

MEMORANDUM

TO: Governing Board

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

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

DATE: July 7, 2011

RE: June 2011 Hydrologic Conditions Report for the District

RAINFALL

- Average rainfall in June was 5.10", which is 78% of the long-term average of 6.52" (Table 1, Figure 1). Distribution was scattered and highly variable, with radar-derived totals ranging from 1" to almost 11" (Figure 2). No county reached or exceeded normal June rainfall. Jefferson, Hamilton, northern Madison, and southeastern Bradford counties were the driest (Figure 3). The lowest gaged total was 1.53" at Santa Fe Lake in Alachua County, while the highest was 9.02" at the Foley gage near Perry in Taylor County.
- The average 12-month deficit increased to 6.9". Deficits nearing 25" persisted in the upper Aucilla, Suwannee, and Santa Fe basins (Figure 4). The average 3-month deficit was 4.2". Figure 5 shows the change in annual deficits beginning in 1998.

SURFACEWATER

- **Rivers:** Provisional record-breaking low flows or stages were observed at the following Suwannee River gages: White Springs (records beginning in 1906), Suwannee Springs (1960), and Noble's Ferry (1987). Average daily flows at the Suwannee River at Branford and the Santa Fe River at Fort White were below the 1st percentile of all records, and average 30-day flows were at the 2nd percentile. The Santa Fe River at Worthington Springs in the upper Santa Fe Basin reported no flow for 30 consecutive days. Flows on the Aucilla, Econfinna, and Steinhatchee rivers fell to below the 10th percentile. 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 all 16 monitored lakes remained below their historic average levels, falling by an average of 4". Low Lake in Suwannee County set a new record low stage, falling below the previous record set in December 2010. Lake Sampson in Bradford County was 0.5" above its

record low set in January. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

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

GROUNDWATER

Levels fell in 95% of monitored upper Floridan Aquifer wells, dropping by an average of 1.1 feet since May (Figure 10). Average conditions across the District compared to historic June data were below the 25th percentile for the fourth consecutive month (based on records beginning no earlier than 1978). Thirty-nine percent of the wells were below the 10th percentile. Conditions based on all monthly records since 1978 fell to the 13th percentile from the 25th percentile in May. Averaged conditions in the Santa Fe Basin were below the 10th percentile of all observations, while in the Suwannee Basin conditions were below the 15th 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 June was 0.13", down 0.01" from the observed May rate. 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 moderate drought during the last week of June.
- 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 eliminate unnecessary uses. 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 (111 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	June-2011	June Average	Last 3 Months	Last 12 Months
Alachua	5.45	6.57	9.59	40.89
Baker	5.60	6.29	8.67	41.59
Bradford	5.41	6.11	9.01	35.61
Columbia	5.58	6.25	9.09	41.66
Dixie	5.35	6.42	9.15	60.26
Gilchrist	5.67	6.43	9.74	46.79
Hamilton	3.75	6.13	7.99	39.94
Jefferson	3.59	6.09	7.63	43.50
Lafayette	4.41	6.25	8.82	47.63
Levy	4.90	6.87	8.92	58.45
Madison	4.43	6.08	8.21	45.89
Suwannee	5.65	6.20	10.55	47.20
Taylor	5.65	6.93	9.21	52.29
Union	5.73	6.78	9.37	40.28

June 2011 Average: 5.10
 Historical June Average (since 1932): 6.52
 Historical 12-month Average (since 1932): 54.68
 Past 12-Month Total: 47.77
 12-month Rainfall Deficit: -6.91

