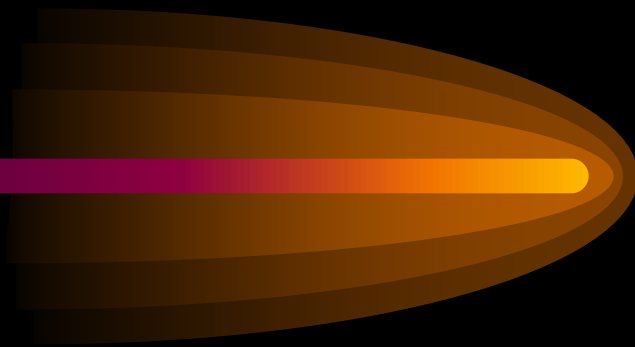


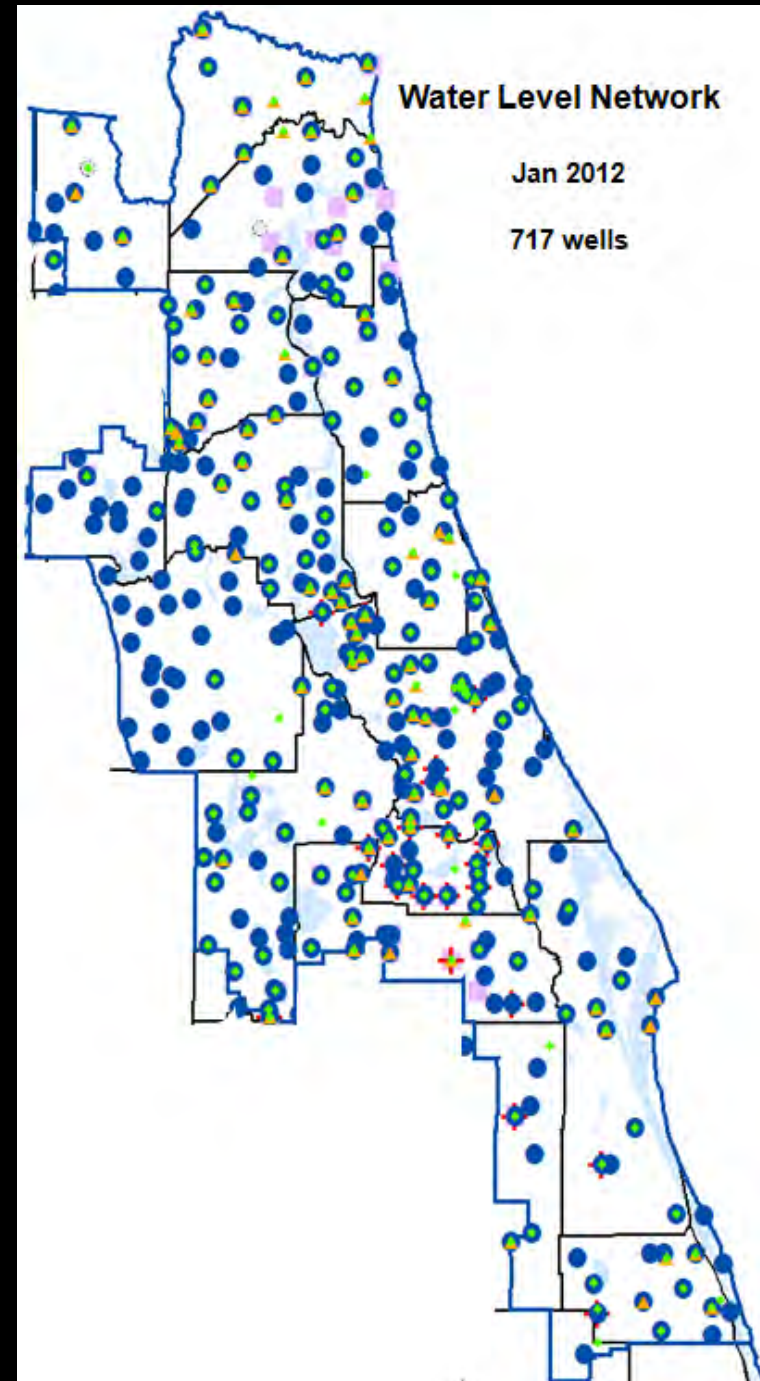
St. Johns River Water Management District



