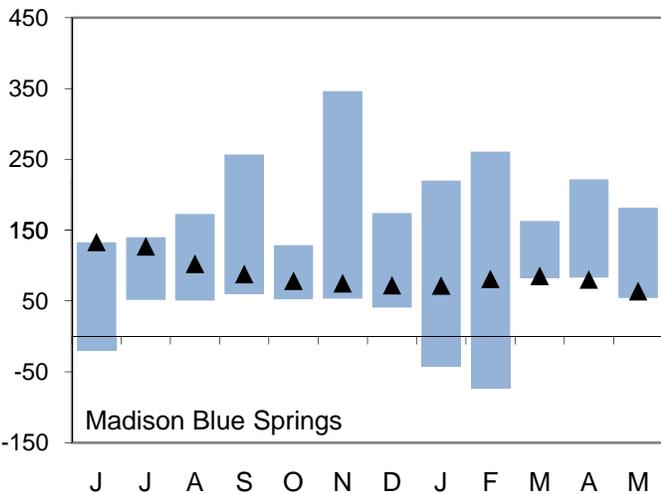
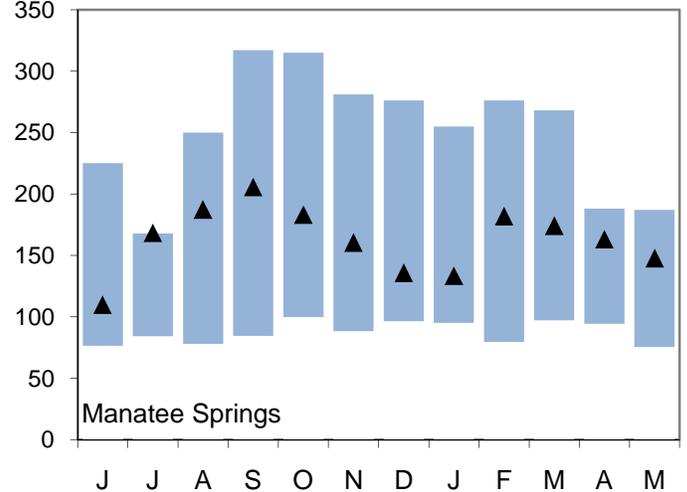
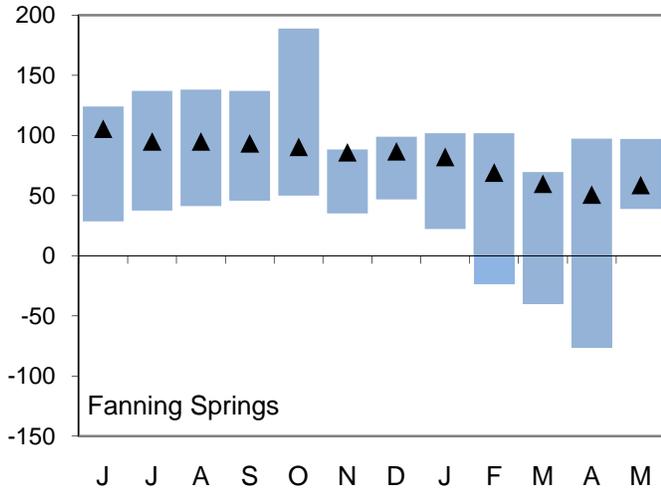
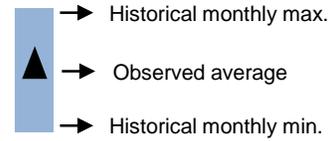


Figure 9: Monthly Springflow Statistics

Flows June 1, 2010 through May 31, 2011

Springflow data are given in cubic feet per second.

Period of record beginning 2002. Data are provisional.



Note: Rising river levels caused by high tides or flooding can cause springflow to slow or reverse.

Springflow for months marked by an asterisk (*) was strongly affected by river conditions.

Data will be revised once approved and published by the U.S. Geological Survey.

