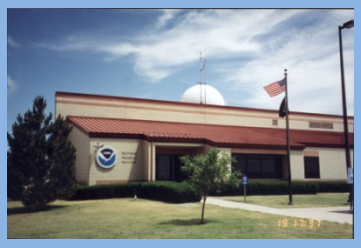

High Plains Wind

(Weather Information News Data)

October 8, 2008
Volume 2 Issue 4

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

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"What's the deal with global warming?"

A Message from the Meteorologist-in-Charge

By Scott A. Mentzer

Climate Change

Whenever I make a presentation to a group of students or a civic group, I am frequently asked one of these questions: "What's the deal with global warming?" or "Is the earth really warming?" or "What impacts will global warming have on weather and climate?"

I preface all my answers with the fact that I am not an expert on climate change. However, the United States Climate Change Science Program (CCSP) recently reported their findings which I thought are sound enough to share. The CCSP reached its conclusions based on a vast body of observations, modeling, and findings from previous assessments of the science including the highly regarded Intergovernmental Panel on Climate Change (IPCC).

Is global warming happening? The CCSP reached this conclusion: "Like global average temperatures, U.S. average temperatures increased during the 20th and into the 21st century, and the last decade is the warmest in more than a century of direct observations in the United States." Further, the CCSP concluded that "most of the recent global warming is very likely due to human-generated increases in greenhouse gas concentrations."

Continued on page 10

Measuring Snowfall Tips

for Cooperative Observers

By Christina Henderson, HMT

Each season before the first snows come, review these instructions for measuring snow. It is easy to forget what needs to be measured, especially in those parts of the country where snow falls infrequently.

- At the beginning of each snowfall/freezing season, remove the funnel and inner measuring tube of the eight-inch manual rain gauge to expose the 8-inch diameter overflow can so that it can more accurately catch frozen precipitation.
- Put your snowboard(s) out and mark their location with a flag or some other indicator so they can be found after a new snowfall. They should be located in the vicinity of your station in an open location (not under trees, obstructions, or on the north side of structures in the shadows).
- Check your gauge to make sure there are no leaks. If there are leaks, take appropriate action.
- Once your equipment has been readied for winter you are prepared for taking snowfall measurements.

Observers should determine three values when reporting solid precipitation. They are:

1. Measure and record the snowfall (**snow, ice pellets**) since the previous snowfall observation.

This measurement should be taken minimally once-a-day but can be taken up to four times a day, (every 6 hours) and should reflect the greatest accumulation of new snow observed (in inches and tenths, for example, 3.9 inches) since the last snowfall observation.

Snowfall amounts can be measured hourly or at any interval as long as the snow measurement board is NOT cleared more frequently than once every 6 hours.

Freezing rain (glaze ice) should never be reported as snowfall. This precipitation type is liquid precipitation and should be reported as such.

2. Determine the depth of snow on the ground at the normal observation time.

This observation is taken once-a-day at the scheduled time of observation with a measuring stick. It is taken by measuring the total depth of snow on exposed ground at a permanently-mounted snow stake or by taking the average of several depth readings at or near the normal

Continued on page 3

Continued from page 2

point of observation with a measuring stick. When using a measuring stick, make sure the stick is pushed vertically into the snow until the bottom of the stick rests on the ground. Do not mistake an ice layer or crusted snow as "ground". The measurement should reflect the average depth of snow, ice pellets, and glaze ice on the ground at your usual measurement site (not disturbed by human activities). Measurements from rooftops, paved areas, and the like should not be made.

Report snow depth to the nearest whole inch, rounding up when one-half inch increments are reached (example 0.4 inches gets reported as a trace (T), 3.5 inches gets reported as 4 inches). For example, if half the exposed ground is bare and half is covered with six inches of snow, the snow depth should be entered as the average of the two readings, or three inches.

