THE SUNSHOWER

The Official Newsletter for Kansas CoCoRaHS Observers Issue 2 — Fall 2023

Hello from the Kansas Climate Office in Manhattan! It's finally fall, at least meteorological fall, which began on September 1st. Even though the average temperature for meteorological summer was just one-tenth of one degree above normal, we endured two heat waves that were historically hot in some areas. The high of 115° in Manhattan on August 19th was the hottest anywhere in Kansas since June, 2012, when Norton Dam reached a scorching 118°. As of this writing, we have had a string of pleasant weather. Days are growing shorter, temperatures are cooler, and average precipitation is decreasing by the day. Did you know that the last 3 months of the year, despite collectively being 25% of the days in a year, only account for 16% of average precipitation in Kansas? That's not great news for those areas in drought , as there is less likelihood of eradicating the precipitation deficits before year's end, which are highest in eastern Kansas, and are over 10" in a few areas.

So Many New Observers!

This year has been great for CoCoRaHS in Kansas. As of August 31st, we have added 266 new observers this year. This is nearly double are previous high count of 137. Welcome to all of our new reporters! We hope you're in the habit of reporting each day. CoCoRaHS strives for complete data records, which means a report from every station every day, whether or not you receive precipitation. Don't forget that you can enter in multiple zero reports for past days, if you don't log in except on days where there is precipitation. There's an option on the CoCoRaHS web page to enter multiple days with zero precipitation all at once ("Monthly Zeros").

Rain Gauge Photos—Send 'em In!

We received a great photo from one of our observers out in Finney County showing their rain gauge and weather station setup. We would love to show you more photos like this in upcoming issues, but this was the only one we received. We want to see YOUR rain gauge photos, and share them in an upcoming issue of the Sunshower. Just seend us a photo in electronic form (e.g., .jpg, .gif, .pdf, etc.) to the e-mail address shown on the bottom of the last page of this issue of the Sunshower. Make sure to include your station ID (e.g., KS-RL-1) so we can properly credit your contribution.

KS-FI-4

A New Way to Measure Precipitation

Earlier this year, CoCoRaHS approved a new rain gauge for use by observers. It's name is the TROPO Precipitation Gauge (or just TROPO for short), TROPO is manufactured by Climalytic Instruments. I decided to purchase one as I was curious to see how it differed from the current gauge we all use now, whose official name is Stratus. I have been using TROPO alongside Stratus for a few months now (see photo at right) at my house (KS-RL-64), and I must say that I prefer TROPO over Stratus for a couple reasons. First, TROPO is a bigger gauge and my aging eyes find it easier to read the inner cylinder. Second, the design of TROPO makes it easier to remove the lid and re-set the inner cylinder after emptying it. The two gauges, on those rare occasions where we had rain here in Manhattan, always measured within 0.01" of each other, even when it was over an inch of rain (again, a rarity the last few months in this part of Kansas).

Stratus (L) and TROPO (R) rain gauges. KS-RL-64.

By no means should you feel obligated to replace your existing gauge with this model, nor will there ever be a requirement from CoCoRaHS HQ to switch gauges. It's simply a new option for supporting CoCoRaHS with a newer model rain gauge. Climalytic has information on their web site which details the product (https://climalytic.com/tropo) and gives a list of improvements they feel their gauge has over the Stratus model. Take a look at the webpage and decide for yourself.

The Climalytic TROPO gauge comes with all of the above components, including spikes to discourage animals from disturbing the gauge, and a handle for easy pouring.

Please note that we here at the Kansas Climate Office will not supply this gauge instead of the Stratus to new observers. The TROPO gauge is more expensive (retail price is $99.99) than the Stratus. Keeping replacement parts on hand would cost us more, and shipping costs due to the larger gauge would also be an added expense. Consider the TROPO as an option if you'd like a new weather gadget to compare against your existing Stratus.

