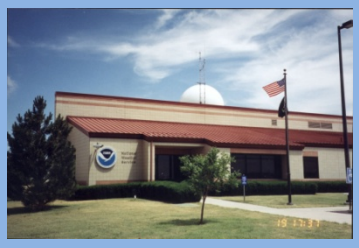

High Plains WIND

(Weather Information News Data)

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National Weather Service, 920 Armory Road, Goodland, KS 67735
http://www.weather.gov/gld/ w-gld.webmaster@noaa.gov 785-899-7119

Inside This Issue

1 MICs Message

2 CoCoRaHS – The Art of Measuring Snow

3 Winter Weather Car Survival Kit

4 What is the weather story?

5 White Christmas?

6 Cooperative Observer News

"Amateur radio operators (hams) provide real time weather data during the year."

A Message from the Meteorologist-in-Charge

By Scott A. Mentzer

The mission of the National Weather Service (NWS) is to: 1) protect lives and property, and 2) to enhance the national economy. Our agency is fortunate to have many volunteers to help us to achieve this mission. Cooperative observers, CoCoRaHS observers, and severe weather spotters all volunteer their time to provide the NWS with important weather data.

Figure 1 - K0FJ, KC0WJT, KC0GLA, and KC0ZSM preparing equipment.

Another group of volunteers has an excellent working relationship with the NWS. Amateur radio operators ("hams") provide real time weather data during the year. Hams participate in a program known as SKYWARN. To become SKYWARN volunteers, hams receive training in storm identification and emergency communication. During significant events hams report weather conditions to the NWS via radio. SKYWARN reports were critical during last year's blizzards and the April 23, 2007, tornado outbreak.

Please see *MICs Message* on page 10

CoCoRaHS – The Art of Measuring Snow

By Kelly James, Meteorologist Intern

"If you haven't removed your funnel and inner tube from your CoCoRaHS rain gauge you should do so immediately."

The colder temperatures, shorter days, and the white stuff falling from the sky can only mean one thing- it's snow measuring season! Yes, it snuck up on us quite fast this year and it will be around awhile, so it might be good to brush up on your snow measuring techniques.

If you haven't removed your funnel and inner tube from your CoCoRaHS rain gauge you should do so immediately. While the funnel and inner tube are great for measuring rainfall, they are not so good for snow. Snow tends to clog the funnel and gives a false reading.

There are several different types of measurements you can make when it comes to snow:

- New snowfall accumulation
- Water equivalent of new snowfall
- Total depth of snow and ice on the ground.

Let's begin by measuring new snowfall. Snowfall is the accumulation of new snow and ice occurring in the past 24 hours prior to melting or settling. You will need a ruler for this, and it is best to measure snowfall on a snowboard if you have one. A good idea is to put a flag or some sort of marker in your yard so you can find your snowboard easily. Another option is to use a picnic table or any other flat surface that is in a fairly open location. Whatever surface you use don't forget to brush it off after you've measured the snow so you can use it for the next snowfall measurement. New snowfall accumulation should be measured to the nearest 0.1".

Continued on page 3

Now it's time to measure the liquid water content of the new snow. When snow accumulates in your gauge outside, bring it inside to take your measurement. If you're patient, you can wait and let the snow melt on its own, pour the liquid into the inner cylinder (which you store inside the house for the winter), read the amount to the nearest hundredth of an inch and you're done. If you're not that patient (like most of us), here is a way to speed up the process. Take your inner cylinder and fill it about a third of the way with warm water. Carefully note the amount of warm water you add to your inner cylinder, measuring it to the nearest hundredth of an inch. Now pour this warm water into your gauge containing the snow. Since you added warm water to the snow it shouldn't take long to melt. When all the snow has melted, pour all of the liquid back into the inner tube and measure to the nearest hundredth of an inch. But remember, this amount is the melted snow plus the water you added, so don't forget to subtract this amount back out. For example, if you initially added 0.50" of warm water to melt the snow, and you now measure a total of 0.79", you must subtract the 0.50" to end up with a total liquid equivalent of the new snow of 0.29 inches.

	Tube full 0.79
-	Water added 0.50

	Final reading 0.29

First, push the cylinder into the snow

Next, turn the cylinder in the snow

Finally, pull the cylinder out of the snow

Here on the High Plains it is common to have situations where the 4-inch gauge we use does not accurately sample the amount of new snowfall. This can be a problem, and often the amount of snow in our gauge is an underestimate of what has actually fallen. One way to get around this is to take a snow core sample. Try to find a location which is representative of the new snowfall, such as your snowboard or picnic table (remember that you clear these off after each snow fall, right?!) Use the illustrations to the right to help you get the idea. Turn your outer cylinder upside down and shove it into the snow, turn it back and forth a few times and remove the cylinder. The snow may not want to stick in the cylinder as you pull it out, and in this case you will want to place something under the bottom of the cylinder when you lift it off the ground (a fly swatter usually works well). You should now melt the snow in the cylinder by adding warm water like we just discussed. You can use either of these methods to obtain the water equivelant of new snowfall.