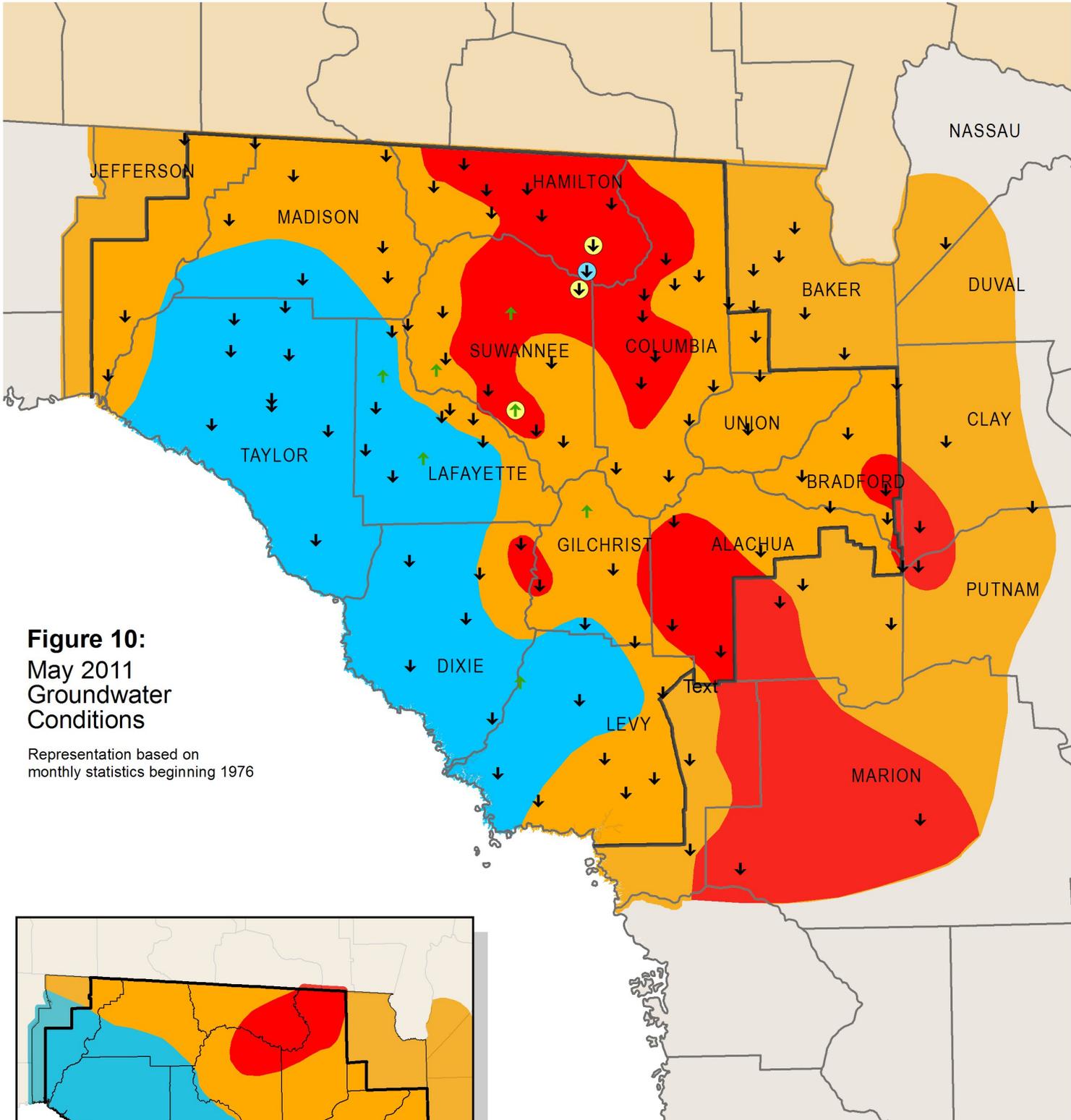
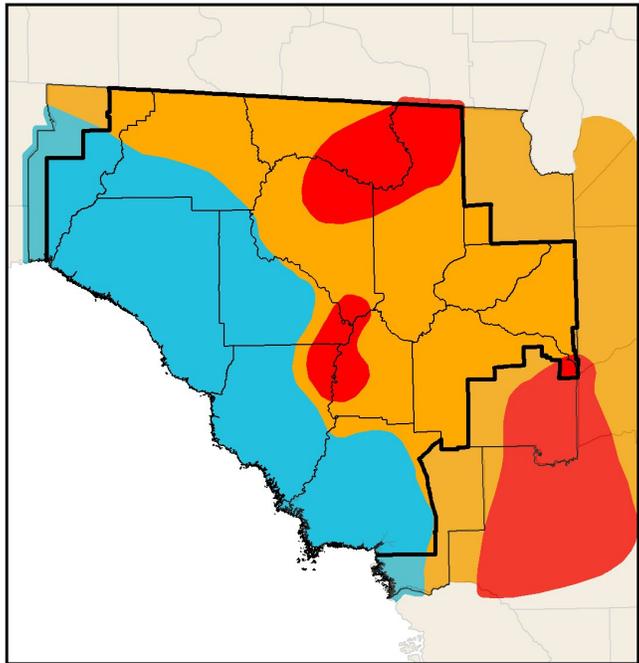