Kansas Rural Water Association Promotes CoCoRaHS to and through Water Systems

Kansas Rural Water Association (KRWA) is a service provider to all Public Water Systems in Kansas. KRWA staff provides training and on-site assistance to the employees, water district board members, city commissions and councils, and owners of these systems that provide safe and affordable drinking water. One service provided, of many, is the development of water conservation plans for water systems.

In the first issue of the Kansas Sunshower, the importance of CoCoRaHS to the United States Drought Monitor was reported. Data supplied by CoCoRaHS observers is critical for accurate depictions of the location of droughts and the intensity of drought conditions. With more data from more locations, the accuracy of these maps can only get better. This great program shows just how true it is, that "The Rain does not Fall, the Same on All."

So how is the U.S. Drought Monitor used after the CoCoRaHS collected data is submitted and analyzed? The State of Kansas has a water supply planning agency, the Kansas Water Office (KWO). This agency has no regulatory function, but serves to help Kansas respond to and anticipate current and future water supply needs. K.S.A. 74-2608(c) requires the KWO "Develop and maintain guidelines for water conservation plans and practices." The Kansas Municipal Water Conservation Plan Guidelines, last updated in 2007, provide a framework for public water systems to draft and adopt their own unique water conservation plan based on their infrastructure, aquifer, lake or river, water rights, etc. To respond to drought and other water shortages, a plan meeting the guidelines will provide the water system with the ability and authority to declare a Water Watch, a Water Warning or a Water Emergency, as conditions worsen. Typical triggers that are used to declare these stages of water conservation typically include groundwater levels, streamflow, lake levels, hours of treatment plant operation per day, etc. As the U.S. Drought Monitor becomes a better-known resource, many water systems are also using the presence of the various stages of drought in their county or region as a trigger to declare a Water Watch.

A Water Watch in Kansas is not much different than weather watches issued by the National Weather Service, but since they're drought related, a Water Watch may last for weeks or months. A typical water watch declared by a public water system will be accompanied with releases of information about current water supply conditions and an outlook on the future water supply, a summary of recent weather conditions, suggested voluntary water conservation tips and posting of the state or regional U.S. Drought Monitor map in public places and on the systems' social media.

