



High Plains

(Weather Information News Data)

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INSIDE THIS ISSUE

- 1 Drought Across the High Plains
- 2 Ever Wonder?
- 5 Sun Dogs
- 6 Is It Spring Yet?
- 8 Cooperative Observer News
- 10 Helpful Tips for Measuring Snowfall
- 15 Storm Spotter Training

A Message from the Meteorologist-in-Charge

By Scott A. Mentzer

Drought Across the High Plains

Though the High Plains received some much needed snow in early February, total snowfall for the season remains below normal. Through February 8, 2011, the National Weather Service office in Goodland had received about 14 inches of snow. The normal snowfall through that date is about 23 inches.

Does this lack of snowfall place the area in drought? First, drought is defined in many different ways for different sectors. For example, there are meteorological, agricultural, hydrological, and economic definitions of drought. Second, the ways these sectors monitor drought are different. There are many ways to monitor moisture deficits. Probably the most widely used indices to monitor drought are the Palmer Drought Index and the Standardized Precipitation Index, but there are others. [Click here](#) for an article that explains in more detail the way drought is monitored.

Continued on page 12



"The current Drought Monitor shows much of the Tri-State area in a moderate drought."



Ever Wonder?

By David Thede, Lead Forecaster

Have you ever wondered or been curious about where the weather observations you hear on NOAA All Hazards radio or various media outlets come from? We'll feature a different weather station in each newsletter.



Over the past several issues of the High Plains Wind I've highlighted a few sites that observe, record, and transmit weather observations on a continuous basis. For this newsletter I'd like to show you a few of these weather observations as well as give you links to where you can view them in real time. I'll also walk you through the process of decoding them.

