

# The Catch

## **COCORAHS – WHAT NOW, AND WHAT NEXT?**

FORT COLLINS, CO — Tuesday, December 30, 2008

Good CoCoRaHS morning, sort of:

It's way too early (3:30 AM), but I gave up trying to sleep. The roar of the wind is just too much. The animals are crazy nervous. Our internet service is out and now the power just went out, too. This is a Chinook wind -- supposedly interpreted from Native American language as "snow eater" - strong westerly winds aloft racing downward on the lee (east) side of the mountains and warming the air by compression. Within a matter of hours the winds have removed most of the remaining snow on the ground. We welcome these winds as they bring surprising warmth in winter and a break from harsher winter temperatures. Temperatures shot up almost 30 degrees last night to the upper 50s just before midnight. But this roar is ridiculous. If only it could be warm and quiet.

### **Heroics in the snow, ice and high water**

The last few weeks have brought raucous winter weather to much of the country. Even our CoCoRaHS volunteers in Las Vegas, NM and Galveston, TX got their chance to measure and report snow. We had dozens of volunteers in the Midwest with multi-day power outages after ice storms. And the Pacific Northwest - Wow, what a Christmas holiday--beautiful mess of deep snow, ice and impossible driving conditions. The blizzard across the northern Plains and upper Midwest earlier in December was also memorable. Our strong winds this morning are bad enough, but the Dakotas and eastern Montana had comparable winds with temperatures well below zero -- and also some power outages. Ouch!!

In the last few days, rains, dense fog and strong warm winds have melted huge amounts of snow both in the coastal areas of the Pacific Northwest but also across northern Illinois, Iowa, Indiana and parts of Wisconsin,

Michigan and New York. As a result, winter flooding has been observed in many areas, and flood watches and warnings have been numerous.

### **Remember, your reports really help!**

The recent round of flooding points out just how important our reports can be. Your regular daily reports with comments are great. But also remember that you can use the "Intense Precipitation Report" to report any weather conditions of immediate concern at any time of the day or night.

<http://www.cocorahs.org/Admin/MyDataEntry/IntensePrecipReport.aspx>

Your routine daily precipitation reports are used to track and map local, regional and national precipitation patterns, but your "Intense Precipitation Reports" and "Hail Reports" go instantly to your local National Weather Service office to help forecasters update local forecasts and also to issue and verify severe weather warnings. It doesn't have to be raining/snowing to submit an "Intense Precipitation" report. Maybe we should change the name of this report to "Significant weather report". But use it whenever you need to report troublesome weather.

All CoCoRaHS volunteers are also welcome and encouraged to become trained weather spotters for the National Weather Service. Go to [www.weather.gov](http://www.weather.gov) <<http://www.weather.gov/>> and click on your location on the national map. You will find information on upcoming severe weather training classes in your area.

### **Changes to the CoCoRaHS website**

We recently made two significant changes to the CoCoRaHS website that you may have noticed.

1) In response to requests from many volunteers, we upgraded the "Daily Comments Reports" so that you can now search, view and export daily comments for any range of dates for an individual stations, all stations in a county, all stations in a state, or even the entire country.

<http://www.cocorahs.org/ViewData/ListDailyComments.aspx>

We really appreciate the comments. They add so much to the value of your observations. Now it will be easier to access and view them.

2) Default snowfall. Up until now, the snowfall (new snow) defaulted to 0.0 on the "Daily precipitation" entry from. We did this to try to simplify your reports since it is usually not snowing. But on the urging of some of you, we changed that default to NA (which means "not available"). We made this change because some volunteers don't feel comfortable or don't choose to measure and report snow but were leaving the 0.0 default in their reports. This made our snowfall maps very confusing and difficult to analyze with many false zeros dotting the maps in the middle of snowy areas.

But now we need your help. If you had rain or freezing rain but no snow to report, the computer no longer inserts a 0.0" for your daily snowfall total. So if you want us to know FOR SURE that it did not snow at your location, then please type over the NA and insert a 0.0" This is especially important if you are close to the rain-snow line. If you had precipitation but no snow, please type in 0.0" for your new snow amount. If you report 0.00 precipitation the computer automatically inserts 0.0" snowfall.

We also greatly appreciate those of you who make the extra effort to report your total depth of snow on the ground and the water content of that snow. That is really important information for engineering and water resources applications. Check out our CoCoRaHS snowdepth maps at:

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

### **Weighing snow!**

While we're on the topic of snow, I promised you several weeks ago information on how to weigh snow instead of melting it. Weighing snow to get its water content is much quicker and easier than going through the sloppy, time consuming ordeal of melting snow and pouring the water from the large tube to the inner cylinder. This is especially true for deep or high water content snow that melts slowly and needs lots of warm water to hasten the snowmelt. But you do need a good scale to make this work.

Over the Christmas holiday I got my hands on a good quality kitchen scale and did a whole lot of test measurements. It made me feel like a kid again. Sure enough, it works great. I found a good scale with a weight capacity of 4 Kilograms (about 9 pounds) and a resolution of 0.1 grams. Even if the scale is only accurate to the nearest gram, you should still be able to use it.

Because this message is already too long, I am going to send a separate

message with step by step instructions. What I found was that every 0.01" of rain in our 4"-diameter gauge weighs just slightly over 2 gm. For all practical purposes, 0.01" of rain equals 2 gm. So you need to know how much the outer cylinder weighs empty -- about 463 grams (and may vary slightly gauge to gauge and scales to scales. You weigh the outer cylinder and its snow content, subtract off the dry weight and get the difference in grams. For example, if the total weight was 533 grams and the dry weight of the large tube 463 that gives you 70 grams of water content. Divide 70 grams by 2 grams per 0.01" and you end up with 0.35".

