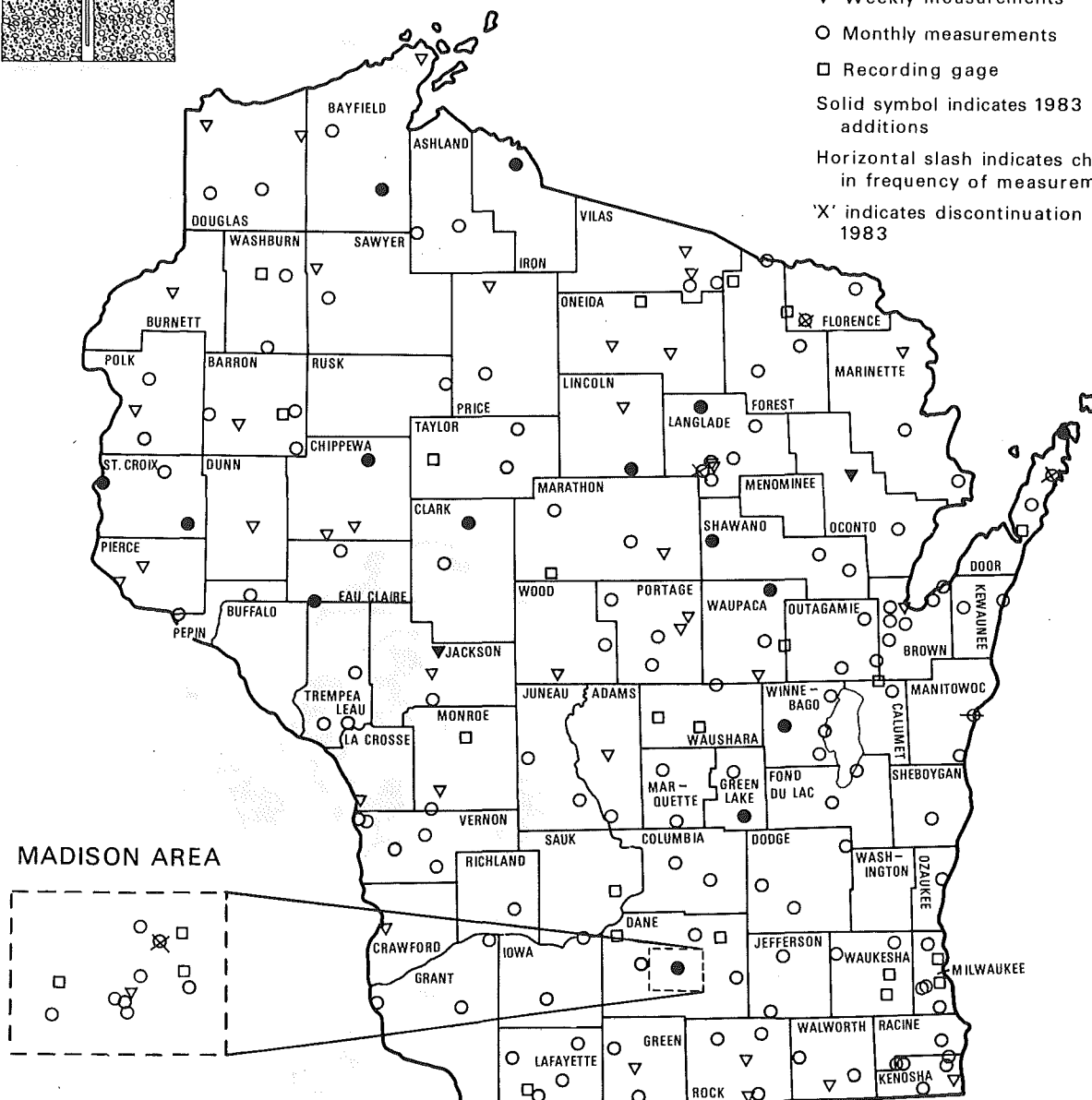


GROUND-WATER LEVELS IN WISCONSIN

ANNUAL SUMMARY 1983

by Alex Zaporozec

- ▽ Weekly measurements
- Monthly measurements
- Recording gage
- Solid symbol indicates 1983 additions
- Horizontal slash indicates change in frequency of measurement
- 'X' indicates discontinuation in 1983



LOCATION OF OBSERVATION WELLS IN WISCONSIN, 1983

PREPARED BY

University of Wisconsin-Extension
 GEOLOGICAL AND NATURAL HISTORY SURVEY
 Water Resources Program
 1815 University Avenue,
 Madison, WI 53705-4096
 Telephone: (608) 262-1705