Here is an observation in its basic simplest form:

```
METAR KGLD 182153Z AUTO 04012KT 10SM CLR 18/00 A3012 RMK AO2 SLP184  
T01780000
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- **METAR** – a scheduled observation taken at the end of each hour. SPECI is an observation taken at an unscheduled time due to certain criteria that is met.
- **KGLD** – K refers to a station in the contiguous United States. GLD is for Goodland, KS.
- **182153Z** – 18 refers to the day of the month, 2153 represents the time the observation was transmitted, Z represents that the time is in UTC (Coordinated Universal Time).

continued on page 3

continued from page 2

- **AUTO** – no human intervention
- **040** - the first three numbers is the direction the wind in degrees from 0 to 359, based on a 2 minute average just prior to the observation time. In this example the wind is blowing from 040 degrees or from the northeast.
- **12** – the next two numbers is the speed of the wind in knots, based on a 2 minute average just prior to the observation time.
- **KT** – knots (to convert to miles per hour multiply by 1.15).
- **10SM** – visibility in statute miles. The range is <1/4SM to 10SM at these automated sites.
- **CLR** – no clouds detected below 12,000 feet.
- **18/00** – 18 represents the temperature in whole degrees Celsius, 00 represents the dewpoint temperature in whole degrees Celsius. If the temperature or dewpoint fall below 0 there will be an M before the number. An example would be M03/M10 for minus 3 degrees Celsius temperature, minus 10 degrees Celsius dewpoint.
- **A** – altimeter
- **3012** – 30.12 inches of mercury.
- **RMK A02** – RMK means remarks at the end of the metar observation. A02 means that the site is automated and has a precipitation sensor.
- **SLP184** – sea level pressure in millibars, 1018.4 in this example.
- **T01780000**– Temperature and dewpoint to the tenth of a degree. In this example the temperature is 17.8C and the dewpoint is 0.0C

To summarize this example:

Weather observation taken from Goodland, KS at 2153Z. Wind is from the northeast at 12kts (14 mph). No visibility restriction and the sky is clear below 12,000 ft. Temperature is 18C (64F) and the dewpoint is 0C (32F). The altimeter is 30.12 inches of mercury. In the remarks section its indicated that this is an automated (no humans) observation. Sea level pressure is 1018.4 millibars. Temperature is 17.8C (64 degrees F) and the dewpoint is 0C (32 degrees F).