Figure 10:
 May 2011
 Groundwater
 Conditions

Representation based on
 monthly statistics beginning 1976

Additional wells courtesy of SJRWMD and USGS

- High
(Greater than 75th Percentile)
- Normal
(25th to 75th Percentile)
- Low
(10th to 25th Percentile)
- Extremely Low
(Less than 10th Percentile)
- ↑ ↓ Increase/decrease in level since last month
- District Boundary
- Record Low for Month
- Historic Low



Inset: April 2011 Groundwater Levels

Figure 11: Monthly Groundwater Level Statistics

Levels June 1, 2010 through May 31, 2011
 Period of Record Beginning 1978

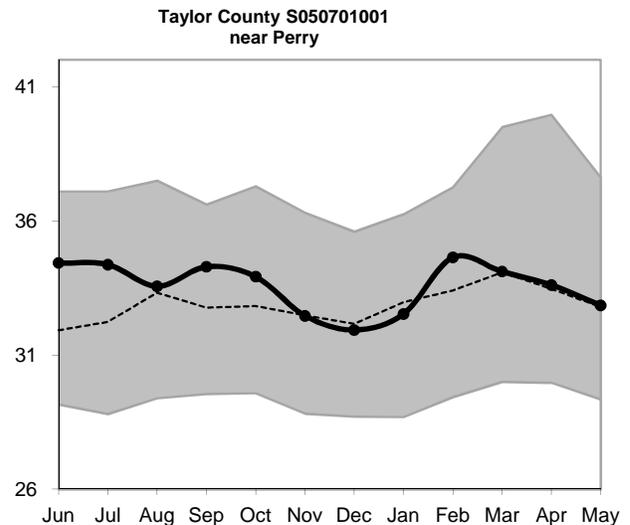
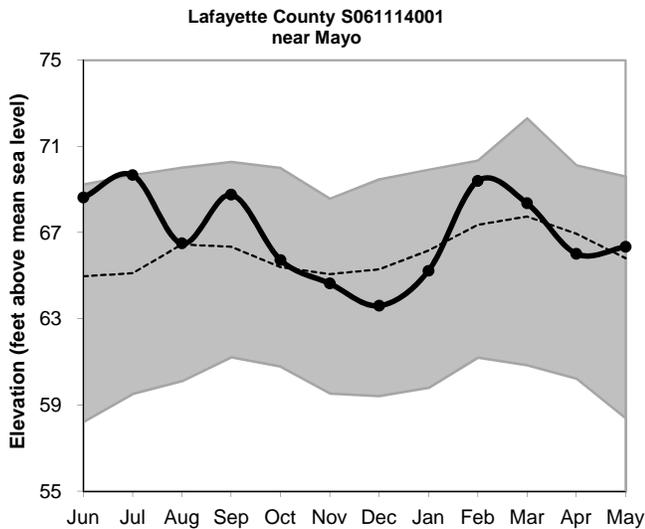
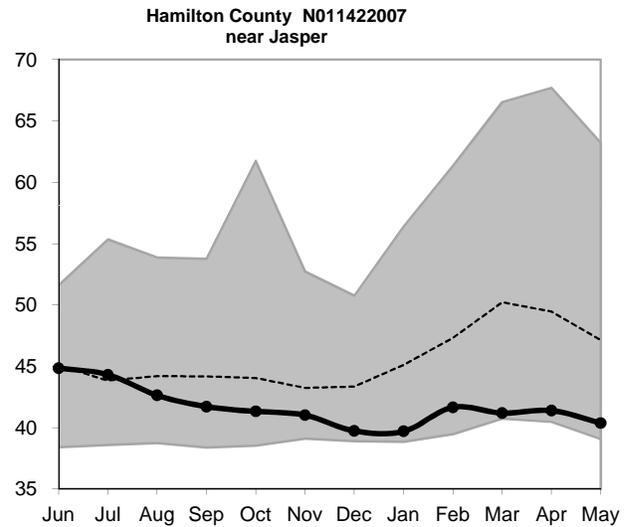
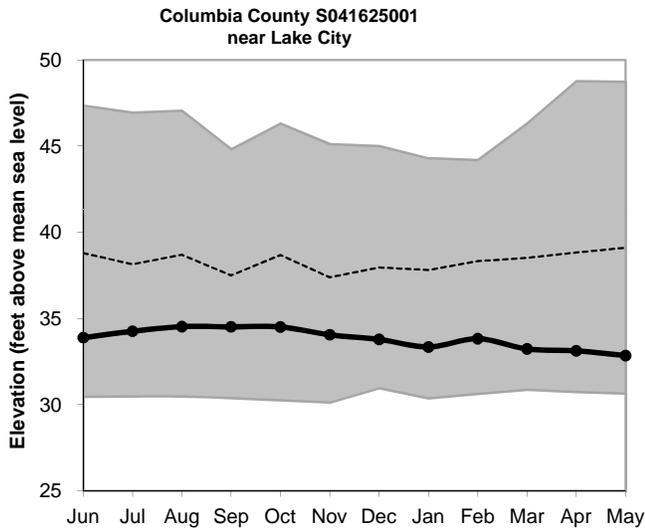
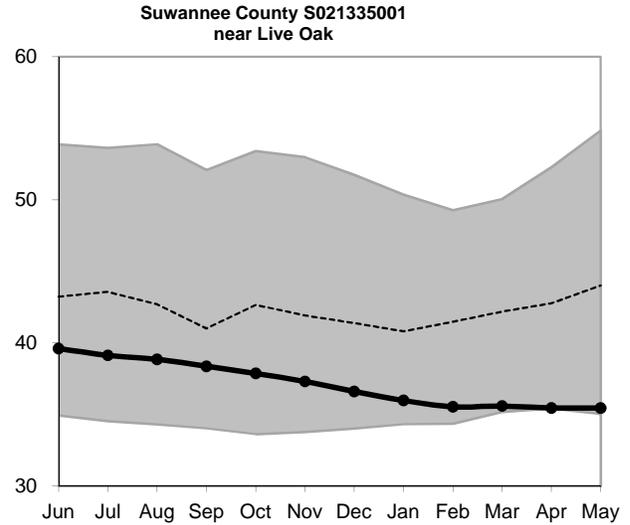
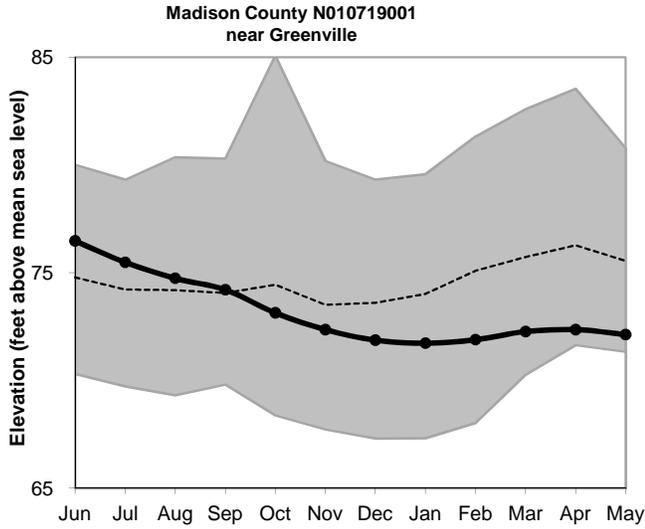
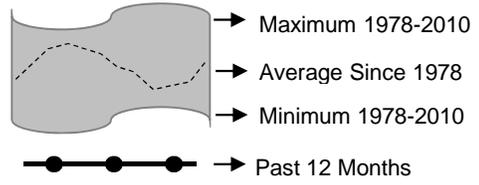