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall

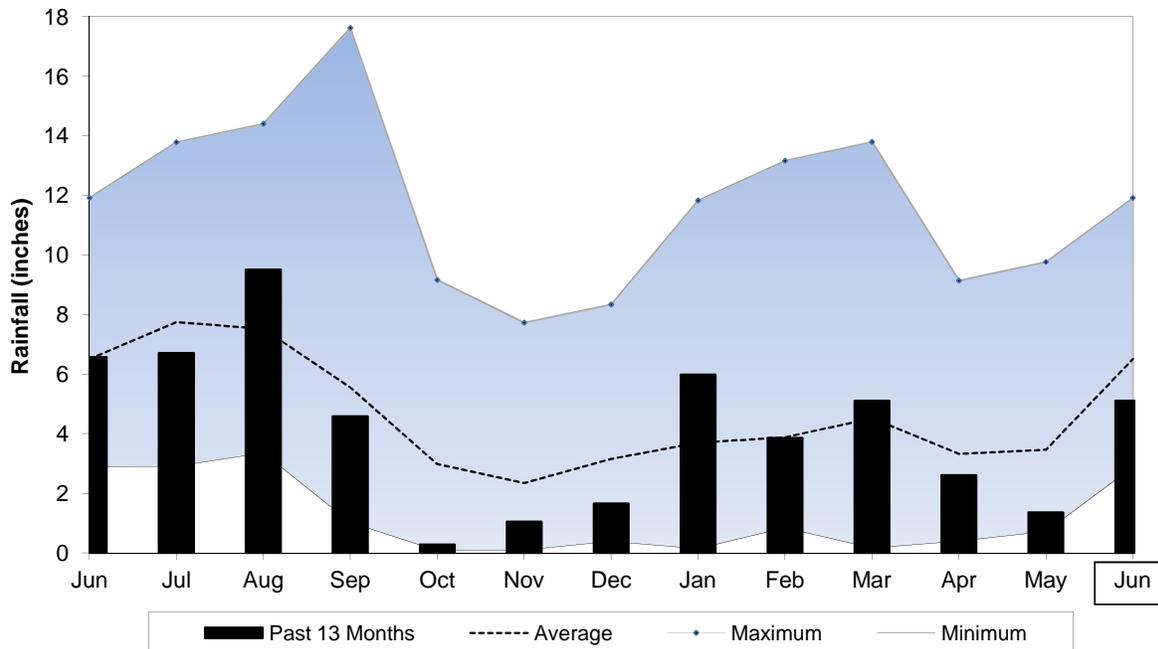


Figure 2: June 2011 Rainfall Estimate

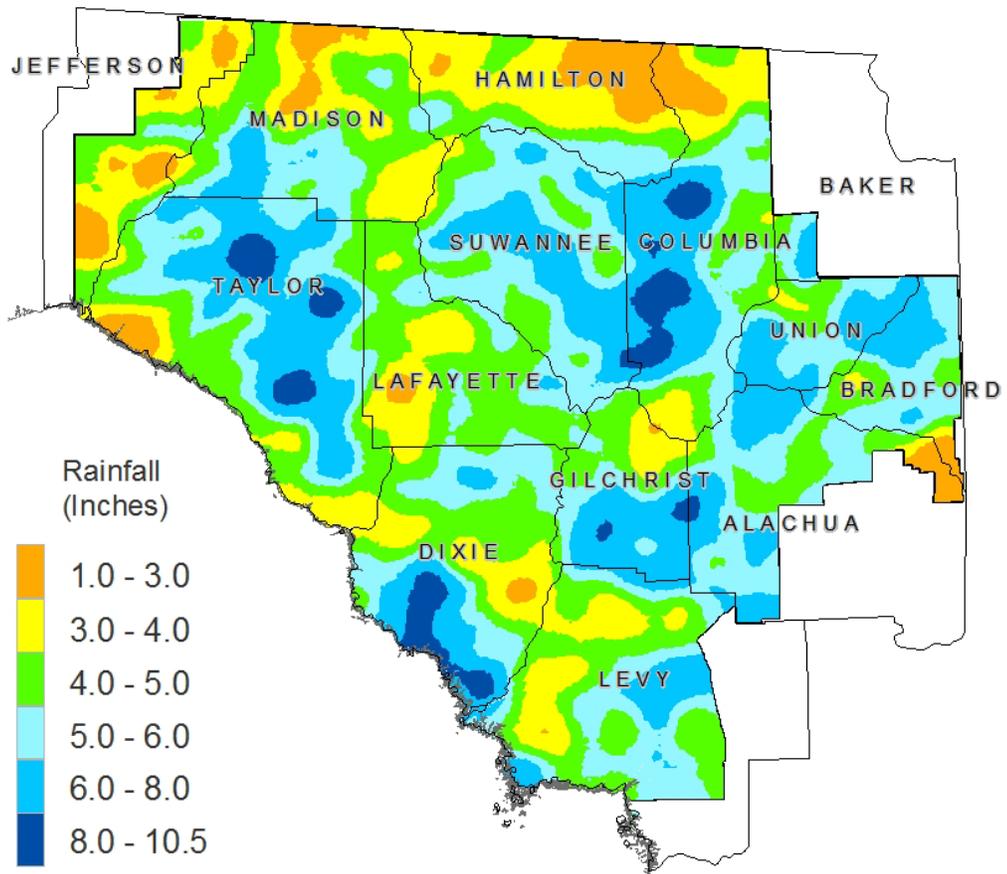


Figure 3: June 2011 Percent of Normal Rainfall

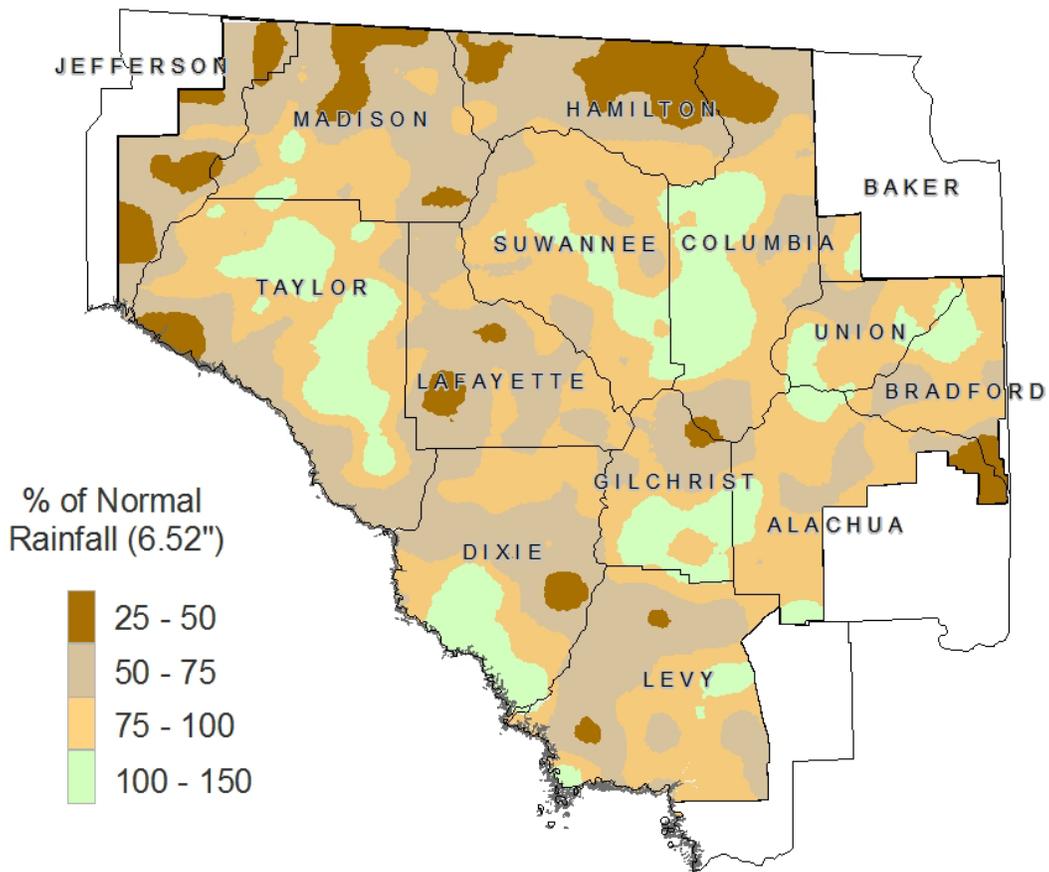


Figure 4: 12-Month Rainfall Surplus/Deficit by River Basin Ending June 30, 2011

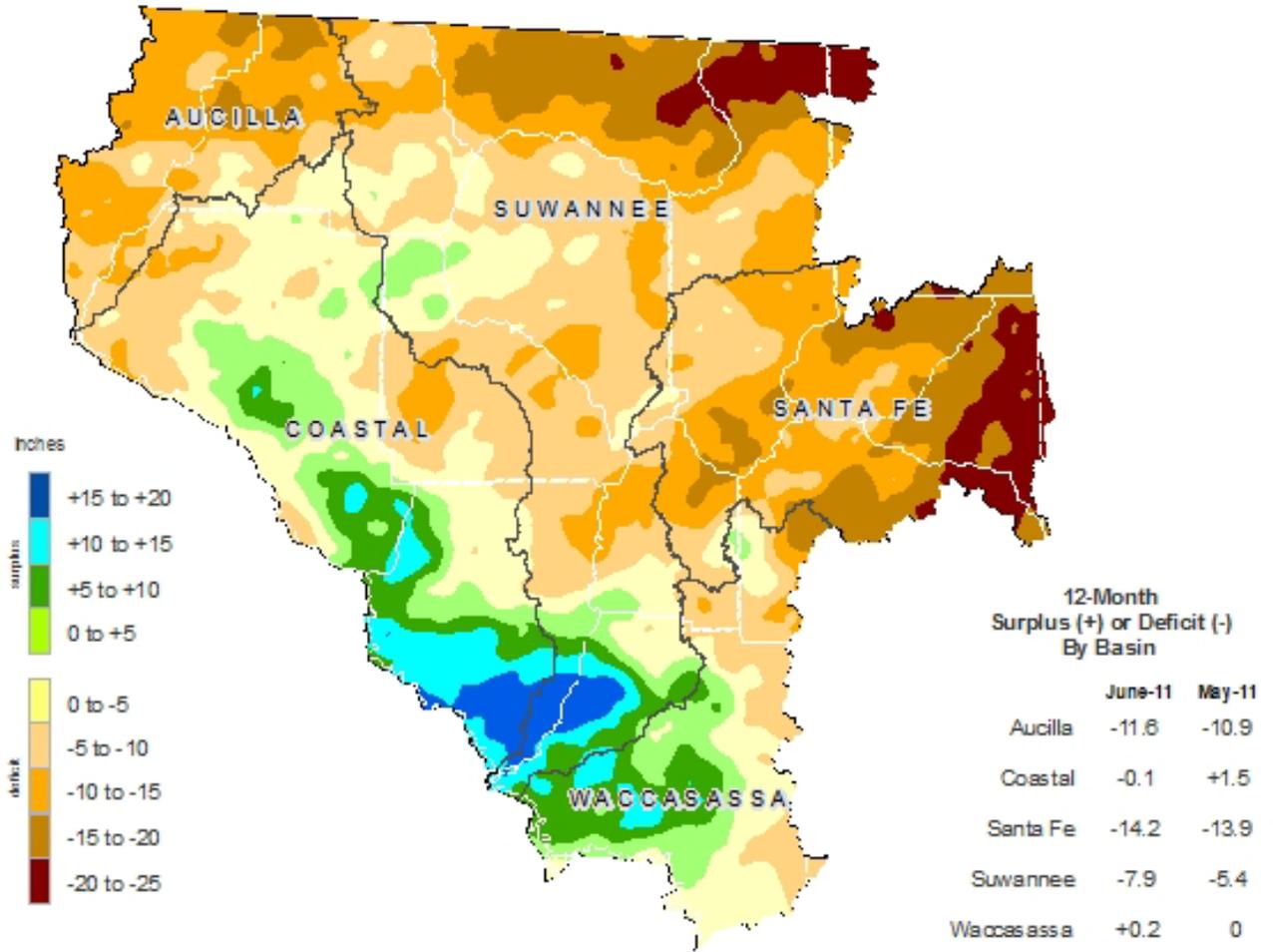