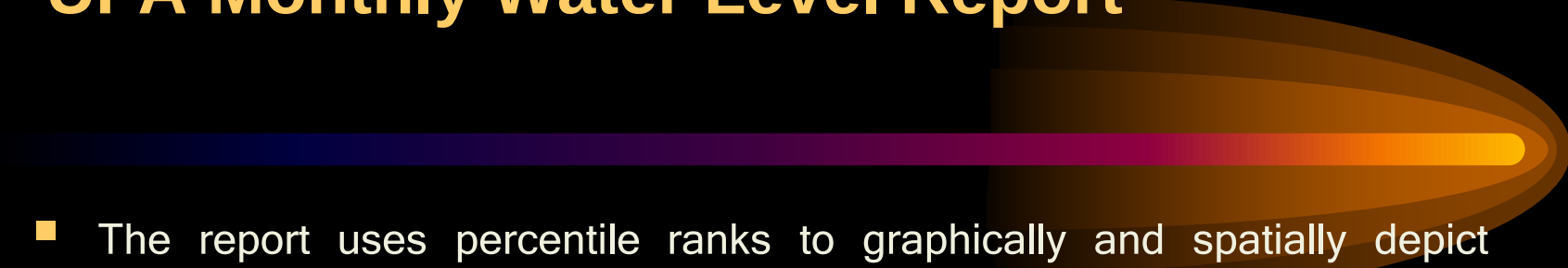
UFA Monthly Water Level Report

Feb 9, 2012

- Evaluate the response of aquifer systems to changes in climate and the demand to meet growing water supply needs.
 - Long-term measurements of water levels from wells and springs provide data needed to assess current aquifer conditions, to analyze trends, and to calibrate models.
 - Share data & information about the characterization of the hydrogeologic system, climate, pumping, and land use changes.
- Groundwater models, statistical analysis
 - Hydrogeologic framework & mapping
 - Consumptive Use Permitting
 - Water Supply Planning
 - Minimum Flow & Levels
 - U.S. Geological Survey
 - DEP - FGS and other state agencies
 - Counties and water supply utilities
 - Consultants
 - Public