3. Measure and record the water equivalent of snowfall since the previous day's observation.

This measurement is taken once-a-day at your specified time of observation. Melt the contents of your gauge (by bringing it inside your home or adding a measured amount of warm water) and then pour the liquid into the funnel and smaller inner measuring tube and measure the amount to the nearest .01 inch (use NWS provided measuring stick) just as you use for measuring rainfall. Do not measure the melted precipitation directly in the large 8-inch outer cylinder. Make sure the inner measuring tube can't fall over when pouring the liquid back into it. If the melted water equivalent (including any added warm water) exceeds two inches and cannot fit into the measuring tube all at one time, then empty the full measuring tube and pour the remaining liquid from the large 8-inch outer cylinder into the emptied measuring tube. Then, add and record the water equivalent of the multiple measurements.

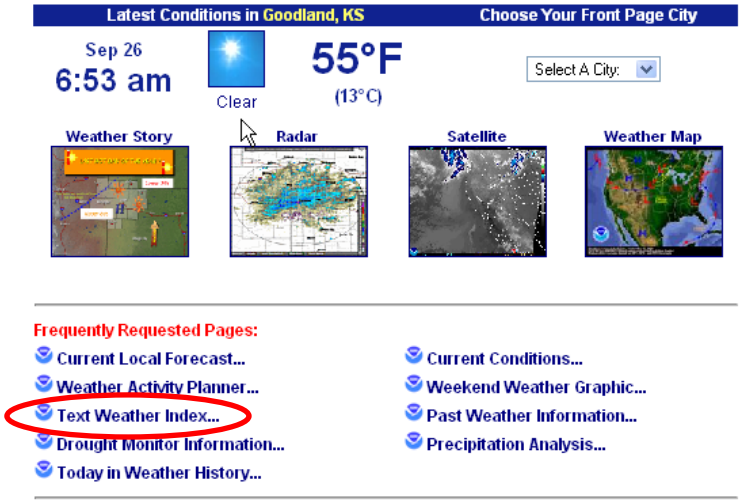
If you added warm water to the gauge to melt the snow, make sure you accurately measure the amount of warm water added before pouring it into the gauge. Then, when you take your liquid measurement, subtract the amount of warm water added from the total liquid measurement to get your final liquid water equivalent of the snowfall.
As winds increase, gauges collect less and less of the precipitation that actually falls. Generally speaking, the stronger the wind and the drier the snow, the less is captured in the gauge. If you notice that less snow is in the gauge than accumulated on the ground, you should first empty any existing snow from inside the 8-inch cylinder, then use it to take a snow sample, sometimes referred to as "take a core" or "cut a biscuit" from your snow board with the 8-inch overflow can. Melt the biscuit of snow, pour the liquid into the small measuring tube to measure the water equivalent.

Navigating the National Weather Service Web Page
A wealth of information at your finger tips!

Continued on page 5

Continued from page 4:

So much weather information…so little time! A tremendous amount of weather data can be found on the Internet, but trying to locate what you want quickly can be a challenge. Your "one stop shop" for all of Goodland's weather products can be found using the "Text Weather Index" link. It is located toward the bottom of the main page as shown below.



Clicking on this link will bring up a list of current products, arranged by product type, along with the time the product was last updated:

Current Observations/Climate Reports

Agricultural Observation (Soil Temp)	NO RECENT ITEMS
Daily Climate Report - Burlington, CO	2:47 AM CDT FRI SEP 26 2008
Daily Climate Product - Goodland, KS	2:47 AM CDT FRI SEP 26 2008
Daily Climate Report - Hill City, KS	2:48 AM CDT FRI SEP 26 2008
Daily Climate Report - McCook, NE	2:48 AM CDT FRI SEP 26 2008
Daily Coop Observer Report	8:46 AM CDT FRI SEP 26 2008
Local Coop Observer Report	11:00 AM CDT THU SEP 25 2008
Monthly Climate Product	5:26 PM CDT TUE SEP 02 2008
Monthly COOP Observer Precipitation	NO RECENT ITEMS
Regional Weather Roundup -TriState	8:08 AM CDT FRI SEP 26 2008
Regional Weather Roundup -Kansas	8:08 AM CDT FRI SEP 26 2008
Regional Temperature/Precipitation Table	7:16 AM CDT FRI SEP 26 2008
Supplemental Data Observation	NO RECENT ITEMS
Supplemental Climatological Data	6:50 AM CDT FRI SEP 26 2008
Preliminary Local Climatological Data -GLD	6:11 AM CDT TUE SEP 30 2008
Preliminary Local Climatological Data -HLC	6:11 AM CDT TUE SEP 30 2008
Preliminary Local Climatological Data -MCK	6:11 AM CDT TUE SEP 30 2008
Preliminary Local Climatological Data -ITR	6:11 AM CDT TUE SEP 30 2008