Figure 5: 12-Month Rolling Rainfall Deficit Since 1998

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

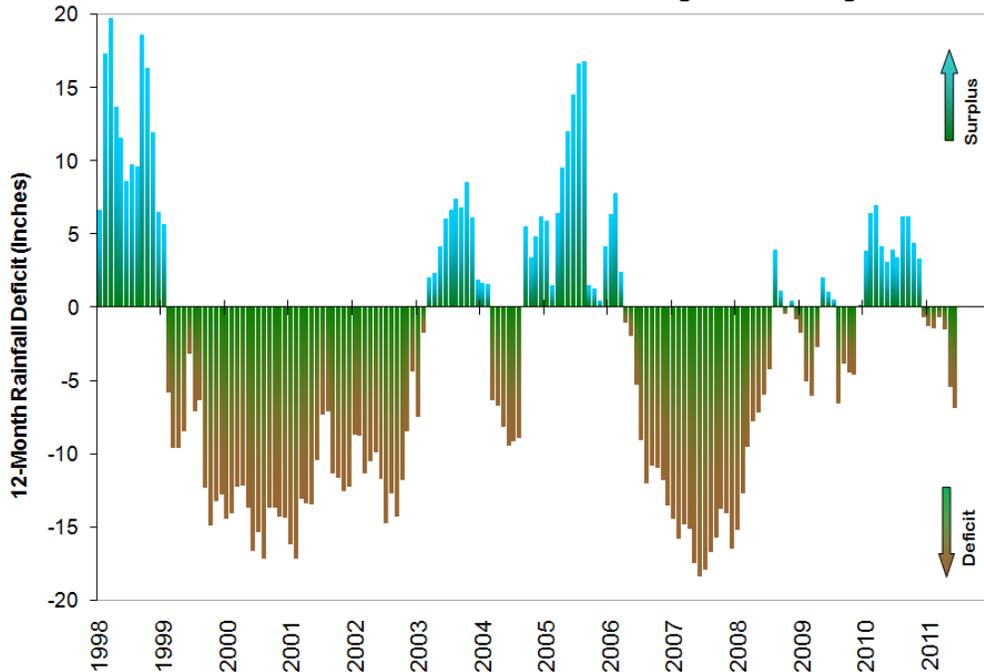
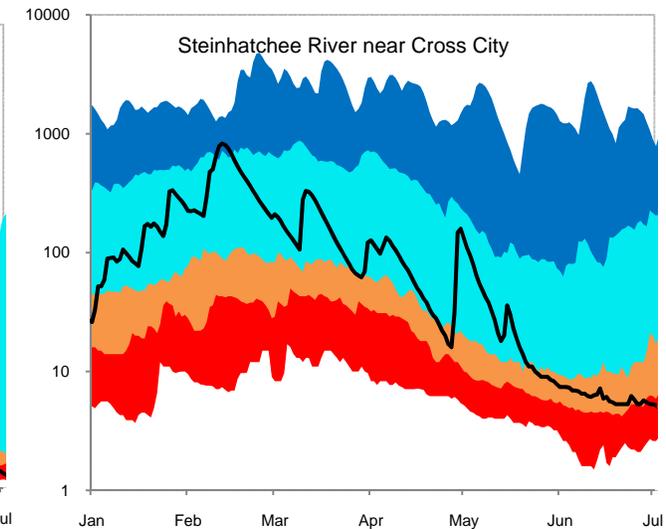
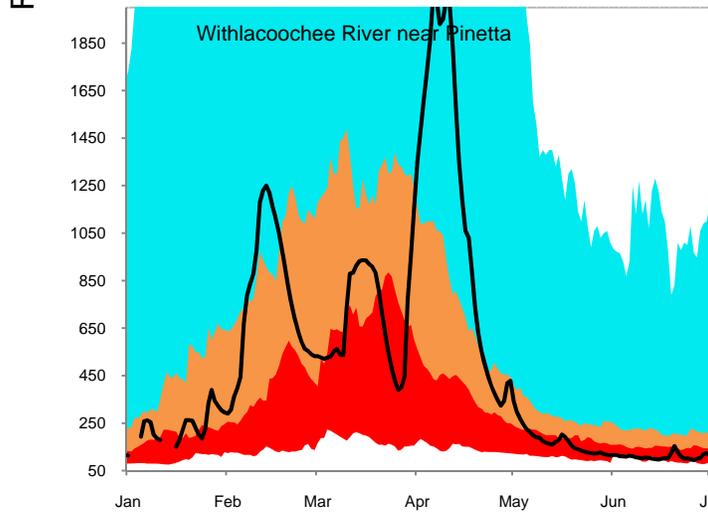
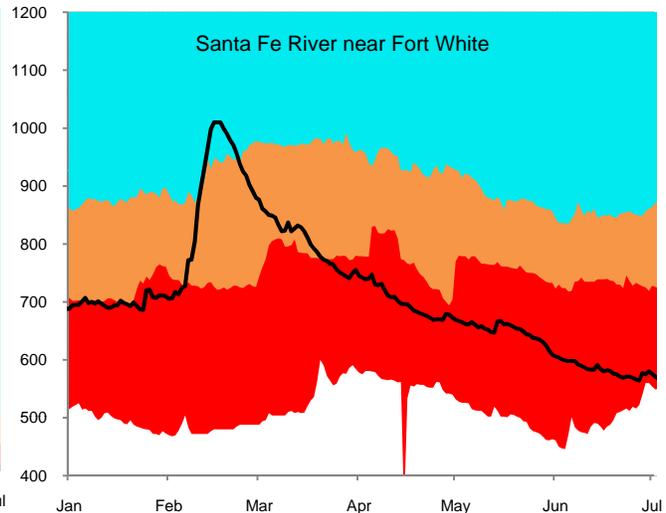
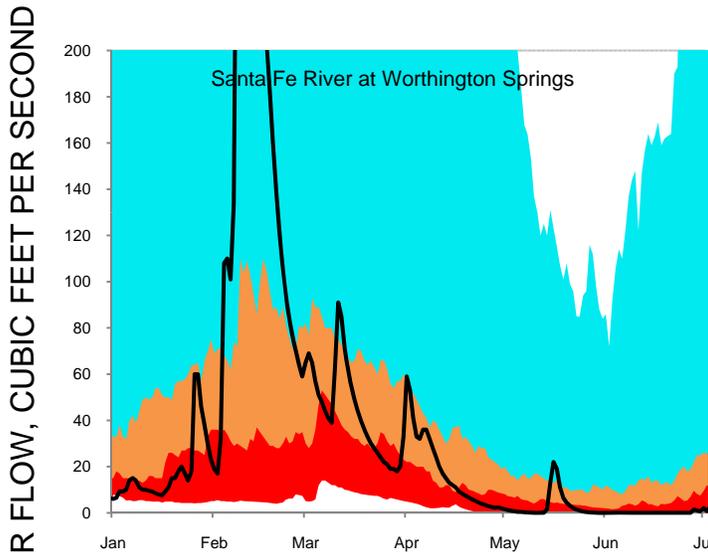
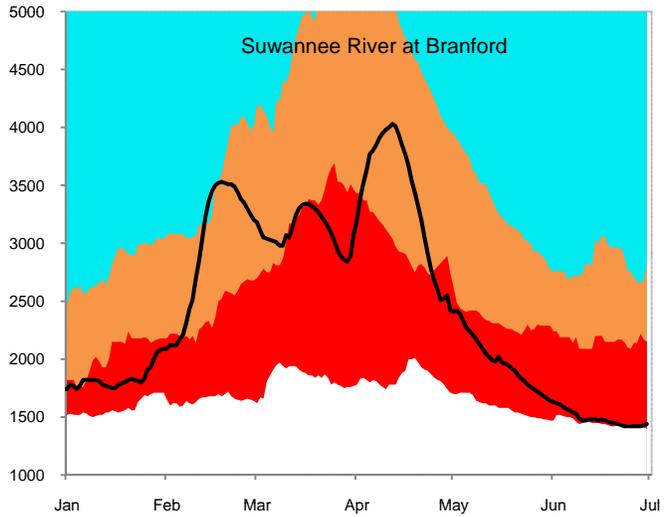
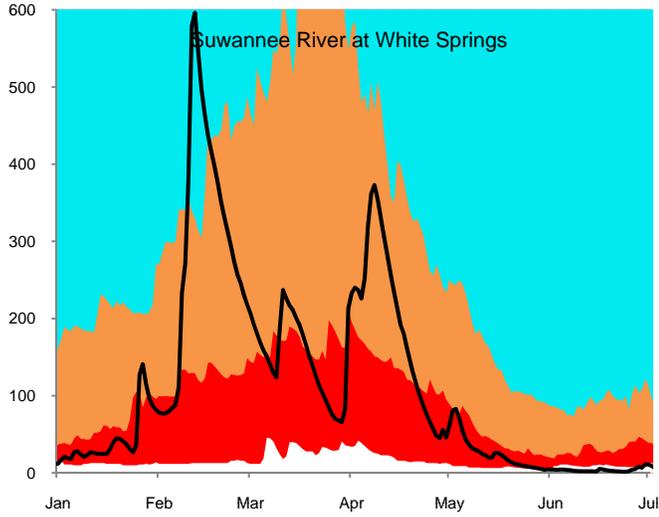
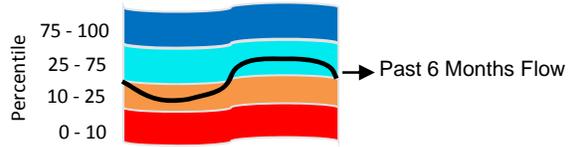