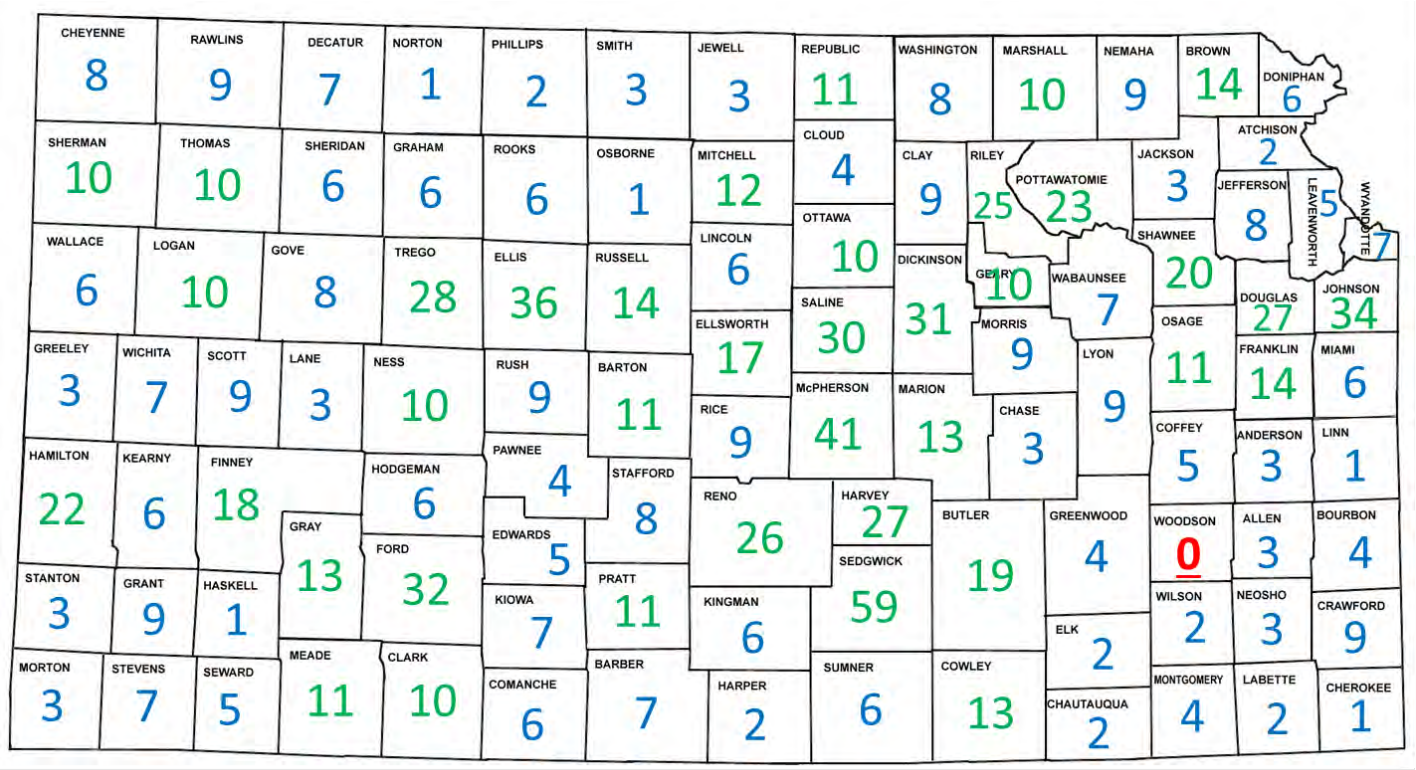
To make the Drought Monitor more accurate locally, the water systems are promoting CoCoRaHS to their customers and neighbors, as part of the water conservation plans' education goals. While the promotion of CoCoRaHS is probably most effective by word-of-mouth, water systems may also use visual and digital methods to introduce CoCoRaHS to their constituency before a potential participant hears about it from a CoCoRaHS observer. Promotion of CoCoRaHS year-round will also help educate and remind people of the real reliance we have on actual precipitation for our drinking water, irrigation, firefighting and recreational needs.

KRWA thanks all of the regular precipitation reporters, especially those that report those so-very-important zeros, on the CoCoRaHS network. We'd like to challenge everyone to recruit at least one new observer to join us in our shared quest to gather and report precipitation data.

- Douglas S. Helmke, P.G., Water Rights/Source Water Specialist, KRWA (and observer at KS-SN-5)

Number of Active CoCoRaHS Observers by County

Counts current as of August 31, 2023



The above map includes all active observers who have reported at least once since January 1, 2023. We still have just one county without a report this year: Woodson. We have five counties with just one active observer. We would like to increase our counts statewide and have at least 5 observers in every one of Kansas' 105 counties. We have almost 30 counties with less than 5 observers, so we have some work still to do. If you know someone in Kansas who would be interested in joining us, especially in a county with few observers, please let them know. Spread the word about CoCoRaHS!

On average, what are the five wettest and driest counties in the state of Kansas in terms of average annual precipitation? (Source: ncei.noaa.gov)

Rank	Wettest		Driest	
	County	Amount (inches)	County	Amount (inches)
1	Cherokee	45.30	Morton	17.36
2	Crawford	44.88	Stanton	17.36
3	Labette	44.18	Hamilton	17.53
4	Neosho	43.22	Grant	18.08
5	Bourbon	43.19	Greeley	18.48

Kansas CoCoRaHS Observers by the Numbers

(Numbers are current as of August 31, 2023)

Number of active CoCoRaHS observers (made at least one report)	1162
Number of active observers who made at least one report in 2023	1098
Number of active observers who made a report in August, 2023	990
Number of new CoCoRaHS applicants in 2023	266
Number of new applicants in 2023 who have yet to report	67
Number of new CoCoRaHS applicants for March Madness 2023	83
Number of March Madness 2023 applicants who have yet to report	33
Number of observers active in 2022 who have not reported in 2023	161
Number of hail reports made by Kansas observers in 2023	64

