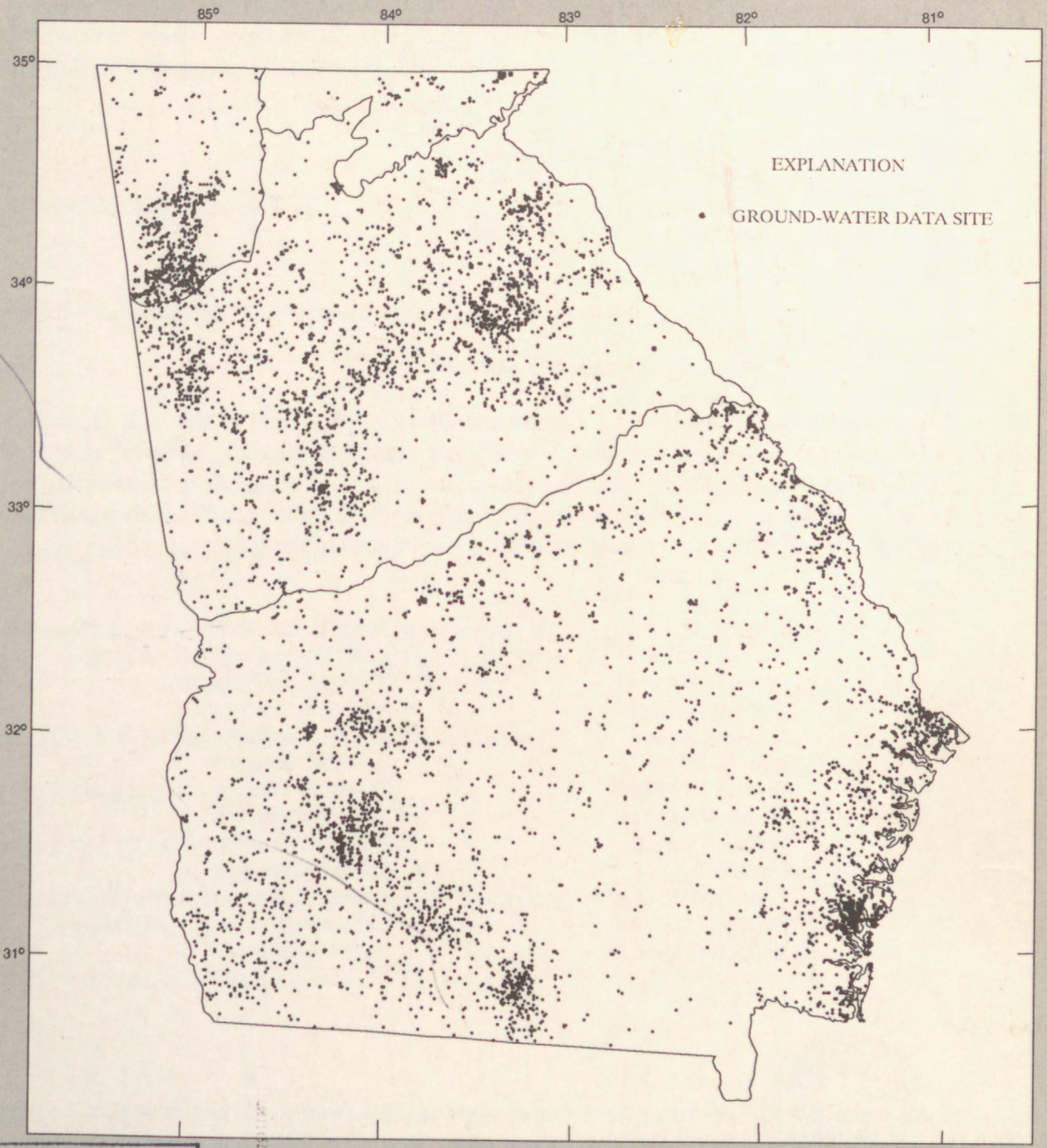
GROUND-WATER CONDITIONS IN GEORGIA, 1992

U.S. GEOLOGICAL SURVEY



Prepared in cooperation with the

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
GEORGIA GEOLOGIC SURVEY

ALBANY WATER, GAS, AND LIGHT COMMISSION

CITY OF BRUNSWICK

GLYNN COUNTY

CHATHAM COUNTY-SAVANNAH METROPOLITAN PLANNING COMMISSION

CITY OF VALDOSTA

OPEN-FILE REPORT 93-358

PREFACE

This report was prepared in cooperation with the following agencies, whose assistance in collecting and compiling precipitation, water-level, and water-quality data during 1992 is gratefully acknowledged:

Georgia Department of Natural Resources
Environmental Protection Division
Georgia Geologic Survey
Albany Water, Gas, and Light Commission
City of Brunswick
Glynn County
Chatham County-Savannah Metropolitan Planning Commission
City of Valdosta
National Oceanic and Atmospheric Administration

The report is the culmination of a concerted effort by personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who edited and assembled the report. In addition to the authors, who had primary responsibility for ensuring that the information contained herein is accurate and complete, the following individuals contributed substantially to the collection, processing, tabulation, and review of the data:

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Data used in this report may be obtained upon request from the U.S. Geological Survey, Water Resources Division, Peachtree Business Center, Suite 130, 3039 Amwiler Road, Atlanta, GA 30360-2824.

[*Cover map*: Location of wells in U.S. Geological Survey's Ground-Water Site Inventory data base in Georgia, 1992. Map designed by Alan M. Cressler and Diane C. Burgoon.]

GROUND-WATER CONDITIONS IN GEORGIA, 1992

By Michael F. Peck and Alan M. Cressler

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CITY OF VALDOSTA

Atlanta, Georgia

1993

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CONTENTS

ILLUSTRATIONS

ILLUSTRATIONS--Continued

ILLUSTRATIONS--Continued

TABLES

CONVERSION FACTORS AND VERTICAL DATUM

CONVERSION FACTORS

Multiply	*by*	*to obtain*
Length		
inch (in.)	2.540	centimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
Volumetric		
gallon per minute (gal/min)	0.06309	liter per second
million gallons per day (Mgal/d)	0.04381	cubic meter per second
	43.81	liter per second

VERTICAL DATUM

Sea Level:--In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Sea Level Datum of 1929."

GROUND-WATER CONDITIONS IN GEORGIA, 1992

By

Michael F. Peck and Alan M. Cressler

ABSTRACT

Ground-water conditions during 1992 and period of record in Georgia were evaluated using data from precipitation, ground-water-level, and ground-water-quality monitoring networks. Data for 1992 included in this report are from precipitation records from 10 National Weather Service (NWS) stations, continuous water-level records from 72 wells, and chloride analyses from 13 wells.

Cumulative departures from long-term mean monthly precipitation in 1992 were above normal for all 10 NWS sites. Cumulative departures for the 10-year period (1983-92) were above normal at 6 of the 10 stations.

Annual mean ground-water levels in Georgia in 1992 ranged from about 4.4 feet lower to about 4.6 feet higher than in 1991. Of the 72 wells summarized in this report, 43 wells had annual mean water levels that were higher and 29 wells had annual mean water levels that were lower, as compared to 1991. Record-high daily mean water levels were recorded in one well tapping the surficial aquifer, one well tapping the Clayton aquifer, and one well tapping the Claiborne aquifer. These record highs were from about 1.3 to about 6.3 feet higher than previous record highs. A record-low daily mean water level was recorded in a well tapping the Cretaceous-age formations that was 1.5 feet lower than the previous record low.

Chloride concentration in water from the Upper Floridan aquifer in most of coastal Georgia was below drinking water standards established by the Georgia Department of Natural Resources and the U.S. Environmental Protection Agency and has not changed appreciably with time. However, chloride concentration in water from some wells that tap the Floridan aquifer system in the Brunswick area exceeds the drinking water standard.

INTRODUCTION

Ground-water-level and ground-water-quality data are essential for water assessment and management. Ground-water-level fluctuations and trends can be used to estimate changes in aquifer storage resulting from the effects of ground-water withdrawal and precipitation. These data can be used to address water-management needs and to evaluate the effects of management and conservation programs.

As part of the ground-water investigations undertaken by the U.S. Geological Survey (USGS) in cooperation with the State of Georgia and city and county governments, a Statewide water-level-measurement program was started in 1938. At the onset, this program consisted of an observation-well network in the coastal area of Georgia to monitor variations in ground-water storage and quality. Additional wells were included in areas where these data could be used to predict potential water-resources problems.

During 1992, periodic water-level measurements were made in 608 wells, and continuous water-level measurements were obtained from an additional 151 wells. Continuous water-level records were obtained using analog (pen and chart) recorders, digital recorders that record water levels at 30-minute (min) or 60-min intervals, and electronic data loggers that record water levels at 60-min intervals. At sites where records were missing, data were estimated, where possible, using historical data from the well and contemporaneous data from nearby wells that showed similar water-level fluctuations and trends. At sites where missing records could not be estimated and more than 20 percent of the data were missing for any given month, monthly means were not calculated for the period of missing record. Water samples from 96 wells collected during April and October were analyzed during 1992 to monitor chloride concentration in the Savannah and Brunswick areas.

Purpose and Scope

The purpose of this report is to present selected precipitation, ground-water-level, and water-quality data for Georgia for 1992. Precipitation graphs for 10 National Weather Service stations and hydrographs of 72 wells are presented. Chloride-concentration graphs for water from 13 wells tapping the Floridan aquifer system in the Savannah and Brunswick areas are included. The text includes a brief discussion of the aquifers and the aquifer systems, ground-water levels, and salinity. An extensive list of references are presented in "Selected References" and previously published reports in this series are listed in table 1.

Well-Numbering System

Wells described in this report are numbered according to a system based on the USGS index of topographic maps of Georgia. Each 7 1/2-minute topographic quadrangle in the State has been assigned a six-digit number and letter designation beginning at the southwestern corner of the State. Numbers increase sequentially eastward and letters advance alphabetically northward. Quadrangles in the northern part of the State are designated by double letters; AA follows Z, and so forth. The letters "I", "O", "II", and "OO" are not used. Wells inventoried in each quadrangle are numbered consecutively, beginning with 01. Thus, the fourth well scheduled in the 11AA quadrangle is designated 11AA04.

Table 1.--*Previous Reports in this Series*
[USGS, U.S. Geological Survey]

Year of data collection	USGS Open-File Report number	Authors	Year data published
1977	79-213	None listed.	1978
1978	79-1290	Clarke, J.S., Hester, W.G., and O'Byrne, M.P.	1979
1979	80-501	Mathews, S.E, Hester, W.G., and O'Byrne, M.P.	1980
1980	81-1068	Mathews, S.E., Hester, W.G., and O'Byrne, M.P.	1981
1981	82-904	Mathews, S.E., Hester, W.G., and McFadden, K.W.	1982
1982	83-678	Stiles, H.R., and Mathews, S.E.	1983
1983	84-605	Clarke, J.S., Peck, M.F., Longsworth, S.A., and McFadden, K.W.	1984
1984	85-331	Clarke, J.S., Longsworth, S.A., McFadden, K.W., and Peck, M.F.	1985
1985	86-304	Clarke, J.S., Joiner, C.N., Longsworth, S.A., McFadden, K.W., and Peck, M.F.	1986
1986	87-376	Clarke, J.S., Longsworth, S.A., Joiner, C.N., Peck, M.F., McFadden, K.W., and Milby, B.J.	1987
1987	88-323	Joiner, C.N., Reynolds, M.S., Stayton, W.L., and Boucher, F.G.	1988
1988	89-408	Joiner, C.N., Peck, M.F., Reynolds, M.S., and Stayton, W.L.	1989
1989	90-706	Peck, M.F., Joiner, C.N., Clarke, J.S., and Cressler, A.M.	1990
1990	91-486	Milby, B.J., Joiner, C.N., Cressler, A.M., and West, C.T.	1991
1991	92-470	Peck, M.F., Joiner, C.N., and Cressler, A.M.	1992

PRECIPITATION

Recharge to the ground-water system in Georgia is derived almost entirely from precipitation. Records for 1941-70 indicate that annual precipitation averaged 50 inches (in.) Statewide, and ranged from 44 in. in the east-central part to about 76 in. in the northeastern corner of the State (fig. 1). Of the total annual precipitation, about 88 percent is discharged to streams or is lost to evapotranspiration, and about 12 percent enters the ground-water system as recharge (Carter and Stiles, 1983).

Monthly mean precipitation data furnished by the National Oceanic and Atmospheric Administration (1992) are shown graphically for 10 precipitation stations (figs. 2 -11). For each station, monthly precipitation was compared to the 30-year (yr) (1961-90) average (normal) for the station. Cumulative departure curves are a method often used to illustrate surplus or deficit amounts of precipitation over a designated time period. The curves used in this report were obtained by adding successive monthly values of precipitation departures from normal. Thus, the annual cumulative departure through December represents the sum of all monthly deficits or surpluses during the year. The 10-yr cumulative departure at the end of December represents the sum of all monthly deficits or surpluses for the previous 119 months. For each of the precipitation stations, the lower graph (figs. 2 - 11) shows the cumulative departure from normal precipitation for the period 1983-92; the upper graph shows the monthly departure and cumulative departure for 1992.

The annual cumulative departures of precipitation in 1992 for the 10 stations (figs. 2 - 11), ranged from 2.3 to 15.3 in. above normal. For the 10-yr period (1983-92), the cumulative departures of precipitation ranged from 34.2 in. below normal to 21.8 in. above normal.

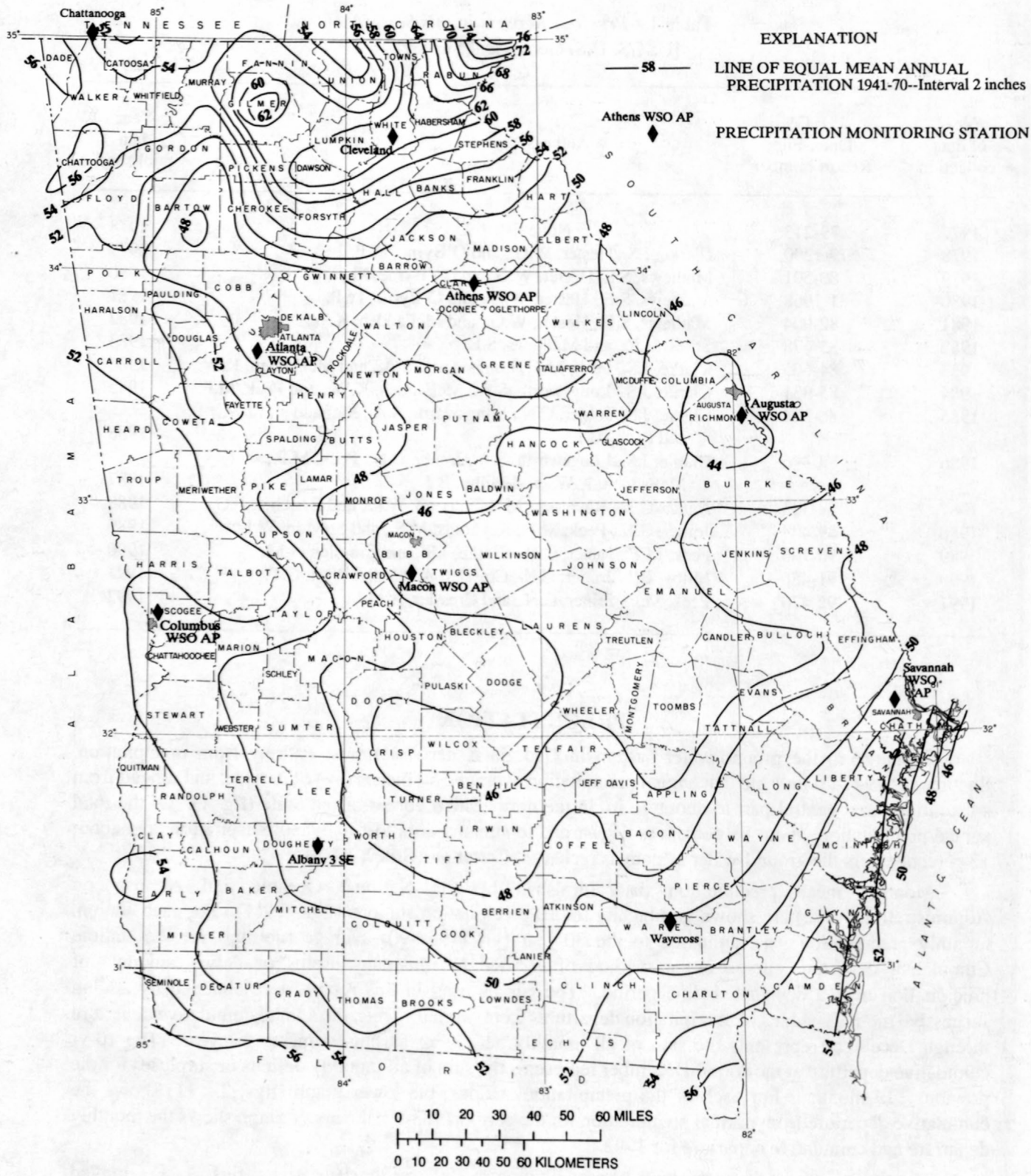


Figure 1.--Locations of precipitation monitoring stations and mean annual precipitation in Georgia, 1941-70. [Modified from Carter and Stiles (1983)]

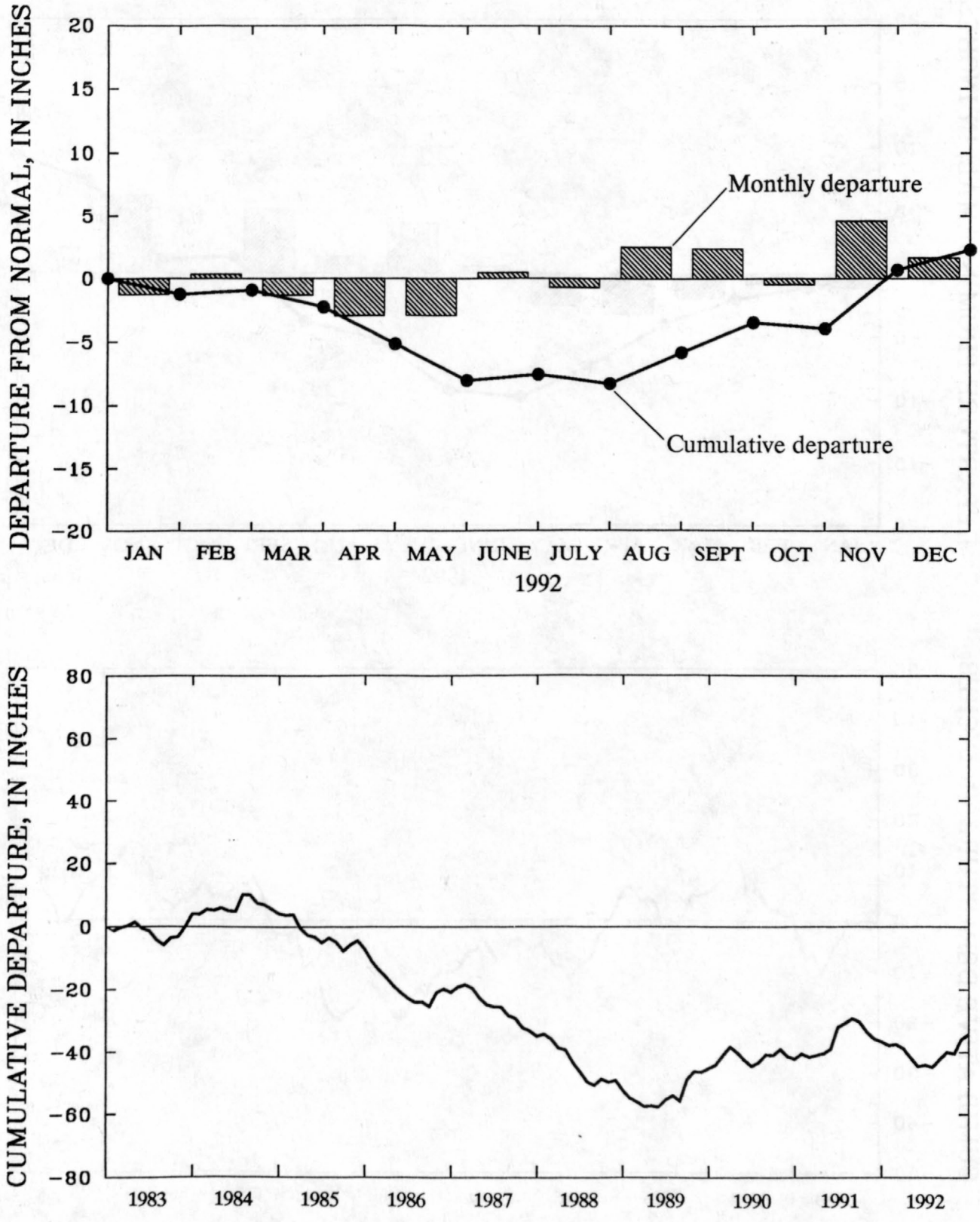
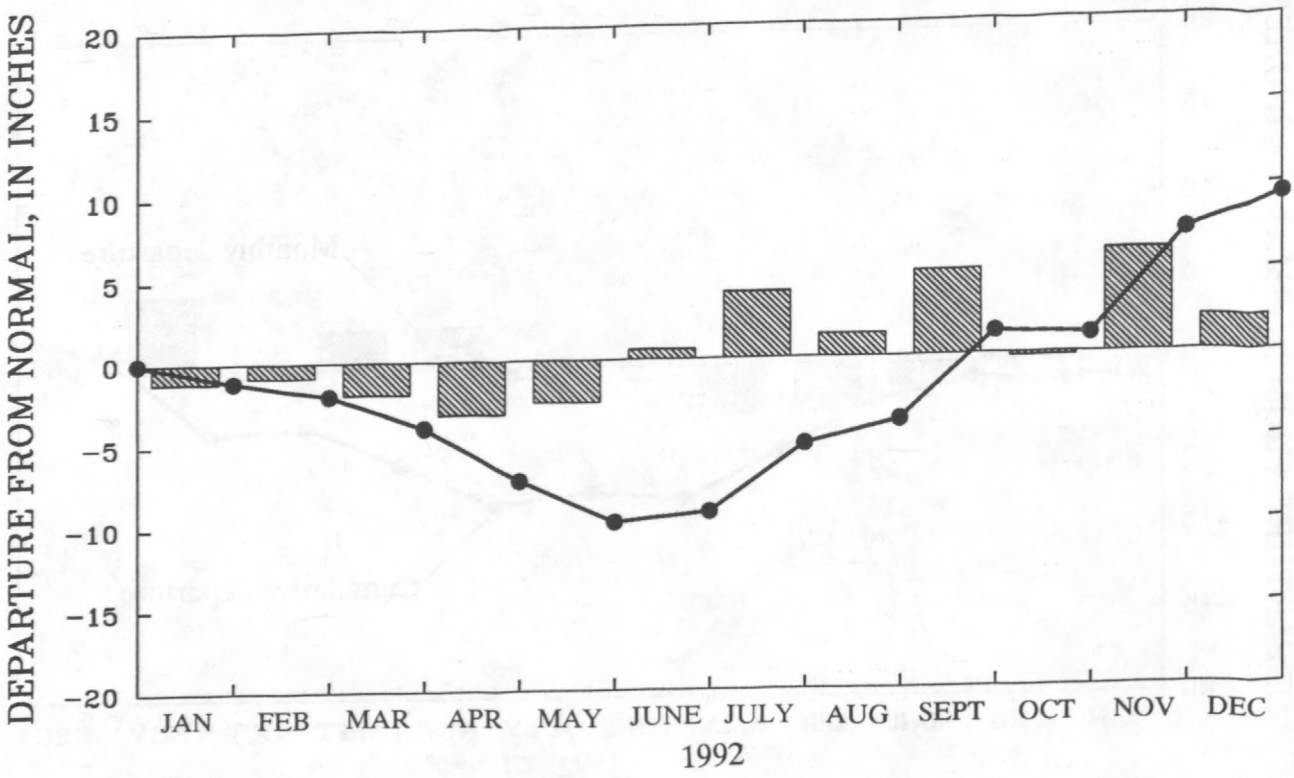


Figure 2.--Precipitation departure from normal for National Weather Athens airport, Clarke County.



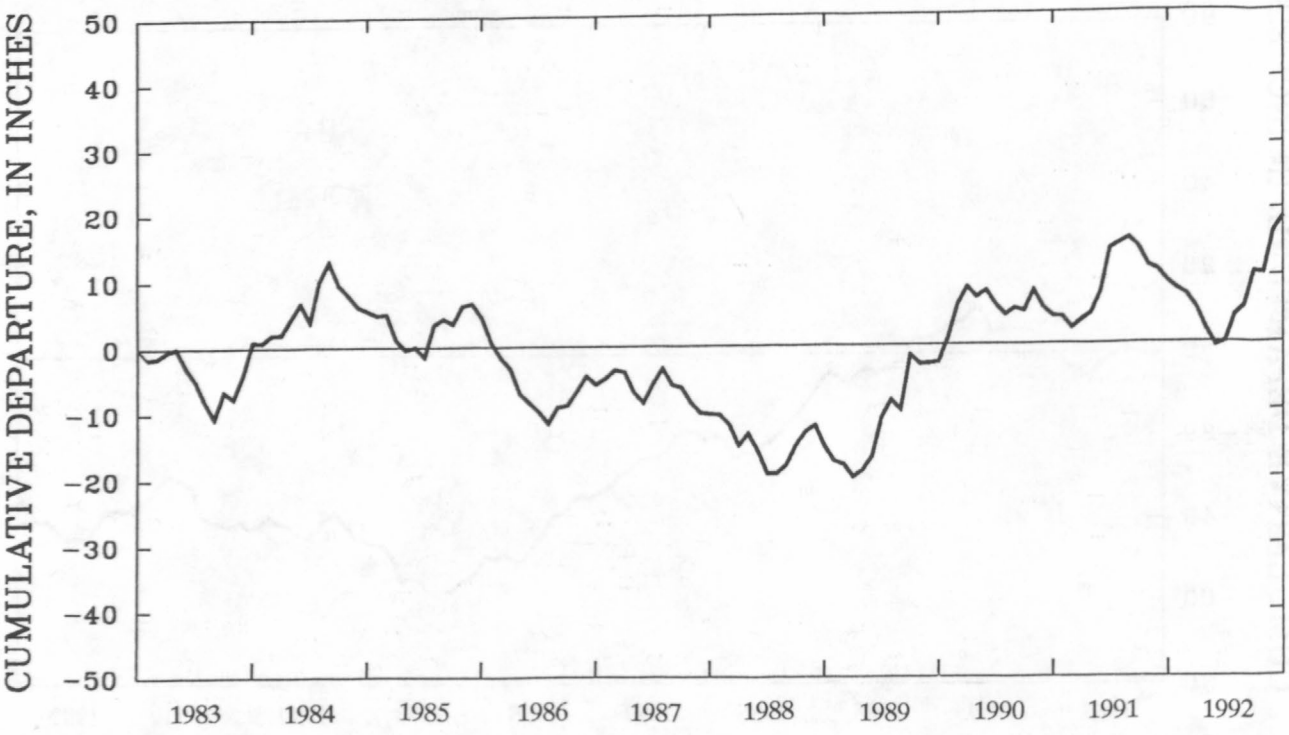
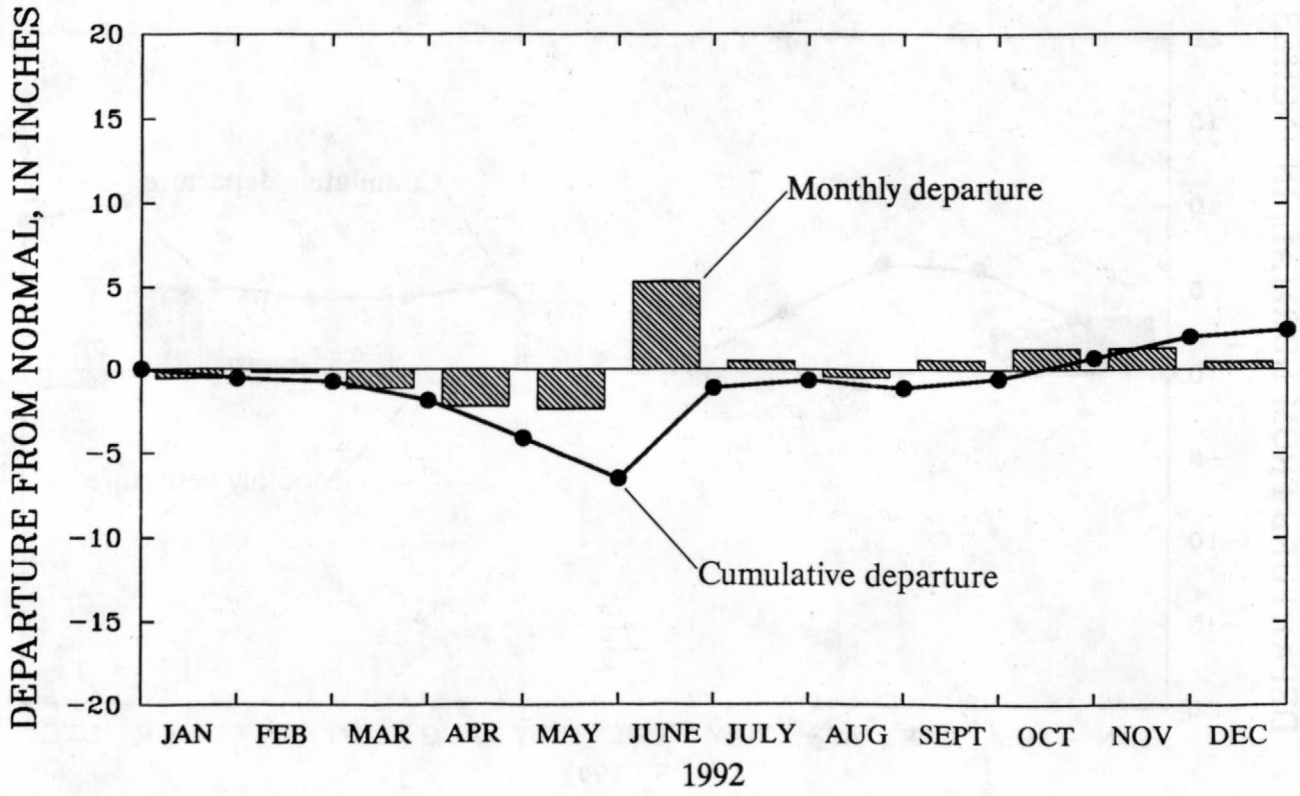


Figure 3.--Precipitation departure from normal for Atlanta airport, Fulton County.



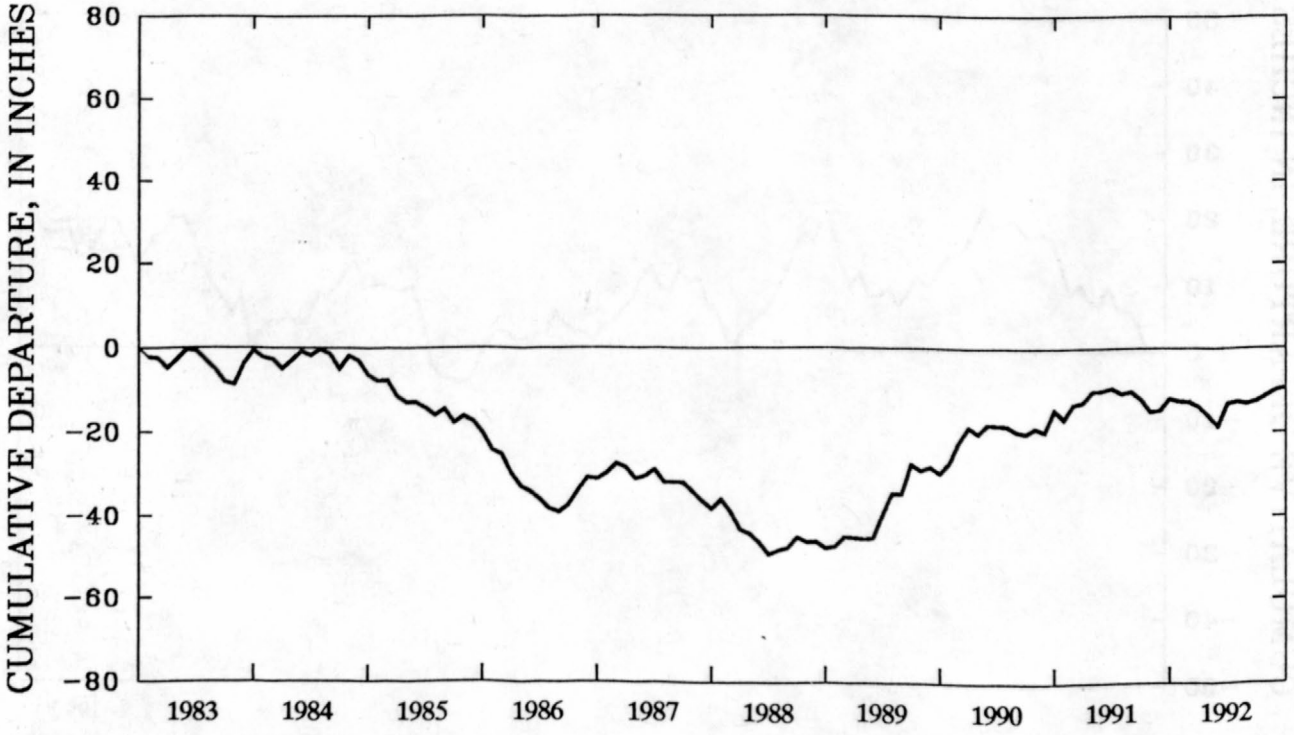
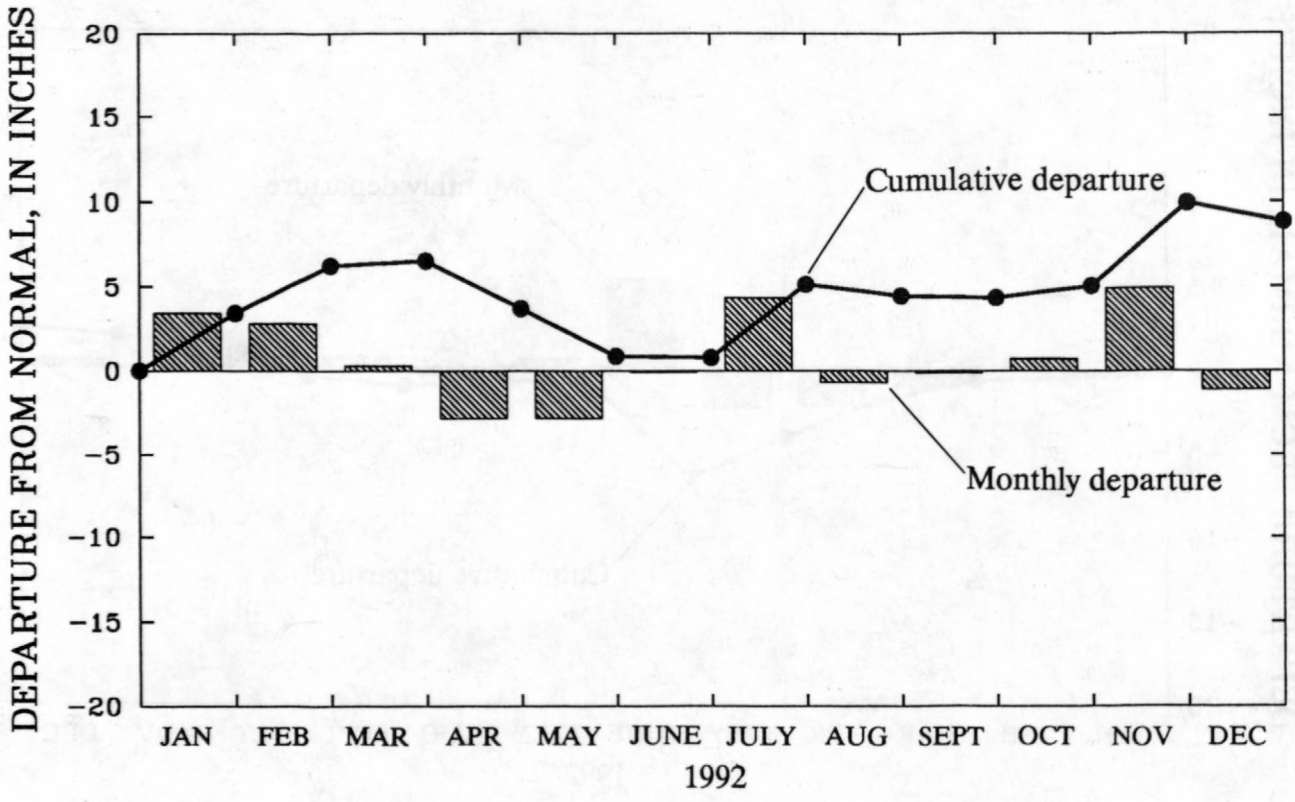


Figure 4.--Precipitation departure from normal for Chattanooga airport, Hamilton County, Tennessee.



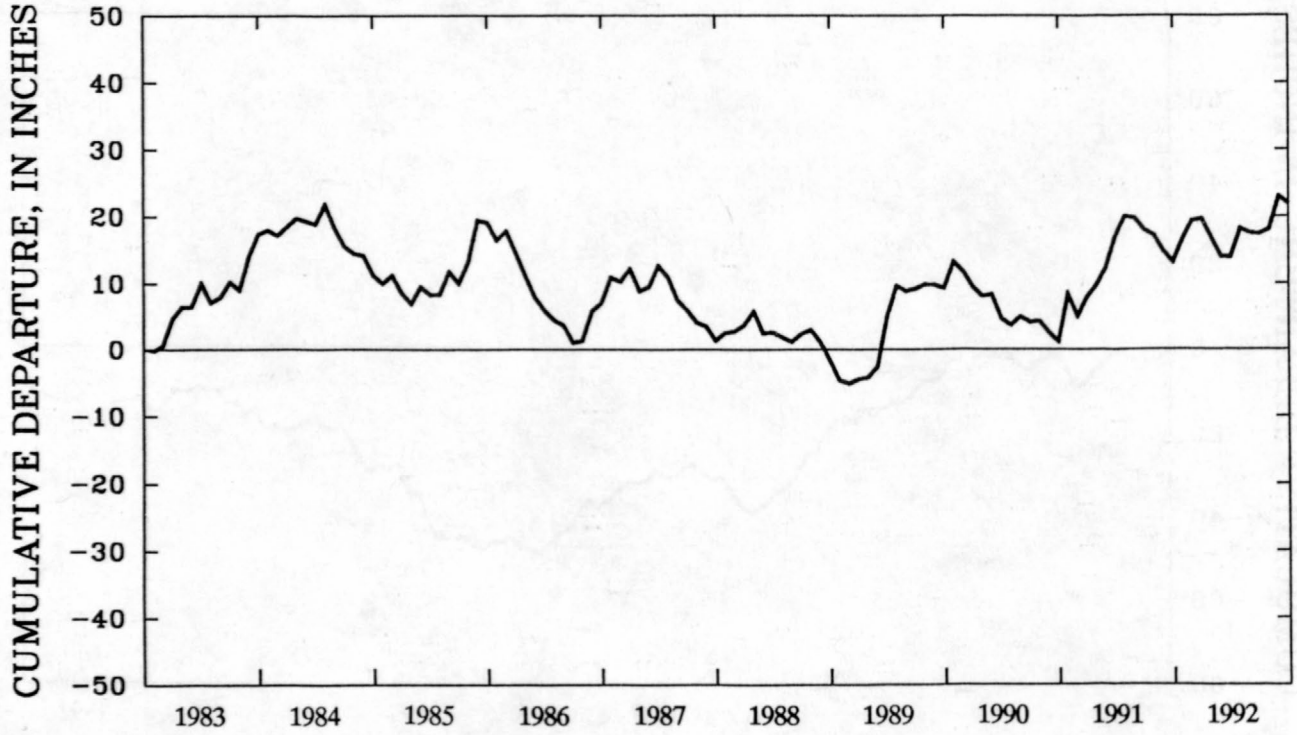
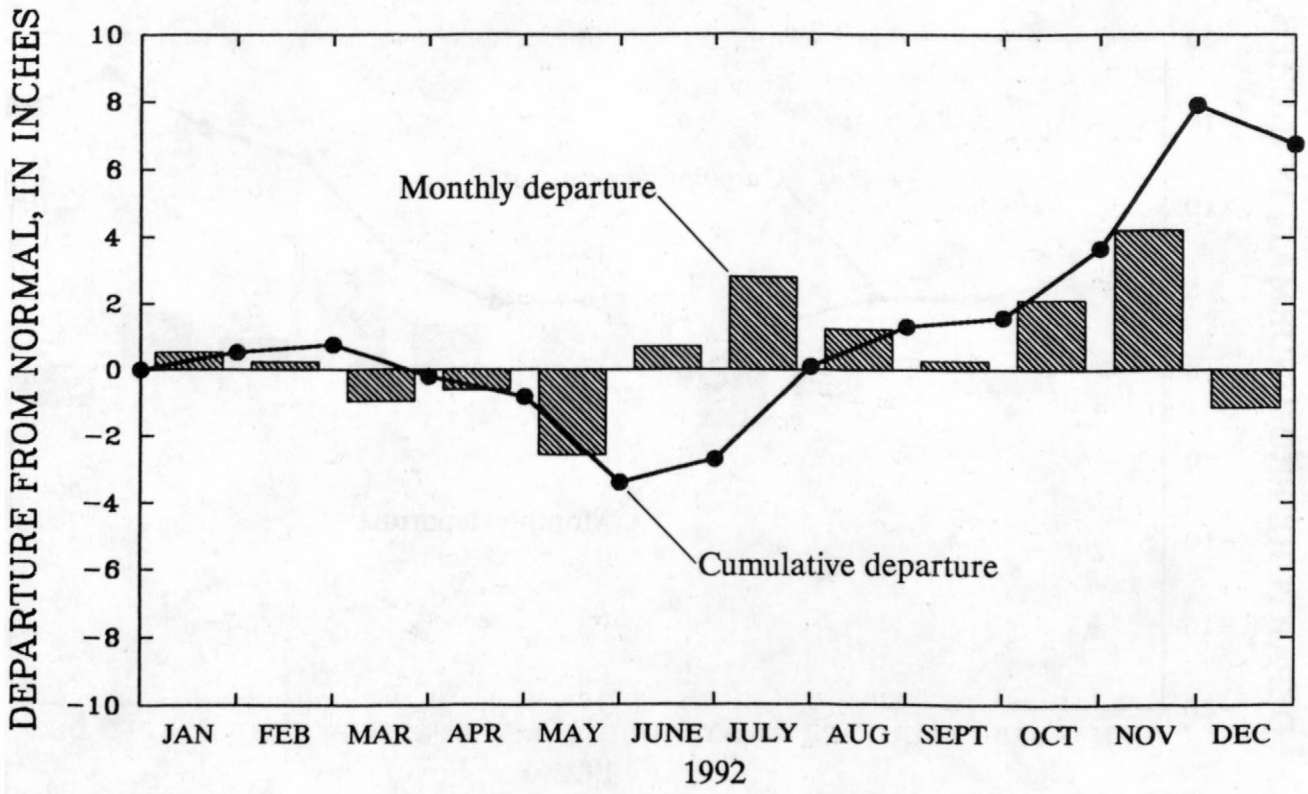


Figure 5. --Precipitation departure from normal for Albany 3 SE, Dougherty County.



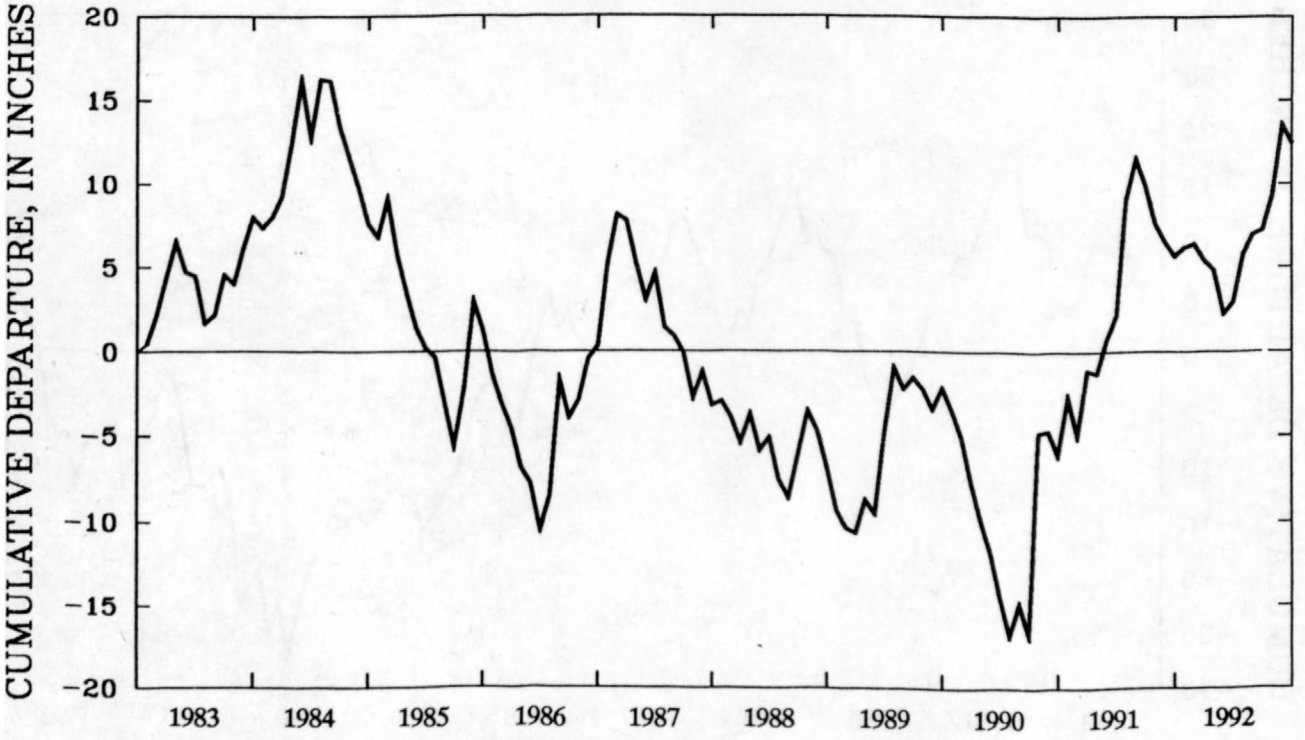
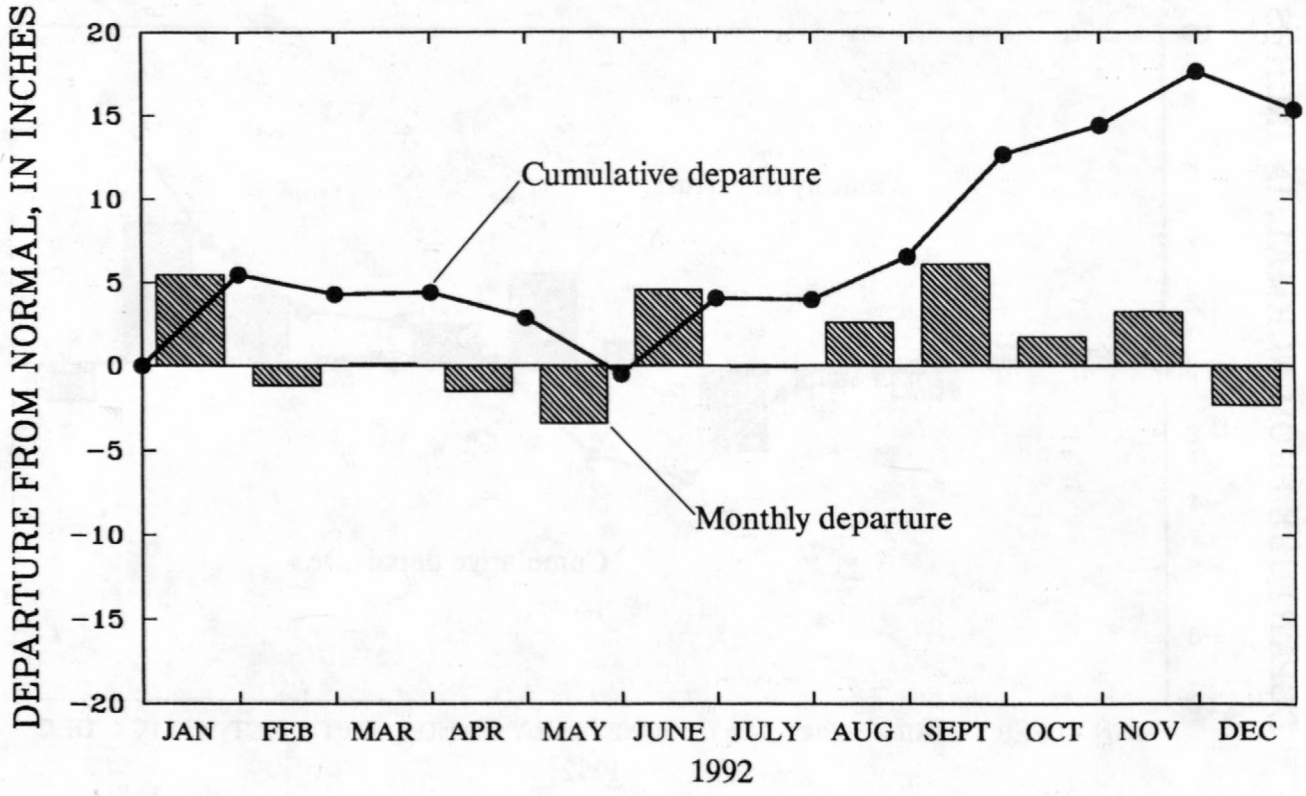


Figure 6.--Precipitation departure from normal for Augusta airport, Richmond County.



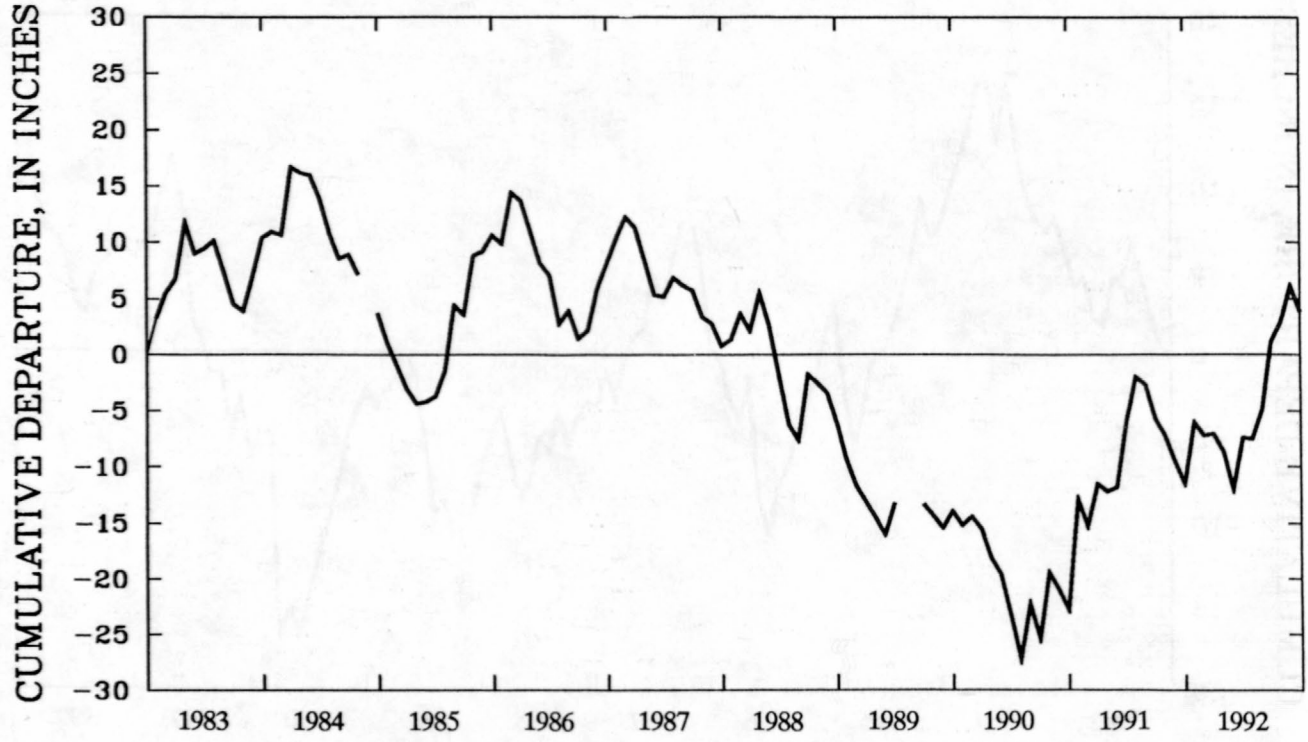
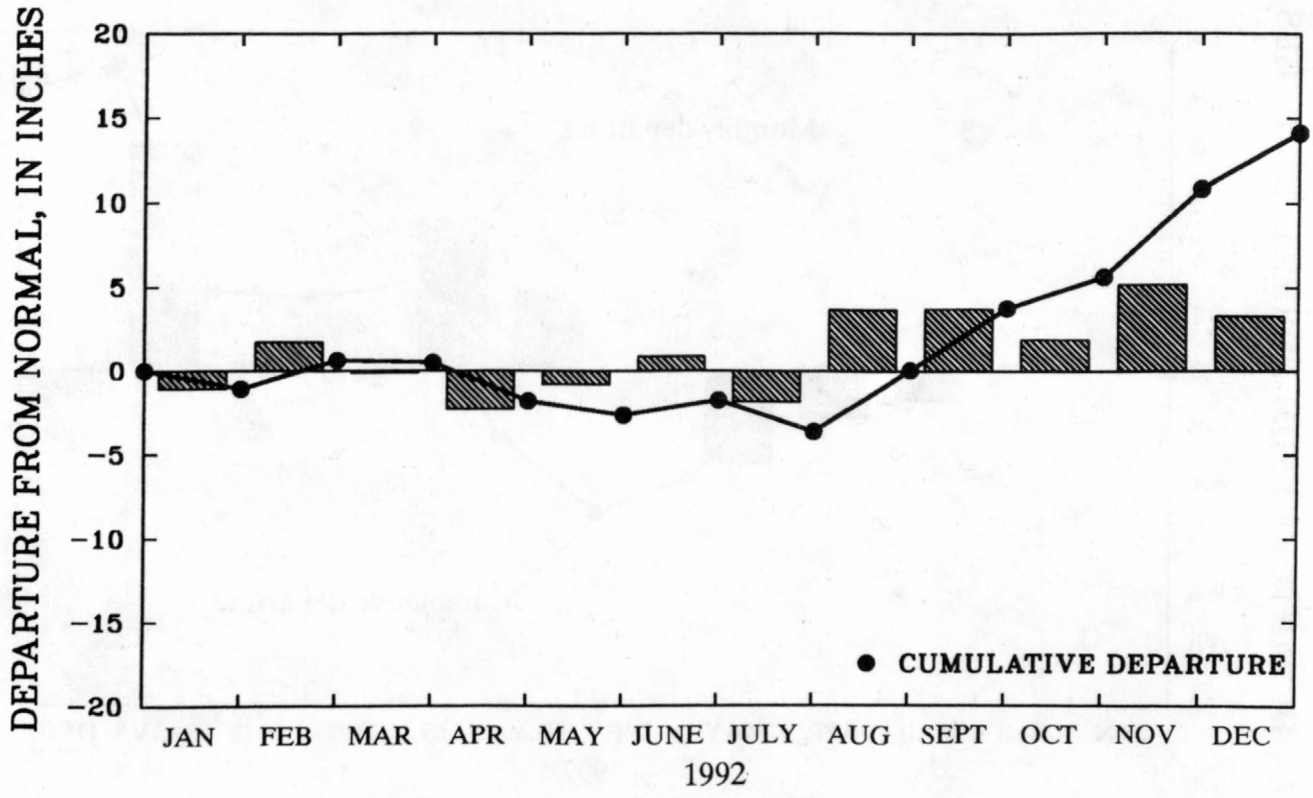


Figure 7.--Precipitation departure from normal for Waycross WSMO, Ware County.



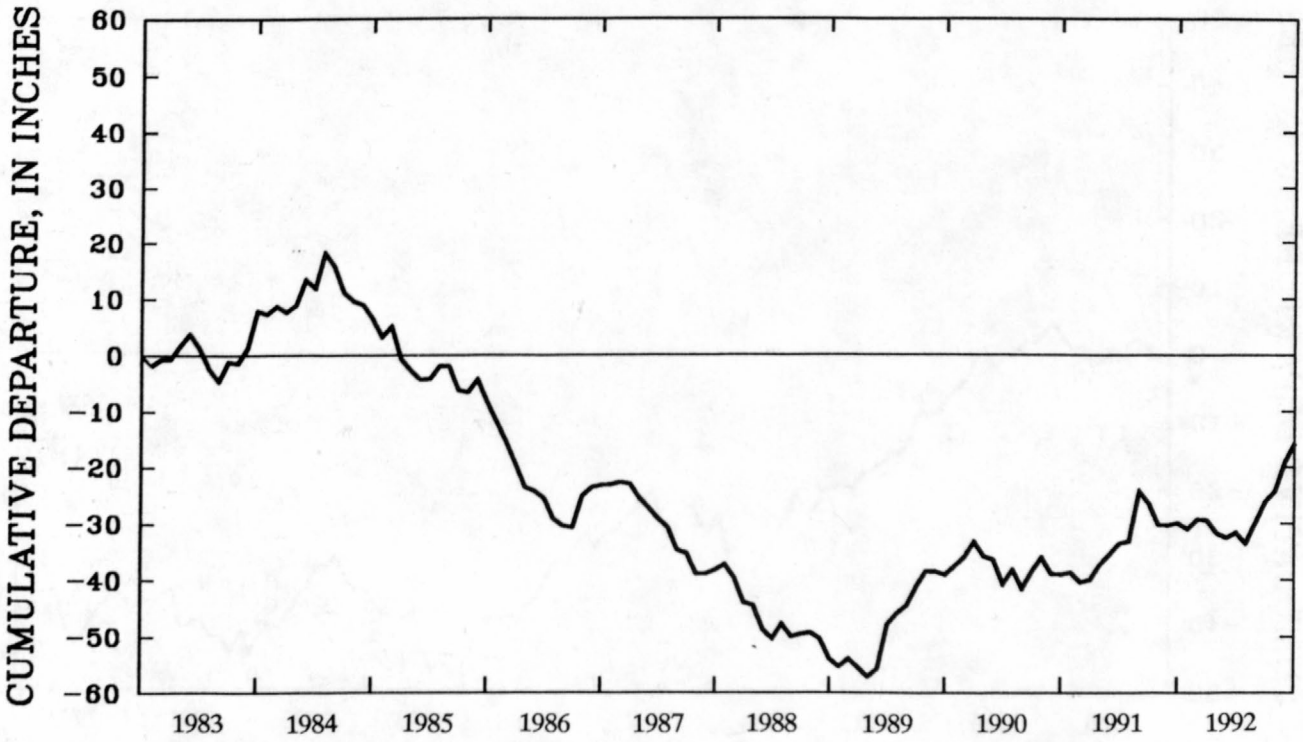
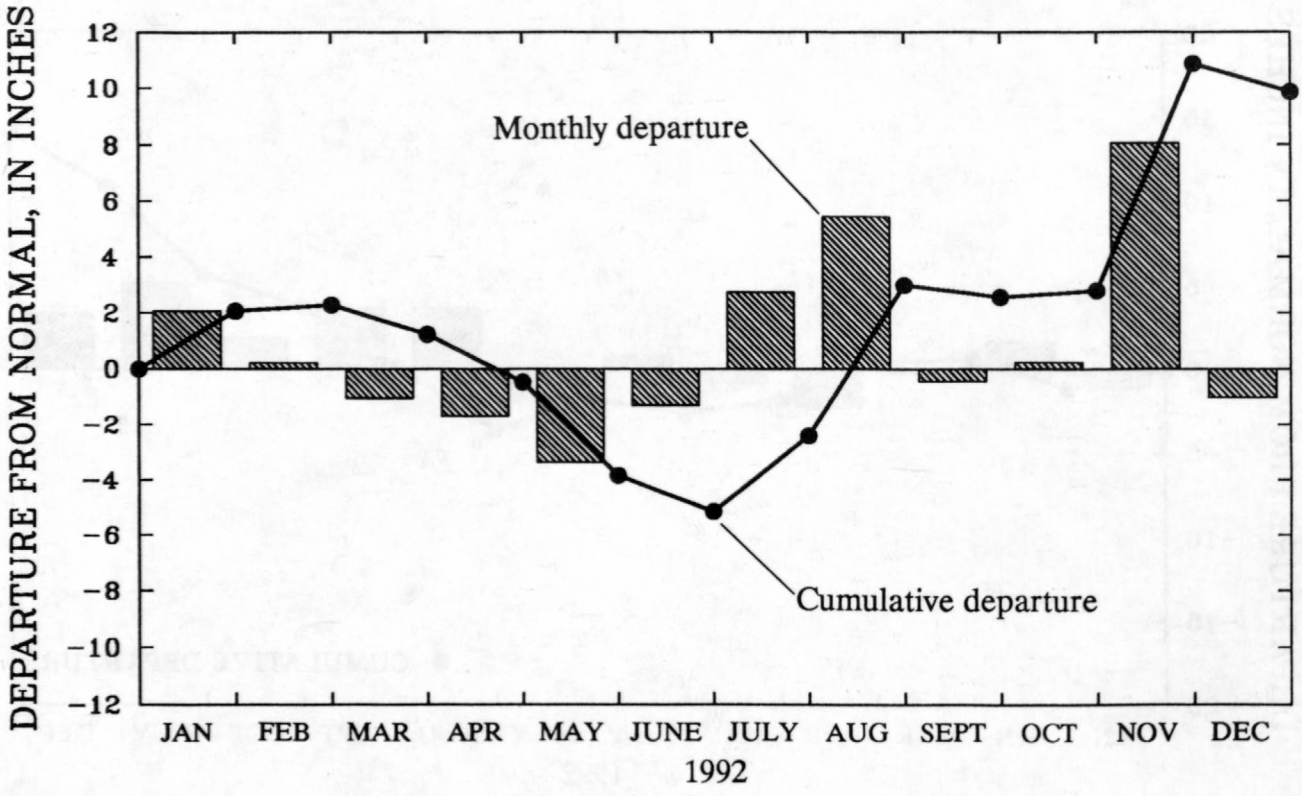


Figure 8.--Precipitation departure from normal for Cleveland, White County.