Figure 6: Daily River Flow Statistics
 January 1, 2011 through June 30, 2011



RIVER FLOW, CUBIC FEET PER SECOND

Figure 7: June 2011 Streamflow Conditions

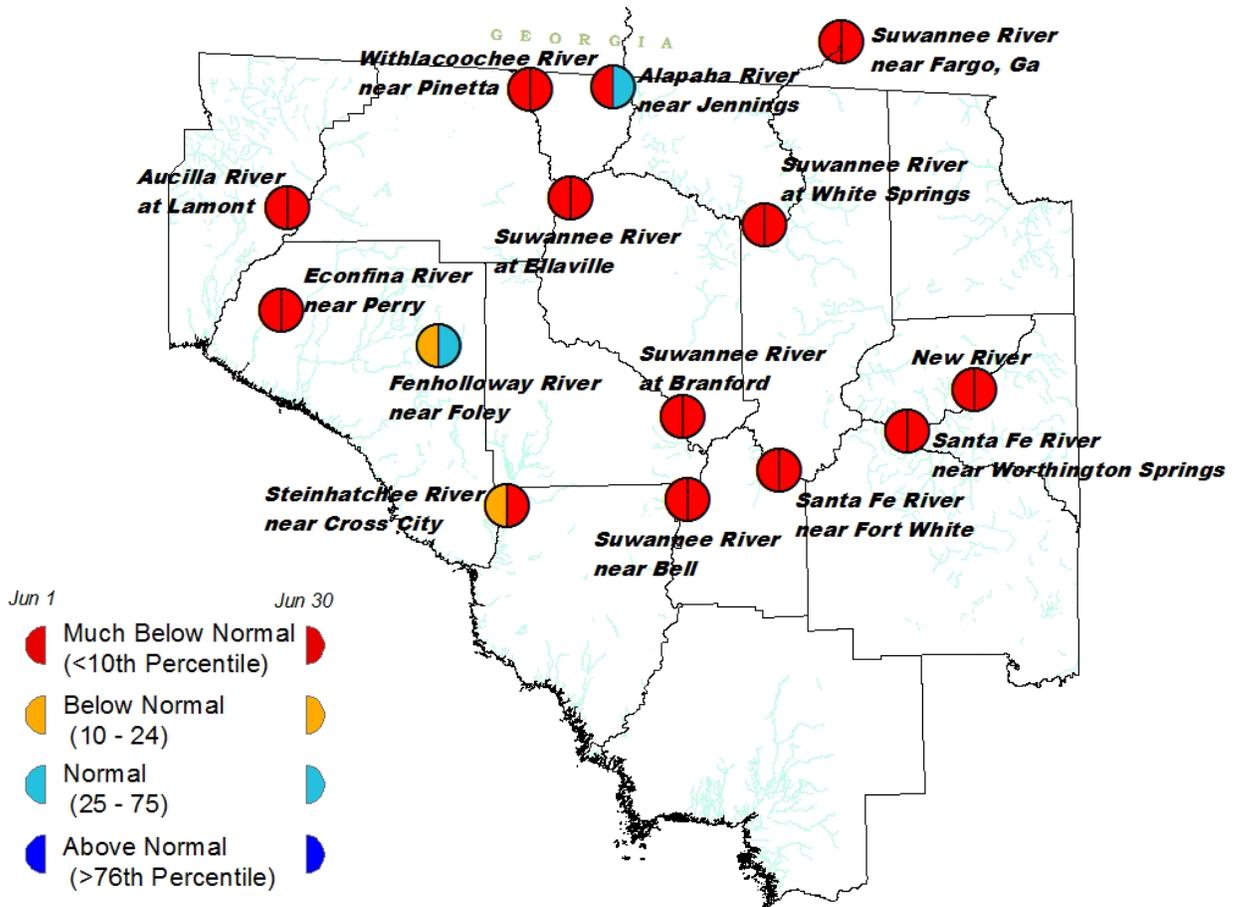


Figure 8: Lake levels relative to historic maximum, minimum, and average levels.