Our last measurement is the total depth of snow and ice on the ground...that occurring from previous snow events plus any that has fallen in the past 24 hours. Look for a representative location, so don't measure in a drift or in areas that have blown clear! If you're not sure, measure in three or four locations around your yard. Use a ruler and measure the total depth of snow and ice to the nearest half or whole inch.

Winter Weather Car Survival Kit

By David L. Floyd, Warning Coordination Meteorologist

With the holiday travel season upon us, now is a good time to put some thought into preparing a ***Winter Weather Car Survival Kit***. It just might come in handy should you or your family become stranded during a winter storm.

The first item to set aside for your winter weather car survival kit is a couple old blankets to help keep you warm if your vehicle gets stuck in a snow drift. You might also consider placing a stocking cap and extra set of gloves in your kit, which you will appreciate if you need to change a tire when the outside temperature is 15 degrees!

Another good item is a flashlight, and one or two extra sets of fresh batteries. If you've ever tried to change a tire after dark you'll know how valuable this item is. A flashlight will also come in handy if you need to signal someone for help. For a few extra dollars, consider a flashlight that doesn't require batteries, one that you shake for 30 seconds to get light.

Now add a bright red or orange cloth to use as a distress flag. This can be an old red T-shirt, a used shop rag, or some fabric you have in storage. During a winter storm when visibility is poor, a bright red shirt or rag tied to your car's antenna will alert law enforcement that you need assistance.

Okay, it's time to add a snow shovel to your kit. Chances are a shovel you use for gardening won't really be needed until spring and can serve you well in the trunk of your car in winter. A shovel can make the difference between remaining stranded for hours, or being able to continue on a journey. Some department stores even carry shovels where the handle can be collapsed to make for easier storage.

Something else to consider is something to use for traction, such as sand or cat litter. I carry a couple one gallon milk cartons filled with sand from my daughter's sandbox. Cat litter also works great. Place sand or litter under the wheels and the additional friction may be enough to help free your vehicle.

Now complete your kit by adding a small amount of non-perishable food in the event you become stranded for any length of time. Gather some food items which will not spoil such as granola bars, candy bars or beef jerky. Even small cans of fruit work well if you remember to get cans which have a pull top. Another item to pack is water. Just fill any type of jug or bottle with tap water. Another option is to pack a mug and simply collect snow for drinking water, but be careful if you go this route because the water from melted snow will be very cold and could actually lower your body temperature a bit.

Continued on page 5

So there you have it...your Winter Weather Car Survival Kit. Most of these items can be placed in a large plastic bucket or a duffle bag. Remember the old saying about an ounce of prevention...

Be safe this winter travel season, and remember to check the latest weather forecasts and road conditions before venturing out this winter at **weather.gov/goodland.**

Extreme Cold Temperatures

Frostbite:

- Causes freezing in deep layers of skin and tissue.
- Causes pale, waxy-white skin color.
- Makes the skin hard and numb.
- Usually affects fingers, hands, toes, feet, ears, and/or nose.

Hypothermia:

- Occurs when the body temperature drops below 95°F.
- Causes uncontrolled shivering, fatigue, or drowsiness.
- Causes the skin to become bluish and cool.
- Can cause slurred speech, clumsy movements, irritable, irrational, or confused behavior.

Don't forget to tune in to weather radio during the winter!
It can be a lifesaver the year round.

What is the weather story?

