



# Capitol Region Watershed District 2023 Climatological Summary





# CRWD 2023 Climatological Summary

**Saint Paul, Minnesota**

Cover image: Victoria Park Pond in Capitol Region Watershed District



# 2023 Climatological Summary

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# 1 Introduction

## 1.1 Purpose

The purpose of this report is to summarize 2023 climatological data within the boundaries of Capitol Region Watershed District (CRWD) in Saint Paul, Minnesota.

## 1.2 Background

Climatological events directly impact District water resources, projects, and programs. CRWD uses climatological data to calculate total annual precipitation, runoff, and nutrient and pollutant loading, as well as to assess effects of drought and flooding in the District. It is important to document and analyze climatological data and other noteworthy climatological events to assess their impact and how they change over time due to climate change. According to the Department of Natural Resources (DNR) State Climatology Office, Minnesota is already experiencing substantial winter and nighttime warming and more frequent extreme precipitation events as a result of climate change (DNR, 2024). These trends are expected to worsen along with increased summer temperatures and longer periods of drought. Because of this, the District has begun analyzing temperature, growing season precipitation, anomalous weather events, drought, and other relevant climatological data to broaden our research on climate and climate change in the District.

## 1.3 Goals

The overall goal of the climatological summary is to act as a formal record of annual standard climatological data as well as notable and significant climatological events. Over time, the summaries will allow the District to assess how the local climate has changed, as well as how the District has responded physically, hydrologically, etc.

## 1.4 Methods

The District utilizes precipitation data collected by the University of Minnesota (U of M) St. Paul Campus Climate Observatory and from the National Weather Service (NWS) at the Minneapolis-St. Paul (MSP) International Airport. The U of M Climate Observatory records precipitation every fifteen minutes from an automatic rain gauge located in the northwest portion of CRWD. The U of M rain gauge was used as CRWD's primary precipitation monitoring station for rainfall when possible due to its location in the District. Rainfall totals (15-minute and daily) were recorded by CRWD from the MN DNR website (DNR, 2023a). The NWS weather station at MSP airport, located approximately six miles south of the CRWD office, records hourly rainfall and snow water equivalent. Because of this, NWS MSP data is used for precipitation totals from November through April to account for snowfall. These variables were recorded by CRWD from the National Oceanic and Atmospheric Administration public website (NOAA, 2023a).

Additionally, CRWD operates four precipitation monitoring stations at different locations throughout the District. These monitoring stations consist of automatic tipping bucket-style rain gauges that log precipitation at a 0.01-inch resolution and are typically installed April through October apart from one rain gauge installed year-round at the CRWD office. There is also a manual rain gauge installed year-

round at the CRWD office that is checked daily; precipitation totals from this rain gauge are entered into the Community Collaborative Rain, Hail and Snow (CoCoRaHS) Network website.

Daily climate data including maximum and minimum temperature, precipitation, snow, and snow depth is utilized from the U of M as part of the NWS Cooperative Observer Program (COOP); this data is recorded by CRWD from the DNR website (DNR, 2023b). All temperatures are recorded in degrees Fahrenheit (F). District lake ice out dates are also accessed from the DNR website (DNR, 2023c). All Minnesota drought data and information on significant climatological events are acquired by the DNR State Climatology Office (DNR, 2023d).

District lake data including surface water temperatures and additional lake ice on and ice out information are collected by Ramsey County Public Works (RCPW) and sent to CRWD as part of an ongoing lake monitoring agreement.

## 2 Results

### 2.1 Temperature

Figure 1 shows 2023 average daily temperatures as compared to 30-year normal monthly average temperatures. Table 1 shows 2023 monthly average temperatures, 30-year normal monthly average temperatures, and departure from normal. The beginning of the year was relatively cool; January and February had a combined total of 12 days with sub-zero minimum temperatures. February through April monthly average temperatures were all below the 30-year normal. This is despite an April warm up that saw seven days with maximum temperatures over 60 degrees, and three days of temperatures in the eighties. May's monthly average temperature was warmer than normal, with temperatures for six out of the last nine days of the month peaking at over 80 degrees. June was also warm, with 21 total days over 80 degrees. June also saw the year's first three days above-90 degrees. July's average was cooler than normal, despite four more days over 90 degrees. August's monthly average temperature was one degree below normal despite three more 90-degree days.

September was warmer than normal, with only two days falling below the normal monthly average temperature of 63.5 degrees and two days above 90 degrees. Overall, the U of M weather station recorded 12 days in 2023 with temperatures at or over 90 degrees, however the DNR confirms there were 33 days in 2023 where the Twin Cities reached or exceeded 90 degrees, which is the fifth highest on record (DNR, 2023e). The last three months of 2023 were all warmer than normal, with December experiencing record-setting warm weather with an average monthly temperature of nearly 10 degrees above normal. The Twin Cities saw zero days with below-normal temperatures in December, surpassing 1877 for the warmest December on record. (DNR, 2023f).

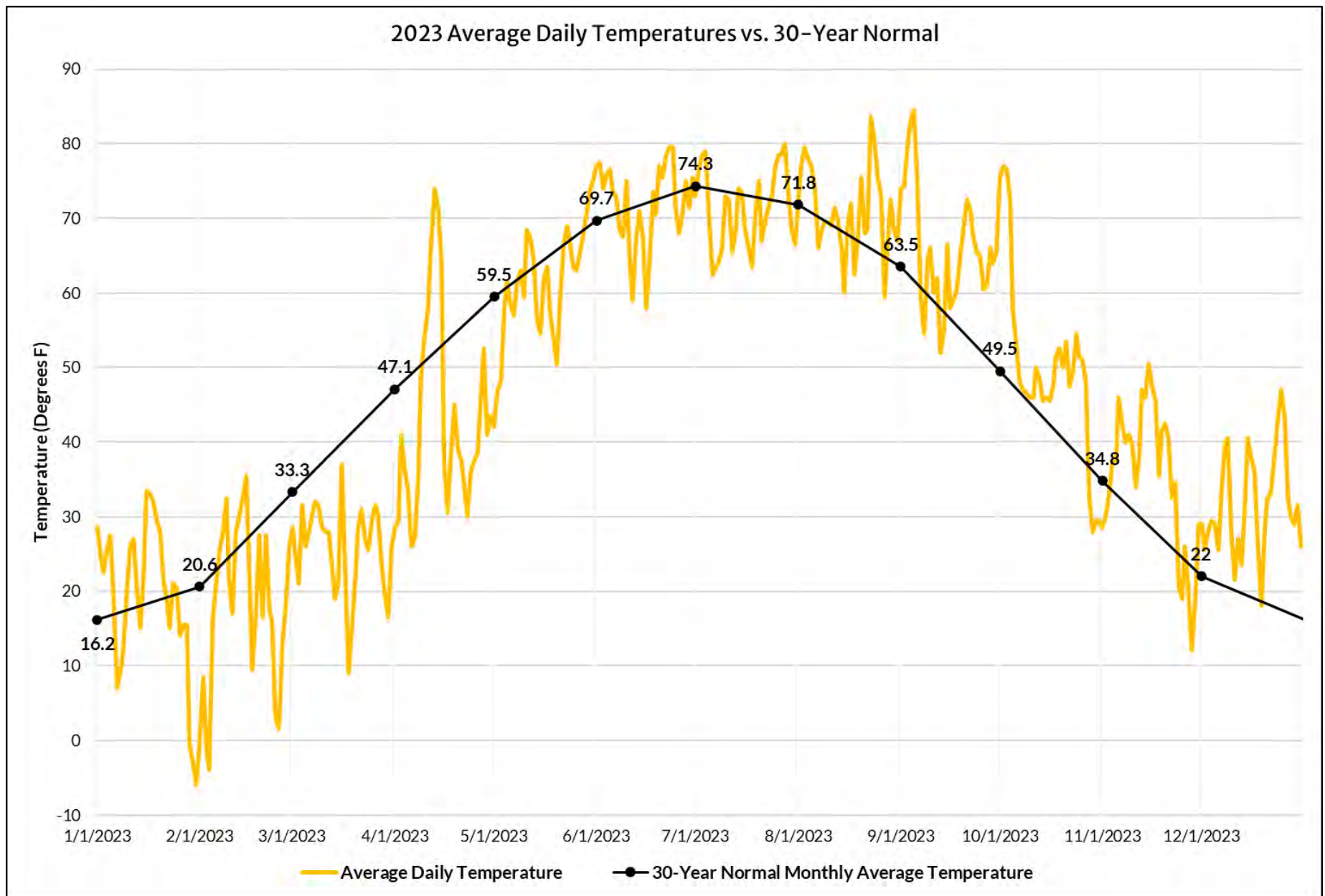


Figure 1: 2023 daily average temperatures at the U of M NWS station compared to 30-year normal monthly average temperatures (F).