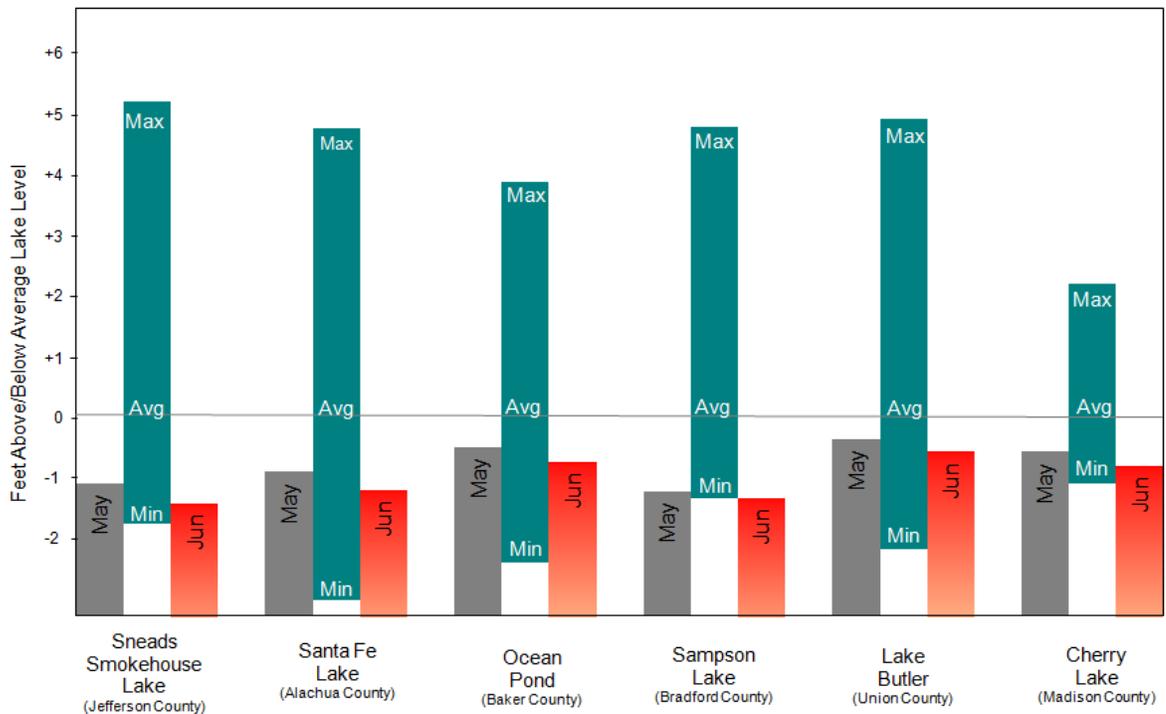
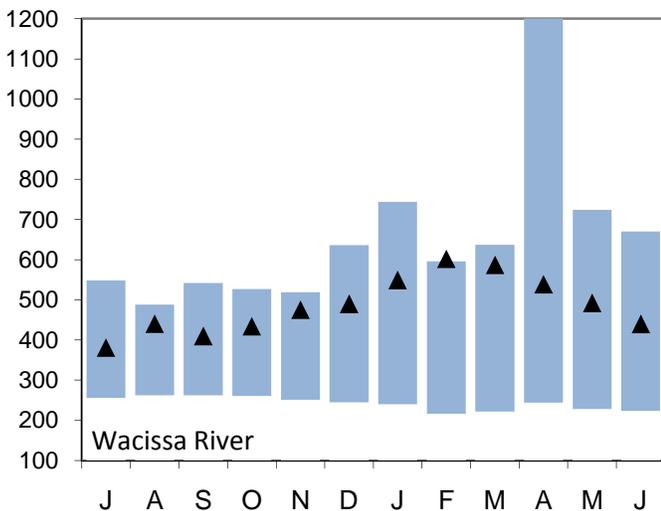
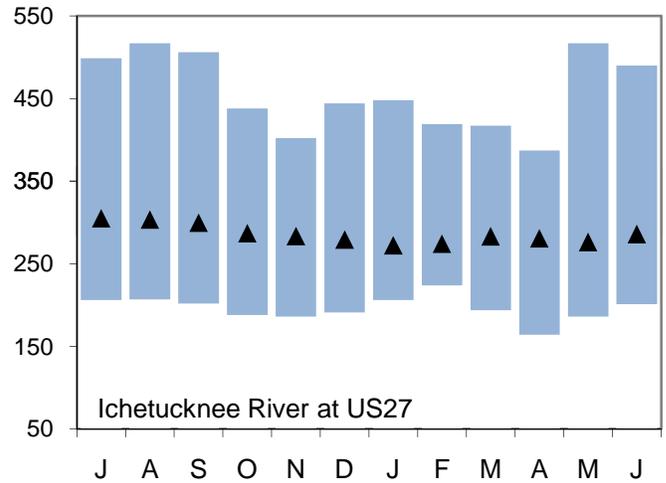
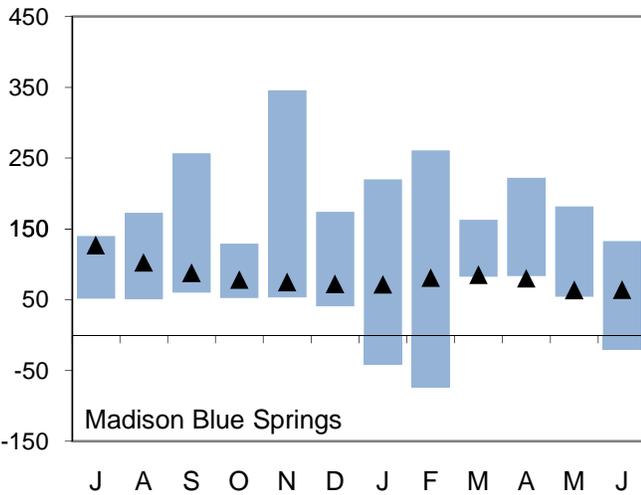
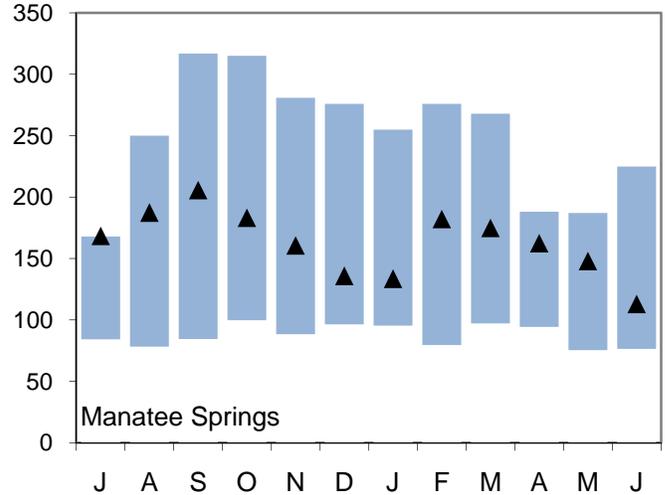
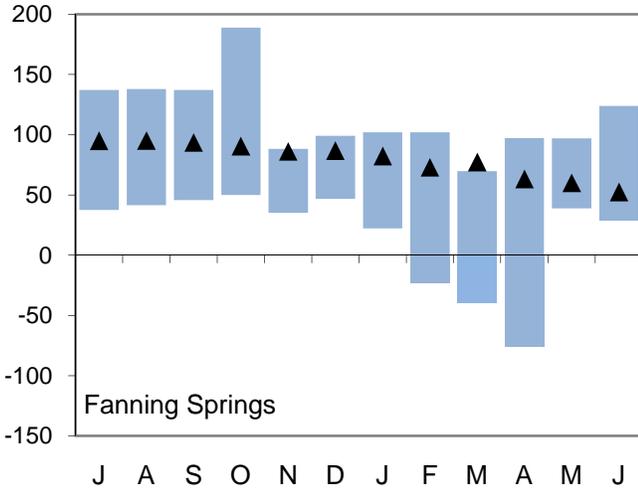
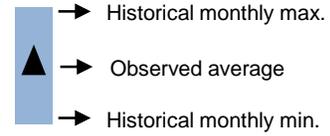


Figure 9: Monthly Springflow Statistics

Flows July 1, 2010 through June 30, 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.