continued on page 4

continued from page 3

Here is another observation:

METAR PABR 031553Z 10021KT 1 3/4SM BLSN FEW003 BKN075 M14/M17
A2944 RMK A02 PK WND 10029/1523 SLP971 T11441172

To summarize this example:

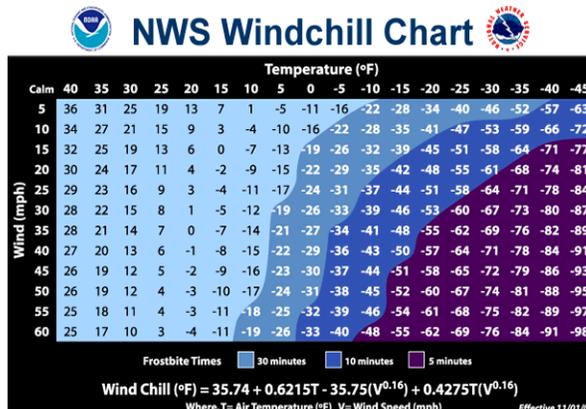
Weather observation taken from Barrow, AK at 1553Z on the 3rd. Wind is from the east at 21kts (24 mph). Visibility 1 ¾ statute miles and is obstructed by blowing snow. A few clouds at 300 feet with another layer at 7500 feet. Temperature is M14C (7F) and the dewpoint is M17C (1F). The altimeter is 29.44 inches of mercury. In the remarks its noted that this is an automated observation (A02). During the hour a peak wind of 29kts (33 mph) was recorded from the east at 1523Z. Sea level pressure is 997.1 millibars. Temperature is -14.4C (6 degrees F) and the dewpoint is -17.2C (1 degree F).

Here is a link if you'd like more in depth information on ASOS:

<http://www.nws.noaa.gov/om/brochures/asosbook.shtml>

BEWARE!

Winter winds can be dangerous. The temperature can often be deceiving and frostbite can occur, often within only five minutes! To learn more check out the chart and the website below:



<http://www.nws.noaa.gov/om/windchill/>

SUN DOGS



Photo and story by Greg Guillot, Meteorologist Intern

I took the picture above on February 1, 2011. The rainbow like formations on the left and right of the sun are often called "sun dogs". The scientific term for a sun dog is 'parhelion'. What you see is a band of light in the shape of an arc on both sides of the sun which appear at a 22 degree angle to the left and right of the sun at the same distance above the horizon as the sun. When ice crystals are suspended in air at low levels, and fall toward the ground, they tend to align themselves vertically. This causes refraction of the sunlight horizontally, resulting in the visual phenomenon we view as a sun dog.

Is it Spring yet???

By Chris Foltz, General Forecaster



While the winter of 2010-2011 has treated the Tri-State region pretty well so far through late January, we're certainly not out of the woods just yet. With only two short stretches of very cold temperatures around New Year's and between January 10th and 12th, temperatures have averaged above normal for most locations in our County Warning Area through the winter season thus far. Additionally, precipitation has generally totaled much below normal. For example, the Goodland National Weather Service office has measured a total of 6.4" of snow through January. In an average year, snowfall through late January would have totaled around 21". This lack of moisture has led to the development of a moderate drought for much of western Kansas and eastern Colorado.

