

# The Catch

## COCORAHS -- MANY THUNDERSTORMS

FORT COLLINS, CO — Wednesday, July 6, 2011

Greetings,

I can't believe it's already July 6th. Happy 4th of July to all of you -- a bit late.

Weather patterns have changed over the past couple of weeks and now we're in mid summer mode. Here in northern Colorado storms are popping up all around and we're getting one quick downpour after another. 0.44" in just a few minutes and the thunderheads are still shooting up in many directions and distant thunder rumbles.

Looking at the national NWS radar mosaic [http://radar.weather.gov/Conus/index\\_loop.php](http://radar.weather.gov/Conus/index_loop.php) there are thunderstorms popping right this minute in almost every state. Washington, Oregon, Wisconsin, Michigan and, for the time being, Iowa -- are about the only states in the clear -- but that could change later this evening. Many of these storms are small and very localized, but many are intense. Tropical moisture has drifted northward into many states helping trigger those infamous summer "popcorn" showers.

Today's weather -- with many, many, intense local downpours (even in parts of California) -- is really what CoCoRaHS is all about. If we had a volunteer every mile across the entire U.S., it still wouldn't capture all the local variations in rainfall. It really is possible to have a downpour on one side of the street and be dry on the other side.

Today's weather also reminds me to remind you to please remember to send in "Significant Weather Reports" when you're having intense downpours. Radar is a great tool for tracking storms, but without ground measurements radar data only provide a good first guess at how much rain is falling. So if you happen to be home when a heavy storm hits -- and if you can get a glimpse of your rain gauge, please take a minute and

send in a report. Just click on "My Data" or "Login" on the top menu -- and then you'll see the list of reports you can select from -- hail, significant weather, multiday accumulation, monthly zeros, etc. Your report of heavy rain and your eyewitness reports of developing localized flooding can really be helpful -- even if your measurement is just a quick approximation.

But do remember that our computer system isn't too smart. You'll still need to enter the regular 24-hour rainfall report at your regular daily reporting time.

Also, if you have hail, please send in a hail report so that your report appears on the CoCoRaHS hail maps.

<http://www.cocorahs.org/Maps/ViewMap.aspx?type=hail>

### **Radar Rain?**

Today we're getting real rain. But have you heard about radar rain? A few years ago I was over at the Colorado Farm Show in Greeley where a group of northeast Colorado farmers had cornered a National Weather Service weather forecaster and were making sure he heard their stories of "radar rain". I asked, "what in the world is radar rain" and they quickly told us that it wasn't any good for growing crops. It was those nice big echoes on the radar that didn't produce any rain on the ground -- only virga.

<http://www.erh.noaa.gov/iln/Gallery/Clouds/clouds13.html>

Fortunately, today's rain can grow crops -- and there is no sign of hail -- so far.

### **Gone one day too long**

Last week, Henry (from our staff) and I traveled to Colorado Springs and taught a couple of classes about the unique climate of the Pikes Peak region (July and August are by far their wettest months of the year in that area -- an average -- and they really need it this year after an incredibly dry fall, winter and spring). We had a good turn out, and thanks to a nice article in the local newspaper over 50 new volunteers signed up in just one week to help measure and report precipitation for CoCoRaHS. Welcome to all of you who are new to CoCoRaHS. We're glad to have you on the rain gauge team. This is a great time of year to get started.

On my return home late last Wednesday evening, I stumbled over a log that was wedged under our gate that separates our driveway from our fenced yard. I also noticed that my outdoor shoes were set up on the porch railing. I thought that was odd, but was too tired to think more about it. I should have been suspicious that something was up. Next morning I figured it out. While I was away, my wife brought home a new puppy to help keep Lily and Angel company. So we're back up to 3 dogs -- never a dull moment.

### **Close to 9400**

We didn't reach that elusive goal of 10,000 reports per day back in early June, but reports are still trickling in and we did go over 9000 reports on 16 days in June and close to 9400 several times. We had an extraordinary day on June 8th. 9258 of us sent in our rainfall reports that day of which 8055 of those reports were ZEROs. That shattered our record for most reports of no precipitation on a single day. That may not sound like much, but it takes a small effort to send in a zero and that was a whole lot of small efforts that added up to something major. If you were one of the many that reported no precipitation that day, thank you.