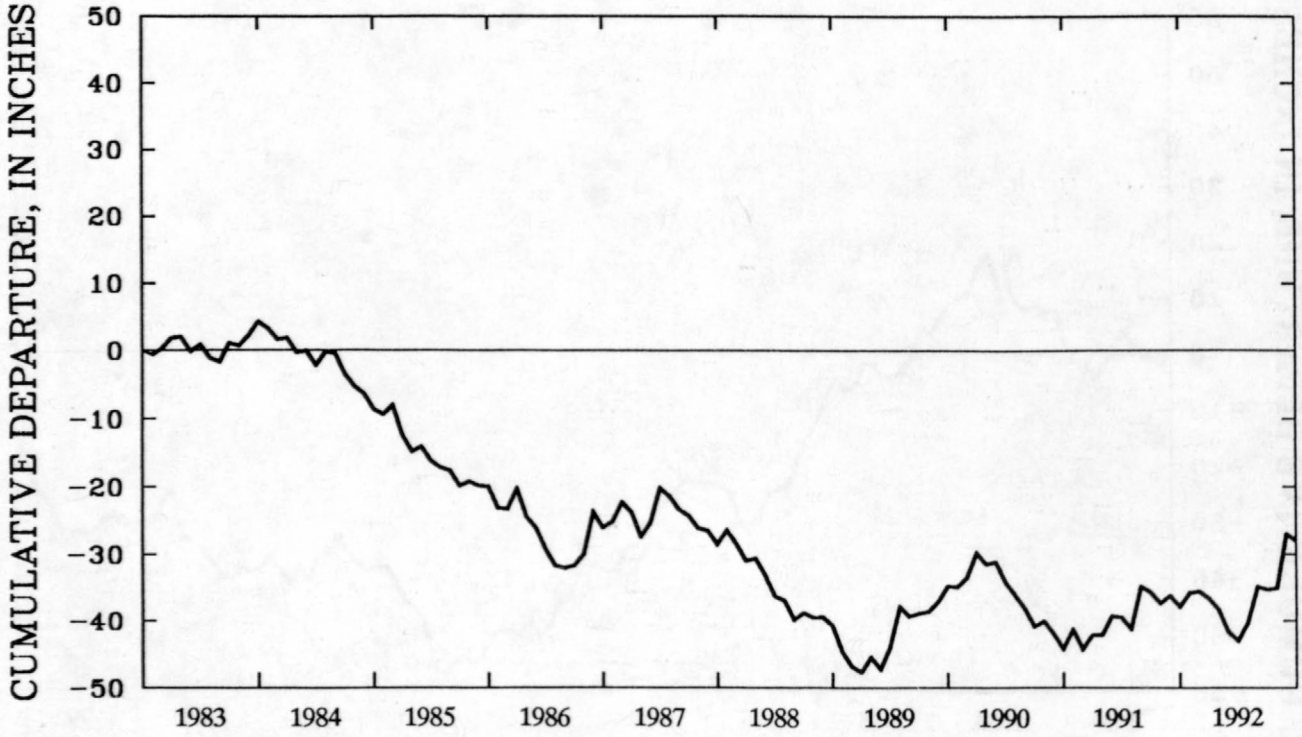
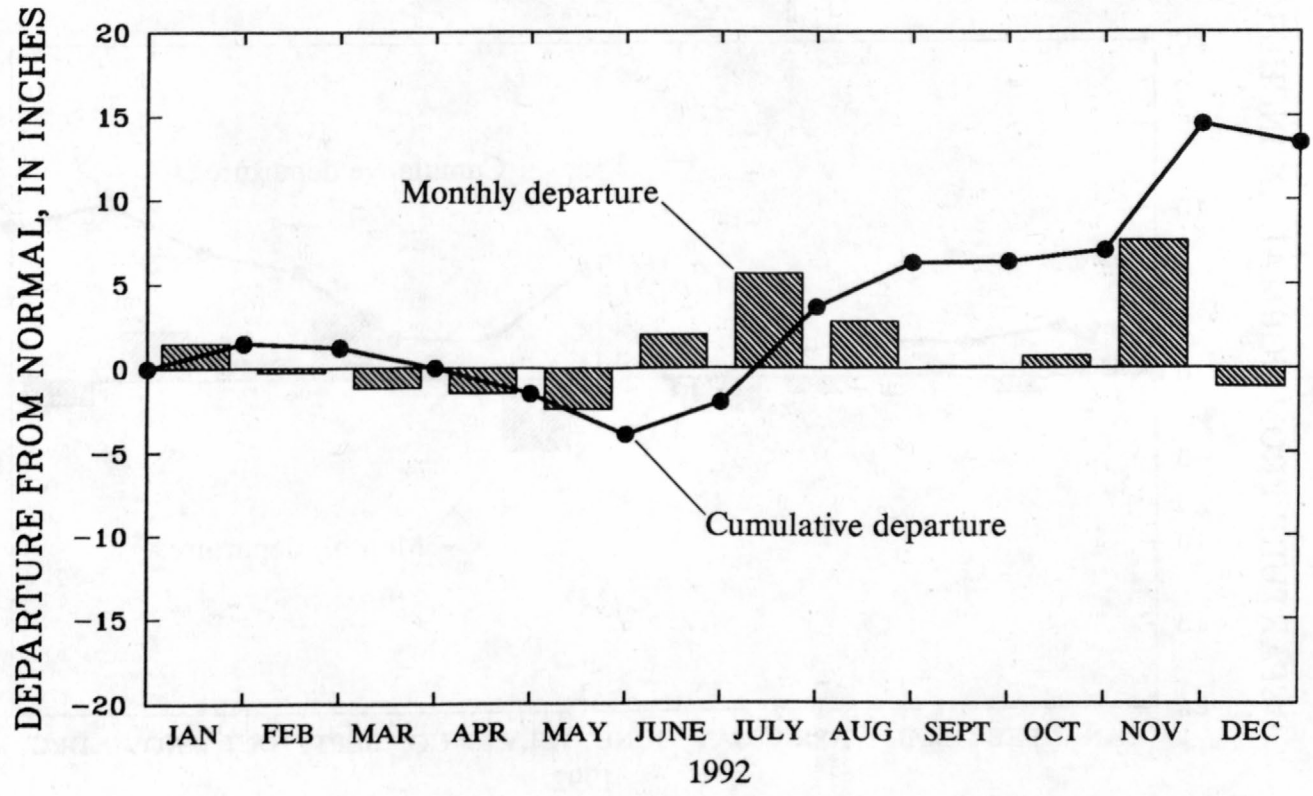


Figure 9--Precipitation departure from normal for Columbus airport, Muscogee County.



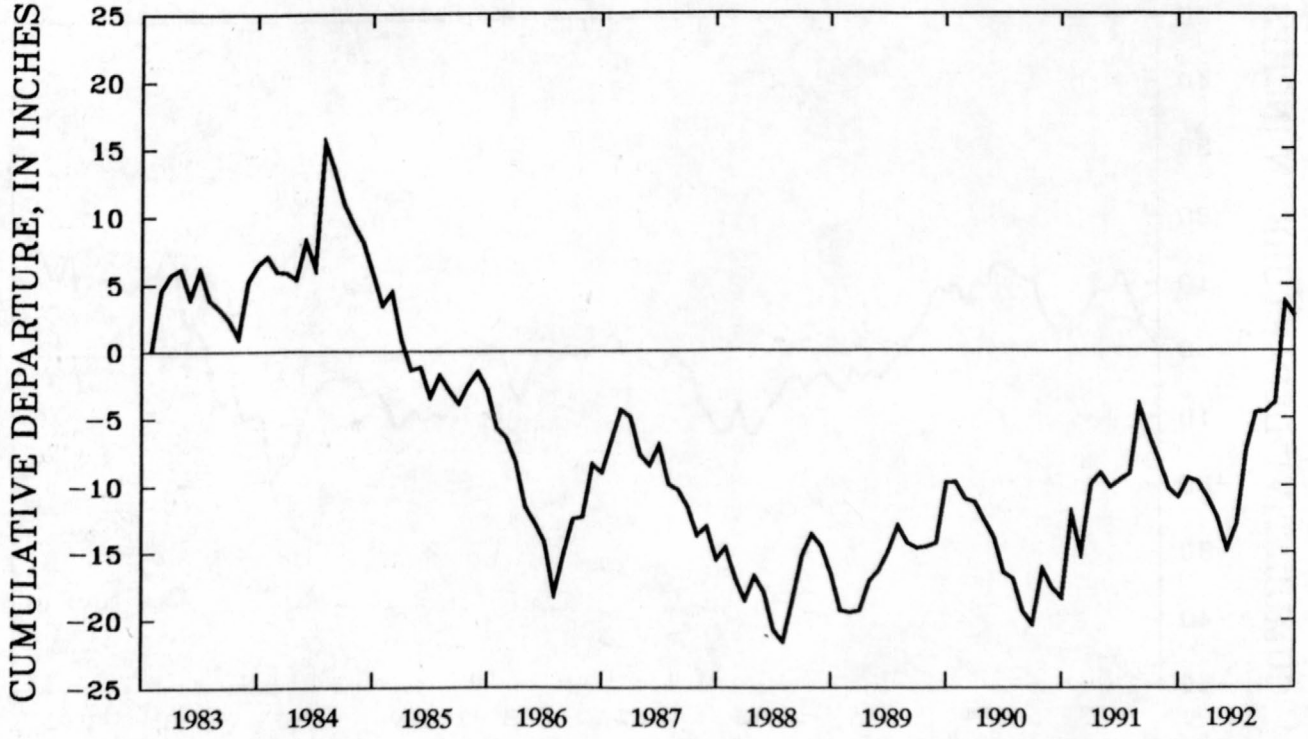
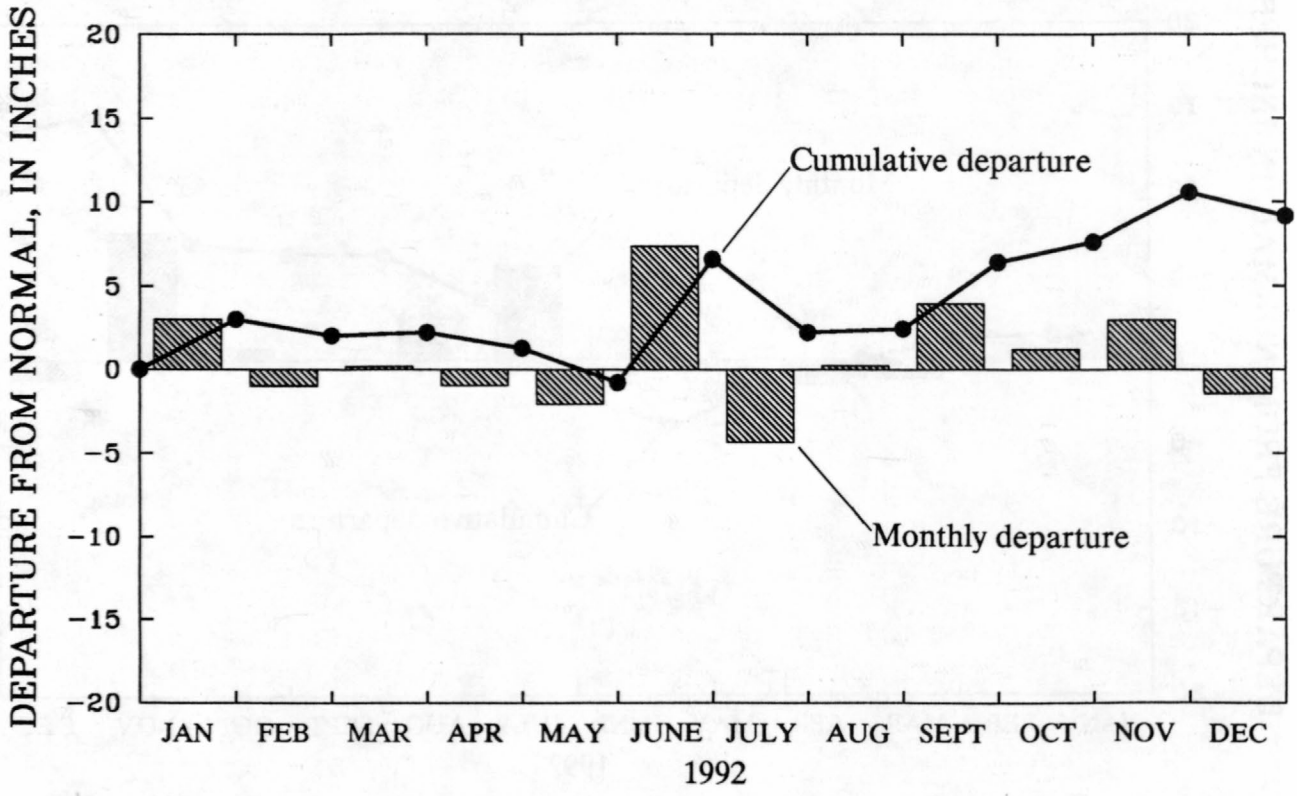


Figure 10.--Precipitation departure from normal for Macon airport, Bibb County.



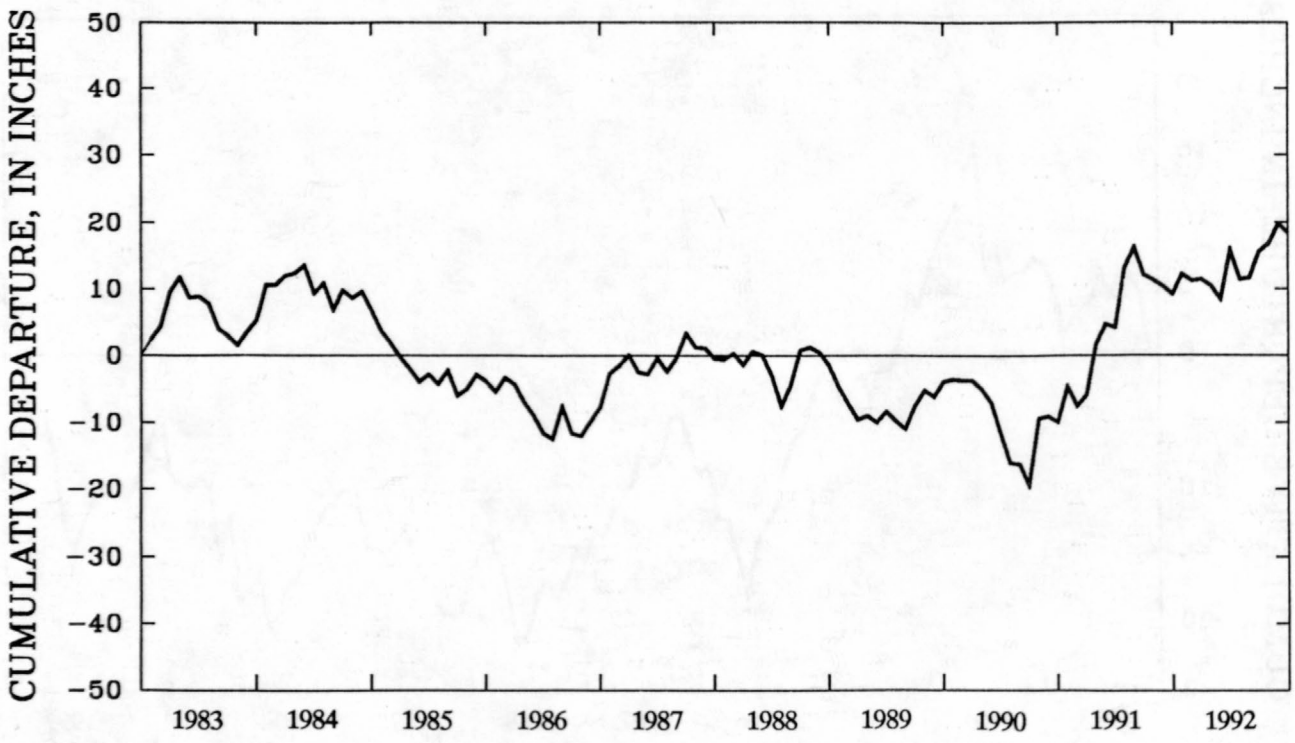


Figure 11.--Precipitation departure from normal for Savannah airport, Chatham County.

GROUND-WATER RESOURCES

Contrasting geologic features and landforms of the physiographic provinces of Georgia (table 2, fig. 12) result in substantial differences in ground-water conditions from one part of the State to another. These features that make up the framework of the aquifers affect the quantity and quality of the ground water throughout the State.

Surficial aquifers are present in each of the physiographic provinces. In the Piedmont, Blue Ridge, and Valley and Ridge Provinces (fig. 12), the surficial aquifers consist of soil, saprolite, stream alluvium, colluvium, and other surficial deposits. In the Coastal Plain Province, the surficial aquifers consist of intermixed layers of sand, clay, and limestone. The surficial aquifers usually are under water-table (unconfined) conditions and are used for domestic and livestock supplies. These aquifers can be semiconfined locally in the coastal area.

In the Piedmont and Blue Ridge Provinces, ground water is transmitted through secondary openings along fractures, foliation, joints, contacts, or other features in the crystalline bedrock. Rocks in these provinces are complex and consist of structurally deformed metamorphic and igneous rocks. In the Valley and Ridge Province, ground water is transmitted through both primary and secondary openings in folded and faulted sedimentary and meta-sedimentary rocks.

The most productive aquifers in Georgia are in the Coastal Plain Province in the southern part of the State. The Coastal Plain is underlain by alternating layers of sand, clay, and limestone that dip and thicken to the southeast. In the Coastal Plain, aquifers generally are confined, except near their northern limits where they crop out or are near land surface. The aquifers of the Coastal Plain include surficial aquifers, the upper Brunswick aquifer, the lower Brunswick aquifer, the Floridan aquifer system, the Claiborne aquifer, the Clayton aquifer, and the Cretaceous aquifers and aquifer systems.

Table 2.--*Aquifer and well characteristics in Georgia*

[Modified from Clarke and Pierce (1984) and Peck and others (1992); ft, feet; gal/min, gallons per minute]

Aquifer name and description	Well characteristics: Depth (ft) Common range	Well characteristics: Yield (gal/min) Common range	Well characteristics: Yield (gal/min) May exceed	Remarks
Surficial aquifers: Unconsolidated sediments. Generally unconfined.	11-72	2-25	25	Primary source of water for domestic and livestock supply in rural areas. Supplemental source of water in coastal Georgia.
Upper and Lower Brunswick aquifers: Phosphatic and dolomitic quartz sand. Generally confined.	85-390	10-30	180	Not a major source of water in coastal Georgia, but considered a supplemental water supply to the Upper Floridan aquifer. Most wells are multi-aquifer, tapping the upper and lower Brunswick aquifers and the Upper Floridan aquifer. The lower Brunswick aquifer currently is not monitored (see Clarke and others, 1990, p. 26-28).
Floridan aquifer system: Limestone, dolomite, and calcareous sand. Generally confined.	40-900	1,000-5,000	11,000	Supplies 50 percent of ground water in Georgia. The aquifer system is divided into the Upper and Lower Floridan aquifers. In the Brunswick area, the Upper Floridan aquifer includes two freshwater-bearing zones, the upper water bearing zone and the lower water-bearing zone. The Lower Floridan aquifer is not considered a major aquifer. In the Brunswick area, southeastern Georgia, the Lower Floridan aquifer includes the Fernandina permeable zone (Krause and Randolph,1989).
Claiborne aquifer: Sand and sandy limestone. Generally confined	20-450	150-600	1,500	Major source of water in southwestern Georgia for irrigation, industrial, and municipal use.
Clayton aquifer: Limestone and sand. Generally confined	40-800	250-600	2,150	Major source of water in southwestern Georgia for irrigation, industrial, and municipal use.
Cretaceous aquifers and aquifer systems: Sand and gravel. Generally confined	30-750	50-1,200	3,300	Major source of water in east-central Georgia. Supplies water for kaolin mining and processing. Includes the Providence aquifer in southwestern Georgia, and the Dublin, Midville, and Dublin-Midville aquifer systems in east-central Georgia.
Paleozoic rock aquifers: Sandstone, limestone, and dolostone.	15-2,100	1-50	3,500	Not laterally extensive. Limestone and dolostone aquifers are most productive. Storage is in regolith, primary openings, and secondary fractures and solution openings in rock. Springs in limestone and dolostone aquifers discharge at rates of as much as 5,000 gal/min. Sinkholes may form in areas of intensive pumping.
Crystalline-rock aquifers: Granite, gneiss, schist, and quartzite	40-600	1-25	500	Not laterally extensive. Storage is in regolith and fractures in rock. Hydrogeology of crystalline rock aquifers is not well understood.

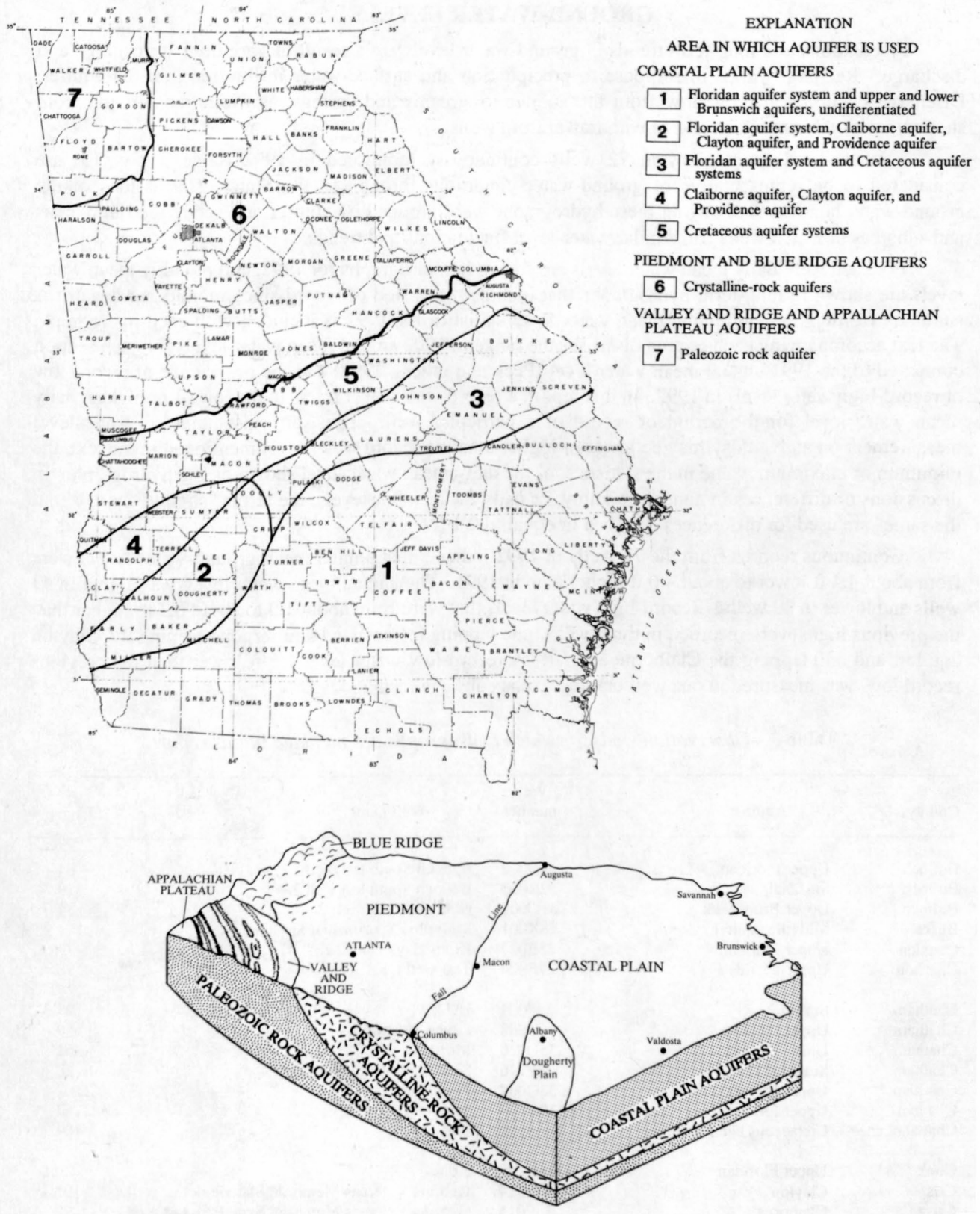


Figure 12.--Areas of utilization of major aquifers and block diagram showing major aquifers and physiographic provinces of Georgia. [Modified from Peck and others, 1992]

GROUND-WATER LEVELS

Fluctuations and long-term trends in ground-water levels are a result of variations in recharge and discharge. Recharge varies in response to precipitation and surface-water infiltration into the aquifer. Discharge occurs as natural flow from the aquifer to streams and springs, as evapotranspiration from shallow water-table aquifers, and as withdrawal from wells.

Water-level fluctuations in 72 wells continuously monitored in 1992 (table 3, fig. 13) are considered to be representative of ground-water conditions throughout the State. Discussions of the ground-water conditions shown in these hydrographs were grouped by aquifer and subdivided into areas and subareas in which wells had similar water-level fluctuations and trends.

For each well, daily mean water levels are shown in hydrographs for 1992, and monthly mean water levels are shown in long-term hydrographs that include the period of record since monitoring began. A summary of monthly and annual mean water-level statistics for 1992 is included with each hydrograph. The text accompanying each section discusses the range in 1992 annual mean water levels for each section compared to the 1991 annual mean water level (Peck and others, 1992) and the occurrence of record-low or record-high water levels in 1992. In this report, a record water level refers to the lowest or highest daily mean water level for the period of record of a particular well. Thus, any instantaneous water-level measurement on a given day may be lower or higher than the record water level mentioned in the text, the minimum or maximum value in the statistics, or the daily mean water level shown on the hydrograph. In discussions of differences in annual, monthly, or daily mean water levels, the terms "slightly" and "about the same" are used for differences less than or equal to 0.1 ft.

Continuous records from the 72 wells in 1992 indicate that annual mean ground-water levels were from about 4.4 ft lower to about 4.6 ft higher than in 1991. The annual mean water level was higher in 43 wells and lower in 29 wells. Record-high water levels that were from about 1.3 to about 6.3 ft higher than the previous highs were recorded in three wells, one tapping the surficial aquifer, one tapping the Clayton aquifer, and one tapping the Claiborne aquifer. A record-low water level 1.5 ft lower than the previous record low, was measured in one well tapping Cretaceous age formations.

Table 3.--*Observation wells for which hydrographs are included in this report*

County	Aquifer	Well number	Well name	Page
Bulloch	Upper Floridan	32R002	Bulloch South test well 1	64
Bulloch	Surficial	32R003	Bulloch South test well 2	29
Bulloch	Upper Brunswick	31U009	Hopeulikit test well 2	34
Burke	Midville aquifer system	28X001	Midville Experimental Station	111
Camden	Upper Floridan	33E027	Kings Bay	77
Charlton	Upper Floridan	27E004	Test well OK9	78
Chatham	Surficial	35P094	UGA	27
Chatham	Upper Floridan	36Q008	Layne-Atlantic	60
Chatham	Upper Floridan	36Q020	Morrison	61
Chatham	Surficial	37P116	Skidaway Institute test well 4	28
Chatham	Upper Floridan	38Q002	Pilot House	62
Chatham	Upper Floridan	39Q003	Test well 7, point 3	63
Chattahoochee	Cretaceous age formations	06S001	Fort Benning	104
Cook	Upper Floridan	18H016	Adel	50
Crisp	Clayton	14P014	Georgia Veterans Memorial State Park test well 1	101
Crisp	Claiborne	14P015	Georgia Veterans Memorial State Park test well 2	92
Decatur	Upper Floridan	09F520	Bolton	40
DeKalb	Crystalline rock	11FF04	GAR, test well 5	122
Dougherty	Providence	12L021	Test well 10	106
Dougherty	Claiborne	11K002	Test well 11	87

Table 3.--*Observation wells for which hydrographs are included in this report--Continued*

County	Aquifer	Well number	Well name	Page
Dougherty	Clayton	11K005	Test well 12	100
Dougherty	Clayton	11L002	Albany Nursery	98
Dougherty	Clayton	13L002	Turner City	99
Dougherty	Claiborne	11L001	Test well 4	88
Dougherty	Claiborne	12L019	Test well 5	89
Dougherty	Claiborne	13L011	Test well 2	90
Dougherty	Upper Floridan	13L003	Albany-Dougherty County	45
Dougherty	Upper Floridan	13L012	Test well 3	43
Early	Clayton	06K009	Kolomoki State Park test well 1	95
Early	Claiborne	06K010	Kolomoki State Park test well 2	85
Fulton	Crystalline rock	10DD02	Fort McPherson	120
Glynn	Upper Floridan	33H127	Test well 3	72
Glynn	Upper Floridan	33H133	Test well 6	74
Glynn	Lower Floridan	33J044	Test well 27	82
Glynn	Upper Floridan	34H371	Test well 11	75
Glynn	Lower Floridan	34H391	Test well 16	81
Glynn	Upper Floridan	34H403	Test well 24	73
Glynn	Upper Brunswick	34H437	Coffin Park test well 2	36
Glynn	Surficial	34H438	Coffin Park test well 3	30
Greene	Crystalline rock	21BB04	Veazey	123
Laurens	Upper Floridan	21T001	Hogan	54
Liberty	Upper Floridan	34M054	Test well 2	65
Long	Upper Floridan	33M004	Test well 3	70
Lowndes	Upper Floridan	19E009	Valdosta	51
Lowndes	Upper Floridan	19F039	Valdosta 8	52
Madison	Crystalline rock	19HH12	Meadowlake Estates	121
McIntosh	Upper Floridan	35M013	Harris Neck	66
Miller	Surficial	07H003	DP-3	25
Miller	Upper Floridan	08G001	Viercocken	41
Mitchell	Upper Floridan	10G313	Meinders	44
Mitchell	Upper Floridan	13J004	Wright	46
Montgomery	Upper Floridan	25Q001	Uvalda School	55
Pulaski	Midville aquifer system	18T001	Arrowhead test well 1	110
Randolph	Clayton	07N001	Cuthbert	96
Randolph	Claiborne	09M009	Martin test well 1	86
Richmond	Dublin-Midville aquifer system	30AA04	McBean 2	113
Seminole	Upper Floridan	06F001	Roddenberry Farms test well 1	42
Spalding	Surficial	11AA01	UGA Experiment Station	23
Terrell	Clayton	09N001	Graves School	97
Tift	Upper Floridan	18K049	Test well 1	49
Toombs	Upper Floridan	26R001	Vidalia 2	56
Twiggs	Dublin aquifer system	18U001	Test well 3	108
Walker	Paleozoic rock	03PP01	Chickamauga Battlefield	117
Washington	Dublin-Midville aquifer system	23X027	Sandersville 8	114
Wayne	Upper Floridan	30L003	Johnson	68
Wayne	Upper Floridan	32L015	Gardi test well 1	69
Wayne	Upper Brunswick	32L016	Gardi test well 2	35
Wayne	Surficial	32L017	Gardi test well 3	31
White	Crystalline rock	16MM03	Unicoi State Park No. 4	124
Worth	Claiborne	13M005	DP-7	91
Worth	Surficial	13M007	DP-9	24
Worth	Upper Floridan	15L020	Sylvester	47

Figure 13.--Locations of observation wells for which hydrographs are included in this report.

Surficial Aquifers

Water-level fluctuations in surficial aquifers were monitored in 14 wells in 1992, eight of which are summarized in this report (fig. 14). Water-level fluctuations in surficial aquifers mainly were caused by variations in precipitation, evapotranspiration, and natural drainage. Water levels in surficial aquifers generally rise rapidly during wet periods and decline slowly during dry periods. Prolonged droughts may cause water levels to decline below pump intakes in shallow wells, particularly those located on hilltops and steep slopes, resulting in temporary well failures. Usually, well yields are restored with an increase in precipitation. In some areas, the surficial aquifer is semiconfined and may be influenced locally by pumping.

Northern area

Water-levels in the surficial aquifers in the northern part of Georgia were monitored in two wells in 1992. A summary of the data for one of these wells, 11AA01, at Griffin, Spalding County, is shown in figure 15. The annual mean water level in well 11AA01 was about 0.7 ft higher in 1992 than in 1991.

Southwestern area

Water levels were monitored in five wells that tap the surficial aquifer in the southwestern area in 1992. Data for two of the wells are shown in figures 14, 16, and 17. The annual mean water level in these wells ranged from about 0.3 to 1.3 ft lower in 1992 than in 1991.

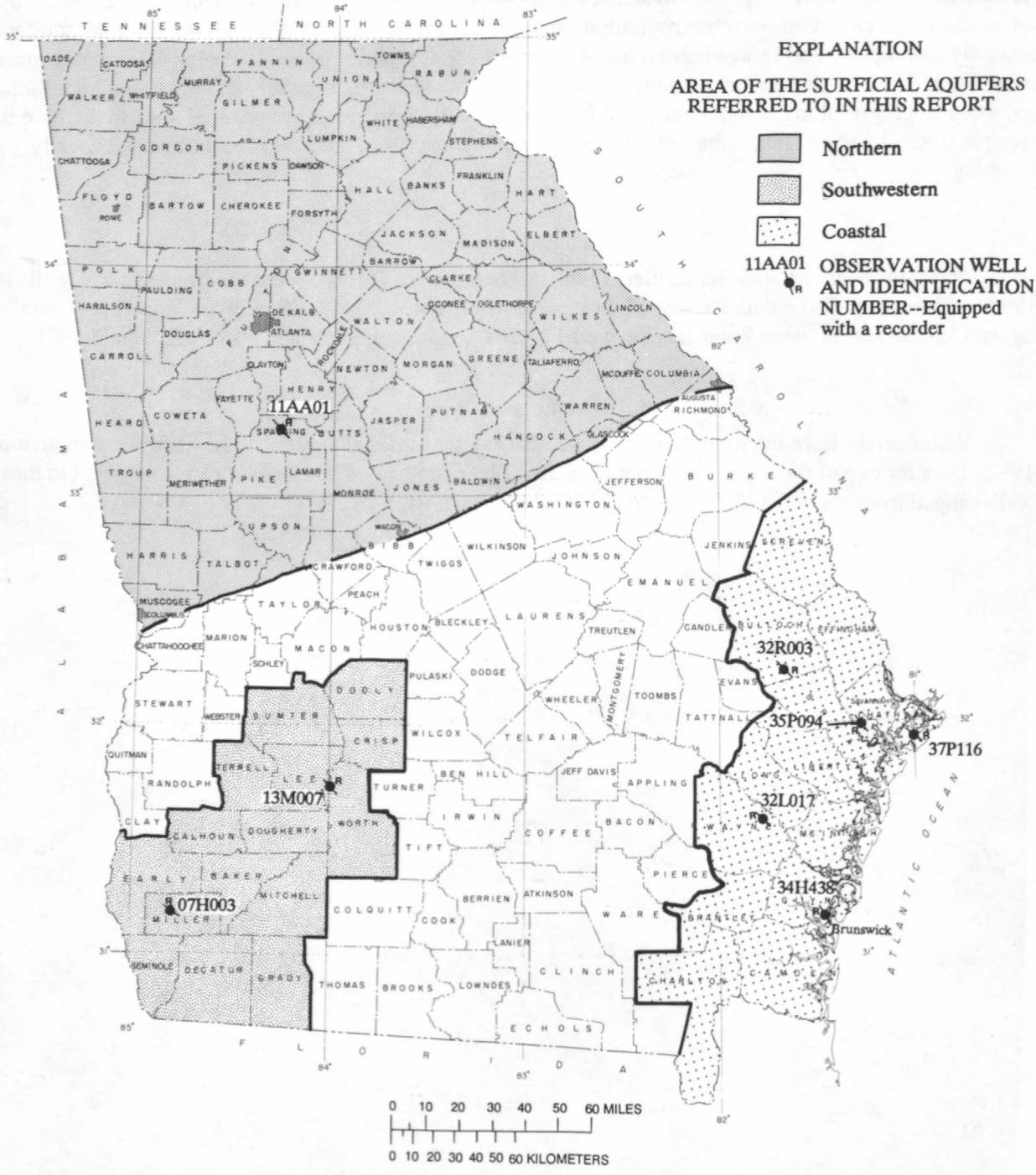
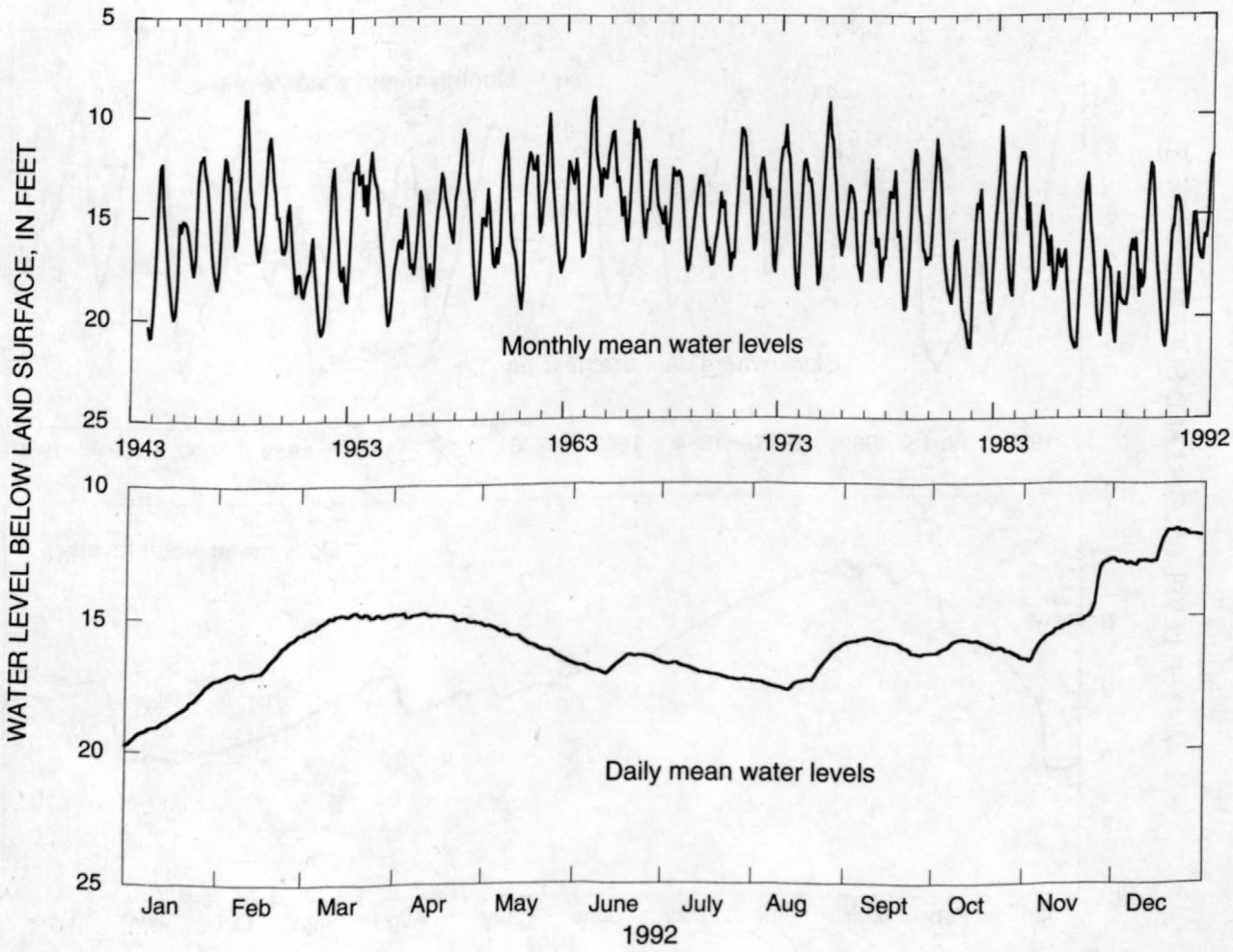


Figure 14.--Locations of observation wells completed in the surficial aquifers.

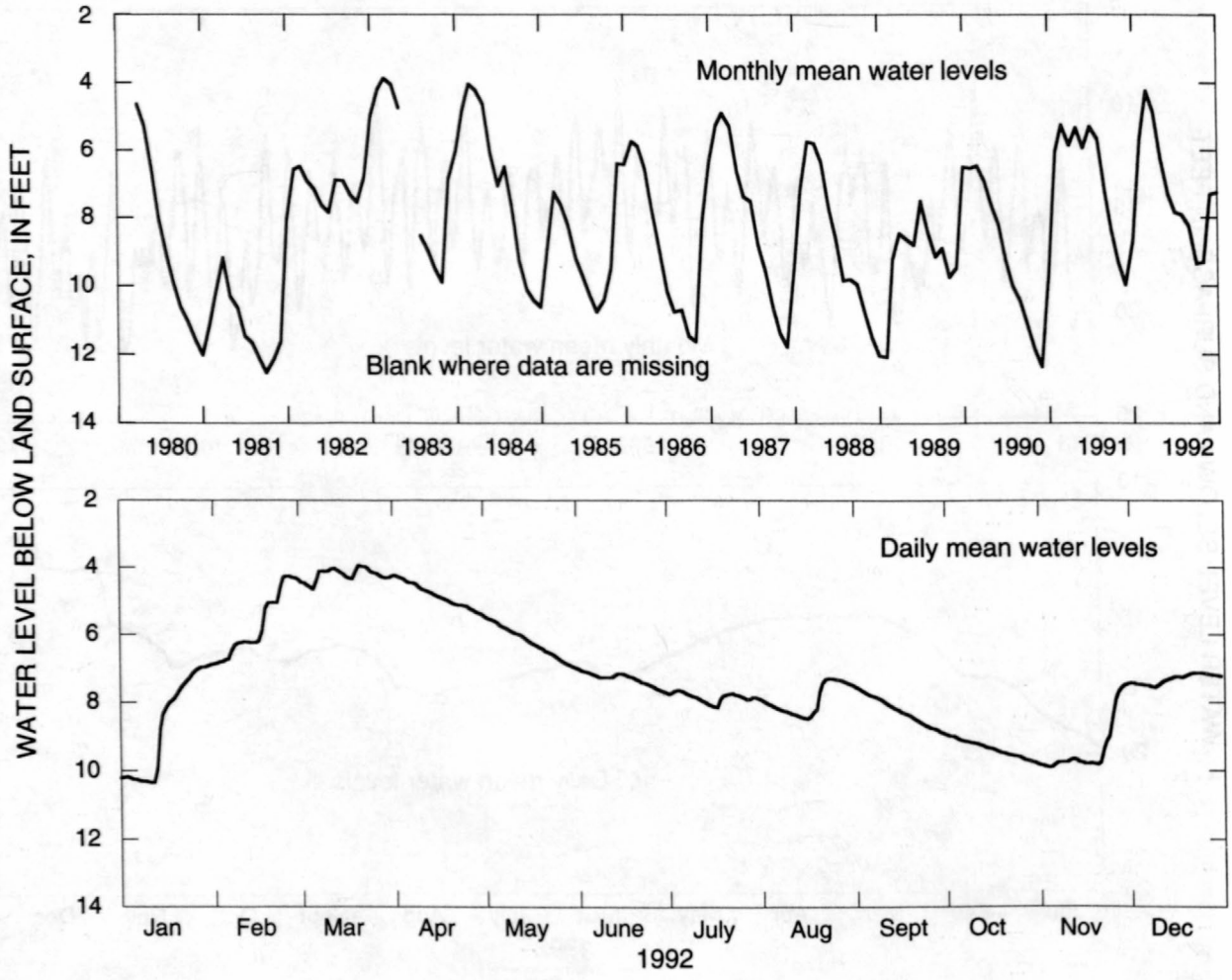
331507084171801 Local number, 11AA01.
LOCATION.--Lat 33°15'54", long 84°16'56", Hydrologic Unit 03070103.
Owner: University of Georgia.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (residuum).
WELL CHARACTERISTICS.--Dug unused supply well, size 4 x 4 ft, depth 30 ft, cased to 30 ft, open end.
DATUM.--Altitude of land-surface datum is 950 ft.
REMARKS.--None.
PERIOD OF RECORD.--October 1943 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.26 ft below land-surface datum, March 19, 1948; lowest, 21.82 ft below land-surface datum, November 18-19, 1986.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	18.65	16.66	15.00	14.95	15.92	16.73	17.06	17.20	16.04	16.12	15.18	12.46
LOW	19.73	17.25	15.47	15.18	16.70	17.13	17.36	17.72	16.39	16.53	16.64	13.08
HIGH	17.30	15.56	14.73	14.79	15.28	16.42	16.71	16.07	15.79	15.84	12.90	11.74
CAL YR	1992		MEAN	16.00		HIGH	11.74		LOW	19.78		

Figure 15.--Water level in observation well 11AA01, Spalding County.

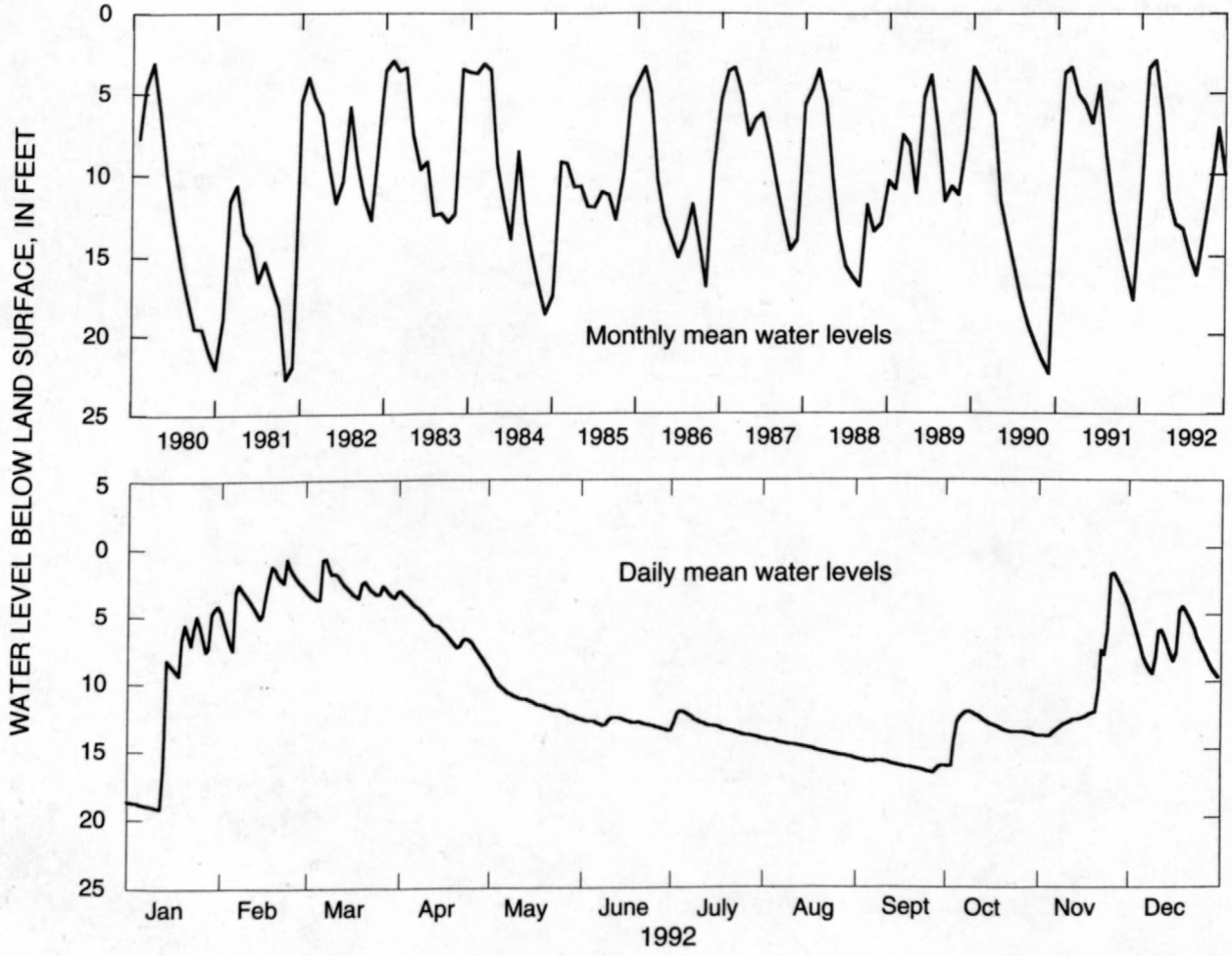
314330084005403 Local number, 13M007.
LOCATION.--Lat 31°43'30", long 84°00'54", Hydrologic Unit 03130006.
Owner: U.S. Geological Survey, test well DP-9.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (residuum).
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 25 ft, cased to 10 ft, open hole.
DATUM.--Altitude of land-surface datum is 230 ft.
REMARKS.--None.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.48 ft below land-surface datum, March 7, 1984; lowest, 13.03 ft below land-surface datum, October 22, 1981.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	8.68	5.71	4.26	4.87	6.24	7.32	7.85	7.93	8.24	9.36	9.32	7.32
LOW	10.36	6.86	4.68	5.43	7.00	7.73	8.15	8.49	8.90	9.80	9.90	7.58
HIGH	6.90	4.29	3.97	4.31	5.55	7.08	7.65	7.31	7.61	8.97	7.46	7.14
CAL YR	1992		MEAN	7.27		HIGH	3.97		LOW	10.36		

Figure 16.--Water level in observation well 13M007, Worth County.

311009084495503 Local number, 07H003.
LOCATION.--Lat 31°10'08", long 84°49'54", Hydrologic Unit 03130010.
Owner: U.S. Geological Survey, test well DP-3.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (residuum).
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 40 ft, perforated casing 30 to 40 ft.
DATUM.--Altitude of land-surface datum is 180 ft.
REMARKS.--Well pumped and redeveloped August 11, 1989.
PERIOD OF RECORD.--February 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.25 ft below land-surface datum, January 30, 1991; lowest, 24.19 ft below land-surface datum, November 10, 1981.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	11.77	3.45	2.93	6.07	11.42	13.04	13.32	14.92	16.16	13.54	10.41	7.12
LOW	19.19	7.53	3.86	8.77	12.70	13.62	14.18	15.62	16.72	16.23	14.07	9.66
HIGH	4.20	0.83	0.79	3.50	9.51	12.64	12.21	14.28	15.73	12.25	1.92	4.42

CAL YR	1992		MEAN	10.37		HIGH	0.79		LOW	19.19		

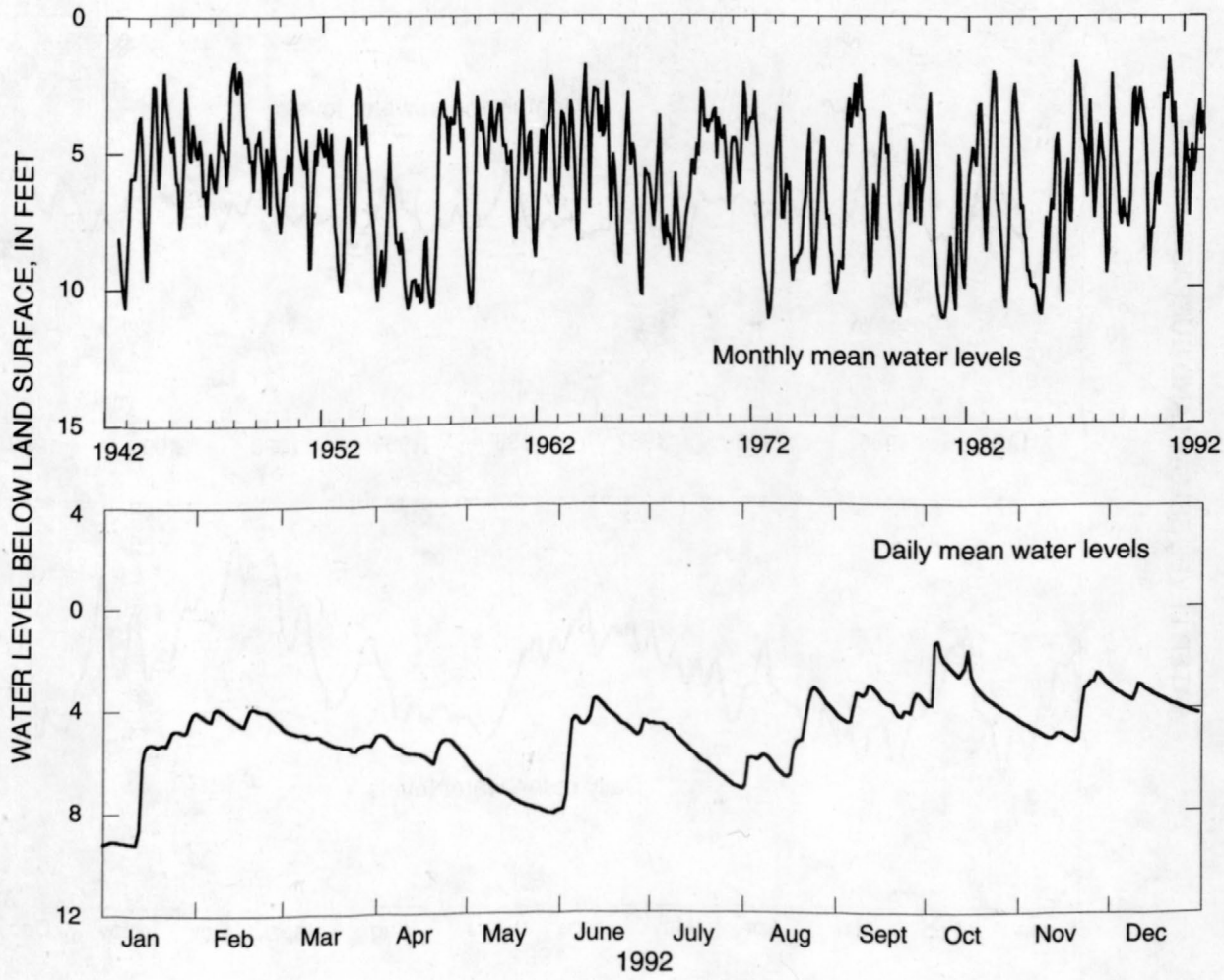
Figure 17.--Water level in observation well 07H003, Miller County.

Coastal area

Water levels in surficial aquifers in the coastal area were monitored in six wells in 1992. Data for five of the wells are shown in figures 14 and 18-22. Water levels in surficial aquifers in the northern part of the coastal area are affected by variations in precipitation, evapotranspiration, and natural drainage (Clarke and others, 1990, p. 22). The annual mean water level in well 35P094 was about 0.5 ft lower in 1992 than in 1991. In 1992, the annual mean water level in wells 37P116 (fig. 19) and 32R003 (fig. 20) ranged from about the same to 0.4 ft higher than in 1991, respectively.

The water-level in the surficial aquifer in the Brunswick area is influenced by nearby pumping, precipitation, and tidal fluctuations (Clarke and others, 1990, p. 24). The annual mean water level in well 34H438 (fig. 21) in Glynn County was about 1.4 ft higher in 1992 than in 1991. A record-high daily mean water level was recorded in this well in November that was about 1.3 ft higher than the previous record high. In 1992, the annual mean water level in well 32L017 (fig. 22) in the Jesup, Wayne County, area was about 0.9 ft higher than in 1991.

315950081161201 Local number, 35P094.
LOCATION.--Lat 31°59'50", long 81°16'12", Hydrologic Unit 03060204.
Owner: University of Georgia, formerly U.S. Department of Agriculture.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (sand of Holocene and Pleistocene age).
WELL CHARACTERISTICS.--Bored observation well, diameter 30 in., depth 15 ft, cased to 15 ft, open end.
DATUM.--Altitude of land-surface datum is 18.67 ft.
REMARKS.--Responds quickly to precipitation.
PERIOD OF RECORD.--August 1942 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.05 ft below land-surface datum, September 26, 1953; lowest, 12.28 ft below land-surface datum, November 30, 1972.

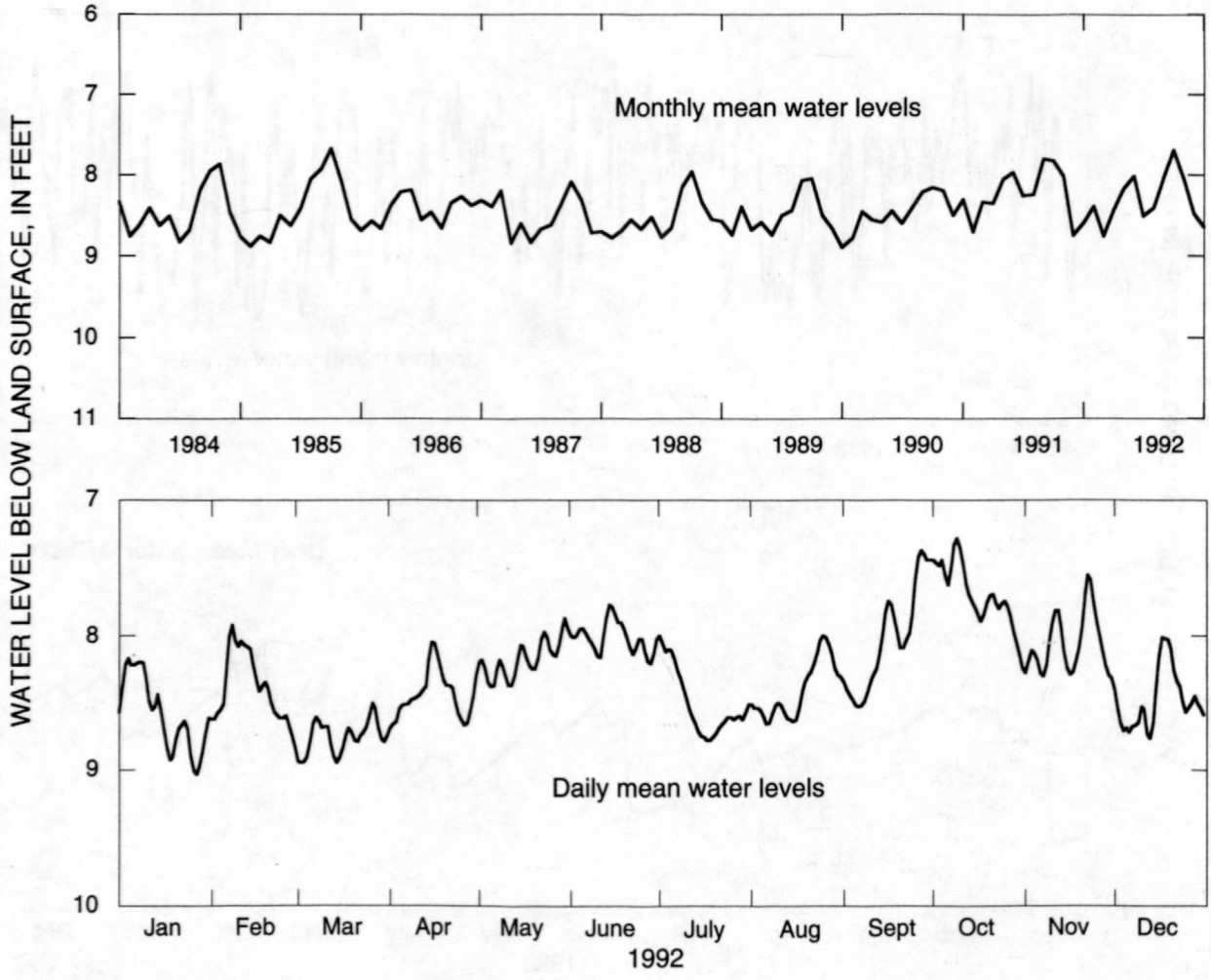


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	6.76	4.19	5.21	5.53	7.34	4.80	5.77	5.35	3.86	3.16	4.38	3.61
LOW	9.21	4.60	5.63	6.13	8.11	7.94	7.12	7.01	4.58	4.39	5.29	4.22
HIGH	4.09	3.89	4.76	4.99	6.16	3.63	4.60	3.20	3.12	1.42	2.63	3.06

CAL YR 1992 MEAN 5.01 HIGH 1.42 LOW 9.21

Figure 18.--Water level in observation well 35P094, Chatham County.

315906081011204 Local number, 37P116.
LOCATION.--Lat 31°59'06", long 81°01'12", Hydrologic Unit 03060204.
Owner: Georgia Geologic Survey, Skidaway Institute test well 4.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (sand of Miocene and post Miocene age).
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 85 ft, cased to 70 ft, screen to 85 ft.
DATUM.--Altitude of land-surface datum is 10 ft.
REMARKS.--None.
PERIOD OF RECORD.--January 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.19 ft below land-surface datum, October 31, 1985; lowest, 9.21 ft below land-surface datum, February 17, 1991.

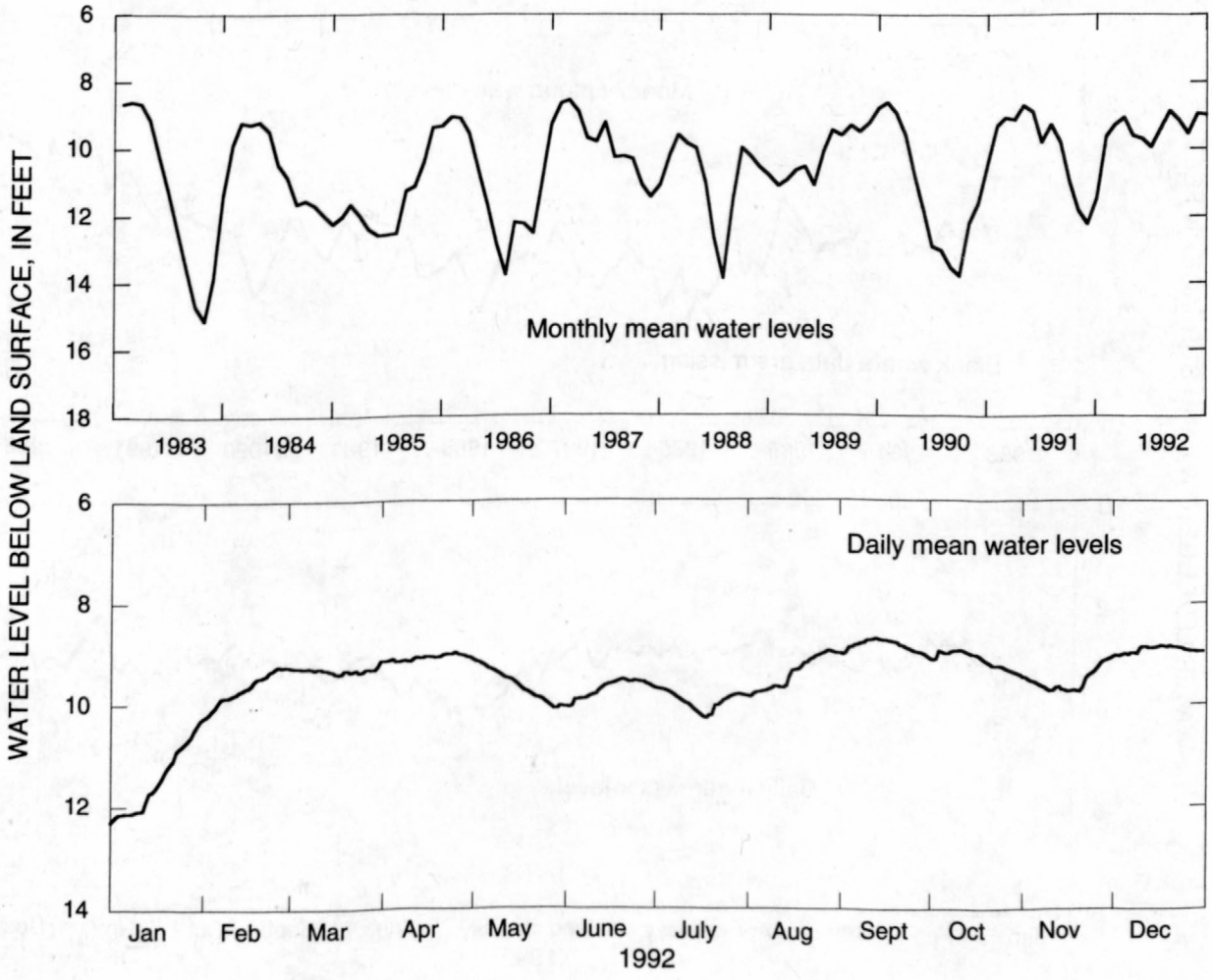


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	8.59	8.39	8.75	8.44	8.17	8.01	8.51	8.41	8.04	7.70	8.06	8.48
LOW	9.04	8.83	8.95	8.67	8.38	8.21	8.78	8.66	8.53	8.24	8.32	8.77
HIGH	8.17	7.92	8.50	8.05	7.87	7.77	8.06	8.00	7.37	7.28	7.55	8.01

CAL YR	1992		MEAN	8.30		HIGH	7.28		LOW	9.04		

Figure 19.--Water level in observation well 37P116, Chatham County.

321240081411502 Local number, 32R003.
LOCATION.--Lat 32°12'40", long 81°41'15", Hydrologic Unit 03060202.
Owner: Georgia Geologic Survey, Bulloch South test well 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (sand of Miocene and post Miocene age).
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 155 ft, cased to 134 ft, screen to 155 ft.
DATUM.--Altitude of land-surface datum is 120 ft.
REMARKS.--Well sounded August 1982. Water levels for periods of missing record, June 5-7, and September 12-14, were estimated.
PERIOD OF RECORD.--February 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.40 ft below land-surface datum, March 26, 1983; lowest, 15.27 ft below land-surface datum, November 14, 1983.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	11.50	9.67	9.33	9.10	9.64	9.73	9.96	9.44	8.88	9.15	9.57	8.95
LOW	12.25	10.22	9.41	9.18	10.10	10.07	10.29	9.89	9.08	9.45	9.77	9.07
HIGH	10.30	9.25	9.16	8.99	9.16	9.54	9.72	8.98	8.73	8.97	9.13	8.87

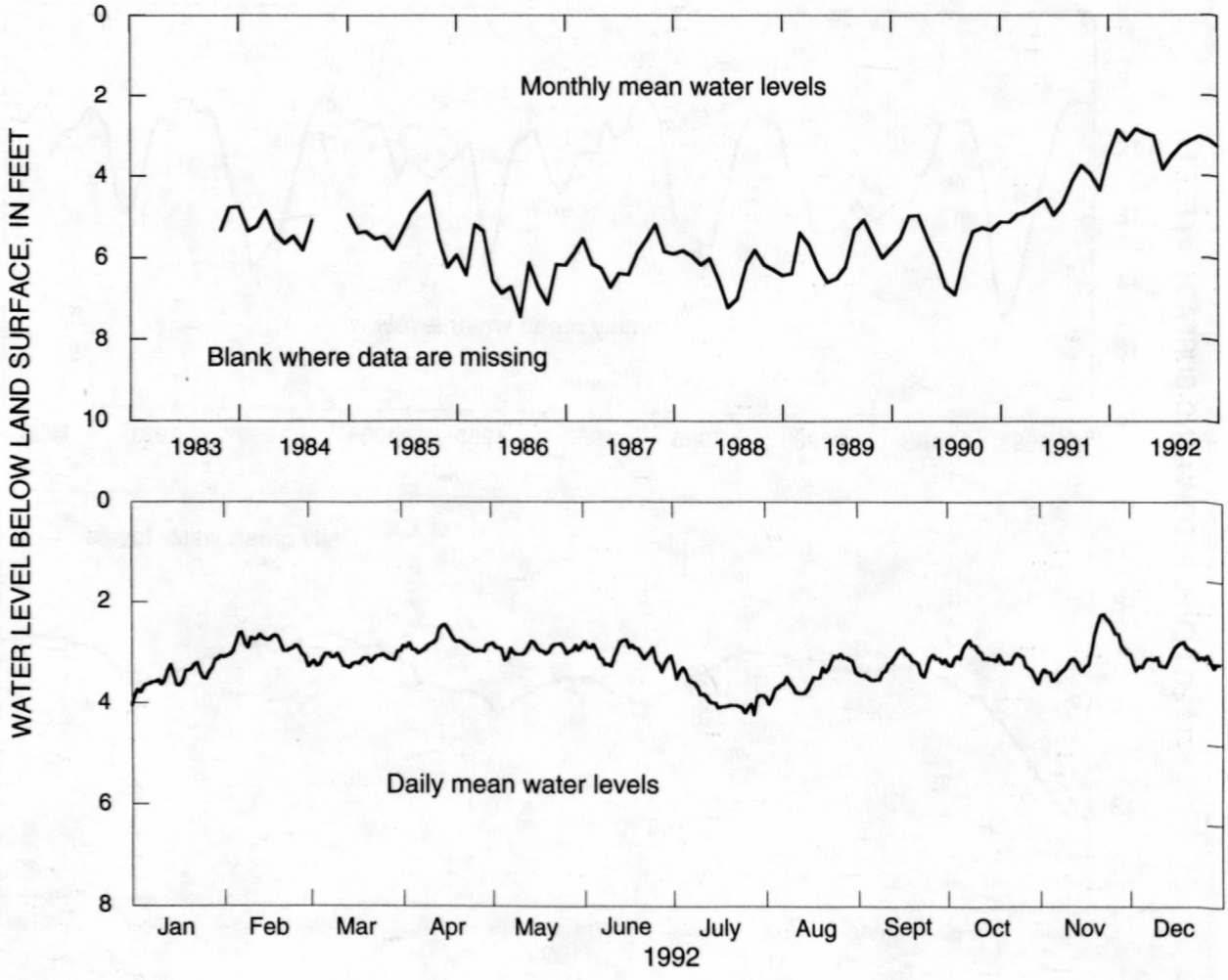
CAL YR 1992 MEAN 9.58 HIGH 8.73* LOW 12.30

[* Estimated value]

* may have been higher or lower during period of missing record

Figure 20.--Water level in observation well 32R003, Bulloch County.