The latest outlook from NOAA's Climate Prediction Center issued January 20, 2011 indicates an equal chance of above normal and below normal temperatures over the northern portion of our forecast area with a slight chance of above normal temperatures over the southern half (Figure 1). However, this certainly does not mean we won't be in for a cold spell or two over the next few months.

Unfortunately, the latest outlook (Figure 2) also indicates a greater than normal chance for below normal precipitation through April with a higher confidence over southwest Kansas and southeast Colorado. This will only aid in worsening the ongoing drought conditions across the Central High Plains as we move into the crucial spring months for the winter crops.

continued on page 7

continued from page 6

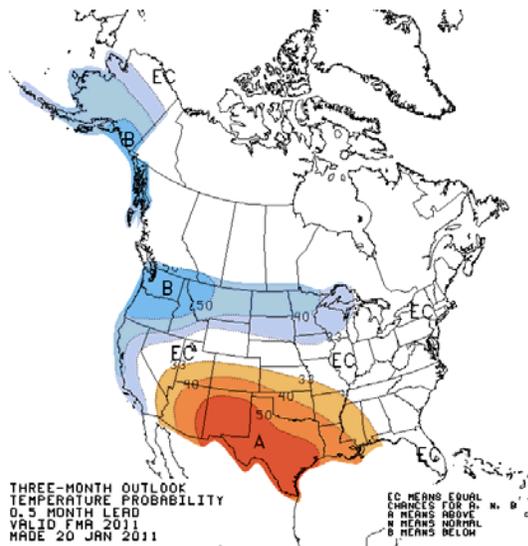


Figure 1

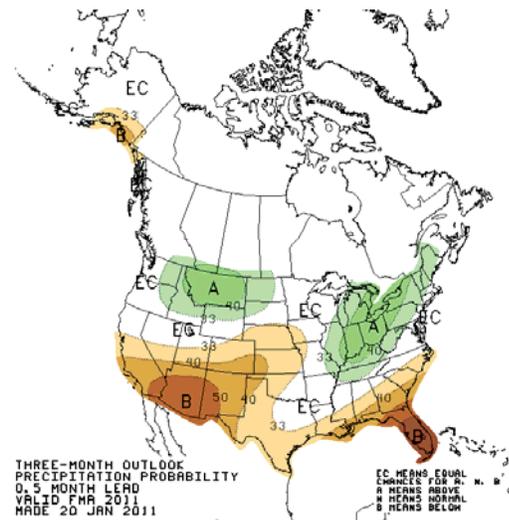


Figure 2

IPAWS – What Can It Do for YOU?

Are you interested in getting alerts of imminent threats to life and property such as tornado warnings, AMBER alerts, or other emergency messages on your cell phone? If so, you will want to check out the article in the January issue of *Aware*. *Aware* is the newsletter published by the National Weather Service to enhance communications within our agency and the Emergency Management Community.

The latest issue can be found here:

<http://www.weather.gov/os/Aware/pdfs/10-11winter-aware.pdf>

Cooperative Observer News

by Mike Lammers, OPL



On the left, in a photo taken by his wife, Virgil Bussen, cooperative observer near Wallace, Kansas, accepts a 10Year Length of Service Award presented by Mike Lammers of NWS Goodland. Virgil received his award on January 20, 2011.
Photo by Mrs. Virgil Bussen

Tom Horobik, pictured at right, recently accepted a 15-year award for his work taking river readings on the Republican River one mile south of Benkelman, Nebraska. .
Photo by Michael Lammers, December 6, 2010



continued on page 9

continued from page 8



Mike Lammers is pictured on left presenting a 10-year Length of Service Award to Richard Hayden. Richard has been recording observations in the city of Goodland, Kansas, since January of 2001. *Photo by Joy Hayden*