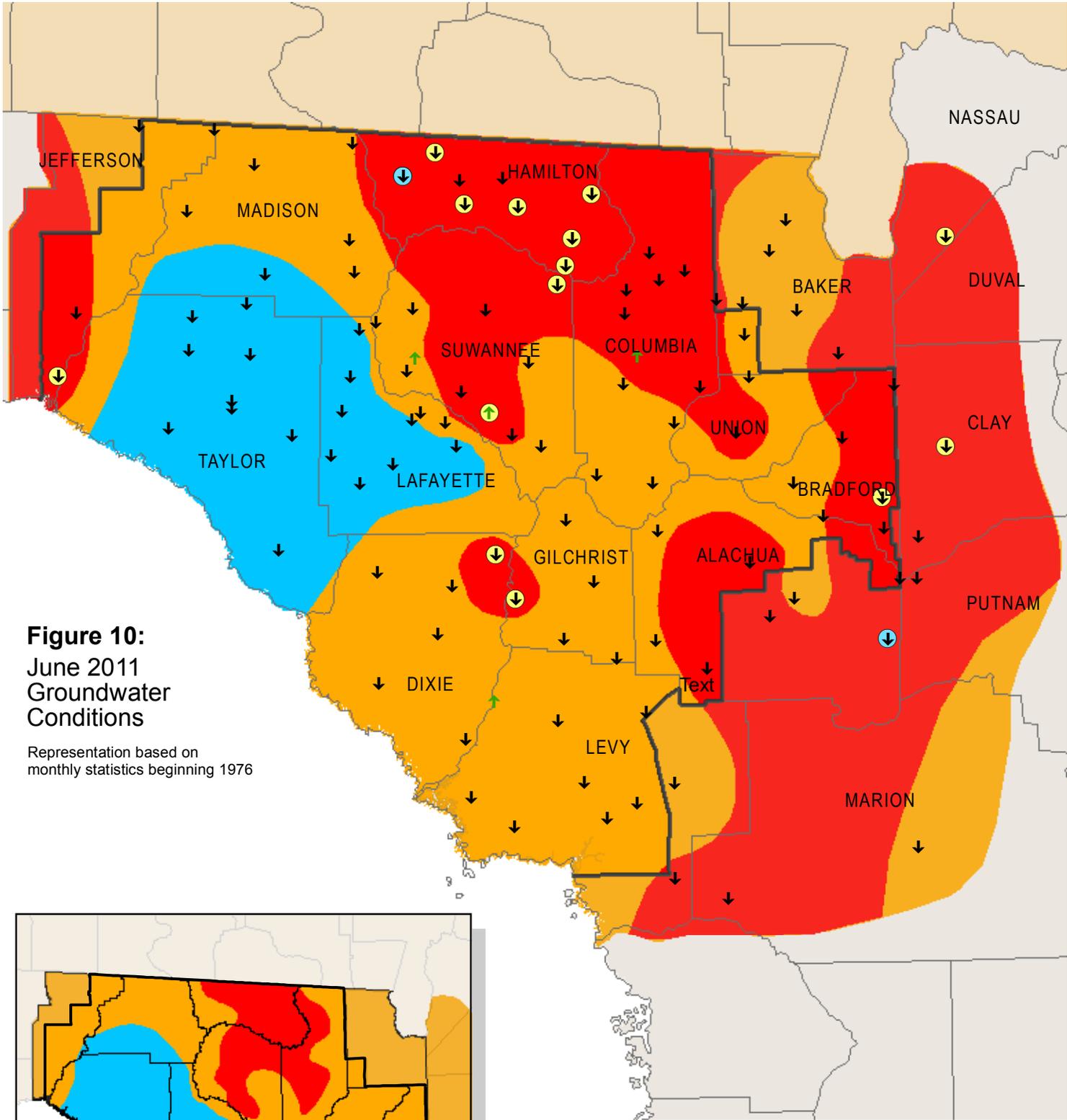
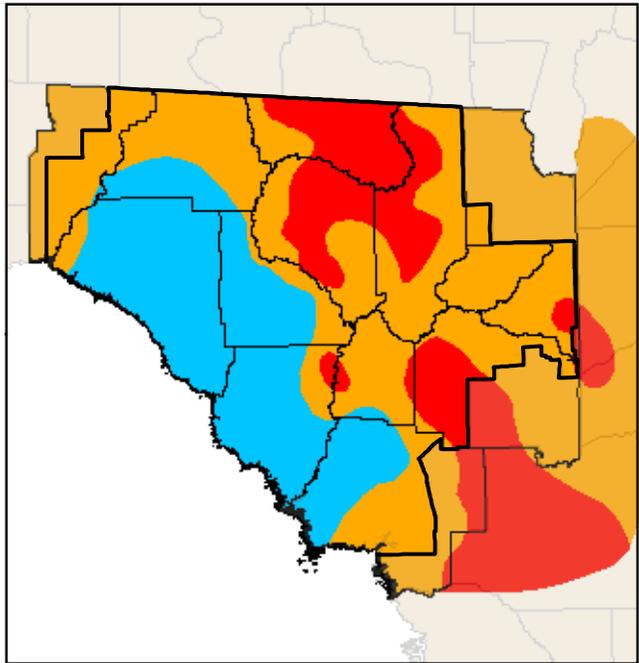


Figure 10:
June 2011
Groundwater
Conditions

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 in level since last month
- ↓ Decrease in level since last month
- District Boundary
- Record Low for Month
- Historic Low



Inset: May 2011 Groundwater Levels

Figure 11: Monthly Groundwater Level Statistics

Levels July 1, 2010 through June 30, 2011
 Period of Record Beginning 1978

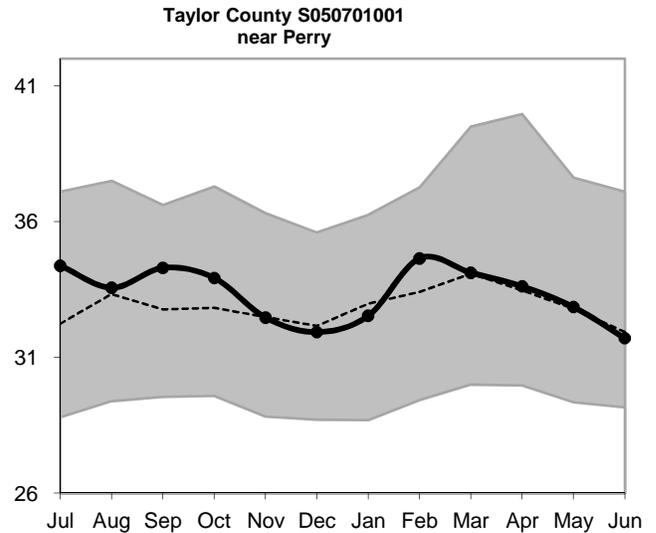
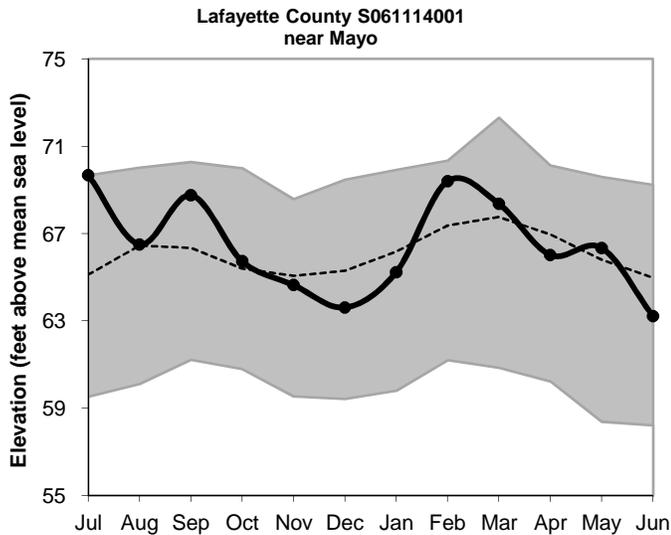
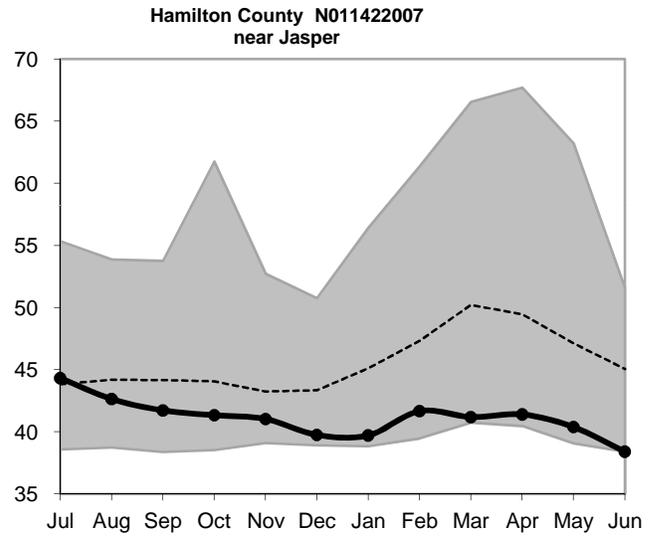
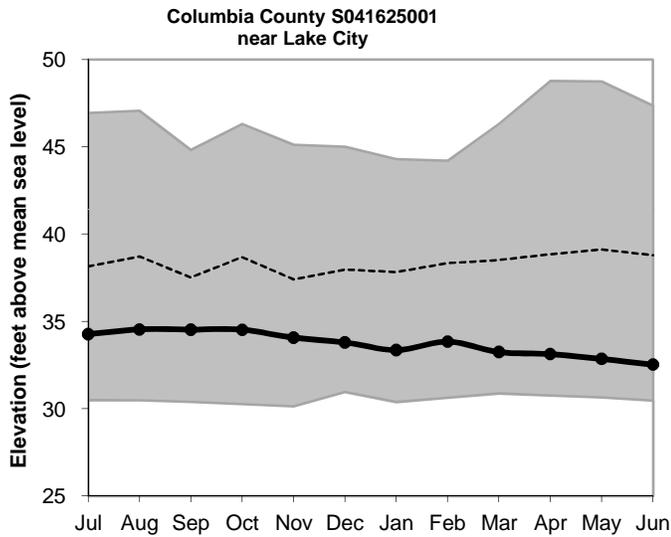
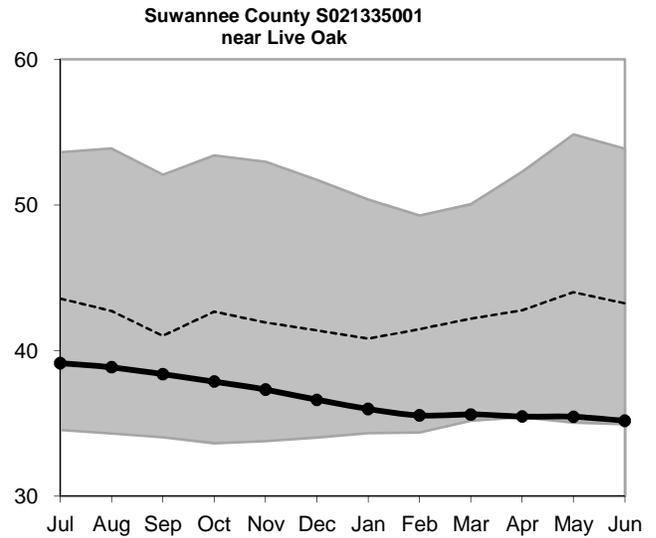
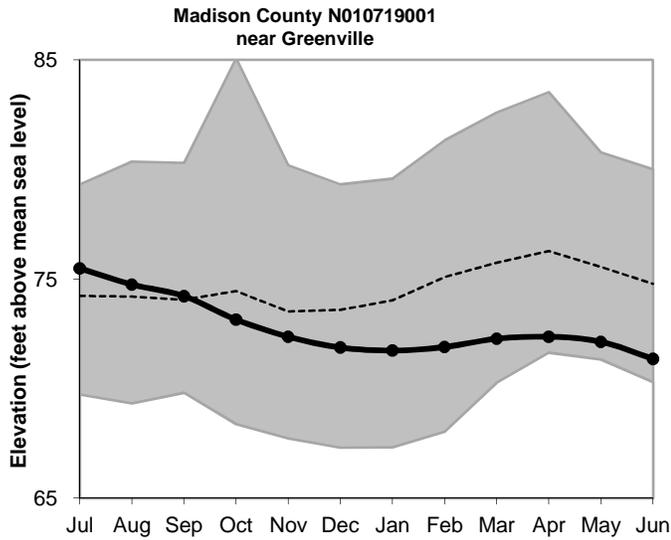
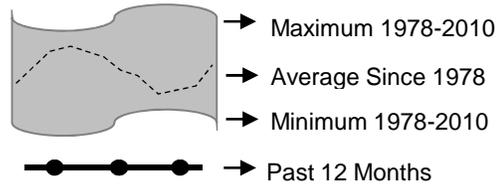