### **No full gauges yet**

We've made it through half of 2011. There has been plenty of rain and some mighty big rains mostly across the northern states and the middle of the country -- but no real whoppers. Every year since CoCoRaHS spread east of the Rockies, we've had one or more days where some part of the country received 11" or more of rain in one day. So far this year we've had many reports of 3 to 4" of rain in a day, a few in the 5 to 6" range and a very small number of 7-8"ers, but nothing close to filling the gauge to the top. Our CoCoRaHS gauges can hold about 11.30" and any additional rain simply overflows and is not measured. Remember, the calibrated inner cylinder only holds 1.00" but the large overflow cylinder holds an additional 10.30".

Chances are that in the next 3-4 months there will be a few of these gully washers somewhere in the country. The best chances for these mighty rains are in the humid Gulf Coast region. But most states have had rains of this magnitude sometime in the past. We can identify close to a dozen storms that have occurred in Colorado that have likely dropped over 11" of rain in a day -- and the consequences were dire with almost

every one. Nationally, the biggest rains typically come from tropical storms or from a slow moving or training thunderstorm system.

No matter where you live in the country, 11" of rain in a day is a problem and possibly a disaster. So if you get this kind of a rain, do your best to get a good measurement. Most storms have a few breaks in them, so if you have a chance, it's a good idea to go out and check and empty your gauge whenever it's getting to be at least half full in the outer tube. That way there will then be more room to catch additional rain.

If you haven't had a monster rainstorm, it's good to know that our gauges are really heavy and hard to manage when they have more than about 4" of rain in them. So I strongly suggest learning to make a first estimate of what's in the gauge before you start trying to carry or pour it. That way, if you happen to have an accident with the gauge, you'll still have a good approximation. Also, if you find your gauge to be half or more full, it's a good idea to take a photo of the gauge to confirm the amount. Then begin your measurement. First remove the inner cylinder with its 1.00" contents. Sometimes it fills slightly more before it spills out -- 1.01" or even 1.02" is possible before it overflows into the 4" diameter outer cylinder. Make note of that exact amount. Then, before you do battle with the big outer tube, first get a good approximation of the depth of water in that tube. Hold up a ruler or your inner cylinder and measure the depth of the water in the big tube. Unlike the inner cylinder that magnifies the rainfall for more precise readings, the outer tube is just a straight one to one relationship with rainfall. So if you have the inner tube removed and there is 4" of water in the large tube, that would be an additional 4" of rain. So add that to your 1.00" to get your total amount. Write it down so you won't forget. Back when we had our big flood here in Fort Collins in 1997 when some parts of town got over a foot of rain, it was amazing how many people were measuring and then forgot to write it down and couldn't remember the exact amount. Refer to our CoCoRaHS training slide show for step-by-step instructions. You can click to that on the right hand side of our homepage <http://www.cocorahs.org>.

To get a more exact reading from your gauge you will need to patiently pour water from the outer cylinder into the calibrated inner cylinder in several increments. It is best not to pour all the way to the top of the inner tube just to avoid the chance of spilling. Write down and add up all the increments. You can often estimate to within about 0.20" of the true amount -- and that may come in handy since there have been several examples of gauges dropped and spilled before the measurement was completed. That also speaks to the advantage of having a home automated tipping bucket rain gauge. They are convenient and they

don't fill up and overflow (except when it snows :-). It is interesting to see that in most cases our CoCoRaHS gauges report more rainfall than the automated gauges in very heavy storms -- and often the differences are very large. In most cases, the manual CoCoRaHS gauge will give a more reliable storm total, but it's fascinating to use the automated gauges to track the timing and intensity of the rainfall.

### **Enjoy summer**

It may be hot and it may be humid -- but it's summer so make the best of it. Thanks for continuing to be a part of CoCoRaHS.

Sincerely,

*Nolan Doesken*  
Colorado State University