Welcome
to our newest Kansas cooperative observers!

Reggie Vrbas of Atwood,
Kevin Heikes of Lenora, and *Leroy Wildeman* of Hoxie!

NWS Reference Guide

Just what is a PDS Tornado Watch?
What should I do if I hear that a Wind Chill Watch has been issued?

A new, comprehensive, National Weather Service Reference Guide is now available on line that can answer these, and hundreds of other questions you might have about weather forecasts.

Especially handy for Emergency Managers and other decision support personnel, the guide is also useful for anyone wanting to know more about the products and services provided by the National Weather Service.

To get your copy click here:

<http://www.weather.gov/om/guide/>

Helpful Tips for Measuring Snowfall

By Mike Lammers, OPL

- Observers should report 3 values when reporting solid precipitation
 - **SNOWFALL** - Measure and record snowfall (snow, ice pellets) since your previous snowfall observation. This measure should be taken once a day but can be taken as often as every 6 hours if you wish. It should reflect the greatest accumulation of new snow observed since the last snowfall observation. Always record snowfall in inches and tenths (i.e. 3.4 inches). Also remember that on your snowboard you should not clear snow off of the board more often than every 6 hours. NEVER report freezing rain (glaze ice such as from freezing drizzle) as snowfall. Freezing rain and glaze ice should be reported as liquid precipitation.
 - **DEPTH OF SNOW ON THE GROUND** - Determine the depth of snow on the ground at your normal 24-hour reporting time. Always record this value in whole inches (i.e. 4 inches). Use your snow stick. Measure the total depth of snow on exposed ground by taking the average of 3 or 4 locations or you can take a measure near the normal point of observation. This will be especially true for those times when wind causes lots of drifting of the snow. The measurement should reflect the average depth of snow, ice pellets (sleet), and glaze ice on the ground at your usual measurement time. Do not take snow depth readings from rooftops, paved areas, and similar locations.