Most daily observations at an active CoCoRaHS observing site

Rank	Count	Site
1	6754	KS-DC-1
2	6744	KS-DC-2
3	6676	KS-RL-1
4	6665	KS-PR-2
5	6636	KS-SH-16
6	6542	KS-NS-6
7	6499	KS-EL-6
8	6471	KS-FO-3
9	6433	KS-JO-6
10	6417	KS-EL-1

Number of active observers who have made at least X number of observations

Count	# Observers
6000	31
5000	89
4000	146
3000	206
2000	276
1000	420
500	576
250	746
100	917
50	1012
10	1121

Highest CoCoRaHS Precipitation Totals

June 2023

Rank	Total	Site	Location
1	10.38″	KS-SW-2	Kismet 0.1 W
2	9.78″	KS-ME-6	Meade 6.6 SSW
3	8.76″	KS-KM-2	Penalosa 0.4 N
4	8.52″	KS-ME-18	Meade 9.2 SSW
5	8.26″	KS-BT-32	Great Bend 0.6 NNW
6	8.01″	KS-HV-35	Newton 5.1 SSE
7	7.80″	KS-ME-10	Meade 0.5 WNW
8	7.49″	KS-PR-2	Preston 3.2 WNW
9	7.41″	KS-HV-49	Newton 6.4 SE
T10	7.27″	KS-EW-50	KS-FO-15, KS-WA-4

July 2023

Rank	Total	Site	Location
1	9.39″	KS-CL-35	Winfield 2.7 NE
2	9.38″	KS-BA-24	Medicine Lodge 3.7 ENE
3	9.08″	KS-SW-2	Kismet 0.1 W
4	8.93″	KS-KW-2	Mullinville 12.5 S
T5	8.92″	KS-CA-10	Kingsdown 5.3 SSW
T5	8.92″	KS-FO-33	Dodge City 11.0 SSE
7	8.68″	KS-BA-4	Medicine Lodge 0.4 WSW
8	8.51″	KS-FO-58	Dodge City 5.6 S
9	8.45″	KS-ME-21	Meade 12.4 NW
10	8.40″	KS-GY-40	Montezuma 0.2 SE

August 2023

Rank	Total	Site	Location
1	8.62″	KS-NO-11	Galesburg 1.0 SSW
2	7.38″	KS-SM-12	Smith Center 0.3 N
3	7.02″	KS-CR-20	Girard 10.6 W
4	6.43″	KS-HP-3	Anthony 0.4 NNW
5	6.35″	KS-NO-12	Parsons 5.7 NW
6	6.29″	KS-EL-37	Gorham 2.4 NW
7	6.22″	KS-RS-10	Russell 8.1 NW
8	6.18″	KS-OB-5	Natoma 6.7 NNE
9	6.17″	KS-PL-6	Phillipsburg 5.7 E
10	5.95″	KS-WY-11	Kansas City 4.9 WNW

Note: Inclusion of stations in this table is limited only to those stations with at least 90% data completeness for any given month or 3-month period.