310901081284403 Local number, 34H438.
LOCATION.--Lat 31°09'01", long 81°28'44", Hydrologic Unit 03070203.
Owner: Georgia Geologic Survey, Coffin Park test well 3.
INSTRUMENTATION.--Basic data recorder.
AQUIFER.--Surficial (sand of Miocene and post Miocene age).
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 202 ft, cased to 192 ft, screen to 202 ft.
DATUM.--Altitude of land-surface datum is 7 ft.
REMARKS.--Well pumped and sampled by Georgia Geologic Survey, January 21 and June 10, 1992. Water levels for period of missing record, July 3-27, were estimated.
PERIOD OF RECORD.--November 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.25 ft below land-surface datum, November 22, 1992; lowest, 8.13 ft below land-surface datum, July 12, 1990.



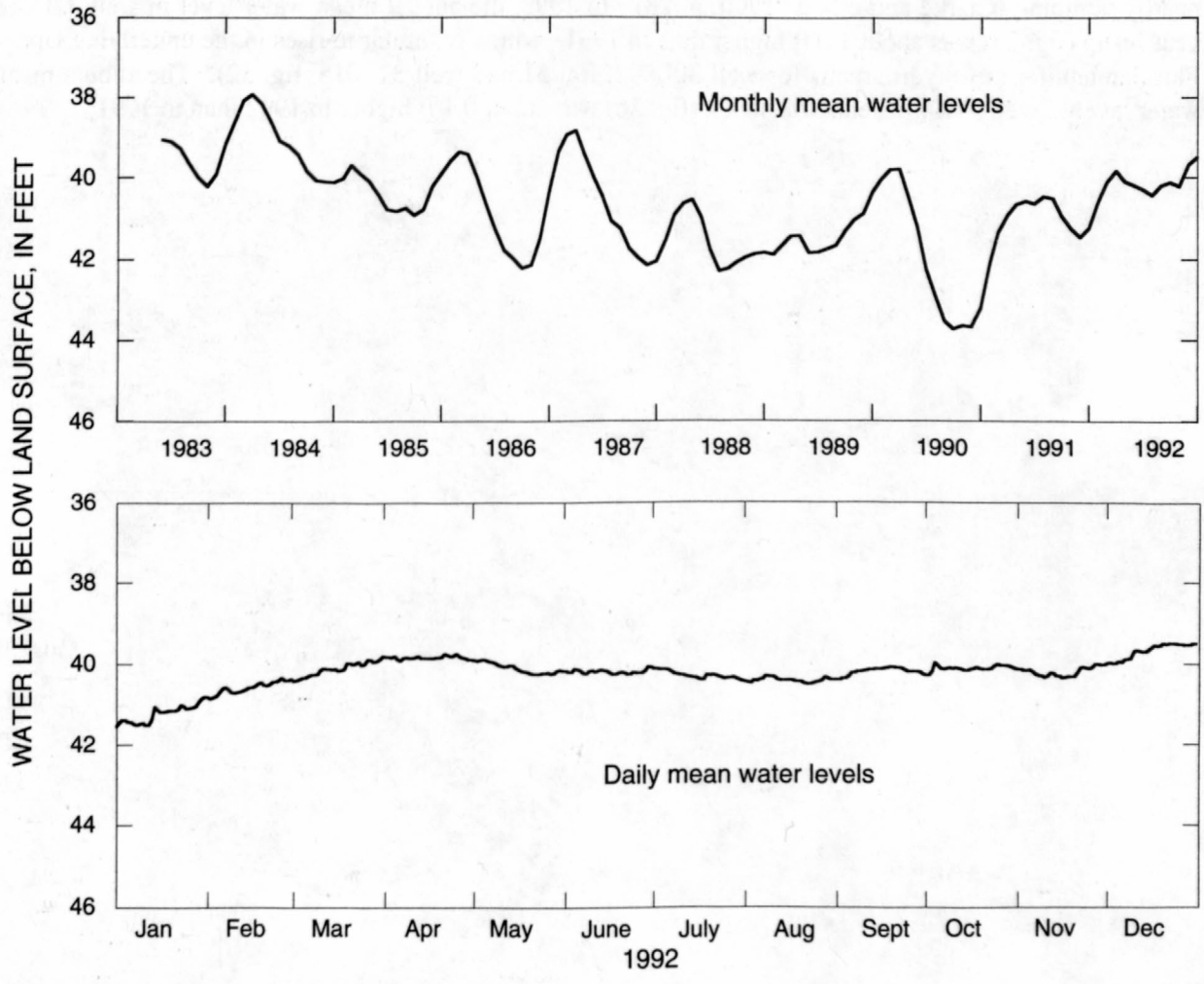
1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	3.49	2.86	3.14	2.84	2.95	3.03	3.85	3.50	3.26	3.13	3.02	3.11
LOW	3.87	3.27	3.30	3.02	3.16	3.38	4.23	4.02	3.55	3.61	3.56	3.36
HIGH	3.07	2.61	2.97	2.46	2.79	2.77	3.30	3.04	2.93	2.77	2.25	2.80

CAL YR	1992		MEAN	3.19		HIGH	2.25		LOW	4.23 *		

* may have been higher or lower during period of missing record

Figure 21.--Water level in observation well 34H438, Glynn County.

313253081433504 Local number, 32L017.
LOCATION.--Lat 31°32'52", long 81°43'36", Hydrologic Unit 03070106.
Owner: Georgia Geologic Survey, Gardi test well 3.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Surficial (sand of Miocene and post-Miocene age).
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 215 ft, cased to 200 ft, screen to 215 ft.
DATUM.--Altitude of land-surface datum is 74 ft.
REMARKS.--None.
PERIOD OF RECORD.--June 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 37.85 ft below land-surface datum, April 16, 1984; lowest, 43.91 ft below land-surface datum, October 8, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	41.23	40.58	40.12	39.84	40.10	40.20	40.29	40.43	40.21	40.12	40.21	39.68
LOW	41.51	40.86	40.41	39.93	40.25	40.27	40.44	40.51	40.40	40.30	40.36	40.01
HIGH	40.81	40.35	39.82	39.75	39.90	40.08	40.12	40.32	40.10	39.99	40.02	39.50

CAL YR	1992		MEAN	40.25		HIGH	39.50		LOW	41.54		

Figure 22.--Water level in observation well 32L017, Wayne County.

Upper Brunswick Aquifer

The water level in the upper Brunswick aquifer was monitored in three wells in 1992; data for these wells are summarized in figures 23-26. Near pumping centers of the Floridan aquifer system, the water level in the upper Brunswick aquifer responds to pumping from the Upper Floridan aquifer as a result of the hydraulic connection between the aquifers (Clarke and others, 1990, p. 28). Elsewhere, the water level mainly responds to seasonal variations in recharge and discharge.

The upper Brunswick aquifer in Bulloch County is under unconfined to semiconfined conditions and is influenced by both variations in recharge from precipitation and by pumping from the Upper Floridan aquifer (Clarke and others, 1990, p. 28). The annual mean water level in well 31U009 (fig. 24) was about 1.1 ft higher in 1992 than in 1991.

In the Wayne and Glynn County areas, the upper Brunswick aquifer is confined and responds to nearby pumping (Clarke and others, 1990, p. 28). In 1992, the annual mean water level in well 32L016 near Jesup (fig. 25) was about 1.0 ft higher than in 1991, which is similar to rises in the underlying Upper Floridan aquifer (see hydrographs for well 30L003, fig. 51 and well 32L015, fig. 52). The annual mean water level in well 34H437 near Brunswick (fig. 26) was about 0.1 ft higher in 1992 than in 1991.

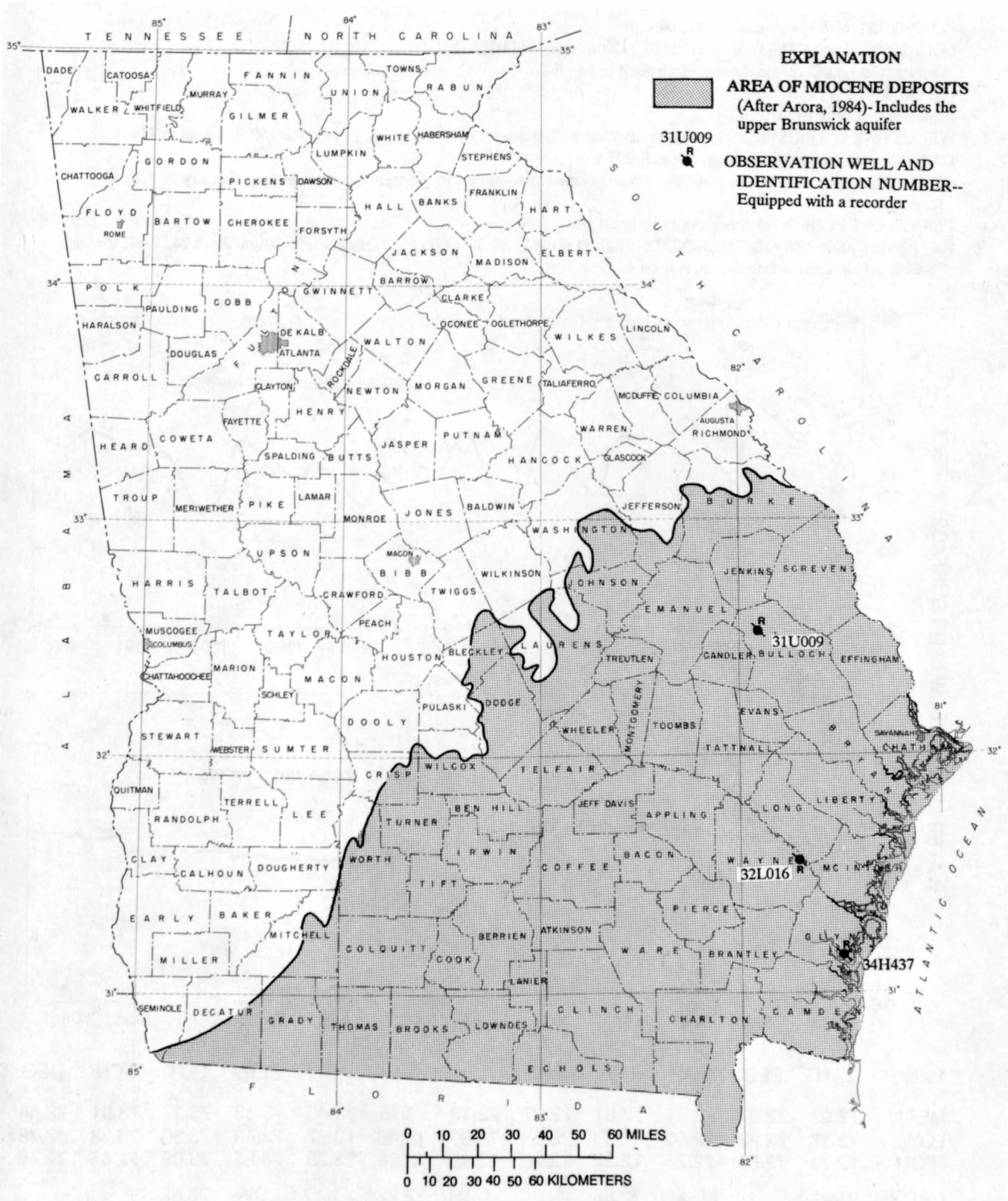
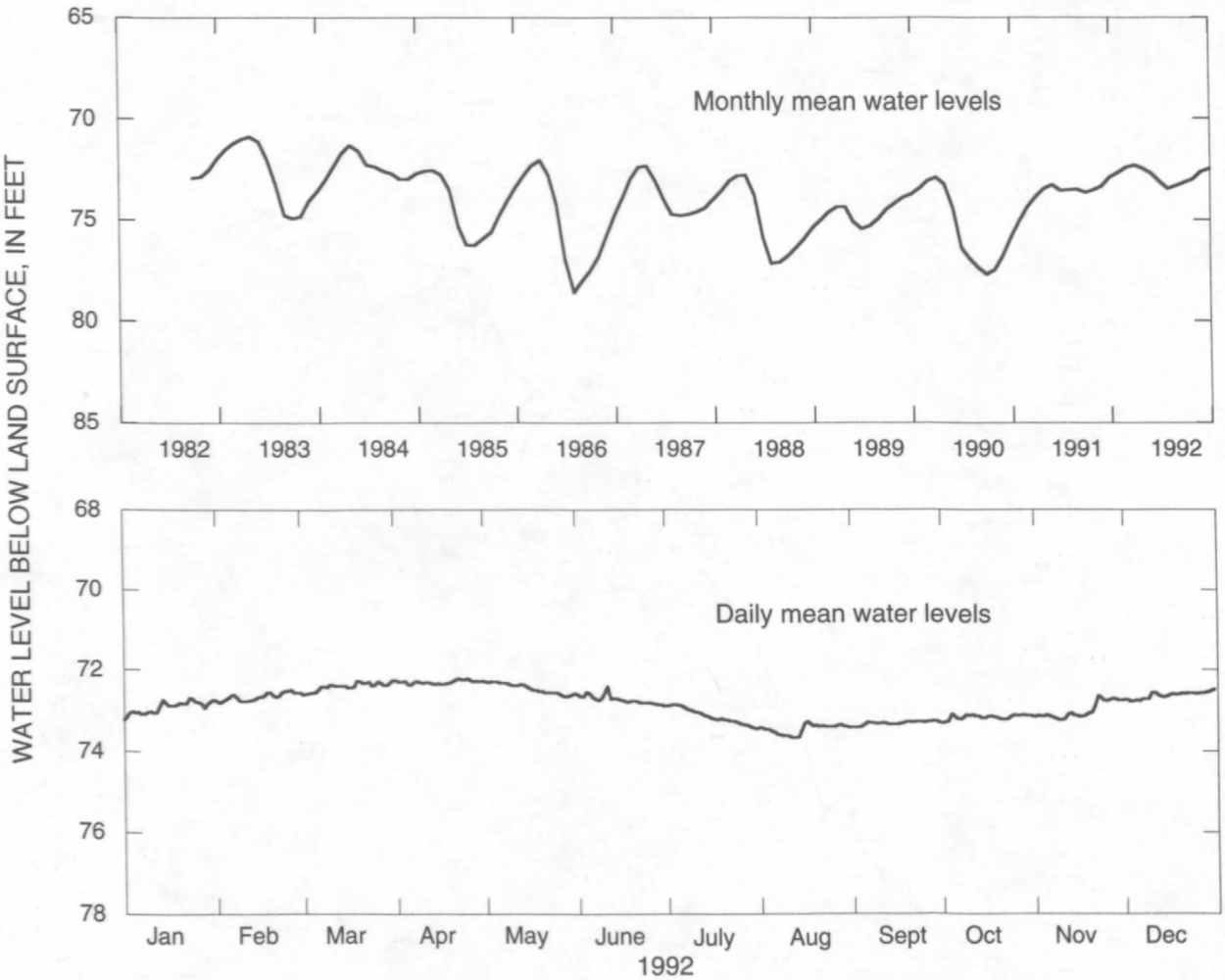


Figure 23.--Locations of observation wells completed in the upper Brunswick aquifer. [The extent of the Brunswick aquifer has not been mapped, but is within the area of Miocene deposits shown.]

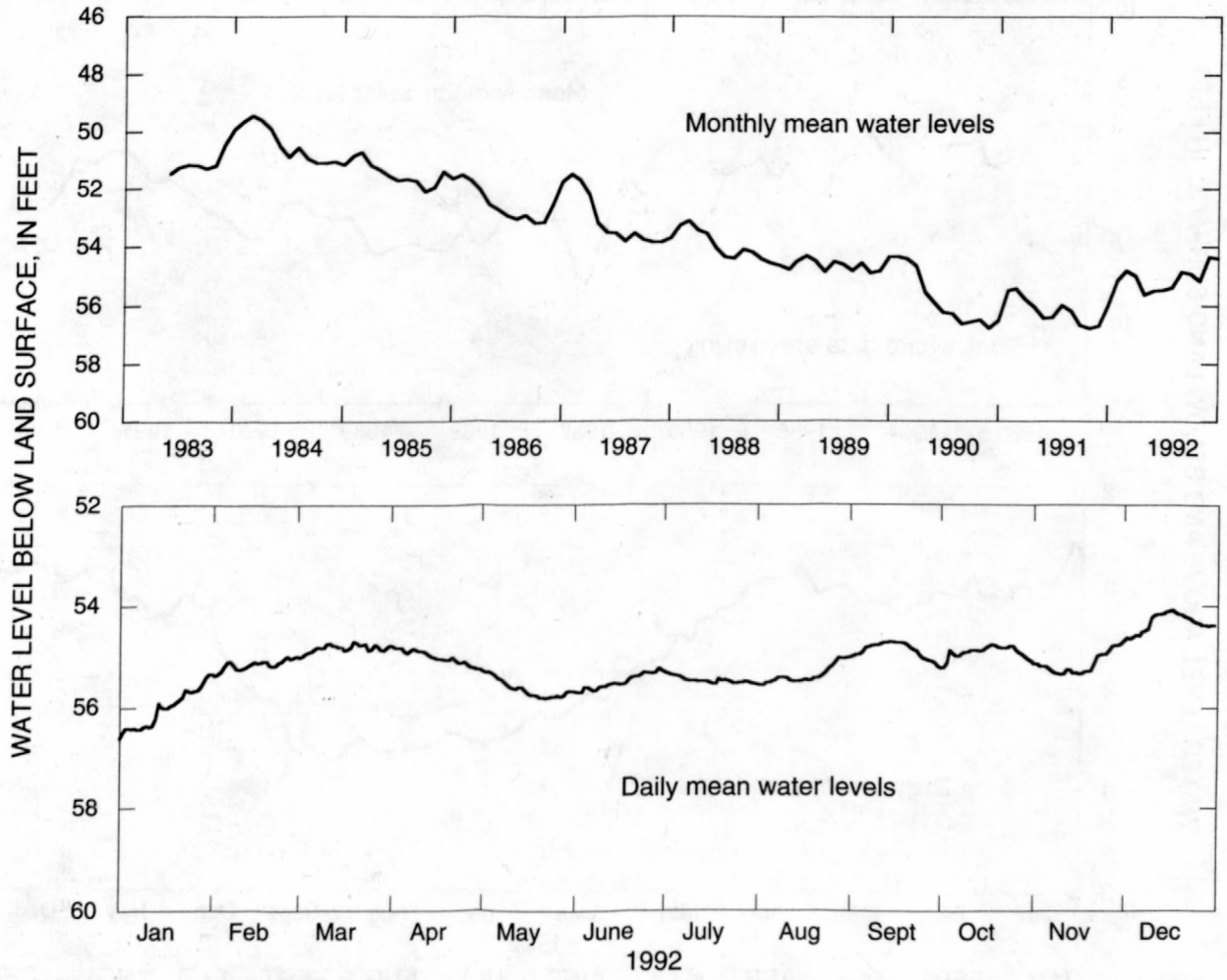
323123081511602 Local number, 31U009.
LOCATION.--Lat 32°31'23", long 81°51'16", Hydrologic Unit 03060202.
Owner: Georgia Geologic Survey, Hopeulikit test well 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Brunswick.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 210 ft, cased to 160 ft, screen to 210 ft.
DATUM.--Altitude of land-surface datum is 205 ft.
REMARKS.--Well sounded August 1982. Well pumped and sampled by Georgia Geologic Survey, January 28 and June 10, 1992.
PERIOD OF RECORD.--October 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 70.77 ft below land-surface datum, April 24, 1983; lowest, 78.87 ft below land-surface datum, August 4, 1986.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	72.93	72.67	72.41	72.31	72.47	72.73	73.15	73.47	73.32	73.17	73.01	72.64
LOW	73.17	72.83	72.60	72.38	72.66	72.89	73.46	73.67	73.43	73.30	73.23	72.78
HIGH	72.71	72.50	72.26	72.22	72.30	72.42	72.86	73.28	73.26	73.09	72.65	72.49
CAL YR	1992		MEAN	72.86		HIGH	72.22		LOW	73.67		

Figure 24.--Water level in observation well 31U009, Bulloch County.

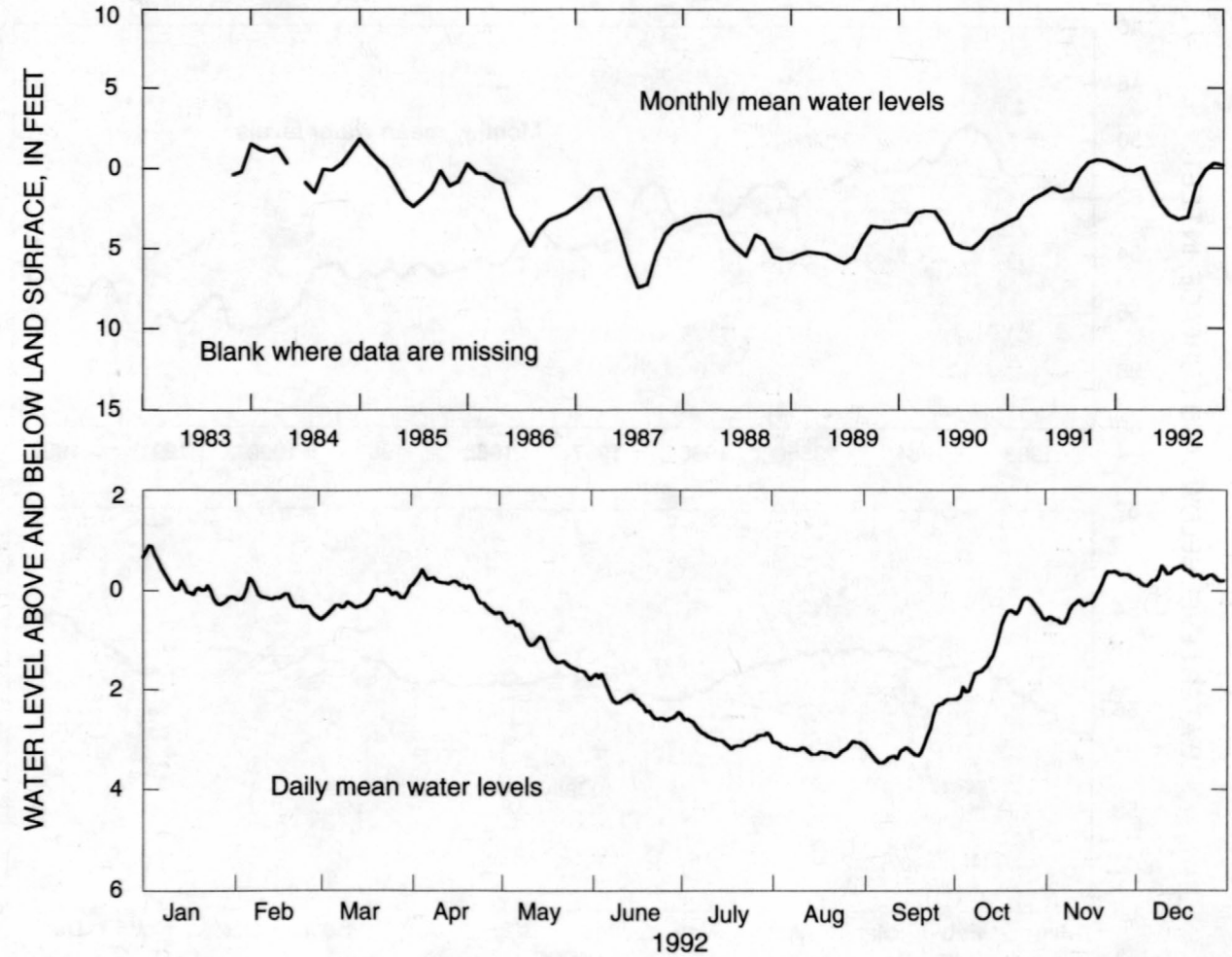
313253081433503, Local number, 32L016.
LOCATION.--Lat 31°32'52", long 81°43'36", Hydrologic Unit 03070106.
Owner: Georgia Geologic Survey, Gardi test well 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Brunswick.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 340 ft, cased to 320 ft, screen to 340 ft.
DATUM.--Altitude of land-surface datum is 74 ft.
REMARKS.--Well sounded April 26, 1983.
PERIOD OF RECORD.--June 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 49.26 ft below land-surface datum, March 20, 1984; lowest, 56.93 ft below land-surface datum, January 9, 1991.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	56.04	55.16	54.84	55.01	55.63	55.50	55.48	55.39	54.88	54.92	55.15	54.35
LOW	56.51	55.38	54.99	55.26	55.82	55.71	55.56	55.58	55.19	55.22	55.36	54.66
HIGH	55.35	54.99	54.71	54.83	55.31	55.24	55.34	55.03	54.72	54.77	54.75	54.09
CAL YR	1992		MEAN	55.20		HIGH	54.09		LOW	56.61		

Figure 25.--Water level in observation well 32L016, Wayne County.

310901081284402 Local number, 34H437.
LOCATION.--Lat 31°09'01", long 81°28'44", Hydrologic Unit 03070203.
Owner: Georgia Geologic Survey, Coffin Park test well 2.
INSTRUMENTATION.--Basic data recorder.
AQUIFER.--Upper Brunswick.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 328 ft, cased to 315 ft, screen to 328 ft.
DATUM.--Altitude of land-surface datum is 7 ft.
REMARKS.--None.
PERIOD OF RECORD.--January 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.26 ft above land-surface datum, January 7, 1985; lowest, 7.80 ft below land-surface datum, August 30, 1987.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	-0.15	0.18	0.21	-0.02	1.17	2.26	2.93	3.20	3.04	1.06	0.14	-0.28
LOW	0.29	0.54	0.53	0.48	1.80	2.62	3.19	3.35	3.48	2.18	0.67	-0.08
HIGH	-0.89	-0.24	-0.08	-0.40	0.56	1.69	2.59	3.04	2.19	0.16	-0.37	-0.48

CAL YR 1992 MEAN 1.15 HIGH -0.89 LOW 3.48

[Negative value indicates water level above land surface]

Figure 26.--Water level in observation well 34H437, Glynn County.

Floridan Aquifer System

Water levels in the Floridan aquifer system are monitored in 68 wells; data for 33 of these wells are summarized in this report (figs. 27 and 60). The Floridan aquifer system includes the Upper and Lower Floridan aquifers (table 2). In and near outcrop areas, the Upper Floridan aquifer is semiconfined, and water levels in wells tapping this aquifer fluctuate seasonally in response to variations in recharge rate and pumping (Clarke and others, 1990). Near the coast, where the Upper Floridan aquifer is confined, water levels respond primarily to pumping, and fluctuations related to recharge are less pronounced (Clarke and others, 1990, p. 31). All but a small percentage of the water withdrawn from the Floridan aquifer system is from the Upper Floridan aquifer; a few wells in the Savannah area withdraw water from the Lower Floridan aquifer.

Upper Floridan aquifer

The water level in the Upper Floridan aquifer is monitored in 55 wells; data for 31 of these wells are summarized in this report (fig. 27). For this report, the Upper Floridan aquifer is divided into four areas: (1) the southwestern area; (2) the south-central area; (3) the east-central area; and (4) the coastal area (fig. 27). These areas were divided on the basis of similar hydrologic settings.

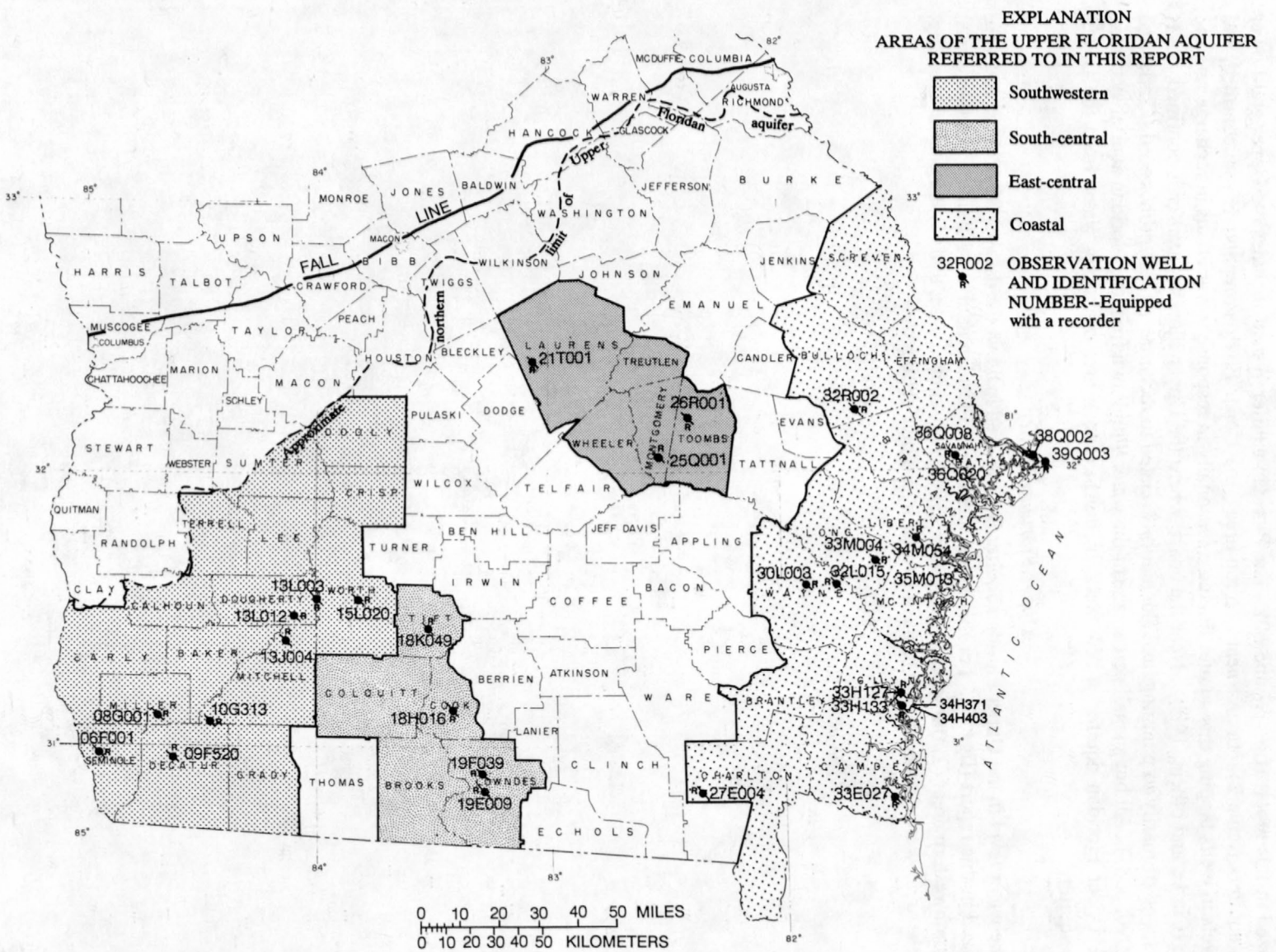


Figure 27.--Subareas and locations of observation wells completed in the Upper Floridan aquifer.

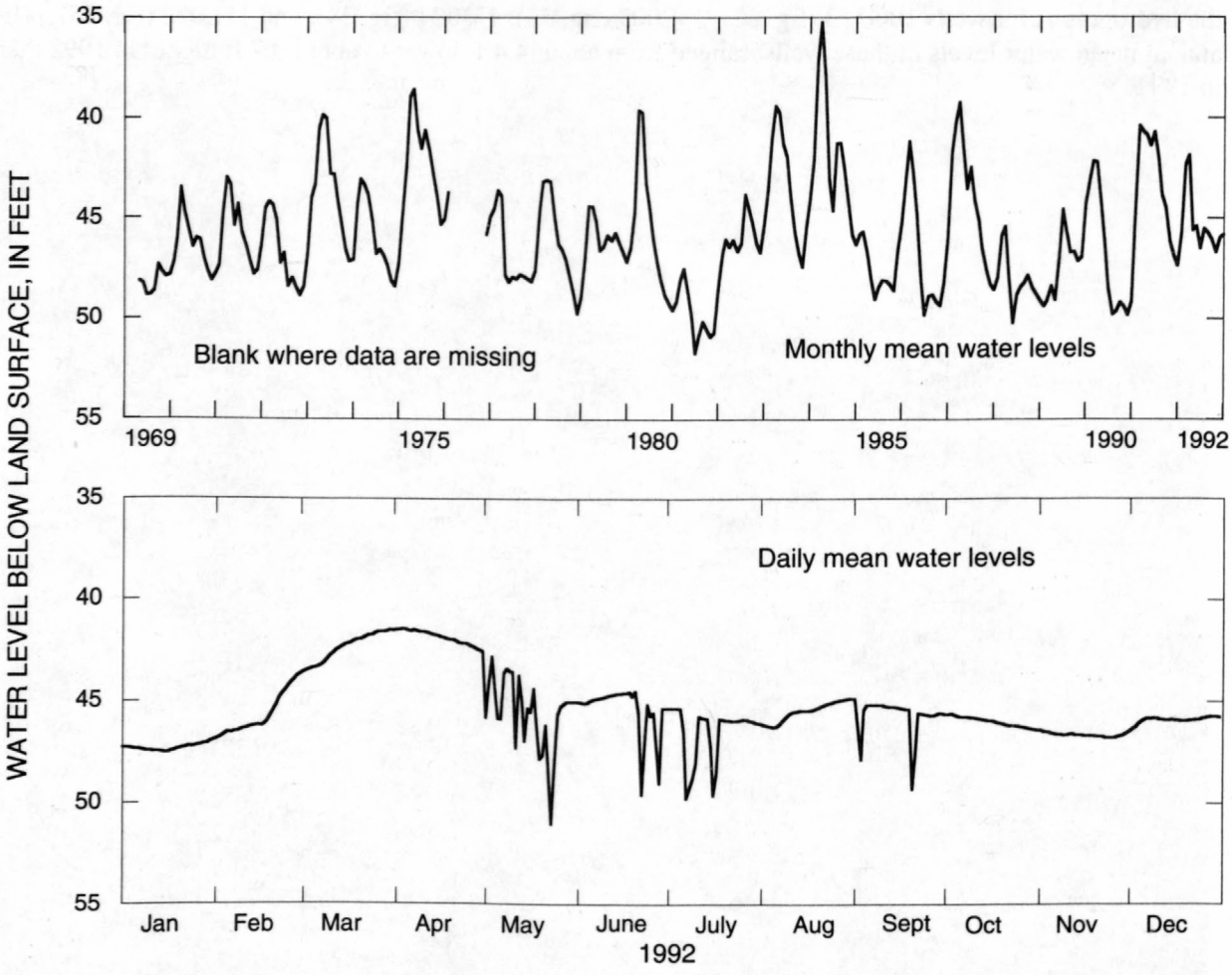
Southwestern area

The water level in the Upper Floridan aquifer in southwestern Georgia was monitored in 24 wells in 1992; data for eight of these wells (fig. 27) are summarized in figures 28-35. In the southwestern area, water levels in wells tapping the Upper Floridan aquifer respond to variations in precipitation, evapotranspiration, pumping, and streamflow (Hayes and others, 1983).

The annual mean water levels in wells 09F520 (fig. 28), 08G001 (fig. 29), 06F001 (fig. 30), and 13L012 (fig. 31) tapping the Upper Floridan aquifer ranged from about 1.1 ft to 2.7 ft lower in 1992 than in 1991. These four wells are near the Flint River or its tributaries where the aquifer is hydraulically connected to the streams.

In areas away from the Flint River and its tributaries, the Upper Floridan aquifer is confined by thicker overburden, is not well connected to streams, and the water level is not rapidly influenced by precipitation (Torak and others, 1991). Water-level fluctuations and trends in these areas are indicated by the hydrographs for wells 10G313 (fig. 32), 13L003 (fig. 33), 13J004 (fig. 34), and 15L020 (fig. 35). The annual mean water levels in these wells ranged from about 4.4 ft lower to about 0.7 ft higher in 1992 than in 1991.

305736084355801 Local number, 09F520.
LOCATION.--Lat 30°57'42", long 84°35'46", Hydrologic Unit 03130008.
Owner: Graham Bolton.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Unused irrigation well, diameter 12 in., depth 251 ft, cased to 130 ft, open hole.
DATUM.--Altitude of land-surface datum is 128 ft.
REMARKS.--This well is about 15 ft from an irrigation well.
PERIOD OF RECORD.--June 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.86 ft below land-surface datum, April 15, 1984; lowest, 54.89 ft below land-surface datum, September 22, 1990.

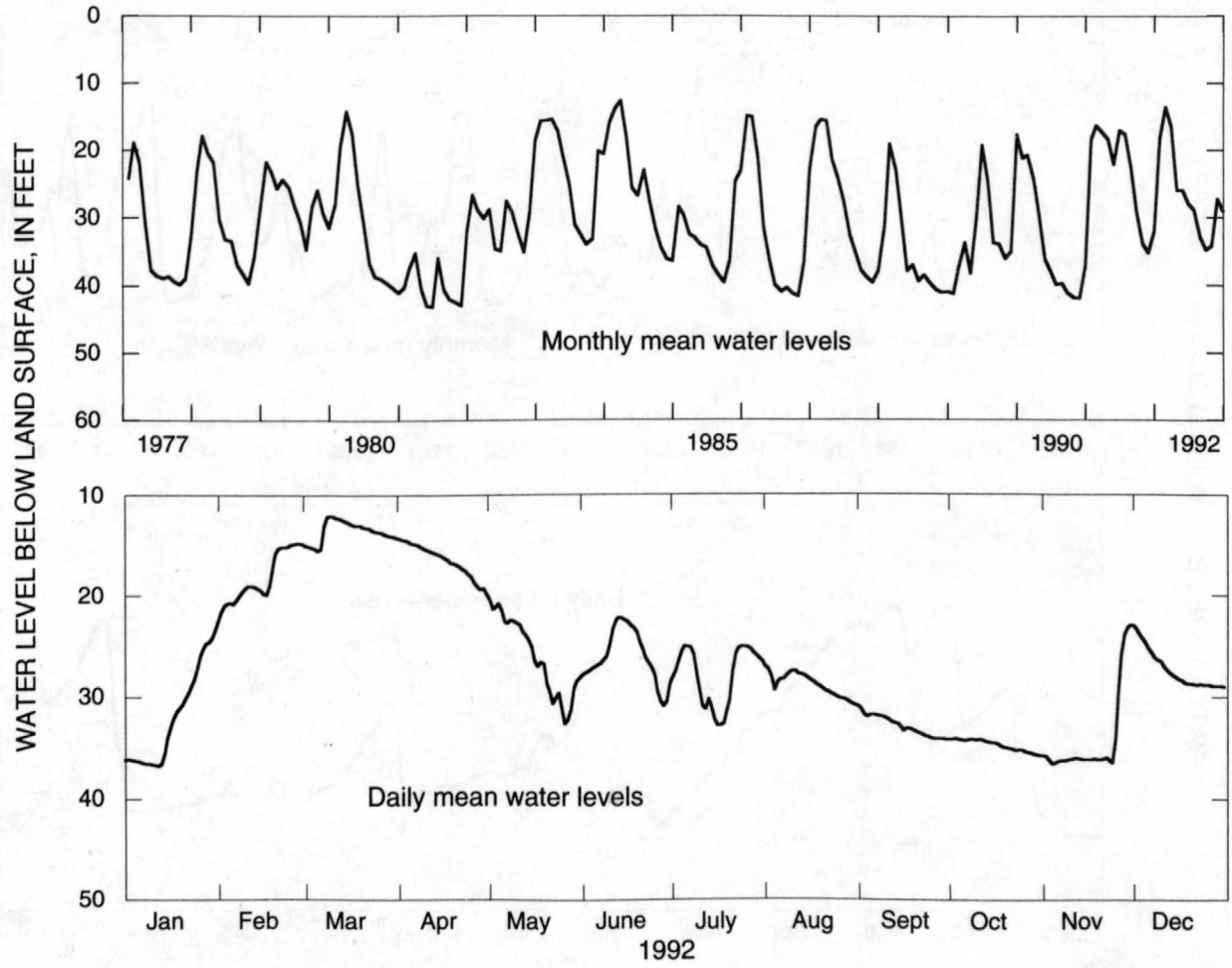


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	47.35	45.73	42.36	41.86	45.59	45.41	46.50	45.51	45.71	46.01	46.68	45.94
LOW	47.56	46.83	43.52	42.56	51.00	49.59	49.78	46.27	49.32	46.43	46.82	46.38
HIGH	46.97	43.66	41.49	41.45	42.81	44.52	45.35	44.88	45.19	45.64	46.48	45.75

CAL YR	1992		MEAN	45.39		HIGH	41.45		LOW	51.00		

Figure 28.--Water level in observation well 09F520, Decatur County.

310651084404501 Local number, 08G001.
LOCATION.--Lat 31°06'51", long 84°40'45", Hydrologic Unit 03130010.
Owner: Viercocken.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused irrigation well, diameter 12 in., depth 255 ft, cased to 130 ft, open hole.
DATUM.--Altitude of land-surface datum is 150 ft.
REMARKS.--None.
PERIOD OF RECORD.--February 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.18 ft below land-surface datum, April 11, 1984; lowest, 43.88 ft below land-surface datum, July 17, 1981.

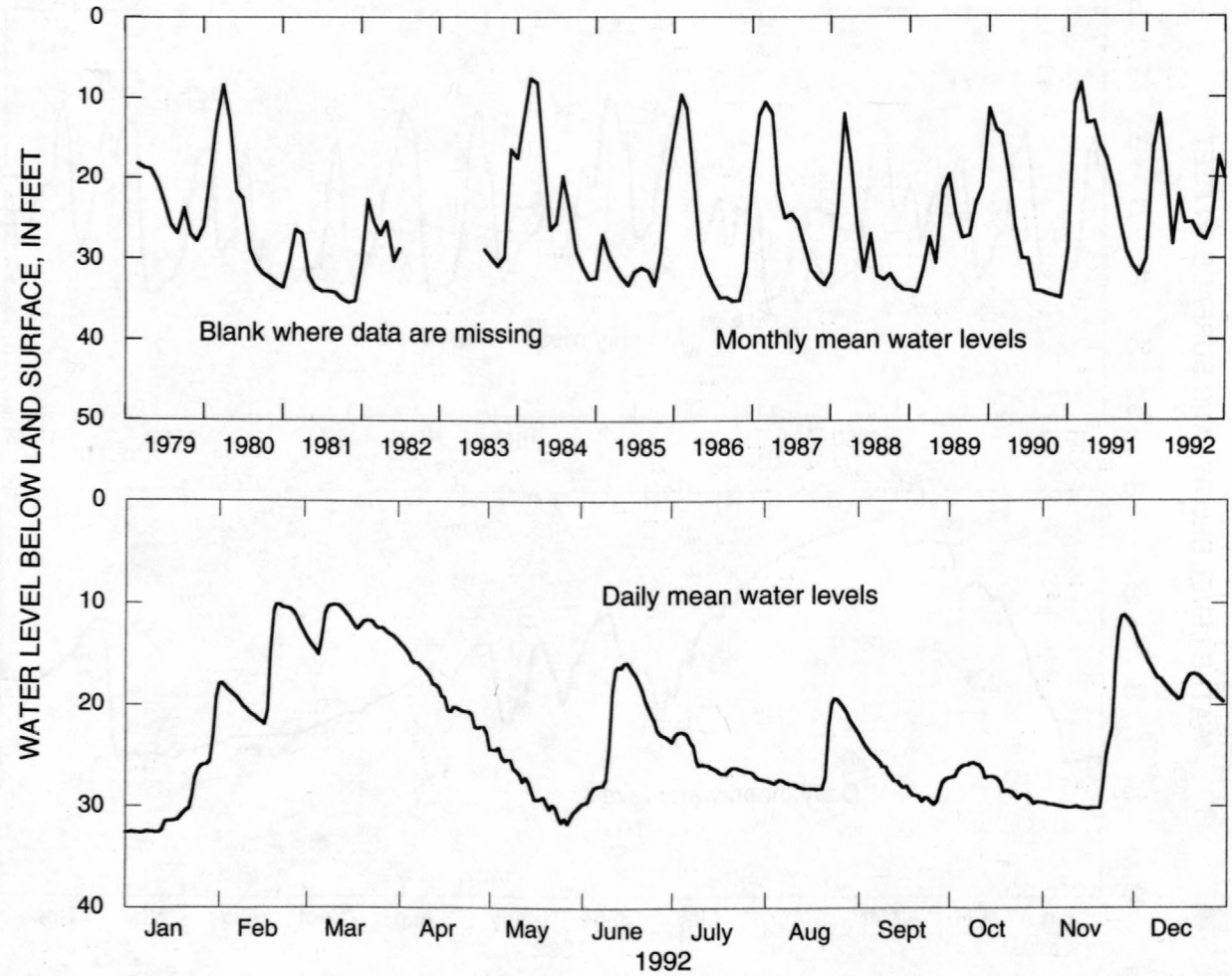


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	32.09	18.27	13.57	16.51	25.97	26.01	27.93	28.93	32.95	34.79	34.25	27.34
LOW	36.76	21.65	15.57	19.82	32.60	30.96	32.88	30.94	34.22	35.77	36.61	29.02
HIGH	23.38	14.82	12.09	14.46	20.71	22.17	25.06	27.33	31.34	34.16	22.89	23.30

CAL YR	1992		MEAN	26.59		HIGH	12.09		LOW	36.76		

Figure 29.--Water level in observation well 08G001, Miller County.

305356084534601 Local number, 06F001.
LOCATION.--Lat 30°54'01", long 84°53'40", Hydrologic Unit 03130004.
Owner: Roddenbery Company Farms, test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 150 ft, cased to 98.5 ft, open hole.
DATUM.--Altitude of land-surface datum is 110 ft.
REMARKS.--Borehole geophysical survey conducted August 10, 1983. Well pumped and redeveloped August 10, 1989.
PERIOD OF RECORD.--March 1979 to July 1982, August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.13 ft below land-surface datum, March 8, 1984; lowest, 35.65 ft below land-surface datum, October 5, 1986.

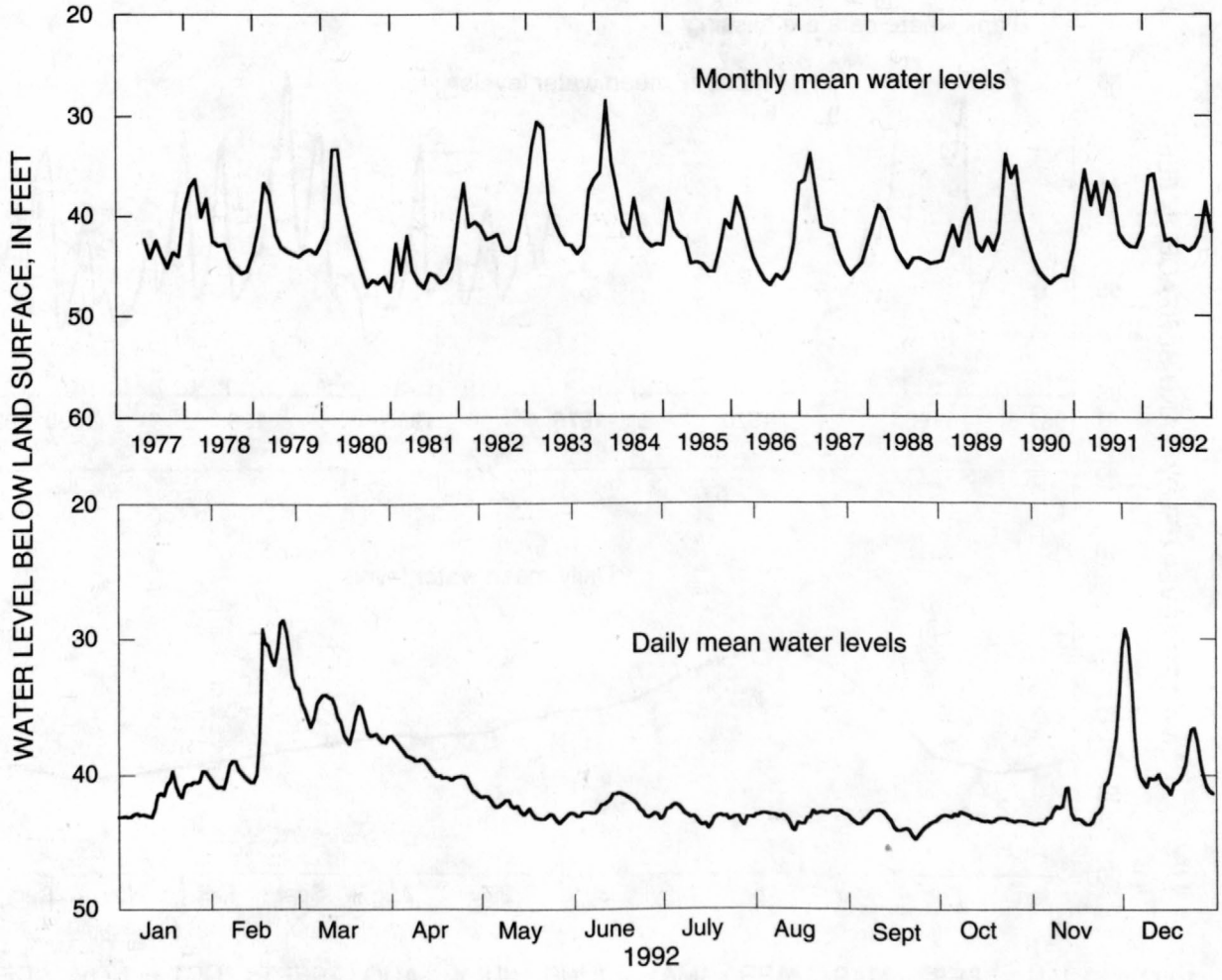


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	30.05	16.36	12.16	18.68	28.15	22.12	25.57	25.55	27.15	27.61	25.79	17.31
LOW	32.63	21.94	15.04	22.72	31.63	29.60	27.36	28.28	29.81	29.75	30.20	19.74
HIGH	19.31	10.13	10.11	14.19	24.22	15.86	22.66	19.37	23.31	25.71	11.21	13.09

CAL YR	1992		MEAN	23.07		HIGH	10.11		LOW	32.63		

Figure 30.--Water level in observation well 06F001, Seminole County.

313105084064302 Local number, 13L012.
LOCATION.--Lat 31°31'05", long 84°06'43", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 3.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 218 ft, cased to 54 ft, open hole.
DATUM.--Altitude of land-surface datum is 195 ft.
REMARKS.--Well pumped and redeveloped August 17, 1988.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 21.92 ft below land-surface datum, March 2, 1979; lowest, 48.18 ft below land-surface datum, July 1, 1981.

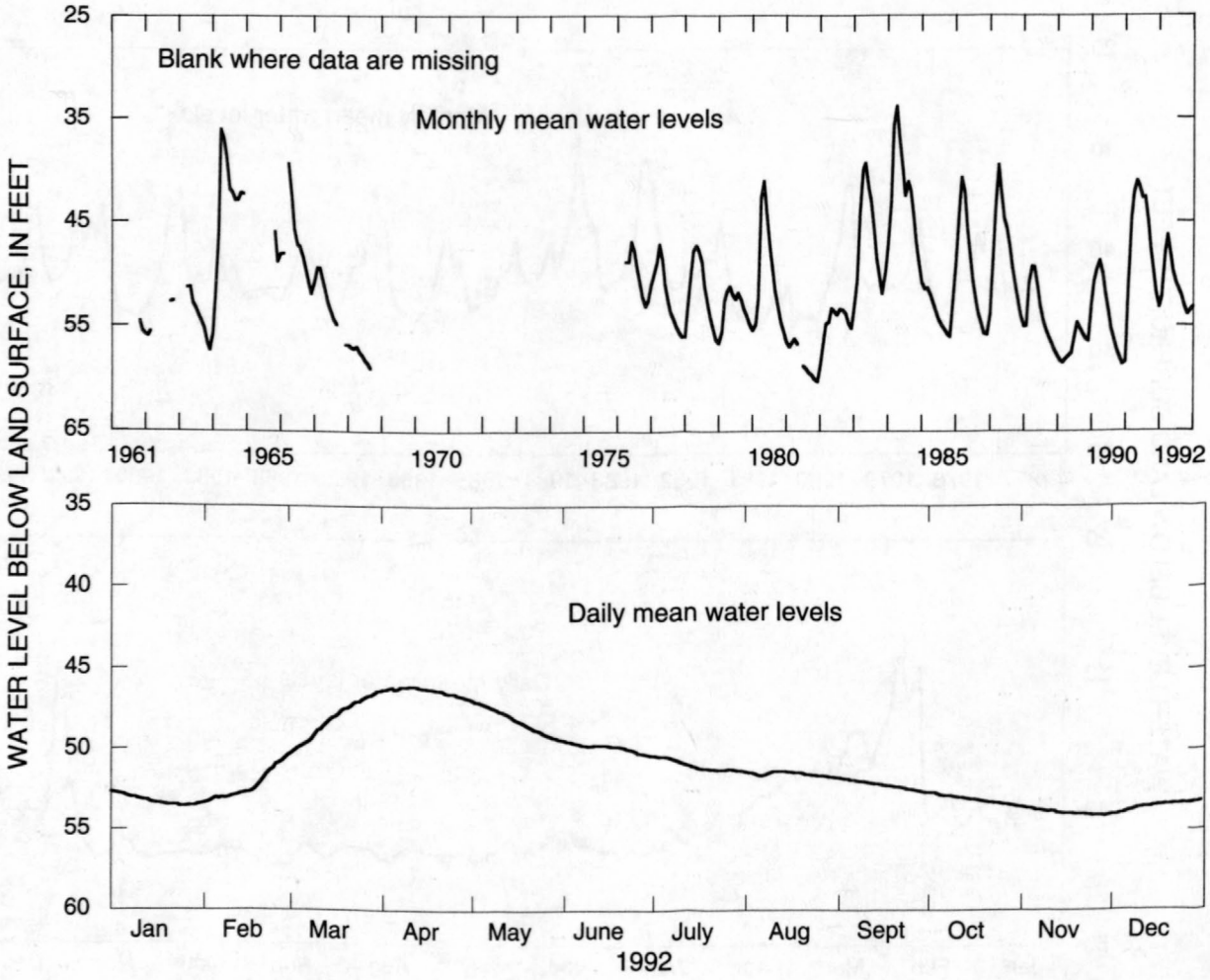


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	41.63	36.14	35.91	39.52	42.58	42.38	43.08	43.05	43.55	43.19	42.03	38.62
LOW	43.08	40.97	37.73	41.50	43.56	43.26	43.95	44.17	44.77	43.55	43.64	41.39
HIGH	39.70	28.61	34.10	37.41	41.53	41.31	42.15	42.65	42.61	42.69	33.84	29.31

CAL YR	1992		MEAN	40.99		HIGH	28.61		LOW	44.77		

Figure 31.--Water level in observation well 13L012, Dougherty County.

310507084262201 Local number, 10G313.
LOCATION.--Lat 31°05'07", long 84°26'22", Hydrologic Unit 03130008.
Owner: Harvey Meinders.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Cable-tool, observation well, diameter 12 in., depth 250 ft, cased to 87 ft, open hole.
DATUM.--Altitude of land-surface datum is 145 ft.
REMARKS.--None.
PERIOD OF RECORD.--November 1961 to September 1968, April 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 32.98 ft below land-surface datum, April 9, 1984; lowest, 60.26 ft below land-surface datum, January 1, 1982.

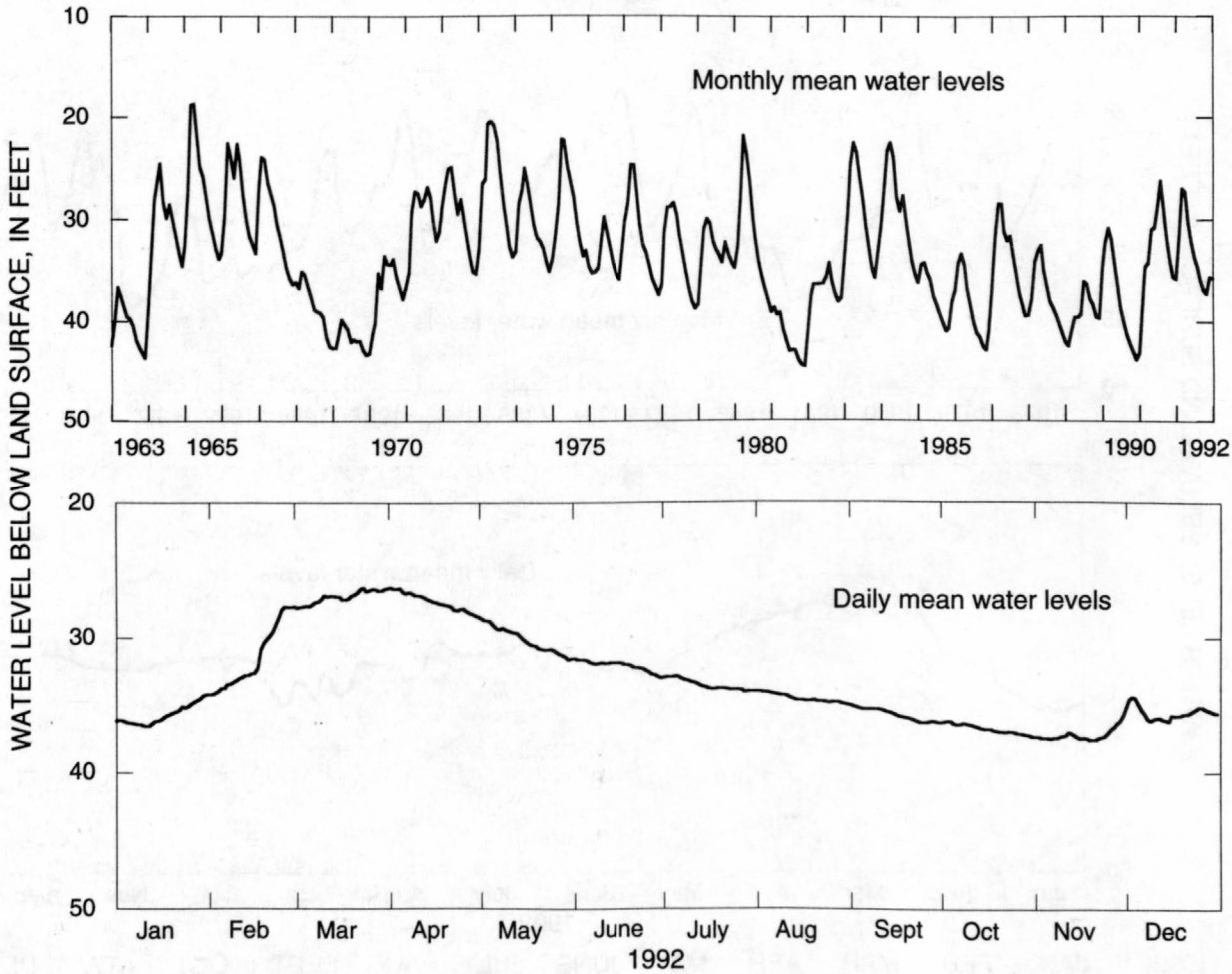


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	53.24	52.29	48.09	46.34	48.15	49.83	50.96	51.50	52.18	53.11	53.92	53.59
LOW	53.57	53.32	50.11	46.83	49.37	50.32	51.35	51.72	52.65	53.55	54.13	54.06
HIGH	52.69	50.37	46.37	46.08	47.01	49.46	50.37	51.33	51.77	52.68	53.59	53.25

CAL YR	1992		MEAN	51.10		HIGH	46.08		LOW	54.13		

Figure 32.--Water level in observation well 10G313, Mitchell County.

313748084002901 Local number, 13L003.
LOCATION.--Lat 31°33'13", long 84°00'21", Hydrologic Unit 03130008.
Owner: City of Albany and Dougherty County.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 6 in., depth 259 ft, cased to 206 ft, open hole.
DATUM.--Altitude of land-surface datum is 225 ft.
REMARKS.--Well pumped and sounded June 21, 1978; water-quality sample collected at conclusion of pumping. Borehole geophysical survey conducted March 17, 1977. Water levels for period of missing record, November 29 to December 15, were estimated.
PERIOD OF RECORD.--January 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.41 ft below land-surface datum, April 2, 1965; lowest, 44.89 ft below land-surface datum, December 13, 1981.

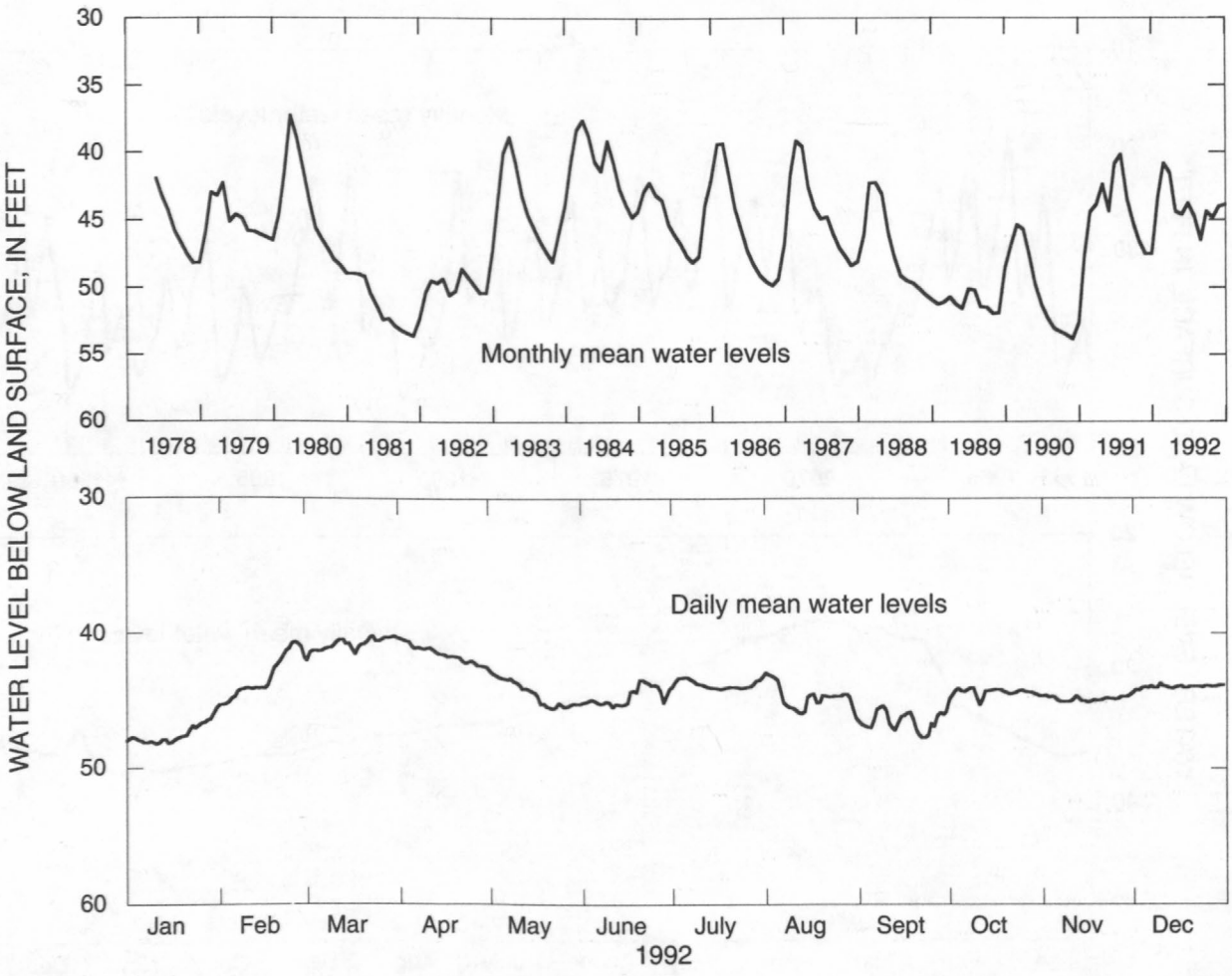


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	35.77	31.52	26.95	27.30	30.18	32.11	33.60	34.61	35.78	36.80	37.24	35.58
LOW	36.61	34.28	27.73	28.41	31.64	33.05	34.12	35.07	36.37	37.38	37.64	36.27
HIGH	34.26	27.68	26.30	26.35	28.71	31.64	32.92	34.09	35.18	36.25	35.78	34.45

CAL YR	1992		MEAN	33.13		HIGH	26.30		LOW	37.64		

Figure 33.--Water level in observation well 13L003, Dougherty County.

