MEMORANDUM

TO: Governing Board

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

THRU: David Still, Executive Director DS
Jon Dinges, Department Director JMD

DATE: December 9, 2010

RE: November 2010 Hydrologic Conditions Report for the District

RAINFALL

- November is historically the driest month of the year. Average rainfall this November was 1.05", which is 44% of the long-term average of 2.36" (Table 1, Figure 1). Localized areas received up to 2", but the majority of the District received less than 50% of average rain during four fronts that moved across the area (Figure 2). Total rain for October and November was 1.33", the lowest total since 2001 and the eighth lowest since 1932.
- The average twelve-month surplus was 3.34". The 12-month deficit in the Santa Fe Basin was 5", while the 3-month deficit was 6". Figure 4 depicts the 12-month surplus/deficit across the District. Figure 5 shows the change in annual deficits beginning in 1998.

SURFACEWATER

- **Rivers**: Flows at most Suwannee River and tributary gages fell below the 5th percentile, meaning more than 95% of daily mean flow records have been higher for this time of year. Long-term Suwannee gages remained near or below their 7-day, 10-year low flows and near or below the 5th percentile of period-of-record flows. The Waccasassa River fell below the 10th percentile, while the Fenholloway and Steinhatchee Rivers remained in a range considered normal for the season. No record-setting low flows were observed. 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 monitored lakes fell below their long-term averages in November. An historic low was observed at Sampson Lake in Bradford County with records beginning in 1957, and at Low Lake in Suwannee County with records beginning in 1974. Levels at Alligator Lake, Waters Lake and Governor Hill Lake were below the minimum measurable stage. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

- **Springs:** Average November flow relative to historical flows is shown for five spring systems in Figure 12.

GROUNDWATER

Levels in all but 3 of 111 monitored upper Floridan Aquifer wells dropped in November, with an average decline of 0.7 feet (Figure 9). Conditions averaged across the District fell to the 33rd percentile from the 38th percentile in October, based on records beginning in 1978. Average conditions in the Suwannee and Santa Fe Basins fell below the 25th percentile. Three wells near the confluence of the Santa Fe and Suwannee Rivers remained below the 10th percentile. Statistics for a representative sample of wells are shown in Figure 10. Figure 11 shows statistics for 5 wells in or near the District with continuous records that predate the mid-1970's.

HYDROLOGICAL/METEOROLOGICAL INFORMATION

- The Palmer Drought Severity Index (PDSI), a climatological tool produced by the National Weather Service, evaluates the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather using precipitation, temperature, and soil moisture data. The PDSI indicated moderate drought during the last week of November.
- The U.S. Geological Survey categorized the Suwannee River Basin as experiencing moderate hydrological drought.

CONSERVATION

Homeowners and others within the District are required to limit landscape irrigation to one day per week, based on a year-round 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. The District offers a variety of free water conservation information to the public via its website and by request.

The hydrologic conditions report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using data collected from the following: rainfall (radar-derived estimate), groundwater levels (111 wells), surfacewater levels (6 lakes and 11 rivers), river flows (15 stations), spring flows (5 stations), and general information such as drought indices and forecasts. Data are provisional, and statistics are updated as revised data become available.

MW/dd

Table 1: Estimated Rainfall Totals

County	Nov-2010	Nov-2009	Last 12 Months	Nov. Average
Alachua	0.93	2.02	48.08	2.35
Baker	1.21	1.07	47.32	2.22
Bradford	1.10	1.76	42.85	2.32
Columbia	1.19	1.51	51.64	2.44
Dixie	1.03	2.41	65.55	2.50
Gilchrist	1.13	2.18	51.02	2.72
Hamilton	0.81	1.38	55.26	2.72
Jefferson	1.18	2.90	59.13	3.44
Lafayette	1.42	1.69	61.40	2.78
Levy	0.73	3.49	66.75	2.55
Madison	0.87	2.20	59.71	3.12
Suwannee	1.24	1.55	57.44	2.53
Taylor	1.09	1.95	64.20	2.85
Union	0.99	1.03	48.55	2.55

November 2010 Average:	1.05
Historical November Average (since 1932):	2.36
Historical 12-month Average (since 1932):	54.68
Past 12-Month Total:	58.02
12-month Rainfall Surplus:	3.34