**Table 1: 2023 monthly average temperatures (F) at the U of M NWS station, 30-year normal monthly average temperatures, and departure from normal.**

Month	2023 Average Temperature	30-Year Normal Monthly Average Temperature	Departure from Normal
Jan	19.2	16.2	3
Feb	18	20.6	-2.6
Mar	25.7	33.3	-7.6
Apr	42.7	47.1	-4.4
May	61.2	59.5	1.7
Jun	71.9	69.7	2.2
Jul	71.2	74.3	-3.1
Aug	70.8	71.8	-1
Sep	66	63.5	2.5
Oct	50.3	49.5	0.8
Nov	35.2	34.8	0.4
Dec	31.8	22	9.8
Annual	47	46.9	0.1

## 2.2 Annual Precipitation

### 2.2.1 Total Annual Precipitation

The total amount of precipitation recorded in CRWD in 2023 was 31.91 inches, which is 0.29 inches more than the 30-year normal. The 30-year normal is recalculated every 10 years. In 2020, the annual 30-year normal was recalculated for 1991-2020 to be 31.62 inches (formerly 30.61 inches for the period from 1981-2010) (NOAA, 2023b). Annual precipitation data from 2005 to 2023 and departure from the 30-year normal can be seen in Table 2 and Figure 2.

### 2.2.2 Total Monthly Precipitation

Monthly precipitation totals and their comparison to 30-year normal precipitation and percent of normal can be seen in Figure 3. January, February, and March precipitation totals were all significantly higher than normal. April through July were all below normal, with May and June representing the biggest deficits at 31% and 40% of normal monthly precipitation. August through October precipitations totals were all above normal. November was far below normal, with only 2% of normal monthly precipitation. December was wetter than normal, totaling almost 200% of normal monthly precipitation.

### 2.2.3 Daily Precipitation

Daily, monthly, and annual precipitation totals and their comparison to 30-year monthly and annual normal precipitation, and departure from normal can be seen in Table 3. Figure 4 shows daily precipitation and cumulative precipitation for 2023. The largest single-day precipitation total was on September 29, with 2.13 total inches of precipitation.

### 2.2.4 District Precipitation Monitoring Stations

Figure 5 shows April-October precipitation totals for CRWD precipitation monitoring stations. The District experienced differing precipitation totals across the District, emphasizing the spatial variability of precipitation even on a local scale. The northern portion of the District received the highest precipitation totals (23.32 inches), followed by the western portion (20.85 inches). The southern and eastern portions of the District received 17.75 and 14.70 inches, respectively.

**Table 2: 2005-2023 annual precipitation in CRWD, 30-year normal, and departure from normal.**

Year	Precipitation (inches)	Departure from 30-Year Normal
2005	35.98	(+) 4.36"
2006	31.69	(+) 0.07"
2007	29.72	(-) 1.90"
2008	21.67	(-) 9.95"
2009	23.34	(-) 8.28"
2010	36.32	(+) 4.70"
2011	33.62	(+) 2.00"
2012	30.26	(-) 1.36"
2013	36.36	(+) 4.74"
2014	35.66	(+) 4.04"
2015	35.21	(+) 3.59"
2016	40.66	(+) 9.04"
2017	31.57	(-) 0.05"
2018	29.59	(-) 2.03"
2019	38.79	(+) 7.17"
2020	21.99	(-) 9.63"
2021	25.08	(-) 6.54"
2022	22.01	(-) 9.61"
2023	31.91	(+) 0.29"
<b>30-Year Normal</b>	31.62	--



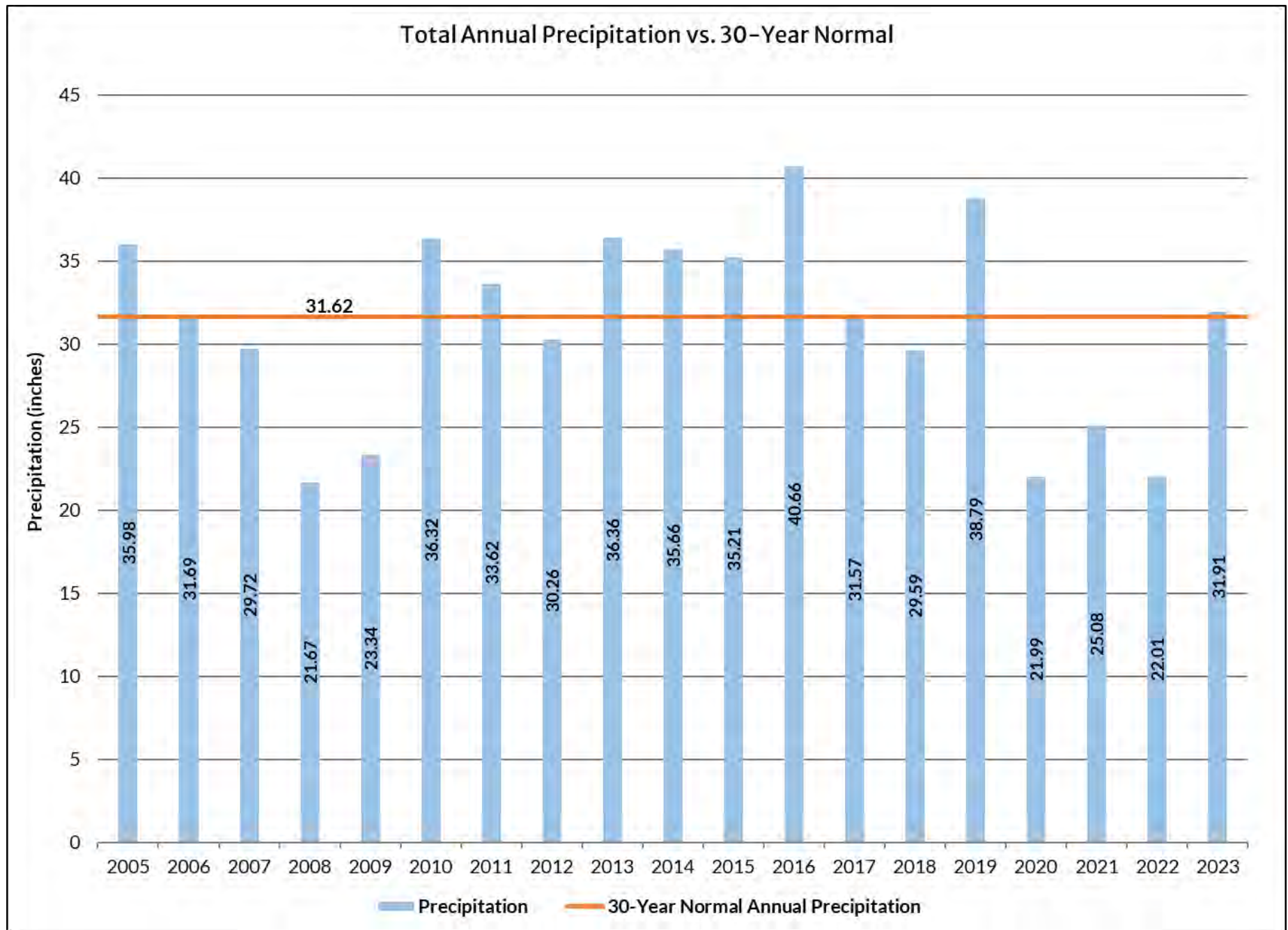


Figure 2: 2005-2023 annual precipitation in CRWD and 30-year normal annual precipitation.