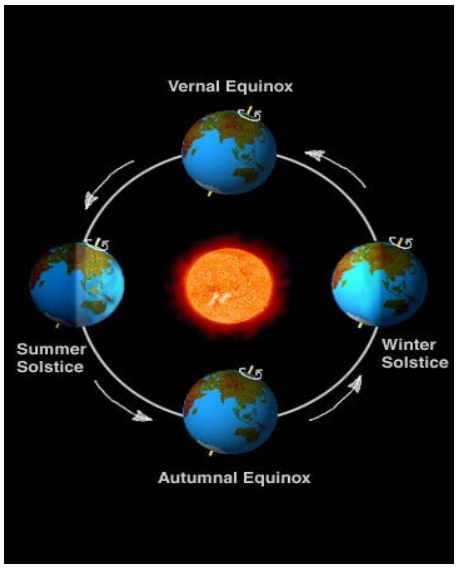
Forecast

Area Forecast Discussion	6:06 AM CDT FRI SEP 26 2008
Coded Cities Forecast	3:40 AM CDT FRI SEP 26 2008
Point Forecast Matrix	3:43 AM CDT FRI SEP 26 2008

Other product types not shown in this example include Hazardous Weather/Warnings, Flood/Hydrological, Aviation, Fire Weather and Miscellaneous. Check it out the next time your surfing the Web at http://weather.gov/gld

Ask a Meteorologist

I thought when the fall equinox occurs, day and night are supposed to be of equal length and exactly 12 hours long. But when I look at sunrise and sunset times this never seems to be true. Why is that?



Courtesy University Corporation for Atmospheric Research

Great question! Equinox literally means "equal night", and marks a time on the astronomical calendar when the center of the Sun crosses the Earth's equator during our planet's annual journey around the Sun. There are two reasons why the length of day is 5-10 minutes longer than 12 hours when the spring and fall equinoxes occur. First, the Sun is not a geometric point, but appears as a disk. Sunrise is defined as a time when the Sun's upper limb is first observed on the horizon, not when the center of the Sun is on the horizon. At sunset a similar situation occurs in that sunset occurs when the Sun's upper limb is last observed on the horizon. This effect adds several minutes to the length of day. Second, atmospheric refraction bends light rays such that the Sun's disk appears higher in the sky than it would if the earth had no atmosphere. In other words, when we obtain our very first glimpse of the sun in the morning, the sun's upper limb is actually still below the horizon. This effect adds another several minutes to the length of day. If the sun were actually a point in the sky, and the earth had no atmosphere, day and night would indeed be of equal length when the spring and fall equinoxes occur!

Dave Floyd, WCM

SKYWARN

The Eyes and Ears of the National Weather Service in the Field

SKYWARN is the program developed by the National Weather Service to recruit and train storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by indentifying and reporting potentially dangerous weather conditions. The SKYWARN program has become an invaluable link in the NWS warning process.

Despite all of the sophisticated technology used in a modern NWS office, forecasters still rely on storm spotters. Doppler radar may indicate that a storm may be producing large hail, damaging winds or strong rotation, but it cannot tell exactly what's happening on the ground underneath the storm. Storm spotters, trained by NWS meteorologists, act as the eyes and ears of the NWS. Their reports result in the most timely and accurate warnings possible.