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall

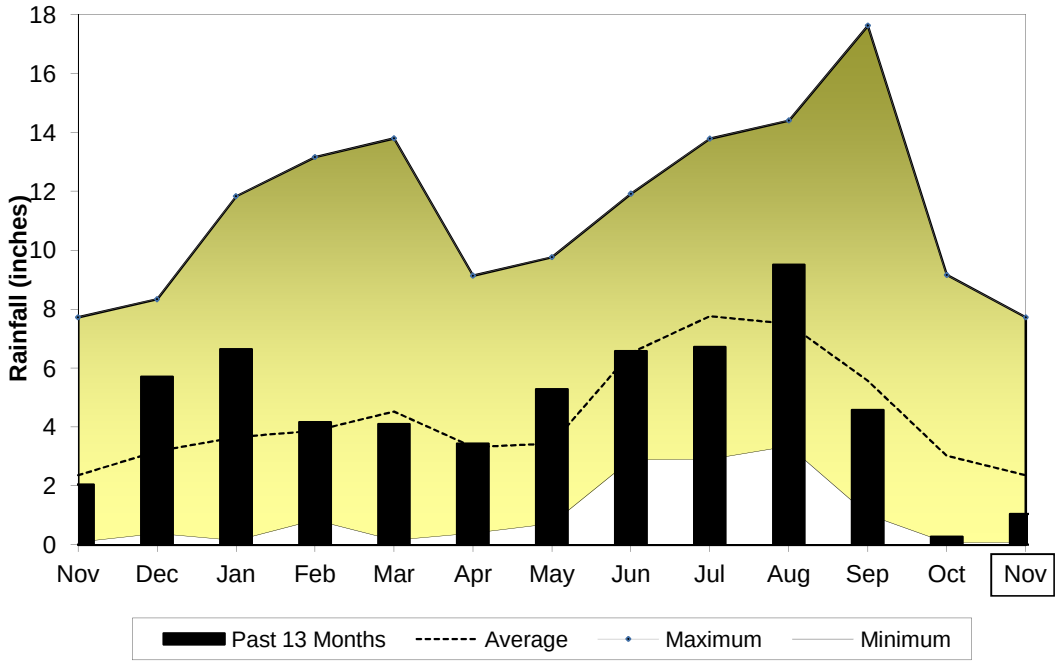


Figure 2: November 2010 Rainfall Estimate

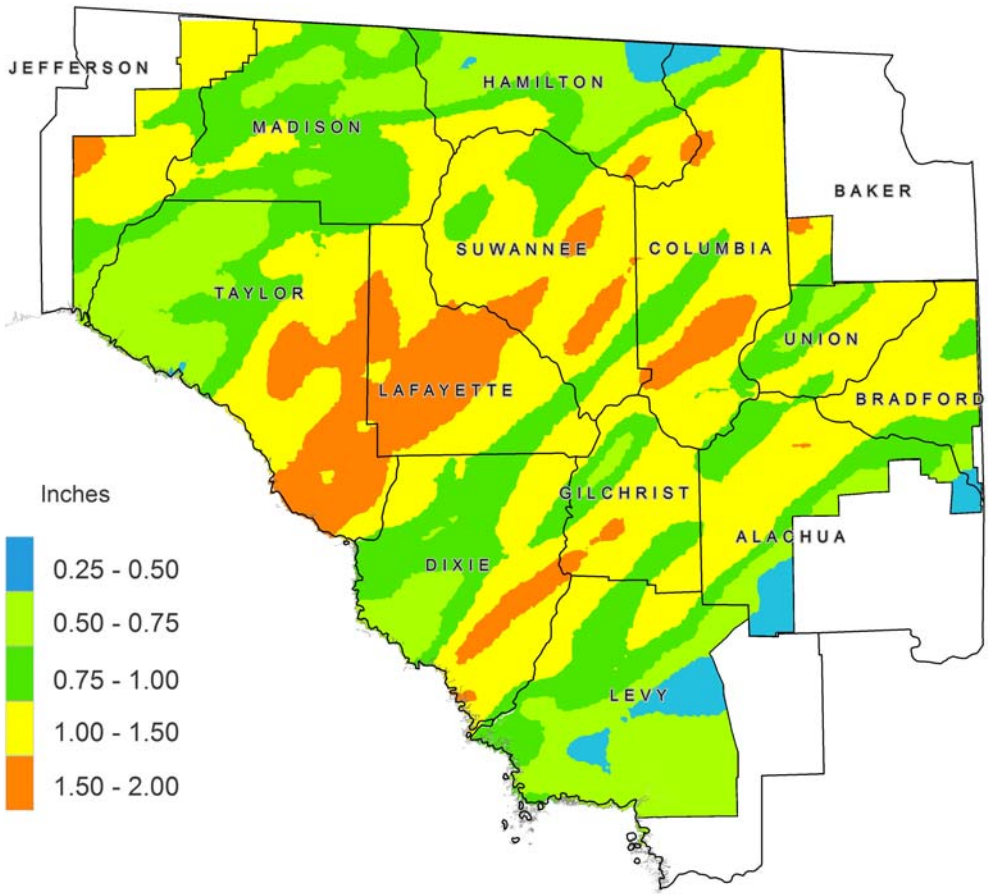


Figure 3: November 2010 Percent of Normal Rainfall

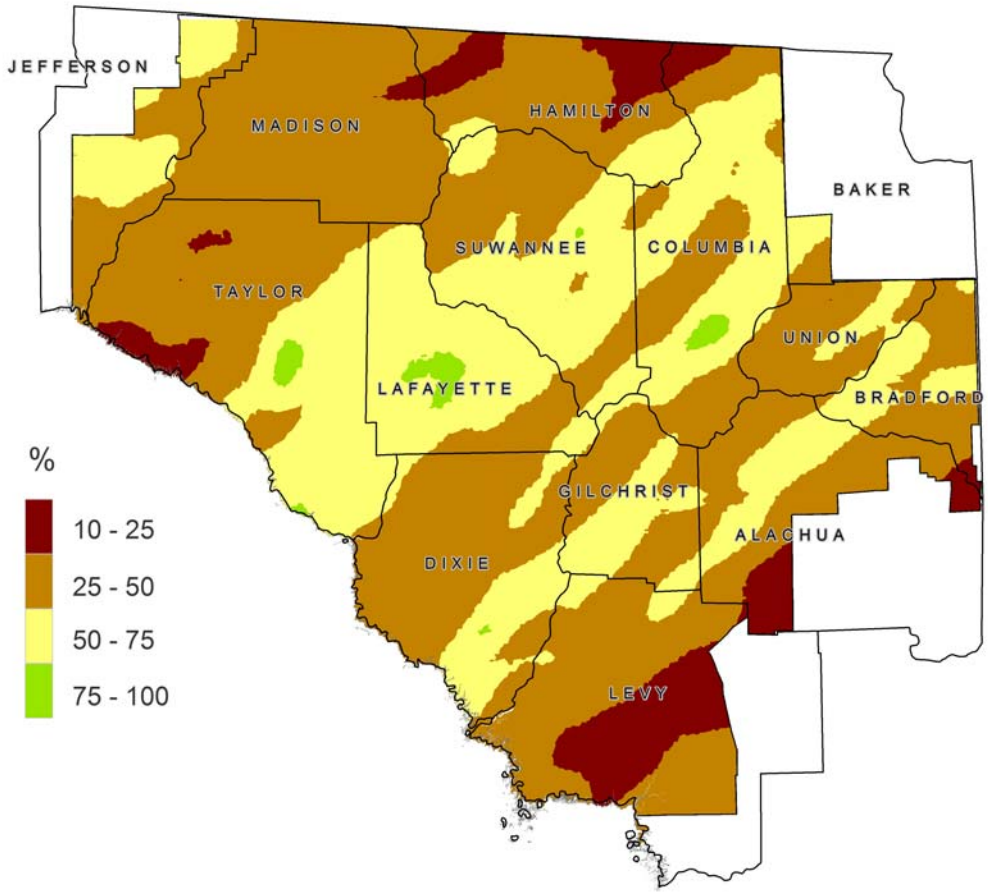


Figure 4: 12-Month Rainfall Surplus/Deficit by River Basin
Ending November 2010

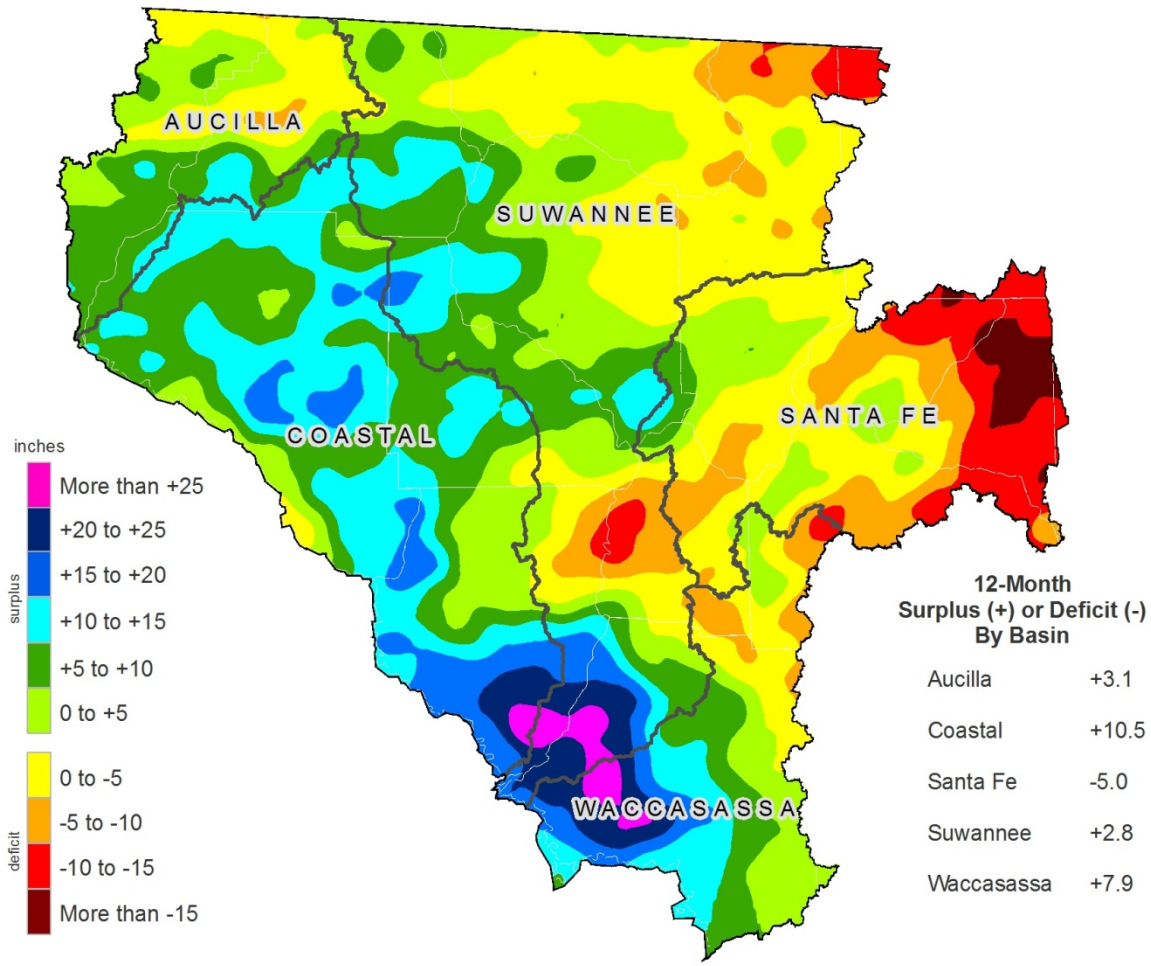


Figure 5: 12-month Rolling Rainfall Deficit Since 1998
Difference between observed 12-month rainfall and the long-term average over the same period

