

# The Catch

## COCORAHS -- OUR WEATHER IS LOOKING UP!

FORT COLLINS, CO — Thursday, May 10, 2012

Good evening, CoCoRaHS volunteers, friends and family,

Fourteen years ago, CoCoRaHS (the Community Collaborative Rain, Hail and Snow network) was just getting organized. Three local high school students, all with totally different interests and talents, helped publicize the new rain gauge network, recruit and train a few dozen volunteers, and develop a functional website where precipitation data could be collected, shared and viewed. We had no idea then that CoCoRaHS would still exist now -- 14 years later. Furthermore we never dreamed that rain gauges would now be flung from the Pacific Ocean to the Atlantic and the Gulf of Mexico to Canada. Our goal then was simply to have enough volunteers spread across our own community (Fort Collins, Colorado) so that we could track the local variations in rainfall and not be caught off guard again by another intense local storm like the one that had dropped 14" of rain from one storm system the previous summer (July 28, 1997).

Here we are 14 years later with thousands of volunteers -- and at least a dozen more signing up every day. Welcome to all of you who are getting your first e-mail from me. We're all glad to have you on the CoCoRaHS rain gauge team. We hope you can get your rain gauge installed and start reporting your rain amounts soon.

### **ET what?**

Tonight, I have some interesting news to share. For 14 years we have focused our efforts on measuring rain (plus frozen forms of precipitation). Today we are launching the measurement of the "up side" of the water cycle -- evaporation and transpiration (known together as "Evapotranspiration" -- ET for short. That is the water changing from liquid to gas and going back up into the atmosphere. ET is largely invisible and often overlooked, but anyone involved in meteorology,

hydrology, agriculture and related fields knows just how important ET is. Here in Fort Collins for every 10" of rain that falls, about 90% of that moisture returns back to the atmosphere as evapotranspiration. But that ratio varies a lot from place to place across our country. Here our rivers and streams are small and far apart -- since not much of our precipitation becomes "runoff". But in other parts of the country rivers are much larger and streams are numerous. That's a sure sign that a lower fraction of the precipitation is evaporating and more is running off into rivers and streams.

We know that ET varies from place to place across the country -- not as much as precipitation, but still a lot. ET rates tend to be low in areas that are cool and humid, but very high in places that are hot and dry (assuming there is any water there to evaporate or transpire). For example, a yard of turf grass growing in west Texas will require much more water to stay green and growing than a similar yard of turf grass in upstate New York. ET also varies from day to day as weather changes -- with more ET on dry, hot, sunny and windy days and much less ET on cool, cloudy, humid and calm days. In other words, sunshine, temperature, humidity and wind speed all influence the rate of evapotranspiration.

### **Opportunity to help measure and report reference Evapotranspiration (ET<sub>r</sub>)**

There is a small company down the road from us near Loveland that has been making an attractive instrument that looks a bit like a rain gauge. It's called an atmometer -- or ET gauge. It works like a rain gauge in reverse. You fill it with distilled water and you prime the tube and ceramic head. Then, each day, the level in the gauge goes down as it draws water through a porous cloth (like a leaf). It approximates the use of water by a crop of alfalfa that has adequate soil moisture -- so technically we are measuring "alfalfa reference evapotranspiration".

We've been testing this instrument at our weather station for three years now. We have found it to perform quite reliably. It's extremely interesting to watch the water cycle in action using the combination of a rain gauge and an ET gauge. It is also satisfying to have something to measure even on dry sunny days (actually, especially on dry sunny days). So this adds some excitement to the many days when there is nothing in our rain gauge.

Last year we found over a dozen people in various states from New England to Arizona to help test the gauge. We developed a data entry

system on the CoCoRaHS website to enter the ETgage levels. Then we developed data reports to show the data and summarize the results. A few of you noticed these new reports that showed up under your "View Data" tab and have been asking about them.

Almost all the bugs have been worked out of the system. Starting today, registered members of CoCoRaHS anywhere in the county can now be a part of the ET measurement team.

### **Some cautions!**

Before you get too excited about this I must warn you about a few things.

1) The instrument is expensive -- about \$212 plus shipping. And even at that price, it still requires manual measurement. The ceramic head, wafer and fabric cover (which simulate water use by plants) cost more than \$75 to replace if damaged. In other words, most of us won't be willing or able to afford this instrument -- and that's perfectly OK.

2) The instrument isn't complicated, but it does require care and commitment. Also, the ET readings are affected by surrounding vegetation so it's important that each instrument be placed in a nice, open area -- installed 39" above the grass for optimum performance and comparability.

