

Decorah Weather - August 2023 Summary

by Richard Bernatz

Weather data available online at <http://faculty.luther.edu/~bernatzr/DecWx/>

1. TEMPERATURE

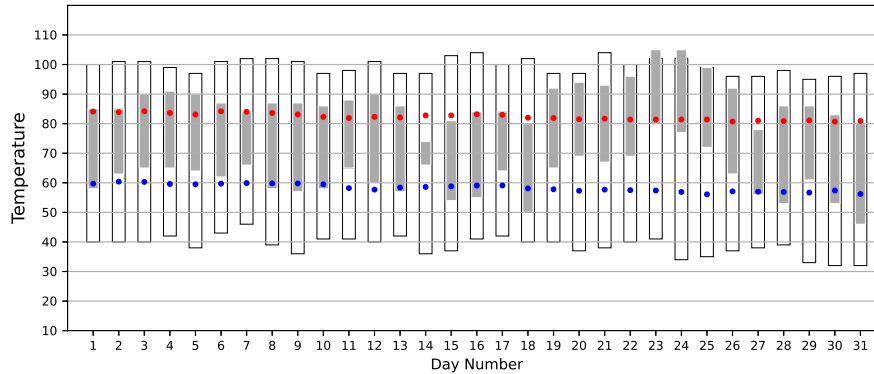


Figure 1: **Grey Bar:** Observed temperature range for 2023, **White Bar:** Record temperature range, **Average temperature range:** Red circle for average high, blue circle for average low.

Item	August 2023 Average	Historical Average	Deviation
High temperature (°F):	88.0	82.4	+5.6
Low temperature (°F):	61.9	58.4	+3.5
Daily temperature (°F):	74.9	70.4	+4.5

Table 1: August 2023 Temperatures compared with August History.

• AUGUST 2023

- Record temperatures : Record maximum temperatures on the 23rd, 24th, and 25th of 105° F, 105° F, and 99° F, respectively. Previous records are 102° F in 1948, 102° F in 1948, and 99° F in 1948.

The 105° F temperature is the warmest ever recorded in the month of August for city of Decorah

Record maximum minimum temperatures (overnight lows) set on the 23rd, 24th, and 25th of 80° F, 77° F, and 72° F, respectively. Previous records are 76° F in 1948, 76° F in 1948, and 72° F 1948 and 2013.

- Average temperature : 74.9° F (4.5° F warmer than average)
- Warmest temperature : 105° F on the 23rd and 24th
- Coldest temperature : 54° F on the 15th
- Cooling degree days : 310, 120 more than average of 190

• ALL AUGUSTS: 1893 TO PRESENT (131 years)

- Compared with August 2023, 10 Augusts were warmer and 120 Augusts were cooler
- Warmest average : 77.5° F in 1900
- Coldest average : 63.9° F in 1915
- Warmest temperature : 105° F on the 23rd and 24th of 2023
- Coldest temperature : 32° F on the 30th and 31st of 1915

2. PRECIPITATION

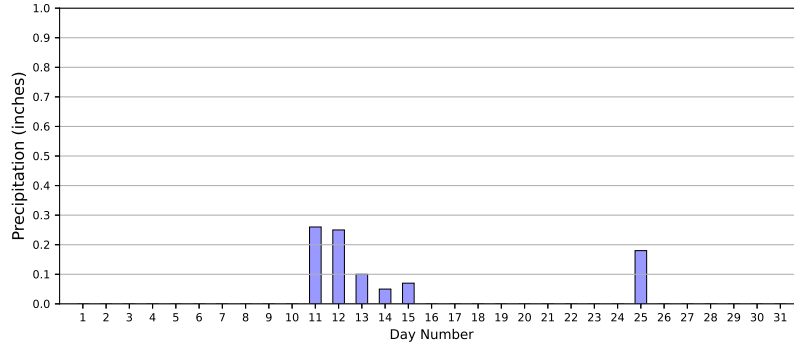


Figure 2: Precipitation for Decorah.

- AUGUST 2023
 - Total precipitation for August 2023 : 0.91 inches
 - 3.14 less than the average of 4.05 inches
 - Six days with measurable precipitation, the average is nine days
 - Greatest one-day total of 0.26 inches on the 11th
- ALL AUGUSTS: 1893 TO PRESENT (131 years - no missing data)
 - Compared with August 2023, 124 Augusts were wetter, 2 were the same, and 4 Augusts were drier
 - Wettest August: 15.11 inches in 2007 (the wettest of any month on record)
 - Driest August: 0.33 inches in 1969