 - **WATER EQUIVALENT OF SNOWFALL** - You can take this measurement once a day at your usual observation time. This value is especially useful for people with agricultural interests since it will tell us how much liquid moisture is in the snow, some of which should make it into the soil at melting time. This value can be obtained by bringing your gauge inside the house and melting it down. To do this, add a measured amount of warm water. Melt the snow you just brought inside in the gauge. Then measure the total amount of liquid. Then (measured amount of warm water + snow) – measured amount of warm



continued on page 11

water = water equivalent of snowfall. Record your measurement to the nearest 0.01 inch. Use your NWS rainfall stick to measure this liquid. If the melted water equivalent and added measured warm water exceeds two inches and cannot fit into the measuring tube all at once, empty the full measuring tube and pour the rest of the liquid from the large 8-inch outer cylinder into the emptied measuring tube. Then, add and record the water equivalent of the multiple measurements. As winds increase, the gauge will collect less and less of the precipitation that actually falls. In other words, the stronger the wind and drier the snow, the less snow will be captured in the gauge. If you notice that there is less snow 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 (snow core). You would take this from your snowboard. With the 8-inch overflow can, melt down the snow core. Pour the liquid into the measuring tube to measure the water equivalent.

Helpful Miscellaneous tips for Cooperative observers

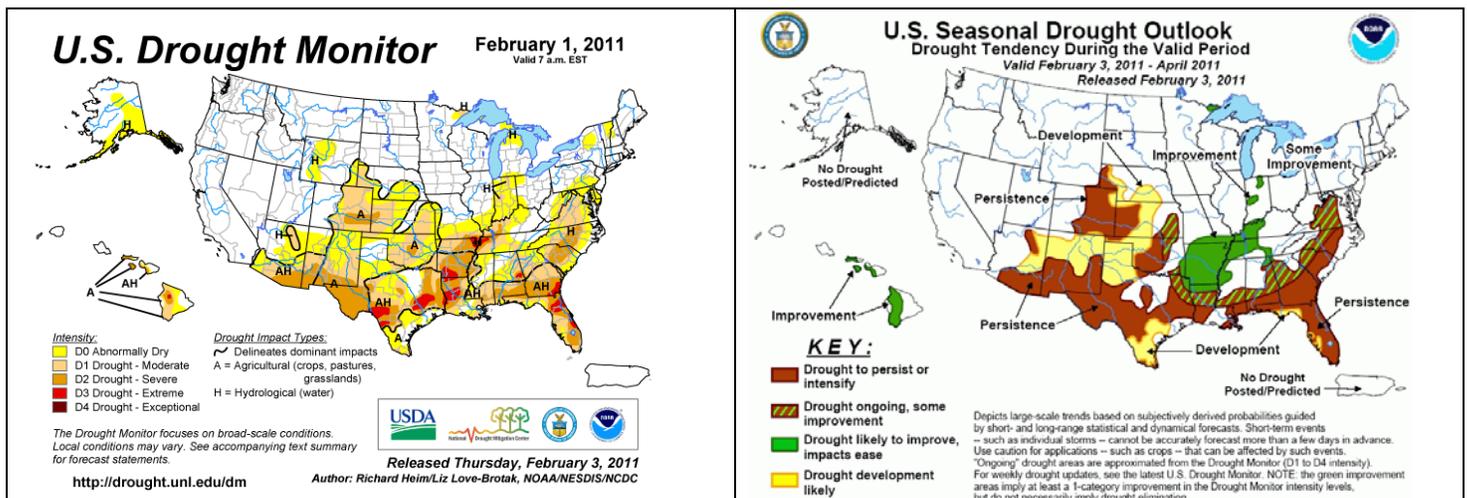
- Fischer Porter Rain Gauges (For our 16 observers with this equipment)
 - Don't forget to put red lines at the start and end of each tape before mailing
 - Always check your Fischer Porter unit at least once a week to be sure it is functioning properly. If there is a problem, contact Mike Lammers (1-800-272-7811) or email at Michael.lammers@noaa.gov so that the problem can be repaired as soon as possible.
 - When applying your on/off label to the tape, be sure to place the label several inches from the end of the tape. Never tape both ends together as this makes it difficult for the reader to open the tape to check it.
 - Please be timely in mailing your tapes to the NWS Goodland office. We check these tapes here at the office and then mail them on to the contractor who uses a machine to take photos of your tape before it is sent on to the National Climatic Data Center. Please do this no later than the tenth of each month.

 - Wxcoder III (Applies to our observers who enter their reports directly into the computer or call in their reports)