312127084065801 Local number, 13J004.
LOCATION.--Lat 31°21'29", long 84°06'57", Hydrologic Unit 03130008.
Owner: Aurora Dairy, Wright 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 12 in., depth 208 ft, cased to 77 ft, open hole.
DATUM.--Altitude of land-surface datum is 200 ft.
REMARKS.--None.
PERIOD OF RECORD.--June 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 36.90 ft below land-surface datum, April 13, 1980; lowest, 54.05 ft below land-surface datum, December 25, 1990.

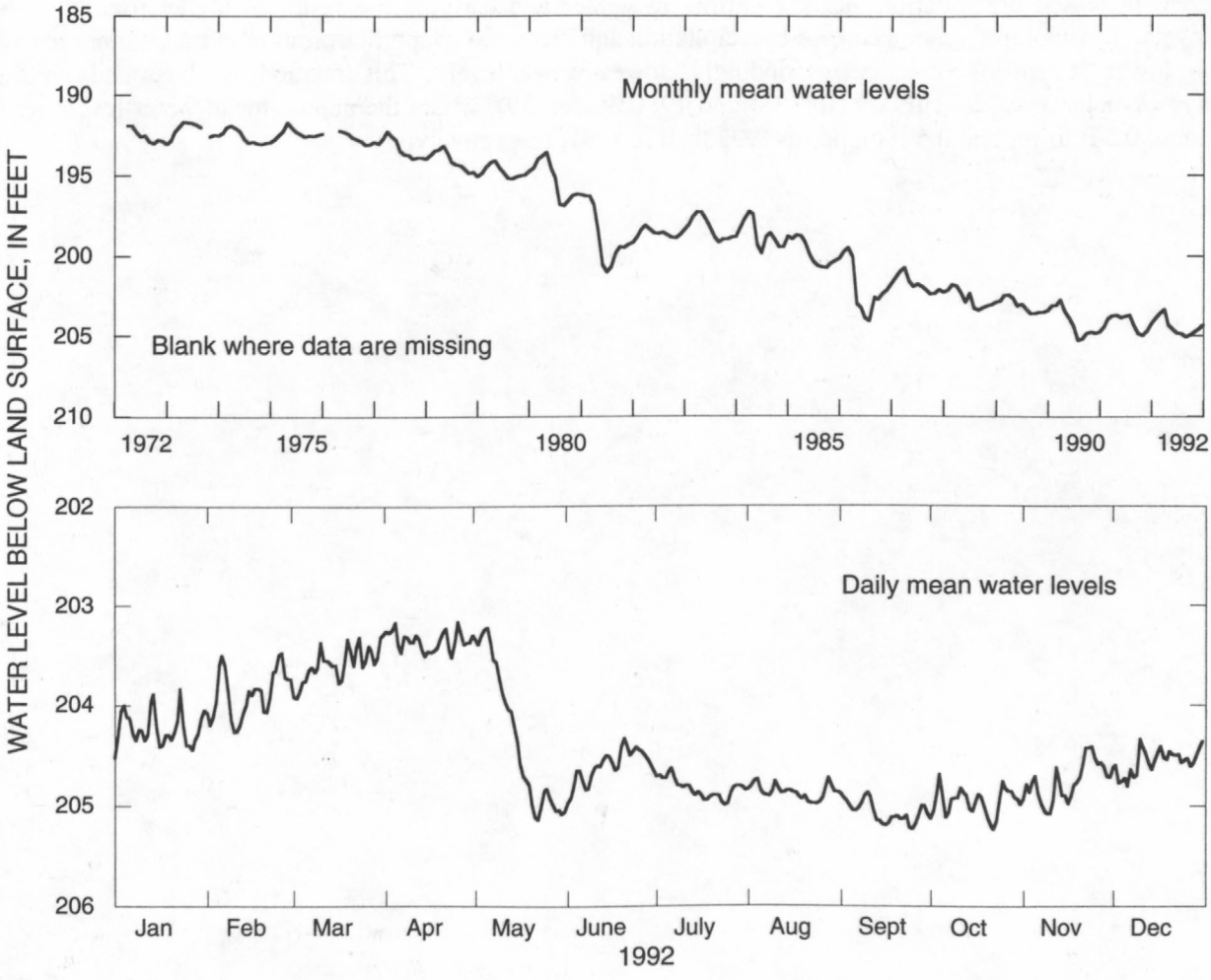


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	47.52	43.31	40.81	41.51	44.39	44.63	43.79	44.74	46.51	44.40	44.86	43.99
LOW	48.23	45.33	41.53	42.46	45.55	45.43	44.12	46.22	47.73	45.29	45.10	44.23
HIGH	45.60	40.66	40.17	40.47	42.98	43.42	43.23	43.05	45.33	44.03	44.57	43.74

CAL YR	1992		MEAN	44.21		HIGH	40.17		LOW	48.23		

Figure 34.--Water level in observation well 13J004, Mitchell County.

313146083491601 Local number, 15L020.
LOCATION.--Lat 31°31'46", long 83°49'16", Hydrologic Unit 03110204.
Owner: City of Sylvester.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused municipal well, diameter 18 in., depth 450 ft, cased to 212 ft, open hole.
DATUM.--Altitude of land-surface datum is 420 ft.
REMARKS.--Well pumped and sounded July 19, 1978. Borehole geophysical survey conducted June 5, 1975.
PERIOD OF RECORD.--May 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 191.5 ft below land-surface datum, May 17, 1973; lowest, 205.88 ft below land-surface datum, August 20, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	204.23	203.89	203.58	203.36	204.33	204.60	204.84	204.87	205.07	204.97	204.77	204.56
LOW	204.44	204.27	203.93	203.52	205.14	204.92	205.00	204.99	205.24	205.24	205.08	204.81
HIGH	203.84	203.48	203.29	203.16	203.22	204.33	204.63	204.73	204.88	204.69	204.42	204.34

CAL YR	1992		MEAN	204.42		HIGH	203.16		LOW	205.24		

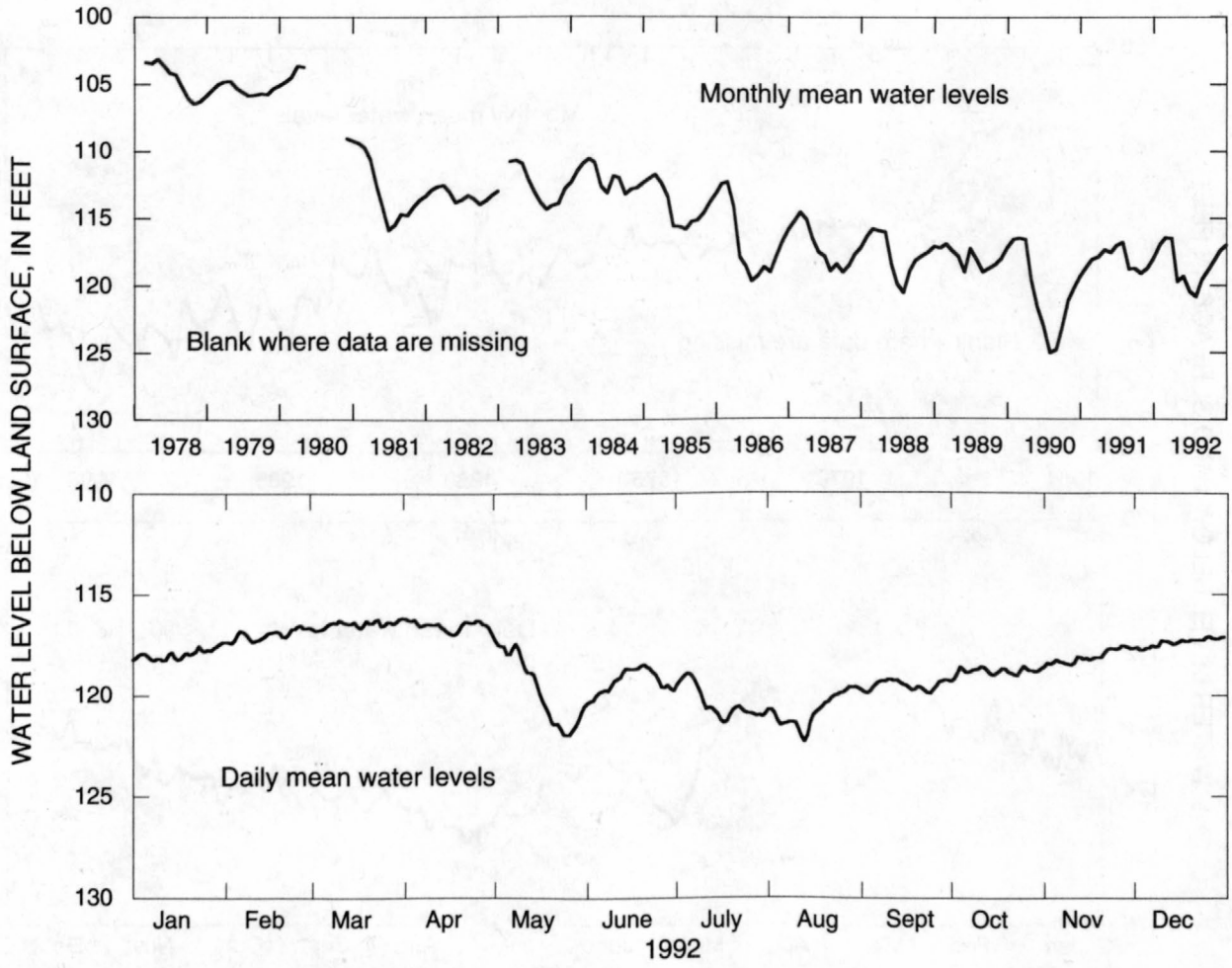
Figure 35.--Water level in observation well 15L020, Worth County.

South-central area

The water level in the Upper Floridan aquifer in south-central Georgia was monitored in six wells in 1992 (fig. 27); data from four of these wells are summarized in figures 36-39. Water levels in wells tapping the aquifer in this area are affected by variations in precipitation, evapotranspiration, and to a lesser degree, pumping (Krause, 1979). In the Valdosta area, water levels also are affected by streamflow (Krause, 1979). The water level generally is highest following the winter and spring rainy seasons, and lowest in the fall. The annual mean water levels in well 18K049 in Tift County (fig. 36) and in well 18H016 in Cook County (fig. 37) were about 0.4 ft lower and about 0.8 ft higher, respectively, in 1992 than in 1991.

The Upper Floridan aquifer receives recharge from the Withlacoochee River north of Valdosta where water from the river flows directly into sinkholes and large solution openings in the aquifer. In this area, increased precipitation and streamflow in winter and early spring result in higher ground-water levels. During most years, decreased precipitation and increased evapotranspiration in the summer results in lower streamflow and, correspondingly, lower water levels. This relation is illustrated on the hydrographs for wells 19E009 (fig. 38) and 19F039 (fig. 39), where the annual mean water levels were about 0.5 ft lower and 0.5 ft higher in 1992 than in 1991, respectively.

312712082593301 Local number, 18K049.
LOCATION.--Lat 31°27'12", long 82°59'33", Hydrologic Unit 03110203.
Owner: U.S. Geological Survey, test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 620 ft, cased to 270 ft, open hole.
DATUM.--Altitude of land-surface datum is 330 ft.
REMARKS.--Borehole geophysical survey conducted March 18, 1978.
PERIOD OF RECORD.--March 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 102.70 ft below land-surface datum, May 14, 1978; lowest, 126.23 ft below land-surface datum, August 26, 1990.

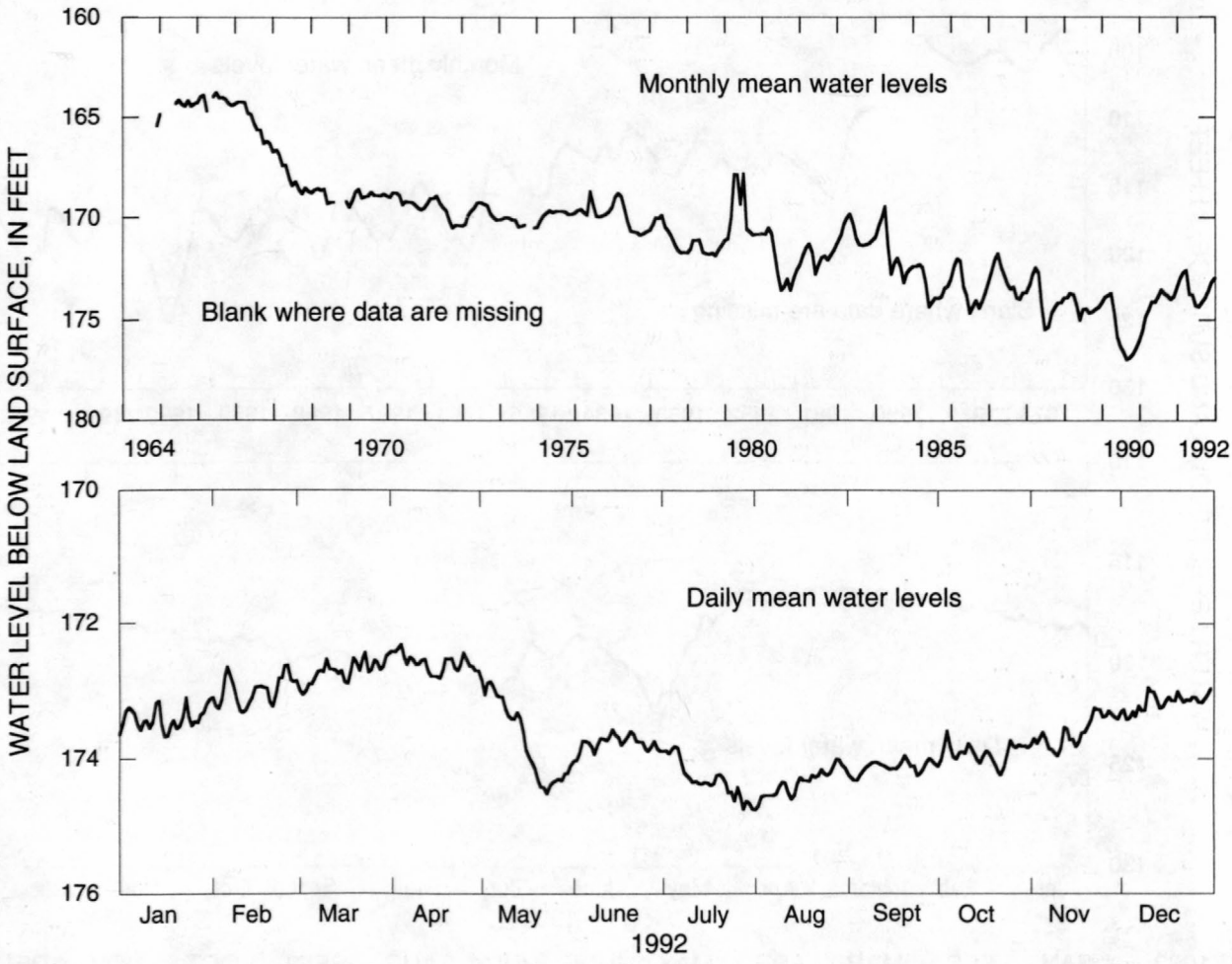


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	117.95	116.99	116.47	116.53	119.70	119.31	120.44	120.80	119.57	118.85	118.12	117.39
LOW	118.28	117.42	116.80	117.01	121.98	120.29	121.42	122.33	119.96	119.24	118.51	117.78
HIGH	117.38	116.54	116.19	116.25	117.44	118.49	118.92	119.64	119.26	118.59	117.56	117.10

CAL YR	1992	MEAN	118.52	HIGH	116.19	LOW	122.33

Figure 36.--Water level in observation well 18K049, Tift County.

310813083260301 Local number, 18H016.
LOCATION.--Lat 31°08'13", long 83°26'03", Hydrologic Unit 03110203.
Owner: U.S. Geological Survey, Adel test well.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 8 in., depth 865 ft, cased to 207 ft, open hole.
DATUM.--Altitude of land-surface datum is 241 ft.
Measuring point: Top of recorder shelf, 2.66 ft above land-surface datum.
REMARKS.--Well pumped July 19, 1978; water-quality sample collected at conclusion of pumping. Borehole geophysical survey conducted October 24, 1974.
PERIOD OF RECORD.--December 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 163.34 ft below land-surface datum, July 5, 1966; lowest, 177.39 ft below land-surface datum, October 8, 1990.

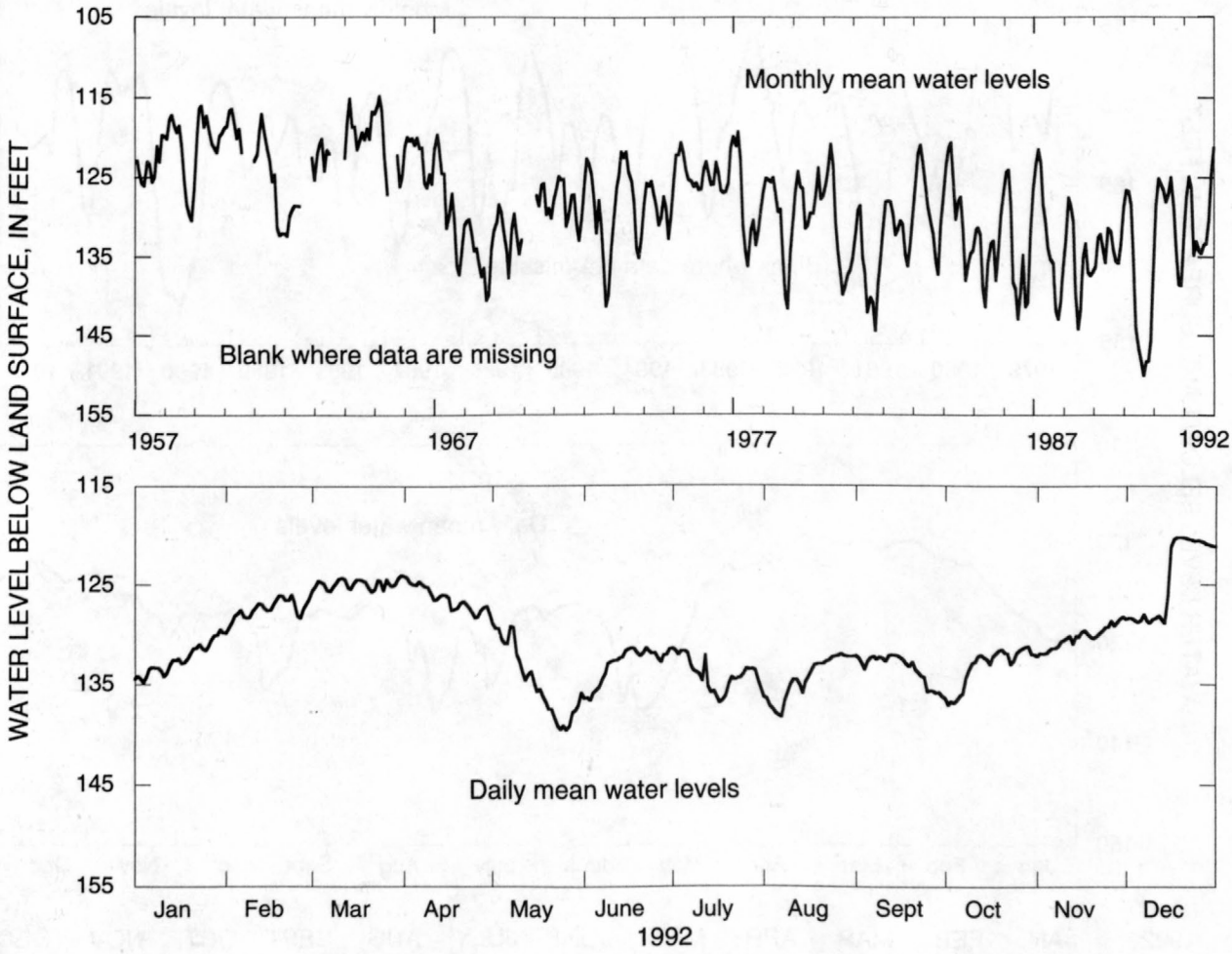


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	173.41	173.00	172.70	172.58	173.73	173.77	174.31	174.37	174.13	173.92	173.60	173.16
LOW	173.68	173.33	173.06	172.80	174.53	174.02	174.76	174.72	174.33	174.25	173.96	173.42
HIGH	173.10	172.63	172.43	172.31	172.85	173.56	173.81	174.01	173.95	173.59	173.24	172.94

CAL YR	1992	MEAN	173.56	HIGH	172.31	LOW	174.77

Figure 37.--Water level in observation well 18H016, Cook County.

304949083165301 Local number, 19E009.
LOCATION.--Lat 30°49'51", long 83°16'58", Hydrologic Unit 03110202.
Owner: City of Valdosta.
INSTRUMENTATION.--Basic data recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused municipal supply well, diameter 20 in., depth 342 ft, cased to 200 ft, open hole.
DATUM.--Altitude of land-surface datum is 217 ft.
REMARKS.--Well pumped July 18, 1978; water-quality sample collected at conclusion of pumping. Borehole geophysical survey conducted April 11, 1963.
PERIOD OF RECORD.--February 1957 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 112.69 ft below land-surface datum, March 9, 1964; lowest, 151.79 ft below land-surface datum, September 19, 1990.

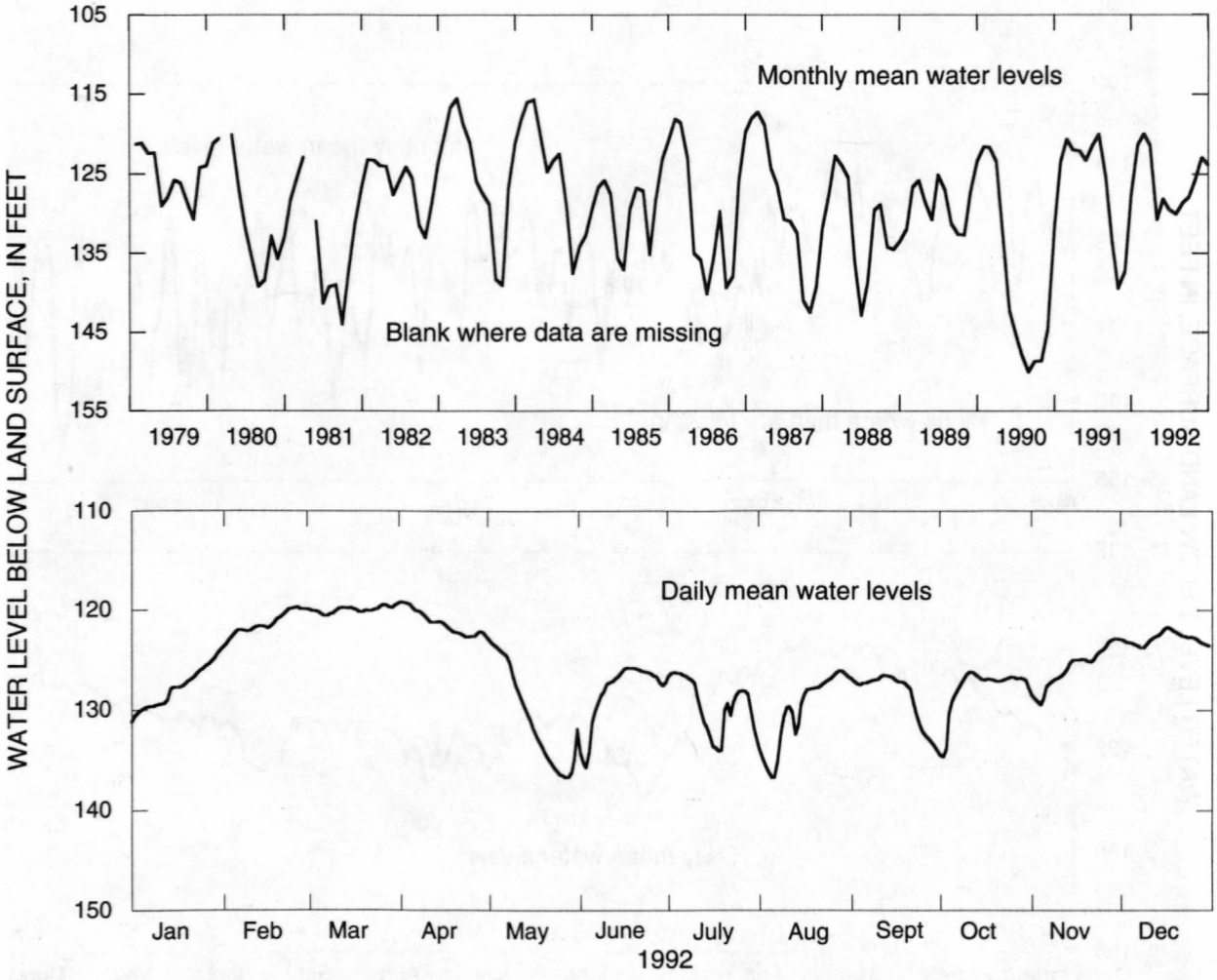


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	132.48	127.45	124.93	126.37	134.75	133.06	134.12	134.50	133.47	133.27	130.34	124.41
LOW	134.83	129.31	125.72	128.35	139.57	136.61	136.93	138.38	136.22	137.09	132.01	128.93
HIGH	129.53	125.95	124.05	124.28	129.21	131.45	131.76	132.09	132.19	131.25	128.25	120.23

CAL YR 1992 MEAN 130.78 HIGH 120.23 LOW 139.57

Figure 38.--Water level in observation well 19E009, Lowndes County.

305241083154401 Local number, 19F039.
LOCATION.--Lat 30°52'41", long 83°15'46", Hydrologic Unit 03110203.
Owner: City of Valdosta, well 8.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused municipal supply well, diameter 16 in., depth 450 ft, cased to 350 ft, open hole.
DATUM.--Altitude of land-surface datum is 222 ft.
REMARKS.--Water level for period of missing record, January 1, was estimated.
PERIOD OF RECORD.--February 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 114.28 ft below land-surface datum, April 9, 1984; lowest, 151.28 ft below land-surface datum, October 9, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	127.84	121.35	119.95	121.34	130.70	128.16	129.45	130.03	128.62	127.89	125.82	122.90
LOW	130.65	123.39	120.58	122.75	136.74	135.74	134.13	136.75	134.01	134.68	129.52	123.80
HIGH	123.98	119.71	119.33	119.25	123.43	125.82	126.29	126.07	126.56	126.21	122.94	121.74

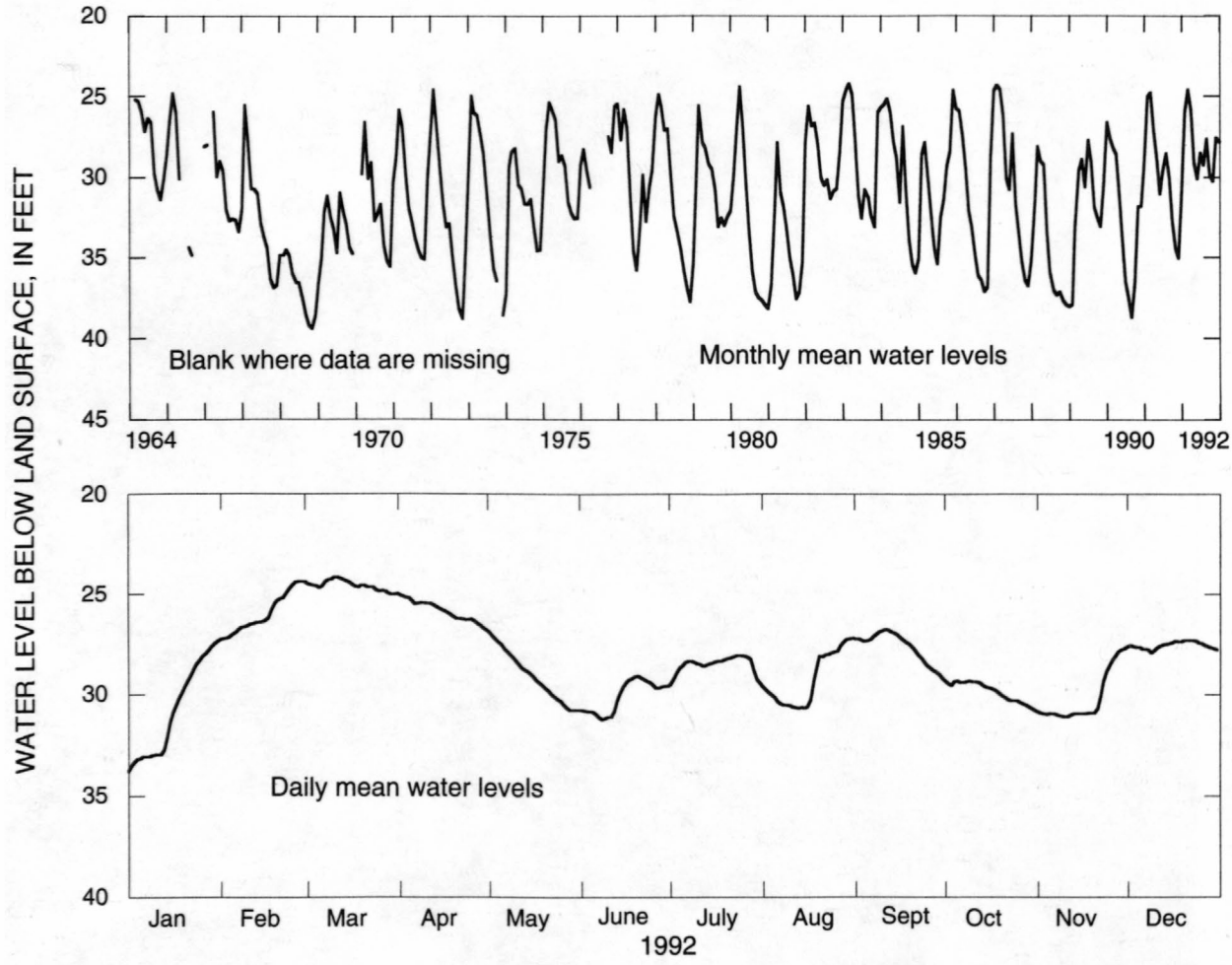
CAL YR	1992		MEAN	126.20		HIGH	119.22		LOW	136.75		

Figure 39.--Water level in observation well 19F039, Lowndes County.

East-central area

The water level in the Upper Floridan aquifer in east-central Georgia was monitored in three wells in 1992; data from these wells (fig. 27) are summarized in figures 40-42. Well 21T001 (fig. 40) in Laurens County is located near the recharge area for the Upper Floridan aquifer, and the water level in this well (fig. 40) responds primarily to seasonal fluctuations in precipitation. The annual mean water level in this well was about 1.4 ft higher in 1992 than in 1991. The 1992 annual mean water levels in wells 26R001 in Montgomery County (fig. 41) and well 25Q001 in Toombs County (fig. 42) ranged from about the same to 0.7 ft higher than in 1991, respectively.

322652083033001 Local number, 21T001.
LOCATION.--Lat 32°27'06", long 83°03'28", Hydrologic Unit 03070102.
Owner: Danny Hogan.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 4 in., depth 123 ft, cased to 89 ft, open hole.
DATUM.--Altitude of land-surface datum is 259 ft.
REMARKS.--Borehole geophysical survey conducted November 1973. Well pumped and sampled by Georgia Geologic Survey, December 8, 1992. Water levels for period of missing record, August 21-25, were estimated.
PERIOD OF RECORD.--March 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 23.62 ft below land-surface datum, January 26, 1987; lowest, 39.58 ft below land-surface datum, November 12, 1968.

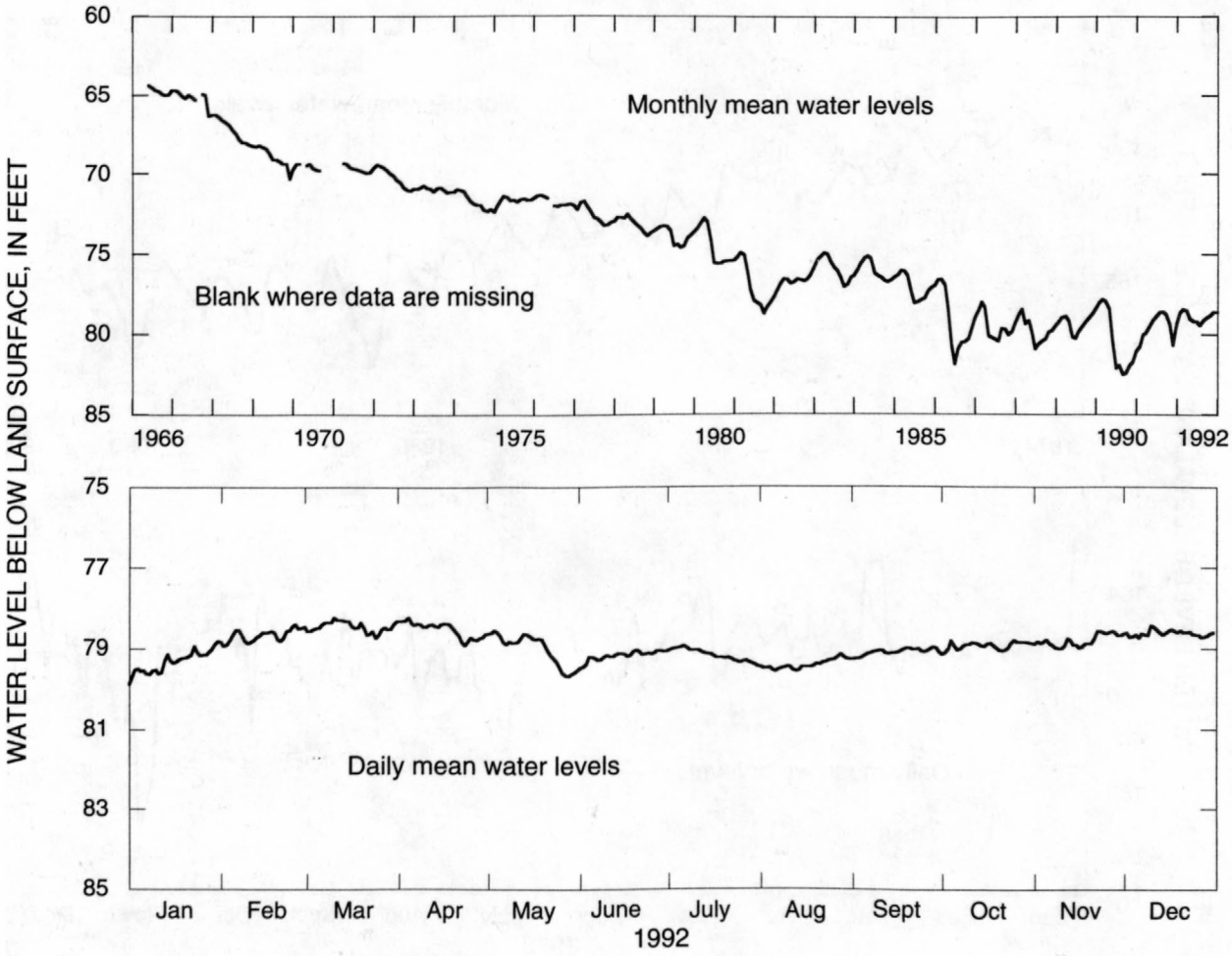


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	30.85	25.97	24.59	25.87	29.11	30.09	28.51	29.25	27.63	29.86	30.24	27.57
LOW	33.58	27.25	25.04	26.80	30.79	31.25	29.44	30.68	29.21	30.80	31.13	27.95
HIGH	27.35	24.37	24.17	25.11	27.10	29.09	28.08	27.22	26.78	29.34	27.72	27.32

CAL YR	1992		MEAN	28.31		HIGH	24.17		LOW	33.80		

Figure 40.--Water level in observation well 21T001, Laurens County.

320226082301101 Local number, 25Q001.
LOCATION.--Lat 32°02'25", long 82°30'05", Hydrologic Unit 03070106.
Owner: Montgomery County Board of Education.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 6 in., depth 536 ft, cased to 421 ft, open hole.
DATUM.--Altitude of land-surface datum is 190 ft.
REMARKS.--Borehole geophysical survey conducted April 22, 1966.
PERIOD OF RECORD.--June 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 64.13 ft below land-surface datum, June 10, 1966; lowest, 82.94 ft below land-surface datum, October 7, 1990.

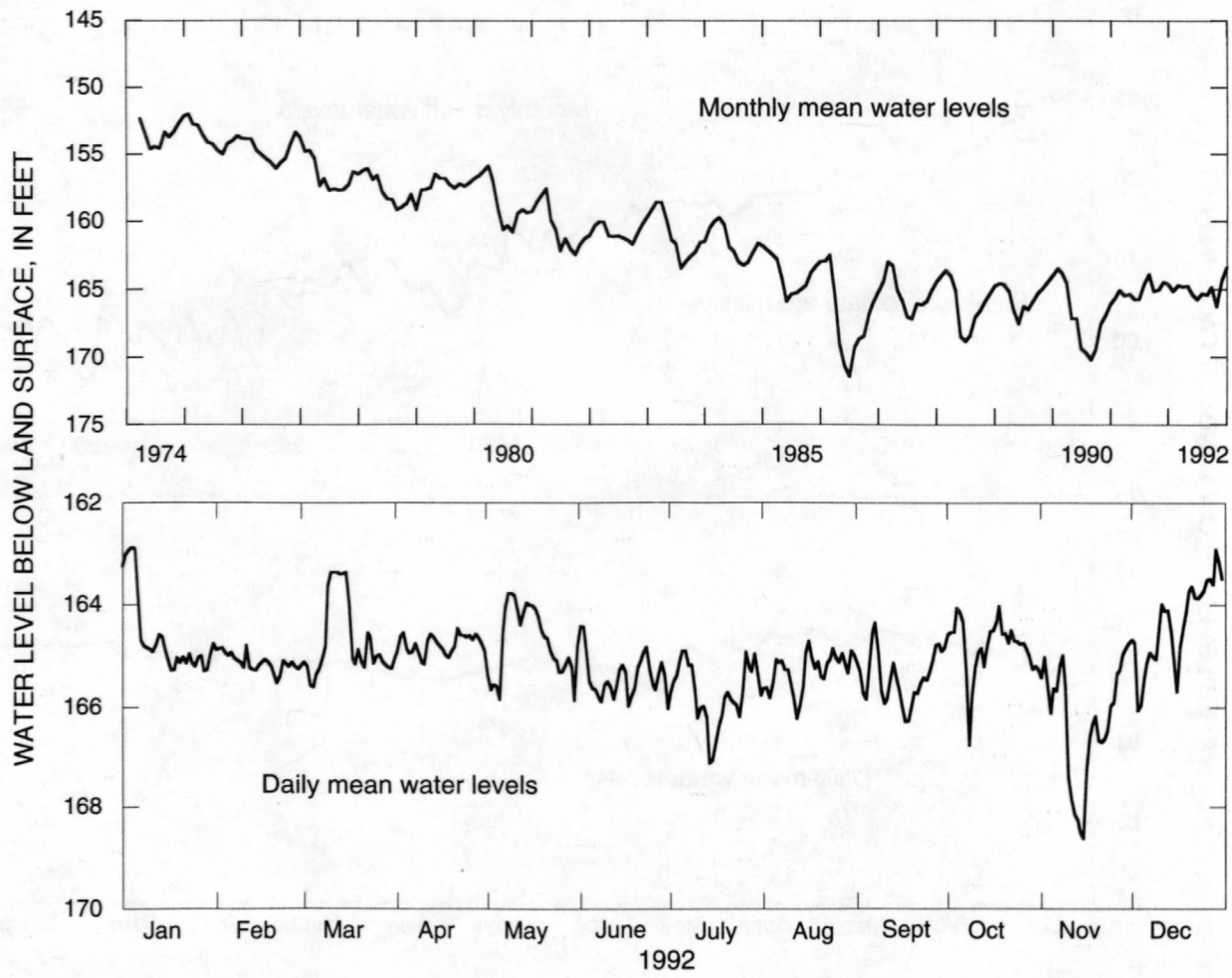


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	79.33	78.66	78.45	78.52	79.01	79.19	79.18	79.42	79.10	78.93	78.80	78.62
LOW	79.73	78.94	78.74	78.92	79.70	79.46	79.45	79.58	79.27	79.11	79.00	78.73
HIGH	78.82	78.39	78.22	78.22	78.57	79.04	78.94	79.16	78.97	78.80	78.57	78.43

CAL YR	1992		MEAN	78.93		HIGH	78.22		LOW	79.89		

Figure 41.--Water level in observation well 25Q001, Montgomery County.

321302082243601 Local number, 26R001.
LOCATION.--Lat 32°13'02", long 82°24'36", Hydrologic Unit 03070107.
Owner: City of Vidalia, well 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled municipal supply well, diameter 12 in., depth 1,000 ft, cased to 720 ft, open hole.
DATUM.--Altitude of land-surface datum is 285 ft.
REMARKS.--None.
PERIOD OF RECORD.--April 1974 to current.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 151.64 ft below land-surface datum, April 15, 1974; lowest, 171.94 ft below land-surface datum, July 10, 1986.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	164.62	165.13	164.69	164.78	164.73	165.40	165.74	165.29	165.41	164.82	166.26	164.37
LOW	165.29	165.53	165.61	165.16	165.86	166.03	167.12	166.23	166.29	166.76	168.64	166.07
HIGH	162.88	164.79	163.36	164.46	163.77	164.44	164.89	164.71	164.35	164.02	164.75	162.92

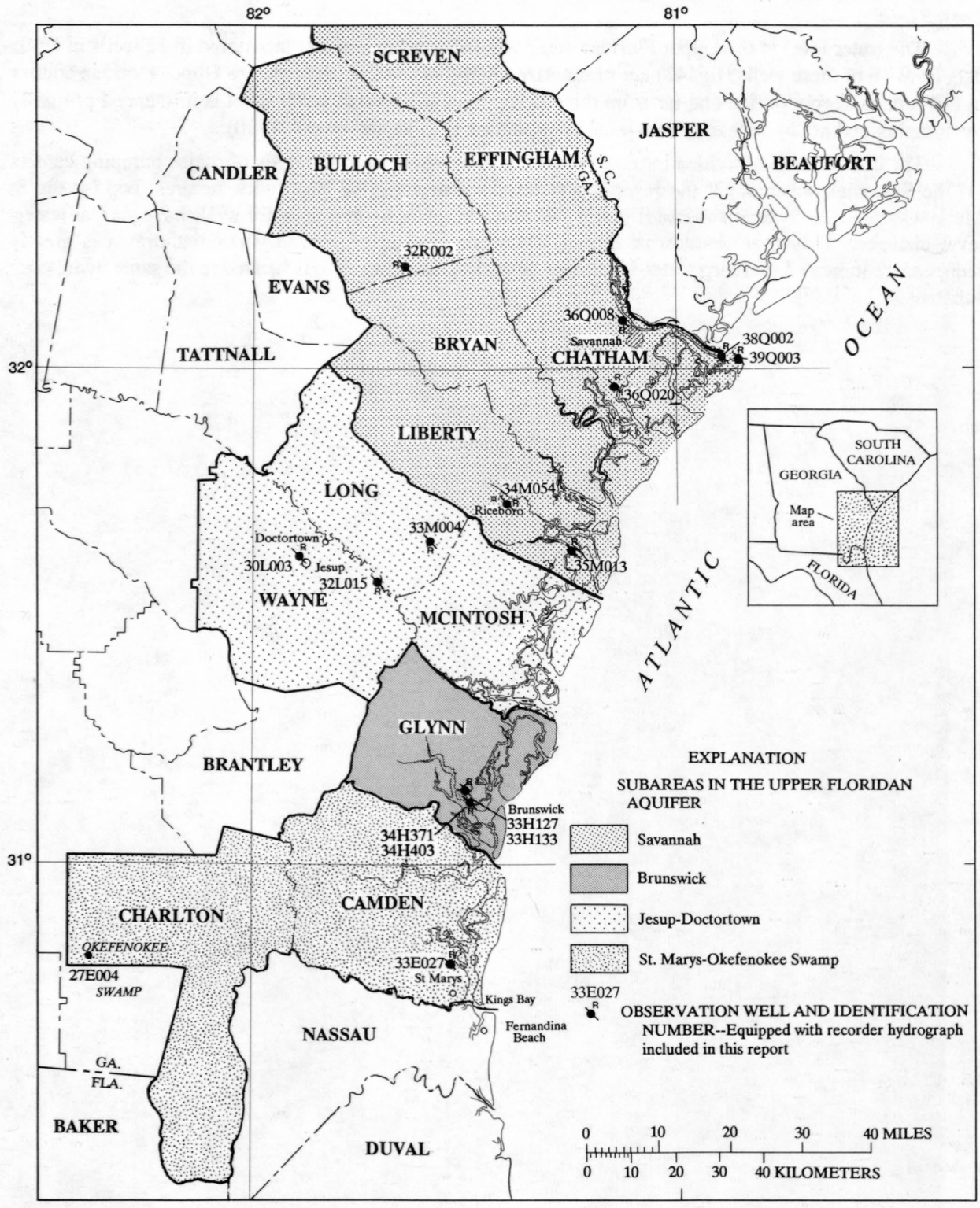
CAL YR	1992		MEAN	165.10		HIGH	162.88		LOW	168.64		

Figure 42.--Water level in observation well 26R001, Toombs County.

Coastal area

The water level in the Upper Floridan aquifer in the coastal area was monitored in 22 wells in 1992; data from 16 of these wells (fig. 43) are summarized in figures 44-59. Because the Upper Floridan aquifer in this area is deeply buried and far from the outcrop area, the ground-water level is influenced primarily by pumping and not by recharge from local precipitation (Clarke and others, 1990).

The coastal area is divided into the following four subareas on the basis of major pumping centers (1) the Savannah subarea; (2) the Jesup-Doctortown subarea; (3) the Brunswick subarea; and (4) the St Marys-Okefenokee Swamp subarea (fig. 43). Within a subarea, hydrographs for wells have similar water-level changes. Industrial shutdowns, during which the amount of ground water withdrawn is greatly reduced, are indicated by sharp water-level rises on hydrographs from wells located in the same hydrologic subarea.



Base from U.S. Geological Survey
State base maps

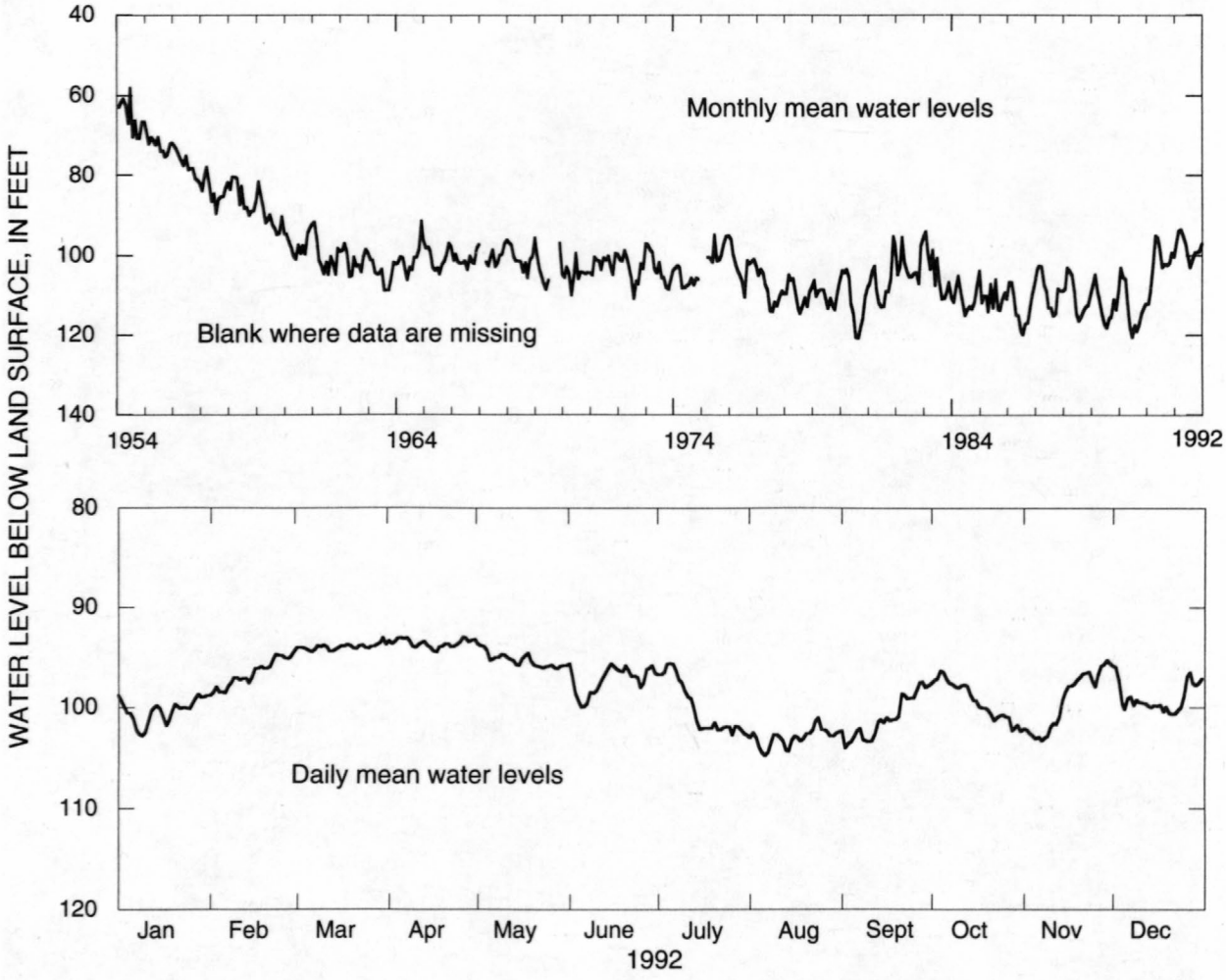
Figure 43.--Subareas and locations of observation wells completed in the Upper Floridan aquifer in the in the coastal area.

Savannah subarea

The water level in the Upper Floridan aquifer in the Savannah subarea was monitored in 11 wells in 1992; data from 7 of these wells (fig. 43) are summarized in figures 44-50. In this subarea, the water level in the Upper Floridan aquifer mainly is affected by pumping for municipal and industrial uses, and as a result of this pumping, a cone of depression has developed in the potentiometric surface at Savannah (Peck, 1991).

Hydrographs for observation wells near the center of pumping in Savannah and in outlying areas illustrate the effects of pumping on the ground-water levels. The 1992 annual mean water levels in wells near the area of the cone of depression at Savannah (figs. 44-47) were from about 1.5 to 4.6 ft higher than in 1991. During 1992, the annual mean water levels in wells in the outlying areas (figs. 48-50) ranged from 1.8 to 2.0 ft higher than in 1991.

320530081085001 Local number, 36Q008.
LOCATION.--Lat 32°05'30", long 81°08'50", Hydrologic Unit 03060204.
Owner: Layne-Atlantic Co.
INSTRUMENTATION.--Analog recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 4 in., depth 406 ft, cased to 250 ft, open hole.
DATUM.--Altitude of land-surface datum is 9.91 ft.
REMARKS.--Water levels for period of missing record, October 8-25, were estimated.
PERIOD OF RECORD.--February 1954 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 49.17 ft below land-surface datum, July 11, 1954; lowest, 124.40 ft below land-surface datum, August 30, 1980.

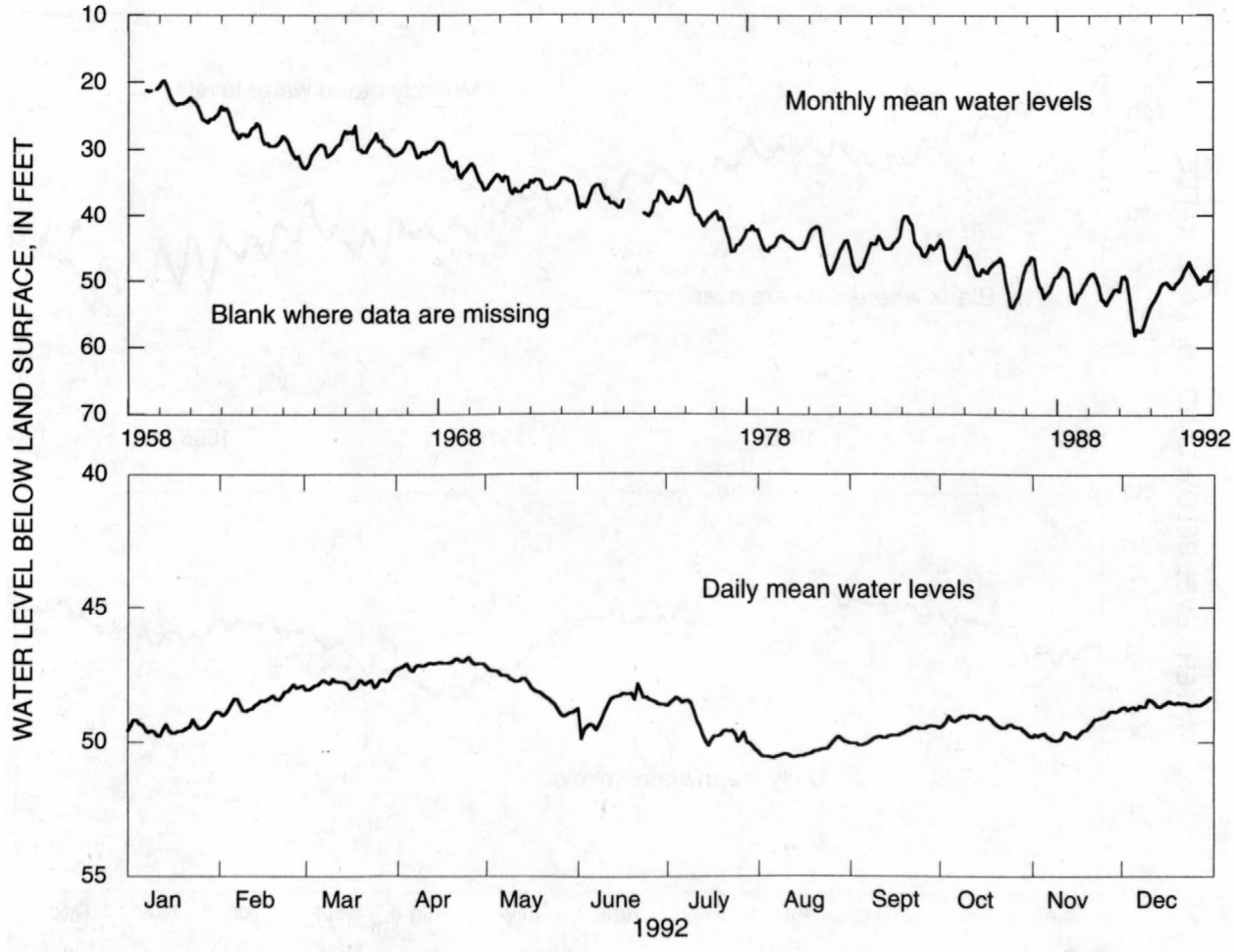


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	100.38	96.61	93.92	93.54	95.25	97.21	100.08	102.97	101.01	99.35	99.37	99.02
LOW	102.81	98.60	94.42	94.42	96.07	99.93	102.78	104.73	103.99	102.41	103.33	100.72
HIGH	98.74	94.40	92.96	92.93	93.82	95.61	95.58	101.03	97.48	96.37	95.32	96.03

CAL YR	1992		MEAN	98.24		HIGH	92.93		LOW	104.73		

Figure 44.--Water level in observation well 36Q008, Chatham County.

320021081124801 Local number, 36Q020.
LOCATION.--Lat 32°00'18", long 81°12'48", Hydrologic Unit 03060204.
Owner: H. J. Morrison.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 3 in., depth 365 ft, cased to 330 ft, open hole.
DATUM.--Altitude of land-surface datum is 13 ft.
REMARKS.--Borehole geophysical survey, May 7, 1985. Water levels for periods of missing record, June 2-22 and July 1-27, were estimated.
PERIOD OF RECORD.--March 1958 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.66 ft below land-surface datum, June 28, 1958; lowest, recorded, 58.56 ft below land-surface datum, July 12, 1990, but may have been lower during period of missing record, July 13-22, 1990.

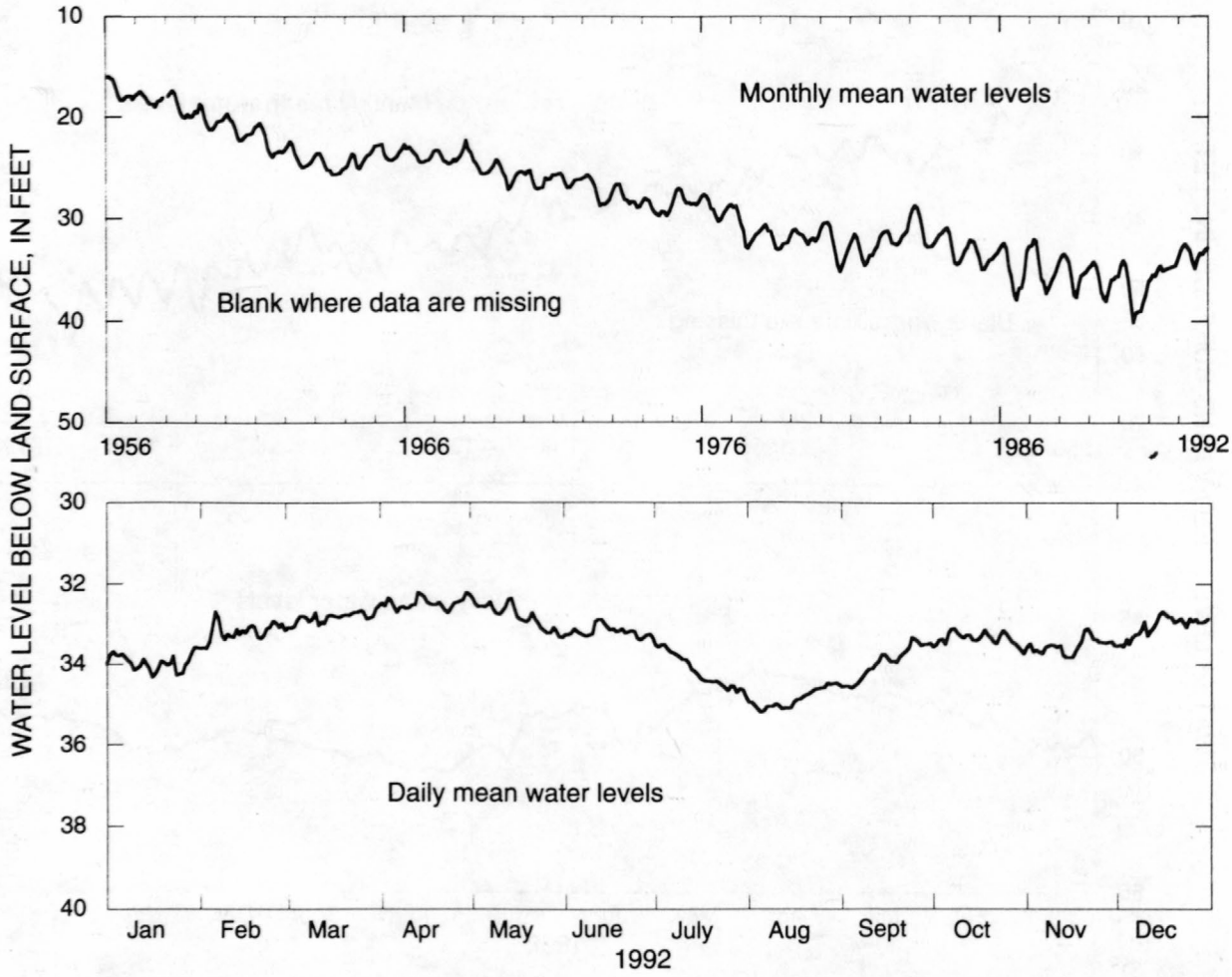


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	49.46	48.47	47.80	47.10	48.06	48.67	49.40	50.38	49.76	49.29	49.52	48.62
LOW	49.80	49.02	48.07	47.38	49.02	49.88	50.31	50.62	50.15	49.77	49.97	48.82
HIGH	48.89	47.87	47.34	46.86	47.33	47.84	48.36	49.82	49.42	49.03	48.85	48.35

CAL YR	1992		MEAN	48.88		HIGH	46.86		LOW	50.62		

Figure 45.--Water level in observation well 36Q020, Chatham County.

320202080541201 Local number, 38Q002.
LOCATION.--Lat 32°02'01", long 80°54'11", Hydrologic Unit 03060204.
Owner: U.S. Department of the Interior, National Park Service, test well 6.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 8 in., depth 348 ft, cased to 110 ft, open hole.
DATUM.--Altitude of land-surface datum is 8.0 ft.
REMARKS.--Borehole geophysical survey conducted June 16, 1961.
PERIOD OF RECORD.--February 1956 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 16.00 ft below land-surface datum, March 5, 1956; lowest, 40.69 ft below land-surface datum, July 16, 1990.

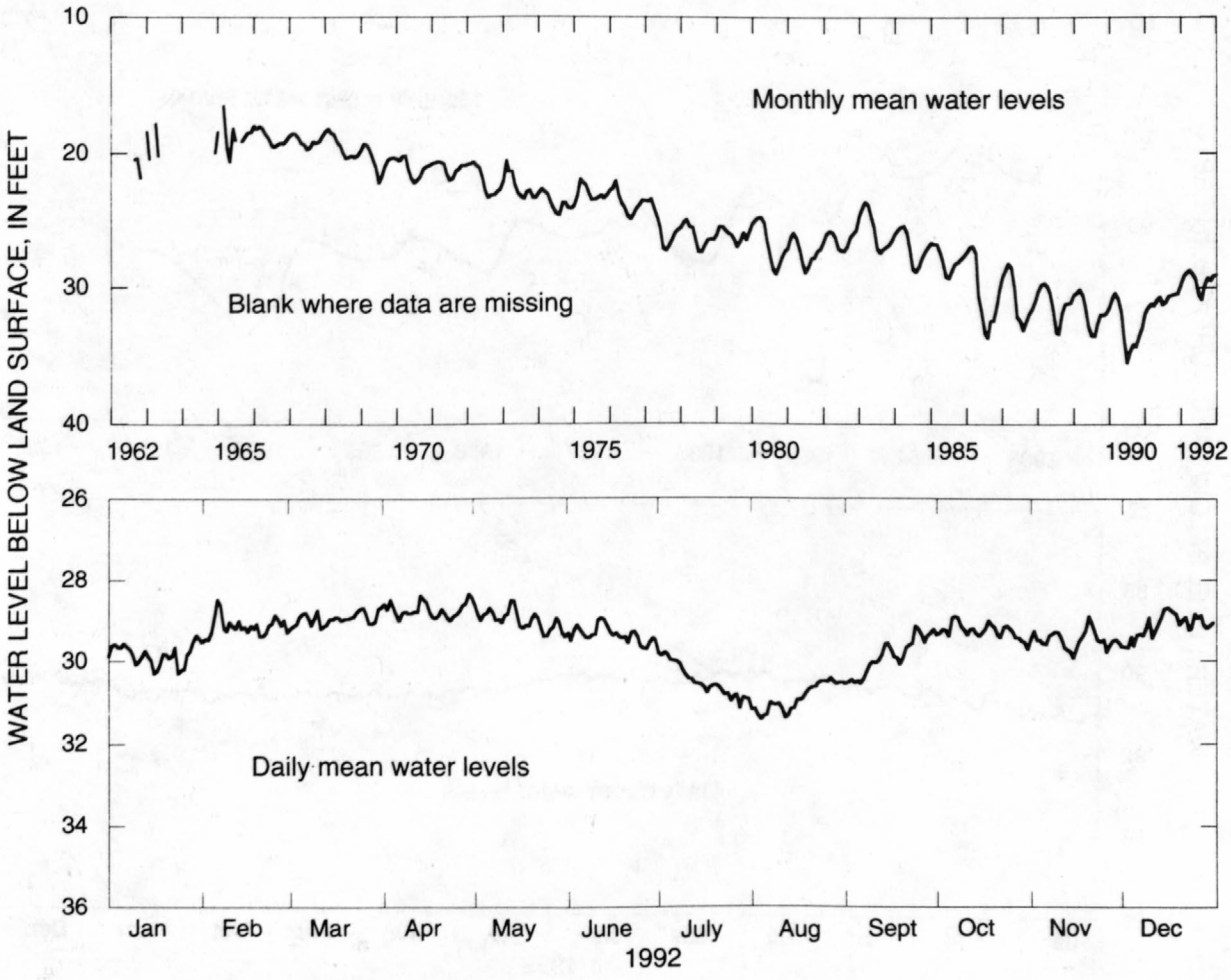


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	33.97	33.20	32.83	32.49	32.81	33.19	34.18	34.85	33.95	33.37	33.54	33.07
LOW	34.33	33.62	33.10	32.73	33.34	33.39	34.80	35.19	34.59	33.74	33.84	33.57
HIGH	33.58	32.70	32.56	32.22	32.35	32.89	33.50	34.47	33.33	33.12	33.12	32.70

CAL YR	1992		MEAN	33.46		HIGH	32.22		LOW	35.19		

Figure 46.--Water level in observation well 38Q002, Chatham County.