SKYWARN spotters come from all walks of life- law enforcement, fire or emergency management agencies, and citizens interested in helping their communities. A large number of storm spotters are ham radio operators who volunteer their time and equipment to help the NWS detect and track severe storms. These "hams" will gather reports in the field and relay the data directly to NWS forecasters. SKYWARN spotters are volunteers – they receive no compensation for their hard work. They do, however, have the satisfaction of knowing that their reports result in better warnings which save lives. For more information on SKYWARN, or to schedule a storm spotter class in your area, contact Dave Floyd at the NWS at 785-899-6412.

StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather. The program encourages communities to take a proactive approach to improving local hazardous weather operations by providing emergency managers with clear cut guidelines on how to improve their hazardous weather operations.

The following counties in our area are StormReady:

Cheyenne
Kit Carson
Sherman
Thomas
Yuma

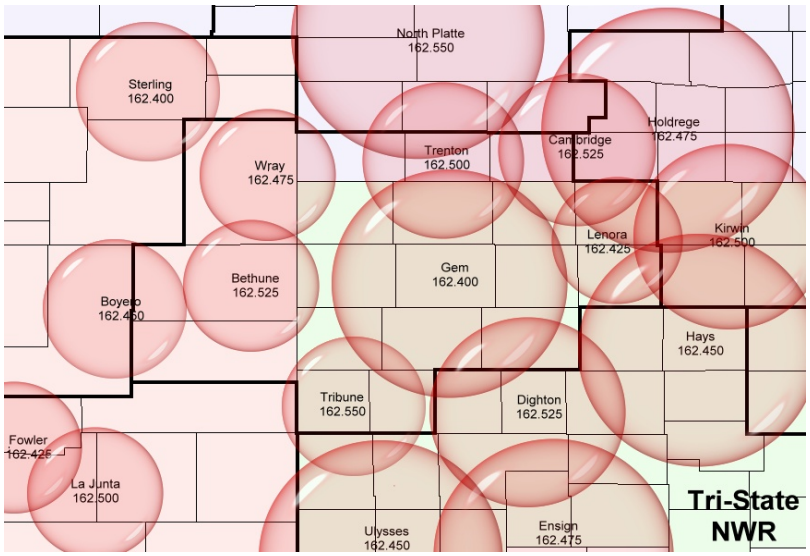
To be officially StormReady, a community must:

- Establish a 24 hour warning point and emergency operations center.
- Have more than one way to receive severe weather warnings and forecasts to alert the public.
- Create a system that monitors weather locally.
- Promote the importance of public readiness through community seminars.
- Develop a formal hazardous weather plan, which includes training sever weather spotters and holding emergency exercises.

For information on how to add your county to the list above, contact Dave Floyd at 785-899-6412 or david.l.floyd@noaa.gov

Your home sits directly in the path of devastating tornado. The National Weather Service has issued a tornado warning! But it's three o'clock in the morning. So, how would you know?

NOAA Weather Radio
Voice of the National Weather Service



The local area is served by six separate NWR transmitters:

CONSOLE	FREQUENCY	LOCATION	COUNTIES SERVED
Gem	162.400 MHz	Gem, KS	Cheyenne, Rawlins, Decatur, Sherman, Thomas, Sheridan, Wallace, Logan, Gove
Bethune	162.525 MHz	Bethune, CO	Southern Yuma, Kit Carson, Cheyenne CO
Lenora	162.425 MHz	Lenora, KS	Norton, Graham, Phillips
Wray	162.475 MHz	Wray, CO	Yuma, Dundy, western Cheyenne, KS
Tribune	162.550 MHz	Tribune, KS	Greeley, Wichita, Hamilton, Kearny
Trenton	162.500 MHz	Trenton, NE	Dundy, Hitchcock, Red Willow, Hayes

Continued from page 1

How is climate change going to impact weather phenomenon? I included a summary sheet from the CCSP that estimates the impacts on various weather phenomenons.

Climate change and global warming are very complicated issues. If you are interested in the topic, I invite you to visit the CCSP web site at: http://www.climatescience.gov/

A quick summary of the CCSP findings is found at: http://www.climatescience.gov/Library/sap/sap3-3/final-report/Brochure-CCSP-3-3.pdf

The complete CCSP report on weather and climate extremes is found at: http://www.climatescience.gov/Library/sap/sap3-3/final-report/sap3-3-final-all.pdf

A report on the impacts of climate change on agriculture is found at: http://www.climatescience.gov/Library/sap/sap4-3/final-report/sap4.3-final-all.pdf

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Observed changes in North American extreme events, assessment of human influence for the observed changes, and likelihood that the changes will continue through the 21st century[1].

