

Colorado CoCoRaHS Summer Newsletter

July 2024

Peter Goble – Colorado CoCoRaHS Coordinator



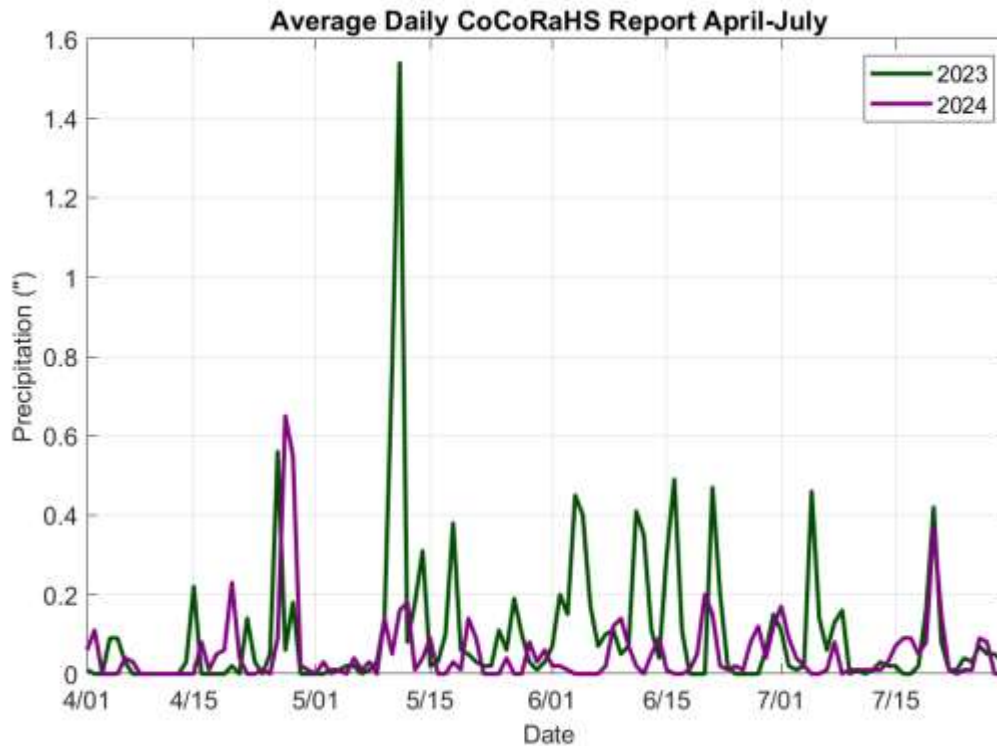
Alexander Mountain Fire at sunset. Photo credit: Kristie Davis.

Hello everyone! My name is Peter, and I am your Colorado State CoCoRaHS Coordinator. What does that mean? It means you are welcome to contact me with any questions, comments, or concerns you have as a volunteer. It also means you get a newsletter from me in your inbox about once/four months with some updates on what is happening at CoCoRaHS HQ that usually diverges into more general musings on what is happening in the world of weather and climate.

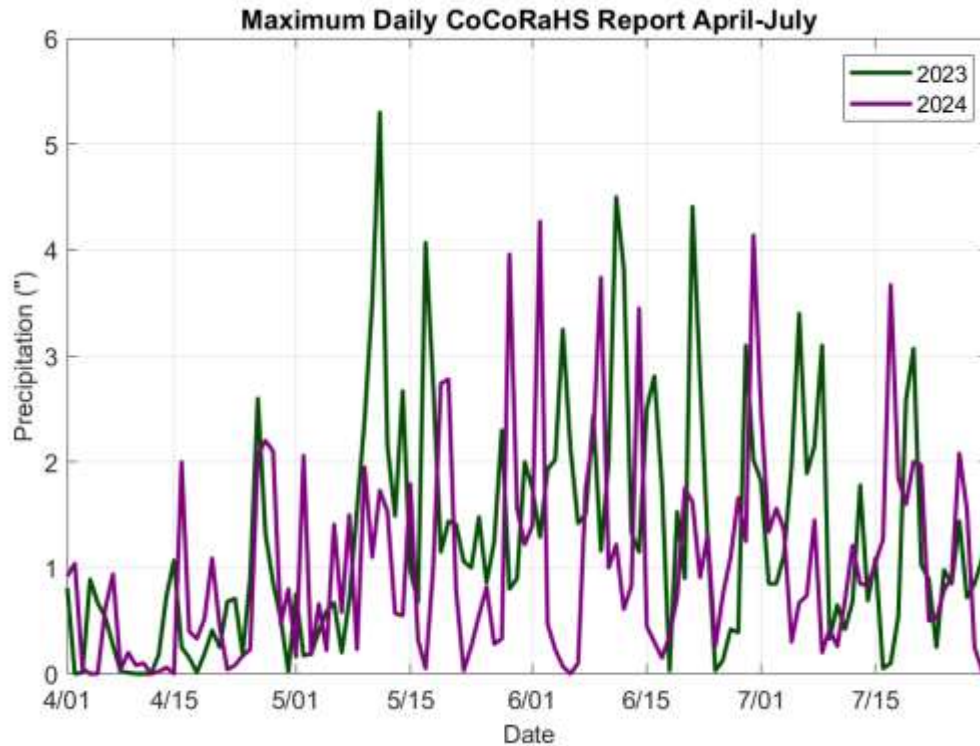
Around the State – For much of Colorado April-July can be thought of as the “rainy season.” In a state that averages just over 18” of precipitation annually (including the mountains) it feels a little silly to call anything the “rainy season.” The nationwide average is 31.3”, and the global average is closer to 40”. Fun fact, these averages DO use CoCoRaHS data. Your data are a part of the National Centers for Environmental Information nClimGrid precipitation maps and the Parameter-elevation Regression on Independent Slopes (PRISM) precipitation maps, which are commonly used in weather and climate research across the country and the world. The Front Range and Eastern Plains of Colorado receive 12-20” of precipitation on average annually, and somewhere between 50 and 60% of annual precipitation falls between April and July.