320122080510204 Local number, 39Q003.
LOCATION.--Lat 32°01'22", long 80°51'01", Hydrologic Unit 03060204.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 10 in., depth 600 ft, cased to 129 ft, open hole.
DATUM.--Altitude of land-surface datum is 7.0 ft.
REMARKS.--Borehole geophysical survey conducted January 24, 1962.
PERIOD OF RECORD.--May 1962 to current year; continuous record, September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.80 ft below land-surface datum, April 11, 1963; lowest, 36.07 ft below land-surface datum, July 11-12, 1990.

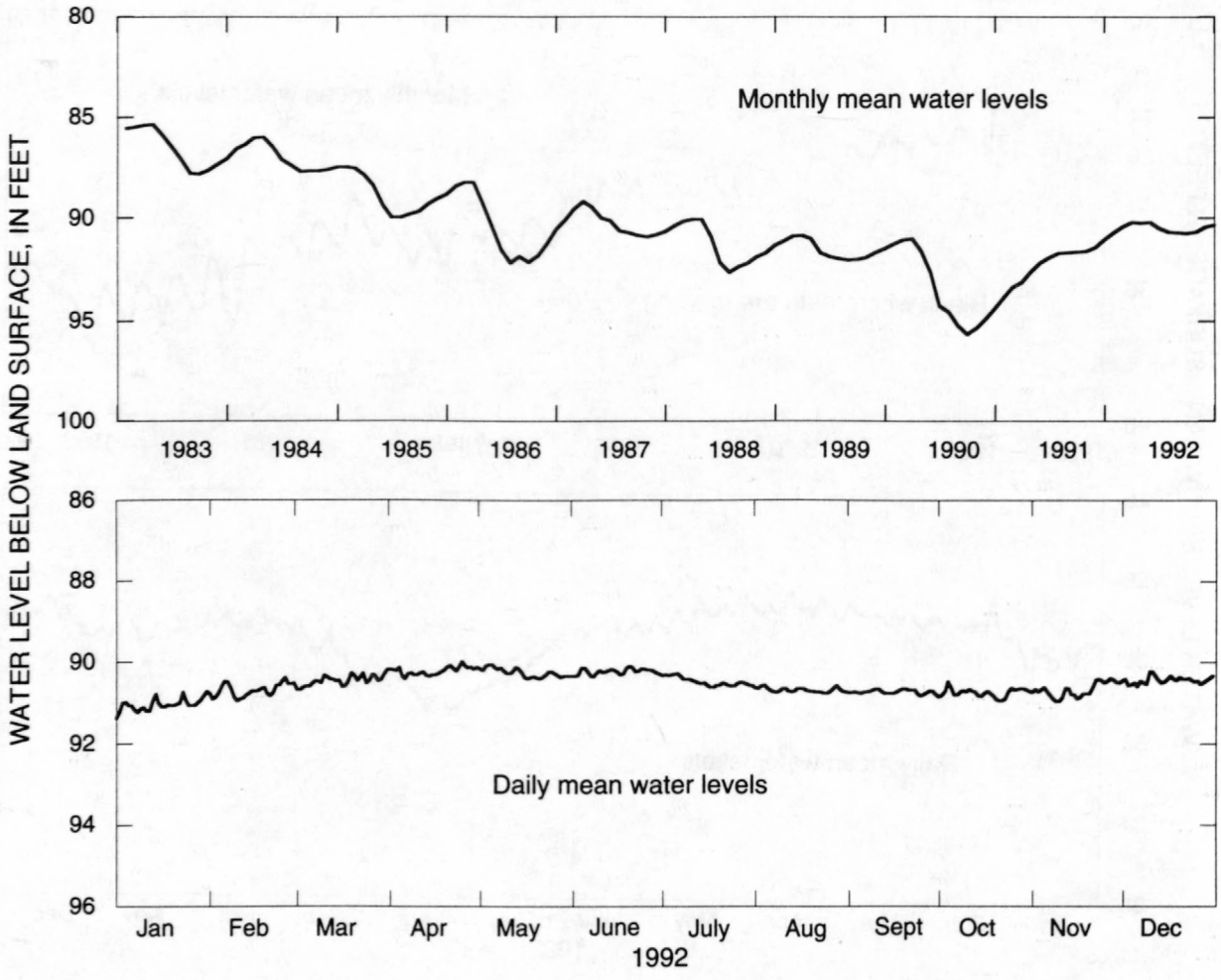


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	29.85	29.16	28.95	28.74	29.01	29.38	30.50	30.93	29.92	29.30	29.50	29.16
LOW	30.31	29.50	29.22	29.02	29.44	29.73	31.16	31.43	30.59	29.74	29.95	29.70
HIGH	29.37	28.48	28.68	28.35	28.51	28.96	29.80	30.44	29.19	28.94	28.92	28.71

CAL YR	1992		MEAN	29.54		HIGH	28.35		LOW	31.43		

Figure 47.--Water level in observation well 39Q003, Chatham County.

321240081411501 Local number, 32R002.
LOCATION.--Lat 32°12'40", long 81°41'15", Hydrologic Unit 03060202.
Owner: Georgia Geologic Survey, Bulloch South test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 804 ft, cased to 420 ft, open hole.
DATUM.--Altitude of land-surface datum is 120 ft.
REMARKS.--Borehole geophysical survey and well sounded August 1982. Water levels for period of missing record, August 19-24, were estimated.
PERIOD OF RECORD.--February 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 85.08 ft below land-surface datum, April 24, 1983; lowest, 95.94 ft below land-surface datum, October 8, 1990.

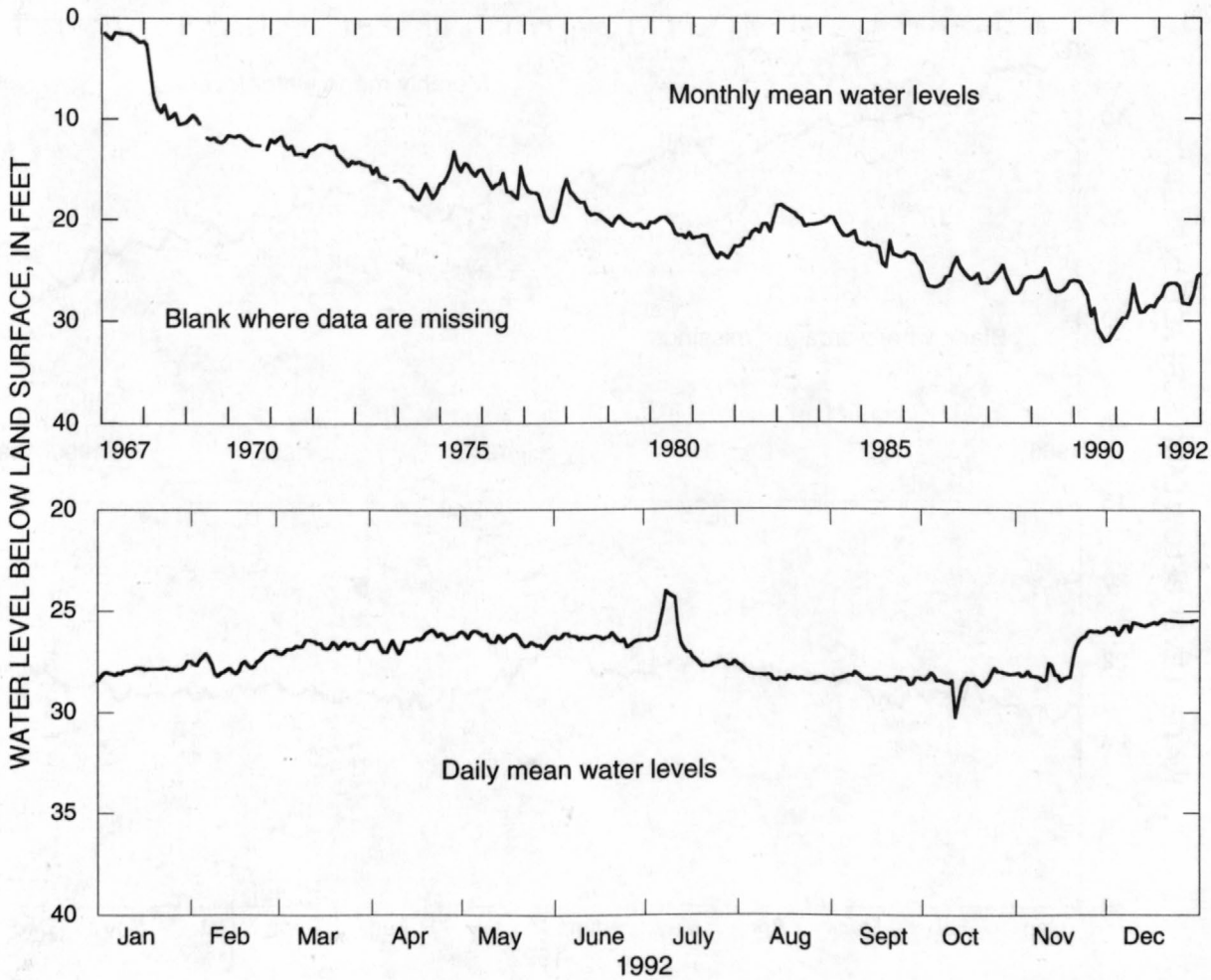


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	91.04	90.69	90.44	90.21	90.25	90.22	90.48	90.68	90.72	90.74	90.67	90.44
LOW	91.24	90.95	90.67	90.40	90.39	90.35	90.62	90.75	90.81	90.94	90.95	90.60
HIGH	90.73	90.38	90.16	89.98	90.05	90.08	90.28	90.56	90.64	90.47	90.40	90.23

CAL YR	1992		MEAN	90.55		HIGH	89.98		LOW	91.37		

Figure 48.--Water level in observation well 32R002, Bulloch County.

314343081251901 Local number, 34M054.
LOCATION.--Lat 31°43'43", long 81°25'19", Hydrologic Unit 03060204.
Owner: U.S. Geological Survey, test well 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 802 ft, cased to 467 ft, open hole.
DATUM.--Altitude of land-surface datum is 19 ft.
REMARKS.--Well pumped July 11, 1979; water-quality sample collected at conclusion of pumping. Borehole geophysical survey conducted June 15, 1976.
PERIOD OF RECORD.--February 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.85 ft below land-surface datum, February 5, 1967; lowest, 32.34 ft below land-surface datum, November 14, 1990.

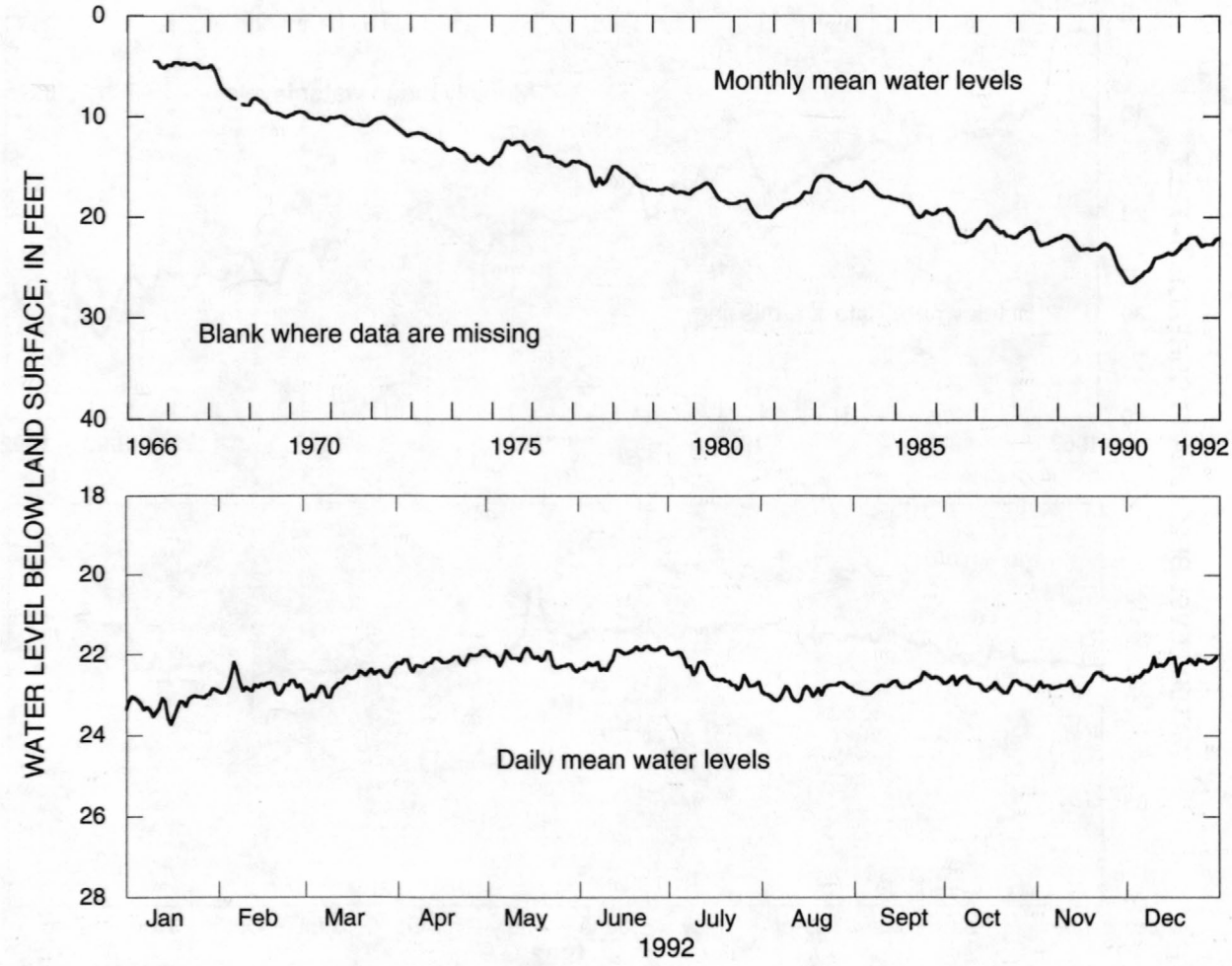


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	27.93	27.57	26.72	26.43	26.37	26.36	26.66	28.25	28.34	28.42	27.47	25.66
LOW	28.28	28.20	27.11	27.09	26.82	26.80	27.78	28.46	28.65	30.26	28.46	26.18
HIGH	27.47	26.94	26.43	25.90	25.97	26.09	24.05	27.74	28.01	27.79	25.97	25.40

CAL YR	1992		MEAN	27.18		HIGH	24.05		LOW	30.26		

Figure 49.--Water level in observation well 34M054, Liberty County.

313823081154201 Local number, 35M013.
LOCATION.--Lat 31°38'23", long 81°15'42", Hydrologic Unit 03060204.
Owner: U.S. Department of the Interior, Fish and Wildlife Service.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 10 in., depth 553 ft, cased to 376 ft, open hole.
DATUM.--Altitude of land-surface datum is 16.3 ft.
REMARKS.--Well pumped August 3, 1976; water-quality sample collected at conclusion of pumping. Borehole geophysical survey conducted June 16, 1976. Water levels for period of missing record, January 23-29, were estimated.
PERIOD OF RECORD.--September 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.35 ft below land-surface datum, October 4, 1966; lowest, 26.88 ft below land-surface datum, November 14, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	23.21	22.77	22.66	22.15	22.11	22.03	22.46	22.91	22.74	22.73	22.69	22.28
LOW	23.74	23.01	23.07	22.41	22.42	22.39	22.86	23.16	22.98	22.95	22.93	22.68
HIGH	22.85	22.19	22.26	21.90	21.84	21.79	21.93	22.69	22.43	22.53	22.43	22.05

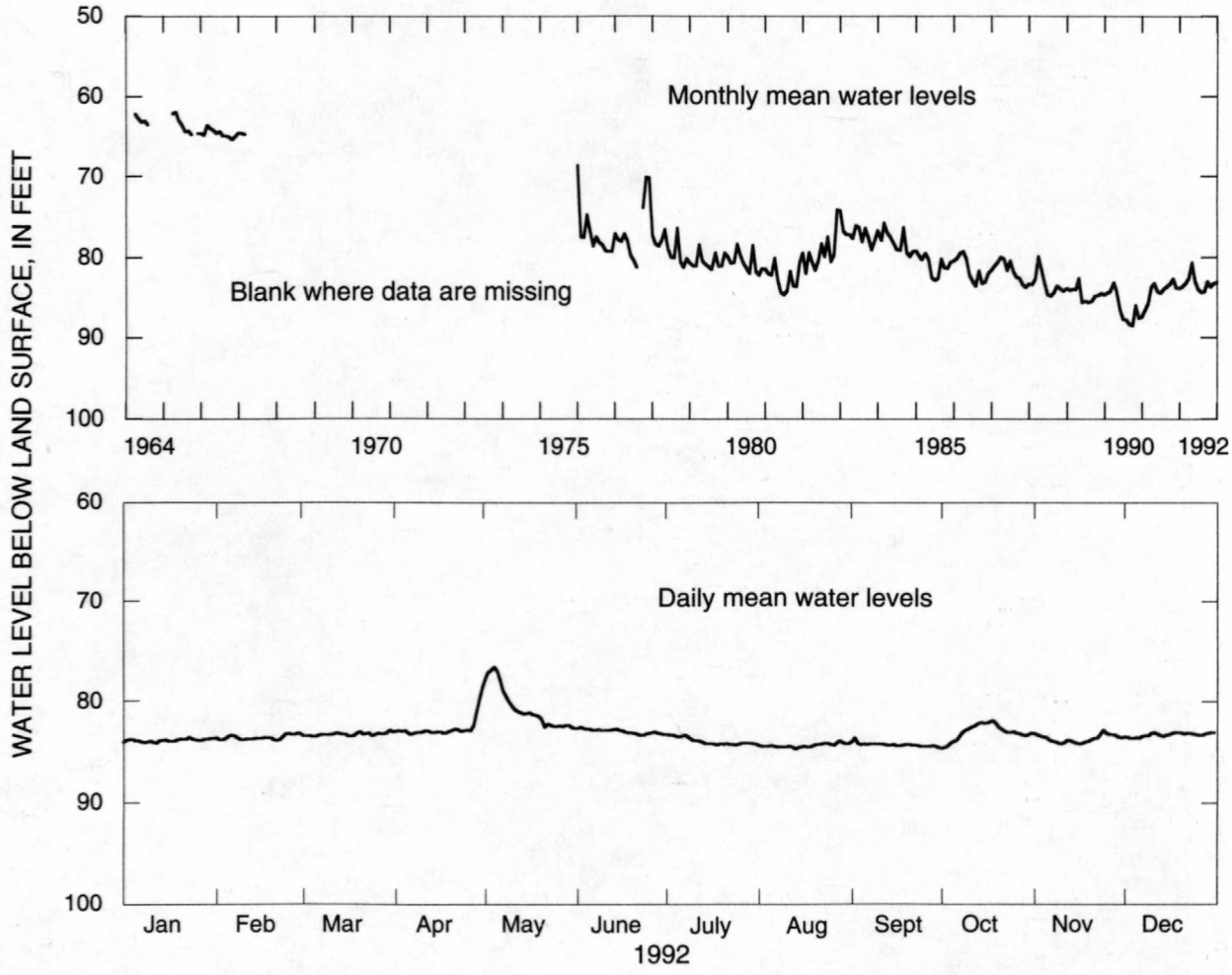
CAL YR	1992		MEAN	22.56		HIGH	21.79		LOW	23.74		

Figure 50.--Water level in observation well 35M013, McIntosh County.

Jesup-Doctortown subarea

The water level in the Upper Floridan aquifer in the Jesup-Doctortown subarea was monitored in three wells in 1992 (fig. 43), each of which are summarized in figures 51-53. In this area, water levels in wells tapping the aquifer are affected mainly by industrial pumping at Doctortown, near Jesup. In 1992, a partial industrial shutdown, during which the major ground-water user temporarily ceased pumping, is indicated by a sharp water-level rise on all three hydrographs in late April. The 1992 mean water levels in the three wells (figs. 51-53) were from about 1.1 to 1.7 ft higher than in 1991.

313701081543501 Local number, 30L003.
LOCATION.--Lat 31°37'01", long 81°54'34", Hydrologic Unit 03070106.
Owner: City of Jesup Housing Authority.
INSTRUMENTATION.--Analog recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 4 in., depth 584 ft, cased to 472 ft, open hole.
DATUM.--Altitude of land-surface datum is 107 ft.
REMARKS.--Borehole geophysical survey conducted August 19, 1963.
PERIOD OF RECORD.--January 1964 to March 1967; February 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 59.98 ft below land-surface datum, April 19, 1964; lowest, 88.91 ft below land-surface datum, October 7, 1990.

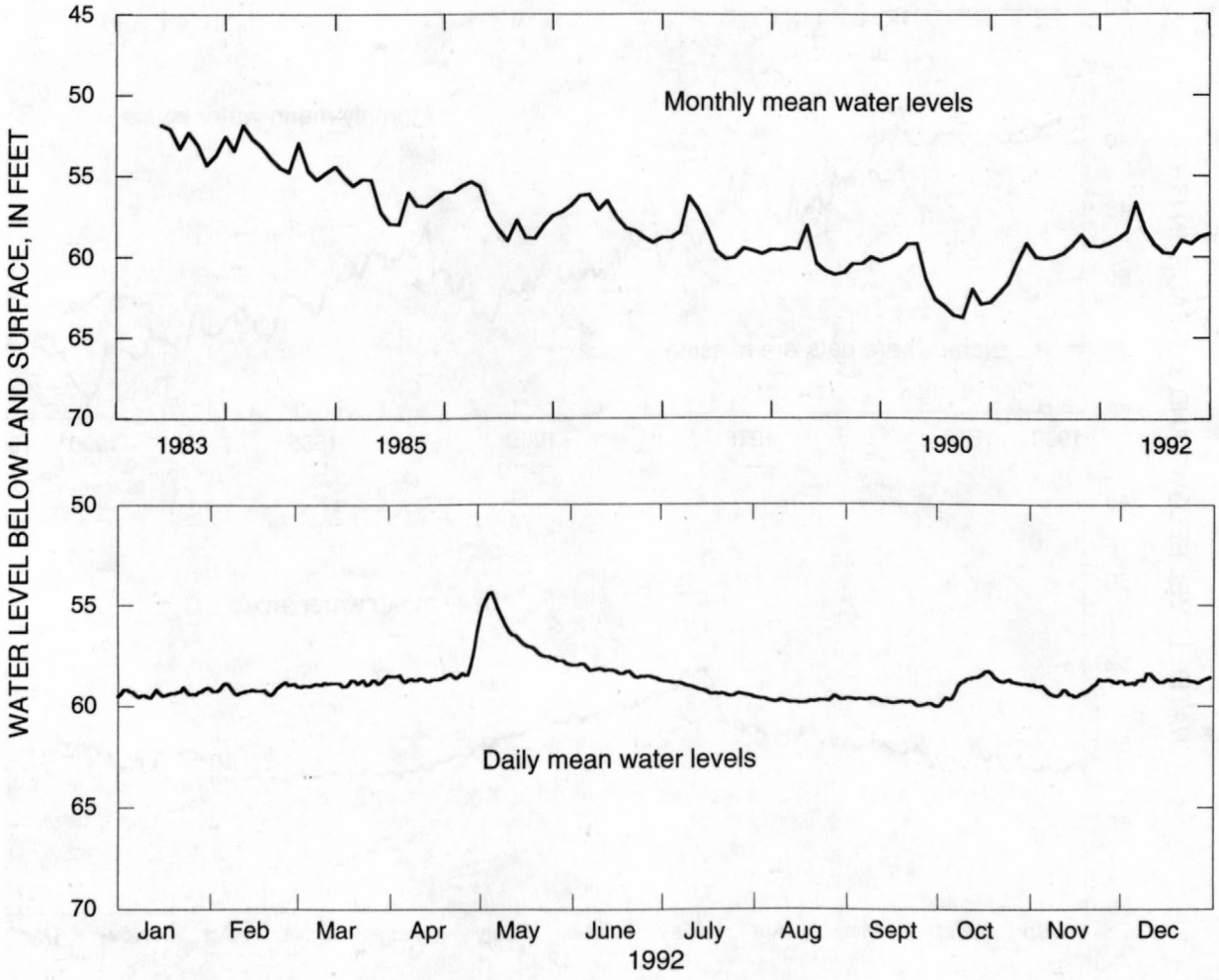


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	83.95	83.68	83.29	82.67	80.69	82.97	83.98	84.38	84.31	83.06	83.71	83.32
LOW	84.20	83.99	83.54	83.26	82.68	83.36	84.35	84.69	84.61	84.58	84.22	83.66
HIGH	83.69	83.21	82.88	78.60	76.55	82.54	83.35	83.94	83.62	81.90	82.88	83.08

CAL YR	1992		MEAN	83.33		HIGH	76.55		LOW	84.69		

Figure 51.--Water level in observation well 30L003, Wayne County.

313253081433502 Local number, 32L015.
LOCATION.--Lat 31°32'52", long 81°43'36", Hydrologic Unit 03070106.
Owner: Georgia Geologic Survey, Gardi test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 750 ft, cased to 545 ft, open hole.
DATUM.--Altitude of land-surface datum is 74 ft.
REMARKS.--Borehole geophysical survey conducted April 20, 1983.
PERIOD OF RECORD.--April 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 49.12 ft below land-surface datum, March 19, 1984; lowest, 64.05 ft below land-surface datum, October 7-8, 1990.

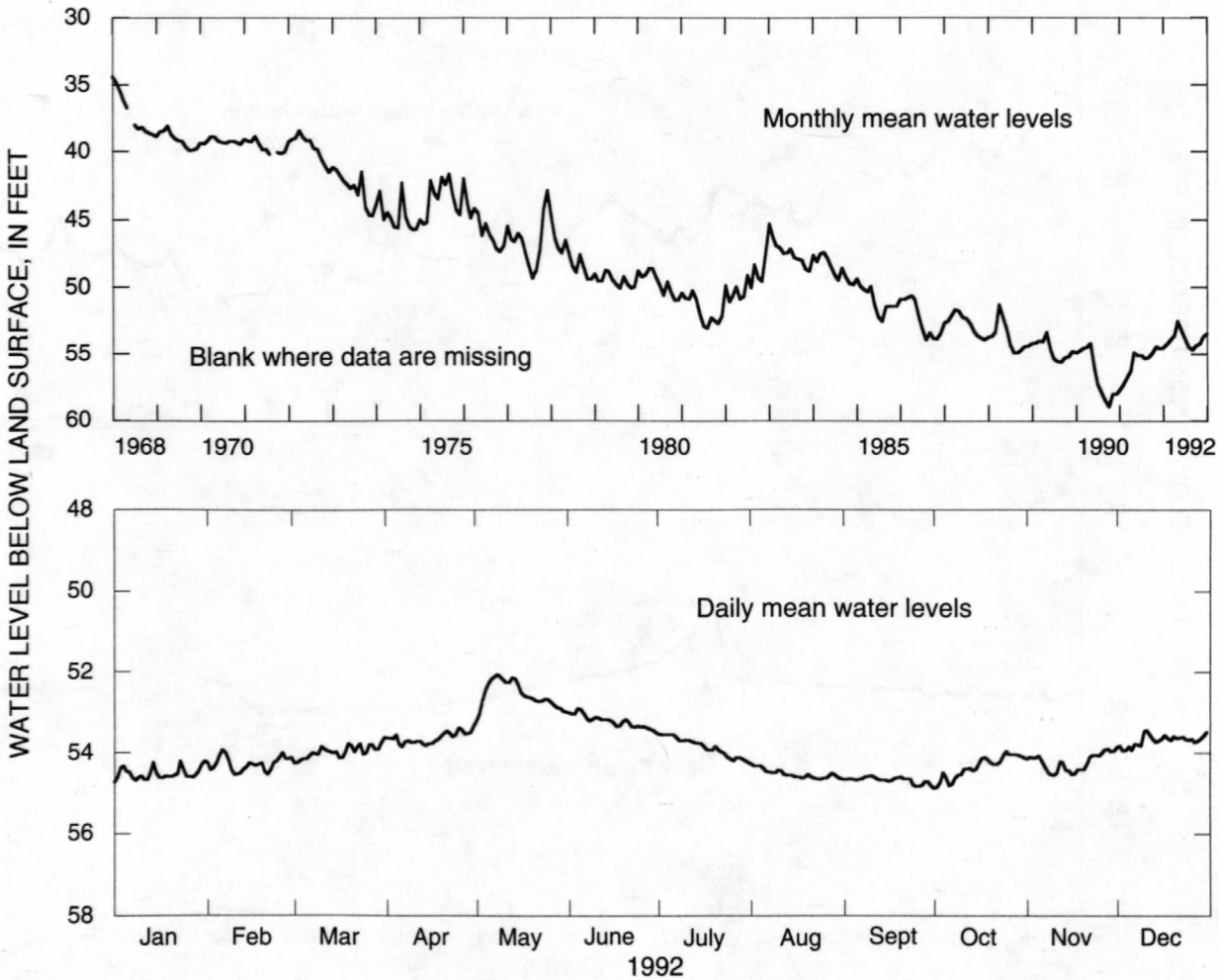


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	59.37	59.17	58.89	58.48	56.62	58.34	59.23	59.75	59.81	58.97	59.16	58.75
LOW	59.59	59.46	59.06	58.82	57.98	58.73	59.55	59.88	60.02	59.99	59.57	58.95
HIGH	59.06	58.83	58.51	56.40	54.40	57.94	58.81	59.55	59.66	58.33	58.70	58.42

CAL YR	1992		MEAN	58.88		HIGH	54.40		LOW	60.06		

Figure 52.--Water level in observation well 32L015, Wayne County.

313845081361701 Local number, 33M004.
LOCATION.--Lat 31°38'54", long 81°36'04", Hydrologic Unit 03070106.
Owner: U.S. Geological Survey, test well 3.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4-3 in., depth 872 ft, cased to 538 ft, open hole.
DATUM.--Altitude of land-surface datum is 61.2 ft.
REMARKS.--Well pumped and sounded June 17, 1976, to depth of 861 ft; water-quality sample collected. Borehole geophysical survey conducted July 28, 1976. Water levels for period of missing record, July 20-26, were estimated.
PERIOD OF RECORD.--January 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.04 ft below land-surface datum, January 14, 1968; lowest, 59.00 ft below land-surface datum, October 8, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	54.53	54.29	53.96	53.62	52.55	53.21	53.85	54.53	54.68	54.36	54.24	53.69
LOW	54.70	54.56	54.25	53.85	53.03	53.48	54.25	54.66	54.84	54.86	54.56	53.95
HIGH	54.21	53.94	53.61	53.33	52.06	52.89	53.54	54.32	54.58	53.97	53.91	53.44

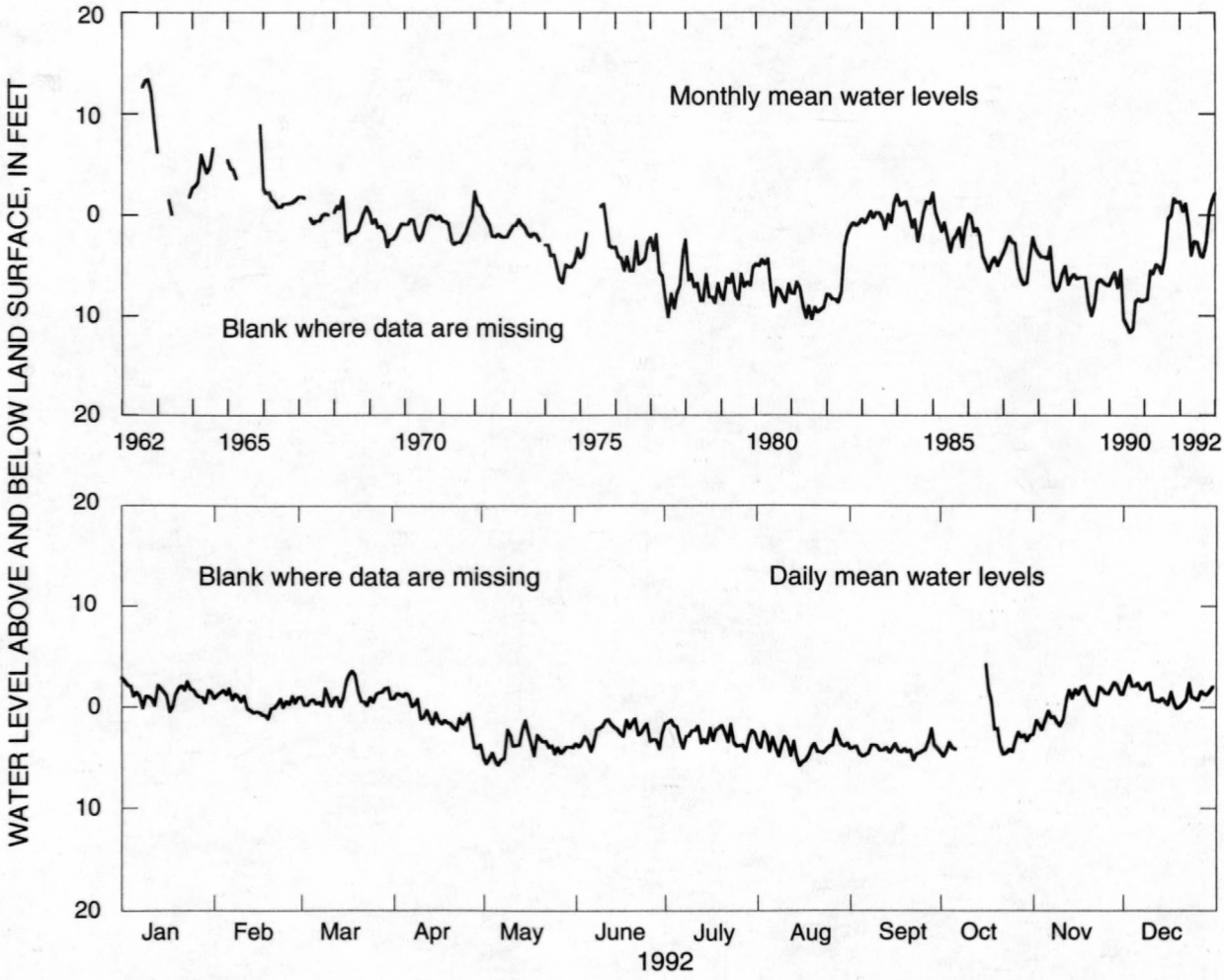
CAL YR	1992		MEAN	53.96		HIGH	52.06		LOW	54.89		

Figure 53.--Water level in observation well 33M004, Long County.

Brunswick subarea

The water level in the Upper Floridan aquifer in the Brunswick subarea (fig. 43) was monitored in six wells in 1992, four of which are summarized in figures 54-57. In this subarea, water levels in wells tapping this aquifer primarily are affected by industrial pumping. This pumping has resulted in the development of a cone of depression centered at Brunswick (Peck, 1991). The water-level response to pumping is illustrated in the hydrographs for wells 33H127 (fig. 54) and 34H403 (fig. 55) tapping the lower water-bearing zone of the Upper Floridan aquifer, and wells 33H133 (fig. 56) and 34H371 (fig. 57) tapping the upper water-bearing zone of the Upper Floridan aquifer. In 1992, a partial industrial shutdown, during which the major ground-water user temporarily ceased pumping, is indicated by a sharp water-level rise on all four hydrographs in October. The annual mean water levels in these wells ranged from 1.3 to 2.5 ft higher in 1992 than in 1991.

311007081301701 Local number, 33H127.
LOCATION.--Lat 31°10'06", long 81°30'16", Hydrologic Unit 03070203.
Owner: U.S. Geological Survey, test well 3.
INSTRUMENTATION.--Analog recorder.
AQUIFER.--Upper Floridan aquifer; lower water-bearing zone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 1,002 ft, cased to 823 ft, open hole.
DATUM.--Altitude of land-surface datum is 6.2 ft.
REMARKS.--Well pumped and sampled for analysis of chloride concentration semi-annually. Water levels for periods of missing record, October 17-28, November 20-22, 25-27, 29-30 to December 1, 4-8, 10-20, and 24-31, were estimated. Water levels for period, October 7-15, are missing.
PERIOD OF RECORD.--August 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.00 ft above land-surface datum, October 9, 1962; lowest, 13.22 ft below land-surface datum, July 9, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	-1.30	-0.36	-1.12	0.97	3.96	2.57	2.73	3.97	4.16	------	-0.32	-1.27
LOW	0.50	1.18	-0.05	4.08	5.72	4.36	4.36	5.81	5.25	4.90	2.24	0.13
HIGH	-2.50	-1.75	-3.59	-1.34	1.33	1.17	1.28	2.17	2.16	-4.20	-2.42	-3.07

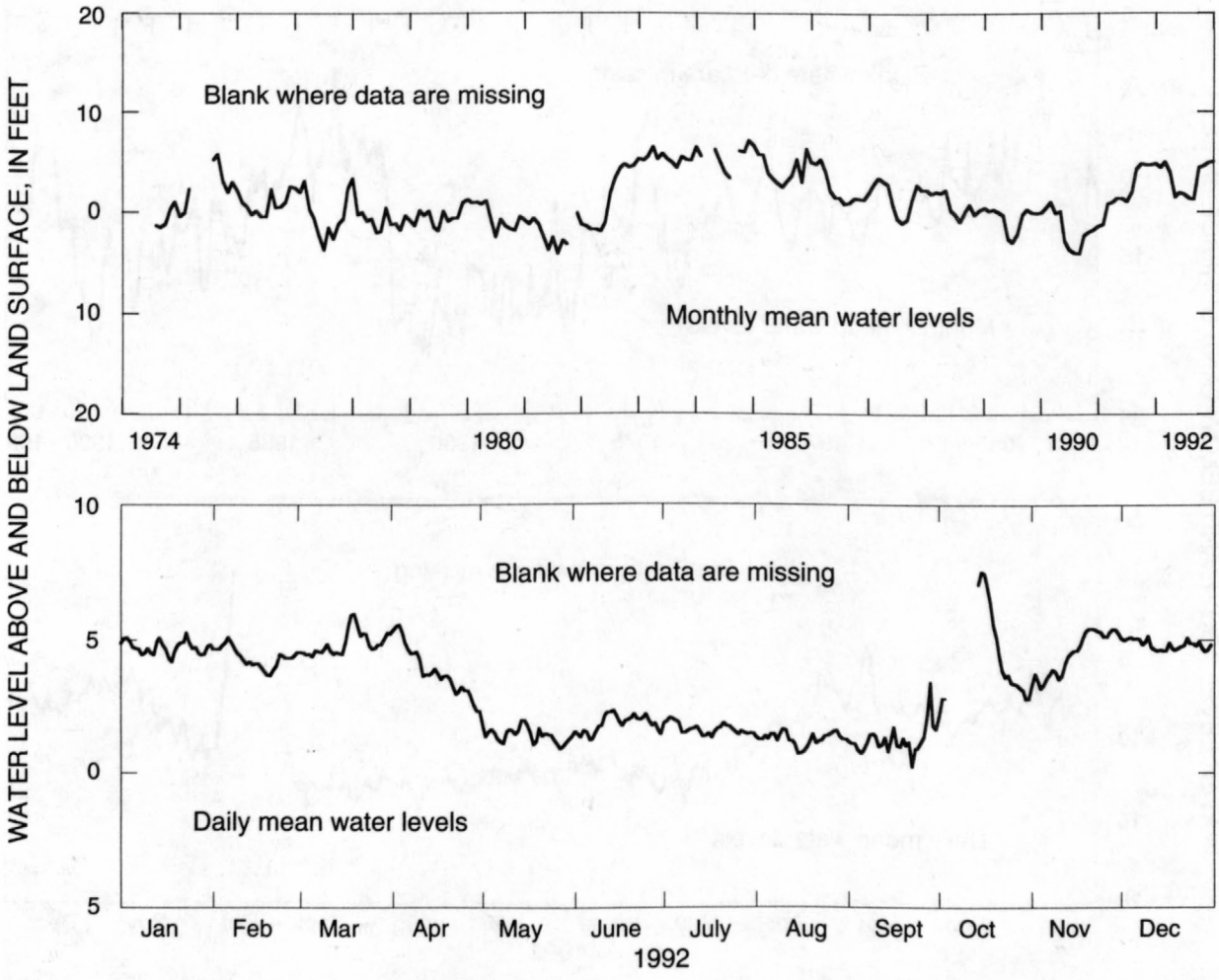
CAL YR 1992 MEAN 1.27 HIGH -4.20* LOW 5.81

* may have been higher or lower during period of missing record

[Negative value indicates water level above land surface]

Figure 54.--Water level in observation well 33H127, Glynn County.

310822081294201 Local number, 34H403.
LOCATION.--Lat 31°08'22", long 81°29'42", Hydrologic Unit 03070203.
Owner: U.S. Geological Survey, test well 24.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer; lower water-bearing zone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 982 ft, cased to 788 ft, open hole.
DATUM.--Altitude of land-surface datum is 9.6 ft.
REMARKS.--Well pumped and sampled for analysis of chloride concentration semi-annually. Borehole geophysical survey conducted September 9, 1970. Water levels for period of missing record, September 9-28, were estimated. Water levels for period, October 4-13, are missing.
PERIOD OF RECORD.--August 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.79 ft above land-surface datum, December 29, 1985; lowest, 4.76 ft below land-surface datum, September 14, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	-4.72	-4.35	-4.87	-3.84	-1.43	-1.83	-1.63	-1.26	-1.24	------	-4.51	-4.83
LOW	-4.19	-3.69	-4.39	-2.32	-0.90	-1.22	-1.31	-0.69	-0.22	-2.79	-3.19	-4.57
HIGH	-5.26	-5.10	-5.97	-5.57	-2.00	-2.35	-2.07	-1.62	-3.42	-7.50	-5.43	-5.14

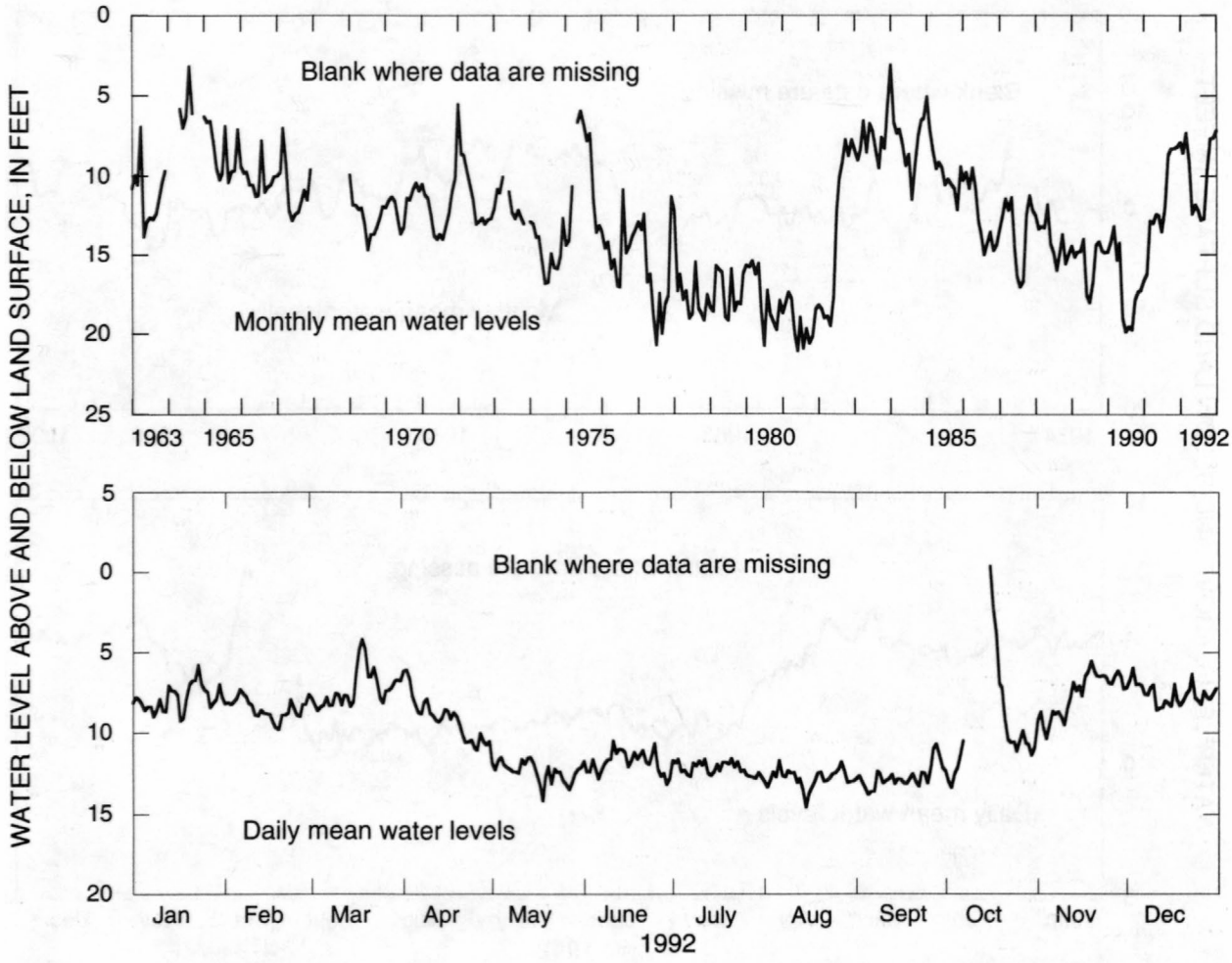
CAL YR 1992 MEAN -3.14 HIGH -7.50* LOW -0.22

* may have been higher or lower during period of missing record

[Negative value indicates water level above land surface]

Figure 55.--Water level in observation well 34H403, Glynn County.

311007081301702 Local number, 33H133.
LOCATION.--Lat 31°10'08", long 81°30'16", Hydrologic Unit 03070203.
Owner: U.S. Geological Survey, test well 6.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer; upper water-bearing zone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 790 ft, cased to 520 ft, open hole.
DATUM.--Altitude of land-surface datum is 6.7 ft.
REMARKS.--Well pumped and sampled for analysis of chloride concentration semi-annually. Borehole geophysical survey conducted September 26, 1977. Water levels for period of missing record, July 27-28, were estimated. Water levels for period, October 8-15, are missing.
PERIOD OF RECORD.--January 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.07 ft above land-surface datum, December 26, 1965; lowest, 21.87 ft below land-surface datum, July 22, 1977.



10	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	7.89	8.54	7.30	9.11	12.38	11.81	12.19	12.79	12.72	------	7.63	7.59
LOW	9.29	9.85	8.68	11.08	14.20	13.18	12.78	14.59	13.80	13.39	10.40	8.58
HIGH	5.85	7.34	4.19	6.11	11.49	10.49	11.58	11.70	10.68	-0.40	5.58	6.00

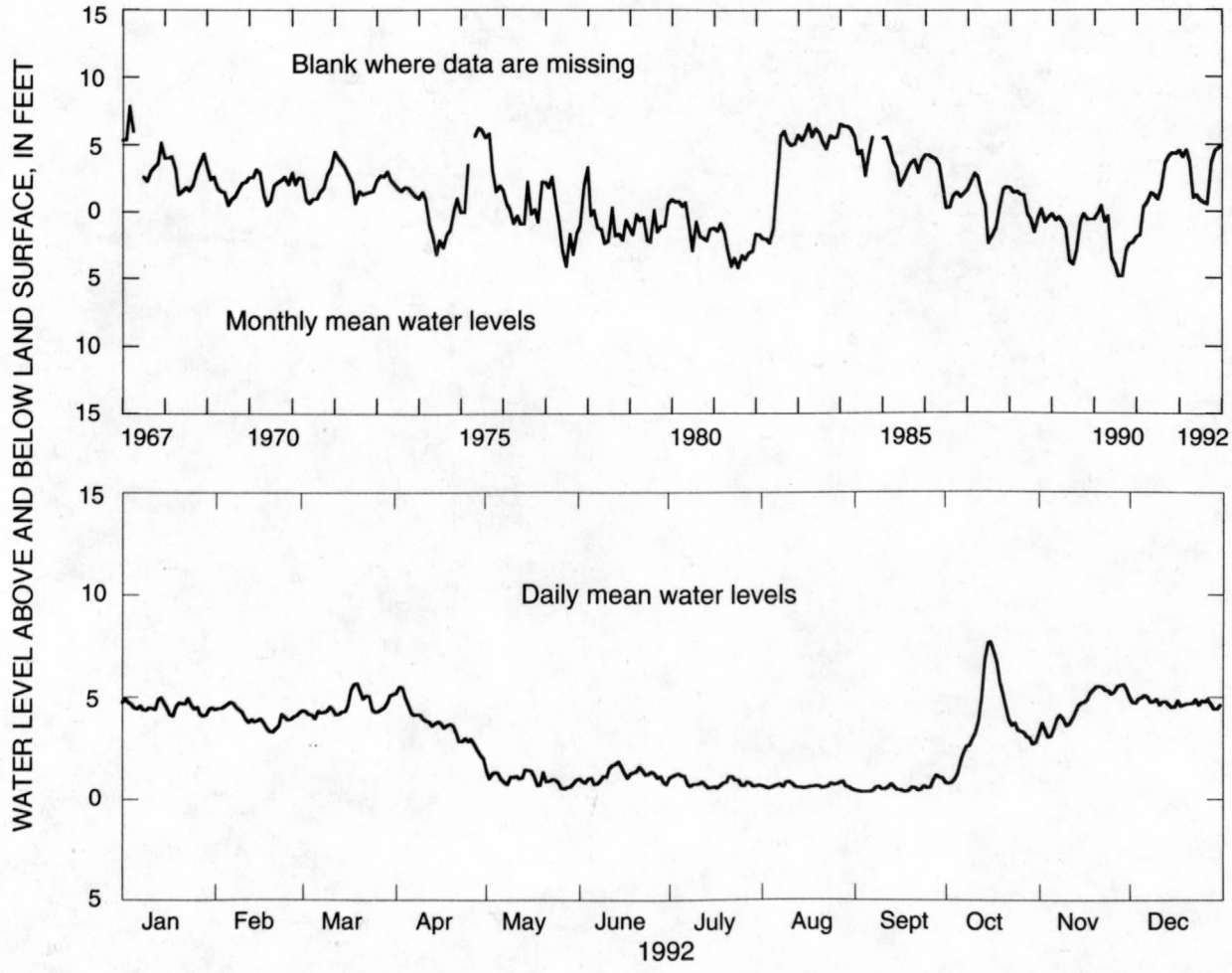
CAL YR	1992		MEAN	10.00		HIGH	-0.40*		LOW	14.59		

*may have been higher or lower during period of missing record

[negative value indicates water level above land surface]

Figure 56.--Water level in observation well 33H133, Glynn County.

310818081293701 Local number, 34H371.
LOCATION.--Lat 31°08'18", long 81°30'16", Hydrologic Unit 03070203.
Owner: U.S. Geological Survey, test well 11.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer; upper water-bearing zone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 3-2 in., depth 719 ft, cased to 512 ft, open hole.
DATUM.--Altitude of land-surface datum is 9.8 ft.
REMARKS.--Well pumped and sampled for analysis of chloride concentration semi-annually. Borehole geophysical survey conducted October 6, 1966. Water levels for period of missing record, August 16-19, were estimated.
PERIOD OF RECORD.--January 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.95 ft above land-surface datum, March 18-19, 1967; lowest, 5.64 ft below land-surface datum, September 14, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	-4.50	-4.05	-4.57	-3.66	-1.00	-1.21	-0.83	-0.62	-0.53	-3.61	-4.52	-4.71
LOW	-4.05	-3.30	-3.93	-1.99	-0.51	-0.72	-0.55	-0.47	-0.33	-0.75	-3.01	-4.42
HIGH	-4.95	-4.74	-5.64	-5.50	-1.45	-1.87	-1.27	-0.84	-1.14	-7.63	-5.59	-5.05

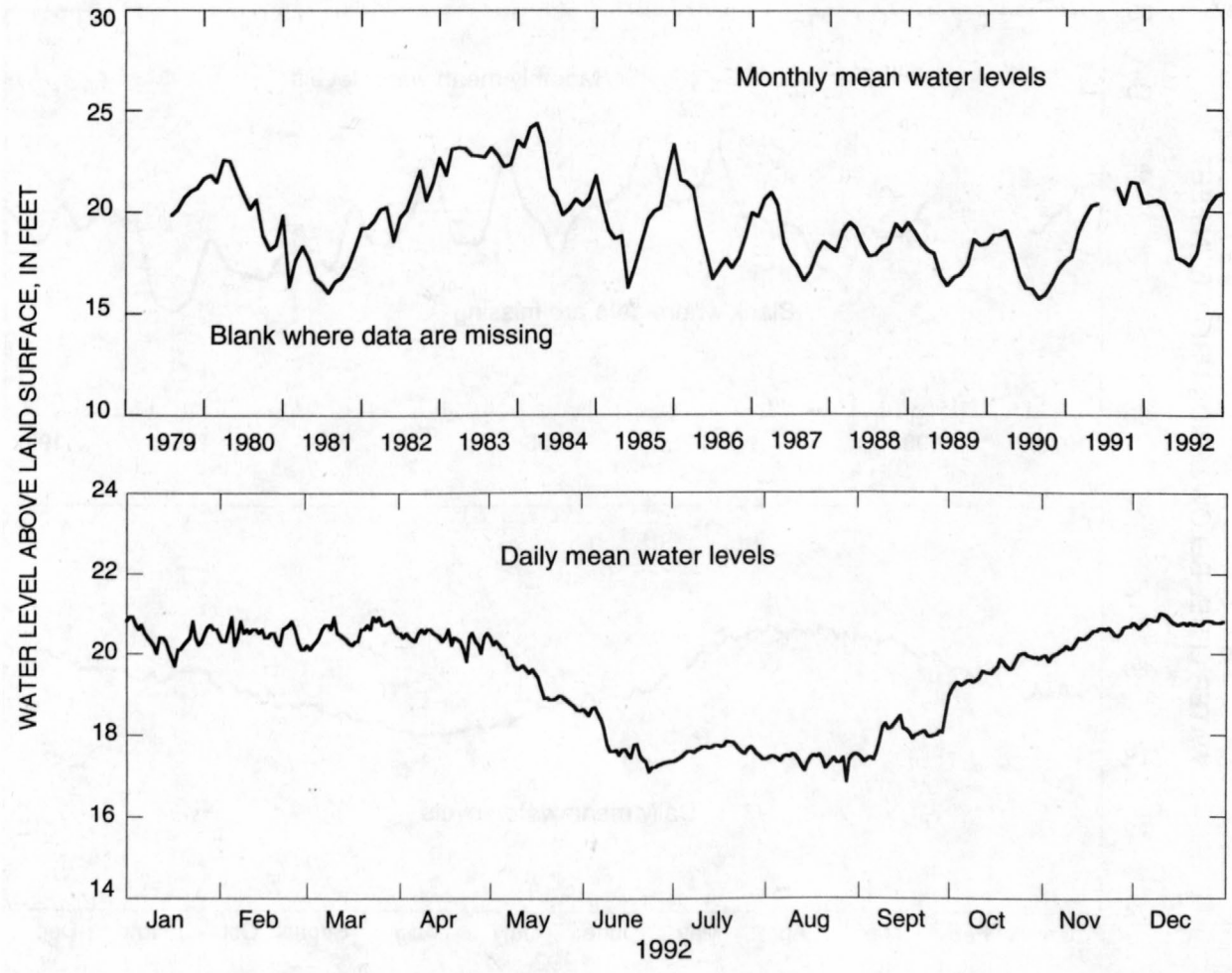
CAL YR	1992		MEAN	-2.81		HIGH	-7.63		LOW	-0.33		

[Negative value indicates water level above land surface]

Figure 57.--Water level in observation well 34H371, Glynn County.

The water level in the Upper Floridan aquifer in the St Marys-Okefenokee Swamp subarea (fig. 43) was monitored in two wells in 1992, four of which are summarized in figures 58-59. Water levels in wells tapping the aquifer in this subarea are affected by industrial pumping. The 1992 mean water levels in well 33E027 (fig. 58) at Kings Bay and well 27E004 (fig. 59) in western Charlton County were about 0.3 ft and 0.2 ft higher than in 1991, respectively.

304756081311101 Local number, 33E027.
LOCATION.--Lat 30°47'56", long 81°31'11", Hydrologic Unit 03070203.
Owner: U.S. Department of the Navy, Kings Bay test well 1.
INSTRUMENTATION.--Basic data recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled test well, diameter 8 in., depth 1,306 ft, cased to 555 ft, backfilled to 990 ft, open hole.
DATUM.--Altitude of land-surface datum is 10.0 ft.
REMARKS.--Borehole geophysical survey conducted February 9, 1979. Water levels for periods of missing record, January 1-2, May 18, 21-31, June 24 to July 17, and September 30, were estimated.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.71 ft above land-surface datum, March 28, 1984, and March 17, 1983; lowest, 13.90 ft above land-surface datum, June 10-11, 1985.



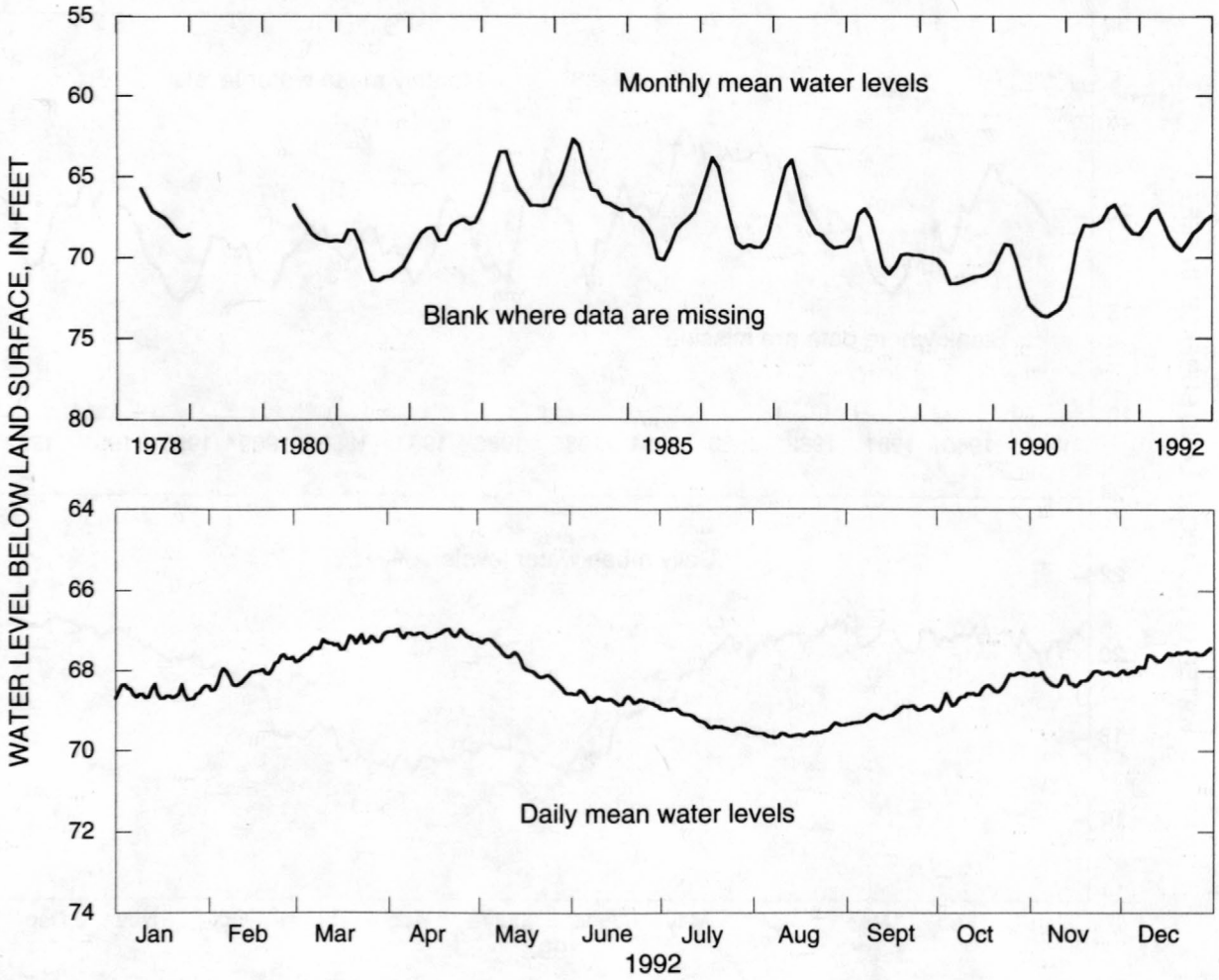
1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	-20.41	-20.48	-20.54	-20.38	-19.39	-17.73	-17.62	-17.37	-17.94	-19.57	-20.34	-20.79
LOW	-19.70	-20.10	-20.10	-19.80	-18.59	-17.09	-17.38	-16.84	-17.33	-19.11	-19.80	-20.62
HIGH	-20.90	-20.90	-20.90	-20.60	-20.30	-18.67	-17.83	-17.51	-18.49	-20.00	-20.67	-21.00

CAL YR 1992 MEAN -19.38 HIGH -21.00 LOW -16.84

[Negative value indicates water level above land surface]

Figure 58.--Water level in observation well 33E027, Camden County.

304942082213801 Local number, 27E004.
LOCATION.--Lat 30°49'43", long 82°21'38", Hydrologic Unit 03110201.
Owner: U.S. Geological Survey, test well OK-9.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Upper Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 700 ft, cased to 498 ft, open hole.
DATUM.--Altitude of land-surface datum is 116 ft.
REMARKS.--Well drilled in May 1978 to replace USGS test well OK-8 (27E002).
PERIOD OF RECORD.--June 14, 1978 to January 26, 1979; January 1, 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 62.30 ft below land-surface datum, May 9, 1984; lowest, 73.91 ft below land-surface datum, October 7-8, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	68.58	68.05	67.34	67.09	67.84	68.73	69.27	69.56	69.09	68.49	68.18	67.71
LOW	68.73	68.51	67.75	67.21	68.58	68.90	69.55	69.68	69.35	68.96	68.39	68.09
HIGH	68.35	67.58	67.05	66.96	67.21	68.49	68.95	69.31	68.87	68.05	68.00	67.43

CAL YR	1992		MEAN	68.33		HIGH	66.96		LOW	69.68		

Figure 59.--Water level in observation well 27E004, Charlton County.

Brunswick area

The water level in the Lower Floridan aquifer was monitored in five wells in the Brunswick area in 1992 (fig. 60), two of which are summarized in figures 61-62. Water levels in wells tapping the Lower Floridan aquifer in this area mainly are influenced by withdrawal from the Upper Floridan aquifer. This response is shown on the hydrograph for well 34H391 (fig. 61). A partial industrial shutdown in October during which a major ground-water user stopped pumping from the Upper Floridan aquifer, resulted in a sharp water-level rise in the well. The 1992 mean water level in wells 34H391 and 33J044 ranged from 1.4 to 2.0 ft higher in 1992 than in 1991. The water-level rises that began in 1991 are similar to those in the Upper Floridan aquifer (figs. 54-57).