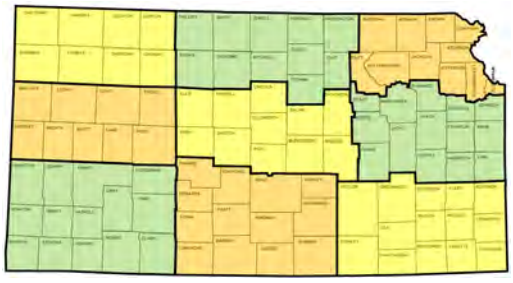
June 1 — August 31. 2023

Rank	Total	Site	Location
1	20.52″	KS-SW-2	Kismet 0.1 W
2	19.43″	KS-CA-10	Kingsdown 5.3 SSW
3	19.28″	KS-ME-8	Meade 6.7 SSW
4	18.17″	KS-KW-2	Mullinville 12.5 S
5	18.03″	KS-BA-24	Medicine Lodge 3.7 ENE
6	17.82″	KS-EL-37	Gorham 2.4 NW
7	17.75″	KS-BA-4	Medicine Lodge 0.4 WSW
8	16.93″	KS-KM-2	Penalosa 0.4 N
9	16.81″	KS-CM-3	Coldwater 6.7 NW
T10	16.72″	KS-CL-35	Winfield 2.7 NE
T10	16.72″	KS-ME-18	Meade 9.2 SSW
12	16.63″	KS-ME-10	Meade 0.5 WNW
13	16.22″	KS-WS-13	Palmer 0.6 SSW
14	16.18″	KS-GY-16	Ingalls 6.2 WNW
15	16.09″	KS-CA-7	Minneola 4.1 SSE

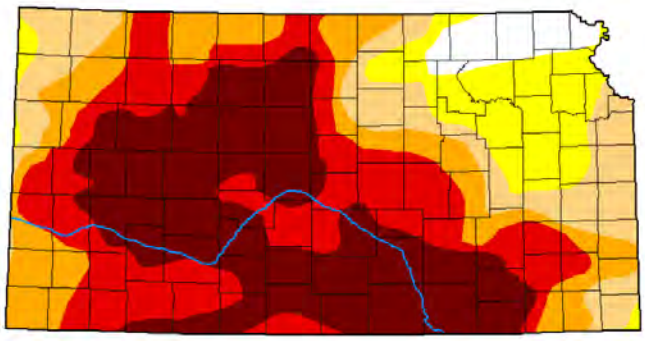
Kansas Precipitation by Climate Division

	JUNE 2023		JULY 2023		AUGUST 2023	
Division	Avg. Precip. (Departure)	Rank	Avg. Precip. (Departure)	Rank	Avg. Precip. (Departure)	Rank
Northwest	4.01″ (+1.05″)	32nd Wettest	3.21″ (-0.25″)	48th Wettest	3.13″ (+0.12″)	39th Wettest
North Central	3.51″ (-0.30″)	58th Driest	3.14″ (-1.05″)	63rd Driest	3.70″ (+0.16″)	44th Wettest
Northeast	2.45″ (-2.39″)	18th Driest	5.18″ (+0.57″)	30th Wettest	3.12″ (-0.88″)	41st Driest
West Central	4.27″ (+1.34″)	25th Wettest	3.85″ (+0.48″)	30th Wettest	2.29″ (-0.63″)	61st Driest
Central	5.03″ (+1.06″)	33rd Wettest	3.14″ (-0.94″)	64th Wettest	3.43″ (-0.28″)	55th Wettest
East Central	2.26″ (-2.79″)	11th Driest	3.85″ (-0.49″)	59th Wettest	2.26″ (-1.86″)	30th Driest
Southwest	4.86″ (+1.71″)	12th Wettest	6.09″ (+2.98″)	6th Wettest	1.82″ (-1.12″)	43rd Driest
South Central	6.00″ (+1.72″)	21st Wettest	6.01″ (+2.37″)	7th Wettest	2.50″ (-1.07″)	59th Driest
Southeast	2.81″ (-2.64″)	25th Driest	4.18″ (-0.05″)	47th Wettest	3.33″ (-0.59″)	57th Wettest
STATE	4.03″ (-0.02″)	60th Wettest	4.39″ (+0.54″)	33rd Wettest	2.80″ (-0.71″)	56th Driest

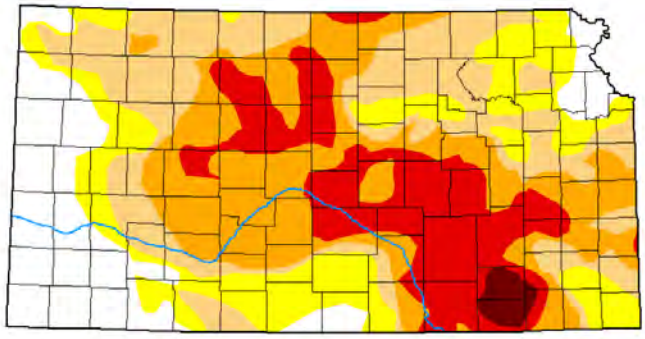
Monthly data are averaged for each of Kansas' nine climate divisions (see map at right), and aggregated to determine the statewide total. Rankings are with respect to the 129-year period of record from 1895 to 2023. Data are courtesy the National Centers for Environmental Information (NCEI).