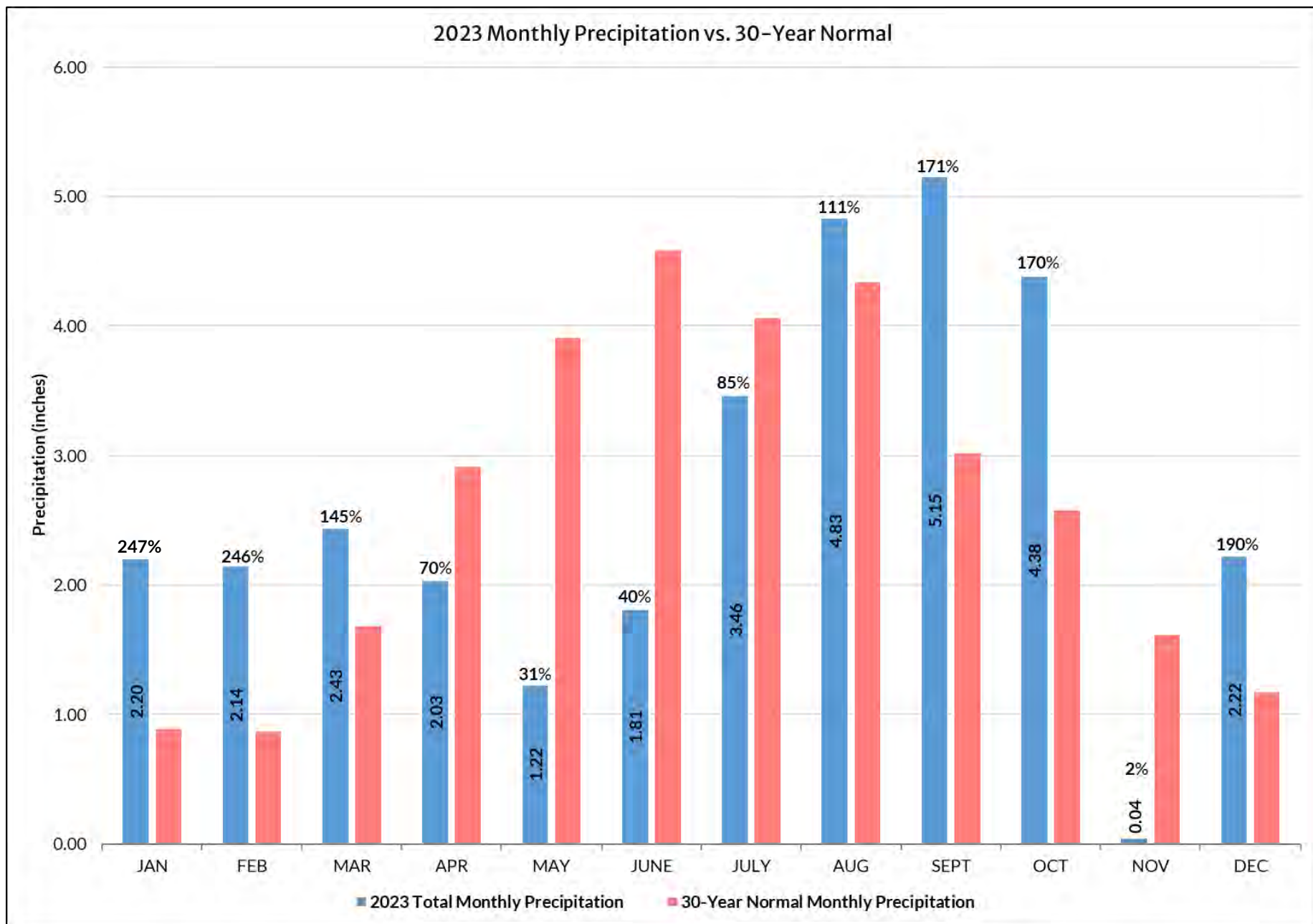


Figure 3: 2023 monthly precipitation totals in CRWD, 30-year normal monthly precipitation and percent of normal.

**Table 3: 2023 daily, monthly, and annual precipitation totals in CRWD; 30-year monthly and annual normal precipitation, and departure from normal.**

Day	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	0	0	0.05	0.13	0	0	0	0	0	0	0	0	
2	0.02	0	0	0	0	0.04	0	0.53	0	0	0	0	
3	0.65	0	0	0	0	0	0	1.75	0	0.13	0	0	
4	0.57	0	0	0.06	0	0	0.87	0	0	0	0	0.03	
5	0.02	0	0.29	0.01	0	0	0	0	0	0	0	0.03	
6	0	0.09	0.04	0	0.24	0	0	0.16	0	0.06	0.01	0	
7	0	0	0	0	0	0	0	0	0	0	0.01	0	
8	0	0	0.05	0	0	0	0	0	0	0	0	0	
9	0	0	0.15	0	0	0	0	0	0.04	0	0	0.07	
10	0	0	0.03	0	0	0.01	0	0.07	0	0	0	0.01	
11	0.07	0	0.17	0	0.02	0	0	1.23	0.22	0	0	0	
12	0	0	0.05	0	0.03	0	0	0	0	0.35	0	0	
13	0	0	0	0	0.26	0	0.13	0.55	0	1.63	0	0	
14	0	0.68	0	0	0.48	0	0	0.53	0	0	0	0	
15	0	0.16	0	0.39	0	0	0	0	0.12	0	0	0.15	
16	0.53	0	0.21	0.36	0	0	0	0.01	0	0	0	0.34	
17	0.02	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0.16	0	0	0	0.01	0	0	0	
19	0.14	0	0	0.3	0	0	0.1	0	0	0.02	0	0	
20	0	0.12	0	0.51	0	0	0	0	0	0	0	0	
21	0	0.25	0.17	0.01	0	0	0.04	0	0	0	0	0	
22	0.01	0.25	0.04	0	0	0	0.02	0	0	0	0	0.01	
23	0	0.23	0	0	0	0.07	0	0	1.17	0.03	0	0	
24	0	0	0	0	0	0.65	0.32	0	0.47	1.34	0	0.35	
25	0.03	0	0	0	0	1.04	0	0	0.81	0.02	0.01	0.94	
26	0	0	0	0	0	0	1.38	0	0.09	0.74	0.01	0.24	
27	0.14	0.36	0	0.02	0	0	0	0	0	0.01	0	0	
28	0	0	0	0.24	0	0	0.6	0	0	0	0	0	
29	0		0	0	0	0	0	0	2.13	0	0	0	
30	0		0.04	0	0.03	0	0	0	0.09	0	0	0.03	
31	0		1.14		0		0	0		0.05		0.02	Totals
Monthly Total	2.20	2.14	2.43	2.03	1.22	1.81	3.46	4.83	5.15	4.38	0.04	2.22	31.91
Monthly Normal	0.89	0.87	1.68	2.91	3.91	4.58	4.06	4.34	3.02	2.58	1.61	1.17	31.62
Departure from Normal	1.31	1.27	0.75	-0.88	-2.69	-2.77	-0.60	0.49	2.13	1.80	-1.57	1.05	0.29
	Data supplied by NWS-MSP												
	Data supplied by UMN												
	No date												

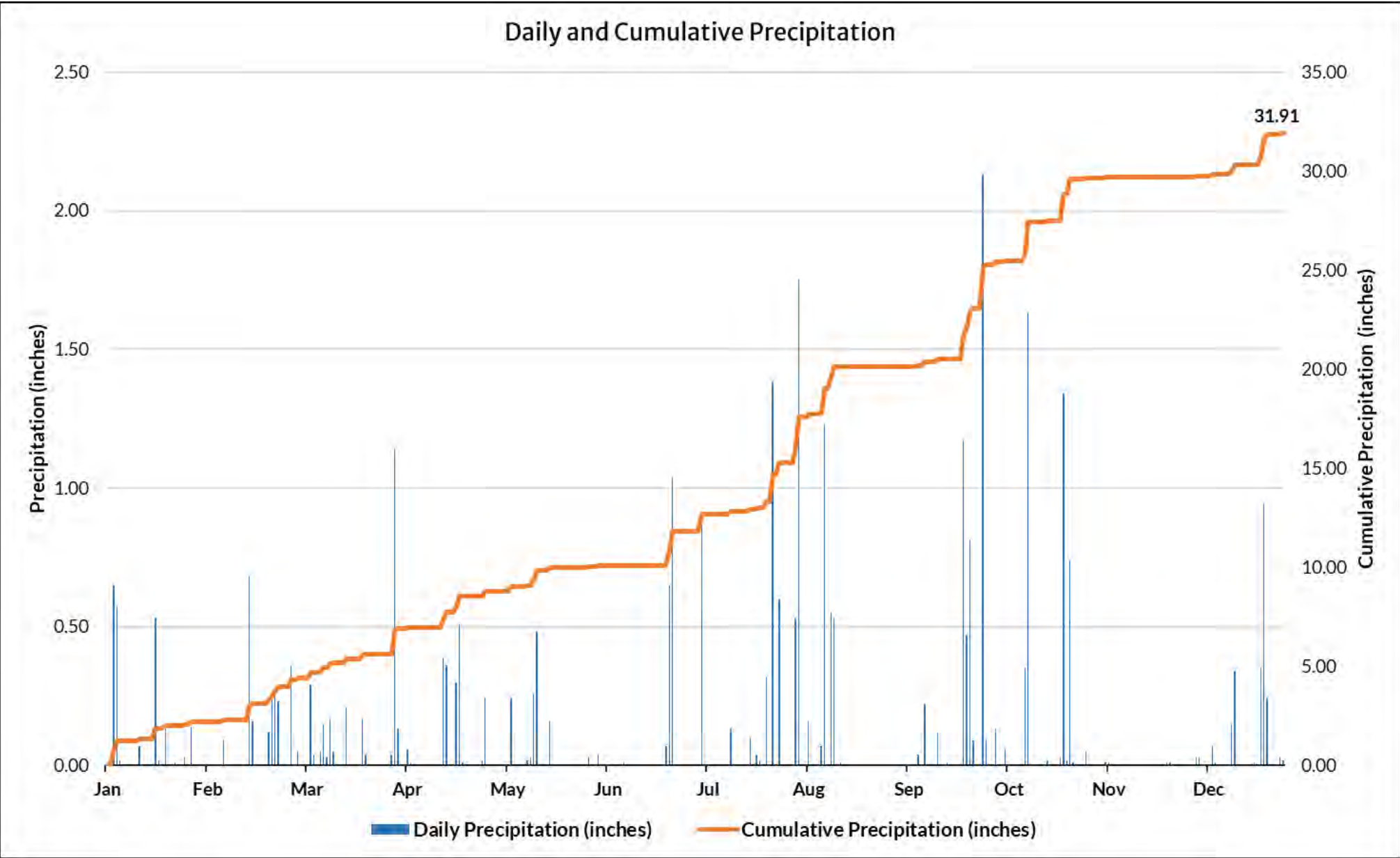


Figure 4: 2023 daily and cumulative precipitation in CRWD.