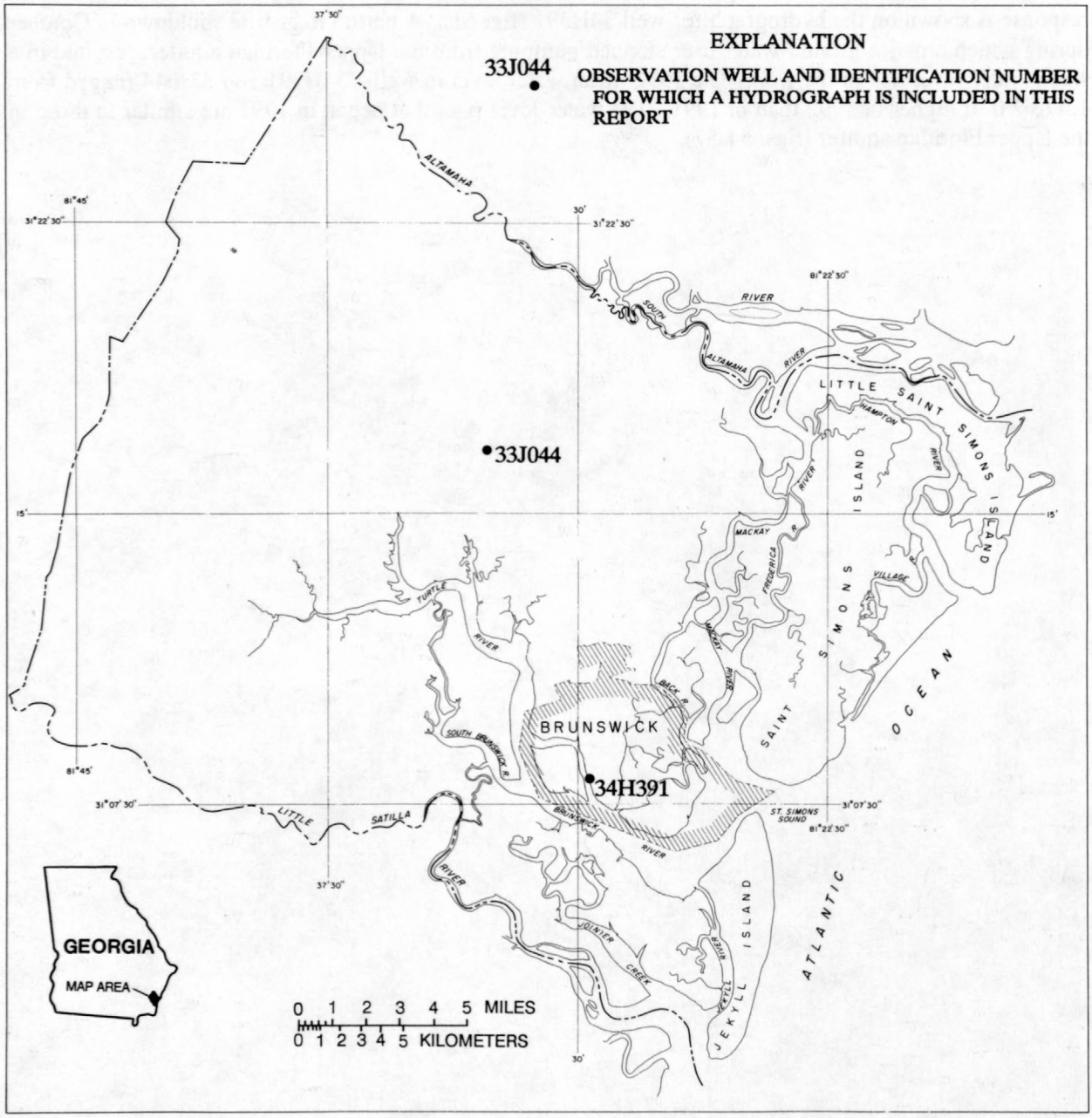
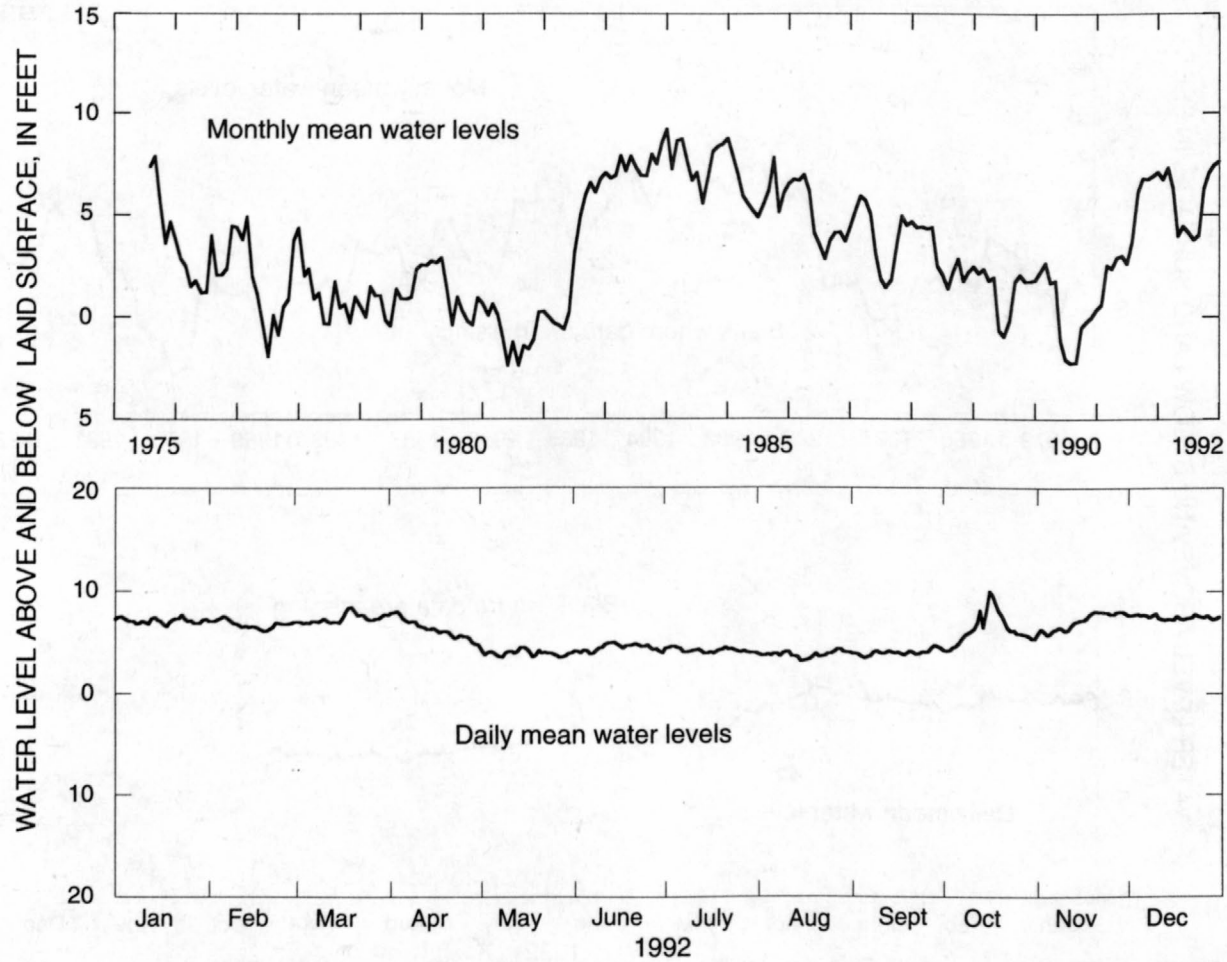


Figure 60.--Locations of observation wells completed in the Lower Floridan aquifer.

310818081294201 Local number, 34H391.
LOCATION.--Lat 31°08'18", long 81°29'42", Hydrologic Unit 03070203.
Owner: U.S. Geological Survey, test well 16.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Lower Floridan aquifer.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 1,150 ft, cased to 1,070 ft, open hole.
DATUM.--Altitude of land-surface datum is 7.13 ft.
REMARKS.--Well pumped and sampled for analysis of chloride concentration semi-annually.
PERIOD OF RECORD.--August 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.65 ft above land-surface datum, October 13-14, 1985; lowest, 2.96 ft below land-surface datum, July 27, 1977.

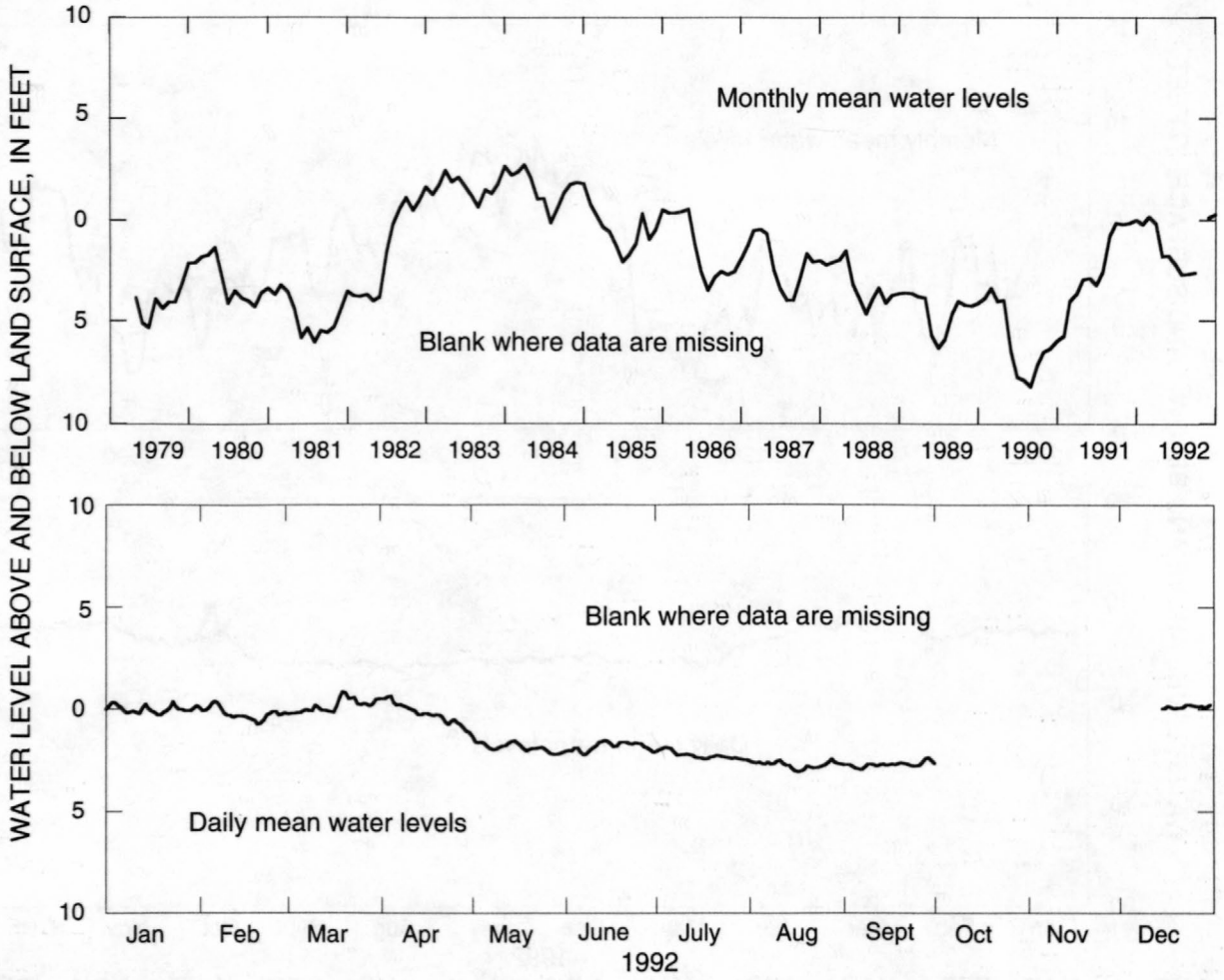


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	-7.04	-6.71	-7.28	-6.28	-3.95	-4.42	-4.15	-3.77	-3.98	-6.22	-7.03	-7.40
LOW	-6.50	-6.06	-6.79	-4.76	-3.48	-3.83	-3.86	-3.15	-3.46	-4.13	-5.70	-7.13
HIGH	-7.59	-7.46	-8.36	-7.96	-4.51	-4.95	-4.58	-4.29	-4.69	-9.91	-7.96	-7.72
CAL YR	1992		MEAN	-5.68		HIGH	-9.91		LOW	-3.15		

[Negative value indicates water level above land surface]

Figure 61.--Water level in observation well 34H391, Glynn County.

311633081324001 Local number, 33J044.
LOCATION.--Lat 31°16'33", long 81°32'40", Hydrologic Unit 03070203.
Owner: Georgia Pacific Co., USGS test well 27.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Lower Floridan aquifer.
WELL CHARACTERISTICS.--Drilled unused oil-test well converted to observation well, diameter 9 in., depth 2,260 ft, cased to 1,079 ft, open hole.
DATUM.--Altitude of land-surface datum is 20 ft.
REMARKS.--This is the Sterling oil-test well. Water levels for period, October 2 to December 14, are missing.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.09 ft above land-surface datum, October 13, 1985; lowest, 8.44 ft below land-surface datum, September 19, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	0.02	0.22	-0.16	0.20	1.82	1.79	2.23	2.70	2.69	------	------	------
LOW	0.29	0.74	0.22	1.12	2.18	2.20	2.45	3.05	2.94	------	------	-0.03
HIGH	-0.34	-0.38	-0.86	-0.63	1.53	1.49	1.83	2.43	2.35	------	------	-0.24

[Negative value indicates water level above land surface]

Figure 62.--Water level in observation well 33J044, Glynn County.

Claiborne Aquifer

The water level in the Claiborne aquifer was monitored in 21 wells in 1992 (fig. 63); data from eight of these wells are summarized in figures 64-71. The water level in the aquifer is affected mainly by precipitation and by local and regional pumping (Hicks and others, 1981). The water level generally is highest following the winter and spring rainy seasons, and lowest in the fall following the summer irrigation season. The annual mean water levels in seven of the eight wells were lower in 1992 than in 1991 (figs. 64-71). Water levels in the eight wells ranged from 3.1 ft lower to 1.5 ft higher in 1992. A record high daily mean water level was recorded in well 12L019 (fig. 68) in April that was 6.30 ft higher than the previous record high.

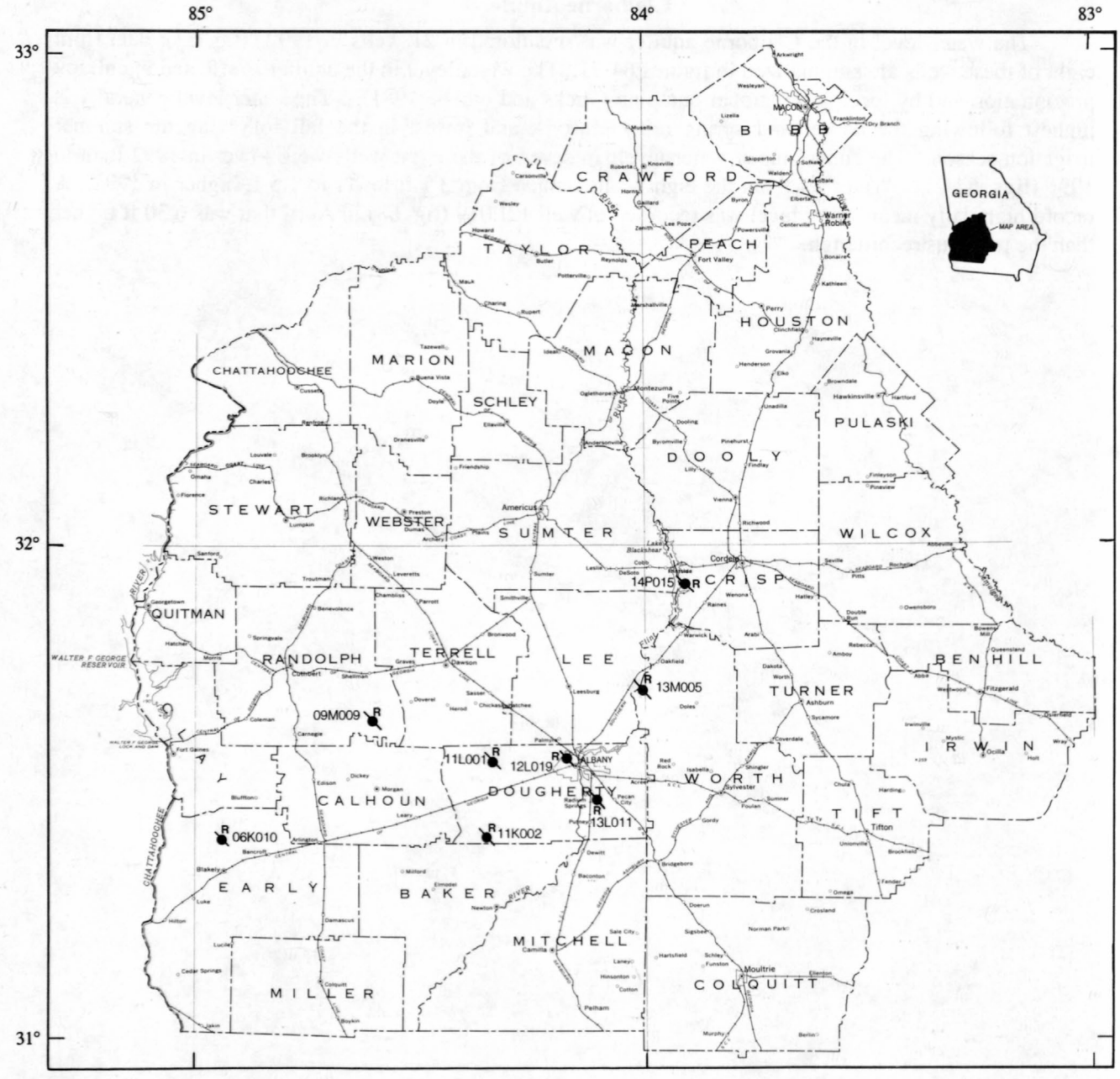
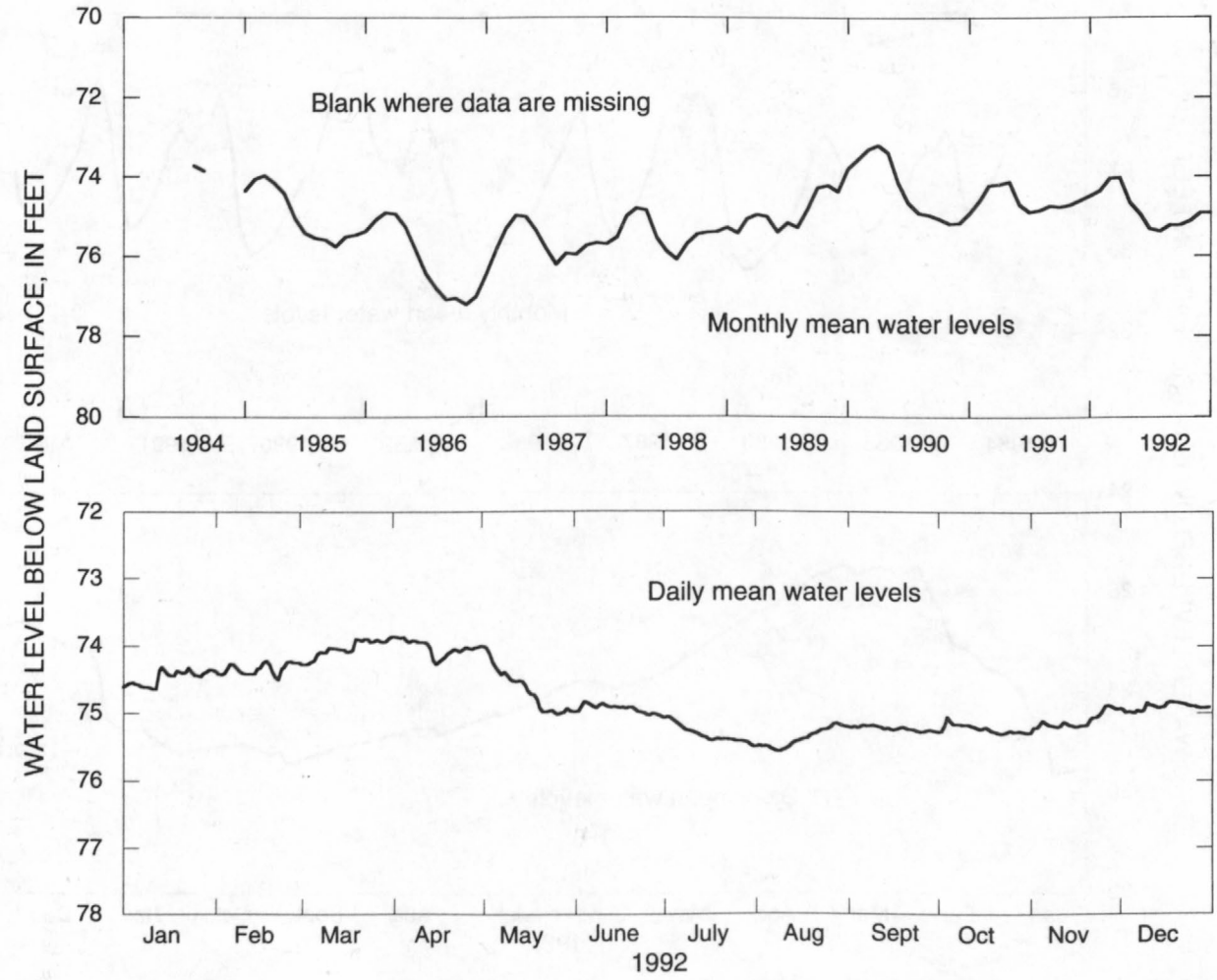


Figure 63.--Locations of observation wells completed in the Claiborne aquifer.

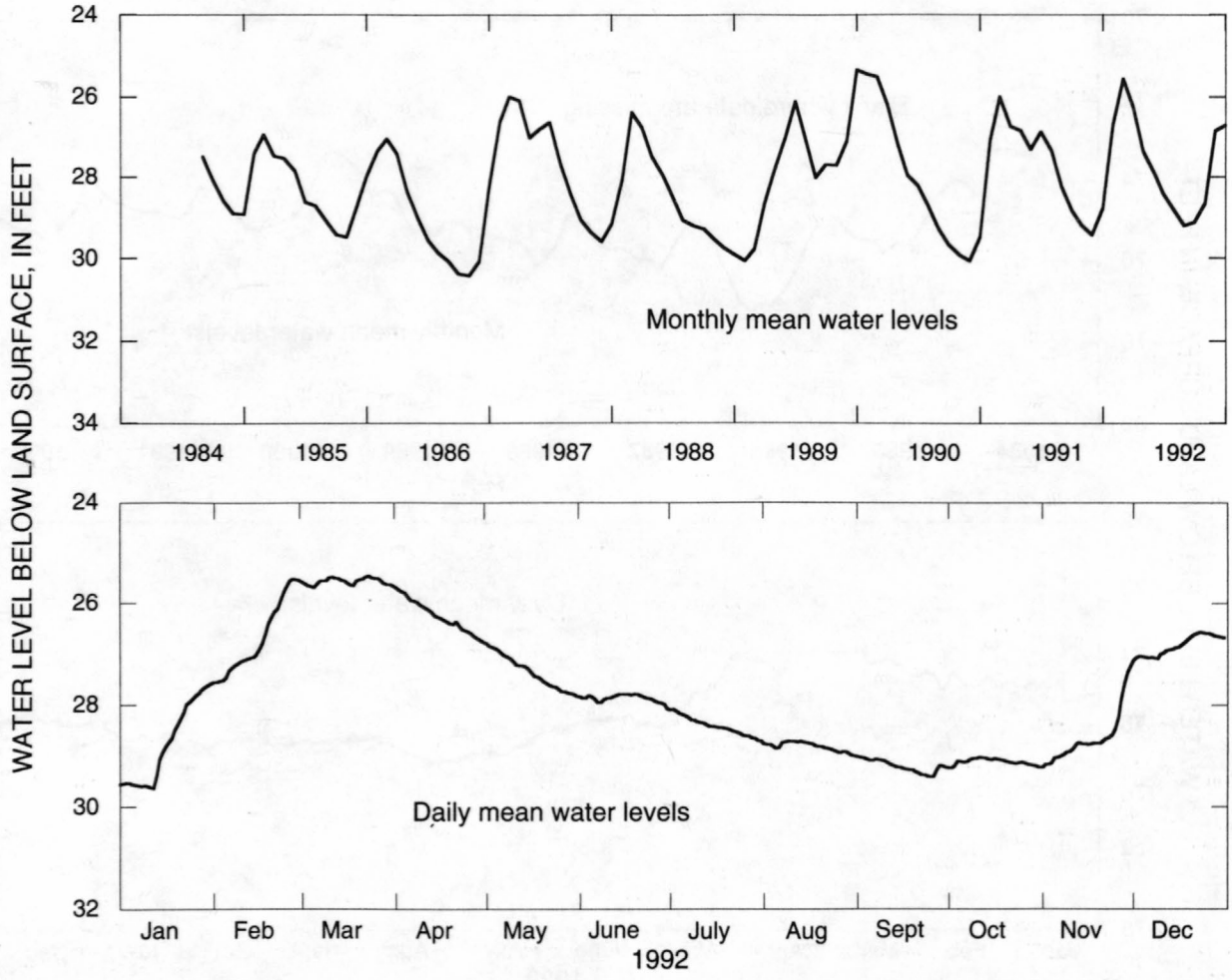
312827084551503 Local number, 06K010.
LOCATION.--Lat 31°28'24", long 84°55'09", Hydrologic Unit 03130004.
Owner: Georgia Geologic Survey, Kolomoki Mounds State Park test well 3.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 140 ft, cased to 120 ft, screen to 140 ft.
DATUM.--Altitude of land-surface datum is 310 ft.
REMARKS.--Well pumped and redeveloped August 8, 1989.
PERIOD OF RECORD.--August 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 73.11 ft below land-surface datum, April 3, 1990; lowest, 77.35 ft below land-surface datum, November 14, 1986.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	74.48	74.35	74.04	74.03	74.65	74.94	75.32	75.39	75.23	75.23	75.12	74.91
LOW	74.65	74.51	74.28	74.27	75.02	75.06	75.51	75.57	75.28	75.31	75.22	75.00
HIGH	74.32	74.23	73.86	73.87	74.03	74.83	75.06	75.16	75.19	75.06	74.89	74.83
CAL YR	1992		MEAN	74.81		HIGH	73.86		LOW	75.57		

Figure 64.--Water level in observation well 06K010, Early County.

313953084361201 Local number, 09M009.
LOCATION.--Lat 31°39'52", long 84°36'10", Hydrologic Unit 03130009.
Owner: C.T. Martin, test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 94 ft, cased to 77 ft, screen to 94 ft.
DATUM.--Altitude of land-surface datum is 322 ft.
REMARKS.--Well pumped and redeveloped August 8, 1989.
PERIOD OF RECORD.--September 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.98 ft below land-surface datum, January 12, 1990; lowest, 30.50 ft below land-surface datum, November 3, 1986.

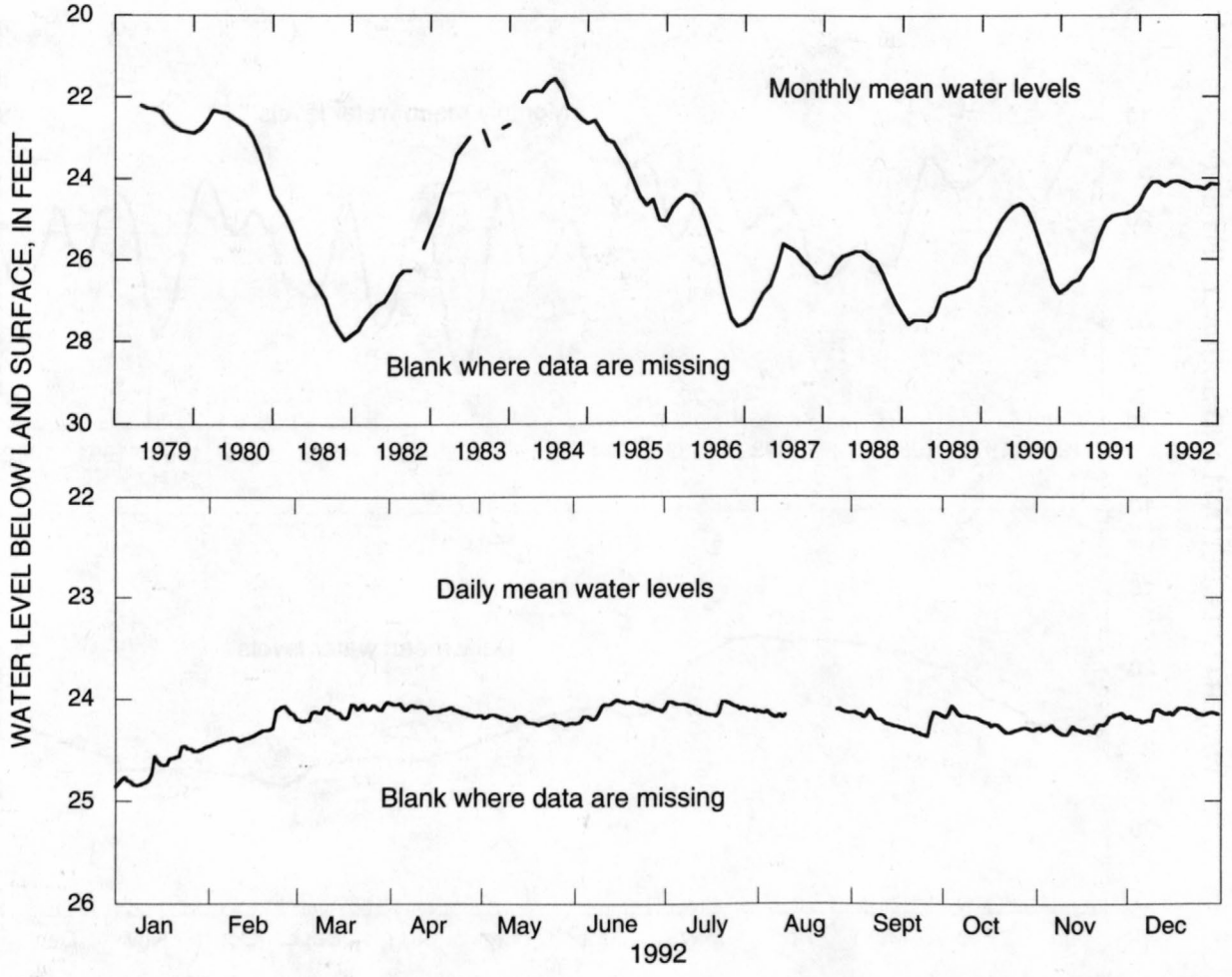


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	28.78	26.70	25.57	26.26	27.36	27.87	28.42	28.82	29.21	29.12	28.66	26.84
LOW	29.63	27.57	25.69	26.77	27.83	28.08	28.72	29.00	29.41	29.24	29.16	27.10
HIGH	27.59	25.52	25.45	25.74	26.85	27.79	28.09	28.71	29.02	29.03	27.23	26.58

CAL YR	1992		MEAN	27.80		HIGH	25.45		LOW	29.63		

Figure 65.--Water level in observation well 09M009, Randolph County.

312654084210102 Local number, 11K002.
LOCATION.--Lat 31°26'54", long 84°21'01", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 11.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 320 ft, cased to 300 ft, screen to 320 ft.
DATUM.--Altitude of land-surface datum is 183.5 ft.
REMARKS.--Borehole geophysical survey conducted March 11, 1980. Water levels for periods of missing record, January 9-12, February 1-8, 12-16, 20, April 23-28, May 21-28, September 15-18, October 25-29, November 1-2, and December 26-31, were estimated. Water levels for period, August 11-26, are missing.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.11 ft below land-surface datum, June 1, 1979; lowest, 28.04 ft below land-surface datum, December 24, 1981.



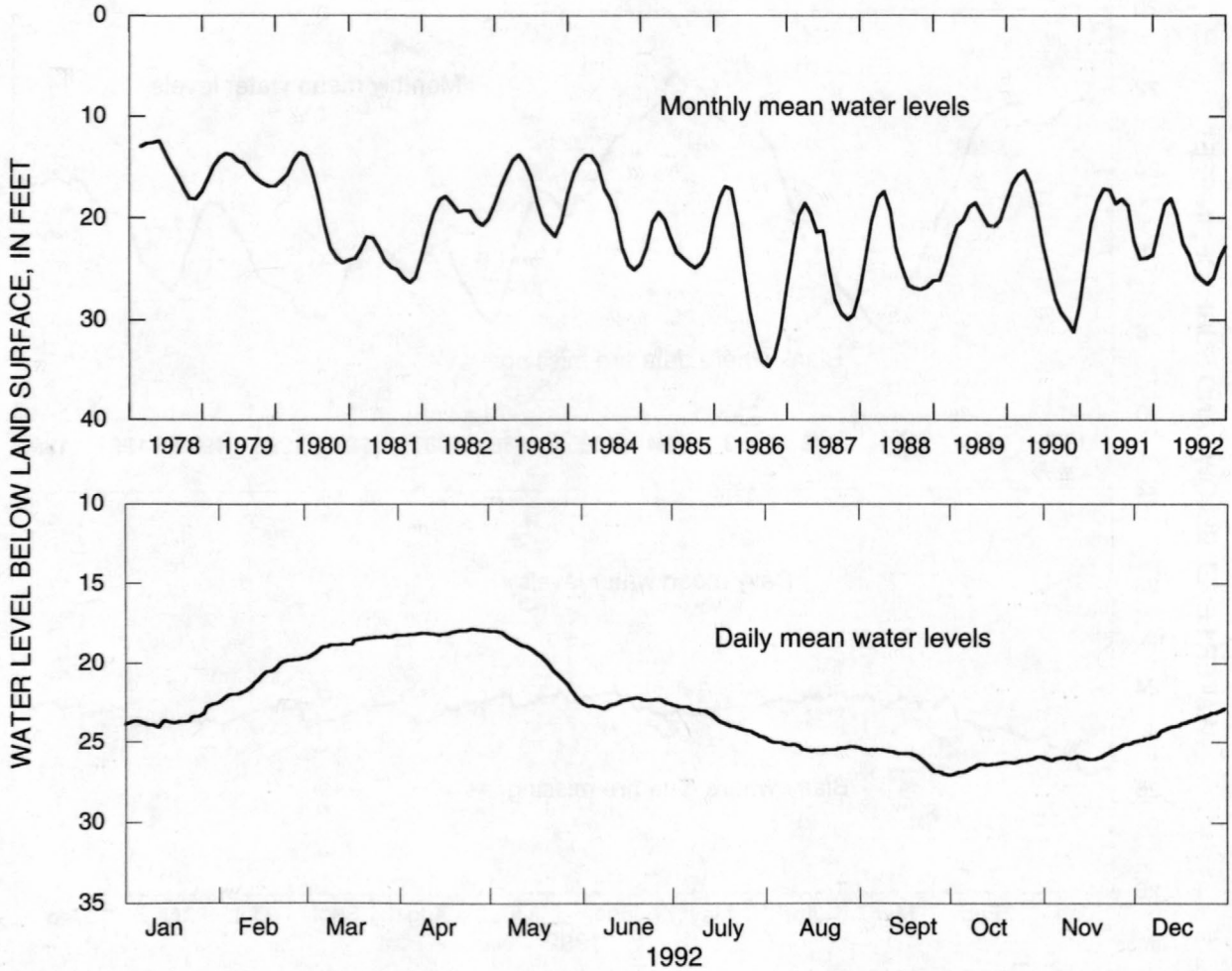
1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	24.66	24.31	24.12	24.10	24.20	24.10	24.09	------	24.23	24.23	24.27	24.15
LOW	24.86	24.45	24.22	24.17	24.25	24.23	24.17	24.18	24.37	24.33	24.35	24.23
HIGH	24.46	24.07	24.03	24.04	24.15	24.01	24.03	24.10	24.11	24.07	24.14	24.09

CAL YR 1992 MEAN 24.22 HIGH 24.01 LOW 24.86*

* may have been higher or lower during period of missing record

Figure 66.--Water level in observation well 11K002, Dougherty County.

313530084203202 Local number, 11L001.
LOCATION.--Lat 31°35'30", long 84°20'34", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 4.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 251 ft, cased to 233 ft, screen to 251 ft.
DATUM.--Altitude of land-surface datum is 220 ft.
REMARKS.--Well pumped and redeveloped August 14, 1988. Water levels for periods of missing record, February 26-28, March 10-13, and 21-26, were estimated.
PERIOD OF RECORD.--March 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.11 ft below land-surface datum, June 5-6, 1978; lowest, 34.75 ft below land-surface datum, October 19-20, 1986.

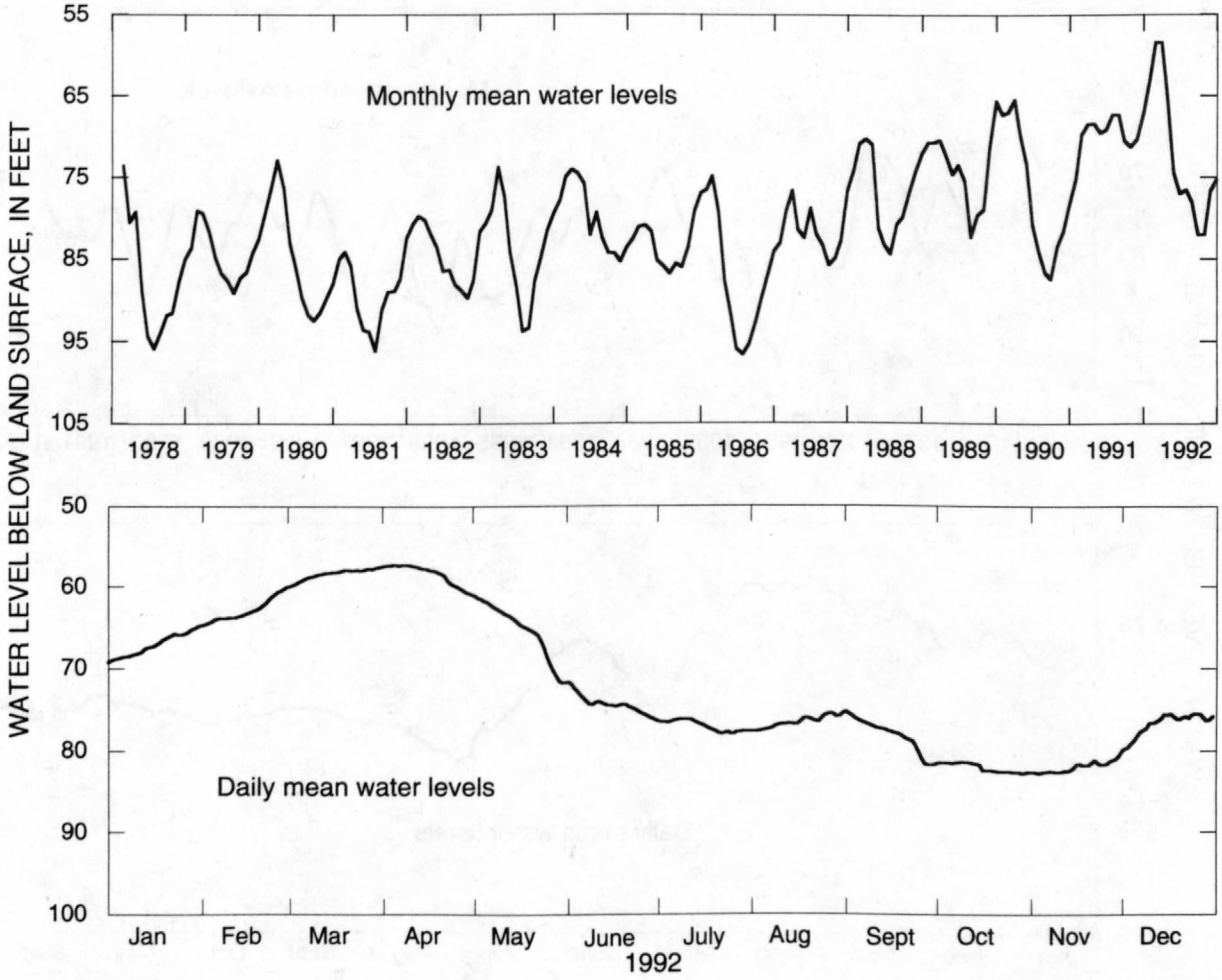


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	23.58	20.95	18.72	18.08	19.65	22.49	23.58	25.32	25.97	26.44	25.84	23.98
LOW	24.08	22.40	19.57	18.22	22.37	22.88	24.68	25.57	27.07	27.04	26.17	24.94
HIGH	22.57	19.67	18.25	17.85	18.00	22.20	22.70	24.91	25.47	25.95	25.10	22.89

CAL YR	1992		MEAN	22.89		HIGH	17.85		LOW	27.08		

Figure 67.--Water level in observation well 11L001, Dougherty County.

313534084103001 Local number, 12L019.
LOCATION.--Lat 31°35'36", long 84°10'30", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 5.
INSTRUMENTATION.--Basic data recorder.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 257 ft, cased to 241 ft, screen to 257 ft.
DATUM.--Altitude of land-surface datum is 198 ft.
REMARKS.--Well pumped and redeveloped August 15, 1988. Water levels for periods of missing record, October 6-14, 17-27, and November 2-12, were estimated.
PERIOD OF RECORD.--March 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 57.31 ft below land-surface datum, April 7, 1992; lowest, 99.53 ft below land-surface datum, August 1-2, 1978.



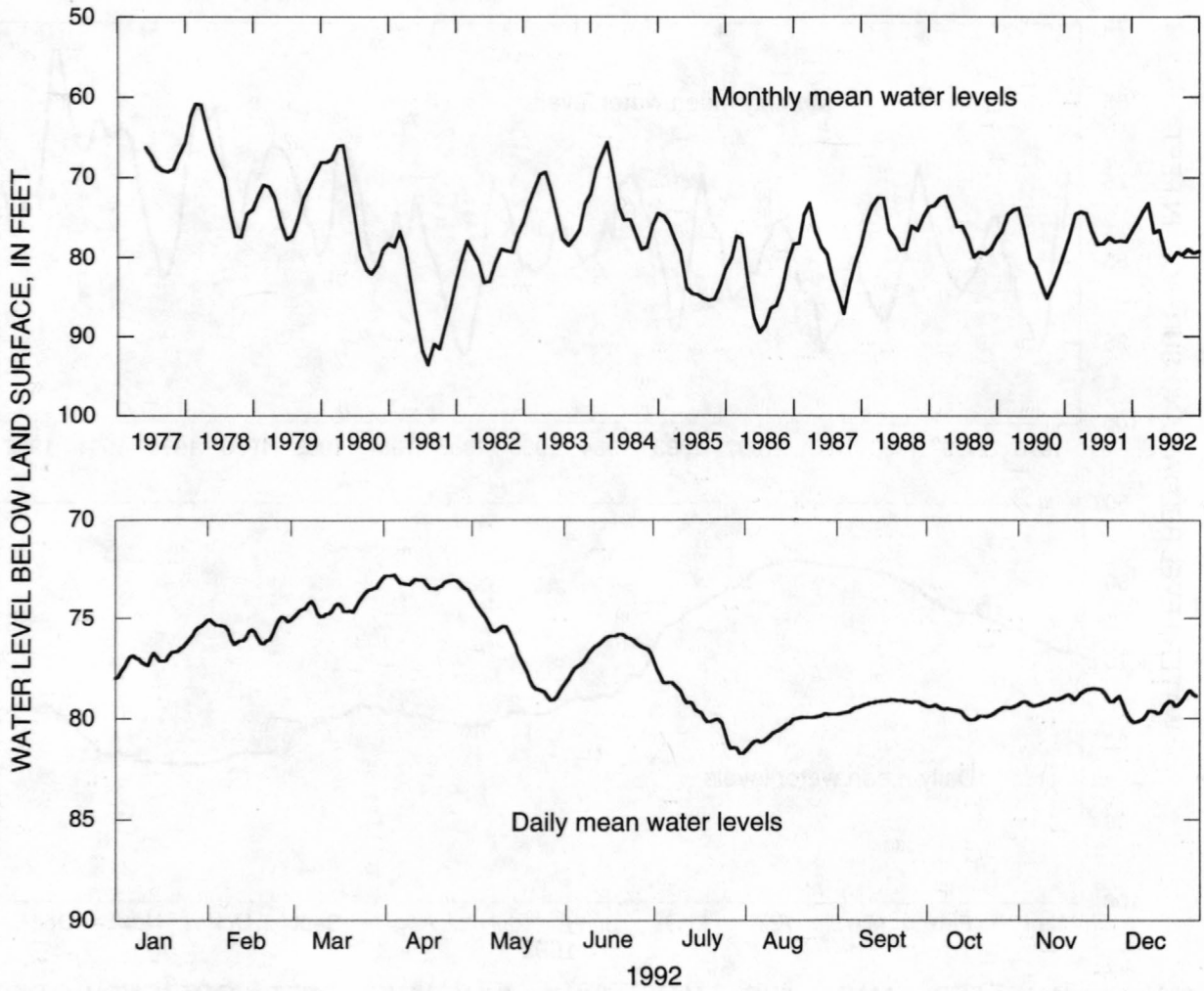
1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	67.19	62.95	58.41	58.45	65.39	74.40	77.09	76.63	78.10	82.08	82.06	76.78
LOW	69.10	64.70	59.81	60.99	71.82	76.33	78.04	77.73	81.75	82.83	82.82	79.82
HIGH	64.88	60.05	57.54	57.31	61.35	71.97	76.20	75.50	75.52	81.43	80.65	75.50

CAL YR 1992 MEAN 71.65 HIGH 57.31 LOW 82.83*

* may have been higher or lower during period of missing record

Figure 68.--Water level in observation well 12L019, Dougherty County.

313105084064301 Local number, 13L011.
LOCATION.--Lat 31°31'05", long 84°06'43", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 2.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 418 ft, cased to 398 ft, screen to 418 ft.
DATUM.--Altitude of land-surface datum is 195 ft.
Measuring point: Top of recorder shelf, 3.0 ft above land-surface datum.
REMARKS.--Well pumped and redeveloped August 16, 1988.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 60.01 ft below land-surface datum, April 5, 1978; lowest, 95.00 ft below land-surface datum, August 9-11, 1981.

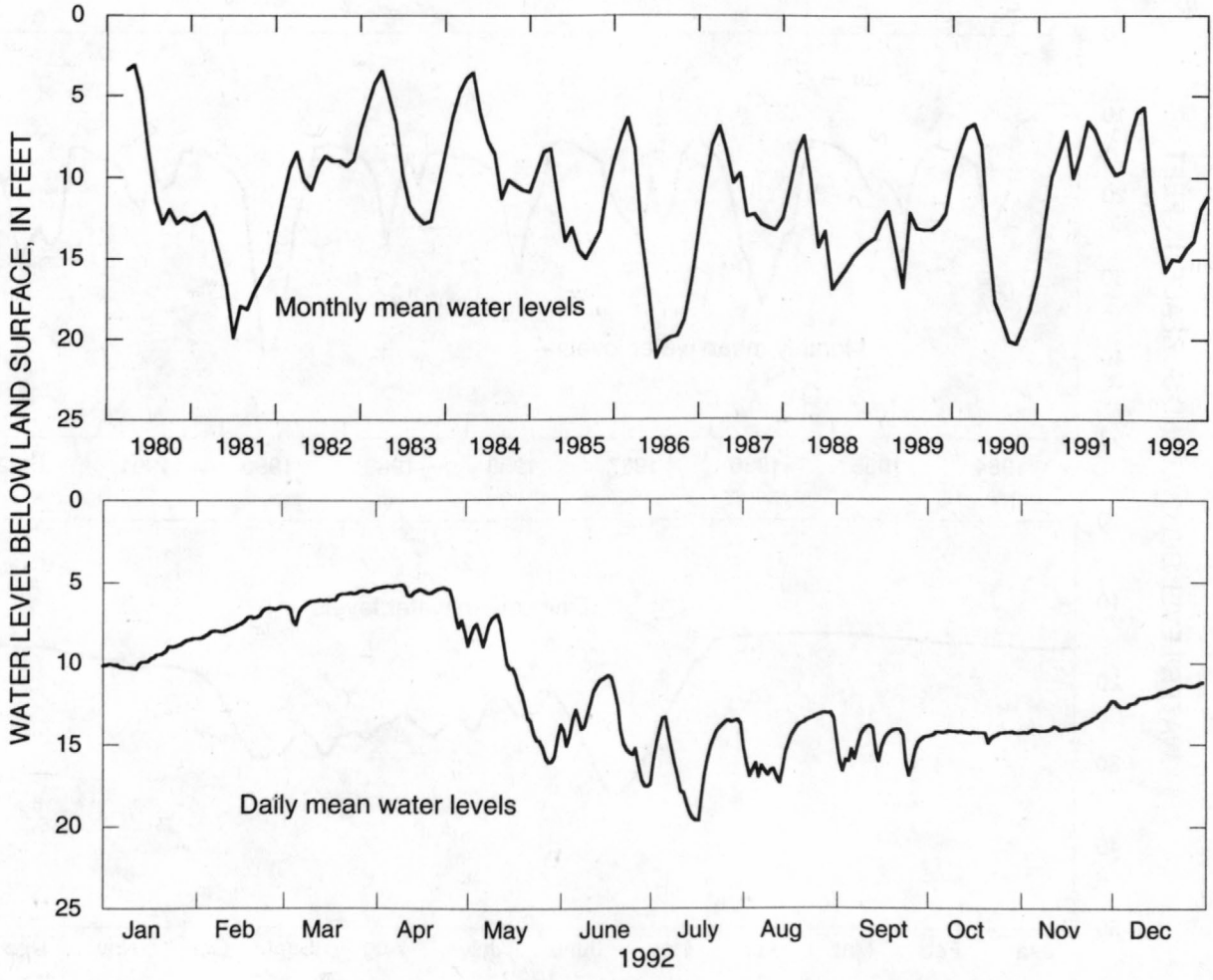


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	76.78	75.64	74.28	73.19	76.84	76.56	79.60	80.42	79.32	79.67	78.98	79.42
LOW	77.93	76.32	74.91	73.83	79.08	77.99	81.74	81.46	79.77	80.10	79.40	80.20
HIGH	75.28	74.93	72.94	72.77	74.33	75.78	77.56	79.79	79.10	79.33	78.53	78.63

CAL YR	1992		MEAN	77.57		HIGH	72.77		LOW	81.74		

Figure 69.--Water level in observation well 13L011, Dougherty County.

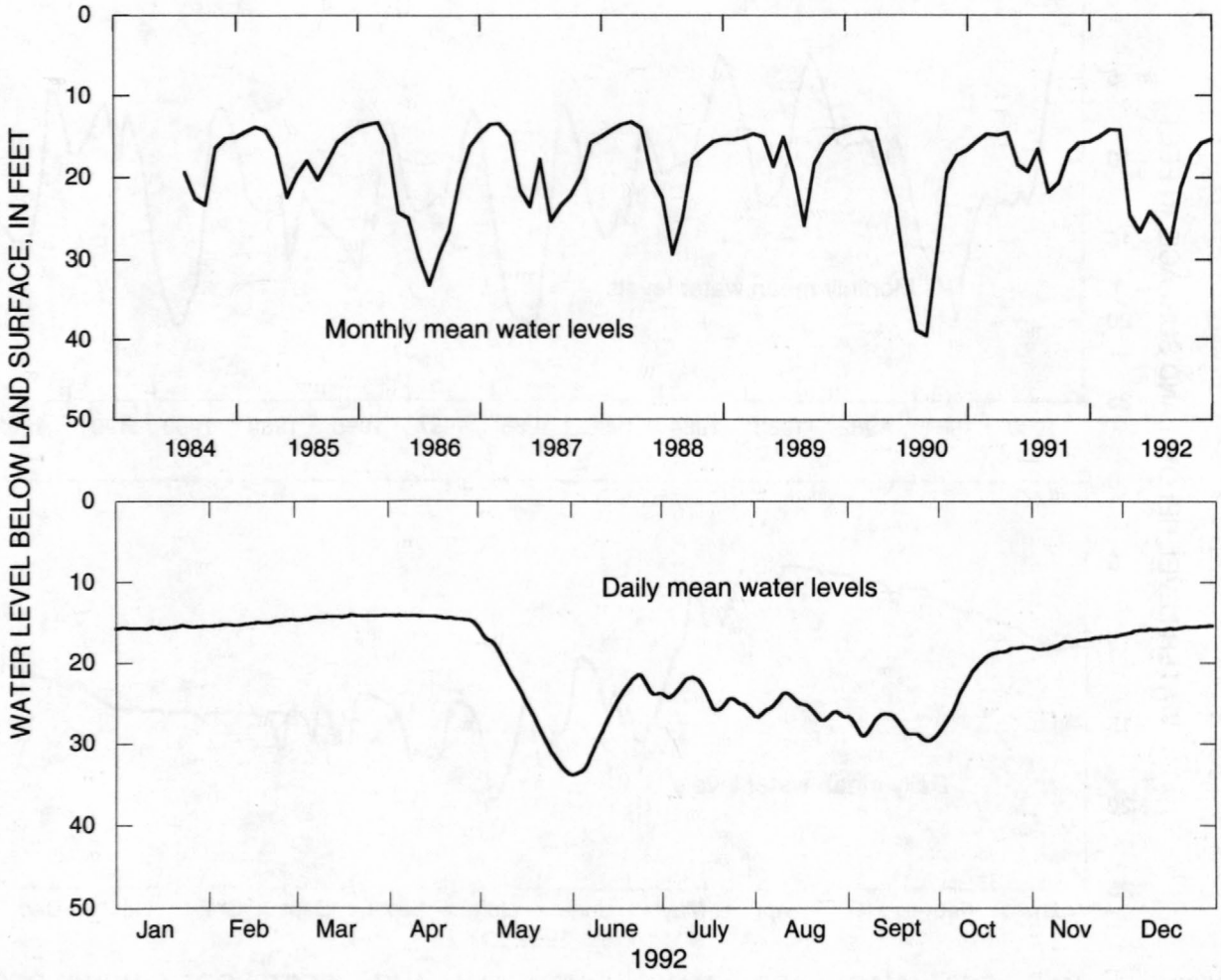
314330084005401 Local number, 13M005.
LOCATION.--Lat 31°43'30", long 84°00'54", Hydrologic Unit 03130006.
Owner: U.S. Geological Survey, test well DP-7.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 345 ft, cased to 330 ft, screen to 345 ft.
DATUM.--Altitude of land-surface datum is 230 ft.
REMARKS.--Borehole geophysical survey conducted March 16, 1982.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.89 ft below land-surface datum, May 29, 1980; lowest, 23.37 ft below land-surface datum July 28, 1981.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	9.62	7.50	6.05	5.71	11.14	13.77	15.78	14.99	15.08	14.37	13.88	11.94
LOW	10.37	8.45	7.59	8.04	16.10	17.61	19.67	17.35	16.92	14.94	14.32	12.73
HIGH	8.46	6.47	5.35	5.12	6.99	10.81	13.36	13.07	13.91	14.22	12.60	11.19
CAL YR	1992		MEAN	11.67		HIGH	5.12		LOW	19.67		

Figure 70.--Water level in observation well 13M005, Worth County.

315731083542302 Local number, 14P015.
LOCATION.--Lat 31°57'31", long 83°54'23", Hydrologic Unit 03130006.
Owner: Georgia Geologic Survey, Veterans Memorial State Park test well 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.-- Claiborne.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 340 ft, cased to 240 ft, screen to 340 ft.
DATUM.--Altitude of land-surface datum is 252 ft.
REMARKS.--Aquifer test conducted on April 22, 1982. Well Pumped and sampled by Georgia Geologic Survey, September 23, 1992.
PERIOD OF RECORD.--August 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.97 ft below land-surface datum, March 9, 1987; lowest, 42.09 ft below land-surface datum, September 2, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	15.64	15.02	14.21	14.30	24.65	26.67	24.16	25.73	28.08	21.25	17.42	15.82
LOW	15.77	15.44	14.62	15.27	33.72	33.70	26.31	27.17	29.70	28.20	18.41	16.44
HIGH	15.37	14.53	13.98	14.00	16.39	21.44	21.83	23.73	26.38	18.08	16.61	15.40

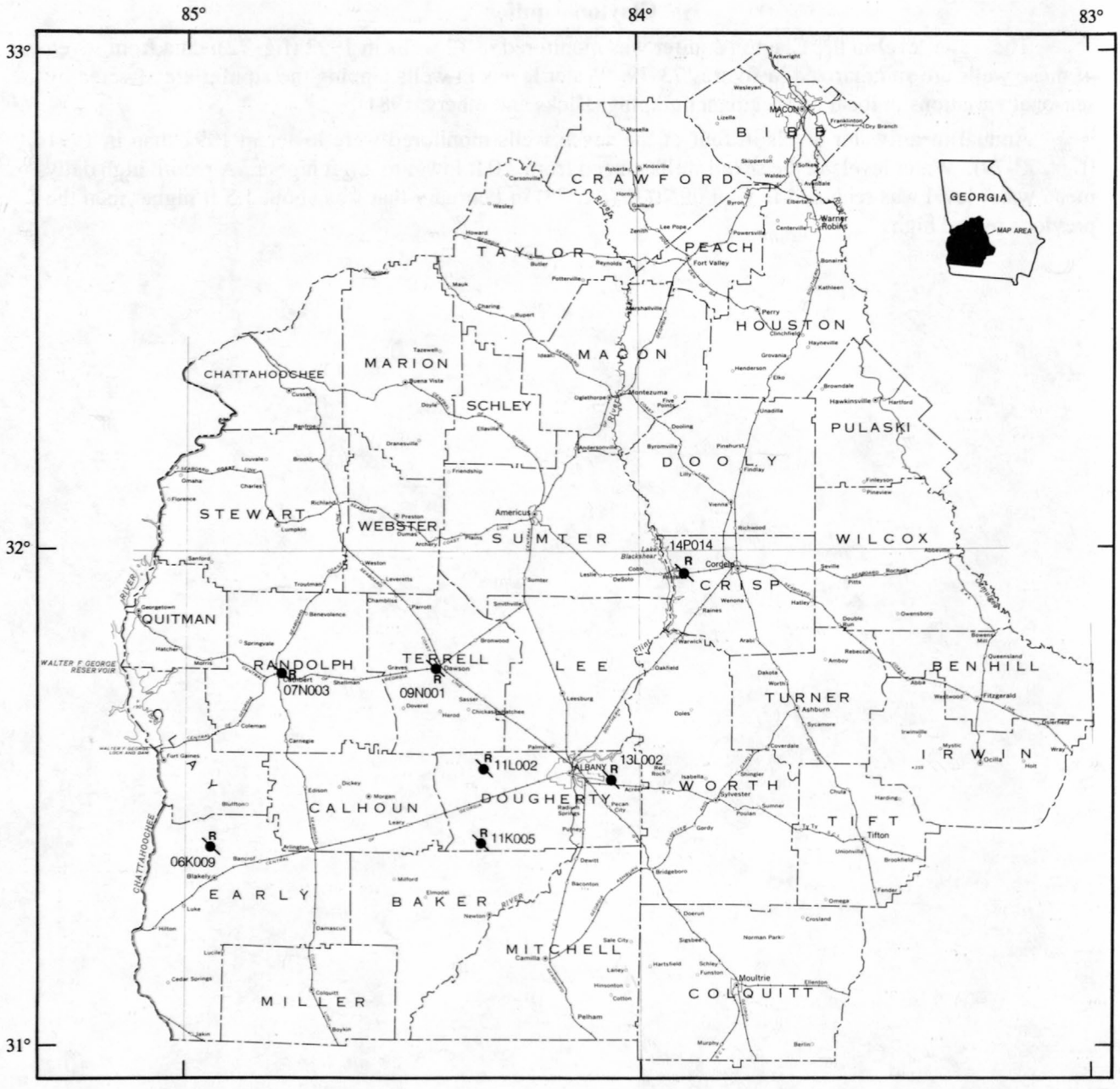
CAL YR	1992		MEAN	20.26		HIGH	13.98		LOW	33.80		

Figure 71.--Water level in observation well 14P015, Crisp County.

Clayton Aquifer

The water level in the Clayton aquifer was monitored in 12 wells in 1992 (fig. 72); data from seven of these wells are summarized in figures 73-79. Water levels in wells tapping the aquifer are affected by seasonal variations in local and regional pumping (Hicks and others, 1981).

Annual mean water levels in four of the seven wells monitored were lower in 1992 than in 1991 (figs. 73-79). Water levels in the seven wells ranged from 2.0 ft lower to 2.6 ft higher. A record high daily mean water level was recorded in well 09N001 (fig. 75) in February that was about 1.5 ft higher than the previous record high.



Base from U.S. Geological Survey
State base map, 1970

0 10 20 30 40 MILES

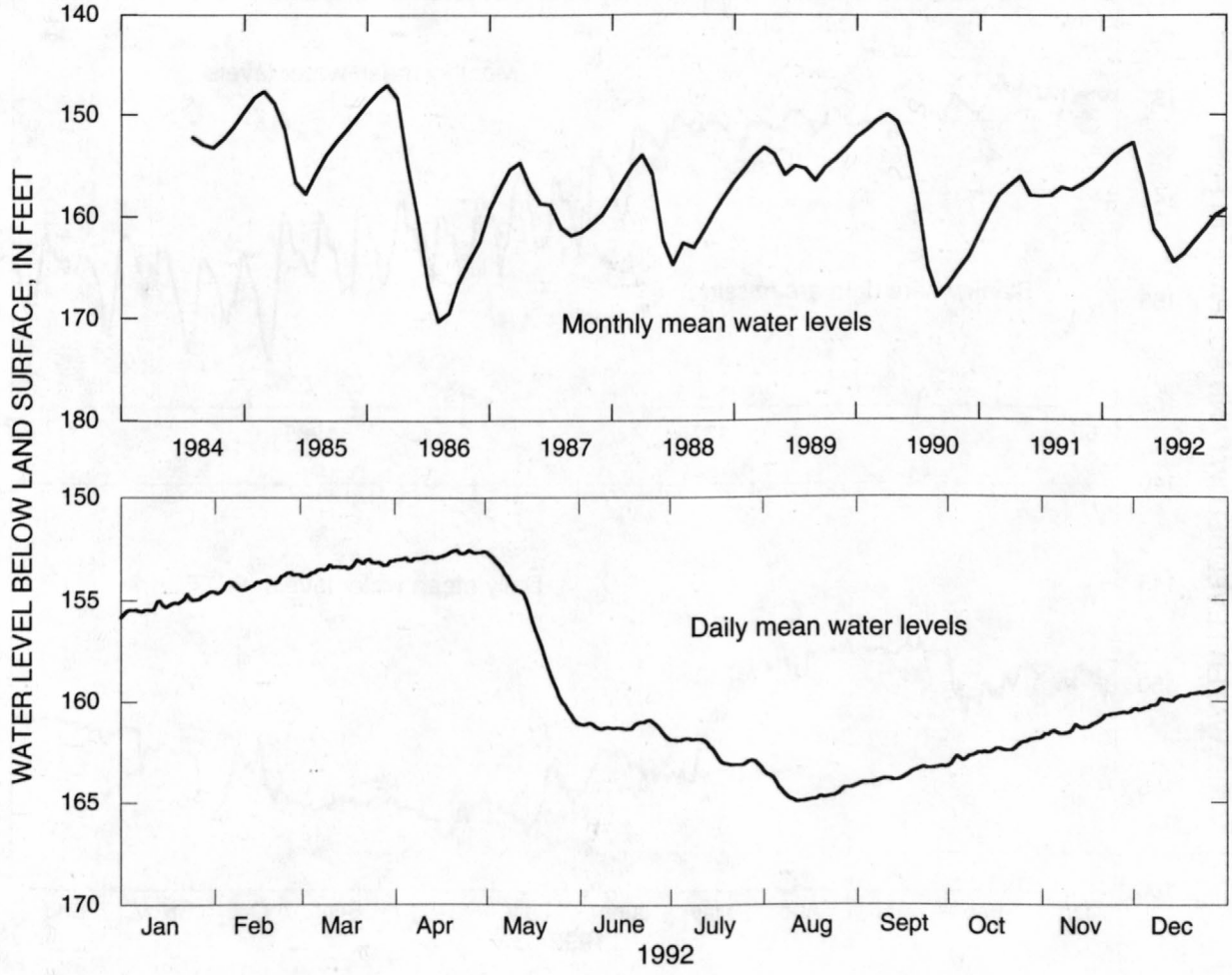
0 10 20 30 40 KILOMETERS

EXPLANATION

11K005 R OBSERVATION WELL AND IDENTIFICATION NUMBER--Equipped with recorder, hydrograph included in this report

Figure 72.--Locations of observation wells completed in the Clayton aquifer.

312827084551501 Local number, 06K009.
LOCATION.--Lat 31°28'24", long 84°55'12", Hydrologic Unit 03130004.
Owner: Georgia Geologic Survey, Kolomoki Mounds State Park test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 612 ft, cased to 491 ft, open hole.
DATUM.--Altitude of land-surface datum is 310 ft.
REMARK.--Borehole geophysical survey conducted November 20, 1979. Aquifer test conducted May 19, 1982. Well pumped and redeveloped August 8, 1989.
PERIOD OF RECORD.--1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 146.62 ft below land-surface datum, April 3, 1986; lowest, 171.38 ft below land-surface datum, August 22, 1986.

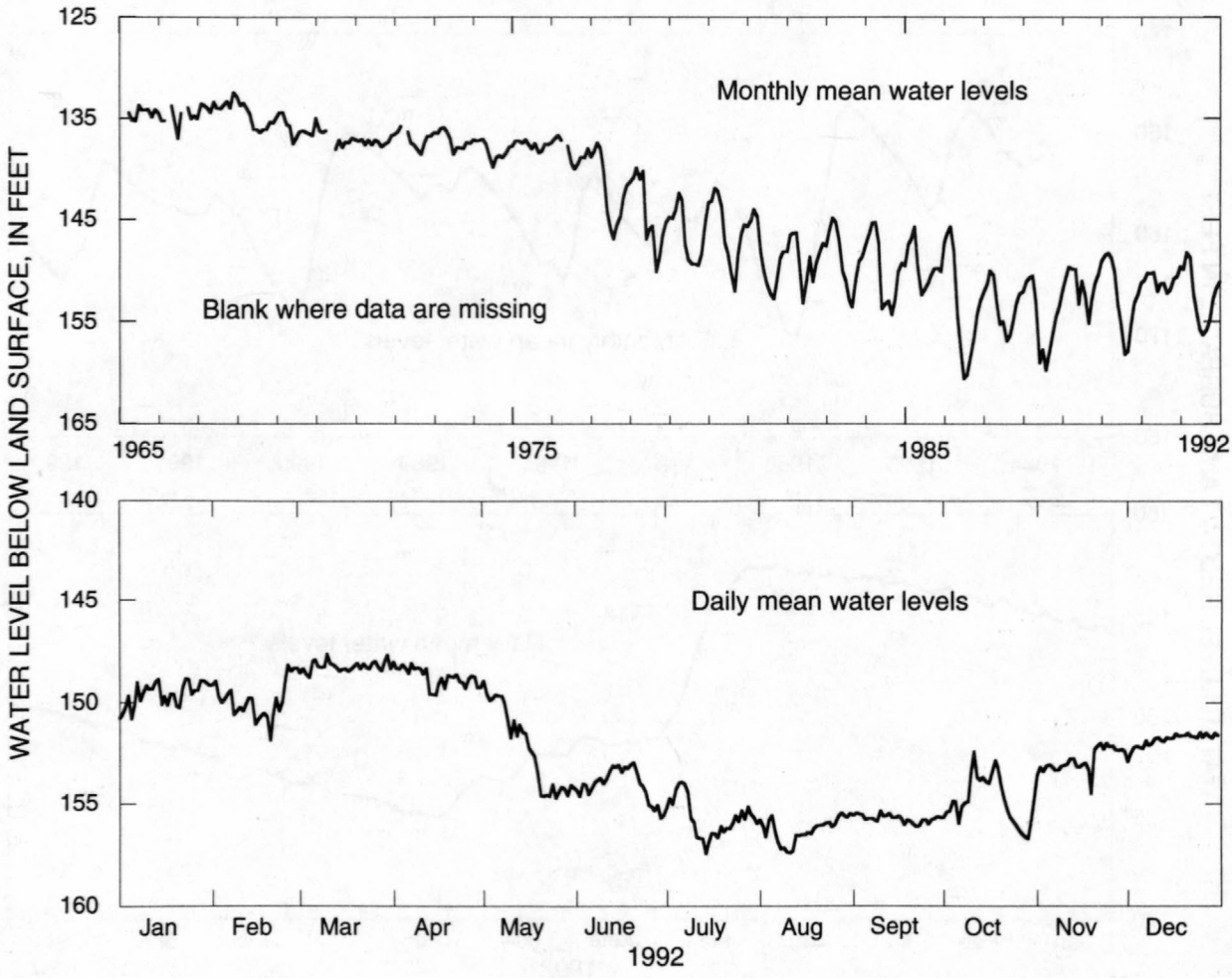


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	155.19	154.14	153.33	152.81	156.46	161.25	162.52	164.51	163.69	162.48	161.18	159.87
LOW	155.68	154.65	153.81	153.07	161.07	161.82	163.28	164.97	164.11	163.13	161.67	160.46
HIGH	154.57	153.64	152.97	152.53	152.78	160.92	161.83	163.61	163.25	161.88	160.55	159.29

CAL YR 1992 MEAN 158.97 HIGH 152.53 LOW 164.97

Figure 73.--Water level in observation well 06K009, Early County.