In Cooperation with
 U.S. DEPARTMENT OF INTERIOR
 GEOLOGICAL SURVEY
 Water Resources Division
 Madison District Office
 1815 University Avenue,
 Madison, WI 53705-4096

The map below indicates the generally healthy state of Wisconsin's ground-water resources in 1983. Water levels rose in more than three-fourths of Wisconsin's observation wells in 1983, the third year in a row for more rises than declines in the state. At year's end, all counties except nine had water levels higher than in 1982. On average, water levels rose one foot. The greatest rise occurred in west central and northeastern Wisconsin (0.7-2.0 ft and 0.5-2.1, respectively). Water levels declined (besides the Green Bay area and southeastern Wisconsin where affected by pumping) about half a foot in Clark, Iowa, and Sauk counties.

**AVERAGE WATER LEVEL CHANGES
FROM 1982 TO 1983,
BY COUNTY**

Legend:

- Declining
- Same as last year (± 0.2 ft.)
- Rising
- No measurements
- Areas of declining levels in the sandstone aquifer

County Data (Change in feet / Percentage of area):

County	Change (ft.)	Percentage (%)
Adams	+0.0	143%
Ashland	+1.4	102%
Barron	+2.1	106%
Bay	+0.5	107%
Berlin	+0.3	101%
Boscawen	+0.8	—
Brown	+0.3	103%
Butler	+0.4	202%
Calumet	+0.7	106%
Chippewa	+0.4	102%
Columbia	+1.3	104%
Crawford	+0.9	105%
Dodge	+1.7	109%
Douglas	+1.2	108%
Eau Claire	+1.1	108%
Franklin	+1.3	107%
Fond du Lac	+1.0	114%
Grant	+0.1	106%
Green	+2.1	110%
Green Lake	+0.9	97%
Iowa	+5.8	135%
Jackson	+0.5	115%
Kenosha	+1.4	115%
Kewaunee	+0.5	97%
Lake	+1.6	109%
Lancaster	+0.9	111%
Lincoln	+2.0	109%
Manitowish	+1.3	101%
Manitowish	+0.9	114%
Marathon	+0.5	—
Marathon	+0.8	127%
Marathon	+1.4	122%
Marathon	+0.8	93%
Marathon	+1.3	88%
Marathon	+0.1	90%
Marathon	+0.8	101%
Marathon	+0.0	143%
Marathon	+0.8	109%
Marathon	+0.2	101%
Marathon	+0.5	116%
Marathon	+0.9	114%
Marathon	+0.6	101%
Marathon	+0.4	112%
Marathon	+0.8	103%
Marathon	+0.6	121%
Marathon	+2.3	93%
Marathon	+0.6	97%
Marathon	+1.2	65%
Marathon	+0.8	78%
Marathon	+1.5	120%
Marathon	+1.2	103%
Marathon	+1.7	109%
Marathon	+0.4	104%
Marathon	+0.5	141%
Marathon	+0.2	101%
Marathon	+0.9	114%
Marathon	+0.6	101%
Marathon	+0.4	112%
Marathon	+0.8	103%
Marathon	+0.6	121%
Marathon	+2.3	93%
Marathon	+0.6	97%
Marathon	+1.2	65%
Marathon	+0.8	78%
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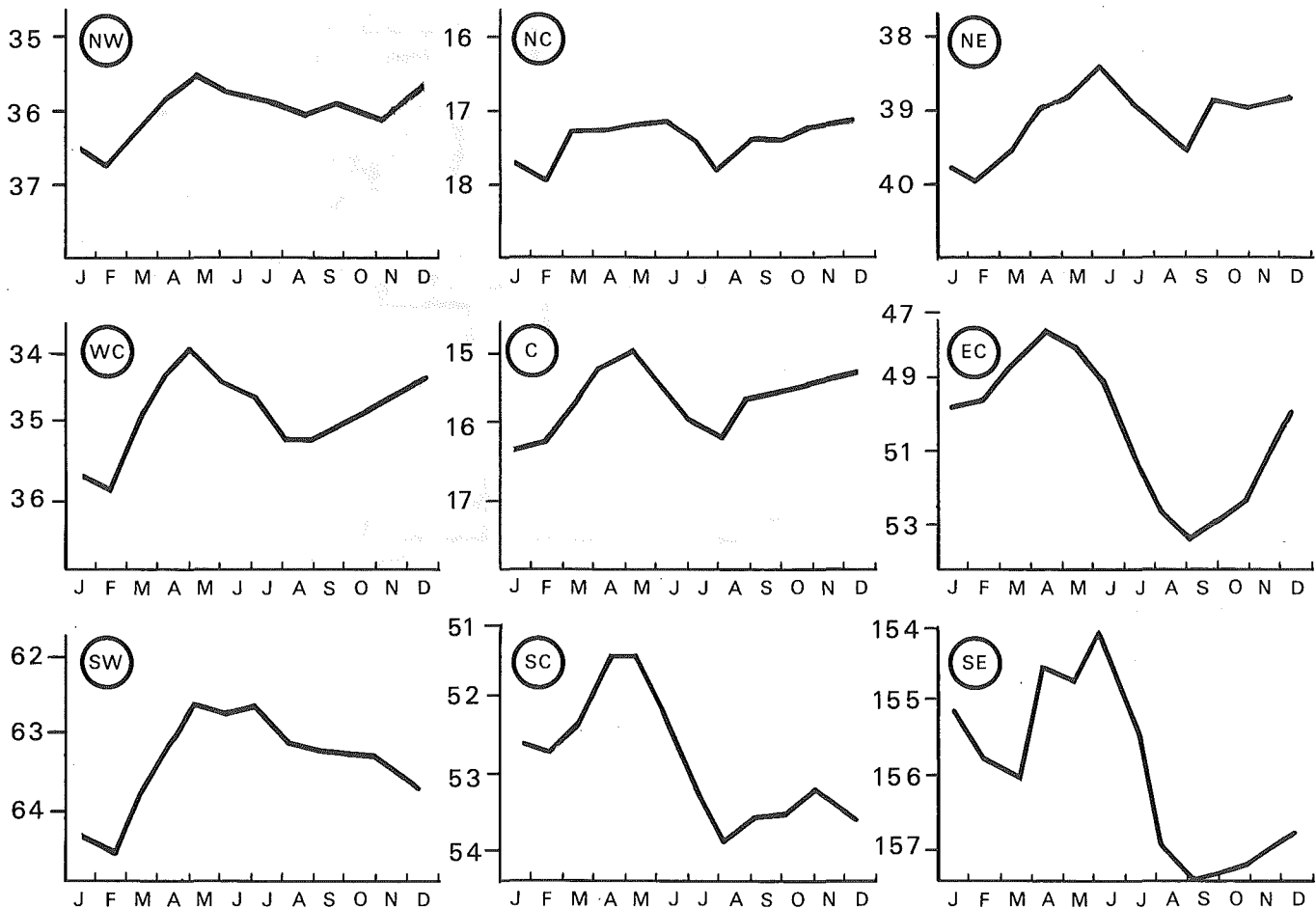
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Composite monthly mean ground-water levels on the graph below represent average levels for current observation wells. They are not directly compatible with the means for previous years because the number of wells varies every year. However, they show representative patterns of fluctuations within individual regions.