UFA Monthly Water Level Report

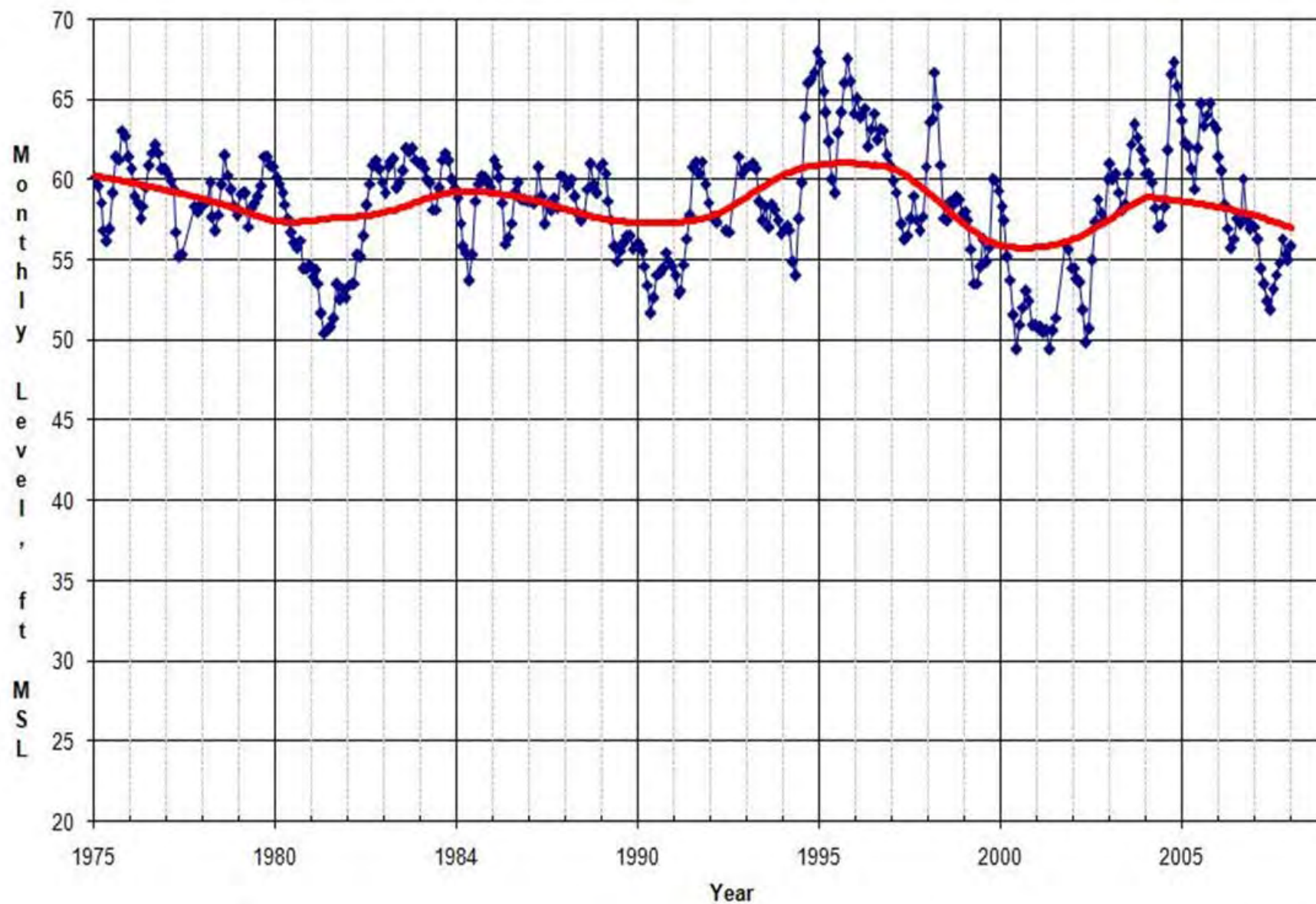


- The report uses percentile ranks to graphically and spatially depict where current UFA levels are with respect to period of record highs and lows.
- UFA levels range from near sea level to over 120 ft above msl
— percentile ranks used as a way to ‘normalize’ data.
- Report started in 2007 in response to drought conditions.

Prepare the data

- For each well, a daily average is computed from recorder hourly values, then the daily averages are aggregated into the monthly mean for each well. The POR monthly mean water levels are then ranked.