Phenomenon and direction of change	Where and when these changes occurred in past 50 years	Linkage of human activity to observed changes	Likelihood of continued future changes in this century
Warmer and fewer cold days and nights	Over most land areas, the last 10 years had lower numbers of severe cold snaps than any other 10-year period	Likely warmer extreme cold days and nights, and fewer frosts[2]	Very likely[4]
Hotter and more frequent hot days and nights	Over most of North America	Likely for warmer nights[2]	Very likely[4]
More frequent heat waves and warm spells	Over most land areas, most pronounced over northwestern two thirds of North America	Likely for certain aspects, e.g., night-time temperatures; & linkage to record high annual temperature[2]	Very likely[4]
More frequent and intense heavy downpours and higher proportion of total rainfall in heavy precipitation events	Over many areas	Linked indirectly through increased water vapor, a critical factor for heavy precipitation events[3]	Very likely[4]
Increases in area affected by drought	No overall average change for North America, but regional changes are evident	Likely, Southwest USA.[3] Evidence that 1930's & 1950's droughts were linked to natural patterns of sea surface temperature variability	Likely in Southwest U.S.A., parts of Mexico and Carribean[4]
More intense hurricanes	Substantial increase in Atlantic since 1970; Likely increase in Atlantic since 1950s; increasing tendency in W. Pacific and decreasing tendency in E. Pacific (Mexico West Coast) since 1980[5]	Linked indirectly through increasing sea surface temperature, a critical factor for intense hurricanes[5]; a confident assessment requires further study[3]	Likely[4]

[1]Based on frequently used family of IPCC emission scenarios
[2]Based on formal attribution studies and expert judgment
[3]Based on expert judgment
[4]Based on model projections and expert judgment
[5]As measured by the Power Dissipation Index (which combines storm intensity, duration and frequency)

Cooperative Observer News

By Mike Lammers, OPL

Observers Receive Awards!

Marilyn Kadlecek, left, received a 20 year service award for her observations at Stratton, Nebraska from Mike Lammers, OPL, National Weather Service, Goodland, KS. Mike presented Marilyn her award in August of 2008. Marilyn started observing when she was postmistress. After she retired, the equipment was moved to her home where she has continued to record and report precipitation daily. Photo by Marilyn's daughter, Carrol Kadlecek.

Don't forget to take the funnel out of your rain gauge before winter!

Sheridan Magnani, observer for the south fork of the Republican River, Benkelman, Nebraska, recently received an award for over 25 years of service. Mike Lammers, OPL, National Weather Service Goodland, presented the award at Mr. Magnani's home during August of 2008. Photo by Mike Lammers, OPL.

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Pictured above are Mike Lammers, OPL, Lora Arnold, John Arnold and Scott Mentzer, MIC. Lora and her son John were recently presented with 30 year awards for their service at Norcatur 3WSW. Photo by Joy Hayden, ASA.

Coming Soon!

2008 SKYWARN™ Recognition Day

will be December 6, 2008

(0000 - 2400 UTC.)

For more information contact our office or visit the website at:

http://www.crh.noaa.gov/hamradio/

NWS Special Event

Why are my observations important?

