The Catch

MIDWEST SNOW FOR COCORAHS—AND DIRTY SNOW MELTS QUICKER

FORT COLLINS, CO — Thursday, February 15, 2007

Greetings CoCoRaHS participants and friends,

We've had disk failures and mail server problems here. I've been trying to send messages—but no luck. We think we have it fixed now—now that a few more big storms have passed. But let's try again. As the big storm took aim on the Midwest, I wanted to get a "snow measurement" reminder out to all of our new observers who haven't had much snow measurement practice yet. Oh well. You've had some experience now. From the looks of some of the pictures some of you sent, several of you in Illinois and Indiana just survived a true blizzard as good as any you might find in the Dakotas.

Although some of the message below is now out of date, I'll go ahead and send it. Also, welcome to all of you who have just joined CoCoRaHS. We continue to get dozens of new applications every week and we're delighted you've joined the CoCoRaHS network. It's never too late to get started. Get a range gauge and be ready for the next storm. Remember, if you have any questions and you can't find the answer on our website instructions, just let us know. Also, remember that we really appreciate when you take the time to enter 0.00 on the days it doesn't rain or snow. For our studies, it is just as important to know that it didn't precipitate than to know that it did.

—beginning of message that was sent a few days ago—unsuccessfully

Hopefully, those of you in the Midwest have your rain gauges in place, funnels and inner tubes removed and have polished up on the "Instructions for Measuring Snow". You've had quite a bout of cold weather, and now this snow will be great icing on the cake—provided, of course, that you like snow. Remember that under strong wind conditions our gauges do not catch all the snow that falls, so be prepared to take core samples of snow on the ground—if you can find a representative "average". I look forward to seeing lots of good reports in the next couple of days.

Here's an even older message I sent last week—hopefully it will go this time.

Dirt on Snow makes it Go

Almost all of us have now gotten to see and measure some snow or ice. It's beautiful but it definitely slows things down.

Last year about this time a major desert dust storm over the Southwest U.S. sent a cloud of dust to the northeast and deposited a layer of colored dust over portions of Colorado. Several of you helped with the special research project that quickly followed that event. Findings will be forthcoming, but it was very obvious right away that dust-covered snow melted much quicker than cleaner whiter snow. There has not been a major dust storm this winter, but with so much snow on the ground over eastern Colorado we have had many days to look at the snow and be amazed at the complex melting patterns. Anywhere that the snow is covered by dark-colored dust and dirt, the snow is melting quickly. Even tiny particles of dust and dirt absorb more solar energy and heat up, helping to melt the adjacent snow. Nearby white patches have hardly melted at all, even with today's 50 degree weather, since the whiter surface reflects more of the incoming energy and stays much colder.

When it comes to science, the weather provides learning opportunities every day, so keep your eyes open for new discoveries. Watching snow melt doesn't sound all that exciting, but it can be a fascinating learning opportunity—if you are so inclined. (Note—as of today 2/12/07 our official weather station in Fort Collins has had continuous snow cover of 5" or great for 55 days. It's melted fast this last week, but cold air is back again, so we'll keep out streak going a bit longer. (Come on, mountain folks, no laughing! This may be nothing for you, but it's a big deal for us.)

What else does snow do? It's a dandy blanket.

One of our scientists here at the CSU Dept. of Atmospheric Science gathered recent soil temperature data from our local weather stations and made some interesting graphs—tracking how soil temperatures change with time as a function of snow depth. What we have always known, but his graphs show very well, is that as soon as the ground is covered with fresh snow, the temperatures down below stabilize. In fact, the temperatures usually stay above freezing if the snow is deep enough.

If you are curious about how snow affects the temperature of the soil, I encourage you to take a look at the following link. The graphs tell a very clear story. Snow is an insulator!

http://einstein.atmos.colostate.edu/~mcnoldy/climo/soil_temps.html

Welcome to all beginners!!

