U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Scientific Investigations Map 3183
A.G. Ortiz , 2011, Potentiometric surface of the upper Floridan aquifer, west-central Florida, May 2011

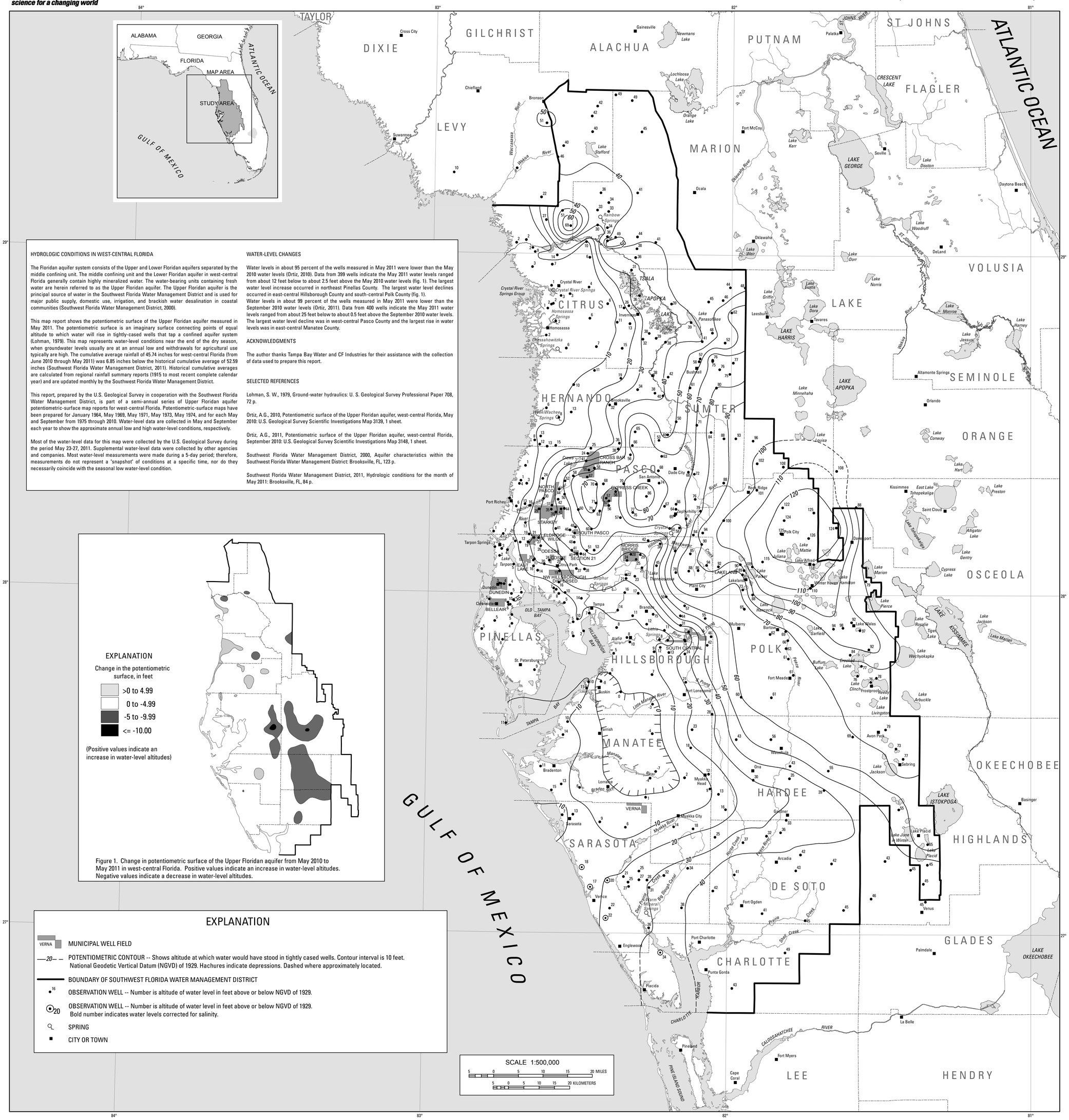

Figure 1. Change in potentiometric surface of the Upper Floridan aquifer from May 2010 to May 2011 in west-central Florida. Positive values indicate an increase in water-level altitudes. Negative values indicate a decrease in water-level altitudes.

HYDROLOGIC CONDITIONS IN WEST-CENTRAL FLORIDA

The Floridan aquifer system consists of the Upper and Lower Floridan aquifers separated by the middle confining unit. The middle confining unit and the Lower Floridan aquifer in west-central Florida generally contain highly mineralized water. The water-bearing units containing fresh water are herein referred to as the Upper Floridan aquifer. The Upper Floridan aquifer is the principal source of water in the Southwest Florida Water Management District and is used for major public supply, domestic use, irrigation, and brackish water desalination in coastal communities (Southwest Florida Water Management District, 2000).

This map report shows the potentiometric surface of the Upper Floridan aquifer measured in May 2011. The potentiometric surface is an imaginary surface connecting points of equal altitude to which water will rise in tightly-cased wells that tap a confined aquifer system (Lohman, 1979). This map represents water-level conditions near the end of the dry season, when groundwater levels usually are at an annual low and withdrawals for agricultural use typically are high. The cumulative average rainfall of 45.74 inches for west-central Florida (from June 2010 through May 2011) was 6.85 inches below the historical cumulative average of 52.59 inches (Southwest Florida Water Management District, 2011). Historical cumulative averages are calculated from regional rainfall summary reports (1915 to most recent complete calendar year) and are updated monthly by the Southwest Florida Water Management District.

This report, prepared by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District, is part of a semi-annual series of Upper Floridan aquifer potentiometric-surface map reports for west-central Florida. Potentiometric-surface maps have been prepared for January 1964, May 1969, May 1971, May 1973, May 1974, and for each May and September from 1975 through 2010. Water-level data are collected in May and September each year to show the approximate annual low and high water-level conditions, respectively.

Most of the water-level data for this map were collected by the U.S. Geological Survey during the period May 23-27, 2011. Supplemental water-level data were collected by other agencies and companies. Most water-level measurements were made during a 5-day period; therefore, measurements do not represent a "snapshot" of conditions at a specific time, nor do they necessarily coincide with the seasonal low water-level condition.

WATER-LEVEL CHANGES

Water levels in about 95 percent of the wells measured in May 2011 were lower than the May 2010 water levels (Ortiz, 2010). Data from 399 wells indicate the May 2011 water levels ranged from about 12 feet below to about 2.5 feet above the May 2010 water levels (fig. 1). The largest water level increase occurred in northeast Pinellas County. The largest water level declines occurred in east-central Hillsborough County and south-central Polk County (fig. 1).
Water levels in about 99 percent of the wells measured in May 2011 were lower than the September 2010 water levels (Ortiz, 2011). Data from 400 wells indicate the May 2011 water levels ranged from about 25 feet below to about 0.5 feet above the September 2010 water levels. The largest water level decline was in west-central Pasco County and the largest rise in water levels was in east-central Manatee County.

ACKNOWLEDGMENTS

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SELECTED REFERENCES

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Base from Southwest Florida Water Management District digital data, 1992,
State Plane Florida East projection, NAD83

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA, MAY 2011

By A.G. Ortiz

Copies of this map can be purchased from:
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