3. TWELVE-MONTH SUMMARY

Month	Year	Ave Temp (°F)	Deviation (°F)	Rank† (#/Total)	Precip (inches)	Deviation (inches)	Rank‡ (#/Total)
September	2022	65.4	+3.2	20/129	1.31	-2.38	118/129
October	2022	50.7	+0.4	56/129	1.34	-0.98	95/129
November	2022	38.5	+3.3	31/130	2.31	+0.46	36/130
December	2022	21.8	+0.5	64/130	1.81	+0.60	27/130
January	2023	24.4	+8.1	11/130	2.17	+1.12	12/130
February	2023	26.6	+6.5	21/113	2.00	+1.04	9/129
March	2023	36.2	+3.4	36/131	1.89	-0.11	70/131
April	2023	50.5	+3.2	23/130	2.84	-0.26	66/130
May	2023	63.0	+4.1	17/128	4.19	-0.04	58/127
June	2023	71.1	+2.8	22/129	2.36	-2.39	109/129
July	2023	72.5	-0.1	63/129	3.32	-0.76	69/130
August	2023	74.9	+4.5	11/131	0.91	-3.14	125/131

Table 2: A summary of the last twelve months. †- The smaller the number (#), the warmer the month. ‡- The smaller the number (#), the wetter the month. Boxed entries are within the historical top or bottom ten.

- Eleven of the last twelve months were warmer than average.
- Eight of the last twelve months were drier than average. August of 2023 is the sixth consecutive month with below average precipitation.
- Precipitation deviations from average (in inches). last three months: -6.30, last six months: -6.73, last nine months: -3.97, last twelve months: -6.87

4. METEOROLOGICAL SUMMER SUMMARY: JUNE - AUGUST

The meteorological summer (June - August) of 2023 ranks 16th out of 128 years on a summer severity scale calculated using temperature averages and distributions in addition to precipitation amounts and frequency.

Warmer than average temperatures and lesser than average precipitation contribute to a positive severity index. Cooler and wetter summers will have a negative index. The three general categories for determining the summer index are 24-hour maximum temperature, 24-hour minimum temperature, and 24-hour precipitation totals.

	Maximum Temperature					Minimum Temperature				Precipitation			Index
	Ave	85+	90+	95+	100+	Ave	65+	70+	75+	Total	Days	DB	
1901	89.7	67	48	30	10	59.3	30	13	3	7.31	18	5	18.93
2023	86.1	57	22	4	2	59.6	21	5	2	6.59	23	5	7.98
Ave	82.3	36	15	4	1	58.5	21	6	1	12.93	29	4.6	0.00
1993	78.4	15	0	0	0	58.4	19	2	0	29.30	57	2	-16.73

Table 3: Summer severity indicator values for the most severe summer (1901), the summer of 2023, the average value for each of the indicators, and the least severe summer (1993).

Table 3 details the measures in each of the three general categories. The first column in each temperature category gives the average value for the summer. The other columns in the temperature categories provide glimpse at how the temperatures within that category were distributed. For example, the “Maximum Temperature” column with the “85+” header gives the number of summer days with a recorded daily maximum temperature of at least that value. The three rainfall measures include the total measured precipitation (in inches), the number of days of measurable precipitation, and the average number of days between measurable precipitation events.

The index for summer 2023 is 7.89, indicating it was a more severe summer than average. This summer’s average maximum daily temperature is 86.1, 3.8 degrees warmer than average. A maximum temperature of 85° F or higher was recorded on 57 days, which is 31 more than average. Temperatures of at least 90° F were recorded on 22 days, seven more than average. There were 4 daily maximums of at least 95° F, which matches the average number, and 2 days with temperatures topping out at 100° F or greater, one more than average. In summary, this summer had an excess of maximum temperatures between 84° F-94° F, but not at the upper reaches of the scale such as the year of 1901.

This summers minimum temperature measures came in very close to average. There were 21 days with a recorded minimum of at least 65° F, 5 days with a minimum of at least 70° F, and 2 days with a low reading of at least 75° F. This is indicative of dry air. It warms up and cools down faster than moist air.

This summer precipitation total of 6.59 inches is less than the total of the most severe summer of 1901. The “Precipitation Column” labeled “DB” gives the average number of days between measurable rainfall events. This year’s average of 5 days is the same as 1901, and a little longer than the average of 4.6 days. Note that the summer of 1993 had a 2-day average length between rainfall events.

The most severe (hot and dry) summer is that of 1901 with an index of 18.94. That year there were 48 days with 90+ temperature readings, 30 days with 95+ readings, and 10 days with temperatures topping out at 100 degrees or greater. Only 7.31 inches of precipitation were recorded that summer.

On the opposite end of the scale is the summer of 1993 with an index of -16.59. That year, the maximum temperature reached 85 or higher on just 15 days, and there were no days with a temperature reading of 90 or greater. Precipitation totaled 29.30 inches, the wettest Decorah summer in recorded history.