In the past week, dozens more volunteers have signed up to join the Community Collaborative Rain, Hail and Snow Network. Most of you are from northern Illinois thanks to a short article in the Chicago Tribune. We're all glad you joined. Some of us have been doing this now for several years (and a few of us much longer than that), but many of us are just getting started. We hope you get your rain gauge set up soon, and start the "backyard adventure" of measuring and comparing precipitation. Much interesting weather lies ahead.

If you have any difficulty ordering a rain gauge, just let us know. A few of you wrote saying you ended up on eBay. That should not happen. Remember to use the link to WeatherYourWay.com on our website and use the "CoCo" username and "RaHS" password to get the discounted gauges.

Spring is Coming!

And it will be here sooner than you think. Darn, Ground Hog Day came and went and we forgot to have a party. But while the harshest winter weather of the season is lashing the north central U.S., the inevitable journey towards spring is already underway. We experienced substantial melting snow today—first time in a week—as the temperature shot up to 50 F. Another week of weather like this and we will be seeing much bare ground—and some glorious mud. But when I went out to measure the water content of a core sample of the old snow—guess what?! Where it is undisturbed (getting harder to find undisturbed snow) the snow was still over 10" deep and contained over 3" of water content. Little if any moisture has begun to soak down into the soil even 7 weeks after the big snow.

Be ready for changeable and potentially severe storms as spring approaches. Storms can get pretty wild, so be ready! Anything can happen. The last full year I lived in Illinois—1976—a huge tornado crashed through my home county—Champaign. I considered storm chasing, but all I owned at the time was my old Schwinn Corvette—not quite the right vehicle for the job. The tornado passed just a few miles south of me, but I was unable to see the tornado.

More observers needed!

Are we ever satisfied?? In the winter our precipitation patterns are a bit more uniform. However, the time is fast approaching (thunderstorm season) where it can literally rain more in your front yard than in the back. For the thunderstorm season it is ideal to have at least one volunteer per square mile to get a reasonable estimate of rainfall patterns in your community. We've added hundreds of new observers in recent weeks, but we need many more if we hope to be able to map and track precipitation from convective storms. So if you can

think of friends, schoolmates, co-workers—even relatives :-) who might like to help study storm patterns, please tell them about CoCoRaHS and encourage them to sign up before summer.

Wisconsin and Nevada next, Tennessee right behind.

Beginning on March 1, volunteers from Wisconsin and Nevada can begin signing up for CoCoRaHS. There has also been a huge surge of interest from Tennessee, so we will be starting there April 1.

Iowa, where there are as many rain gauges out on farm fences as there are people, may be our next state to join and South Dakota may be next. If you have weather-inclined family and friends in those states, let them know.

Climate Change

Unless you slept through the last 3 days, you probably heard that a very large team of scientists from all parts of the world just issued a report and a public statement that climate change is real, serious, and most likely (90% chance) a result of human activity and the burning of fossil fuels. CoCoRaHS could play a role (no, we're not the cause of "global warming" but our data could help scientists). While increases in temperature appear likely in the years ahead, what is happening with all-important precipitation is much harder to predict. Precipitation can vary so much already, that it is difficult to detect systematic changes. Our measurements of precipitation in the coming months and seasons, combined with data from long-term monitoring networks, will help monitor variations and extremes in local precipitation. Your measurements will help this research.

Six More Weeks

Hang on. Warm weather approaches (I know that may be hard to believe). If you can make it to February 15th, it usually starts warming up after than. Unless you are one of our two hundred mountain weather observers where winter seems to never end, in a few more weeks you will be able to put the funnel and inner tube back in your gauge and get back to the basic and straightforward measurement of rain. We realize that measuring snow and ice is not easy, and we appreciate all of you who have been braving cold, dark and stormy winter mornings just so you can send in your CoCoRaHS precipitation report. Your neighbors and fellow family members may questions your sanity, but you all rank very high on our list of favorite people.

Have a fine February—if you possibly can.

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P.S. Thanks for coming to the Farm Show. We had a nice turnout last week.
(that was now several weeks ago—sorry about that)