314602084473701 Local number, 07N001.
LOCATION.--Lat 31°46'09", long 84°47'43", Hydrologic Unit 03110204.
Owner: City of Cuthbert.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled unused municipal well, diameter 8 in., depth 372 ft, casing depth unknown.
DATUM.--Altitude of land-surface datum is 460 ft.
REMARKS.--Well pumped and redeveloped August 8, 1989. Well near city wells. Water levels for period of missing record, October 16-31, were estimated.
PERIOD OF RECORD.--January 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 132.0 ft below land-surface datum, December 10, 1967; lowest, 162.08 ft below land-surface datum, August 4, 1986.

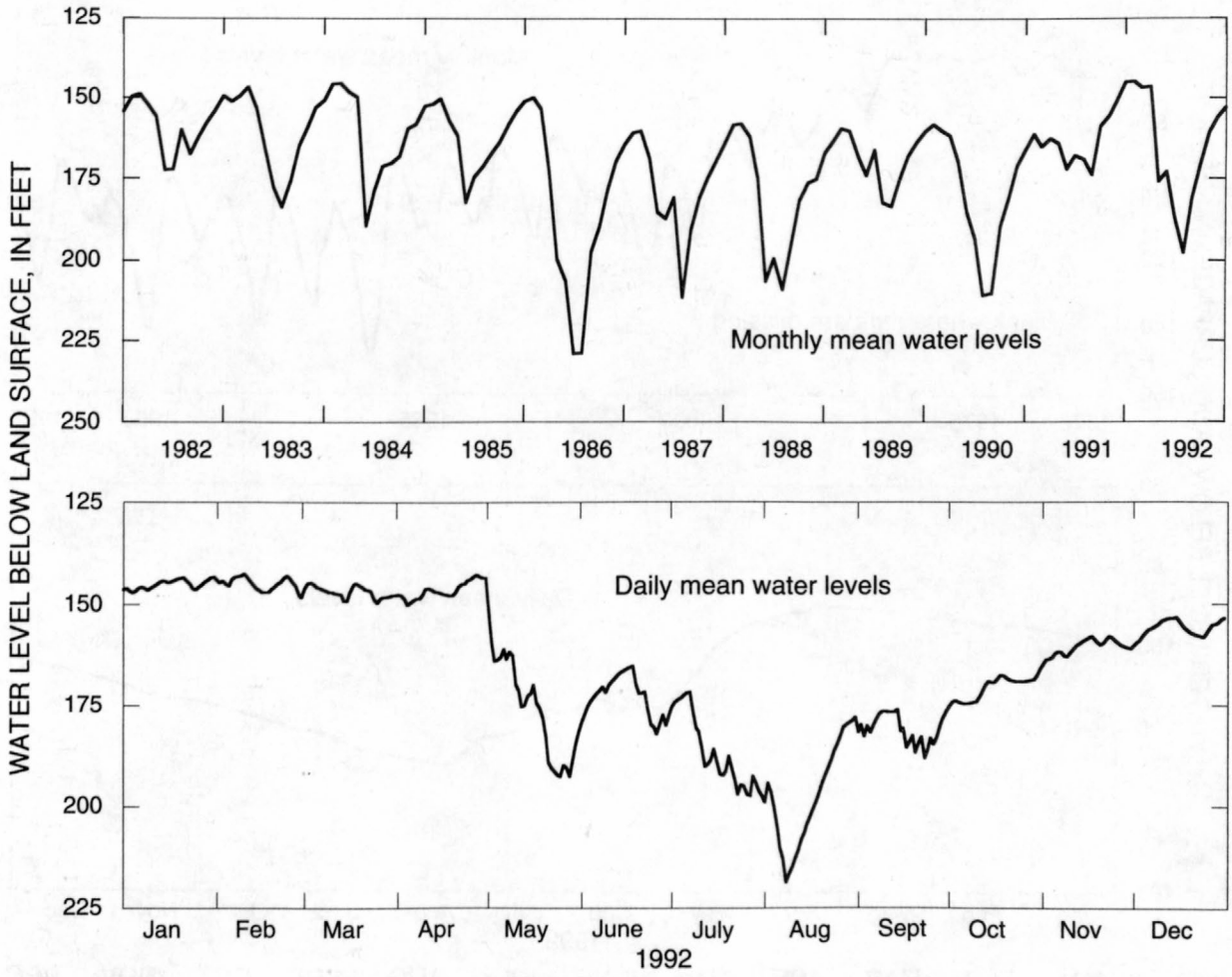


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	149.61	149.88	148.23	148.75	152.26	154.06	155.72	156.31	155.76	154.85	152.86	151.83
LOW	150.81	151.85	148.77	149.61	154.73	155.72	157.46	157.43	156.14	156.73	154.49	152.49
HIGH	148.84	148.15	147.62	148.07	149.59	152.94	153.91	155.47	155.38	152.43	151.97	151.47

CAL YR	1992		MEAN	152.52		HIGH	147.62		LOW	157.46		

Figure 74.--Water level in observation well 07N001, Randolph County.

314611084310301 Local number, 09N001.
LOCATION.--Lat 31°46'09", long 84°31'07", Hydrologic Unit 03130009.
Owner: Bill Newman.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 6 in., depth 433 ft, cased to 333 ft, open hole.
DATUM.--Altitude of land-surface datum is 348 ft.
REMARKS.--Borehole geophysical survey conducted July 31, 1953. Well pumped and redeveloped August 9, 1989. Water levels for period of missing record, August 9-26, were estimated.
PERIOD OF RECORD.--1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 142.54 ft below land-surface datum, February 10, 1992; lowest, 241.61 ft below land-surface datum, July 21, 1986.

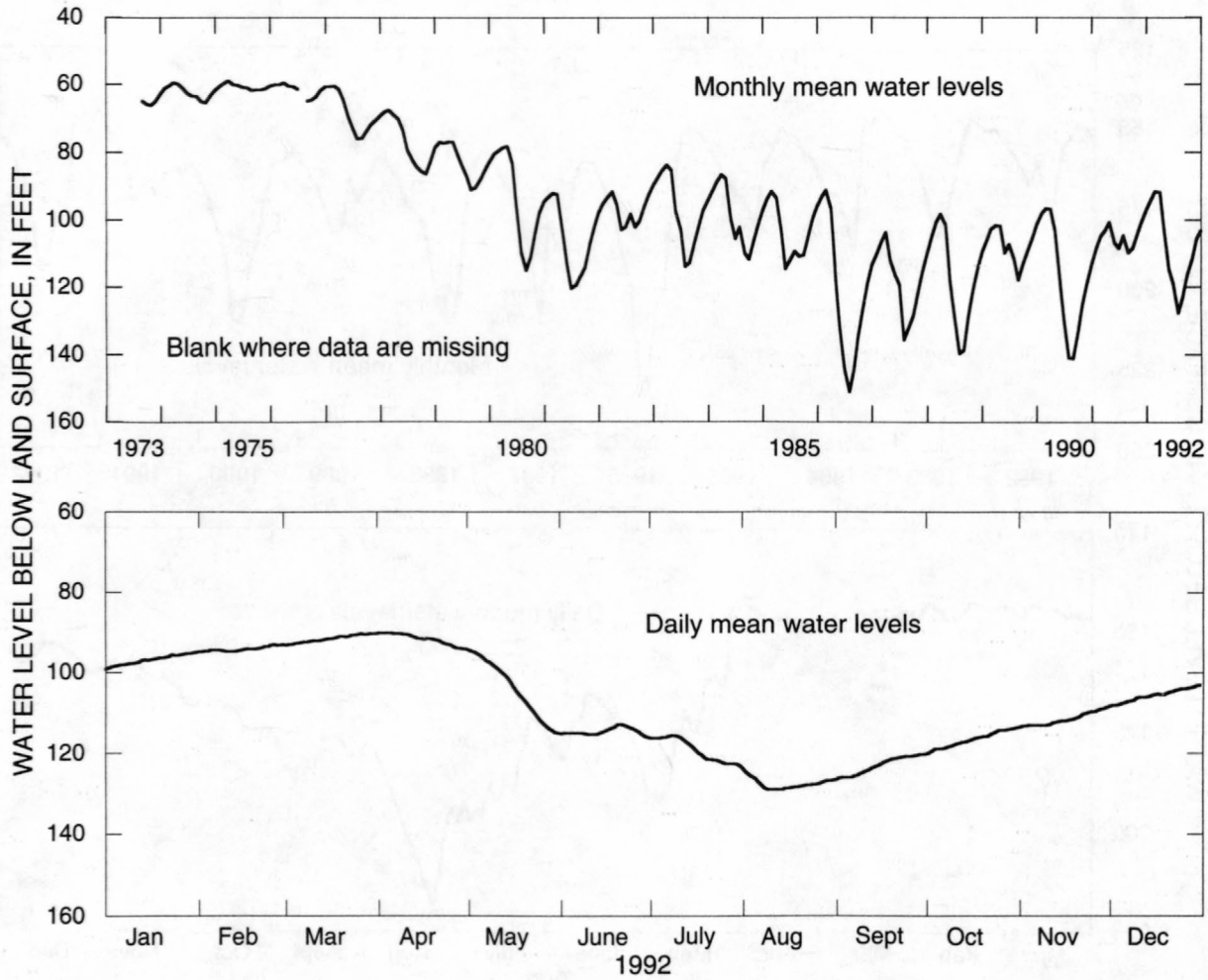


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	145.15	144.95	146.97	146.48	175.91	173.01	186.97	197.77	181.21	170.91	160.64	155.98
LOW	147.14	148.28	149.69	150.16	192.81	182.30	197.74	218.72	188.36	174.89	163.89	159.64
HIGH	143.25	142.54	144.67	142.62	159.83	165.34	171.91	178.20	176.24	166.30	157.89	153.31

CAL YR 1992 MEAN 165.61 HIGH 142.54 LOW 218.72

Figure 75.--Water level in observation well 09N001, Terrell County.

313532084203501 Local number, 11L002.
LOCATION.--Lat 31°35'32", long 84°20'35", Hydrologic Unit 03130008.
Owner: Georgia Geologic Survey, Albany Nursery.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled observation well, diameter 3 in., depth 656 ft, cased to 542 ft, open hole.
DATUM.--Altitude of land-surface datum is 222 ft.
REMARKS.--Well pumped and redeveloped August 14, 1988. Borehole geophysical survey conducted June 3, 1975. Water levels for periods of missing record, June 13-21, August 15-25, and November 6-9, were estimated.
PERIOD OF RECORD.--1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 58.90 ft below land-surface datum, April 29, 1975; lowest, 152.61 ft below land-surface datum, August 23, 1986.

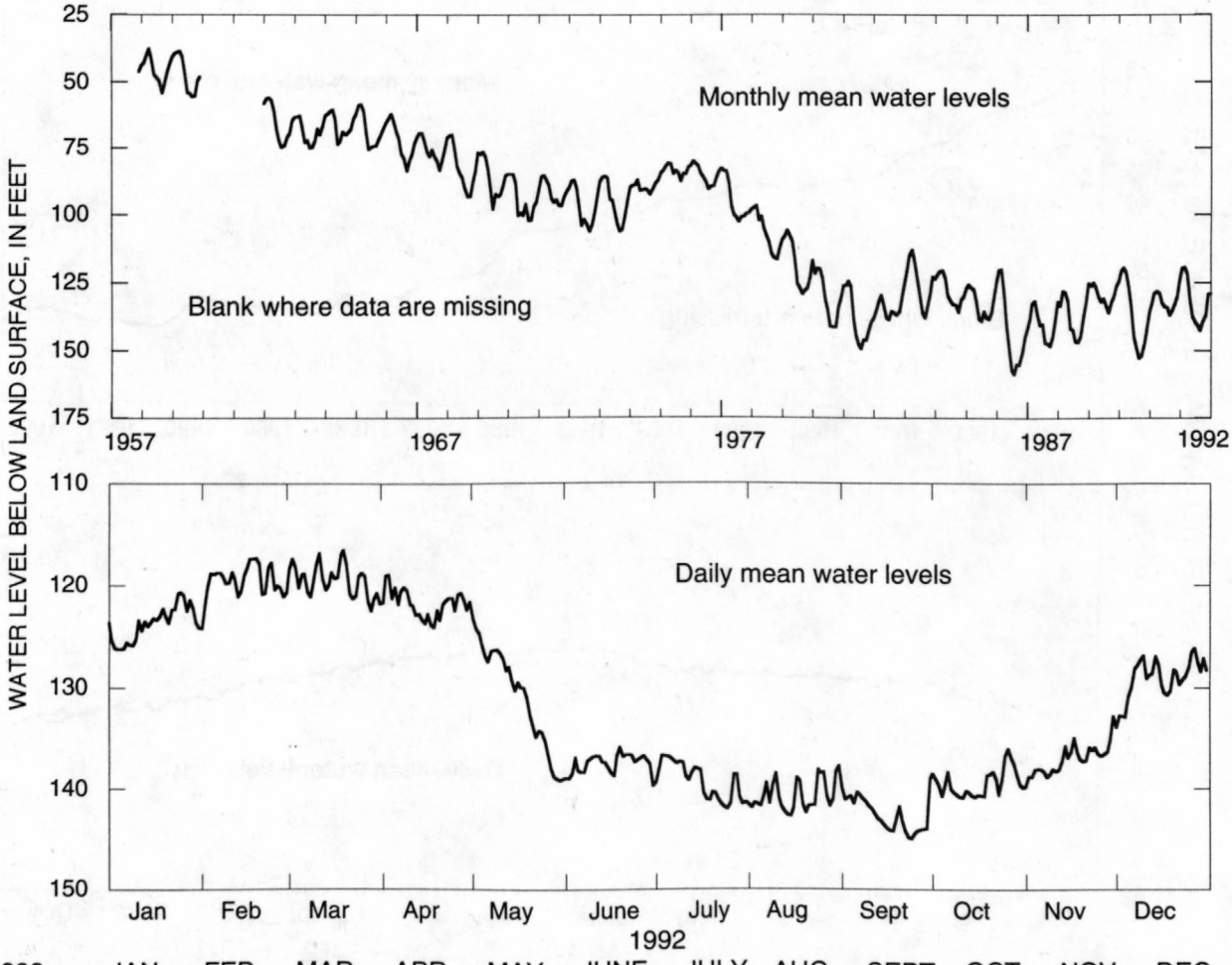


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	96.96	94.19	91.61	91.76	104.09	114.57	119.15	127.62	123.19	116.75	111.65	105.71
LOW	98.93	94.89	93.12	94.18	115.04	116.06	123.19	128.98	126.23	119.97	113.34	108.15
HIGH	95.08	93.08	90.36	90.19	94.73	112.87	115.66	124.77	120.41	113.75	108.67	103.23

CAL YR 1992 MEAN 108.15 HIGH 90.19 LOW 128.98

Figure 76.--Water level in observation well 11L002, Dougherty County.

313554084062501 Local number, 13L002.
LOCATION.--Lat 31°35'51", long 84°06'24", Hydrologic Unit 03130008.
Owner: Albany Water, Gas, and Light Commission, Turner City 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 12 in., depth 760 ft, cased to 713 ft, open hole.
DATUM.--Altitude of land-surface datum is 212.84 ft.
REMARKS.--Well pumped and sounded to a depth of 760 ft, June 21, 1978; water-quality sample collected at conclusion of pumping. Borehole geophysical survey conducted March 17, 1977. Water levels for periods of missing record, June 11-12, July 4-6, and September 25-28, were estimated. Well pumped and sampled by Georgia Geologic Survey, December 1, 1992.
PERIOD OF RECORD.-- 1957 to 1959; 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 38.19 ft below land-surface datum, April 1, 1959; lowest, 160.88 ft below land-surface datum, July 26, 1986.

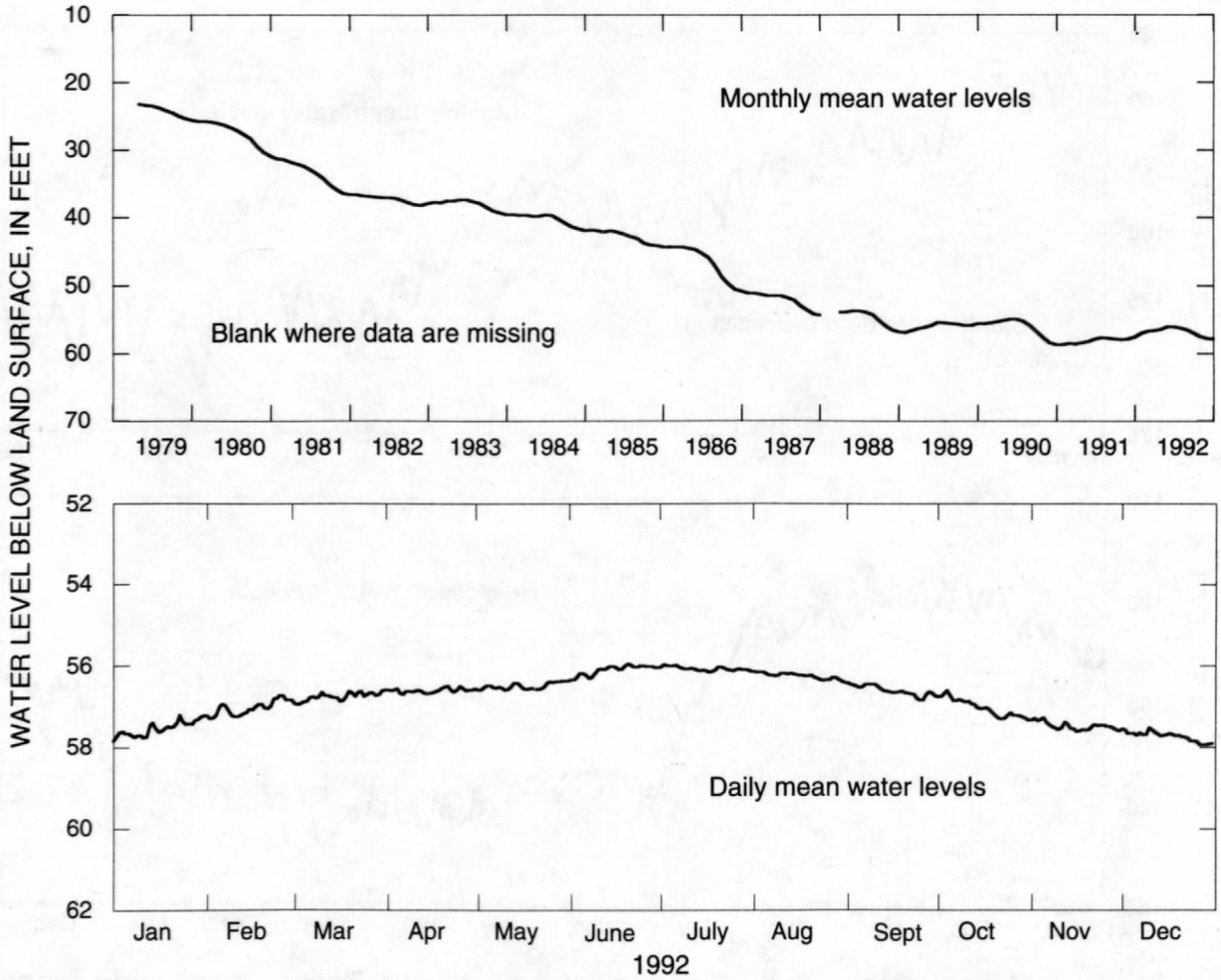


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	123.75	119.57	119.51	121.79	130.89	137.49	139.27	140.71	142.57	139.42	137.11	129.15
LOW	126.31	121.80	122.53	124.14	139.15	139.74	142.02	142.74	144.96	140.83	138.88	132.90
HIGH	120.69	117.35	116.55	118.94	124.26	135.86	136.67	137.73	138.96	135.99	132.83	126.19

CAL YR	1992		MEAN	131.80		HIGH	116.55		LOW	144.96		

Figure 77.--Water level in observation well 13L002, Dougherty County.

312654084210103 Local number, 11K005.
LOCATION.--Lat 31°26'54", long 84°21'01", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 12.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 690 ft, cased to 630 ft, open hole.
DATUM.--Altitude of land-surface datum is 183 ft.
REMARKS.--Borehole geophysical survey conducted March 14, 1979.
PERIOD OF RECORD.--1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 23.03 ft below land-surface datum, May 24, 1979; lowest, 58.86 ft below land-surface datum, January 9, 1991.

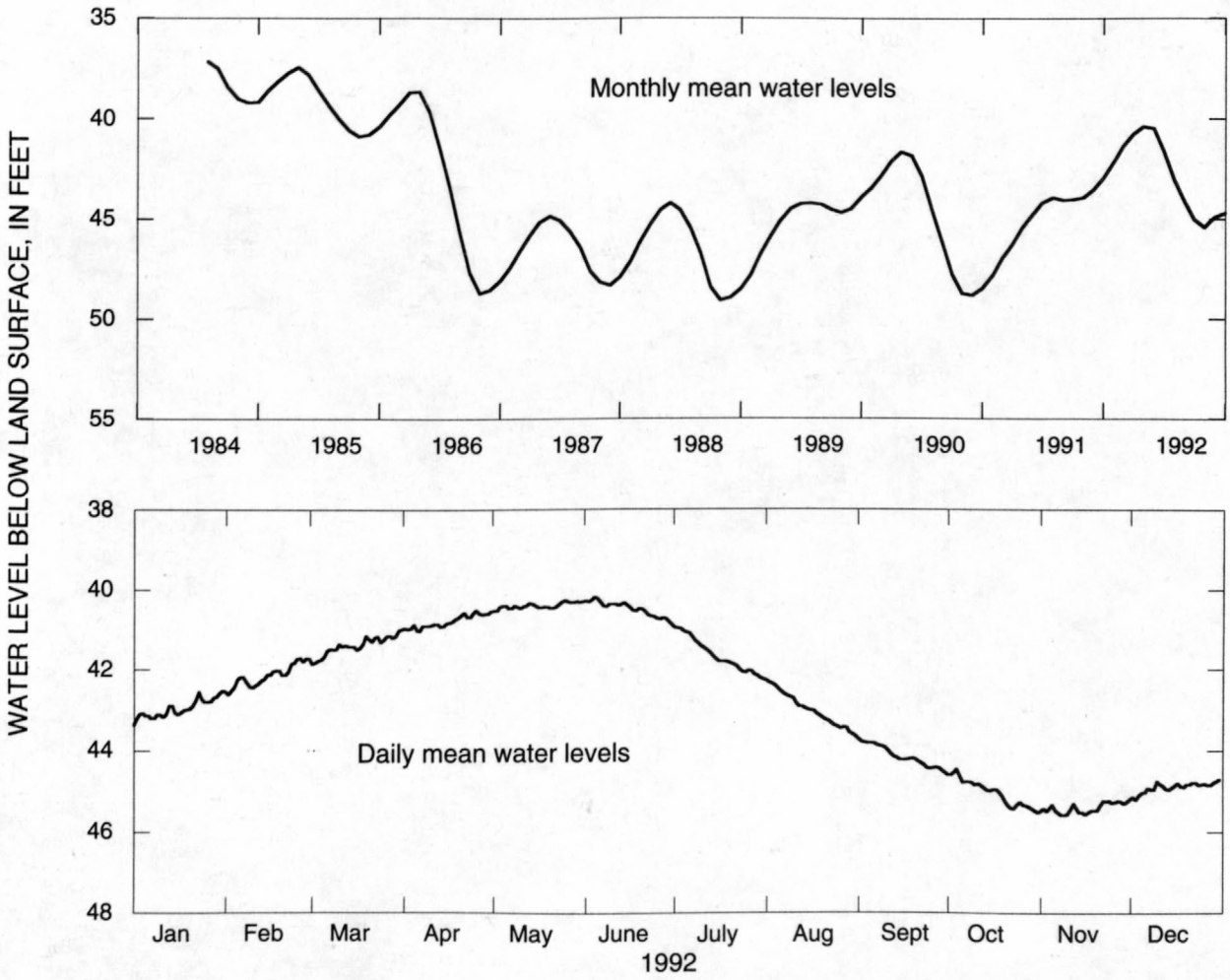


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	57.53	57.04	56.74	56.60	56.49	56.10	56.07	56.24	56.59	57.02	57.48	57.73
LOW	57.76	57.30	56.94	56.69	56.59	56.33	56.15	56.40	56.83	57.33	57.61	57.94
HIGH	57.21	56.72	56.59	56.49	56.36	55.95	55.97	56.15	56.44	56.60	57.27	57.51

CAL YR	1992		MEAN	56.80		HIGH	55.95		LOW	57.94		

Figure 78.--Water level in observation well 11K005, Dougherty County.

315731083542301 Local number, 14P014.
LOCATION.--Lat 31°57'31", long 83°54'23", Hydrologic Unit 03130006.
Owner: Georgia Geologic Survey, Veterans Memorial Park test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Clayton.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 550 ft, cased to 500 ft, open hole.
DATUM.--Altitude of land-surface datum is 252 ft.
REMARKS.--Well pumped May 20, 1982. Borehole geophysical survey conducted February 22, 1982.
PERIOD OF RECORD.--1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 37.16 ft below land-surface datum, September 2, 1984; lowest, 49.26 ft below land-surface datum, November 29, 1988.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	42.96	42.14	41.38	40.79	40.41	40.50	41.66	43.01	44.14	45.03	45.41	44.91
LOW	43.24	42.61	41.83	41.03	40.53	40.89	42.26	43.65	44.55	45.52	45.59	45.22
HIGH	42.53	41.71	40.99	40.52	40.29	40.20	40.96	42.34	43.79	44.46	45.24	44.71

CAL YR	1992		MEAN	42.70		HIGH	40.20		LOW	45.59		

Figure 79.--Water level in observation well 14P014, Crisp County.

Cretaceous Aquifers and Aquifer Systems

Water levels in Cretaceous aquifers and aquifer systems were monitored in 12 wells in 1992 (fig. 80), seven of which are summarized in figures 81-87. The Cretaceous aquifers and aquifer systems include the Providence aquifer in southwestern Georgia and the Dublin, the Midville, and the Dublin-Midville aquifer systems in the northeastern part of the Coastal Plain. Water levels in these aquifers and aquifer systems are influenced by variations in precipitation and pumping.

In Chattahoochee County near Columbus, the annual mean water level in well 06S001 (fig. 81) was about 1.3 ft lower in 1992 than in 1991. A record low daily mean water level was recorded in the well in October that was about 1.5 ft lower than the previous record low.

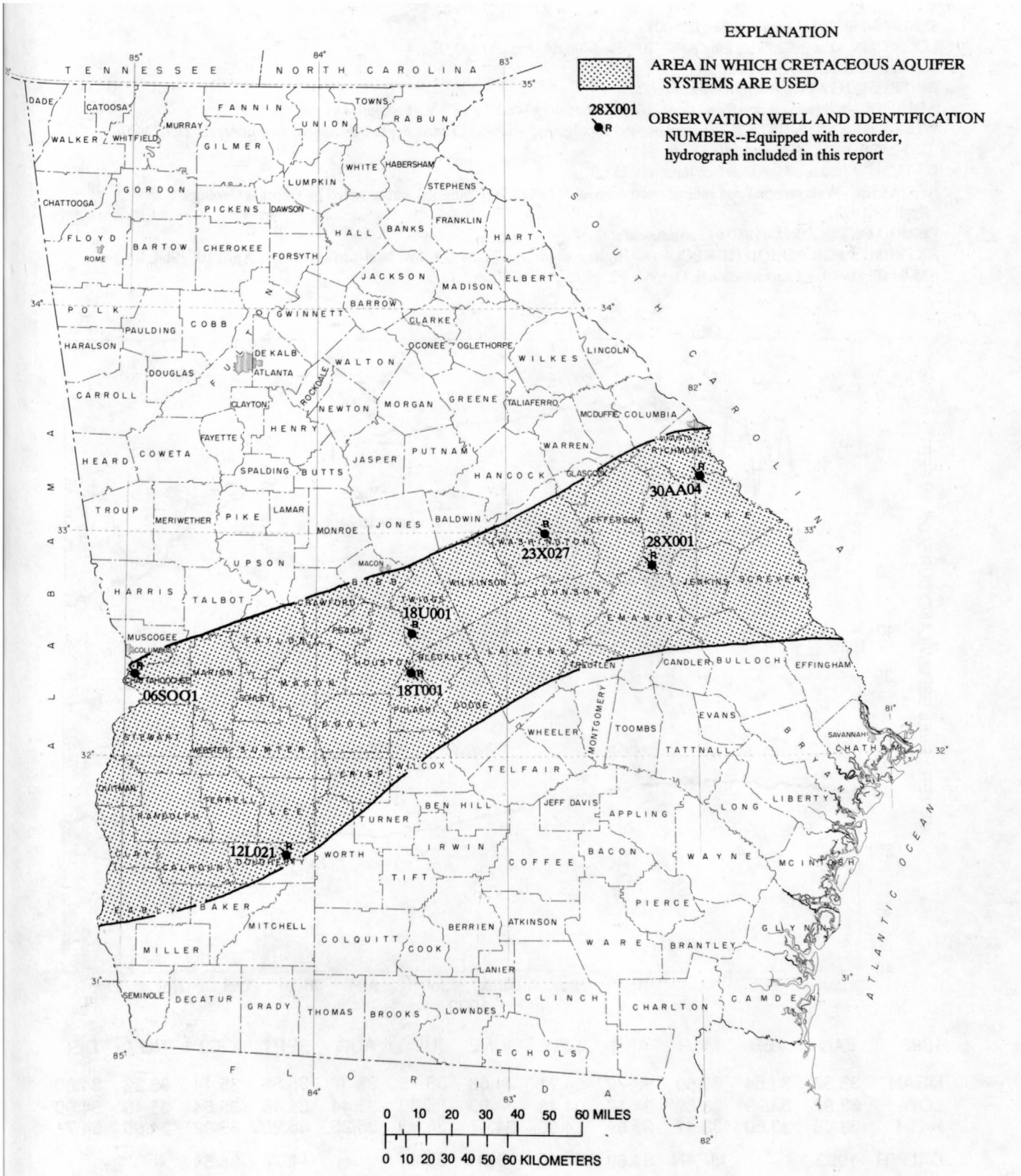
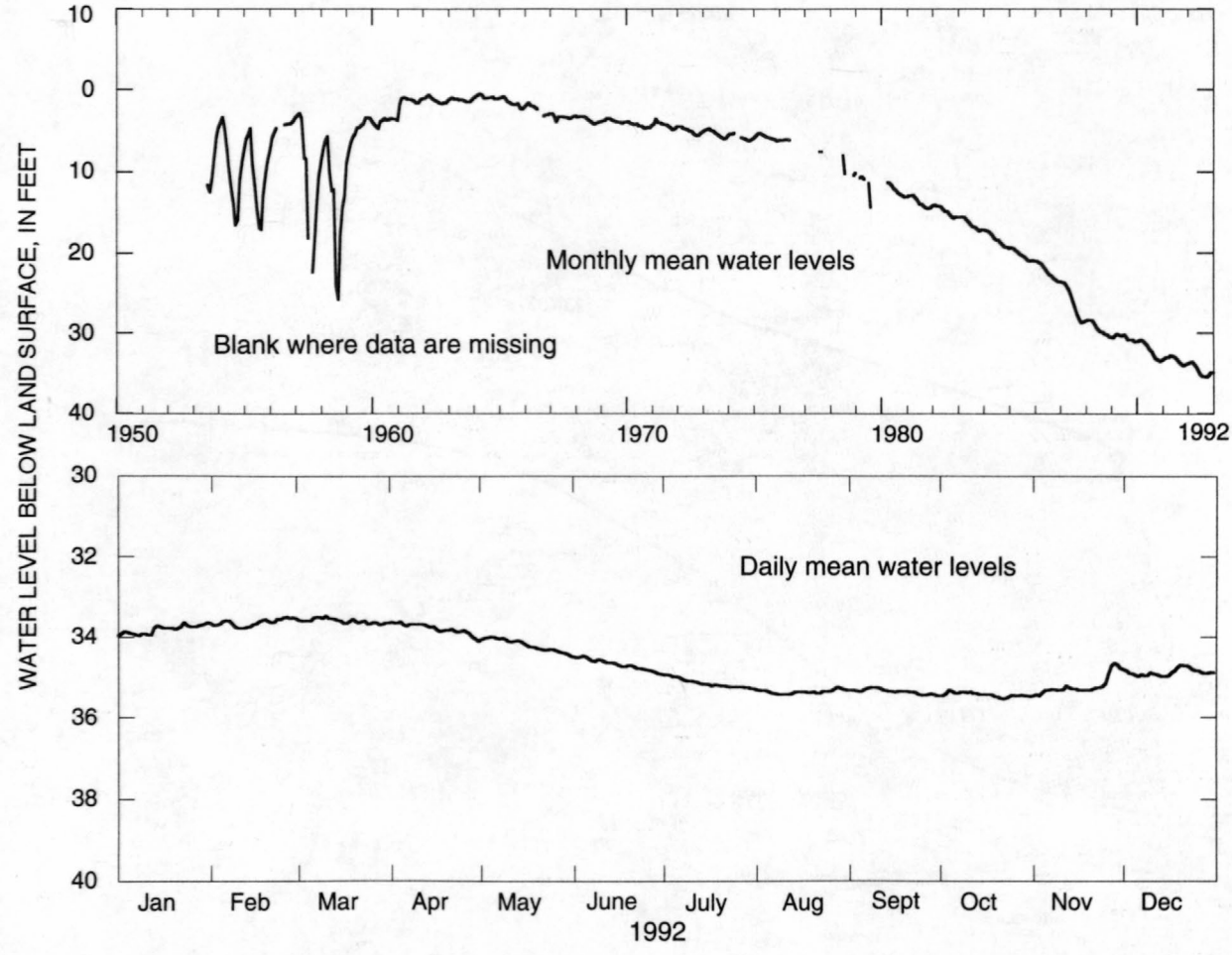


Figure 80.--Locations of observation wells completed in Cretaceous aquifers and aquifer systems.

322036084590301 Local number, 06S001.
LOCATION.--Lat 32°20'31", long 84°59'10", Hydrologic Unit 03130003.
Owner: U.S. Army, Fort Benning.
INSTRUMENTATION.--Digital recorder.
AQUIFER.-- Cretaceous age formations (Blufftown, Eutaw, and Tuscaloosa Formations).
WELL CHARACTERISTICS.--Drilled unused supply well, diameter 12 in., depth 568 ft, screened intervals 215-220 ft, 230-235 ft, 280-290 ft, and 540-550 ft.
DATUM.--Altitude of land-surface datum is 255 ft.
REMARKS.--Well pumped and redeveloped August 7, 1989. Well pumped and sampled by Georgia Geologic Survey, April 28,1992.
PERIOD OF RECORD.--1950 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.37 ft below land-surface datum, April 10, 1964; lowest, 35.54 ft below land-surface datum, October 22, 1992.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	33.82	33.64	33.60	33.79	34.21	34.68	35.15	35.37	35.36	35.44	35.22	34.88
LOW	33.97	33.79	33.69	34.12	34.48	34.92	35.30	35.44	35.46	35.54	35.46	34.99
HIGH	33.65	33.50	33.47	33.62	34.00	34.47	34.93	35.25	35.26	35.32	34.65	34.71

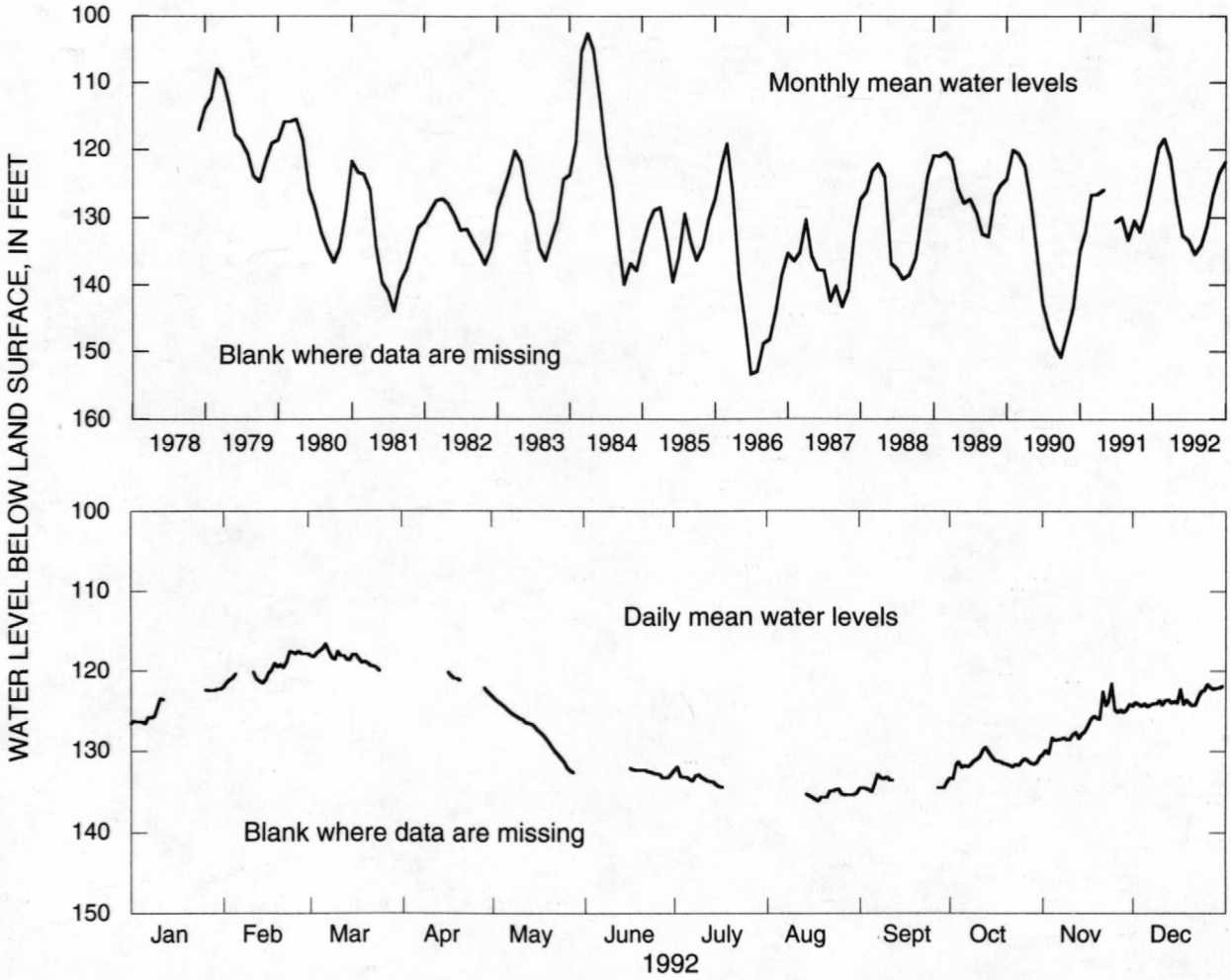
CAL YR 1992 MEAN 34.60 HIGH 33.47 LOW 35.54

Figure 81.--Water level in observation well 06S001, Chattahoochee County.

Providence aquifer

The water level in the Providence aquifer in the Albany (fig. 80) area was monitored in one well in 1992, as shown in figure 82. Water levels in the aquifer are influenced by variations in precipitation and pumping (Clarke and others, 1983). In 1992, the annual mean water level in well 12L021 (fig. 82) was about 1.4 ft higher than in 1991.

313534084103003 Local number, 12L021.
LOCATION.--Lat 31°35'37", long 84°10'29", Hydrologic Unit 03130008.
Owner: U.S. Geological Survey, test well 10.
INSTRUMENTATION.--Basic data recorder.
AQUIFER.--Providence.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 834 ft, cased to 810 ft, screen to 830 ft.
DATUM.--Altitude of land-surface datum is 198 ft.
REMARKS.--Borehole geophysical survey conducted October 26, 1978. Well pumped and sampled by Georgia Geologic Survey, October 24, 1989. Water levels for periods, January 13-25, February 6-10, March 25 to April 15, 21-27, May 29 to June 15, July 18 to August 13, and September 13-26, are missing.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 101.59 ft below land-surface datum, April 26, 1984; lowest, 156.36 ft below land-surface datum, July 26, 1986.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	124.56	119.72	118.43	121.45	127.50	132.63	133.37	135.37	134.03	131.39	126.73	123.49
LOW	126.59	121.58	120.06	122.95	132.67	133.30	134.40	136.15	135.00	133.42	130.29	124.50
HIGH	122.38	117.61	116.70	120.24	123.67	132.06	131.95	134.69	132.87	129.52	121.63	121.71

CAL YR 1992 MEAN 127.08 HIGH 116.70* LOW 136.15*

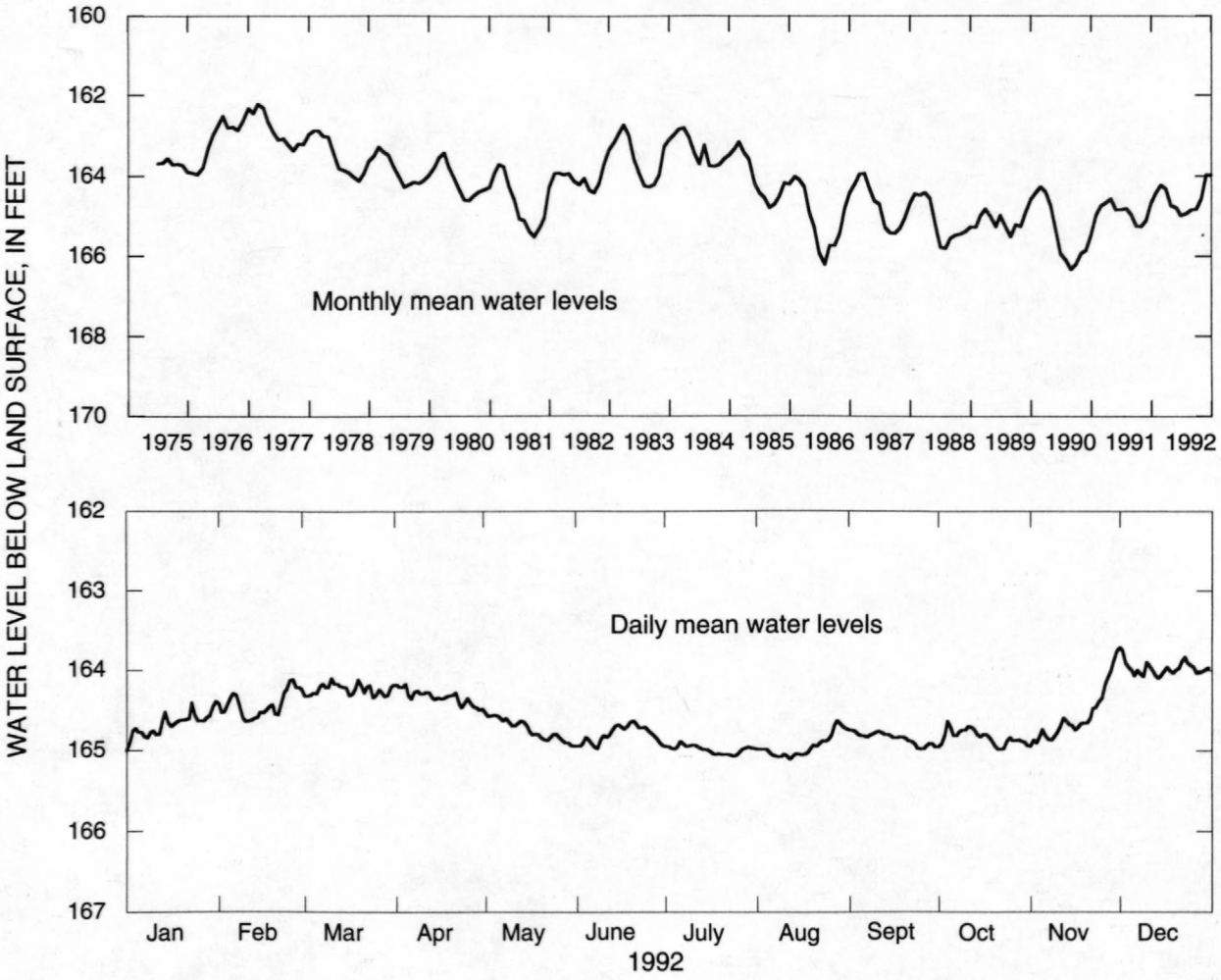
* may have been higher or lower during periods of missing record

Figure 82.--Water level in observation well 12L021, Dougherty County.

Dublin aquifer system

The water level in the Dublin aquifer system was monitored in one well in southern Twiggs County in 1992, as shown in figure 83. In this area, water levels in wells tapping the aquifer are affected by precipitation and by pumping in eastern Houston and western Twiggs Counties (Clarke and others, 1985). The annual mean water level in well 18U001 (fig. 83) was about 0.4 ft higher in 1992 than in 1991.

323302083263401 Local number, 18U001.
LOCATION.--Lat 32°33'02", long 83°26'34", Hydrologic Unit 03070104.
Owner: Georgia Kraft, U.S. Geological Survey, test well 3.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Dublin aquifer system.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 616 ft, cased to 586 ft, screen to 616 ft.
DATUM.--Altitude of land-surface datum is 442 ft.
REMARKS.--Water-quality analysis June 10, 1975.
PERIOD OF RECORD.--July 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 162.0 ft below land-surface datum, April 4, 1977; lowest, 166.44 ft below land-surface datum, October 3, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	164.68	164.43	164.24	164.34	164.74	164.80	164.99	164.95	164.85	164.84	164.58	163.97
LOW	164.92	164.65	164.34	164.50	164.94	164.97	165.07	165.11	164.98	164.99	164.91	164.10
HIGH	164.40	164.12	164.10	164.17	164.56	164.63	164.89	164.63	164.75	164.64	163.76	163.75

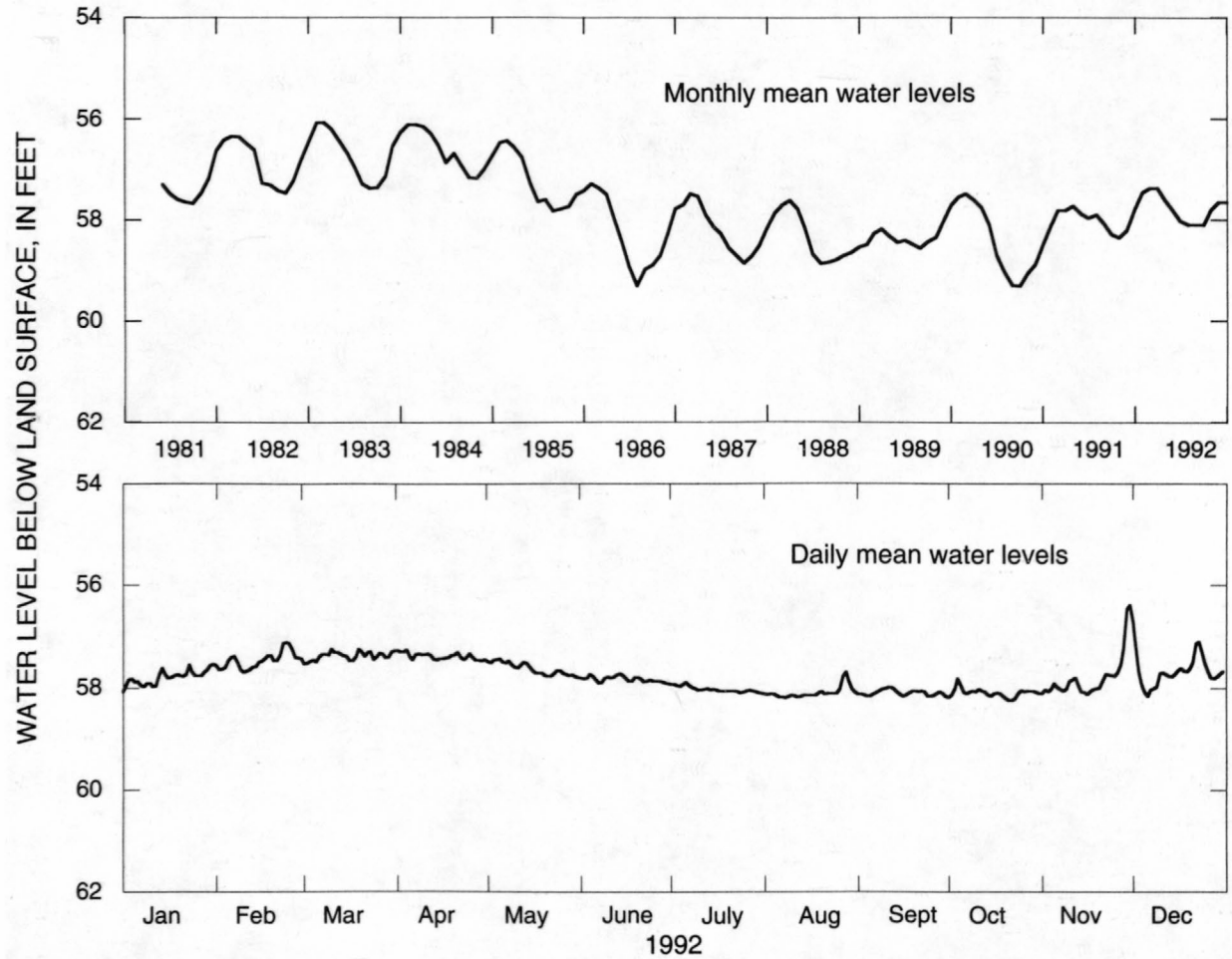
CAL YR	1992		MEAN	164.62		HIGH	163.71		LOW	165.11		

Figure 83.--Water level in observation well 18U001, Twiggs County.

Midville aquifer system

The water level was monitored in six wells in east-central Georgia in 1992 (fig. 80). Data from two of these wells, 18T001 and 28X001, are summarized in figures 84-85. The water level in the Midville aquifer system is affected mainly by regional pumping (Clarke and others, 1985). In 1992, the annual mean water level in these wells ranged from about 0.3 to 1.1 ft higher than in 1991, respectively.

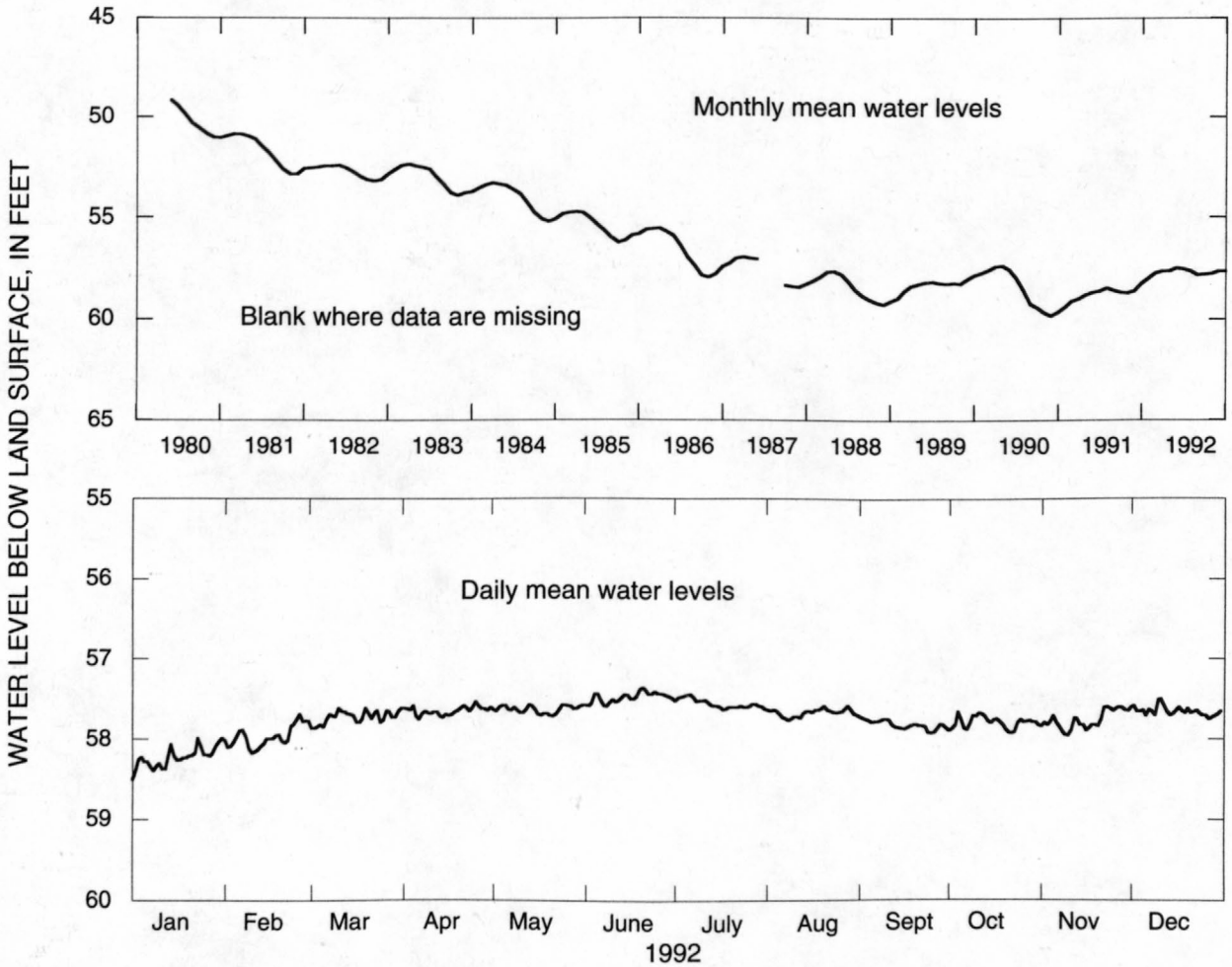
322245083290101 Local number, 18T001.
LOCATION.--Lat 32°22'45", long 83°29'01", Hydrologic Unit 03070104.
Owner: U.S. Geological Survey, Arrowhead test well 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Midville aquifer system.
WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in., depth 1,555 ft, cased to 970 ft, screened intervals, 970-980 ft, 1,110-1,130 ft, and 1,270-1,280 ft.
DATUM.--Altitude of land-surface datum is 334 ft.
REMARKS.--Borehole geophysical survey conducted January 28 and April 15, 1981. Water-quality analysis May 12, 1981.
PERIOD OF RECORD.-- June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 55.48 ft below land-surface datum, April 12, 1983; lowest, 59.52 ft below land-surface datum, October 7-8, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	57.80	57.47	57.38	57.38	57.62	57.82	58.03	58.10	58.10	58.10	57.81	57.66
LOW	57.98	57.70	57.53	57.47	57.79	57.91	58.12	58.20	58.17	58.25	58.13	58.16
HIGH	57.54	57.13	57.25	57.27	57.43	57.72	57.89	57.69	57.99	57.81	56.40	57.11
CAL YR	1992		MEAN	57.77		HIGH	56.40		LOW	58.25		

Figure 84.--Water level in observation well 18T001, Pulaski County.

325232082131501 Local number, 28X001.
LOCATION.--Lat 32°52'32", long 82°13'15", Hydrologic Unit 03060201.
Owner: U.S. Geological Survey, Midville Experiment Station 1.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Midville aquifer system.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in., depth 1,045 ft, cased to 1,025 ft, screen to 1,045 ft.
DATUM.--Altitude of land-surface datum is 269 ft.
REMARKS.--Borehole geophysical survey conducted March 8 and April 22, 1980. Water-quality analyses May 23, 1980.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 49.07 ft below land-surface datum, June 4, 1980; lowest, 59.91 ft below land-surface datum, November 30, 1990.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	58.23	57.97	57.72	57.65	57.63	57.47	57.54	57.65	57.81	57.80	57.77	57.65
LOW	58.41	58.18	57.87	57.75	57.71	57.59	57.62	57.75	57.92	57.93	57.96	57.75
HIGH	57.99	57.69	57.61	57.53	57.57	57.35	57.43	57.57	57.73	57.66	57.60	57.50

CAL YR	1992		MEAN	57.74		HIGH	57.35		LOW	58.51		

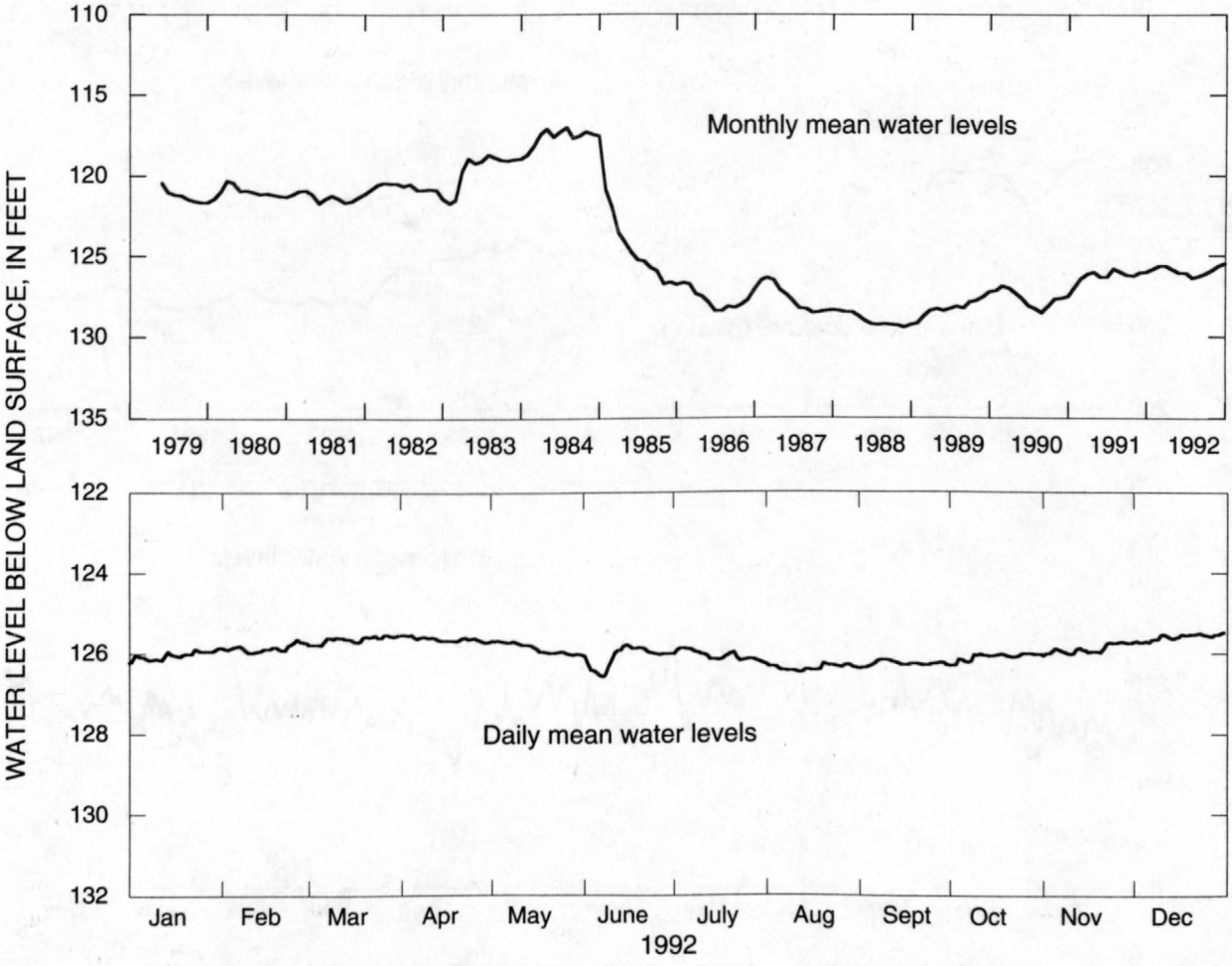
Figure 85.--Water level in observation well 28X001, Burke County.

Dublin-Midville aquifer system

The water level in the Dublin-Midville aquifer system (fig. 80) was monitored in two wells in 1992, and are summarized in figures 86 and 87. Water levels in wells tapping the Dublin-Midville aquifer system in Richmond County are influenced mainly by precipitation and by local pumping (Gorday, 1985, p. 28). The annual mean water level in well 30AA04 (fig. 86) near McBean in southern Richmond County, was about 0.4 ft higher in 1992 than in 1991.

At Sandersville, Washington County, the water level in the Dublin-Midville aquifer system is influenced primarily by local pumping. During 1992, the annual mean water level in well 23X027 (fig. 87) was about 0.7 ft higher than in 1991.

331711081573701 Local number, 30AA04.
LOCATION.--Lat 33°15'25", long 81°57'47", Hydrologic Unit 03060106.
Owner: Richmond County water system, USGS McBean 2.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Dublin-Midville aquifer system.
WELL CHARACTERISTICS.--Drilled unused municipal well, diameter 6 in., depth 496 ft, cased to 174 ft, screened intervals, 174-192 ft, 299-319 ft, 341-372 ft, and 393-434 ft.
DATUM.--Altitude of land-surface datum is 293 ft.
REMARKS.--Borehole geophysical survey conducted October 23, 1967. Water-quality sample collected November 26, 1967.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 116.70 ft below land-surface datum, May 30, 1984; lowest, 129.61 ft below land-surface datum, August 28, 1988.

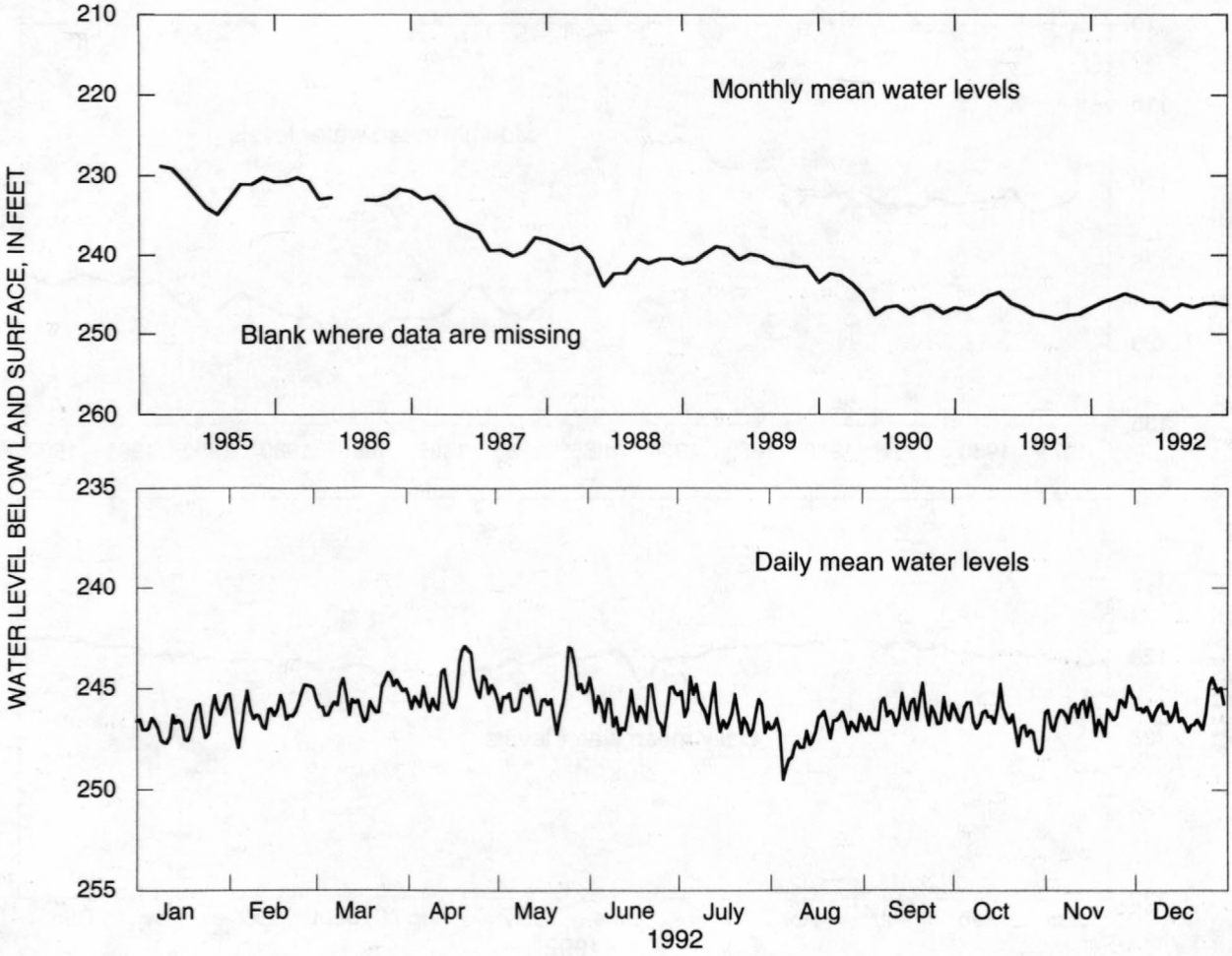


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	126.04	125.86	125.64	125.63	125.86	126.08	126.07	126.38	126.27	126.10	125.90	125.59
LOW	126.21	125.99	125.80	125.72	126.04	126.57	126.26	126.50	126.38	126.31	126.03	125.74
HIGH	125.86	125.65	125.53	125.53	125.68	125.79	125.88	126.27	126.17	126.01	125.72	125.47

CAL YR 1992 MEAN 125.95 HIGH 125.47 LOW 126.57

Figure 86.--Water level in observation well 30AA04, Richmond County.