This year our highest April-July precipitation accumulations happened in the far northeastern corner of the state. CO-PH-53 topped the charts with 12.68” of precipitation from April 1st to July 31st. 12.38” is a solid accumulation even for the rainy season, over 3”/month. But what if we compare this number to

last year? There were 590 stations across the state that recorded more than 12.68" of precipitation between April and July last year. We have had some impressive one-day totals in 2024, but they have been from scattered heavy thunderstorms. We have not seen the regular, widespread moisture that we did in 2023.



Average daily Colorado CoCoRaHS precipitation report (inches) April 1st – July 31st, 2023 & 2024.



Maximum daily Colorado CoCoRaHS precipitation report (inches) April 1st – July 31st, 2023 & 2024.

Reporting statistics are down in 2024 from 2023. We have seen 916 reports/day in April-July 2023, and 864 reports/day in April-July 2024. I am not worried about this yet. Colorado CoCoRaHS participation has largely remained steady. Over the past few years. That said, if you have any friends or family who love weather, please feel free to talk about your rain gauge, and see if we can get a few more folks on board.

Hail – We have not seen as much hail this summer statewide as last summer, but we have seen some impressive hailstorms. Last year we received 670 hail reports.

I did want to include a reminder that CoCoRaHS now allows you to share your photos of hail when uploading a hail report. We love getting hail pictures. Check out this behemoth from last summer!



Hail photo from CO-BA-23 (far southeastern Colorado) on June 16th, 2023.

Heatwaves – Some of us in Colorado experienced near all-time record high temperatures this July, primarily July 12-14th. We are currently suffering through yet another heat wave. Why are some summers hotter than others? What makes a heat wave? I recently wrote a blog on this, and you are welcome to peruse it for more details: climate.colostate.edu/blog. All things considered, when will you see record heat, and why? 1. Record heat will likely occur in the mid-to-late afternoon immediately after the day's peak heating hours. 2. Record heat will probably occur in late June or July. August is hot, but the days are already getting shorter, and the intensity of the midday sun has already begun to wane. 3. The air and land will be dry. In Colorado, it is almost impossible to heat humid air to triple digits without clouds forming, and possibly thunderstorms. 4. The surface pressure will be high, which draws dry, compressed air down from the upper atmosphere at seals in warmer conditions. 5. The air above the surface can likely be traced back to thunderstorm activity somewhere else. The latent heat release from

storms is contribute to the heat dome over your head. 6. If a new record occurred at your local long term weather station, it was probably even hotter downtown and on the roadways.

Wildfires – Unfortunately we did not escape wildfire season without significant incidents here in Colorado. Over the course of the last few days, we have seen the Alexander Mountain Fire devour over 9000 acres, and the Stone Canyon Fire near Lyons burn through over 2000 acres. These fires are still small relative to what we endured in years like 2002, 2012, 2018, and 2020. However, these fires are not contained, and the forecast only calls for scattered moisture until mid-next week. Hopefully the fires do not continue to grow rapidly.

Wildfire smoke has become an increasingly common part of life in Colorado. Even in May 2023 when we had unusually wet conditions, we were impacted by wildfire smoke from Canada. Up until this week, most of the smoke we experienced this year was also from Canada, with some coming from California and Oregon as well.