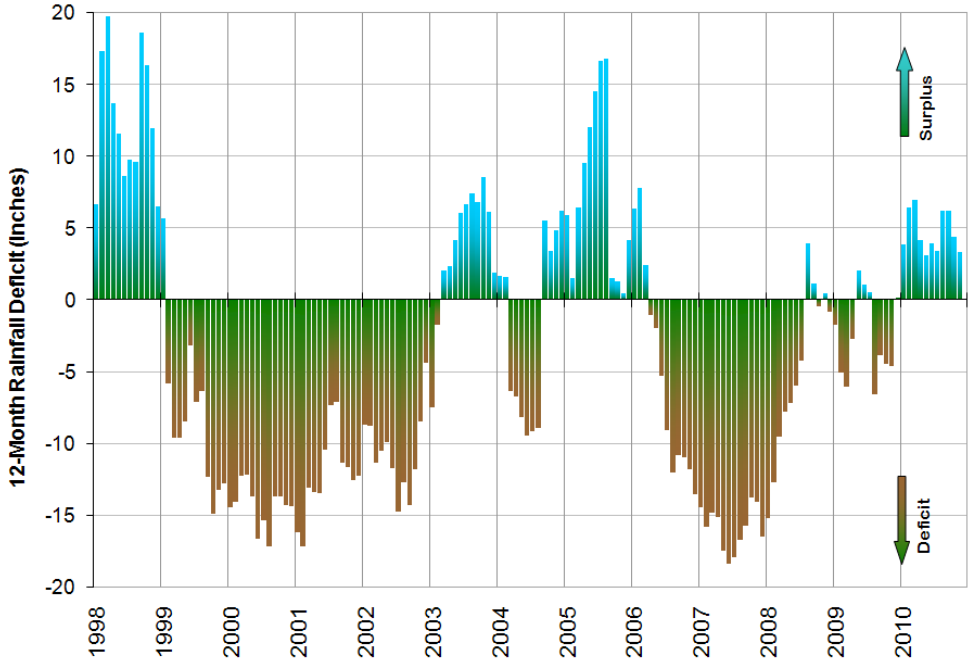
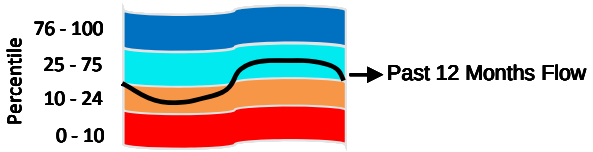
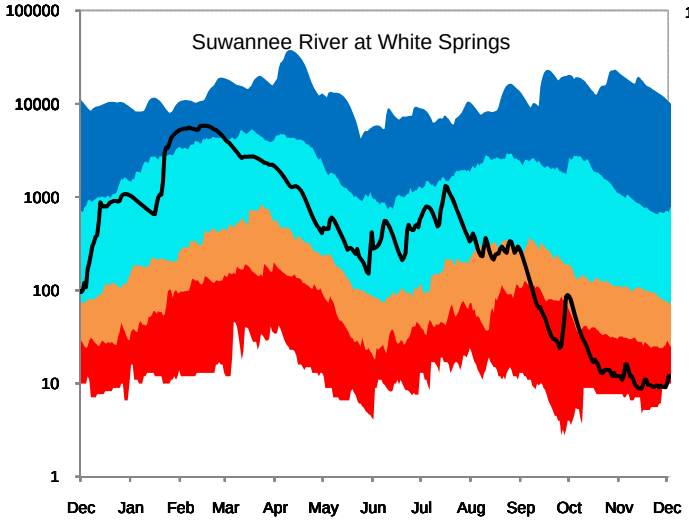


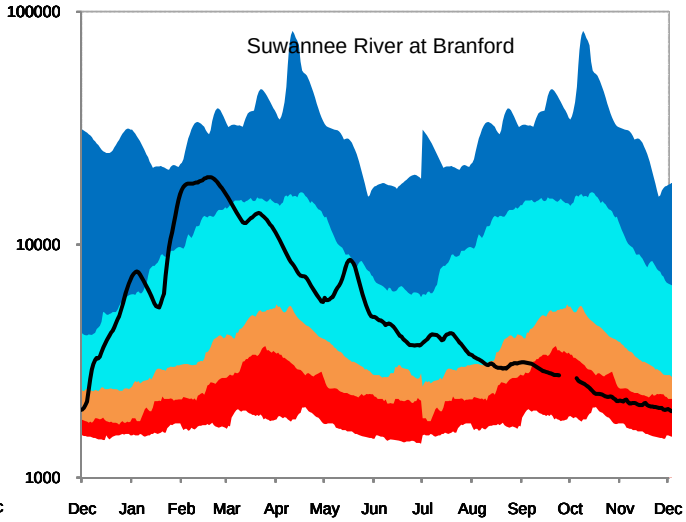
Figure 6: Daily River Flow Statistics

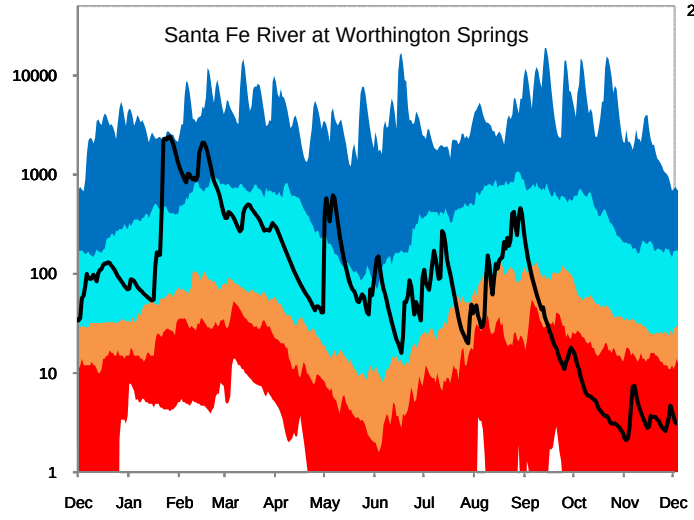
December 1, 2009 through November 30, 2010