325848082480901 Local number, 23X027.
LOCATION.--Lat 32°58'48", long 82°48'08", Hydrologic Unit 03070102.
Owner: City of Sandersville, well 8.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Dublin-Midville aquifer system.
WELL CHARACTERISTICS.--Drilled unused municipal well, diameter 8 in., depth 750 ft, cased to 480 ft, screened intervals, 480-485 ft, 605-610 ft, 650-655 ft, 695-700 ft, and 740-745 ft.
DATUM.--Altitude of land-surface datum is 450 ft.
REMARKS.--Borehole geophysical survey conducted March 14, 1985. Well sounded to 672 ft on March 14, 1985. Lower screens probably caved.
PERIOD OF RECORD.--March 1985 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 227.68 ft below land-surface datum, April 9, 1985; lowest, 250.91ft below land-surface datum, August 29, 1991.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	246.70	246.05	245.55	244.94	245.40	245.99	246.11	247.21	246.25	246.62	246.21	246.08
LOW	247.71	247.94	246.65	246.14	247.26	247.32	247.31	249.48	247.08	248.21	247.36	247.12
HIGH	245.36	244.86	244.24	242.92	242.98	244.81	244.43	246.12	244.76	244.81	244.90	244.50

CAL YR	1992		MEAN	246.09		HIGH	242.92		LOW	249.48		

Figure 87.--Water level in observation well 23X027, Washington County.

Paleozoic Rock Aquifers

The water level in an unconfined Paleozoic limestone aquifer in Walker County (fig. 88) was monitored in well 03PP01 in 1992 (fig. 89). In this area, water levels in wells tapping the Paleozoic rock aquifers are affected mainly by precipitation and local pumping. The effect of precipitation on water levels in areas where thin regolith overlies aquifers having secondary openings (fractures or solution openings) is indicated in the hydrograph of daily mean water levels for well 03PP01 (fig. 89). The annual mean water level in this well was about 1.0 ft higher in 1992 than in 1991.

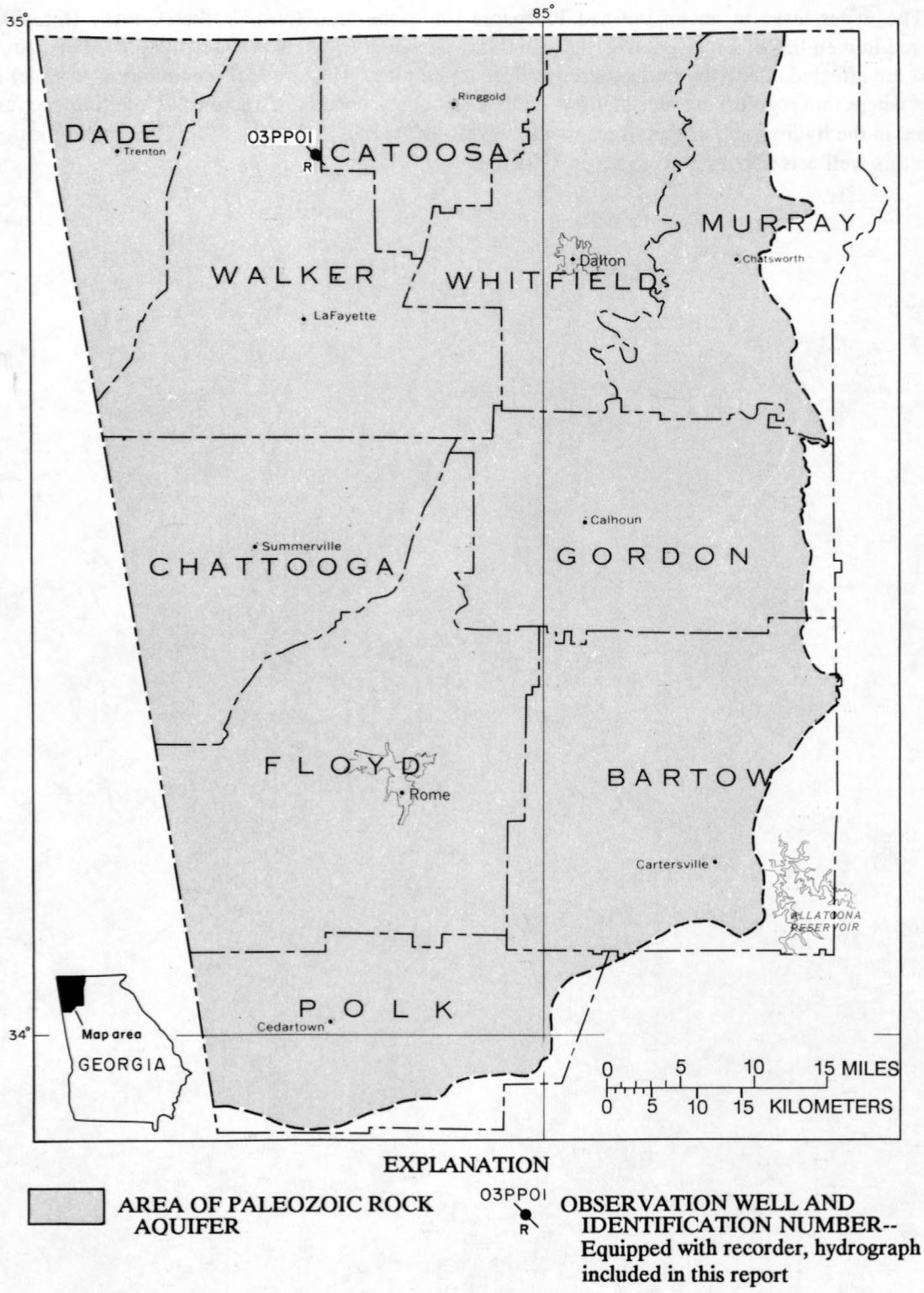
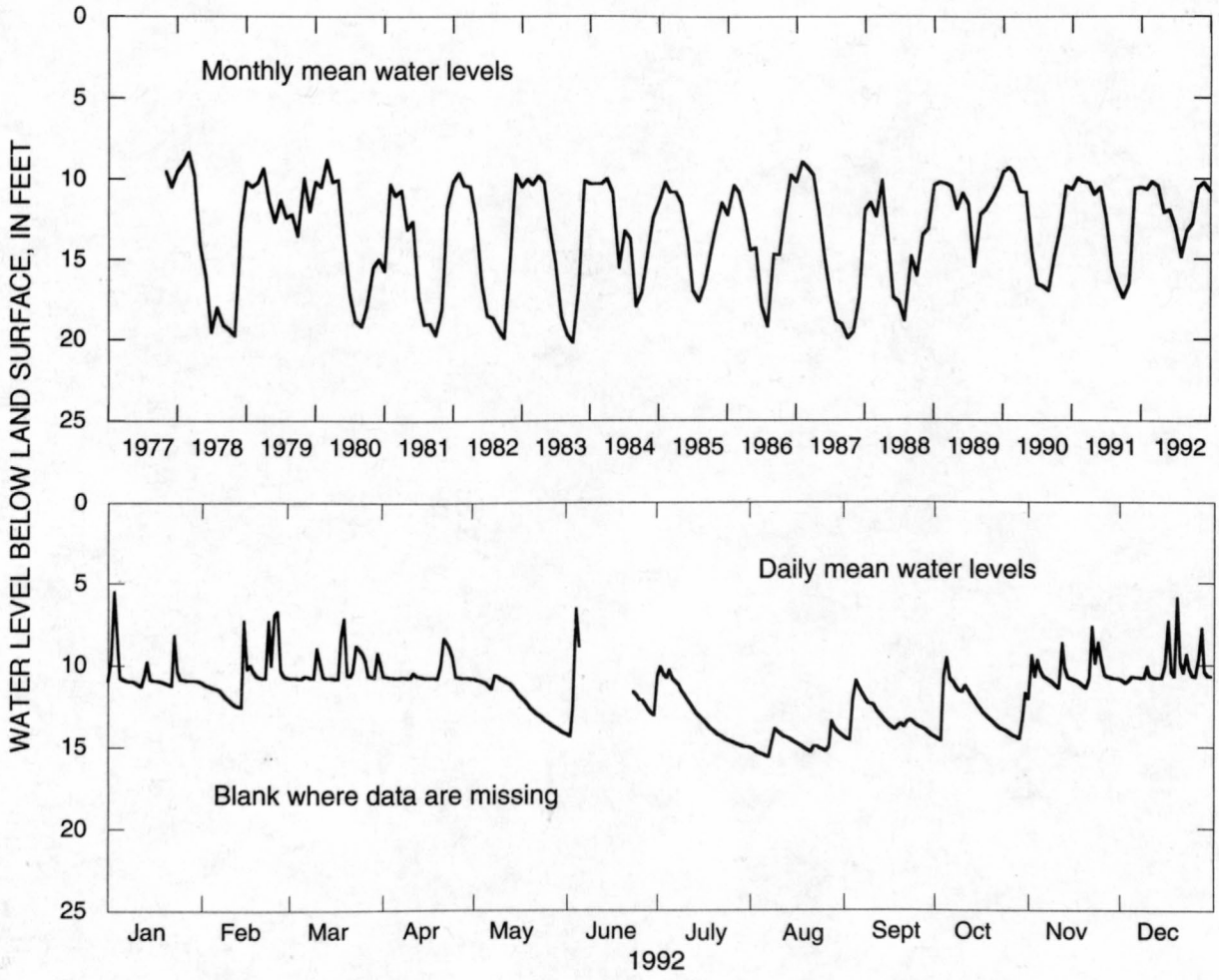


Figure 88--Location of an observation well completed in the Paleozoic rock aquifer.

345403085160001 Local number, 03PP01.
LOCATION.--Lat 34°54'08", long 85°16'00", Hydrologic Unit 06020001.
Owner: National Park Service, Chickamauga Battlefield Park.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Paleozoic Rock (Chickamauga Limestone).
WELL CHARACTERISTICS.--Cable-tooled, observation well, diameter 8 in., depth 72 ft, cased to 11 ft, open hole.
DATUM.--Altitude of land-surface datum is 730 ft.
REMARKS.--Well sounded October 18, 1977. Water levels for periods of missing record, March 1, 24-25, 31, April 22-24, and July 30 to August 2, were estimated. Water levels for period, June 6-22, are missing.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.97 ft below land-surface datum, March 9, 1978; lowest, 21.70 ft below land-surface datum, August 5, 1978.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	10.53	10.64	10.18	10.48	12.11	------	13.00	14.84	13.29	12.82	10.53	10.23
LOW	11.27	12.56	10.83	10.81	14.15	14.35	15.07	15.67	14.62	14.66	11.44	11.14
HIGH	5.53	6.75	7.17	8.39	10.62	6.60	10.11	13.45	10.97	9.63	7.71	5.93
CAL YR	1992		MEAN	11.70		HIGH	5.53		LOW	15.67		

Figure 89.--Water level in observation well 03PP01, Walker County.

Crystalline-Rock Aquifers

Water levels in the crystalline-rock aquifers (fig. 90) were monitored in nine wells in 1992, five of which are summarized in figures 91-95. Water levels in wells tapping the crystalline-rock aquifers are affected mainly by precipitation and evapotranspiration, and locally by pumping. As in the Paleozoic rock aquifers, precipitation can cause rapid rises in water levels in areas where thin regolith overlies aquifers having secondary openings, and the effect is illustrated in the hydrograph for well 11FF04 (fig. 93). The annual mean water levels in these wells (figs. 91-95) ranged from 0.4 ft lower to 0.2 ft higher in 1992 than in 1991.

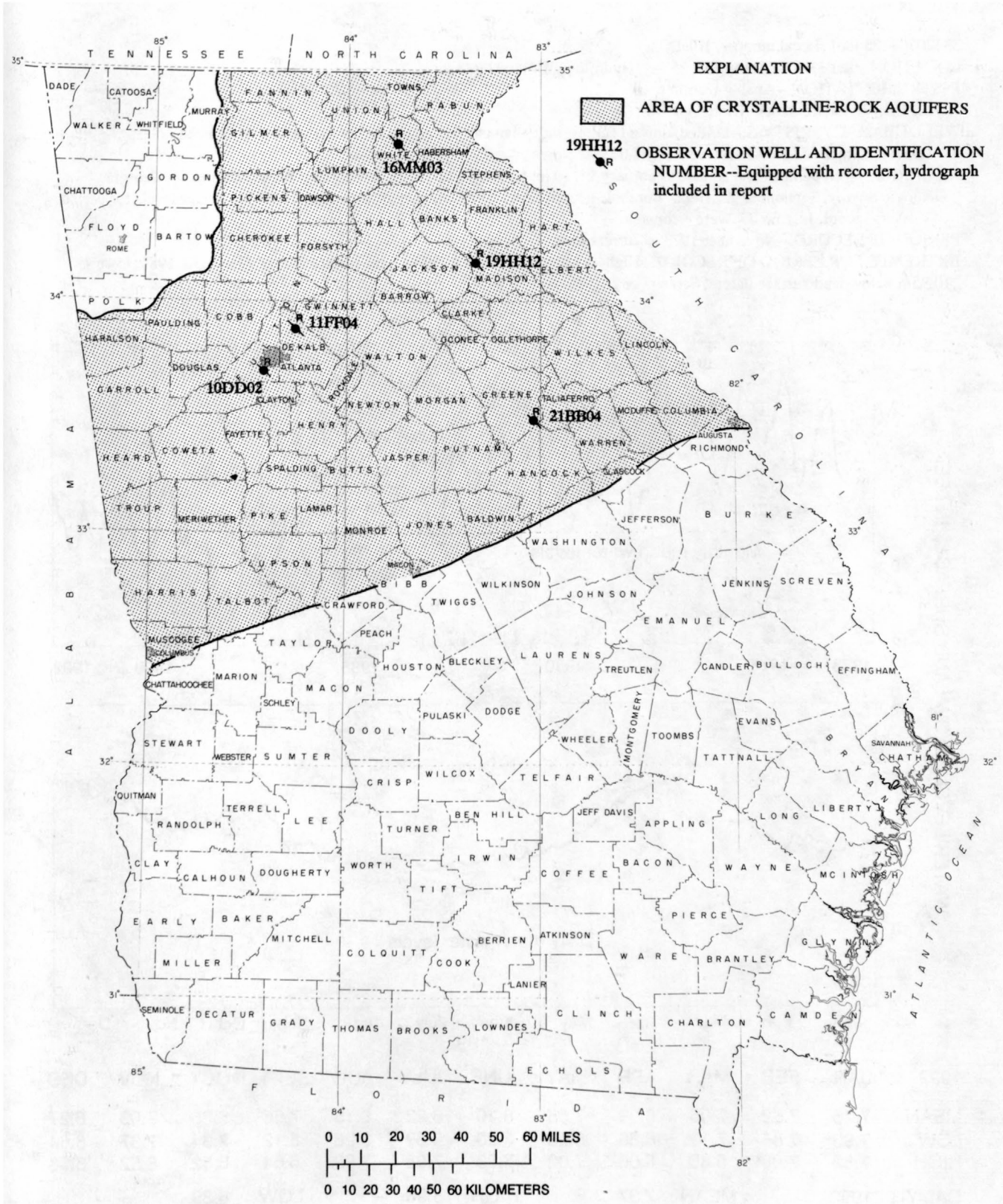
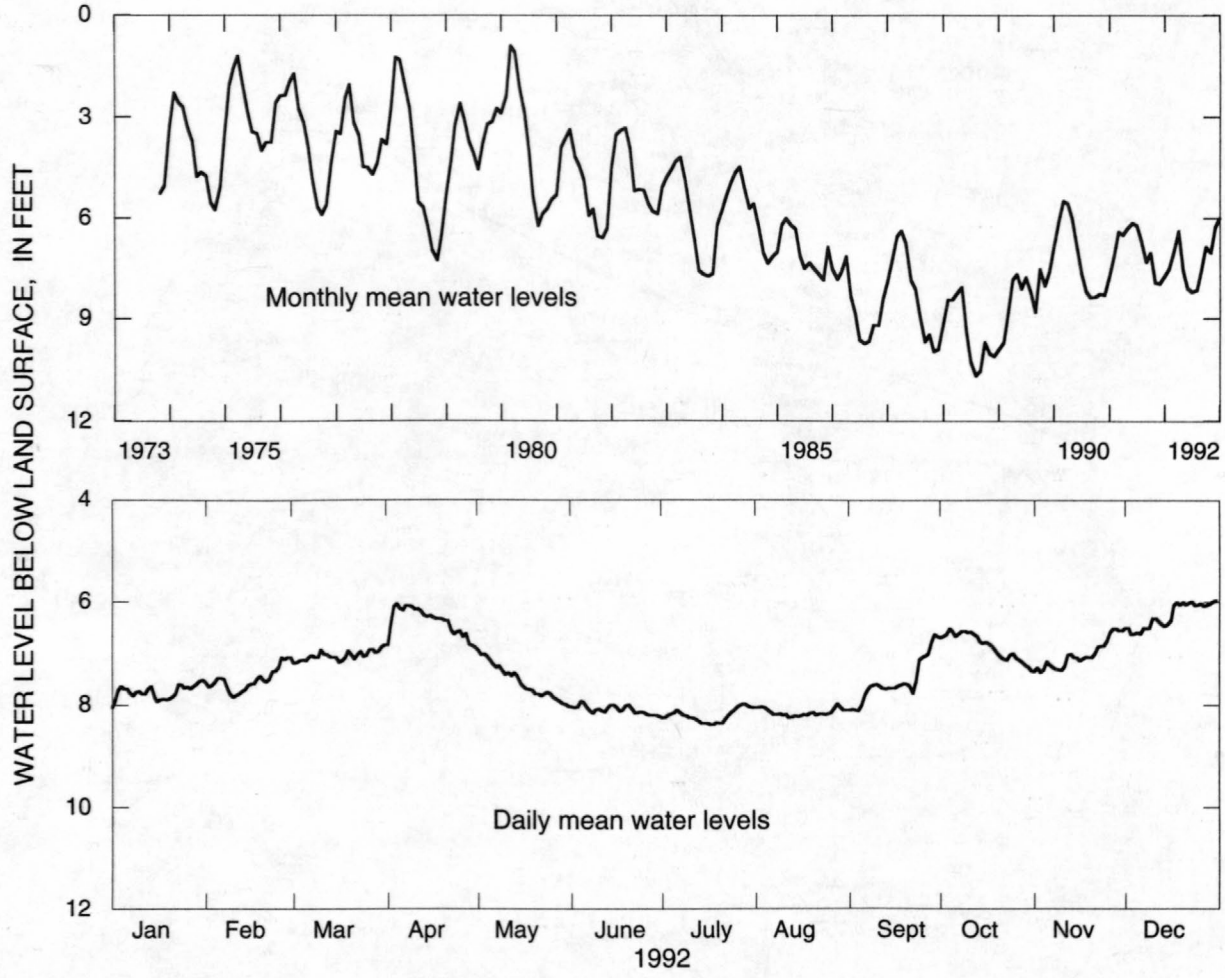


Figure 90.--Locations of observation wells completed in crystalline-rock aquifers.

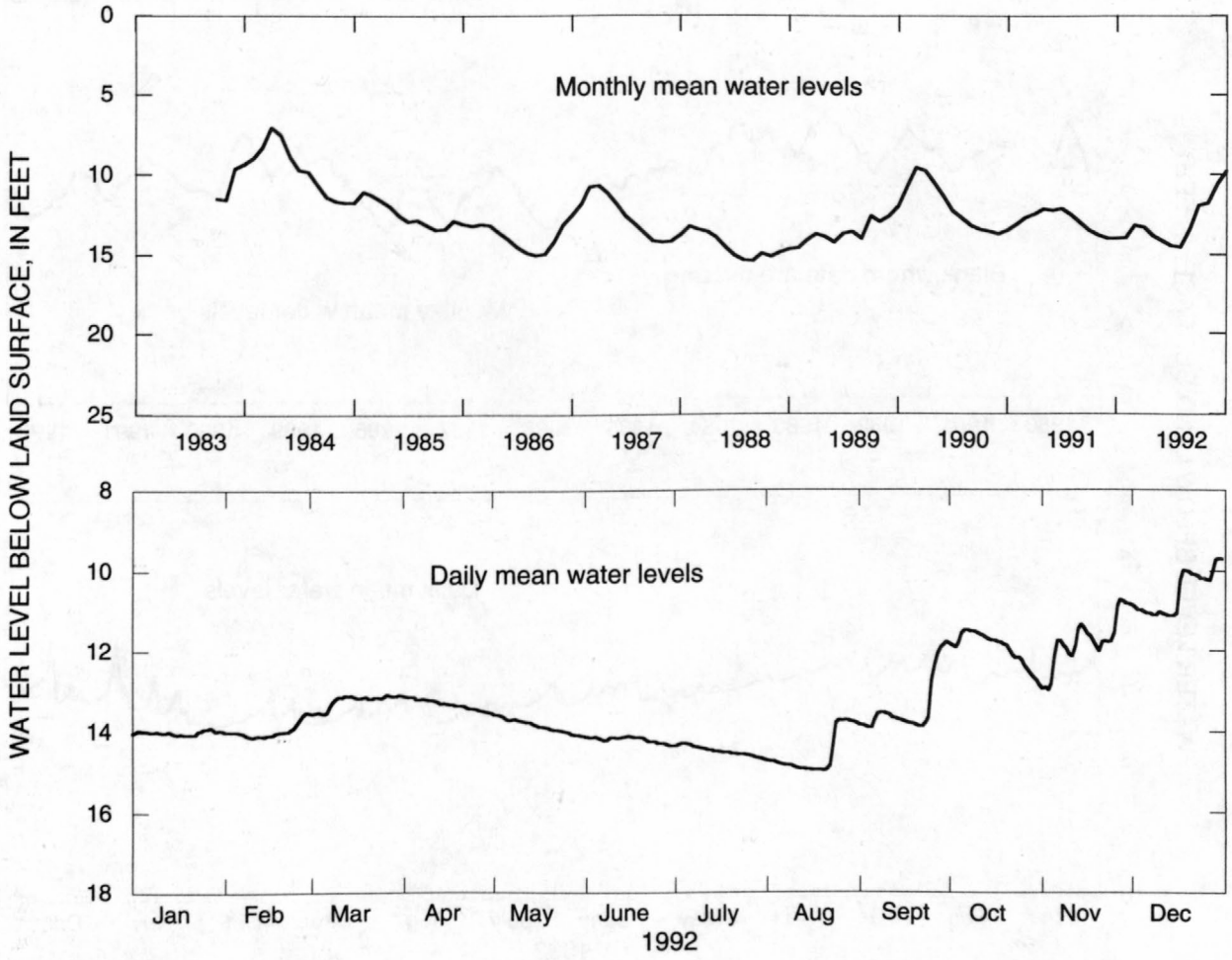
334207084254801 Local number, 10DD02.
LOCATION.--Lat 33°42'07", long 84°25'48", Hydrologic Unit 03130002.
INSTRUMENTATION.--Analog recorder.
AQUIFER.--Crystalline rock (Biotite gneiss).
WELL CHARACTERISTICS.--Drilled, unused supply well, diameter 12 in., depth 338 ft, cased to 41 ft, open hole.
DATUM.--Altitude of land-surface datum is 1,013 ft.
REMARKS.--Well pumped and sounded February 14, 1976, to a depth of 338 ft. Well pumped and sampled by Georgia Geologic Survey, September 22, 1992. Borehole geophysical survey conducted November 19, 1974. Water levels for period of missing record, July 26-27, were estimated.
PERIOD OF RECORD.--November 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.10 ft below land-surface datum, March 30, 1980; lowest, 10.95 ft below land-surface datum, September 2, 1988.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	7.76	7.52	7.05	6.39	7.55	8.10	8.22	8.15	7.56	6.86	7.03	6.27
LOW	7.95	7.85	7.19	6.88	8.03	8.23	8.39	8.26	8.12	7.34	7.37	6.64
HIGH	7.52	7.08	6.85	6.05	7.02	7.93	7.98	7.98	6.64	6.52	6.52	5.98
CAL YR	1992		MEAN	7.37		HIGH	5.98		LOW	8.39		

Figure 91.--Water level in observation well 10DD02, Fulton County.

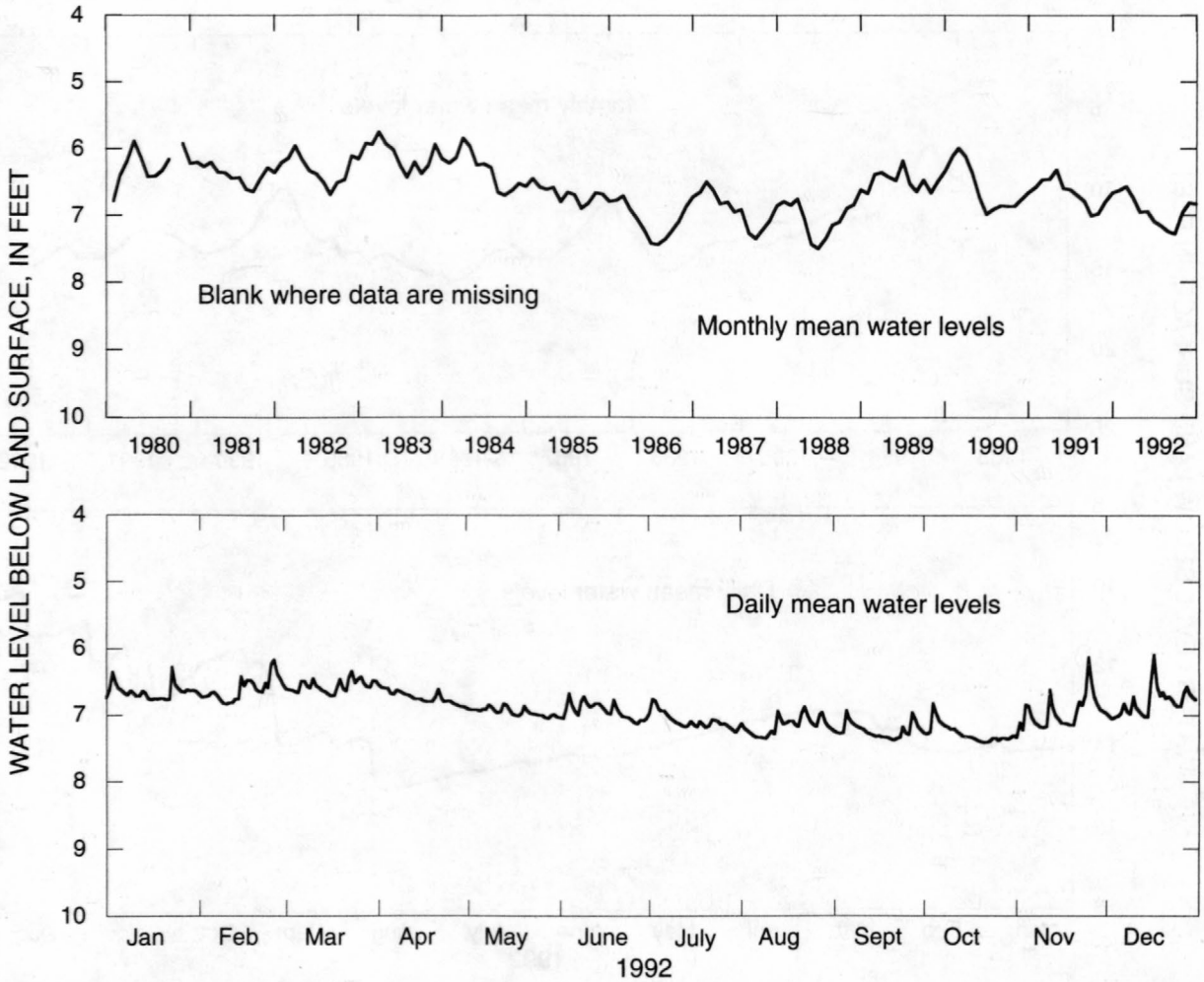
341020083201701 Local number, 19HH12.
LOCATION.--Lat 34°10'20", long 83°20'17", Hydrologic Unit 03060104.
Owner: Meadowlake Estates.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Crystalline rock.
WELL CHARACTERISTICS.--Drilled, unused supply well, diameter 6 in., depth 185 ft, cased to 50 ft, open hole.
DATUM.--Altitude of land-surface datum is 800 ft.
REMARKS.--Pump test conducted April 4-5, 1984. Borehole geophysical survey conducted October 31, 1983 and November 16, 1983. Water levels for periods of missing record, September 27-29, and October 21 to November 20, were estimated.
PERIOD OF RECORD.--October 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.69 ft below land-surface datum, April 14, 1984; lowest, 15.56 ft below land-surface datum, September 2-3, 1988.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	14.00	13.96	13.21	13.30	13.84	14.18	14.48	14.56	13.42	11.94	11.77	10.56
LOW	14.07	14.12	13.54	13.52	14.09	14.34	14.70	14.97	13.91	12.85	12.98	11.13
HIGH	13.90	13.51	13.06	13.12	13.57	14.10	14.29	13.73	11.78	11.48	10.72	9.70
CAL YR	1992		MEAN	13.27		HIGH	9.70		LOW	14.97		

Figure 92.--Water level in observation well 19HH12, Madison County.

335517084164001 Local number, 11FF04.
LOCATION.--Lat 33°55'17", long 84°16'40", Hydrologic Unit 03130001.
Owner: U.S. Geological Survey.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Crystalline rock.
WELL CHARACTERISTICS.--Drilled, observation well, diameter 6 in., depth 620 ft, cased to 36 ft, open hole.
DATUM.--Altitude of land-surface datum is 950 ft.
REMARKS.--Borehole geophysical survey conducted April 18, 1980.
PERIOD OF RECORD.--February 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.98 ft below land-surface datum, March 17, 1990; lowest, 7.66 ft below land-surface datum, July 20, 1988.

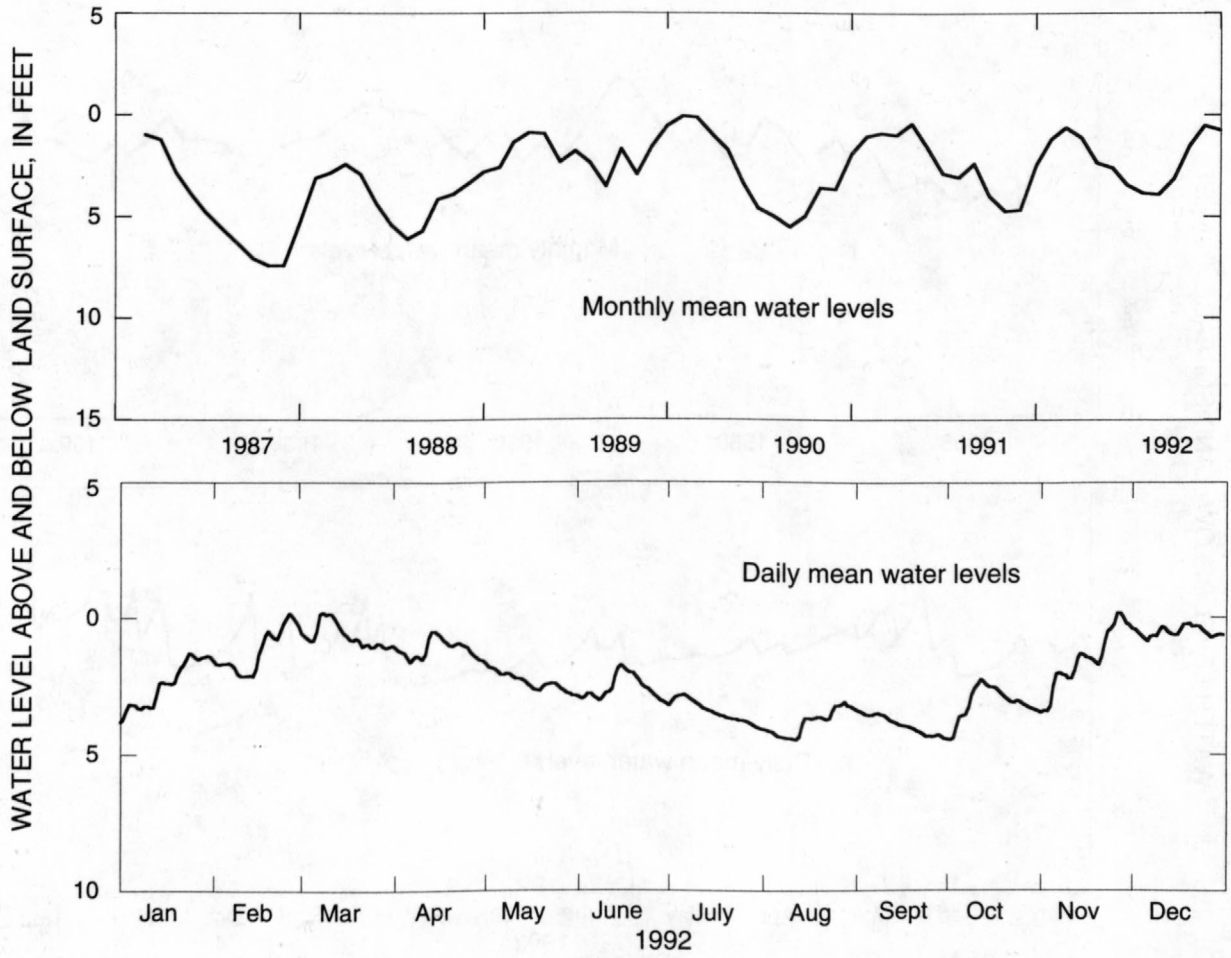


1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	6.66	6.62	6.57	6.73	6.95	6.94	7.09	7.16	7.24	7.28	6.96	6.81
LOW	6.78	6.84	6.72	6.88	7.05	7.13	7.26	7.36	7.38	7.41	7.23	7.06
HIGH	6.29	6.18	6.35	6.59	6.82	6.68	6.76	6.88	6.94	6.82	6.13	6.10

CAL YR	1992		MEAN	6.92		HIGH	6.10		LOW	7.41		

Figure 93.--Water level in observation well 11FF04, DeKalb County.

332808083010201 Local number, 21BB04.
LOCATION.--Lat 33°28'08", long 83°01'02", Hydrologic Unit 03070101.
Owner: Charles Veazey.
INSTRUMENTATION.--Analog recorder.
AQUIFER.--Crystalline rock.
WELL CHARACTERISTICS.--Drilled, unused supply well, diameter 6 in., depth 497 ft, cased to 15 ft, open hole.
DATUM.--Altitude of land-surface datum is 675 ft.
REMARKS.--Borehole geophysical survey conducted March 13, 1987. Water levels for period of missing record, January 23-25, were estimated.
PERIOD OF RECORD.--March 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.55 ft above land-surface datum, February 20, 1990; lowest, 7.58 ft below land-surface datum, December 7, 1987.



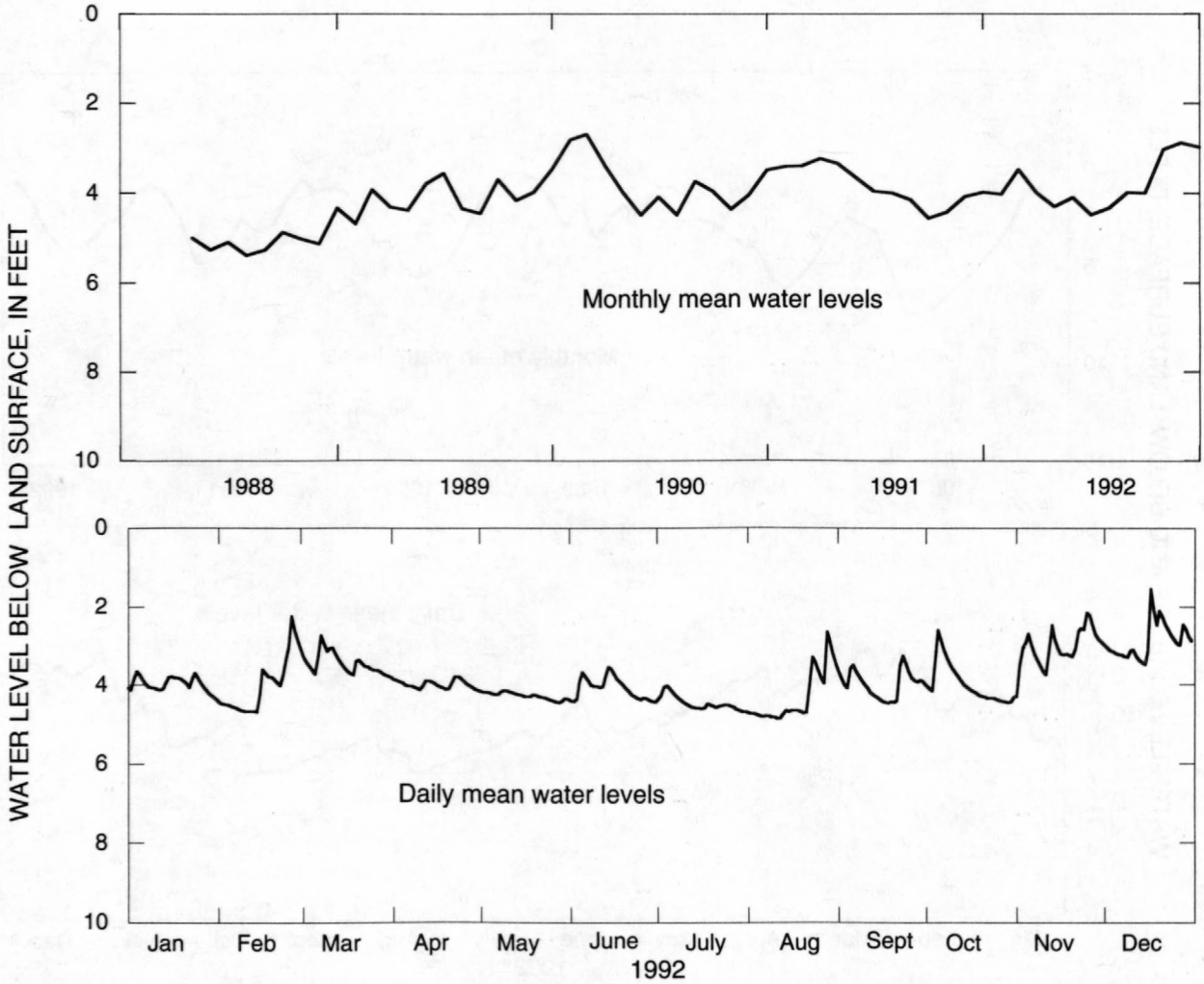
1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	2.45	1.20	0.65	1.14	2.35	2.61	3.45	3.83	3.90	3.14	1.55	0.53
LOW	3.72	2.14	1.12	1.62	2.87	3.17	4.07	4.47	4.42	4.46	3.43	0.87
HIGH	1.30	-0.17	-0.20	0.50	1.80	1.77	2.83	3.08	3.41	2.25	-0.18	0.23

CAL YR	1992		MEAN	2.24		HIGH	-0.20		LOW	4.47		

[Negative values indicate level above land surface]

Figure 94.--Water level in observation well 21BB04, Greene County.

344314083433201 Local number, 16MM03.
LOCATION.--Lat 34°43'14", long 83°43'32", Hydrologic Unit 03130001.
Owner: Unicoi State Park.
INSTRUMENTATION.--Digital recorder.
AQUIFER.--Crystalline rock.
WELL CHARACTERISTICS.--Drilled, unused supply well, diameter 6.25 in., depth 400 ft, cased to 72 ft, open hole.
DATUM.--Altitude of land-surface datum is 1550 ft.
REMARKS.--Borehole geophysical survey conducted December 7, 1987.
PERIOD OF RECORD.--May 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.74 ft above land-surface datum, March 17, 1989; lowest, 5.59 ft below land-surface datum, September 2, 1988.



1992	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
MEAN	3.98	4.02	3.48	4.00	4.29	4.09	4.48	4.33	3.98	3.99	3.03	2.88
LOW	4.37	4.71	3.83	4.15	4.46	4.44	4.70	4.86	4.48	4.46	3.74	3.48
HIGH	3.66	2.25	2.73	3.79	4.15	3.54	4.03	2.64	3.27	2.60	2.16	1.55
CAL YR	1992		MEAN	3.88		HIGH	1.55		LOW	4.86		

Figure 95.--Water level in observation well 16MM03, White County.

CHLORIDE CONCENTRATION IN WATER FROM THE FLORIDAN AQUIFER SYSTEM

Chloride concentration in water from the Floridan aquifer system has been monitored periodically in coastal Georgia since the 1950's. During April and October 1992, water samples were collected from 96 wells that tap the Floridan aquifer system in the Savannah and Brunswick areas and were analyzed for chloride concentration. Graphs of chloride concentration in water for 13 of these wells (fig. 96; table 4) are shown in figures 97-100. Chloride concentration in water from the Upper Floridan aquifer in most of the coastal Georgia area is less than 40 milligrams per liter (mg/L) (Clarke and others, 1990, p. 48), which is lower than the 250 mg/L drinking-water standard established by the Georgia Department of Natural Resources (1977) and the U.S. Environmental Protection Agency (1990). Chloride concentration in water from the Upper Floridan aquifer that exceeds drinking-water standards has been detected only in the Brunswick area. Water in the Lower Floridan aquifer generally has high chloride concentration in the Savannah and Brunswick areas. Chloride concentration in water from the Fernandina permeable zone at the base of the Lower Floridan aquifer has been measured as high as 30,000 mg/L (Krause and Randolph, 1989, p. D51).

Table 4.--*Observation wells for which chloride concentration graphs are included in this report*

County	Aquifer	Well number	Well name
Chatham	Lower Floridan	38Q196	Test well 1 point 2
Chatham	Lower Floridan	39Q017	Test well 7 point 1
Chatham	Lower Floridan	39Q018	Test well 7 point 2
Chatham	Lower Floridan	38Q004	Test well 4
Chatham	Upper Floridan	37Q185	Hutchinson Island test well 1
Glynn	Upper Floridan, upper water-bearing zone	34H393	Test well 17
Glynn	Upper Floridan, lower water-bearing zone	34H403	Test well 24
Glyn	Lower Floridan, brackish-water zone	34H399	Test well 19
Glynn	Lower Floridan, brackish-water zone	34H391	Test well 16
Glynn	Upper Floridan, upper water-bearing zone	34H469	Test well 2
Glynn	Upper Floridan, upperwater-bearing zone	34H427	E.M. Champion well 2
Glynn	Upper Floridan, upper water-bearing zone	33H133	Test well 6
Glynn	Upper Floridan, lower water-bearing zone	33H127	Test well 3

Savannah Area

Twelve wells are sampled semi-annually in Chatham County, five of which are summarized in figures 96 and 97. Data from these wells indicate that chloride concentration generally increases with depth below land surface and is not changing appreciably with time (fig. 97).

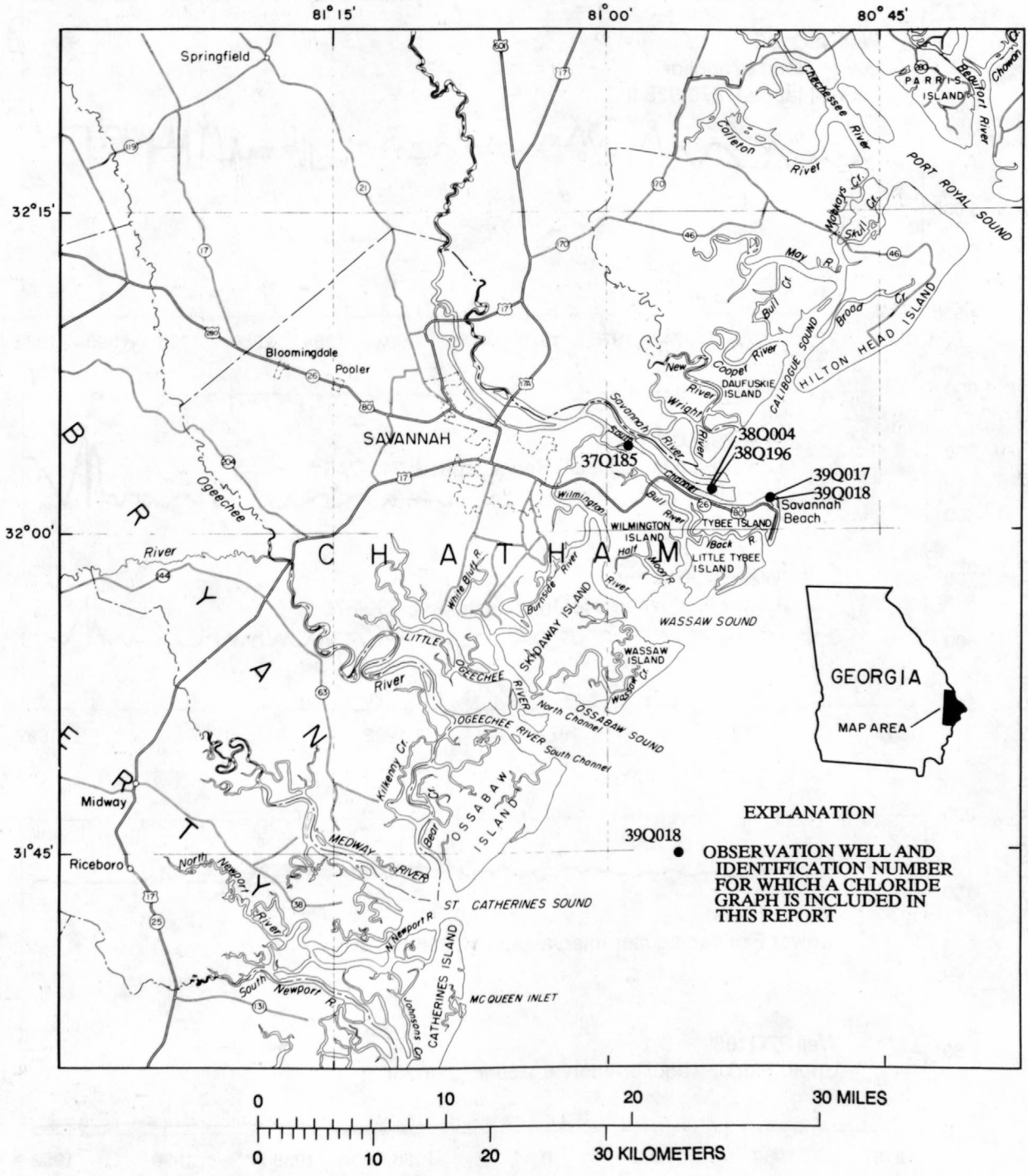


Figure 96.--Locations of chloride monitoring wells completed in the Floridan aquifer system in the Savannah area.

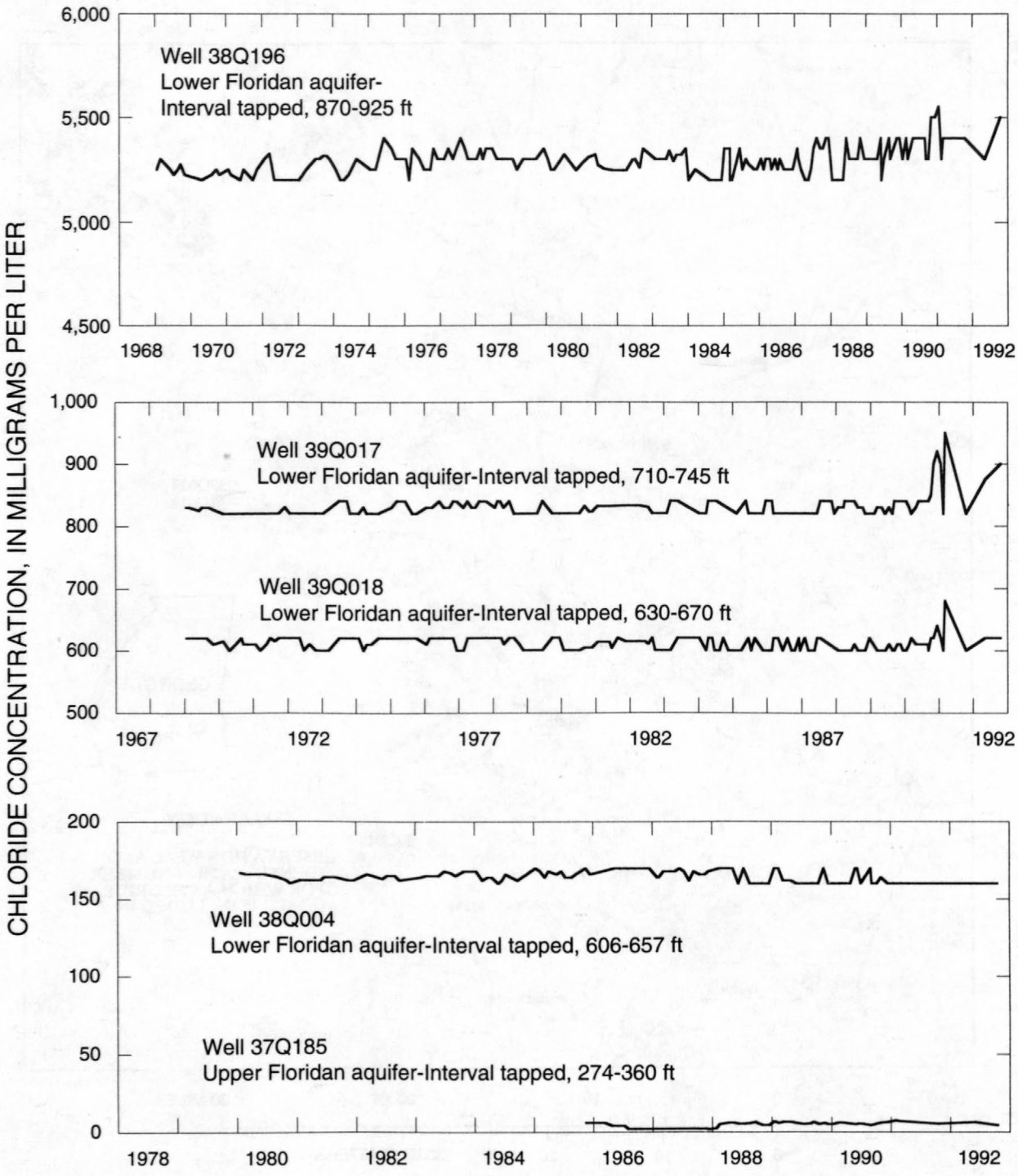


Figure 97.--Chloride concentrations in the Upper and Lower Floridan aquifers in the Savannah area.

Brunswick Area

Since pumping began in the Brunswick area in the late 1800's, ground-water withdrawal has lowered the water level in the Upper Floridan aquifer (Krause and Randolph, 1989). This water-level decline has allowed saltwater to migrate upward into the Upper Floridan aquifer in Brunswick from the Fernandina permeable zone, which is at the base of the Lower Floridan aquifer (Krause and Randolph, 1989, p. D51). Chloride concentration in water from the upper water-bearing zone of the Upper Floridan aquifer is greater than 2,000 mg/L in parts of Brunswick.

In the Brunswick, Glynn County area, 84 wells are pumped and sampled semi-annually for chloride analysis. Graphs of chloride concentration in water from eight wells tapping various zones of the Floridan aquifer system are shown in figures 98 and 100.

The chloride concentration in water from wells 34H393 and 34H403 (fig. 99), which tap the upper and lower water-bearing zones of the Upper Floridan aquifer in the southern Brunswick area, has changed little since sampling began in 1968. The chloride concentration in water from well 34H391 (fig. 99) tapping the brackish-water zone of the Lower Floridan aquifer, also has changed little since sampling began in 1968. However, the chloride concentration in water from well 34H399 (fig. 99) that taps the brackish-water zone of the Lower Floridan aquifer shows a general increasing trend since sampling began in 1970.

The chloride concentration in water from wells 34H469 and 34H427 (fig. 100) which tap the upper water-bearing zone of the Upper Floridan aquifer in the northern Brunswick area, show a slight upward trend that began in 1988. Prior to this upward trend, the chloride concentration from the two wells showed a downward trend that began in 1980 in well 34H427, and in 1984 in well 34H469 (fig. 100). The chloride concentrations in water from wells 33H133 and 33H127 (fig. 100) which tap the upper and lower water-bearing zones of the Upper Floridan aquifer, respectively, show an upward trend since sampling began in 1966.

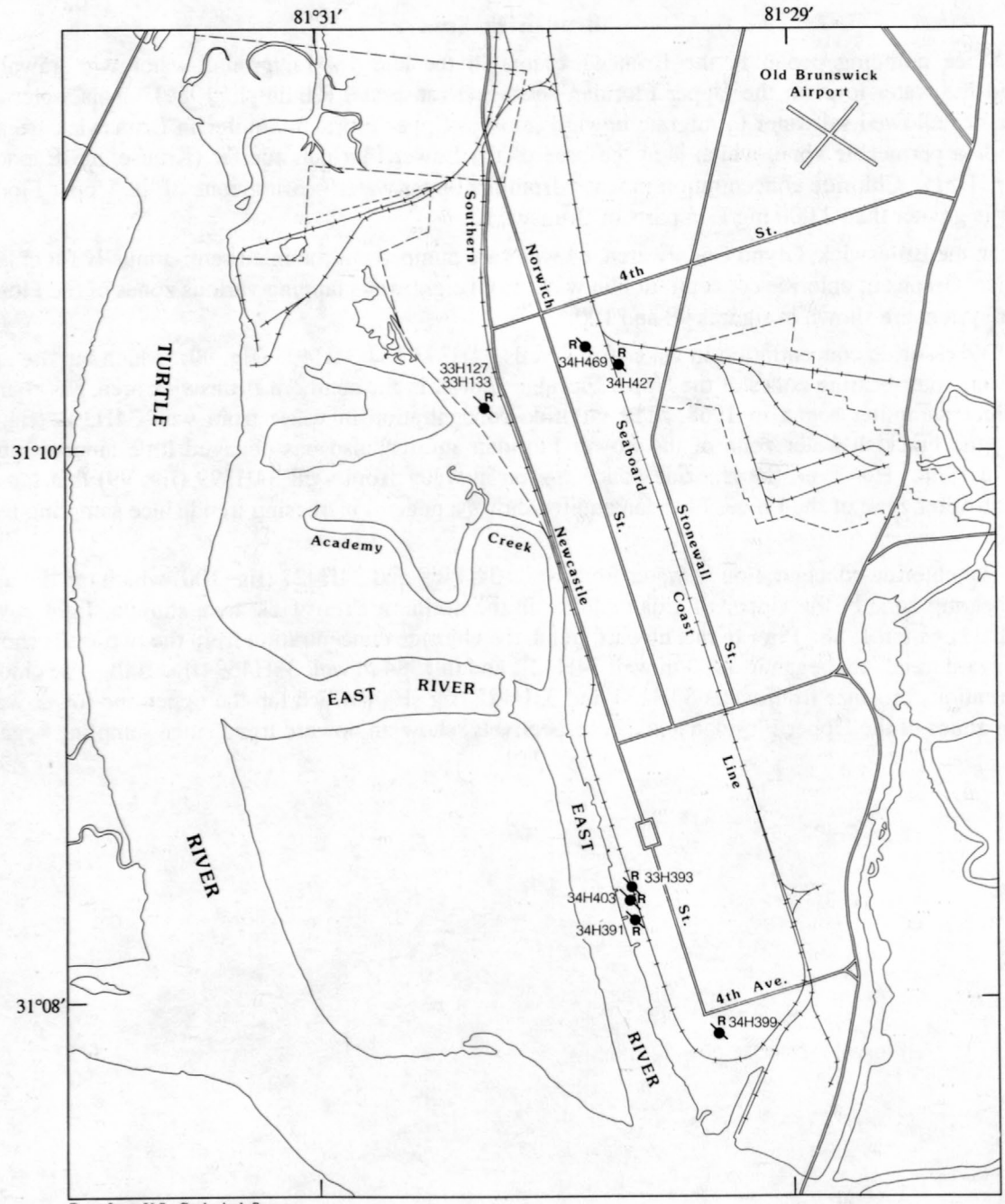


Figure 98.--Locations of chloride-monitoring wells completed in the Floridan aquifer system in the Brunswick area.

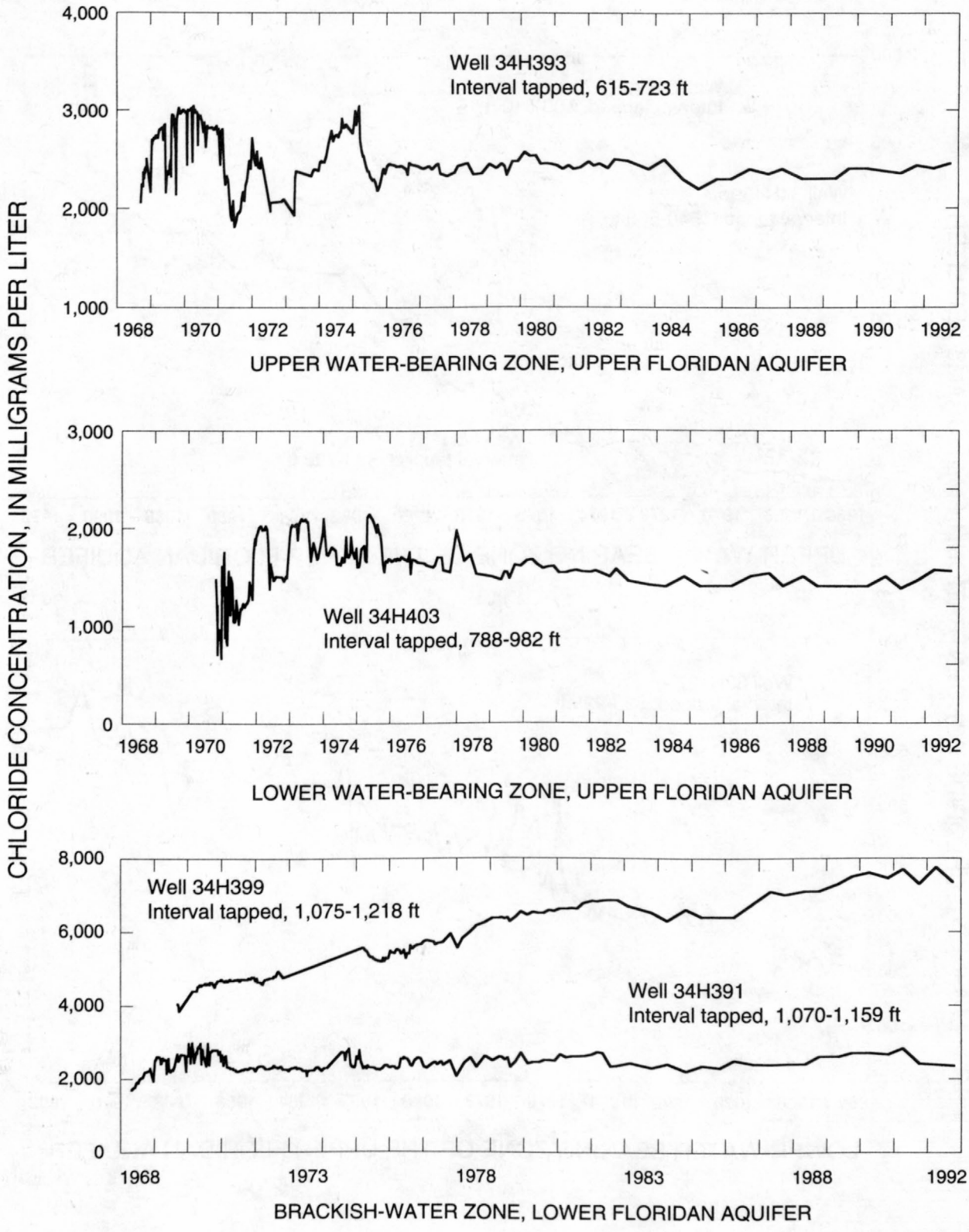


Figure 99.--Chloride concentration in the Floridan aquifer system in the southern Brunswick area.

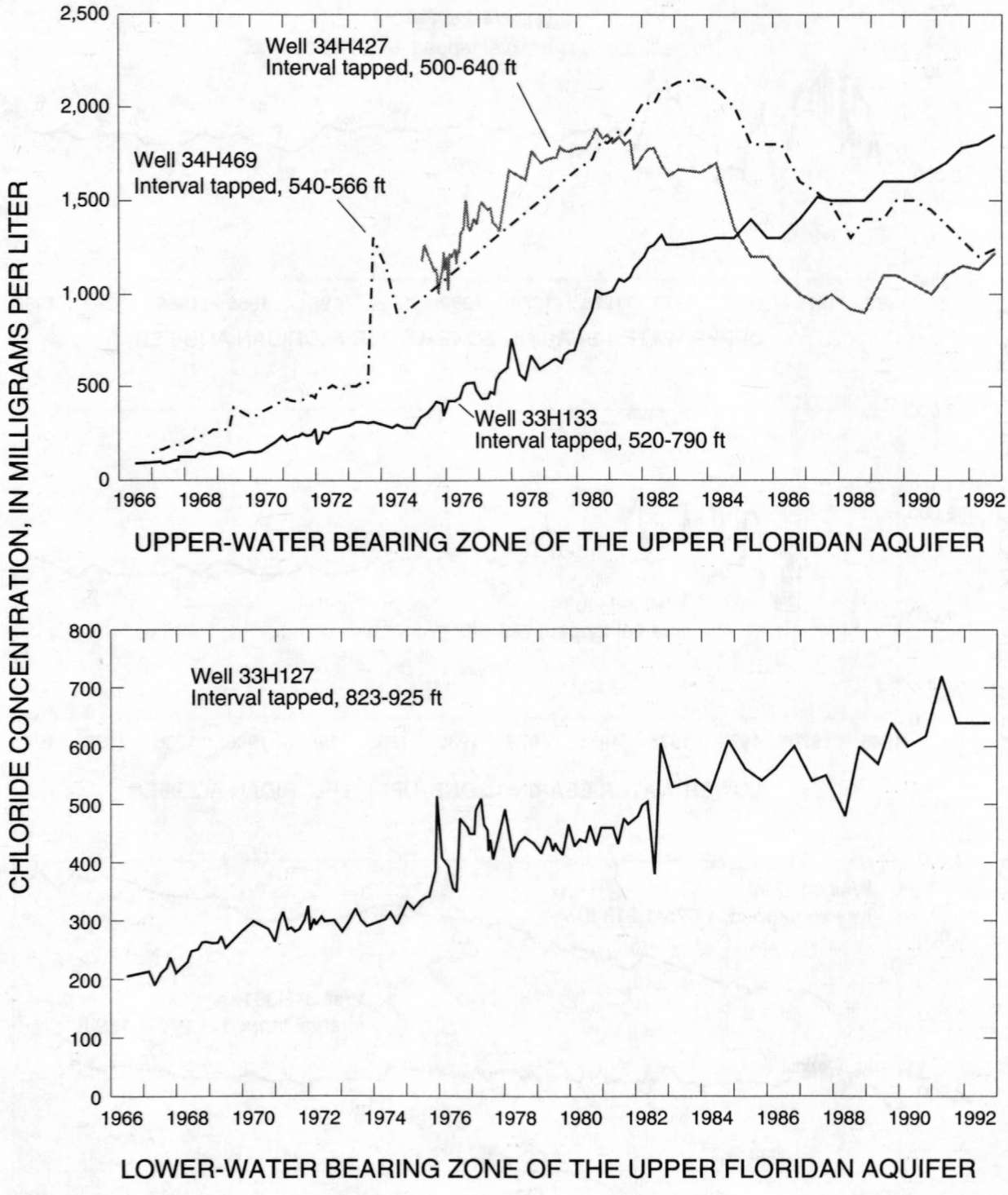


Figure 100.-- Chloride concentration in the Floridan aquifer system in the northern Brunswick area.

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