Figure 11, cont.: Groundwater Level Statistics

Levels June 1, 2010 through May 31, 2011
 Period of Record Beginning 1978

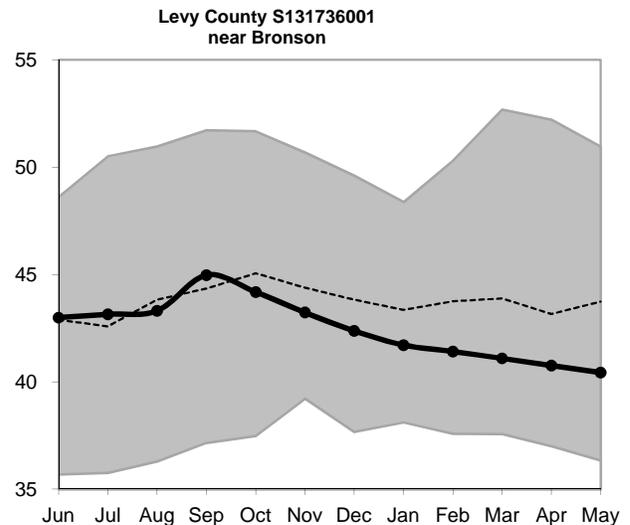
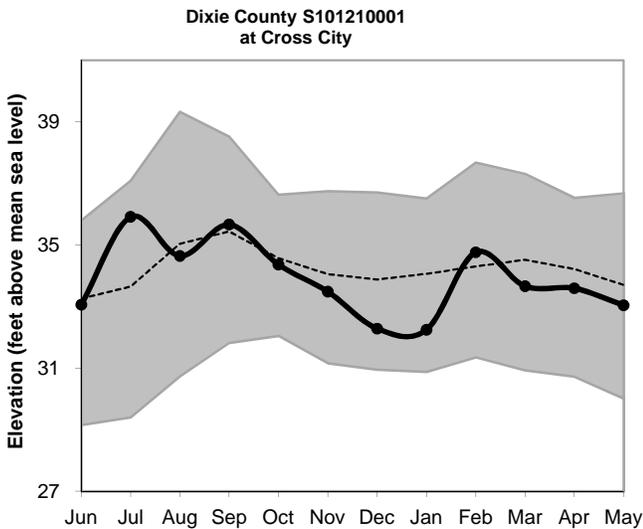