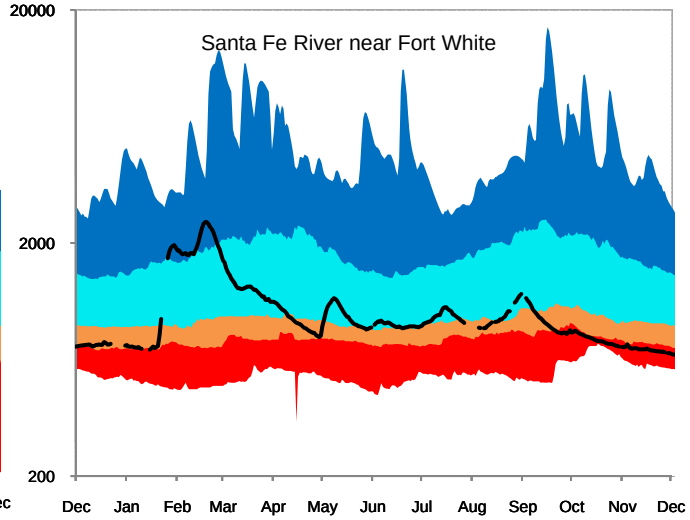


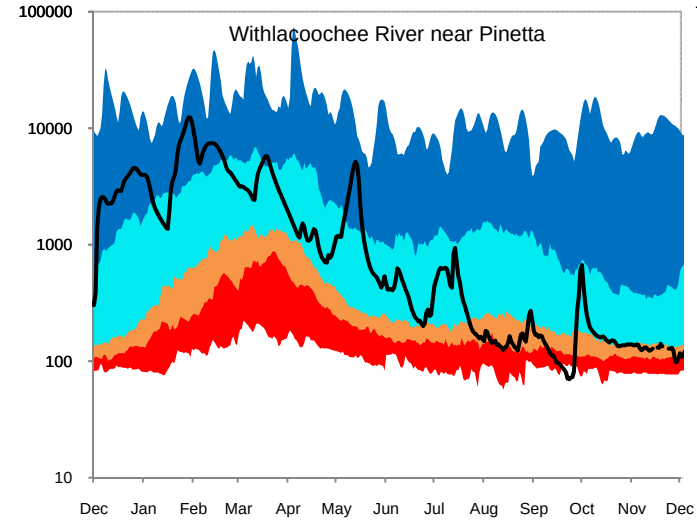
RIVER FLOW, CUBIC FEET PER SECOND











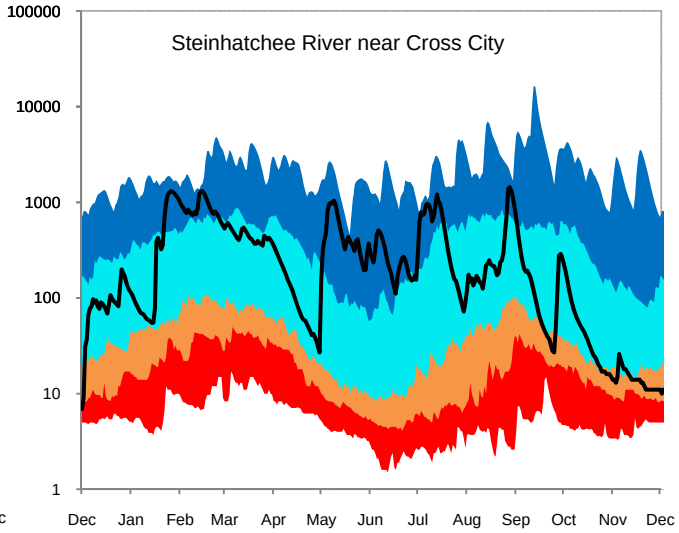


Figure 7: November 2010 Streamflow Conditions

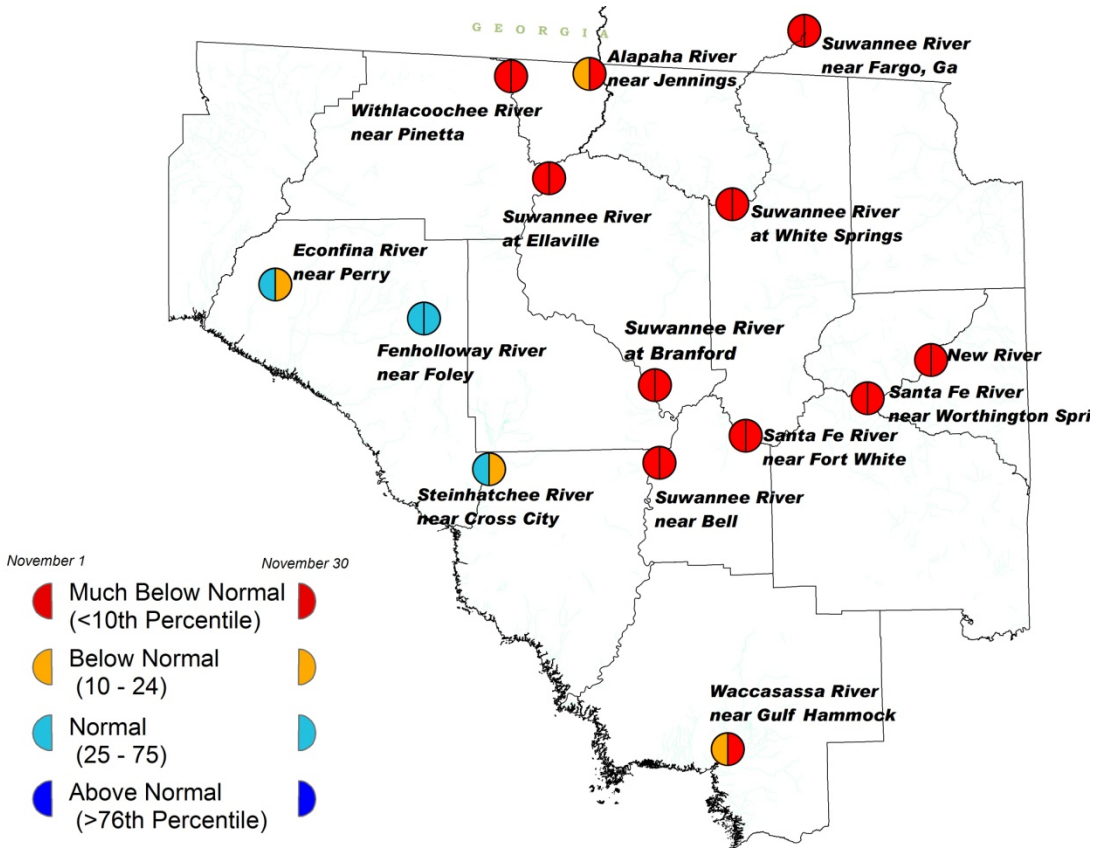
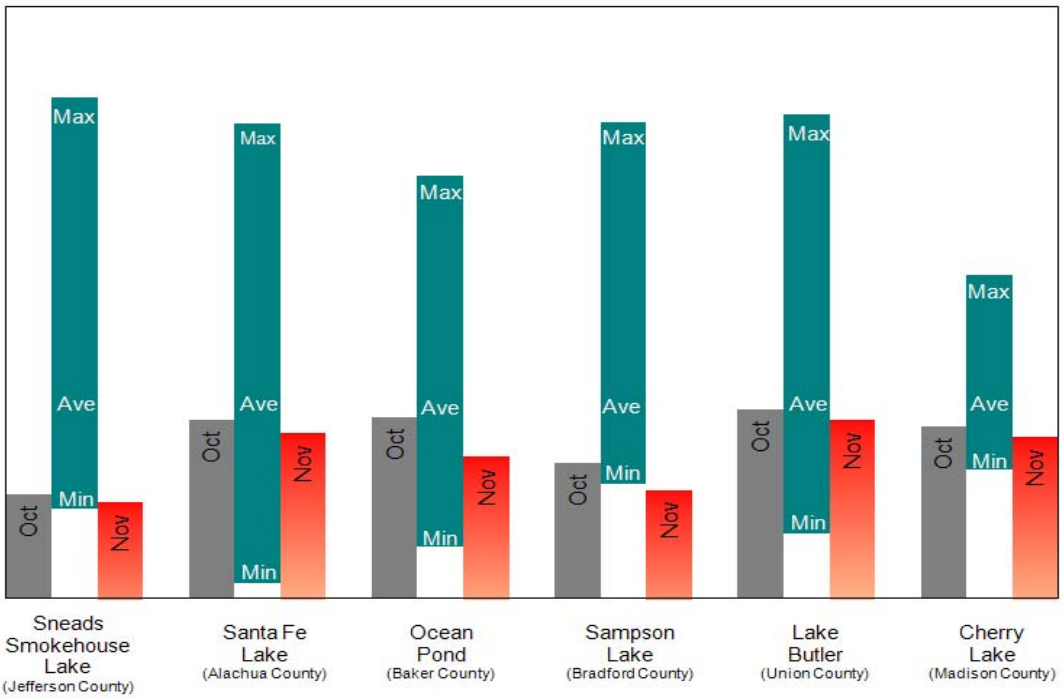


Figure 8: Lake levels, relative to historic maximum, minimum, and average levels.