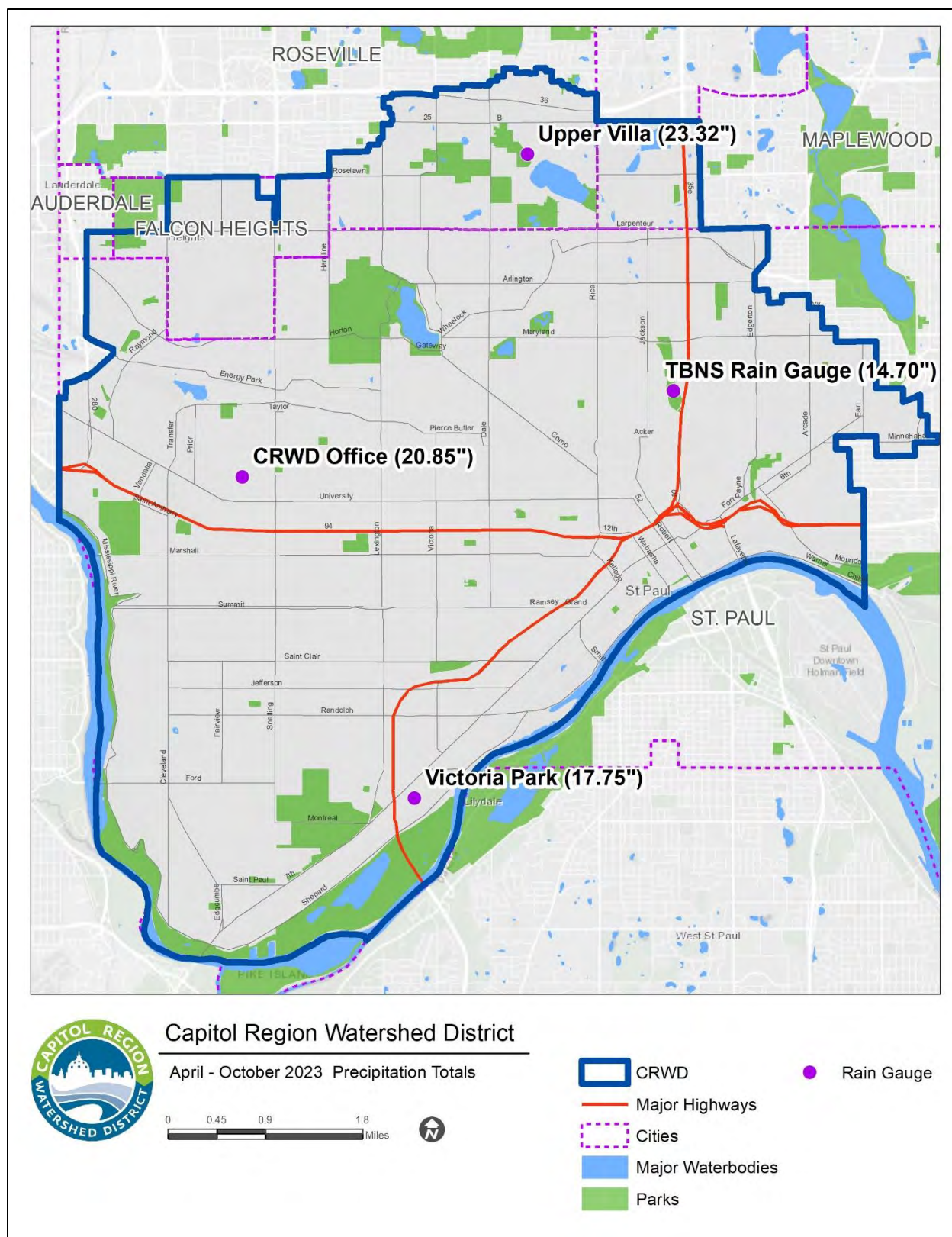


Figure 5: CRWD precipitation monitoring stations and 2023 April-October precipitation totals.

## 2.3 Water Year Precipitation

In addition to calendar year precipitation, the Minnesota State Climatology Office also uses water year precipitation, which runs from October 1 to September 30 of the following year. The water year is used by hydrologists because water levels are typically lowest near October 1. The water year is defined by the year in which it ends. For example, water year 2023 begins on 10/1/2022 and ends on 9/30/2023. Thus, the water year represents the beginning of the season of soil moisture recharge and ends with season of maximum soil moisture utilization, according to the American Meteorological Society (AMS) (AMS, 2024). The water year average from 1994-2022 was calculated using Ramsey County data supplied by the MN State Climatology Office (DNR, 2023g). Water year precipitation totals for 2015 through 2023 and water year average precipitation are shown in Figure 6. The 2023 water year precipitation total in CRWD was 29.47 inches, which is 3.70 inches below the average of 33.17.

## 2.4 Growing Season Precipitation

The growing season is determined by the last spring freeze and the first fall frost, but in Minnesota is typically from May through September. It is important to characterize precipitation during the growing season in Minnesota since most of the District's tree and plant growth occurs during this timeframe. According to the U.S. Department of Agriculture, climate change has caused growing seasons to become longer, however it has also caused a change in precipitation patterns and more frequent and severe extreme precipitation events. Precipitation changes due to climate change can cause excess precipitation during off seasons and limited water availability during critical plant growth periods (USDA, 2024). Growing season precipitation event totals and maximum daily temperatures are shown in Figure 7. 2017 through 2023 growing season precipitation in CRWD and departure from normal can be seen in Table 4.

Despite slightly above-normal annual precipitation, the 2023 growing season in CRWD was dry, totaling almost three and half inches below normal. Even after an exceptionally wet spring, a dry spell combined with warm temperatures from mid-May through mid-June sent the majority of Minnesota back into drought at the beginning of the growing season (DNR, 2023h). Despite occasional heavy rain events in June, July, and August, more than 90% of the state experienced below-normal precipitation during each of those months, according to the DNR State Climatology Office (2023i). A second dry period from mid-August to mid-September along with record-breaking heat waves caused high levels of drought to return at the end of the growing season. 2023 demonstrated how despite a year of "normal" annual precipitation, deficits at critical times during the growing season allowed the state to feel a third consecutive year of drought impacts on agricultural activities and plant growth.