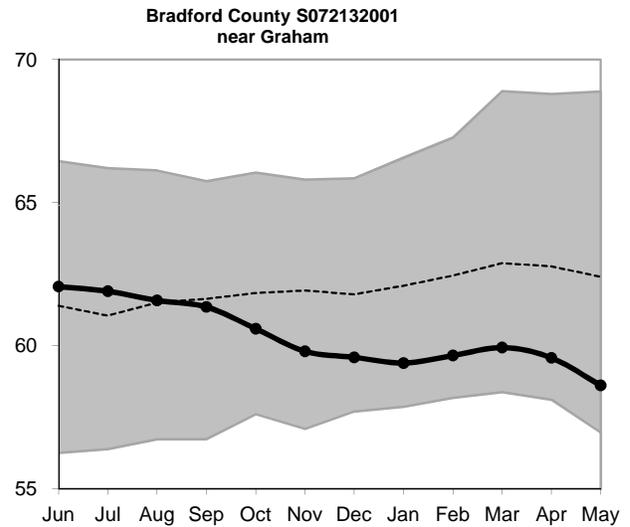
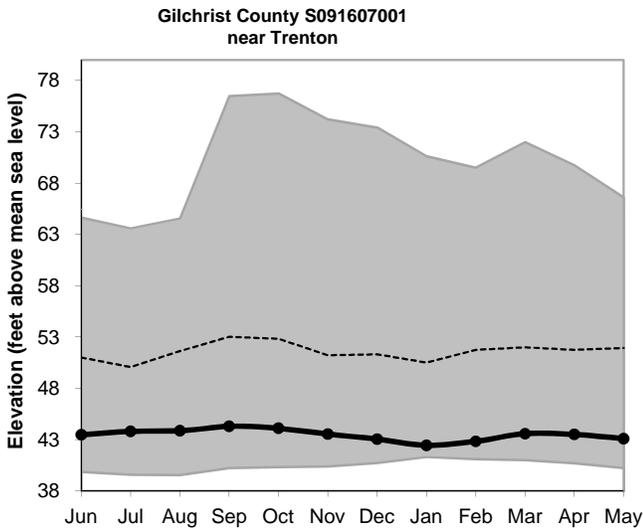
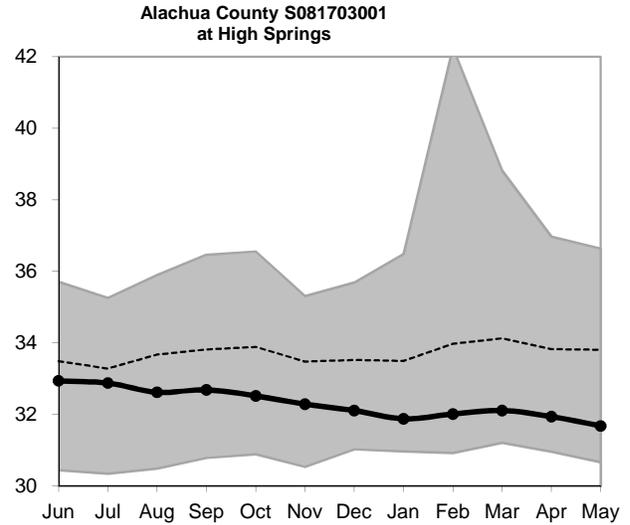
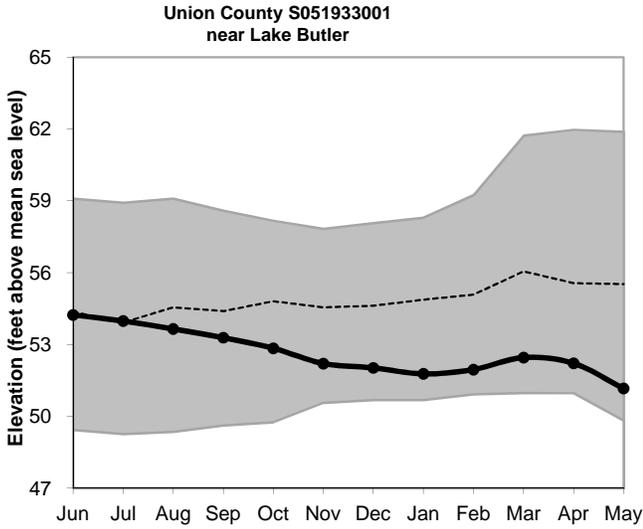
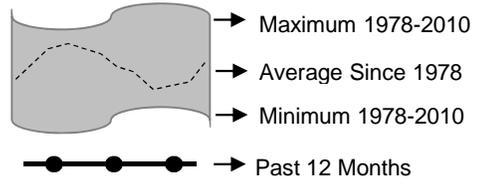