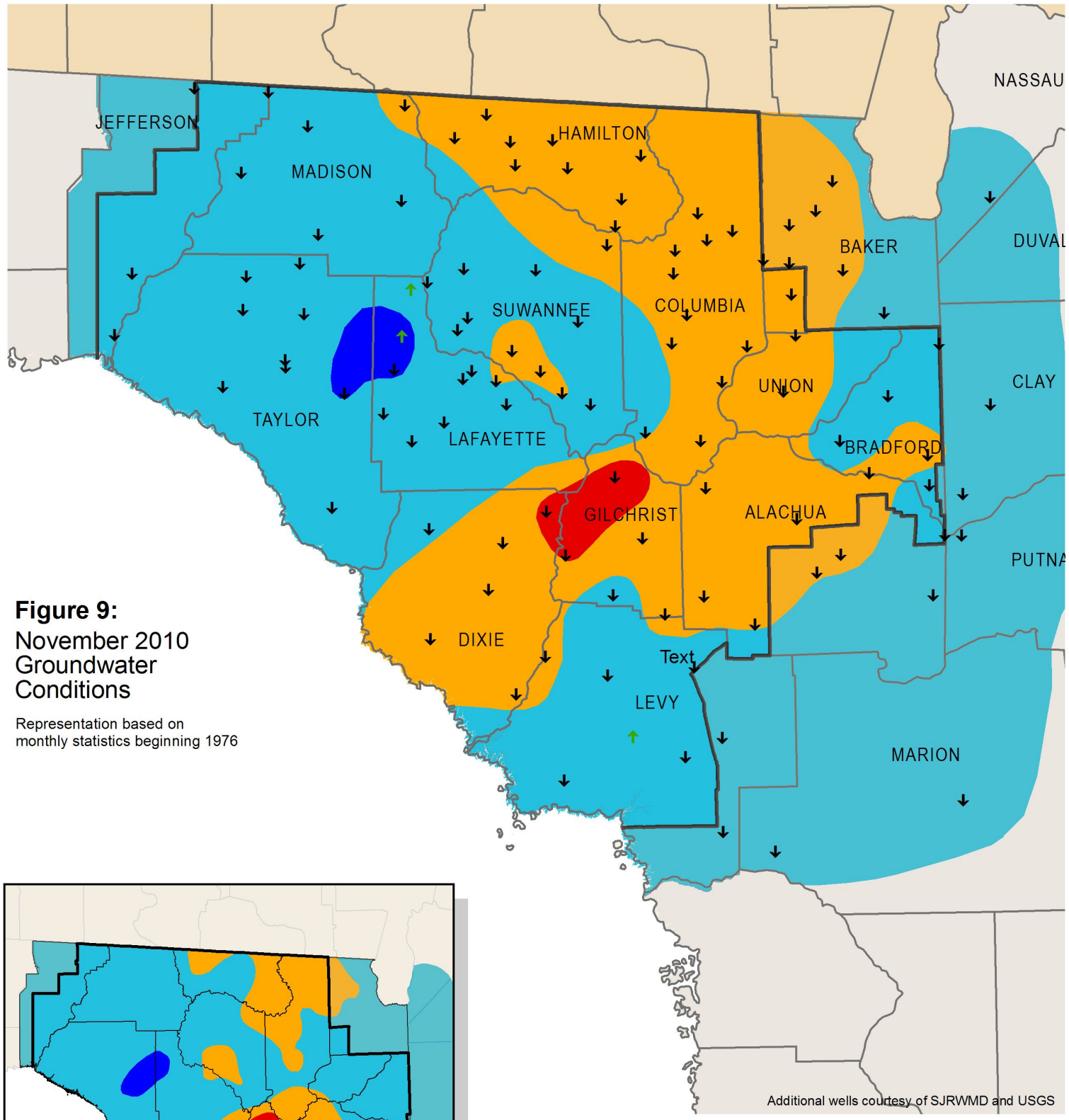
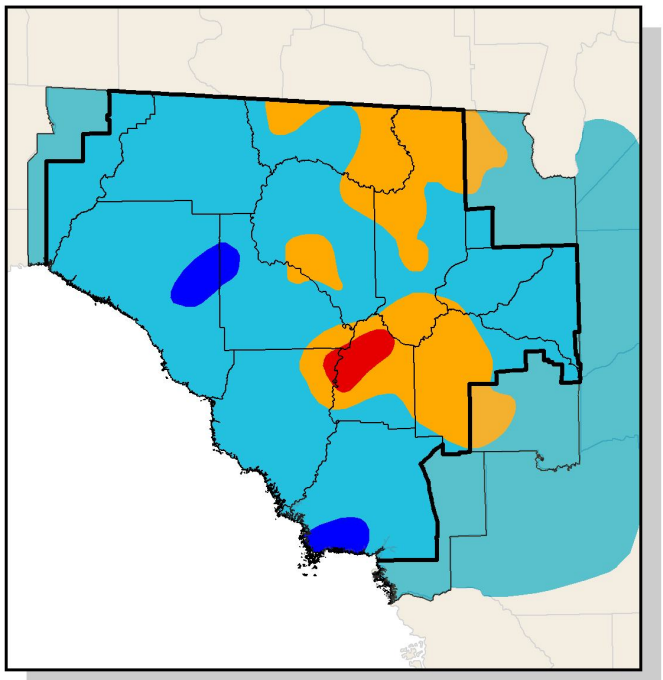


Figure 9:
November 2010
Groundwater
Conditions

Representation based on
monthly statistics beginning 1976



Inset: October 2010 Groundwater Levels

High
(Greater than 75th Percentile)

Normal
(25th to 75th Percentile)

Low
(10th to 25th Percentile)

Extremely Low
(Less than 10th Percentile)

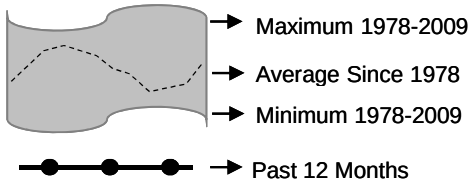
Increase/decrease in level since last month

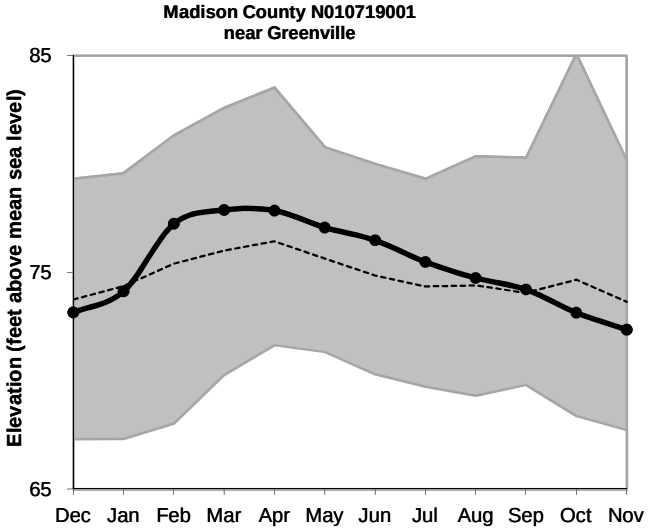
District Boundary

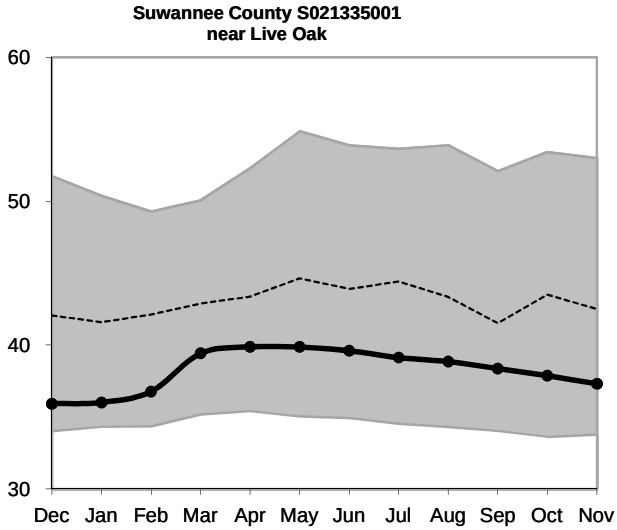
Figure 10: Monthly Groundwater Level Statistics