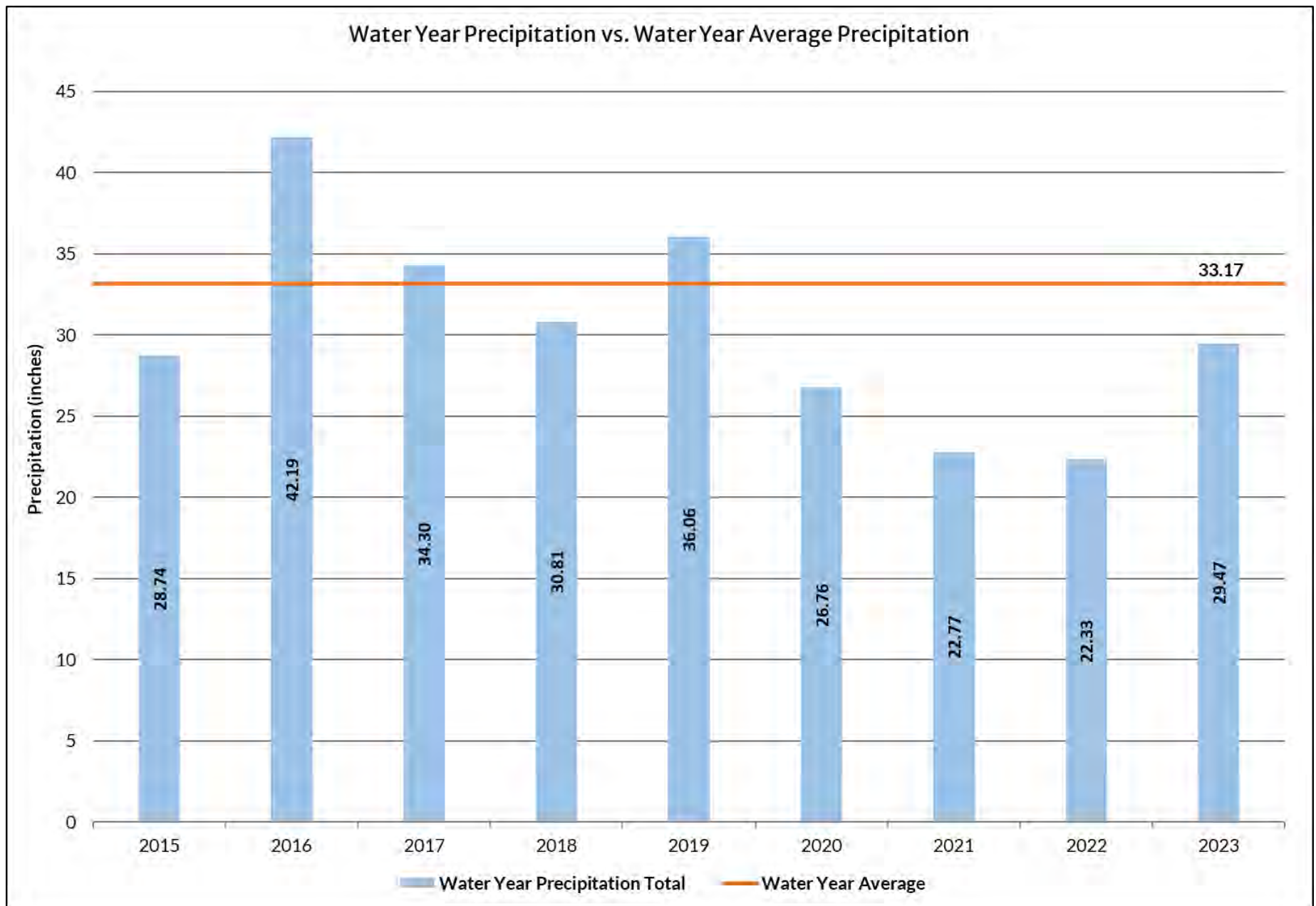


Figure 6: Water year (10/1/22-9/30/23) precipitation total in CRWD and water year average precipitation for Ramsey County.



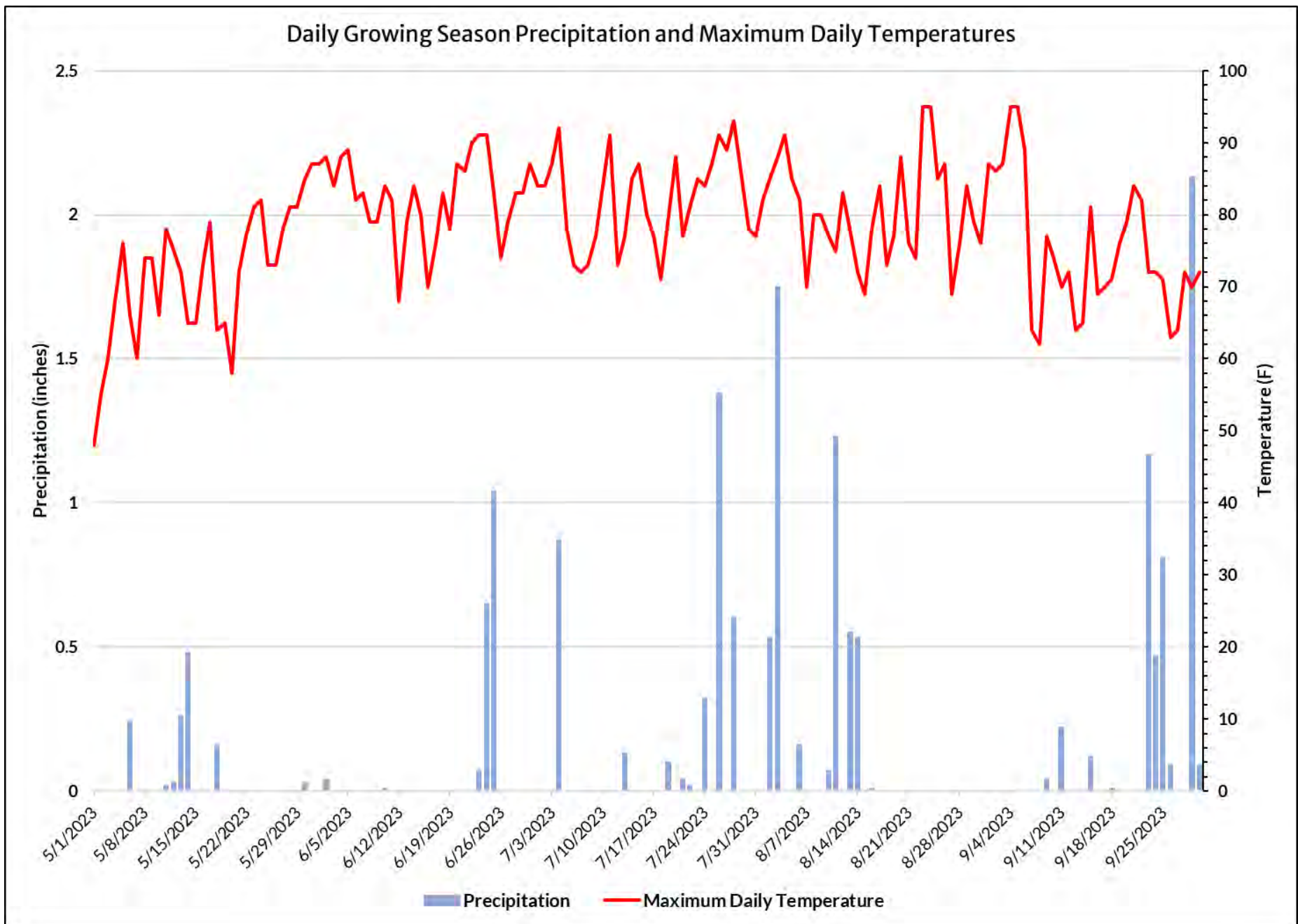


Figure 7: Daily growing season (May-September) precipitation in CRWD and maximum daily temperatures at the U of M NWS station.



**Table 4: 2017-2023 growing season precipitation in CRWD and departure from normal.**

Growing Season (May-September)	Inches of Precipitation	Departure from Normal
2017	19.75	-0.16
2018	20.51	+0.60
2019	22.88	+2.97
2020	14.24	-5.67
2021	13.88	-6.03
2022	10.05	-9.86
2023	16.47	-3.44
Normal	19.91	--

## 2.5 Total Snowfall and Snowpack

Total annual snowfall in the District can be seen in Table 5 and Figure 8. CRWD experienced 54.40 inches of snowfall in 2023, 3.2 inches above the 30-year normal. From October 2022 to April 2023, 82.70 inches of snow fell, nearly twice as much as the previous winter (43.80 inches). A large snowstorm at the beginning of January saw about 12 inches of snow at the U of M NWS station and became one of the 20 largest snowstorms on record in the Twin Cities (DNR, 2023i). Snowpack depth and maximum daily temperature is shown in Figure 9. Maximum snowpack depth peaked on March 12, with 18 inches of snowpack.

**Table 5: 2010-2023 annual total snow in CRWD, 30-year normal, and departure from normal.**

Year	Total Snow (inches)	Departure from 30-Year Normal
2010	60.20	(+) 9.00"
2011	52.00	(+) 0.80"
2012	30.80	(-) 20.40"
2013	73.00	(+) 21.80"
2014	76.20	(+) 25.00"
2015	34.31	(-) 16.89"
2016	37.70	(-) 13.50"
2017	25.90	(-) 25.30"
2018	80.70	(+) 29.50"
2019	86.90	(+) 35.70"
2020	23.90	(-) 27.30"
2021	31.10	(-) 20.10"
2022	59.70	(+) 8.50"
2023	54.40	(+) 3.20"
30-Year Normal	51.20	--