- A *percentile* is a measure that tells us what percent of the total frequency scored at or below that measure. In this case, what percent of the monthly mean water levels for a well ranked at or below the mean water level of the current month of interest.
- A *percentile rank* is the percentage of values that fall at or below the mean water level of the current month of interest.
- The highest monthly mean water level for a well has a percentile rank of 1 (100%), and the lowest 0 (0%). The median level is 0.5 (50%) percentile.

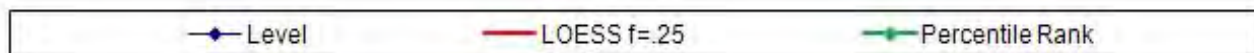
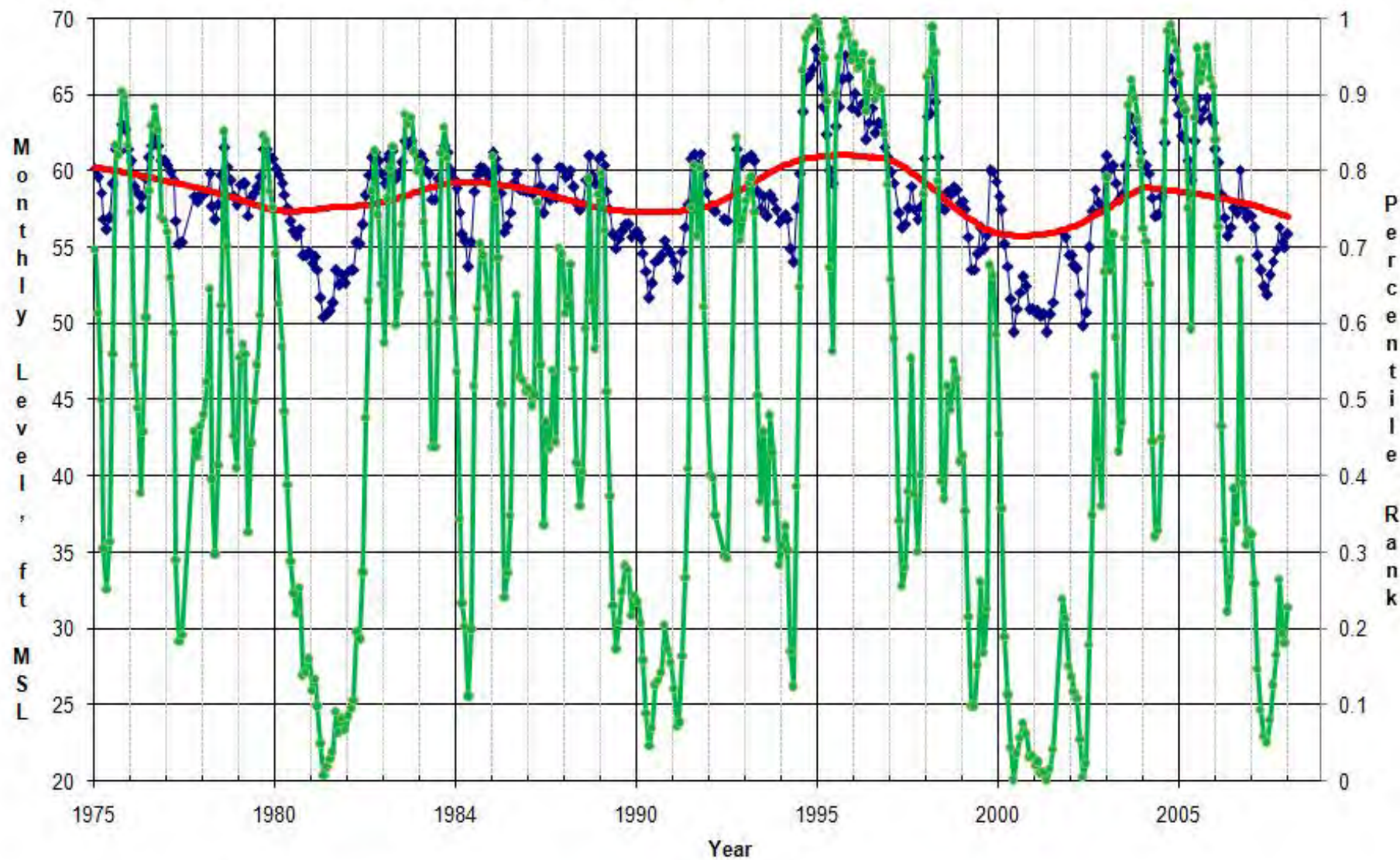
OR0047 - Orlo Vista - FA