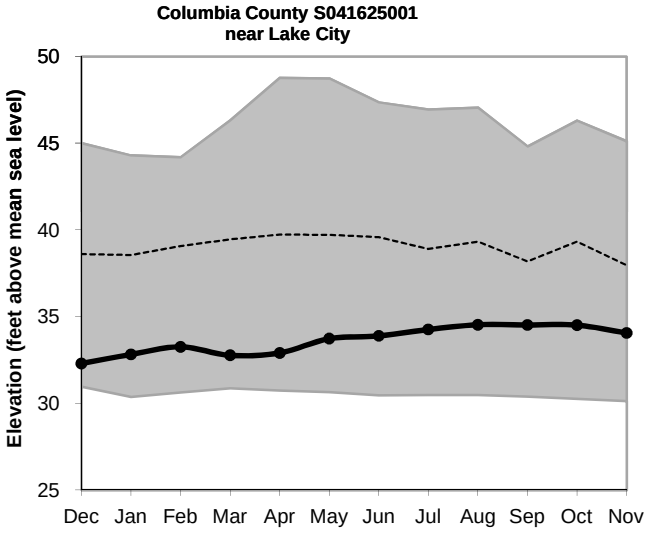
Levels December 1, 2009 through November 30, 2010

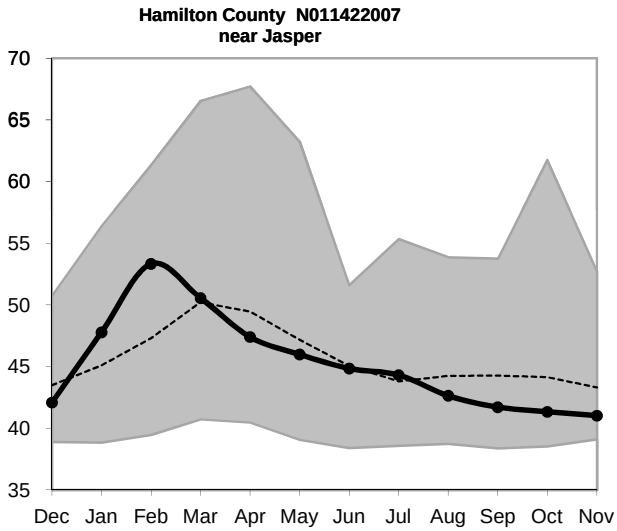
Period of Record Beginning 1978

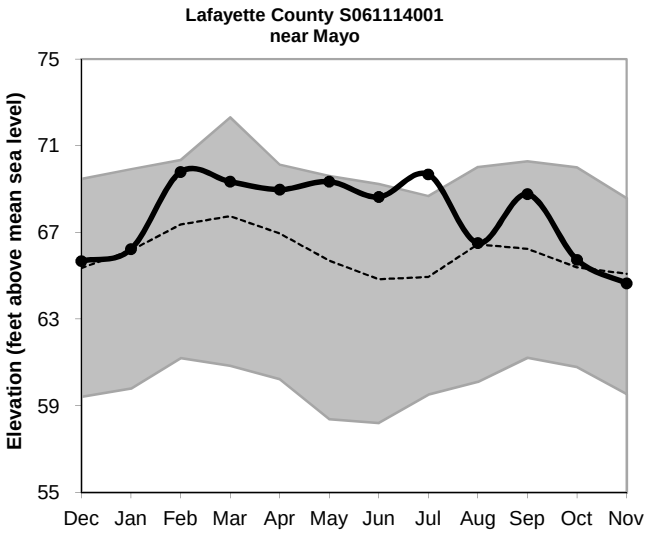












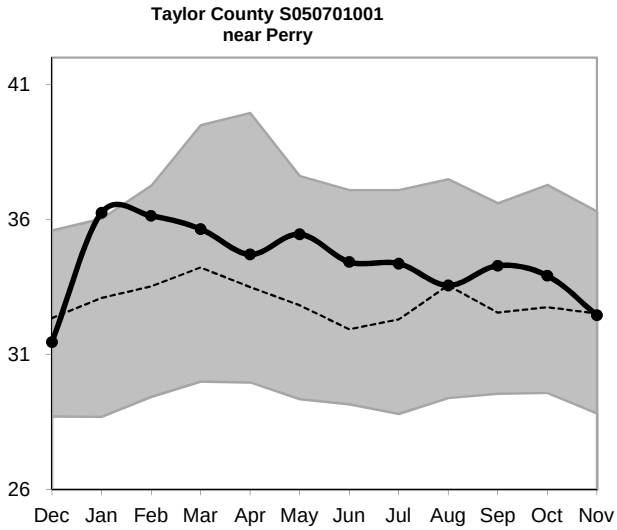
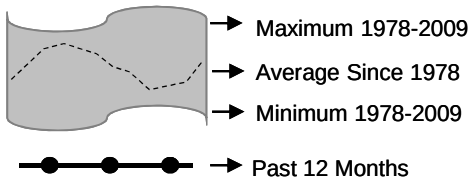
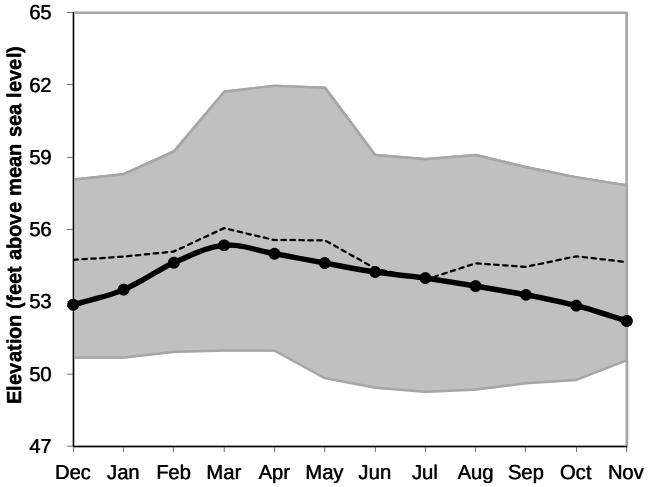


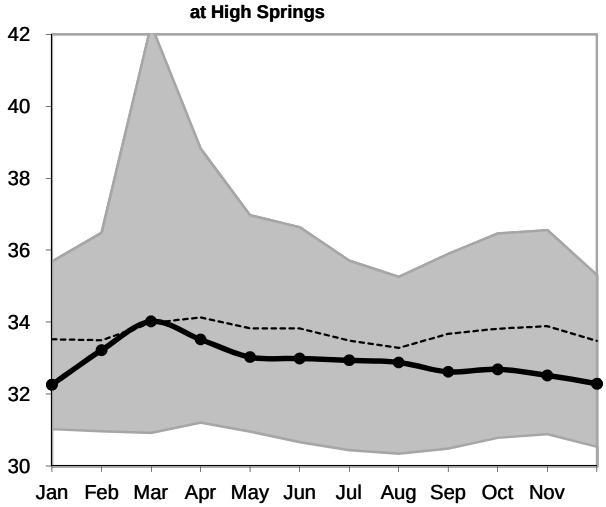
Figure 10, cont.: Monthly Groundwater Level Statistics
Levels December 1, 2009 through November 30, 2010
Period of Record Beginning 1978