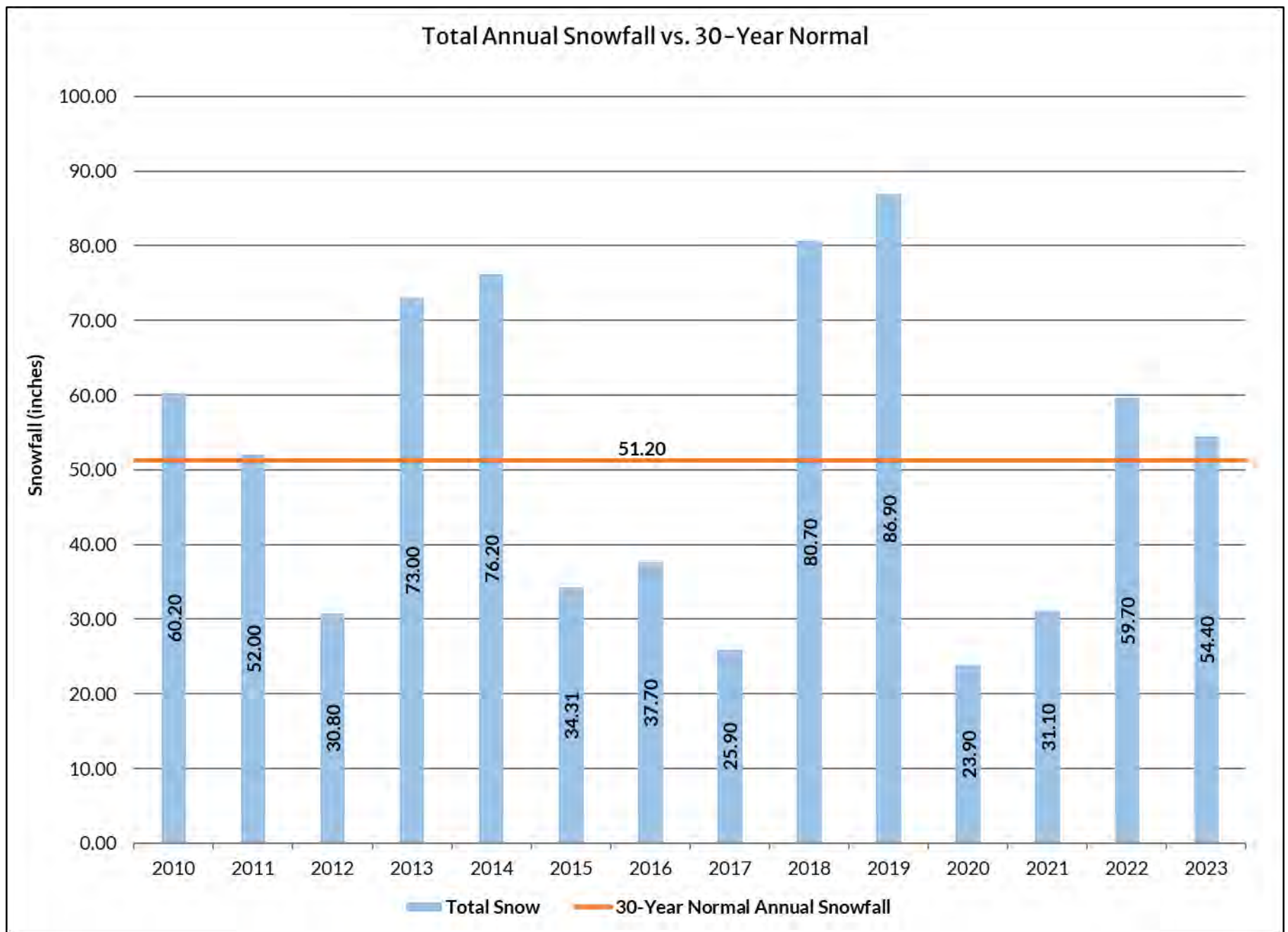


Figure 8: 2010-2023 total annual snow in CRWD and 30-year normal annual snowfall.

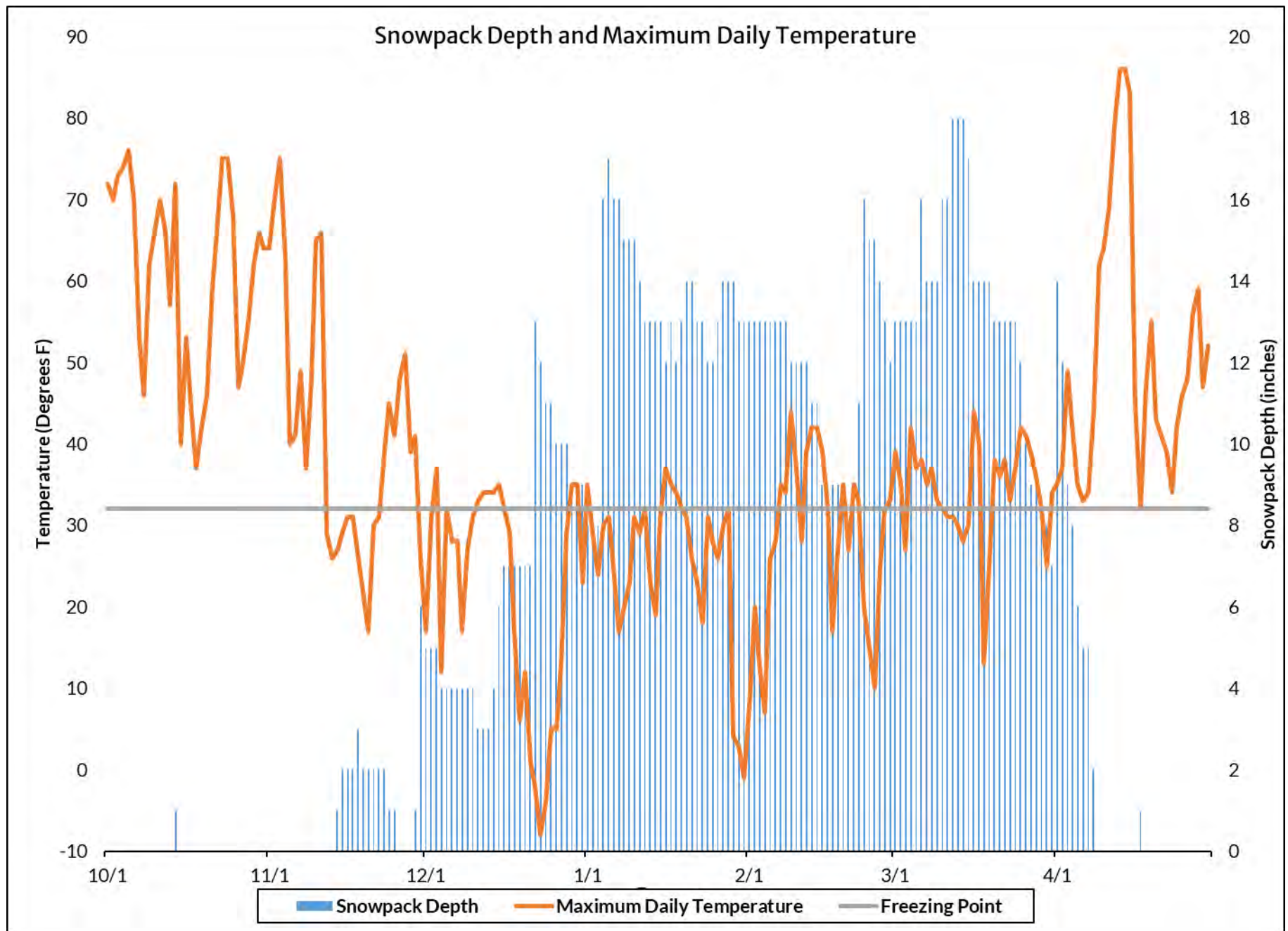


Figure 9: October 2022 through April 2023 snowpack depth, maximum daily temperatures, and freezing point (32 degrees F).

## 2.6 Lakes

### 2.6.1 Ice In and Ice Out

Ice in for Como Lake and Lake McCarrons was December 1, 2022, and ice out was April 13, 2023. The total number of days with ice cover was 133. The average number of days with ice cover for Como Lake is 117. For Como Lake, the median ice in date is December 6. The shortest season of ice cover was 84 days in 2015-2016 and the longest season of ice cover was 148 days in 2018-2019.

### 2.6.2 Surface Water Temperature

Average, minimum, and maximum surface water temperatures for district lakes from May through September 2023 can be seen in Table 6. Biweekly surface water temperatures for CRWD lakes as measured by RCPW and maximum daily air temperatures can be seen in Figure 10. The highest surface water temperature was 81.70 degrees Fahrenheit at Little Crosby on July 27.