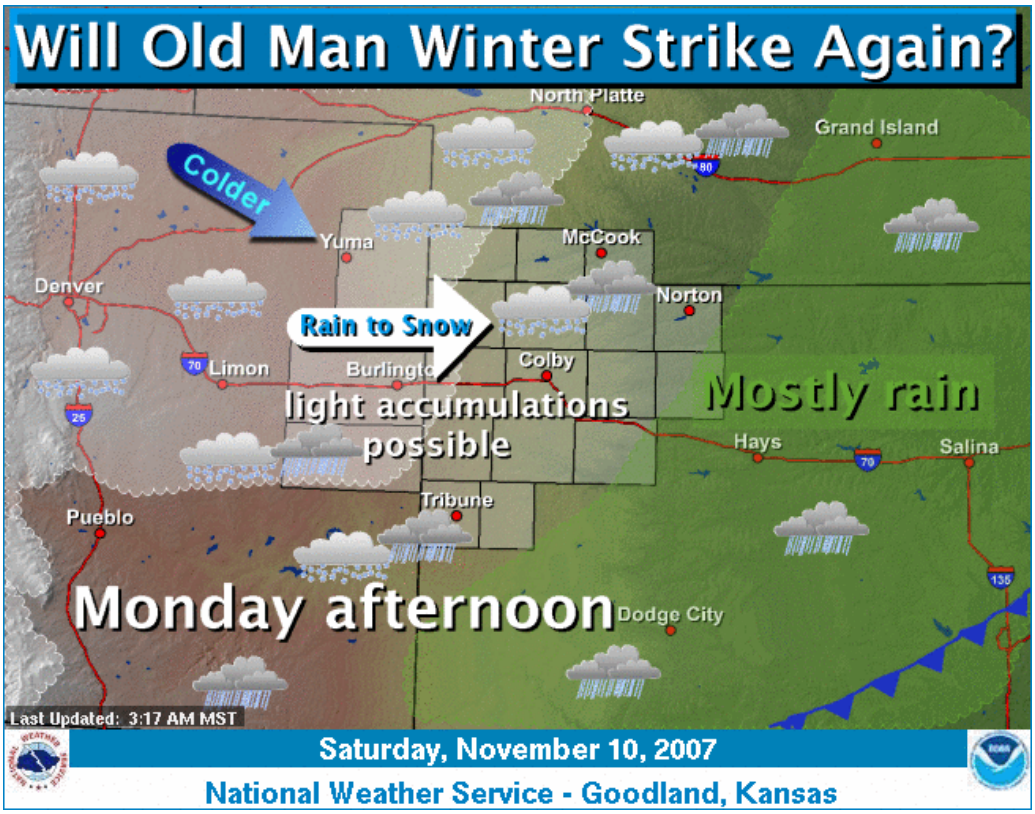
By Sarah Johnson, Meteorologist Intern

Perhaps you have noticed the "Weather Story" link on our home page located just above the watch/warning map on the NWS Goodland home page (http://www.weather.gov/goodland). This past spring, the National Weather Service in Goodland, along with all NWS forecast offices across the central U.S. began producing a graphical "Weather Story of the Day." This graphical product is produced every morning by 6 AM MT. The weather story focuses on the most important weather event for the Tri-state region occurring during the next 7 days. This may include winter storms, travel forecasts, fire danger, or ongoing hazardous weather. To link directly to the weather story, the URL is

http://www.crh.noaa.gov/wxstory.php?site=gld .

Questions?

We're as close as your email. Please write to us at:
w-gld.webmaster@noaa.gov
or
call us at 785-899-7119!

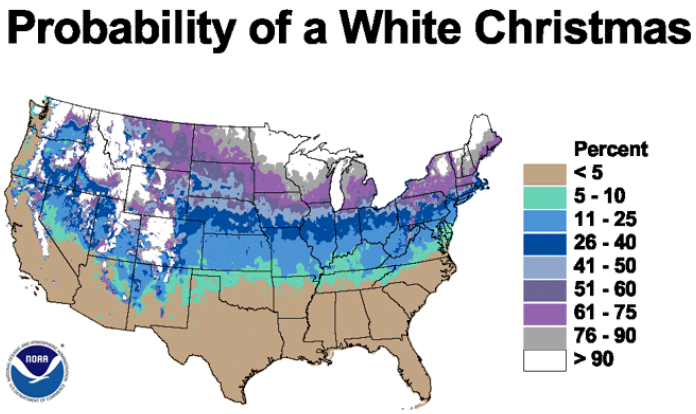


White Christmas?

By David L. Floyd, Warning Coordination Meteorologist

Each year as the holiday season approaches, the age old question arises: "Will we have a white Christmas?" Weather records for the Goodland area indicate that the odds are against having measurable snow occur on Christmas day, or having snow on the ground Christmas morning from a previous snowfall. However, a few recent Christmas Days have beaten those odds. On Christmas morning in 2004 there was 1" of snow on the ground, and in 2006 the ground was covered with 5" of snow. The map above shows the probability of a white Christmas nationwide.

Weather records for Goodland date back to the 1895, however, some parameters were not consistently reported until about 1910. Looking back through the records, the year with the most snow on the ground Christmas morning occurred in 1941, when a 13 inch snow depth was measured. In addition, almost four inches of new snow fell during the day. 1982 was also a big year for snow around the holidays, with 10 inches of snow reported on the ground Christmas morning.



Here is a list of the years having a white Christmas, defined by a snow depth measurement of 1 inch or greater in the morning:

13 inches: 1941
10 inches: 1982
8 inches: 1939
5 inches: 1997, 2006
4 inches: 1968, 1973
2 inches: 1983, 1985, 1998
1 inch: 1948, 1952, 1962, 1963, 1965, 1984, 2004

Continued on page 8

Here is a list of years having a white Christmas, defined by measurable snowfall of 0.1 inch or greater during the day:

3.9 inches: 1941
3.3 inches: 1939
1.3 inches: 1982
1.2 inches: 1966
1.2 inches: 1985
1.0 inches: 1930
0.4 inches: 1990
0.3 inches: 1997
0.1 inches: 2000

To put the weather records in perspective, the Goodland office has reported a snow depth of 1 inch or greater on Christmas morning in 17 of 94 years, or 18% of the time. During this same period of record, measurable snow falling on Christmas day itself occurred in 9 of 94 years, or 10% of the time. Combining those years when snow either fell Christmas day or snow was already present from a previous snowfall, the probability of a white Christmas is 21/94, or 22%, or about one in five.