 - Never leave any data space blank. Even with precipitation and snowfall, if none occurs on a given day put zeroes in those spaces.
 - If you have missing data (example - you were out of town on vacation) please note the reason for the missing data in the Remarks section. Remember that years from now, someone may need this data and seeing a blank space with no reason will likely make that person think, "Did the observer forget to take the observation that day? Was the observer out of town? Why is this missing?"
 - Especially important is the END OF MONTH CLOSEOUT. Please do this diligently each month. It is very important. You as the observer should check your data and then do your close out BEFORE THE TENTH OF EACH MONTH. Once this is done, we will check your data here at the Goodland office. Then we do our own close out BY THE TWENTIETH OF EACH MONTH. Once we do our close out, your report will go out to NCDC and the world.
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continued from page 1

One of the easiest ways to check for the latest drought conditions is to examine the [United States Drought Monitor](#) product. The Drought Monitor is a synthesis of multiple indices and impacts that represents a consensus of federal and academic scientists. The National Weather Service, state climatologists, the U.S. Department of Agriculture, the U.S. Drought Mitigation Center, and others have input to this product which is created weekly. This map provides a “one stop shopping experience” which combines relevant indices with expert opinions to determine where drought is occurring. The map also classifies drought into different categories: moderate, extreme, severe, and exceptional.

The current Drought Monitor shows much of the Tri-State area in a moderate drought. Further, the [Drought Outlook](#) through early April indicates that these drought conditions will persist. So, yes, drought conditions technically cover the High Plains.



Drought Monitor

Drought Outlook

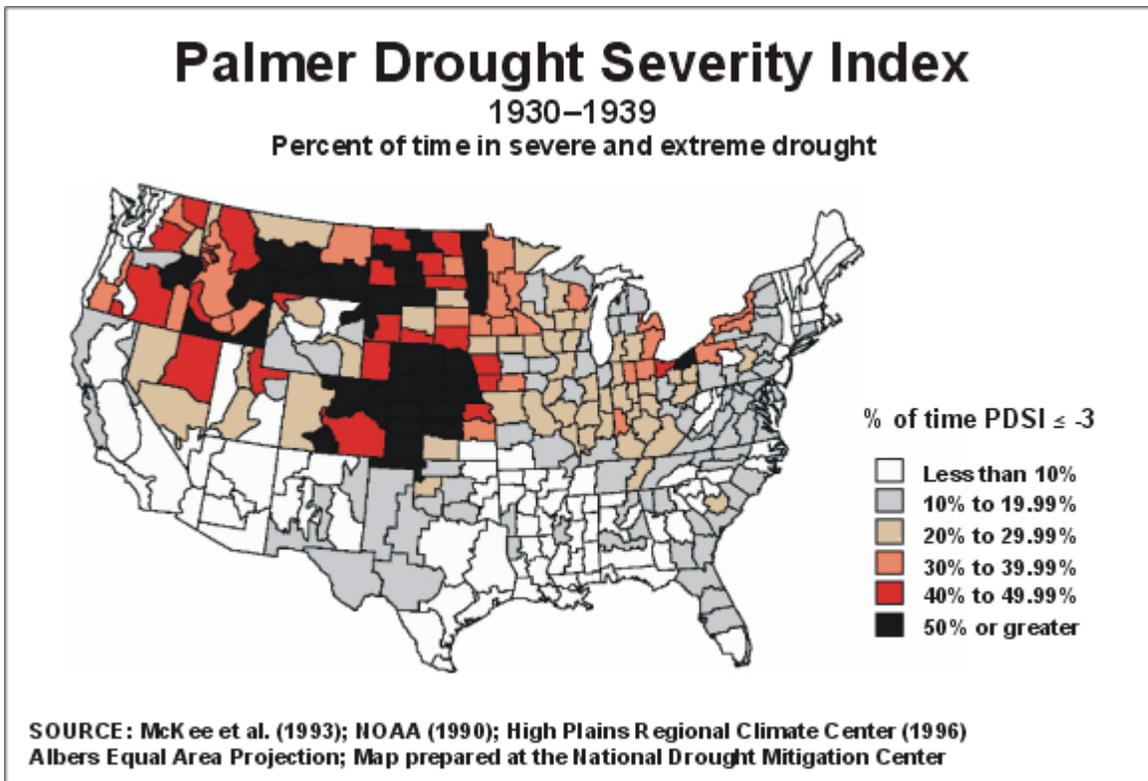
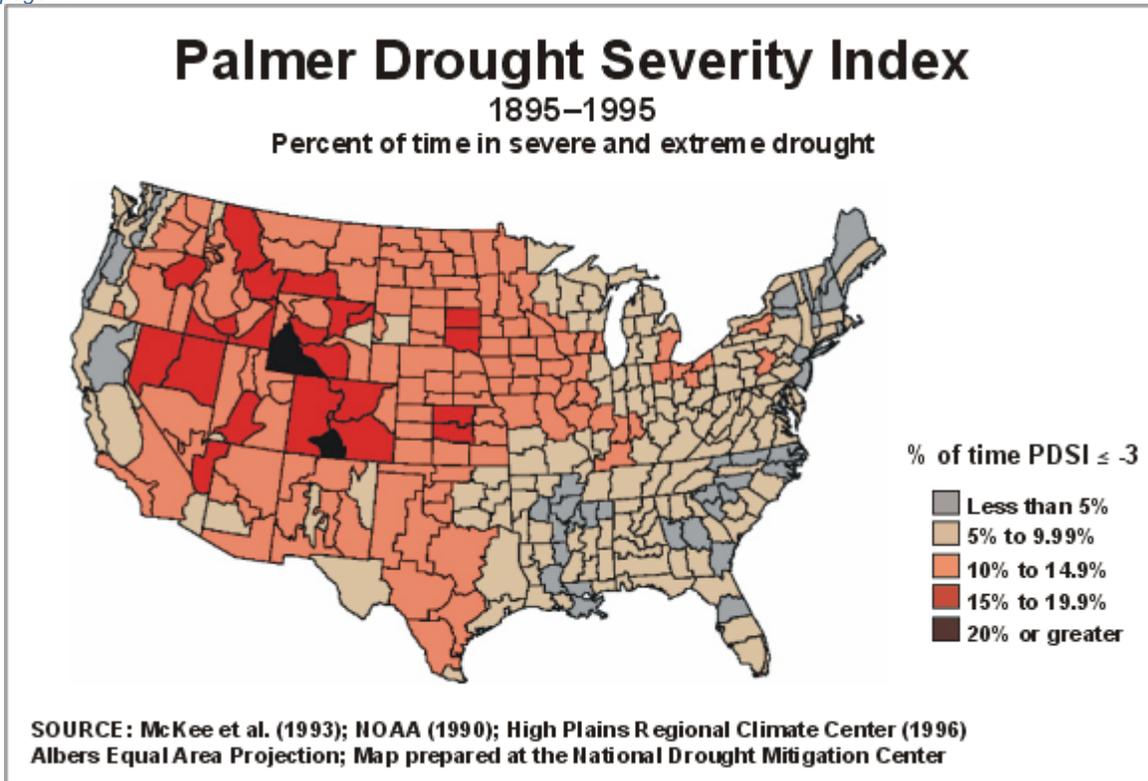
Current drought maps for Colorado, Nebraska, and Kansas are also included at the end of this article.

Drought is not unusual for the Tri-State area. From 1885 through 1995, the area was “in drought” approximately 15% of the time. During exceptional drought conditions, however, as in the 1930’s, the area was in drought over 50% of the time.