Figure 11, cont.: Groundwater Level Statistics

Levels July 1, 2010 through June 30, 2011
 Period of Record Beginning 1978

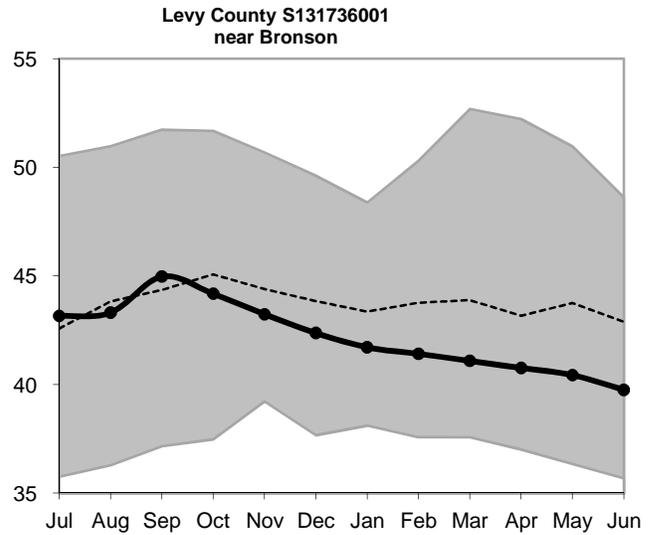
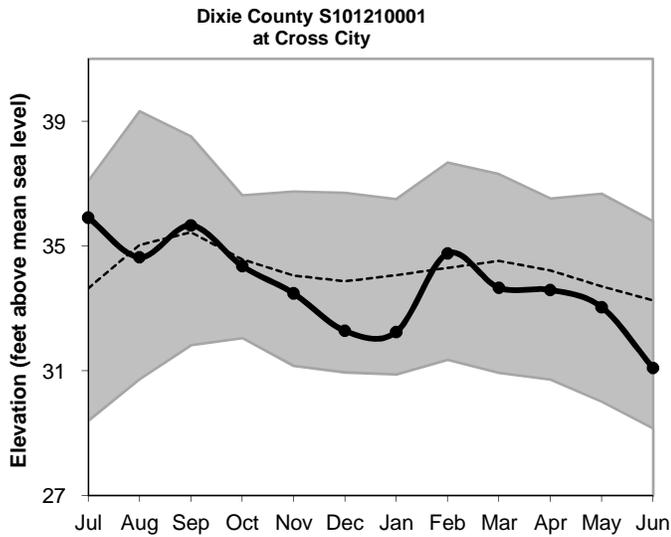
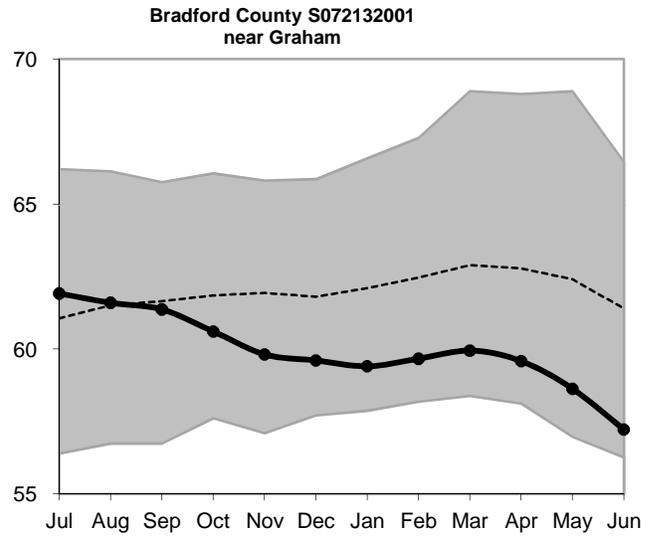
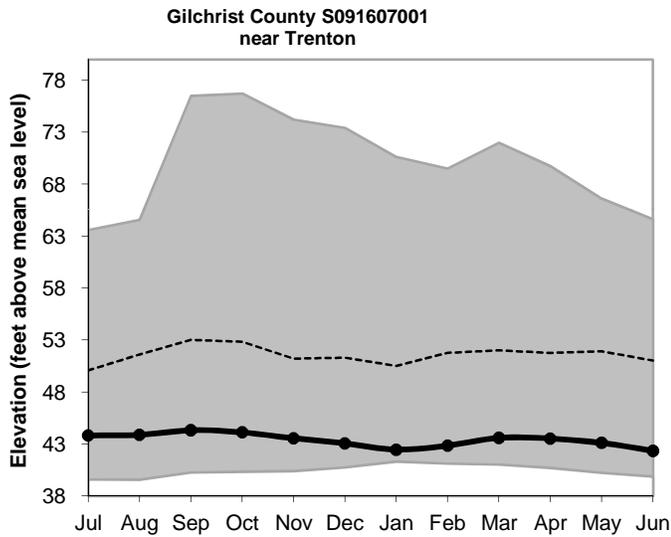
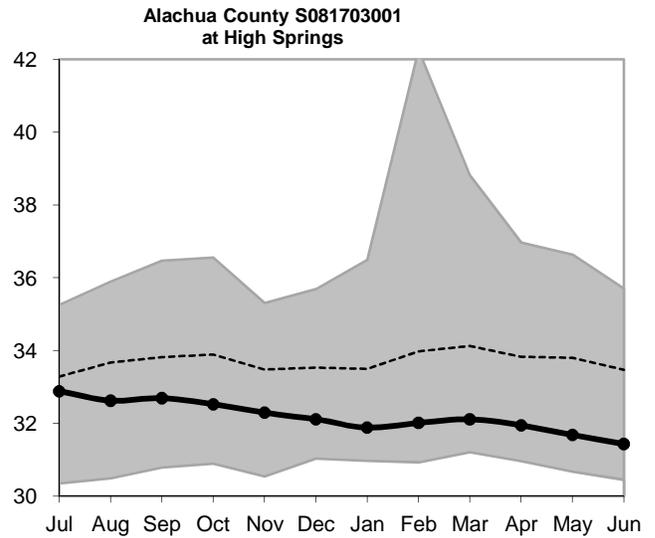
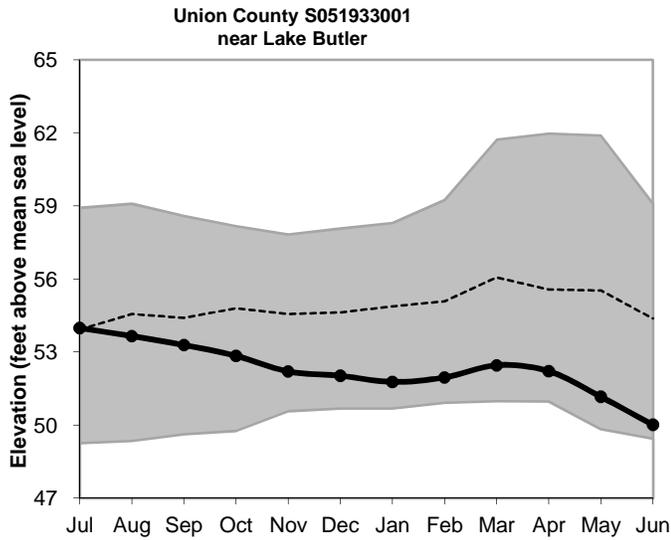
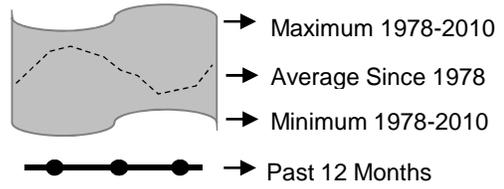