Figure 12: Long-Term Groundwater Levels

Ending May 2011

Levels in feet above mean sea level

— Observed data
 - - - Observed data smoothed using LOWESS (locally weighted polynomial regression)

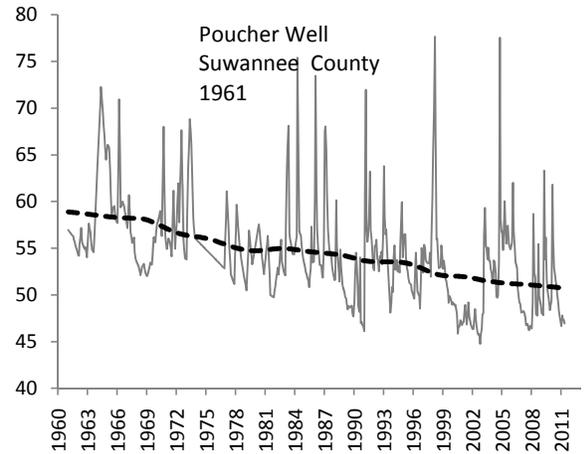
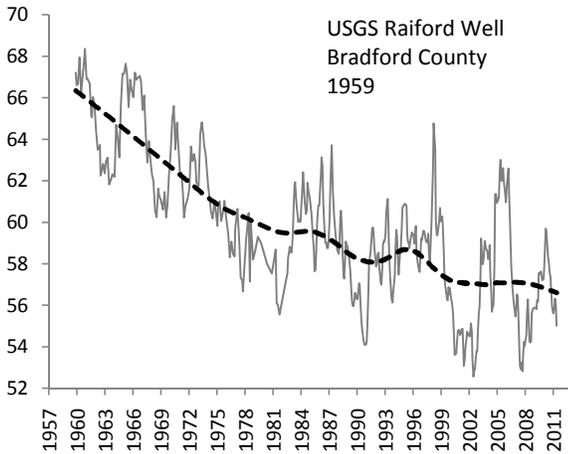
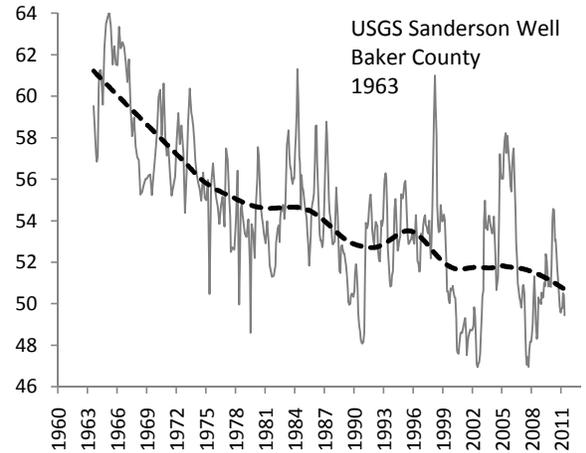
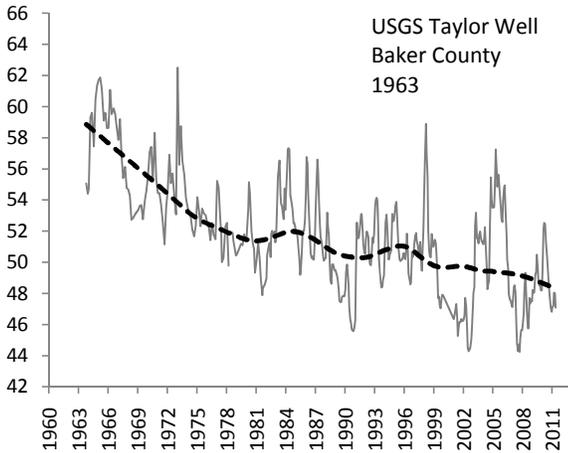
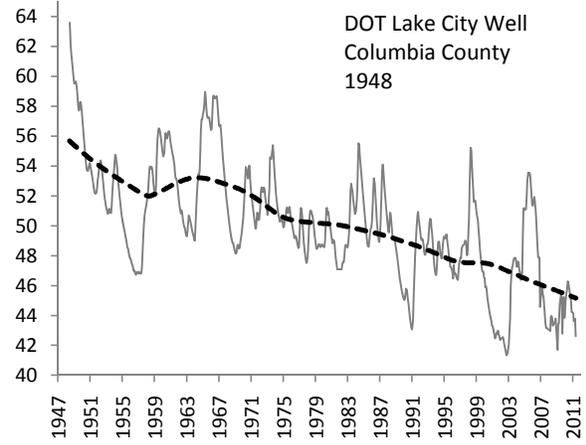
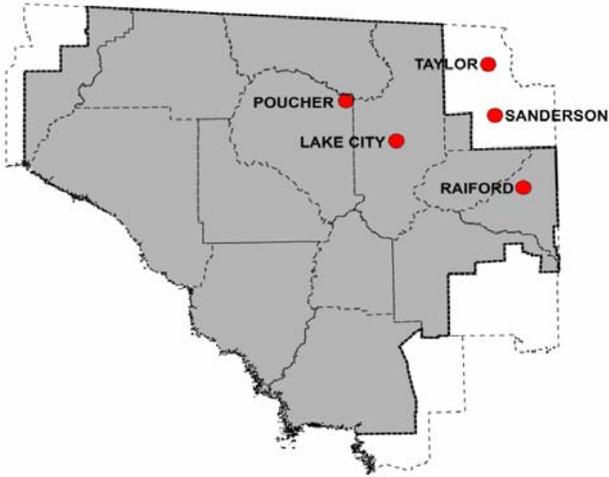


Figure 13: Agricultural Water Use

Daily evapotranspiration (loss of water by evaporation and plant transpiration) and irrigation based on usage reported by up to 106 overhead irrigation systems (12,250 acres total) on a variety of crops throughout the District. These units are part of a network of 175 units installed at 48 agricultural operations by permission of the owners. Evapotranspiration data courtesy of University of Florida IFAS Extension.