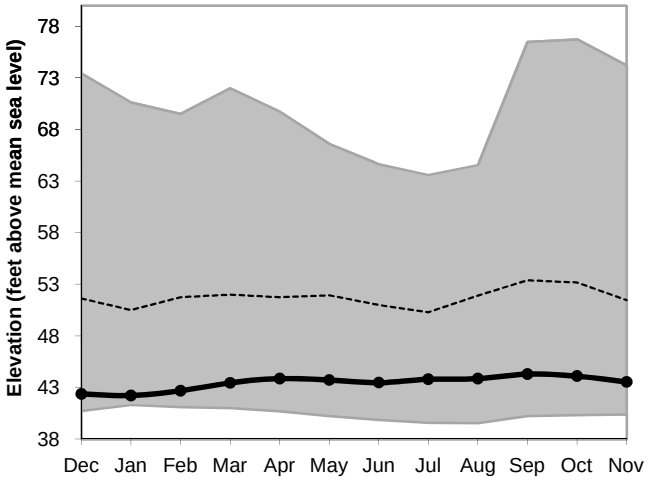
Union County S051933001
near Lake Butler



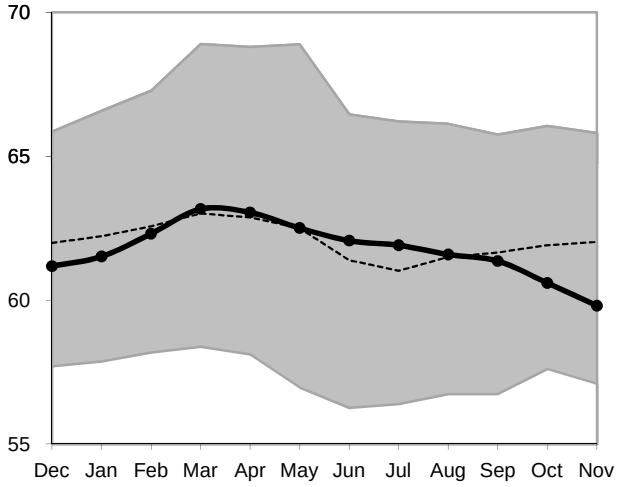
Alachua County S081703001
at High Springs



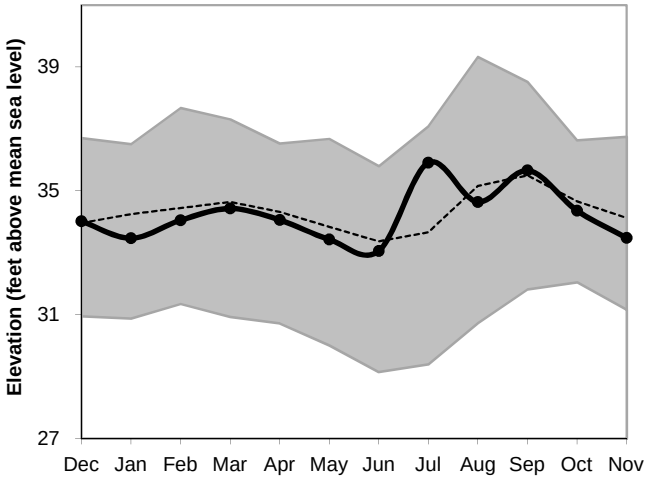
Gilchrist County S091607001
near Trenton



Bradford County S072132001
near Graham



Dixie County S101210001
at Cross City



Levy County S131736001
near Bronson

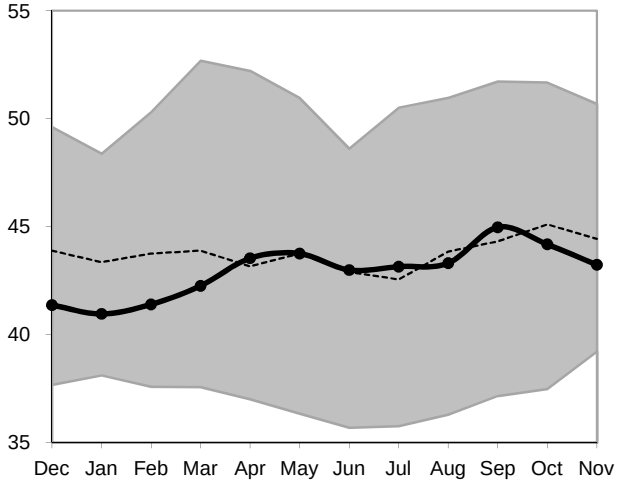
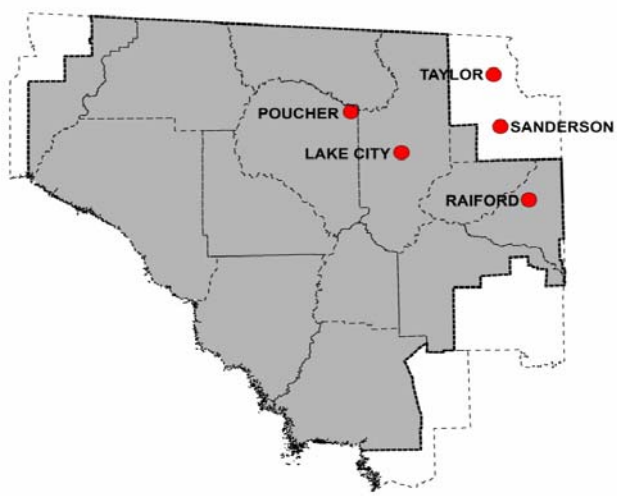
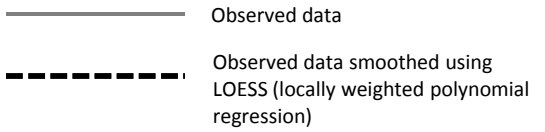
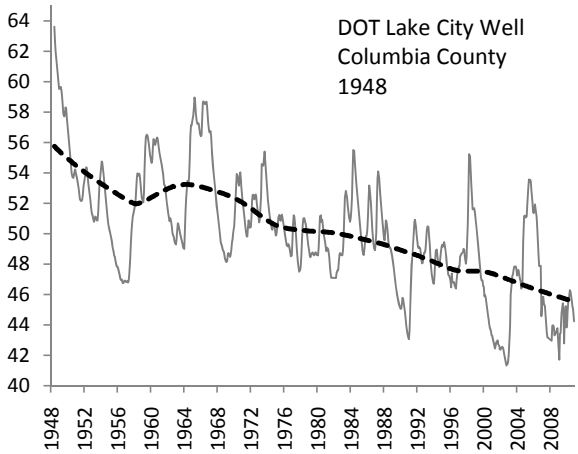
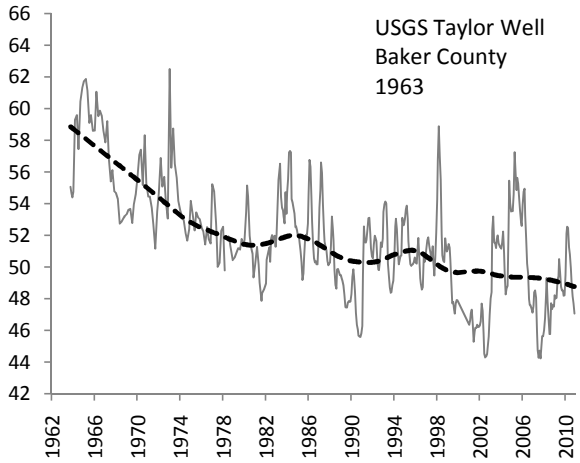


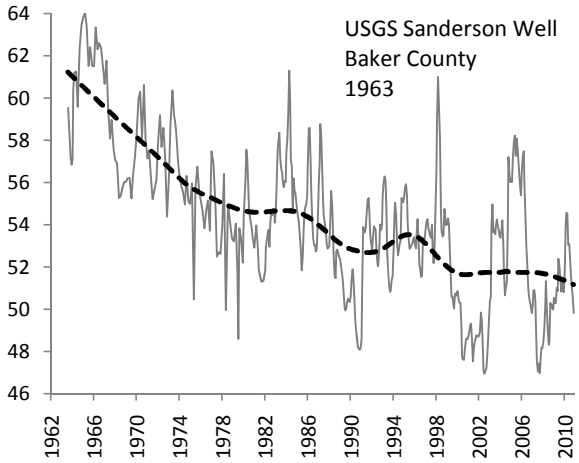
Figure 11: Long-Term Groundwater Levels
Ending November 2010
Levels in feet above mean sea level