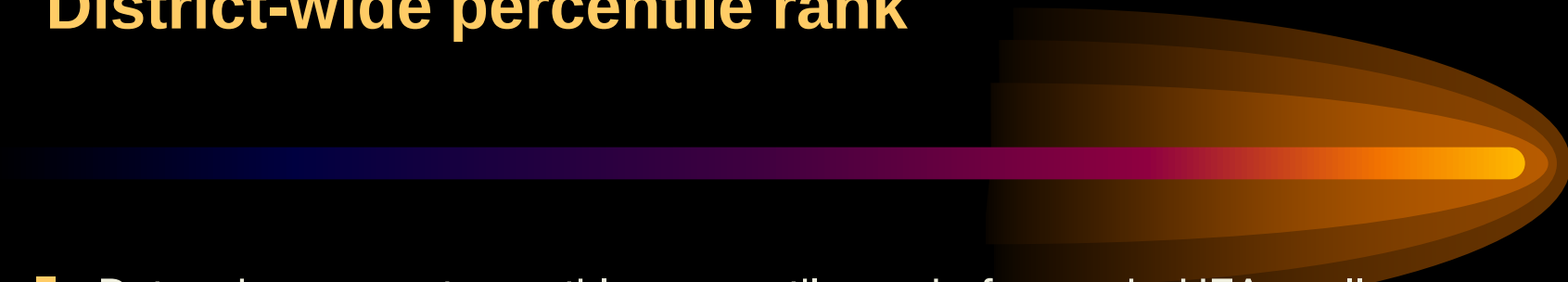
—◆— Level

— LOESS f=.25

OR0047 - Orlo Vista - FA



District-wide percentile rank

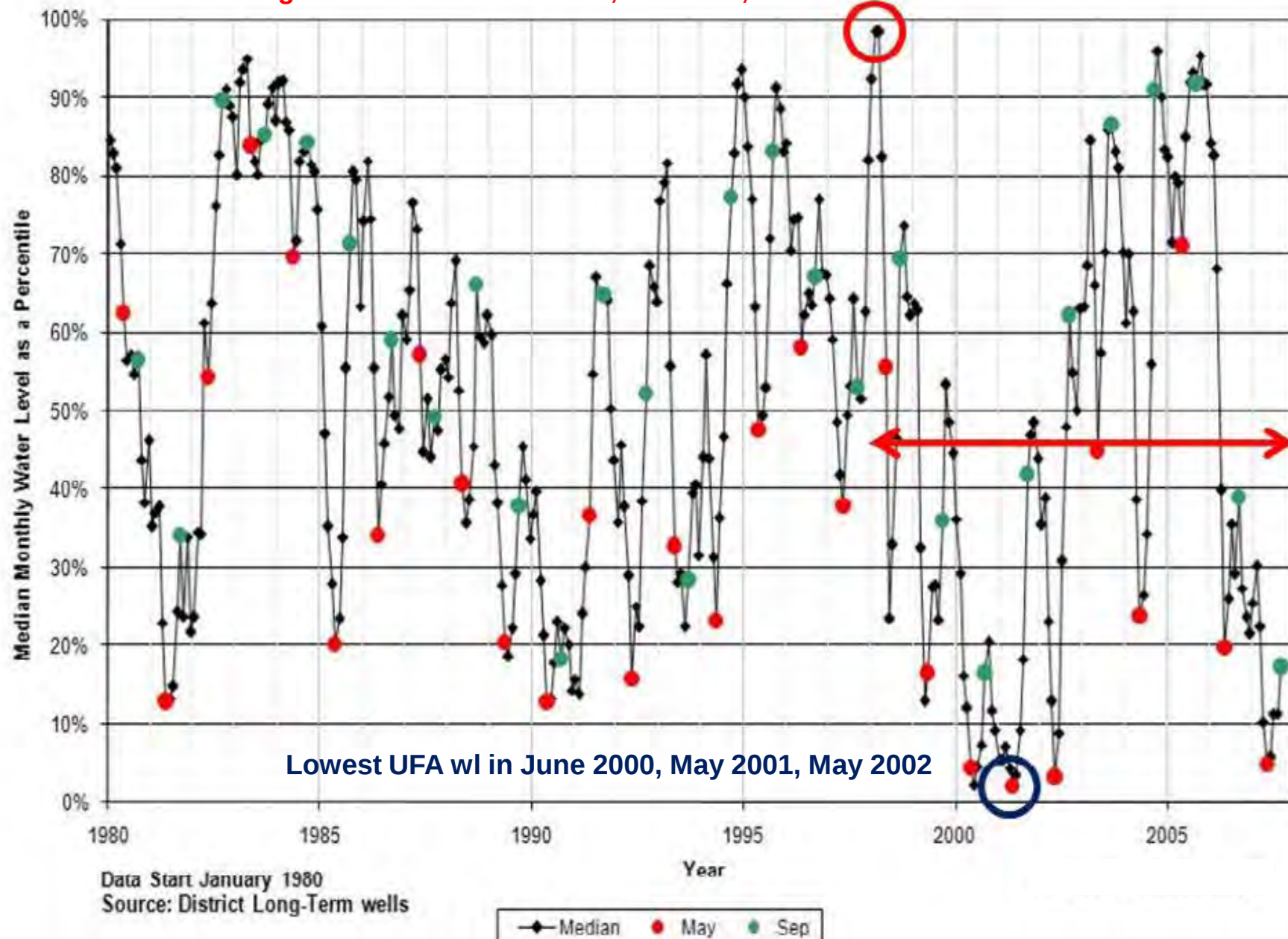


- Determine current monthly percentile rank for each UFA well.
- The District-wide percentile rank for the current month is the median of all percentile ranks for all the wells.

District-wide percentile rank

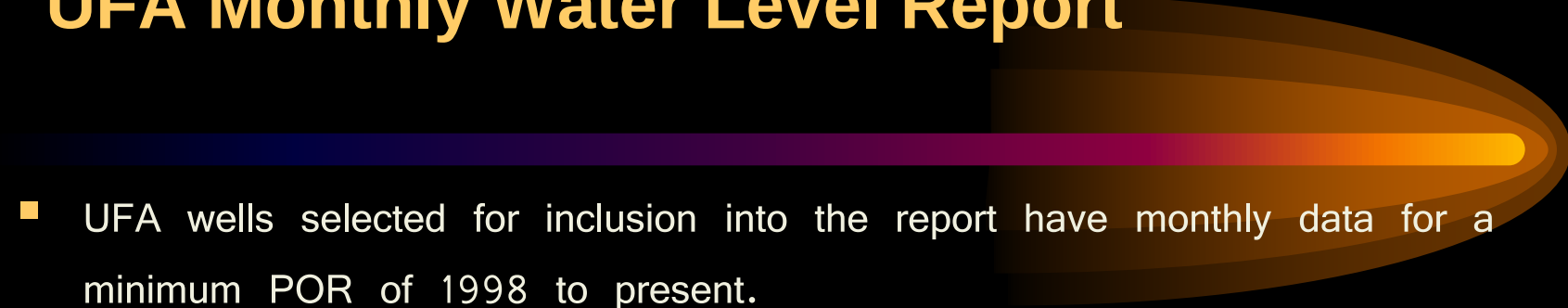
- Percentile ranks were determined for more than 200 UFA wells with monthly to continuous records that had data since 1980.
- Graph of District-wide median monthly percentile rank shows that the highest UFA water levels occurred in March 1998, October 2004, and October 2005. The lowest water levels occurred in June 2000, May 2001, and May 2002.
- Since the highest and lowest UFA levels occurred in 1998 and 2001 respectively, a data set using wells with telemetered water levels & with data since 1998 (the red horizontal arrow) was used to report monthly changes in UFA water levels based on percentile ranks.