The unusually mild and wet winter and heavy spring rains boosted ground-water levels to such high levels that they were sufficient to sustain adequate ground-water storage in the drier months that followed. In most cases the water-level fluctuations show two periods of rising level (spring and late fall) and two minimum positions (February and August). Winter recession was short; water levels began rising at the end of February and peaked in May or June. Dry summer months resulted in summer recession, at the end of which water levels dropped to about pre-spring levels. Rainfalls from August to November added more water to ground-water storage, which kept increasing until year's end.

Annual fluctuations under natural conditions ranged from several tenths of a foot to almost ten feet. On average, the largest difference between minimum and maximum levels was recorded in southcentral Wisconsin, 3.8 feet, and the smallest in northcentral Wisconsin, 1.5 feet. Larger fluctuations (more than 10 ft) were recorded on wells in east central and southeastern Wisconsin in the confined sandstone aquifer affected by continuing heavy pumping and in the fractured dolomite of Door County.

COMPOSITE MONTHLY MEAN WATER LEVELS IN 1983
IN FEET BELOW THE LAND SURFACE
(for climatic regions shown on page 4)



Based on precipitation trends in 1983, we can expect that water levels in 1984 will remain above average. The late-fall rains substantially recharged the ground water and kept water levels at or above the year's-beginning levels. Winter recession probably will not affect the water levels to any great degree because the early heavy snow insulated the ground from severe temperatures and the frost penetrated into the record least depth of 1.9 inches. If the ground thaws early, we may expect the water levels to start rising already in February, similar to the last year. The above-average conditions are likely to continue in 1984, unless the summer is extremely dry, with the exception of parts of the central sand plain, sandy areas in the northwest, and eastern Wisconsin. Water levels in the sandstone aquifer around the Green Bay-DePere, Milwaukee-Waukesha, Racine-Kenosha, and Madison pumping centers will remain well below average, even though their gradual declines were in some parts arrested by a continuing period of above-average precipitation.