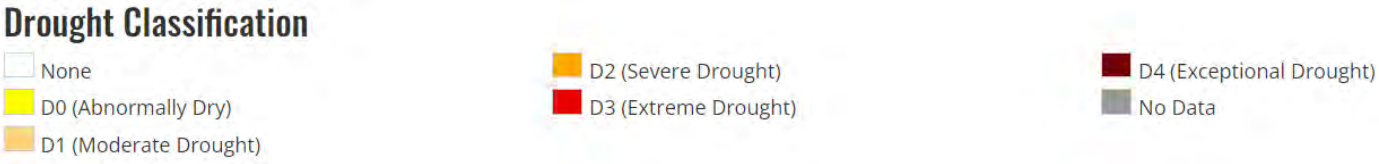
Kansas Drought Status



May 30, 2023



August 29, 2023



Date	Drought-Free	D0	D1	D2	D3	D4	DSCI
5/30/23	4 %	11 %	14 %	15 %	25 %	32 %	343
8/29/23	16 %	18 %	24 %	24 %	17 %	1 %	213

The above table contains the percentages of the state in each of the drought categories at the start and end date of the 3-month period. DSCI refers to the Drought Severity Coverage Index, a composite value that takes the percent of the state in each category and assigns a weight to each. The DSCI ranges from 0 to 500, with higher values indicating worse drought conditions. The maps and tables are courtesy the US Drought Monitor (https://droughtmonitor.unl.edu).

Conditions have dramatically improved in western Kansas in the last three months. The far western part of the state improved from D2 and D3 to being drought-free. Better still, parts of Meade and Harper Counties have gone from D4 all the way to drought-free! The large area of D4 has been reduced to a small area covering much of Elk and Chautauqua Counties. Parts of northeast and east central Kansas have seen worsening conditions. Portions of 20 counties in these areas have been degraded by two categories, with 1-category degradations more widespread in these divisions. With dry conditions forecast for September, conditions are expected to worsen in the short term, especially in eastern Kansas.

KS-RL-1

Kansas CoCoRaHS Honor Roll

Between June 1 and August 31, 2023, the following observers surpassed the specified number of daily reports. We are grateful for your dedication and for supporting CoCoRaHS!

6,000	KS-BA-4	KS-HM-5	KS-KM-2	KS-LY-2	KS-PT-1	KS-RN-7
	KS-RN-11	KS-RN-19	KS-TH-18			
5,000	KS-DG-15	KS-OS-19	KS-PT-7	KS-RN-25		
4,000	KS-EL-55	KS-FO-33	KS-JF-3	KS-LC-5	KS-LG-5	KS-MR-5
	KS-MR-6					
3,000	KS-NS-17	KS-OS-7	KS-RN-55	KS-TH-10		
2,500	KS-FI-30	KS-PT-34	KS-SG-100			
2,000	KS-AN-3	KS-FI-10	KS-KM-12	KS-LV-9	KS-PT-36	
1,500	KS-DG-65	KS-DK-51	KS-DK-54	KS-HM-4	KS-HV-40	KS-JF-9
	KS-ME-18	KS-NM-1	KS-SG-126	KS-SG-144	KS-SN-37	KS-SN-39
1,000	KS-EW-45	KS-EW-46	KS-FR-27	KS-GY-30	KS-SG-151	KS-SG-157
500	KS-BA-19	KS-CY-8	KS-DK-49	KS-DK-65	KS-GO-13	KS-HG-12
	KS-KM-19	KS-MI-15	KS-MR-12	KS-NM-2	KS-PT-49	KS-RO-11
	KS-RP-9	KS-WH-13	KS-WY-12			

The Sunshower is a publication of the Kansas State Climate Office.
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