To view the probabilities of a white Christmas for other locations across the country visit: http://lwf.ncdc.noaa.gov/oa/climate/extremes/christmas.html

If you are traveling through the Tri-state area this holiday season, drive safely, and don't forget to check for the latest National Weather Service forecasts, warnings and advisories on NOAA Weather Radio All-Hazards, or visit our web site at: weather.gov/goodland.

Cooperative Observer News

By Mike Lammers, Observation Program Leader

Meet Mike Lammers, OPL

I want to take this opportunity to introduce myself to everyone as the new Observation Program Leader at Goodland. My name is Mike Lammers and some of you may already know me as I have lived in Goodland for nine years and have been a forecaster meteorologist at the National Weather Service in Goodland until now. I look forward to working with each of you in the coming months and years as we continue to provide good sound weather data for others to use. I will be checking in with each of you from time to time to see how things are going. If you ever need help or run short of supplies do not hesitate to call on me. If any of your equipment malfunctions, please call or email me immediately so that we can get that repaired and start receiving your observations as soon as possible.

Just a reminder:

1. Measure and record the snowfall (snow and ice pellets) since the previous snowfall observation.
2. Determine the depth of the snow on the ground at your normal observation time.
3. Measure and record the water equivalent of snowfall since the previous day's observation.

As winds increase, your gauge may collect less precipitation than actually falls. The stronger the wind, and drier the snow, the less is captured in your gauge. If you notice less snow in your gauge than is accumulated on the ground, you should empty any existing snow in the cylinder, then use it to take a snow sample, or snow core. See Kelly's article on page 3 for all the details!

Are you interested in becoming an observer?

Cooperative observer volunteer demonstrate the following abilities:

1. Dedication to public service
2. Attention to detail
3. Ability to learn and perform daily duties
4. Willingness to allow NWS to place measuring instruments on your property
5. Willingness to allow at least one visit per year from a NWS representative.

Additionally, the following capabilities are useful but are not mandatory:

1. Ownership of a personal computer with modem and familiarity with its basic uses
2. Established internet access.

If you are interested in this important work, please give us a call at the number listed on page 11.

Continued from *MICs Message* on page 1

Figure 2 - Boy scouts learning about amateur radio from KC0ZSM during SKYWARN Recognition Day.

"In fact, I want to say how much I appreciate the efforts from all our volunteers."

Figure 1 - N5DBZ and KC0ZSF making a radio contact.

The NWS office in Goodland maintains several amateur radios to communicate with hams during the year. In fact, the NWS provides a special daily briefing for SKYWARN operators at 11 AM Mountain Time (noon Central Time). Even if you are not a ham, you can monitor the briefings in Sherman and Thomas counties on the following radio frequencies: 146.820 MHz or 147.030 MHz.

The NWS co-sponsors an event each year with the American Radio Relay League to highlight the importance of amateur radio volunteers to the NWS. This event, known as SKYWARN Recognition Day, allows NWS offices to show their appreciation to SKYWARN volunteers. For 24 hours, hams visit the local NWS office and operate radios to contact as many people across the country and the world as possible.

Amateur radio operators visited the Goodland NWS office on December 1, 2007, to participate in SKYWARN Recognition Day. The operators established temporary towers to mount antennas, brought additional radio equipment, and proceeded to contact over 700 other hams via radio. Contacts were made as far as Russia and Estonia.

The NWS office in Goodland says "thanks" to all the SKYWARN volunteers for all their efforts through the year. In fact, I want to say how much I appreciate the efforts from all of our volunteers. Without you, our job would be vastly more difficult. So, thanks to all of you who volunteer.

Finally, to all of our loyal readers of the High Plains Wind, have a safe and happy holiday season.

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If you have pictures or video to share of any of the severe weather events that have taken place over the last year, please contact ***david.l.floyd@noaa.gov***

With your permission, your pictures and video will provide information and training materials for future storm spotters and meteorologists!

The National Weather Service provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community. It is accomplished by providing warnings and forecasts of hazardous weather, including thunderstorms, flooding, hurricanes, tornadoes, winter weather, tsunamis, and climate events. The NWS is the sole United States OFFICIAL voice for issuing warnings during life-threatening weather situations.

Meet **Kelly**:

Watch your mailboxes for the next newsletter featuring one of our talented Meteorologist Interns, Kelly James!