By Christina Henderson, HMT

Ever wonder if your observations are really used for anything? Below is an excerpt from the National Climatic Data Center website:

Uses of cooperative weather data

- The energy industry uses climate normals derived from COOP data to perform assessments to plan for levels of power usage, compute rate adjustments, and research alternate energy sources
- The housing industry and real estate companies use COOP products in such applications as performing assessments of construction deadline penalties due to weather, planning for site selection for resort and retirement developments
- For flood control design and planning, the U.S. Army Corp of Engineers has used the 100-year return period of short duration precipitation COOP products.
- The National Association of Home Builders (NAHB) used COOP data to design building standards for frost protected shallow foundations. Shallower foundations have been documented to save homeowners **$330 million annually in construction costs** and in energy savings due to the extra foundation insulation.
- Agribusiness has used COOP data to study the effects of climate variations on crop yields, determine optimal geographic locations for crop types, and plan for the application of herbicides and pesticides based upon certain weather patterns.
- COOP data products are used in assessments and planning for drought, excessive rainfall, and late spring frosts all of which have obvious effects on crops.
- Transportation climate assessment products are used in planning for favorable land routes for the transport of commodities based upon historical weather patterns derived from COOP data. Trucking companies also uses climatic averages to plan for the optimal route in the transport of perishable goods.
- Health and human services COOP applications include conducting research on the correlation between climates and diseases/physical disorders.

So the next time you record an observation, remember how many people are depending on you - Thank you!

Will the weather on Halloween be "frightening" this year?

-Chris Foltz, Meteorologist

While it's too early to tell exactly what the weather will be like for the little ghosts and goblins this year, we can look back at the last several years to see what has happened previously to give us an idea of what could be possible this year.

The end of October can bring anything from warm temperatures to frigid weather, from dry conditions to rainfall to heavy snow. The record high for October 31th occurred way back in 1950 when the thermometer reached a warm 87 degrees. On the other side of the coin, a bitterly cold record low of 12 degrees was felt back in 1991.

From 1990 to 2007, the average high temperature at Goodland was 52 degrees which is 6 degrees below the climatologically normal temperature of 58 degrees. The average low temperature at Goodland during the period of 1990 to 2007 was right on target at 31 degrees.

Over the last 18 years, there have been 5 years with at least a trace of snowfall recorded at Goodland's Renner Field. In addition to holding the record low for October 31st, the year 1991 also saw a total of 4.7" of snow.

It's clear that the Tri-State region can expect just about any kind of weather on Halloween. As we get close to the big Trick-or-Treat day, be sure to check the latest forecast from your Goodland National Weather Service office.

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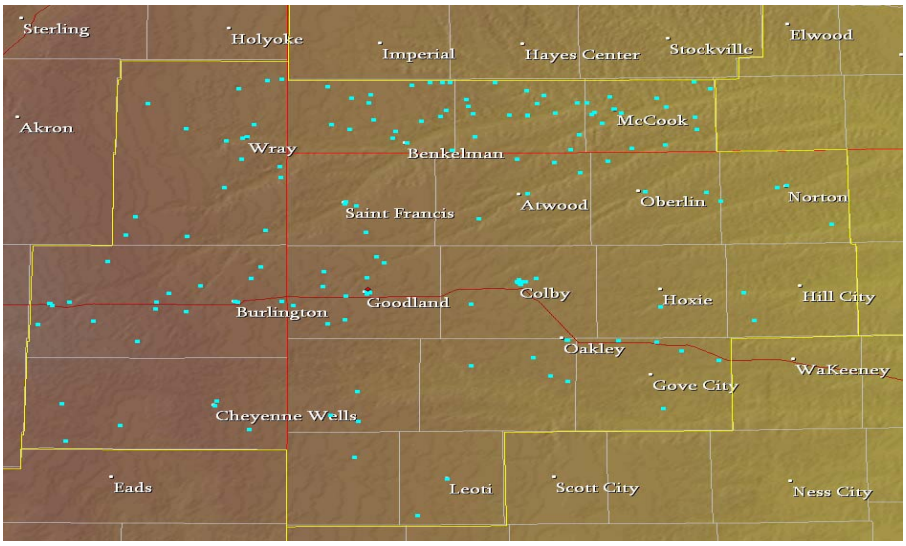
Halloween Climate Records 1990 - 2007				
	High	Low	Rain	Snow
Records	87 (*1950*)	12 (*1991*)	0.91 (*1920*)	4.8 (*1972*)
Averages	58	31	0.03	0.1
2007	53	34	0.00	0.0
2006	37	18	0.00	0.0
2005	56	33	0.00	0.0
2004	59	27	0.00	0.0
2003	38	32	0.00	0.0
2002	26	19	0.02	0.1
2001	83	43	0.00	0.0
2000	68	34	0.42	0.0
1999	70	29	0.00	0.0
1998	43	37	0.27	T
1997	53	38	0.00	0.0
1996	33	29	T	T
1995	41	33	0.01	0.0
1994	57	25	0.00	0.0
1993	62	21	0.00	0.0
1992	46	39	0.02	0.0
1991	22	12	0.31	4.7
1990	82	47	0.00	0.0
1990-2007 Averages	52	31	0.06	0.27