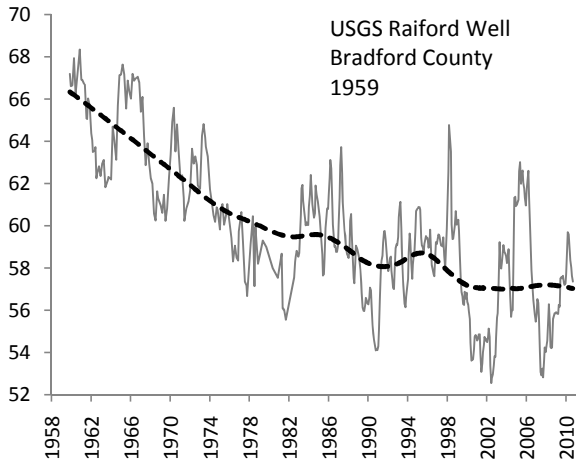












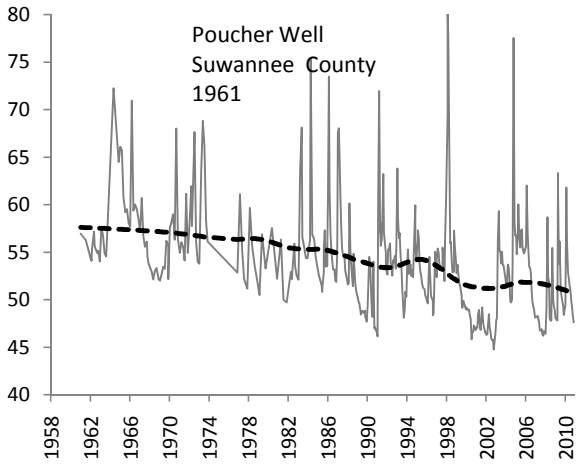
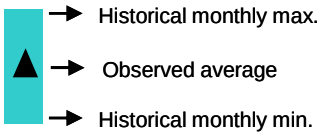
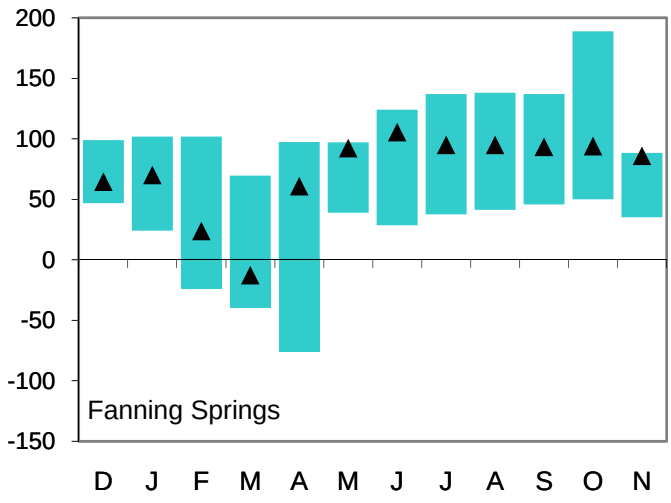
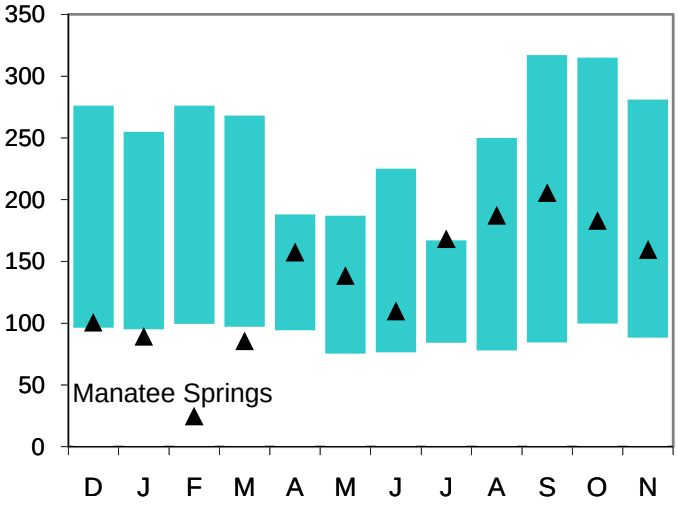


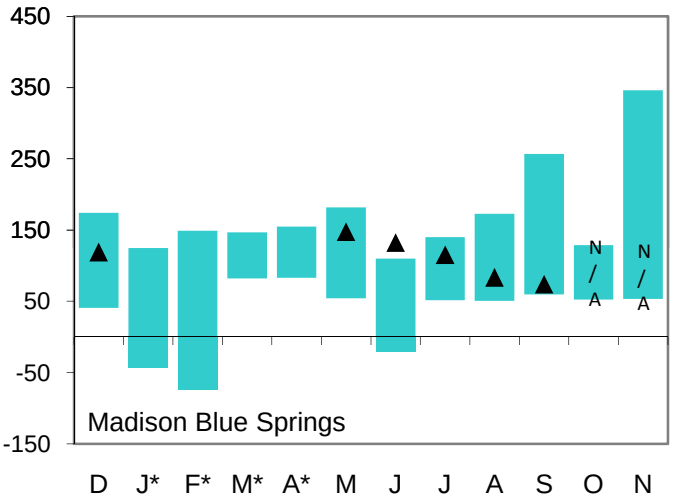
Figure 12: Monthly Springflow Statistics

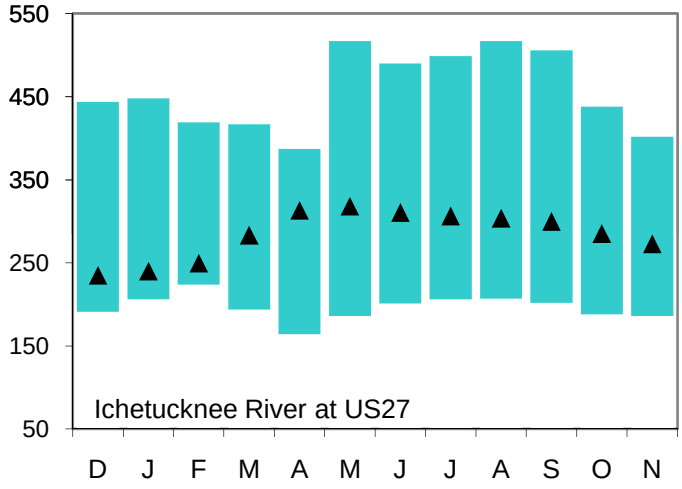
Flows December 1, 2009 through November 30, 2010
Springflow data are given in cubic feet per second.
Period of record beginning 2002. Data are provisional.

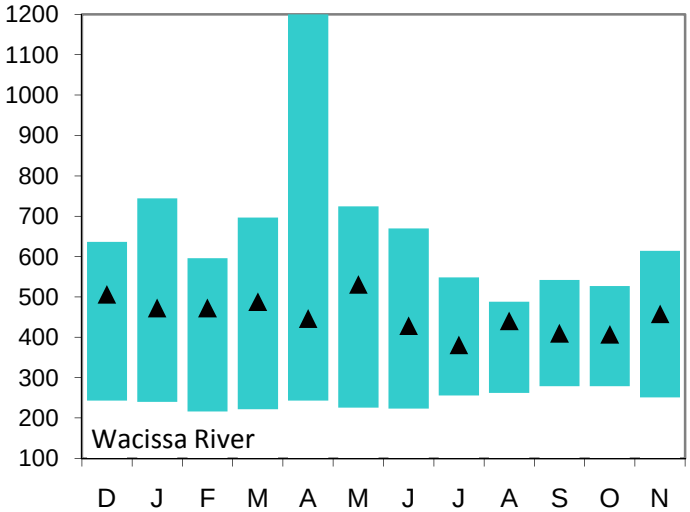












Note: Rising river levels caused by high tides or flooding can cause springflow to slow or reverse.

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.