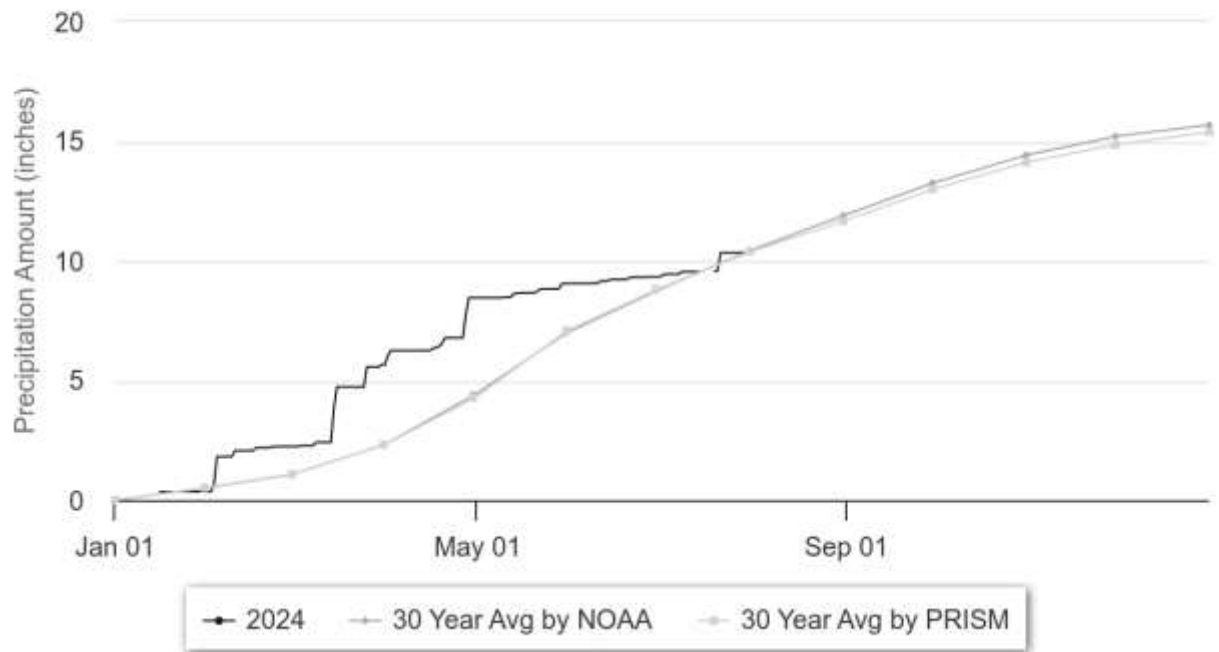
As an atmospheric scientist I've learned a lot of not so fun facts about air quality over the years. For instance, poor air quality may already shave as much as two years off the average person's life expectancy. Have you ever changed your air filter after ignoring it for too long, and been shocked by how gunky the filter is? It turns out, our lungs have filtration mechanisms too. Air that is full of wildfire smoke carries particles small enough to filter deep into your lungs and enter your bloodstream. Children, elderly folks, and sensitive groups like asthma patients are at increased risk of health impacts from these particles. On average, over 25% of the hazardous particulates inhaled throughout the course of the year comes from wildfires smoke in the western United States. Some studies suggest that for folks who avoid accidents, do not do drugs or drink alcohol, and eat a healthy diet, long-term exposure to air pollution is one of the leading causes of mortality.

I bring this up not just to despair, but because as community scientists, there is something you can do to help. Purple Air is a group that is passionate about air quality in the way we are passionate about rain, hail, and snow. It is a more costly program than CoCoRaHS (sensors are \$200-300), but the data are important in times like this. You can use output from your purple air sensor to mitigate the risk to you and your family, making decisions about when to recreate outside, what kinds of PPE to wear, and when to have your windows open or closed. To be clear, we do not have a partnership with Purple Air; I am not affiliated with them in any way. I just admire their work.

Zero Burnout – Does anybody else ever get burned out by too many days with nothing in the rain gauge? I do. Most of us probably get excited when there are storms. This year started out fun, but since about May 1st it has been tough sledding at my station. Only 32% of normal precipitation over the last three months with lots of zero days. My only advice for zero burnout is to use the "monthly zeros" tab on our website. The "monthly zeros" tab is located on the left-hand side of the page when you are logged into cocorahs.org. This page will allow you to enter zero for each day simply by checking a box on the calendar. At CoCoRaHS we care about drought too, so tracking zeros matters. We like to say, "be a hero, report your zero," but how many of us are excited about drought? I understand if you do not always get around to those zeros.

Year-Over-Year Accumulated Precipitation Jan 1st to Dec 31st

Station: CO-LR-1200: Berthoud 2.5 N



My precipitation accumulation since the beginning of the year from the CoCoRaHS data explorer (CO-LR-1200). You can see how May and June are supposed to be wet months at my location, but precipitation flatlined.