Beware that low cost scales may not all read identically, so each of us should do our own calibrations. But I really like this idea and will give you more information soon, including some suggested manufacturers for scales.

### **Training Slide Shows**

Remember, we have training instructions on our website. We have recently posted a new training slide show specific to snow. We will also create one for weighing snow and for measuring hail. Here is the link. Let me know if you have suggestions on how to make these training materials better.

[http://www.cocorahs.org/Content.aspx?page=training\\_slideshows](http://www.cocorahs.org/Content.aspx?page=training_slideshows)

### **Water Year Summary, and other CoCoRaHS data analysis**

We have another new addition to our website. It's our "Data Analysis" section <http://www.cocorahs.org/Content.aspx?page=dataanalysis>

In the future, we hope to regularly post new data analysis products to show how CoCoRaHS data are being used.

Our first "Analysis" is the 2008 Water Year summary. This has been a long time coming. In all, 11,541 CoCoRaHS stations reported at last once during the 2008 water year (October 1, 2007 - September 30, 2008). Out of that large number, we found a total of 571 stations that measured and reported every single day from a total of 23 states. Hundreds more stations had complete precipitation totals for the year even though some days were missed and some multi-day accumulations were reported.

While the number of reporting stations is modest, the range of precipitation was impressive. For example, here in Colorado our driest

location totaled 7.51" for the water year, while the wettest site (near Crested Butte) totaled 43.67" (with an impressive 524.5" of snow). In Wyoming, their driest station had 5.60" and a station near Las Vegas, Nevada reported only 2.15" for the entire year (Thanks for reporting all those zeros!!!). Meanwhile, in Indiana (where they had a very wet year) all stations with complete data had at least 41" of precipitation for the year, with a maximum of 64.67" at a station in Hendricks County just south of Indianapolis.

The largest water year precipitation total from the stations with complete data was 74.75" at Putnam County in north central Missouri. That is double their long term average and a very, very wet year for that part of the country.

Thanks to all of you who compiled your water year statistics for 2008!! As more states continue to join CoCoRaHS, our map should have many more data points next year when we summarize the 2009 water year,

Our next analysis is a study of the frequency of precipitation amounts by reporting increment. That will make more sense when I show you a graph. We have taken all the daily precipitation reports for different seasons of the year to see what the range and number of occurrences have been. Not surprisingly, small precipitation amounts occur most often with 0.01" and 0.02" being by far the most frequent daily precipitation amounts. It has been interesting to note that although our gauge for CoCoRaHS is divided into equal one-hundredth inch increments, that we seem to have a preference to only report certain increments -- especially when the rainfall amounts are 1.00" or greater. Why would this be? We'll pose some theories, and we will be posting this next CoCoRaHS analysis soon. Thanks to Zach Schwalbe, our CoCoRaHS "station administrator" for digging into the data and preparing these results.

### **Six egg day!**

Like many of you, I collect more than just weather data. I also keep track of our hens and their egg laying. Yesterday was a 6-egg day -- very good for mid winter. Despite the short days, long nights, high winds and the recent cold temperatures, our chickens are still laying eggs left and right. But actually, for some reason they prefer laying left. Out of a choice of 4 laying boxes, about 80% of all eggs from our chicken coop are laid in the leftmost (most southerly) box and most of the other 20% are laid in the second from the left. While the hens spend time in the other two boxes, they hardly ever lay eggs there. I don't have an explanation.

We ate our last garden tomato about 2 weeks ago. We picked many green ones right before frost (at midnight, to be precise) and let them ripen indoors. The last ones were marginal in terms of flavor and texture, but they still were red and tomato-like. Now the seed catalogs are showing up in the mailbox everyday. In only 10 weeks we can start planting our 2009 garden.

## **Funds and other such matters**

2009 will be an interesting year for us -- the year where we become financially self-sufficient. Based on economics, I would say our timing is not so good. But hopefully with creativity and good work we will keep this project that we call CoCoRaHS (Community Collaborative Rain, Hail and Snow network) rolling and growing.

For those who have made donations to CoCoRaHS in 2008, we are most grateful. You can still make a donation today and tomorrow (Dec. 31) that will be tax deductible on your 2008 income taxes. These are challenging times for most of us, but your help does make a difference.

<http://www.cocorahs.org/Content.aspx?page=donate>

This is a secure site operated by our university's Foundation so you should be able to trust it.

If you know of organizations in your state and county (utilities, agencies, businesses, etc) that are or should be using CoCoRaHS data in their operations and planning, let us know. We have a list of potential CoCoRaHS supporters who we will be contacting this year to help broaden our support base.

## **New CoCoRaHS states**

Idaho officially joins the CoCoRaHS team on January 1, 2009. And next is Ohio on February 1. At last I can start bugging my nieces, nephews, sister, cousins, second cousins, etc. etc. all over the state of Ohio. I can just about start a network with relatives -- if I can be meteorologically persuasive.

## **Signing off for 2008**

It's been quite a year -- highs and lows, joys and sorrows, storms and calm, heat and cold -- I guess this is what we call life. It is a pleasure to work with all of you and I hope we can continue together in 2009. The power is still out and my computer battery is running low, so I will close for now and send this message later when the power comes back on.

Best wishes for 2009!!!

*Nolan*

P.S. The power came back on before noon. Our anemometer showed a peak wind gust this morning of 77 mph right when our power went out. But now the windstorm has ended and the temperature has dropped 25 degrees. The next "High Wind Watch" has been issued for New Year's eve. That will be fun for the fireworks :-)