**Table 6: May-September average, minimum, and maximum surface water temperatures from RCPW in degrees F for five CRWD lakes.**

Lake	Average Surface Water Temperature (F)	Minimum Surface Water Temperature (F)	Maximum Surface Water Temperature (F)
Como	71.8	62.9	78.9
McCarrons	72.2	62.0	79.4
Loeb	72.7	65.1	79.6
Crosby	72.1	65.3	80.7
Little Crosby	73.3	66.5	81.7



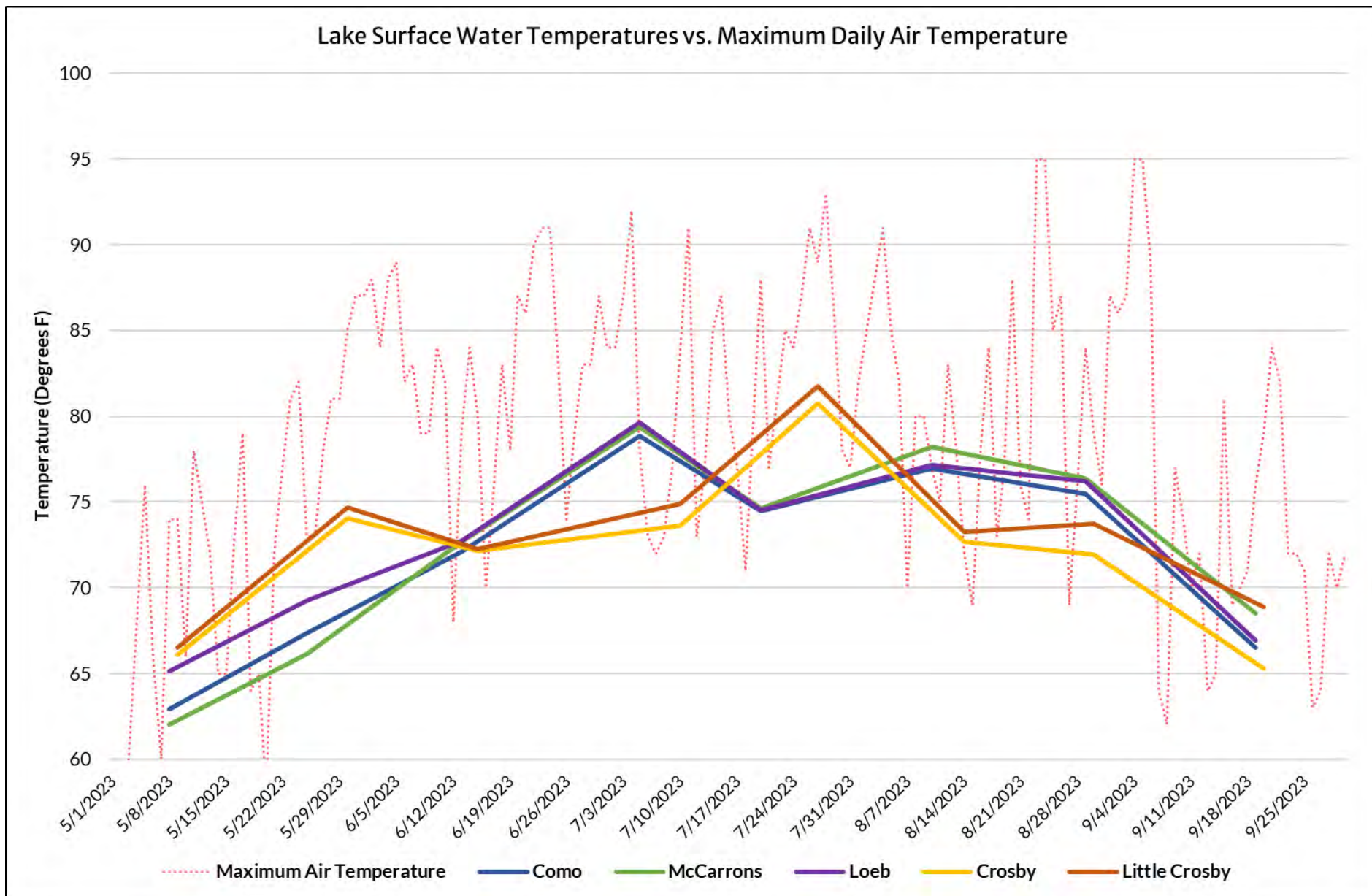


Figure 10: 2023 May-September biweekly surface water temperatures of CRWD lakes from RCPW and maximum daily air temperatures (F).

## 2.7 Notable Climatological Events

Table 7 shows the three most intense rain events in 15-minute, 1-hour, and 24-hour intervals during 2023. These events were compared to the Atlas 14 precipitation frequency ratings to estimate the average recurrence interval of events (NOAA, 2023c). The most intense rainfall was on August 3 with 1.47 inches of precipitation in one hour, resulting in an Atlas 14 frequency rating between 2 and 5 years.

**Table 7: 2023 rainfall intensity statistics for 15-minute, 1-hour, and 24-hour events.**

Rainfall Intensity			Atlas 14 Rating
Time Period	Date & Event End Time	Amount (in)	Frequency (yr)
15-minute	8/3/2023 20:45	0.74	2
	8/3/2023 20:30	0.70	2
	7/26/2023 0:45	0.67	1
1-hour	8/3/2023 20:00	1.47	2-5
	7/26/2023 0:00	1.17	1
	8/11/2023 16:00	0.85	1
24-Hour	9/29/2023	2.13	1
	8/3/2023	1.75	1
	10/13/2023	1.63	1

2023 experienced numerous anomalous and record-breaking weather events. After a snowy January, a rare rainstorm on February 14 doused the District with 0.68 inches of rain, a daily precipitation record for the Twin Cities on that date (DNR, 2023j). Additional February snow helped to make the meteorological winter, December 2022-February 2023, the second wettest on record in the Twin Cities (DNR, 2023k). According to the DNR, rain accounted for 20-50% of the meteorological winter precipitation totals across most state weather stations. 8.50 inches of heavy, wet snow fell during an “intense barrage of rain, sleet, thunderstorms, and very heavy snow” on April 1, causing widespread damage including power outages and numerous fallen trees (DNR, 2023l). Spring flooding followed as the deep snowpack melted, and November 2022 through April 2023 became the third wettest on record statewide (DNR, 2023i). Drought returned in the summer, and smoke from Canadian wildfires frequently moved down into Minnesota. June 14 saw the worst daily average air quality values on record in the Twin Cities, and at the time Minnesota was experiencing the worst air quality in the country (DNR, 2023m). According to the DNR (2023n), an intense hailstorm on August 11 caused strong winds and golf ball- to baseball-sized hail that, as of October 2023, caused 1.5 billion dollars in hail damage. Finally, December broke records as a historically warm December and is the wettest December on record in the Twin Cities (DNR, 2023f). This is attributed to the timing of the peak of a strong El Niño weather system.

## 2.8 Drought

2023 was the third year in a row with high levels of drought in Minnesota. The year started out snowy and wet, with little remaining impacts being felt from the 2021 and 2022 droughts. However, as warm, dry weather moved in around mid-May, much of the state climbed back into abnormally dry to moderate

drought conditions. Despite some heavy rains at the end of June and in July and August, another dry and hot wave of weather swept in and by September most of the state was in severe and extreme drought conditions yet again. According to the DNR, May 15 through August 31 was one of the driest periods on record at all five of Minnesota's top climate observation stations, with the Twin Cities receiving less than half of its normal precipitation (DNR, 2023h). Southern and southeastern Minnesota felt the worst effects of the drought, reaching "Exceptional" levels in September, the highest level of drought according to the US Drought Monitor. Drought conditions improved some towards the end of 2023, however the year closed out with much of the state still in abnormally dry, moderate and severe levels of drought. Minnesota drought maps for March 28, June 20, September 19 and December 19 can be found in the Appendix.

### 3 Summary

A summary of 2023 climatological data and events can be seen in Table 8.

Table 8: 2023 climatological data summary.

2023 Climate Summary			
Variable		Normal/Average	Notes
Days over 90 degrees F	33*	13	20 more than normal
Total Precipitation (inches)	31.91	31.62	0.29" more than normal
Water Year Precipitation (inches)	29.47	33.17	3.70" less than normal
Growing Season Precipitation (inches)	16.47	19.91	3.44" less than normal
Total Snow (inches)	54.4	51.2	3.20" more than normal
Last Significant Snowfall	4/1	N/A	
Last Spring date with greater than 1" snowpack	4/8	3/31	8 days later than normal
Winter Ice In Date (Como)	12/1	Median: 12/6	5 days earlier than normal
Spring Ice Out Date (Como)	4/13	Median: 3/31	14 days later than normal
Total number of ice in days (Como)	133	117	16 days more than normal

\*as reported by the DNR State Climatology Office.