Highest UFA wl in Mar 1998, Oct 2004, Oct 2005



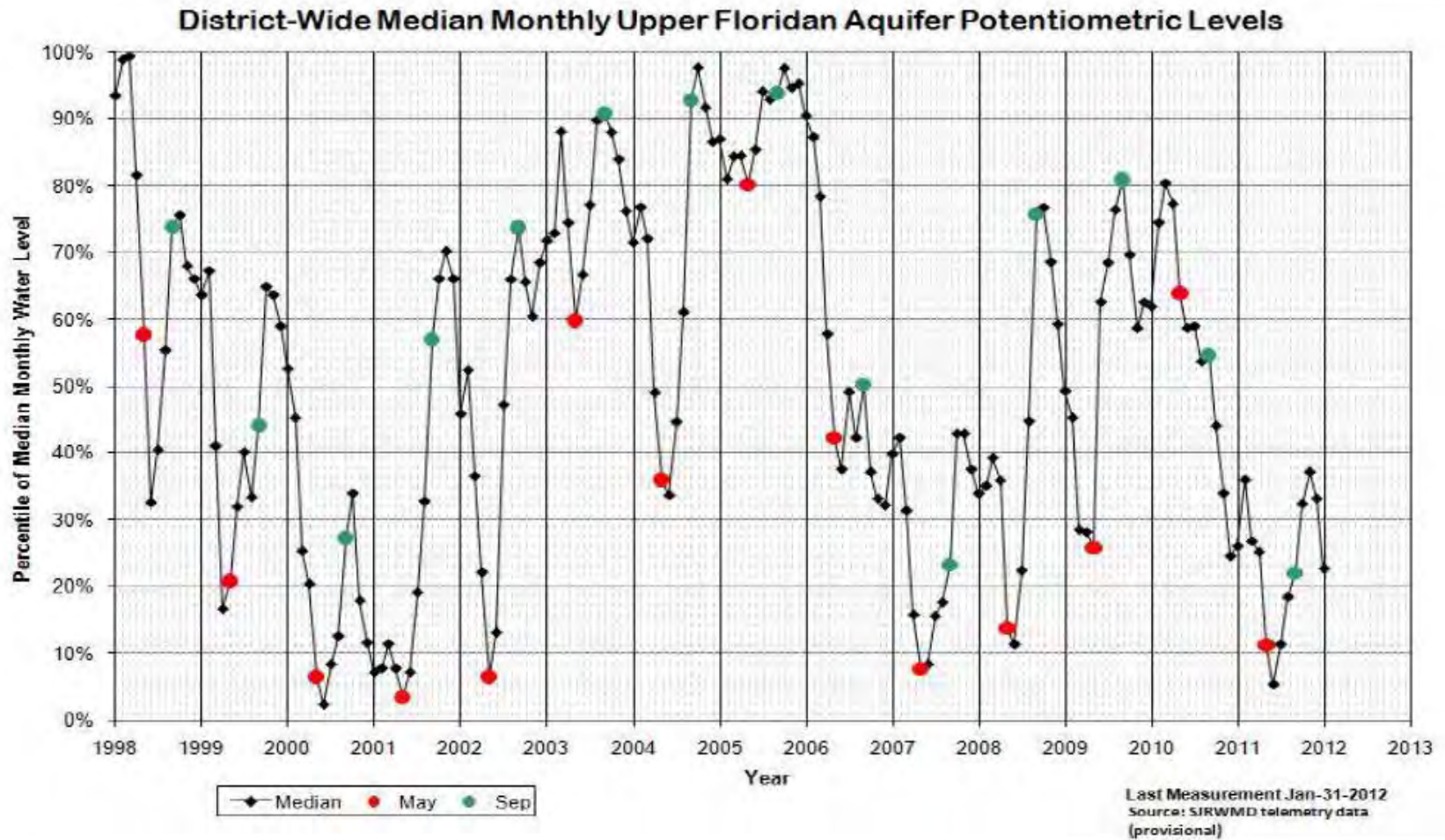
Lowest UFA wl in June 2000, May 2001, May 2002

UFA Monthly Water Level Report



- UFA wells selected for inclusion into the report have monthly data for a minimum POR of 1998 to present.
- The wells also have to be in the telemetry recorder network so that wells with near real-time data can be included in the report.
- The monthly report utilizes 107 wells; additional wells can be included in the report as more wells with monthly water levels since January 1998 are added to the telemetry network.