CoCoRaHS News

by Kelly James



Active CoCoRaHS Observers

A big thanks goes out to all the CoCoRaHS volunteers who have reported so diligently over the past few months. All of us at the National Weather Service really appreciate the timely reports and use them frequently to make decisions regarding warnings and forecasts. However, as you can see from the map at left we still have some gaps to fill in with data.

Rural areas are usually much more difficult to find observers and that's where you can help! If you know of any neighbors or relatives in these areas that might be interested in taking rain and snow measurements please let them know that we could always use them in the CoCoRaHS network. I'd be happy to visit with anyone who is interested if they have any questions or concerns. Thanks again for all the wonderful reports over the past few months!

As you think about the seasons, keep in mind that water left in the inner cylinder of your gauge will freeze and crack the gauge, if left outside in prolonged subfreezing weather. The time will come in the next few weeks to bring the funnel and inner tube inside and catch the winter precipitation in the large outer cylinder.

Please remember that if you are having heavy rain or snow, use the "Intense Precipitation" entry form to send in special reports at any time during the day or night. These reports are specifically to alert weather forecasters of active weather in your area. You will still need to fill out the "Daily Precipitation" report the next morning for your 24-hour precipitation amount.

The Big Chill is Coming…

By Chris Foltz, Meteorologist

As the leaves on the trees continue to change to vibrant golds and reds and the corn and sunflower harvests wrap up, it's a reminder that winter will soon be on its way to the Tri-State Region. As we go from October through the end of December, days become much shorter and temperatures plummet. We'll see a transition from warm fall days to the bitter chill of winter.

	Sunrise	Sunset	Total Daylight	Average High	Average Low
October 1	6:43 AM	6:29 PM	11 hr 46 min	73	44
December 31	7:07 AM	4:34 PM	9 hr 27 min	41	17
		Difference	2 hr 19 min	32	27

From October 1st through December 31st, Goodland sees days shorten by over two hours. Meanwhile, average high temperatures drop from the lower 70's into the lower 40's. Nighttime lows drop from the middle 40's all the way into the middle teens. So be sure to get out and enjoy the beautiful fall weather before Mother Nature puts us in the deep freeze.

Meet Dave Floyd, WCM

Dave has 34 years of experience in the field of meteorology, graduating from the University of Wisconsin in 1974 with a Bachelor of Science Degree in Meteorology.

The first 20 years of his weather career were in the private sector, first in radio and TV broadcasting in Wisconsin, followed by three years in New York City forecasting commodity weather on Wall Street, and then 12 years in Minneapolis as training manager for a large weather database company.

Dave joined the National Weather Service (NWS) in 1994, working in Norman, Oklahoma as a Doppler radar instructor specializing in radar interpretation of severe storms, then later as a forecast meteorologist. In 2002 he moved to Goodland, KS and currently serves as the Warning Coordination Meteorologist at the National Weather Service office.

Dave's favorite pastime in the spring and summer is storm chasing. His annual storm spotter training sessions incorporate pictures and video from previous years of chasing. He has been involved in spotter training since 1988. He is married to Denise and has two daughters, age 14 and 10.

Watch for the next newsletter
featuring our Electronics Staff!

National Weather Service
920 Armory Road
Goodland, KS 67735

Phone:
785-899-7119

Fax:
785-899-3501

E-mail:
w-gld.webmaster@noaa.gov

Please don't forget, if you have pictures or video to share of any severe weather events that take place this 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.