Figure 12: Long-Term Groundwater Levels

Ending June 2011

Levels in feet above mean sea level

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

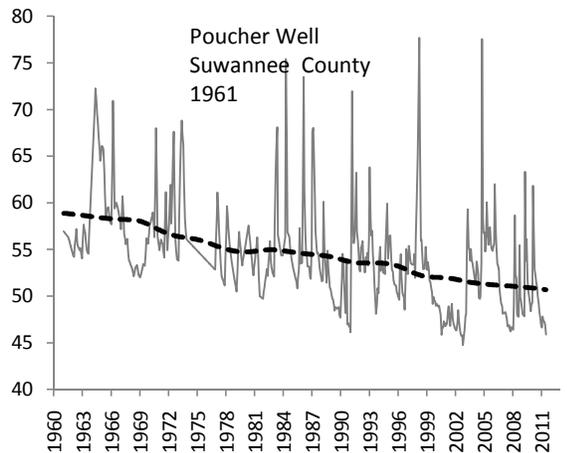
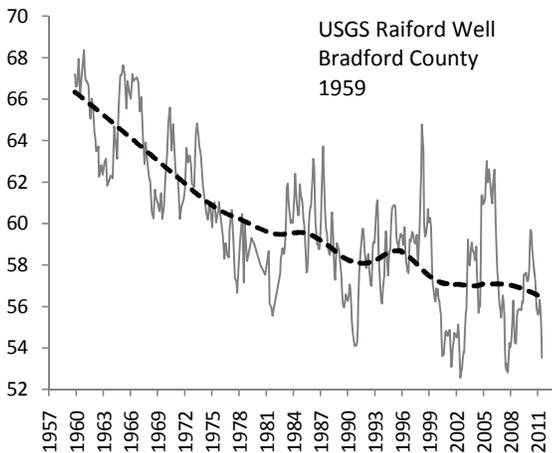
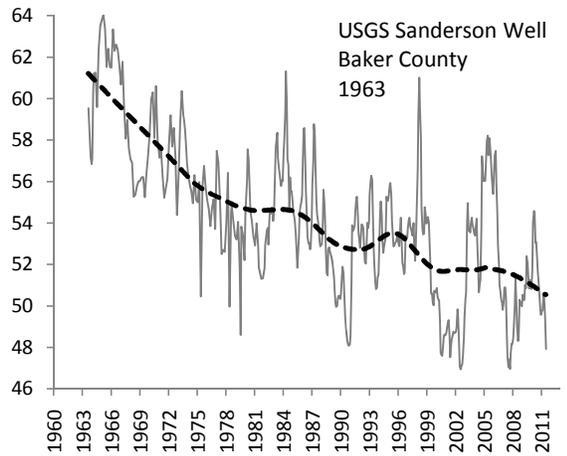
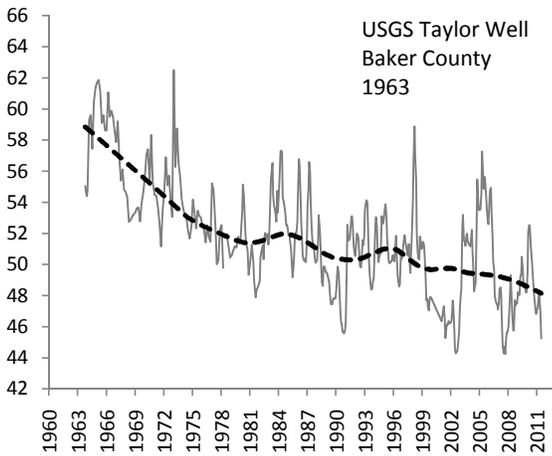
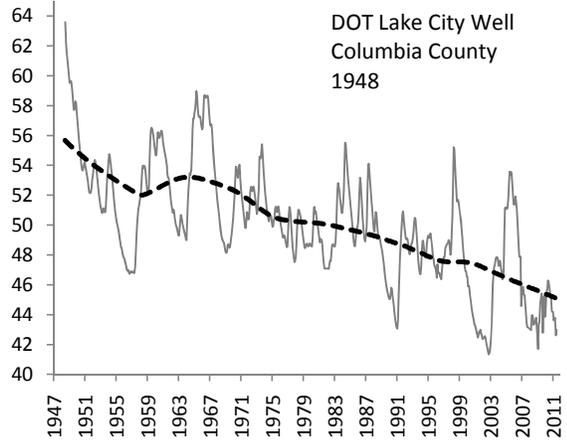
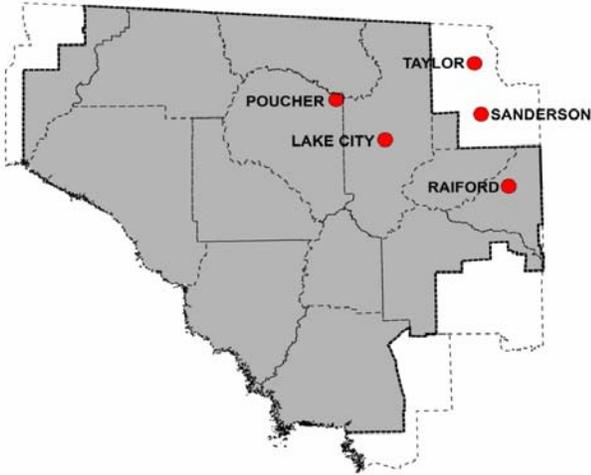


Figure 13: Agricultural Water Use

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.