Use the Drought Monitor and the Drought Outlook maps frequently to view the latest thinking about drought in our area. [Click here](#) to view a national drought web site. The National Weather Service office in Goodland also produces Drought Information Statements when drought is classified in the severe category.

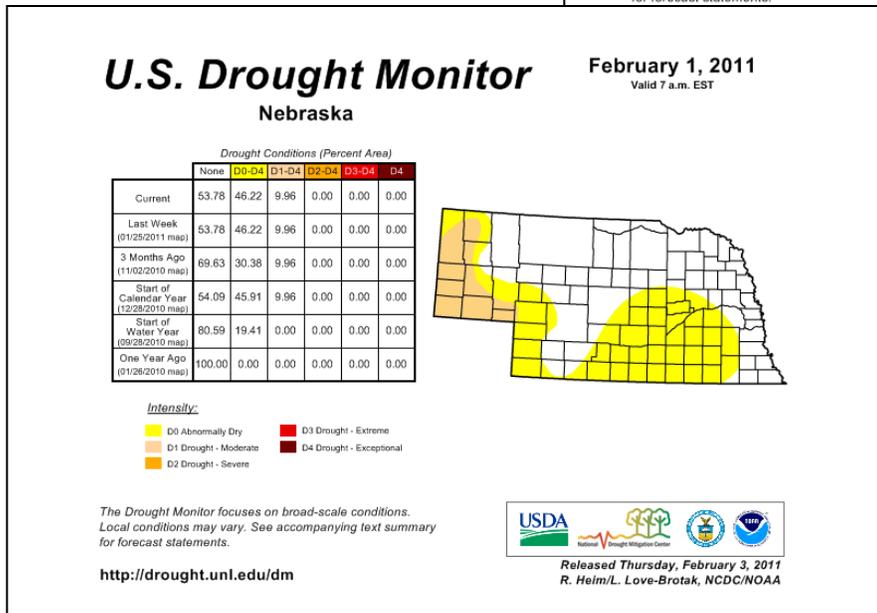
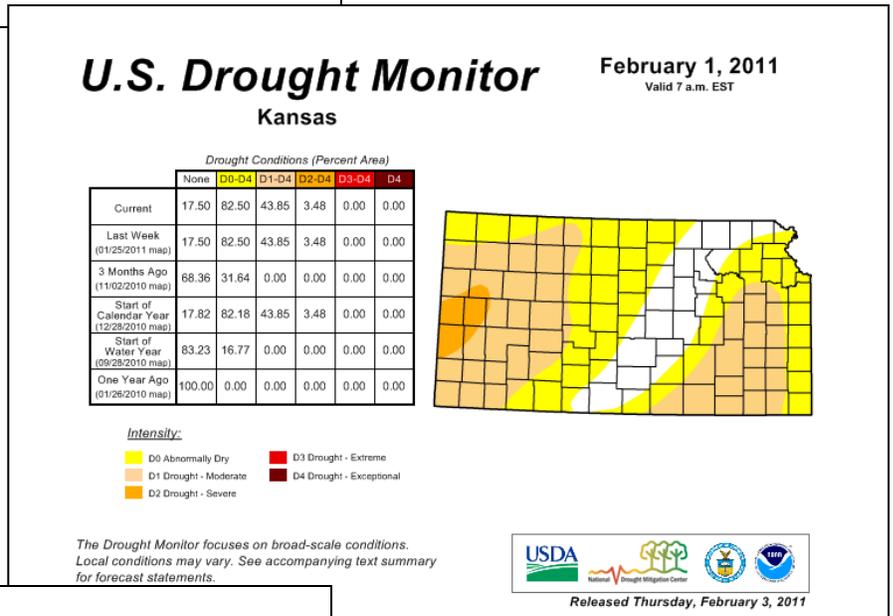
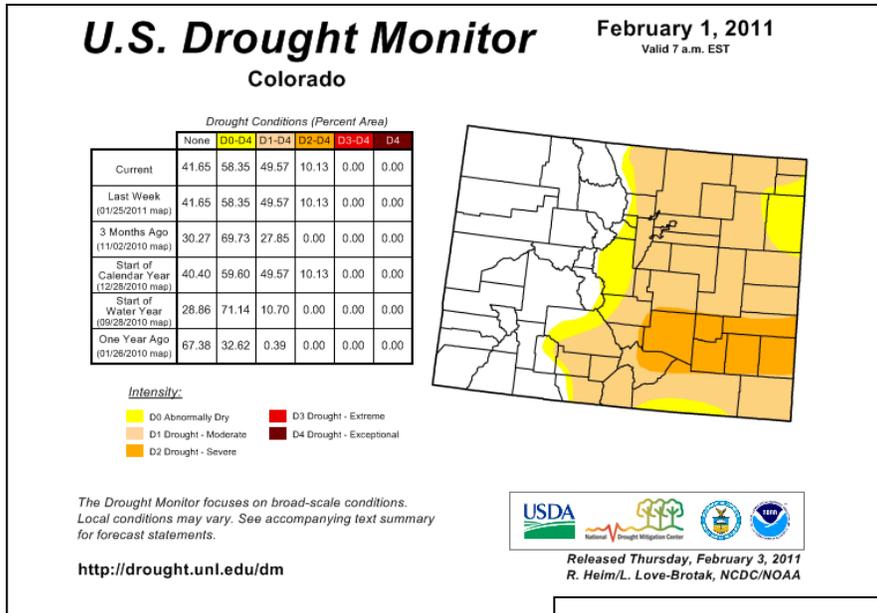
continued on page 13

continued from page 12



continued on page 14

continued from page 13



Spotter Training - Coming to a Location Near You!

If you have any questions, call our office. We hope to see you in March.

March 2011			
Day	City, State	Time	Location
01	Hill City, KS (Graham County)	6:30pm CST	Frontier Stage 321 E Main St
02	Atwood, KS (Rawlins County)	6:30pm CST	Prairie Developmental Center 208 S 4th
03	Oakley, KS (Logan County)	6:30pm CST	Courthouse Downstairs 710 W 2nd
07	Colby, KS (Thomas County)	6:30pm CST	Community Building Downstairs 285 E 5th
08	Norton, KS (Norton County)	6:30pm CST	Prairie Land Electric Coop Downstairs - 1101 W Hwy 36
10	Grainfield, KS (Gove County)	6:30pm CST	4-H Building, West of town on 3rd St
11	Leoti, KS (Wichita County)	6:30pm CST	Firehouse 4th Street (Hwy 25) 2 blocks north of Hwy 96
14	Goodland, KS (Sherman County)	6:30pm MDT	Murray Center Northwest Tech College 1315 Eustis
15	Wray, CO (Yuma County)	6:30pm MDT	Ambulance Building Corner Hwy 34 and Blake Street
16	St Francis, KS (Cheyenne County)	6:30pm CDT	High School Cafeteria 100 S College
17	McCook, NE (Red Willow County)	6:30pm CDT	McCook Senior Center 1400 W 5th St
21	Benkelman, NE (Dundy County)	6:30pm MDT	High School Distance Learning Room - 400 9th Ave W
22	Hoxie, KS (Sheridan County)	6:30pm CDT	Bowen Scout House 1041 Sheridan St
23	Oberlin, KS (Decatur County)	6:30pm CDT	Gateway Building 1 Morgan Drive
24	Cheyenne Wells, CO (Cheyenne County)	5:00pm MDT	Middle School 325 W 4th St N
25	Sharon Springs, KS (Wallace County)	6:30pm MDT	CAB Building Fairgrounds south of town
26	Burlington, CO (Kit Carson County)	4:00pm MDT	Burlington Community Center 340 S 14th Street
28	Trenton, NE (Hitchcock County)	6:30pm CDT	EMS Building 333 Main St
29	Tribune, KS (Greeley County)	6:30pm MDT	EMS Building Greeley Ave west of Hwy 27

National Weather Service

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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.