3) Reference Evapotranspiration does not vary as much from place to place and day to day as precipitation. Therefore, we don't need nearly as many stations to get a realistic view of ET variations across the country. That's good because of #1 and #2 above :-)

4) You have to check in with us before you can start reporting. Contact Zach at [info@cocorahs.org](mailto:info@cocorahs.org) if you intend to become an ET<sub>r</sub> reporter.

Despite these obstacles, we're still hoping that we can find a few observers in each state across the entire country so we can begin measuring, mapping and comparing ET -- and tracking the "up side" of the water cycle as well as the "down side" -- precipitation.

One way this could work is by finding motivated sponsors -- perhaps local Conservation Districts, Water and Sanitation Districts, City Parks, Storm Water utilities, agricultural businesses, etc. -- who may need local ET information and be willing to purchase instruments for a few volunteers in their area.

Are you interested in taking measurements or sponsoring some instruments?

If you would like to help measure reference evapotranspiration in your area please consider the qualifications and costs. Then, if you think it might be possible, please contact us at [info@cocorahs.org](mailto:info@cocorahs.org)

### **Are you interested in learning about ET?**

Here is our new resource page about ET:  
<http://www.cocorahs.org/Content.aspx?page=et>

There is a link there to the excellent instructional guide on how to measure ET (reference).

You certainly don't need to take measurements to benefit from CoCoRaHS ET. All our data are free and public. Just click on "View Data" on the top menu bar of the CoCoRaHS website [www.cocorahs.org](http://www.cocorahs.org) and you'll see "ET Reports" on the left hand menu 6 items down. As of this evening (May 9) I see that 77 daily ET reports have been submitted so far this month. That means that some of our testers from last year are still actively collecting data. Hurray!!! You'll also see "Water Balance summary" where you can compare the amount of precipitation to the amount of reference ET for any station that is measuring both elements.

Thanks for taking the time to read about ET today. Hopefully in a few months we'll have a nice batch of water balance data to analyze.

### **Hail, Hail and Hail**

Just a quick heads up that next week will be "CoCoRaHS Hail Week" with daily reminders on how to measure and report hail.

<http://www.cocorahs.org/Content.aspx?page=mod&mod=1>

There is often confusion about this, but please remember that you don't need to have a hail pad installed in order to report hail. If you see hail, please report it using the CoCoRaHS hail report forms. These reports all go directly and immediately to your local National Weather Service Office and then they appear promptly on our CoCoRaHS hail maps.

<http://www.cocorahs.org/Maps/ViewMap.aspx?state=usa>

Today about a dozen hail reports were submitted -- from as far east as western New York State and as far west as southern Arizona. Thanks to you observers who reported hail today.

Regardless of the size or severity, if you see hail please report it.

### **Update on Angel**

Many of you wrote to ask about Angel -- our aging Great Pyrenees. I am pleased to report that Angel is still with us and has regained just a bit of mobility. Thanks for all the suggestions on how to help a lame dog enjoy her later months and years. I just wish these years would pass more slowly. Meanwhile, our young Australian Shepherds continue to give us a run for our money with boundless energy and mischievousness -- every day.

Wow, were we grateful for the rains that came Sunday night -- totaled 0.66" While that may not sound like much it is more than we had seen in many months and was enough to finally get the grass to turn green. Rain is in the forecast again for Friday night here. Let's hope. And down in Texas, another round of rain is expected for a lot of the state. Last year's drought continues to erode away -- thankfully.

### **We're close to 10,000**

With many new volunteers setting up rain gauges now, it's almost a certainty that we will very soon reach 10,000 daily CoCoRaHS rainfall reports per day. We still haven't made it, but in April 2012 we surpassed 9000 reports on 25 out of 30 days. On April 16, we're up to 9910 reports. So we are so very close! Remember, all of our measurements help -- even the measurement of ZERO. When we hit 10,000 I'll let you know.

### **One last thing**

The lightning webinar last week was fascinating. It is available for viewing at your convenience at:

[http://www.youtube.com/watch?v=Ek\\_PXi2j8Is&list=PLDDC91E3A979406CE&index=6&feature=plpp\\_video](http://www.youtube.com/watch?v=Ek_PXi2j8Is&list=PLDDC91E3A979406CE&index=6&feature=plpp_video)

Our next live webinar will be a timely one about hurricanes -- coinciding

with the start of the 2012 hurricane season. This will be held on Thursday evening, June 14th. If you want to reserve a place for this webinar, click here:

<https://www3.gotomeeting.com/register/376658398>

Well wishes, and thanks

Nolan Doesken  
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