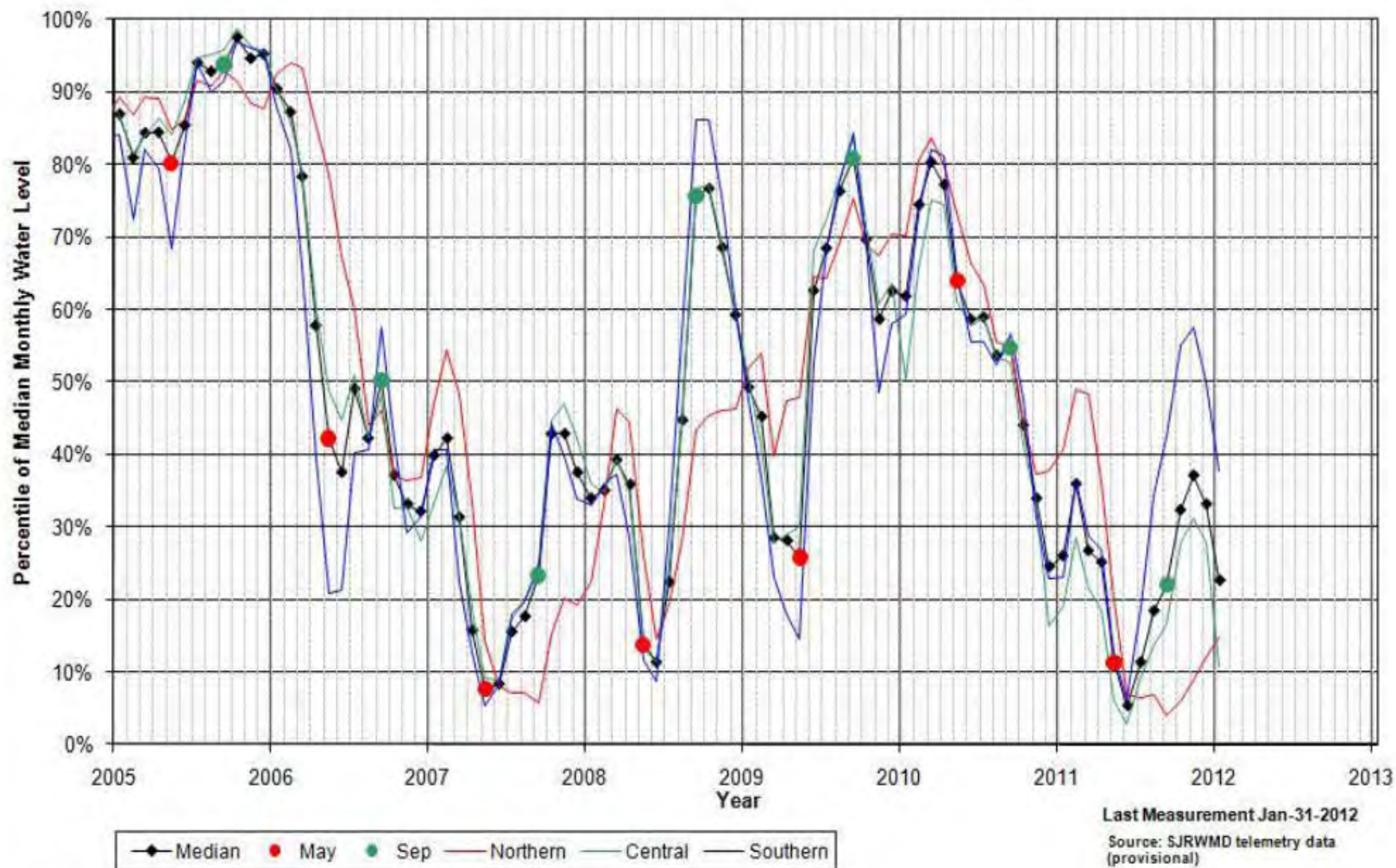
UFA w/ percentiles, showing where current levels are with respect to POR highs and lows.



UFA Monthly Water Level Report

- The percentile rank method is an effective way to compare observations by reducing the effects of outliers and provide an easily interpretable relative standing.
- “Normalizing” the water levels to percentile ranks allows one to compare and track District-wide and regional changes.
- For a regional perspective, the District was divided into central, northern, and southern regions. The same analysis as for the District-wide median UFA water levels was conducted for each of the regions.