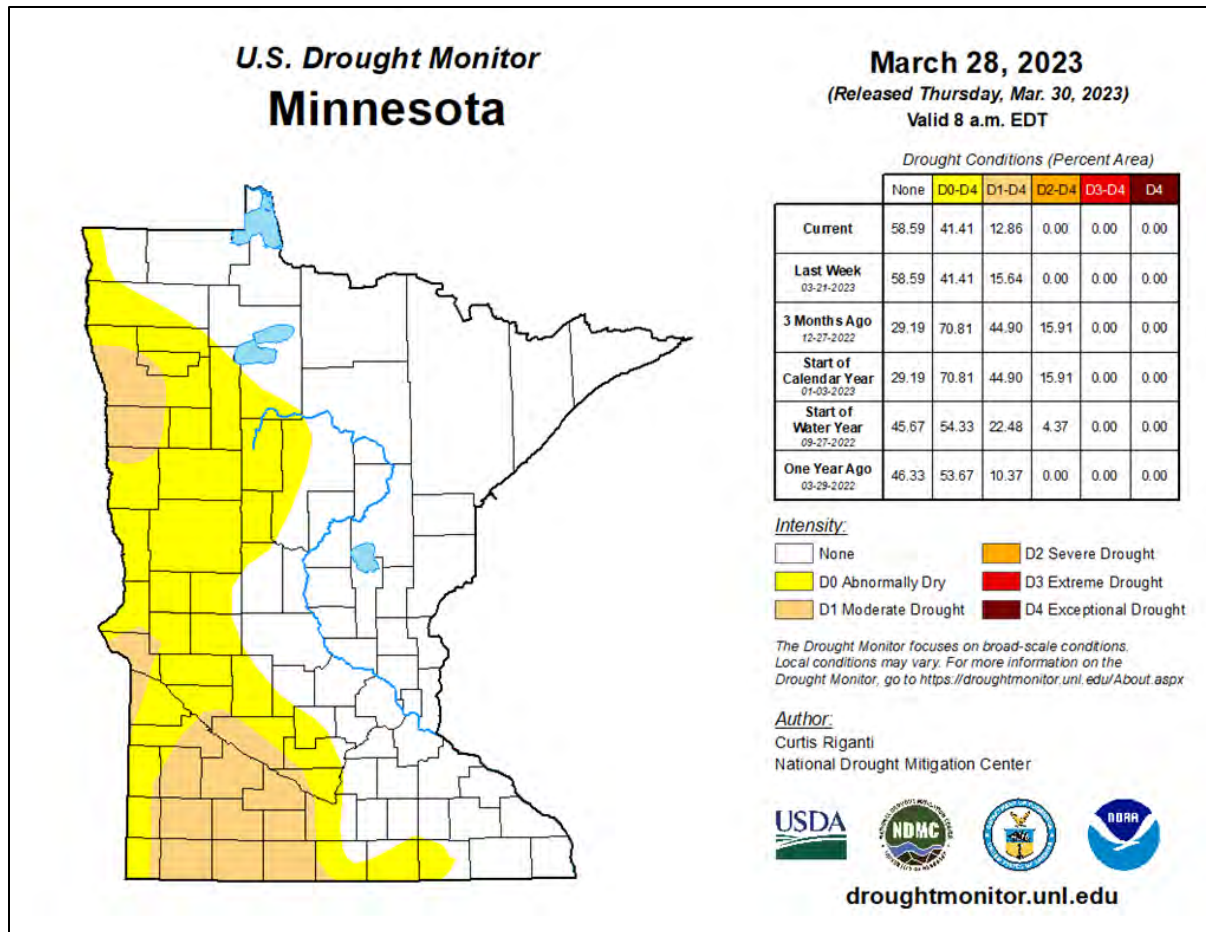


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## 5 Appendix

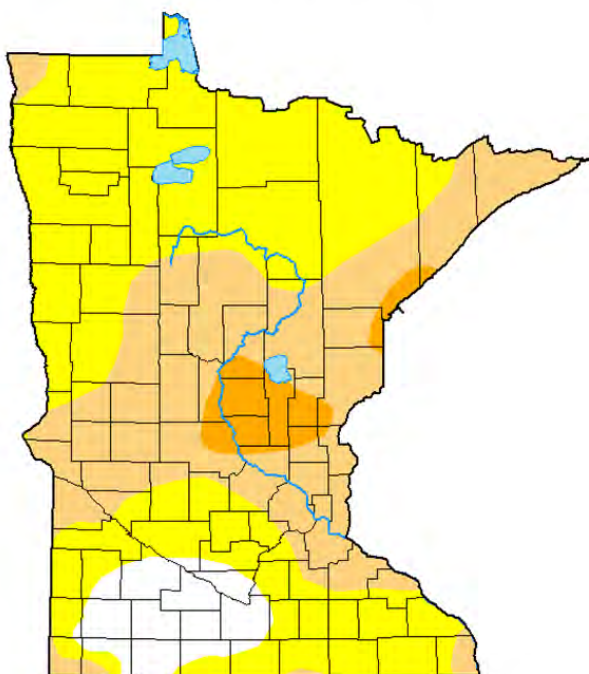


# U.S. Drought Monitor Minnesota

June 20, 2023

(Released Thursday, Jun. 22, 2023)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	7.68	92.32	39.43	4.82	0.00	0.00
Last Week 06-13-2023	22.76	77.24	18.85	2.14	0.00	0.00
3 Months Ago 03-21-2023	58.59	41.41	15.64	0.00	0.00	0.00
Start of Calendar Year 01-03-2023	29.19	70.81	44.90	15.91	0.00	0.00
Start of Water Year 09-27-2022	45.67	54.33	22.48	4.37	0.00	0.00
One Year Ago 06-21-2022	89.20	10.80	0.00	0.00	0.00	0.00

## Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

## Author:

Adam Hartman  
NOAA/NWS/NCEP/CPC



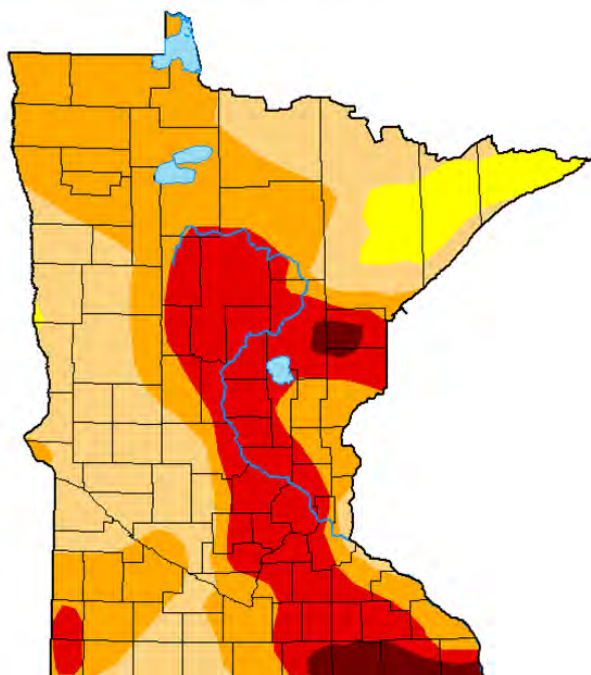
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

# U.S. Drought Monitor Minnesota

September 19, 2023

(Released Thursday, Sep. 21, 2023)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	94.50	64.01	26.07	2.82
Last Week 09-12-2023	0.00	100.00	98.58	61.53	19.21	1.40
3 Months Ago 06-20-2023	7.68	92.32	39.43	4.82	0.00	0.00
Start of Calendar Year 01-03-2023	29.19	70.81	44.90	15.91	0.00	0.00
Start of Water Year 09-27-2022	45.67	54.33	22.48	4.37	0.00	0.00
One Year Ago 09-20-2022	58.23	41.77	14.55	4.37	0.00	0.00

## Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

## Author:

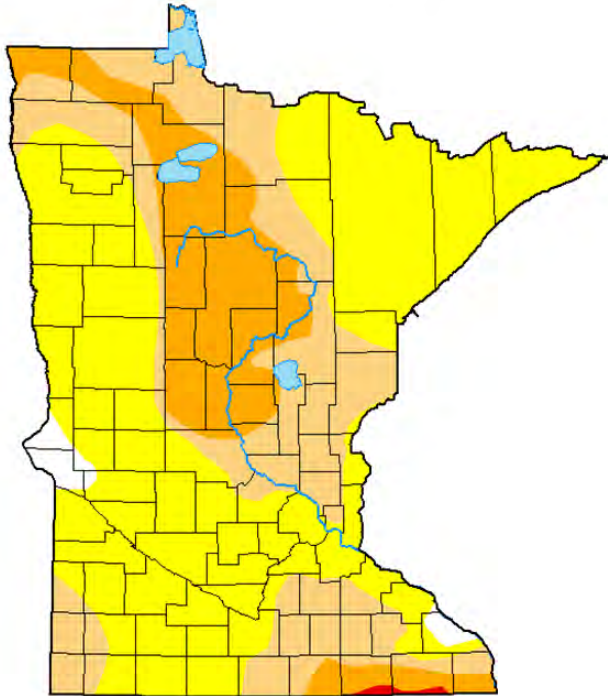
Richard Heim  
NCEI/NOAA



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# U.S. Drought Monitor Minnesota



**December 19, 2023**

(Released Thursday, Dec. 21, 2023)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	1.63	98.37	44.92	18.01	0.25	0.00
<b>Last Week</b> 12-12-2023	1.66	98.34	44.92	18.01	0.25	0.00
<b>3 Months Ago</b> 09-19-2023	0.00	100.00	94.50	64.01	26.07	2.82
<b>Start of Calendar Year</b> 01-03-2023	29.19	70.81	44.90	15.91	0.00	0.00
<b>Start of Water Year</b> 09-26-2022	0.00	100.00	82.65	46.65	8.03	0.00
<b>One Year Ago</b> 12-20-2022	29.19	70.81	44.90	15.91	0.00	0.00

## Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

## Author:

Curtis Riganti  
National Drought Mitigation Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)