Median Monthly Upper Floridan Aquifer Potentiometric Levels as a Percentile, by Region

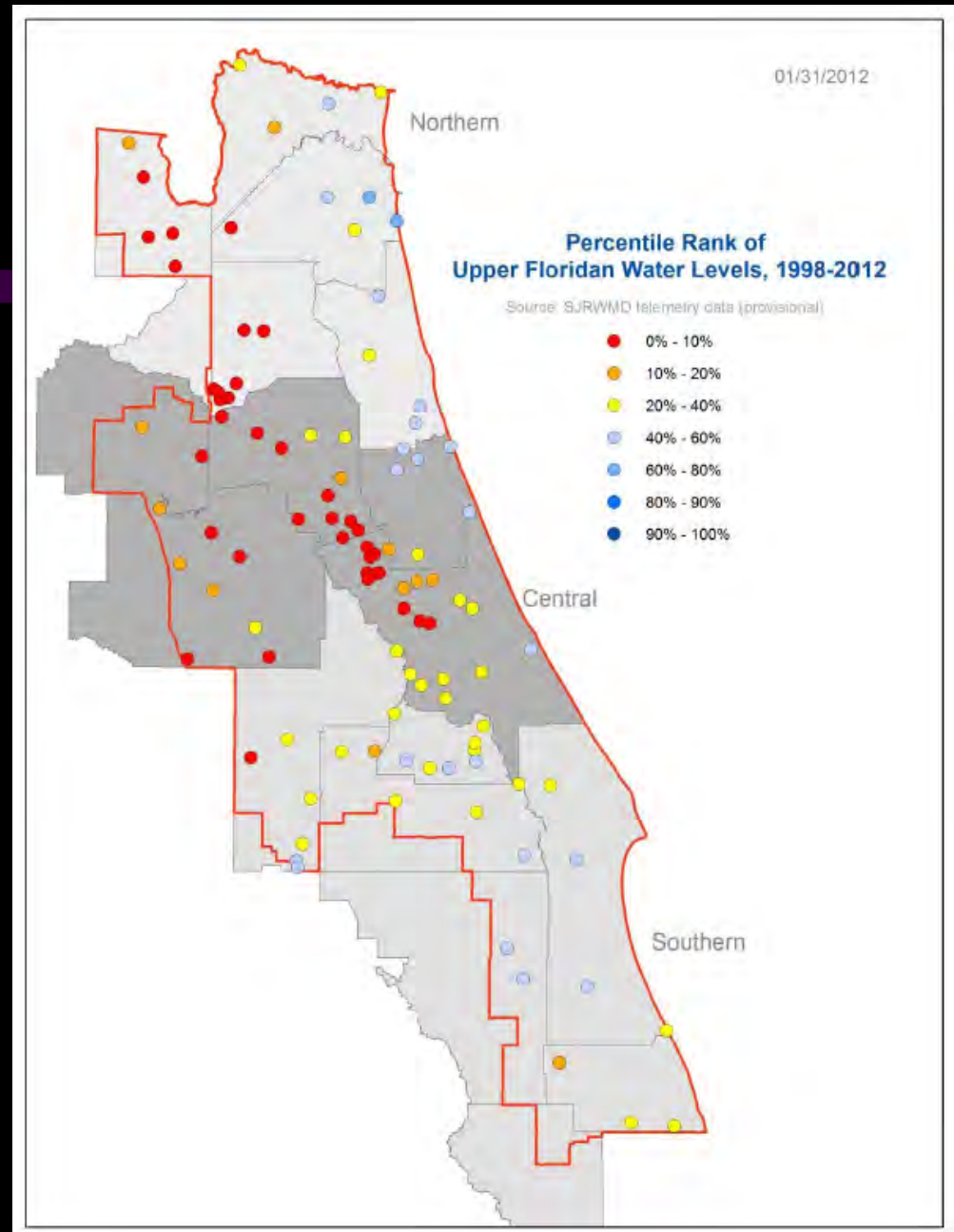


UFA Monthly Water Level Report

- A table is also derived that gives information on the percentile rank of the current month of interest (Jan 2012) compared to the highest water level (March 1998), lowest (May 2001), same month of the previous year (Jan 2011), and the preceding month (Dec 2011).

Region	Last Measurement	Median % Mar 1998	Median % June 2000	Median % May 2001	Median % May 2002	Median % Jan-2011	Median % Dec-2011	Median % Jan-2012	1 Month Change to last	Period
District Wide	1/31/2012	99%	2%	4%	7%	26%	33%	23%	-10%	1998-Present
Northern	1/31/2012	100%	9%	16%	6%	41%	12%	15%	3%	1998-Present
Central	1/31/2012	98%	3%	4%	10%	19%	28%	11%	-17%	1998-Present
Southern	1/31/2012	99%	0%	1%	6%	23%	50%	38%	-12%	1998-Present

To evaluate water levels spatially, individual wells throughout the District are plotted with their respective current month percentile rank.



Comparing current month relative to the same month of previous years throughout the period of record is also of interest.

