Spring/Summer 2011
Volume 8, Issue 1

National Weather Service Quad Cities IA/IL

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Weather Home Companion is a semiannual publication of the National Weather Service office in the Quad Cities.

Questions and feedback are welcome and encouraged. Contact information can be found on page 8.

2011 Groundhog Day Blizzard—One for the Record Books

Steve Kuhl

On January 31st, a weak storm system spread light snow and freezing drizzle across much of the area, with snow totals between 1 and 2 inches by the morning of February 1st. This light snowfall was a precursor of what was soon to come.

Also on January 31st the Gound-hog Day Blizzard that was soon to hit Iowa and Illinois was forming in Texas. Early on February 1st the storm began to undergo rapid intensification and by mid-morning weather conditions were rapidly deteriorating across locations south of Highway 34.

4 to 6 foot drifts during the Ground Hog Day blizzard at the National Weather Service office in Davenport.

The mission of the National Weather Service (NWS) is to protect life and property. About 24 hours before the blizzard began, the NWS Quad Cities Office issued a blizzard warning for all of its forecast area. The approaching storm was expected to produce heavy snow and strong winds favorable for blowing and drifting snow.

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Not the Lone Rangers!

Donna Dubberke

The National Weather Service may be the nation's official source for weather and water warnings, but we don't do it alone. We depend on many partnerships to help us make key decisions and efficiently communicate information.

Just to name a few examples, at the federal level the U.S. Geological Survey (USGS) and the Corps of Engineers (COE) are key collaborators for river data and modeling. At the state and local levels, emergency managers provide feedback from their own communities as well as helping alert people throughout their jurisdictions of potential or imminent hazards and preparedness and mitigation actions that should be taken. Media partners - from print to broadcast to the world wide web – rapidly and efficiently communicate all types of hazard information. Volunteer observers and storm spotters provide critical, reliable observations and reports.

We are grateful for our partners' continued commitment. Without them, the NWS could not fulfill its mission to "protect life and property". To them, we would like to say simply, "Thank you!"

Two Day Snowfall Totals for February 1-2, 2011

Cedar Rapids:	11.2
Davenport:	13.5
Dubuque:	13.6
Iowa City:	15.8
Moline:	16.7*

* new record for 24 hour snowfall

2011 Groundhog Day Blizzard—One for the Record Books!

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Wind gusts over 50 mph were expected!

Once the snow began, visibilities across the area quickly dropped to 1/4 mile or less. Heavy snow continued from the afternoon into the evening as the blizzard continued to grow in strength. Explosive strengthening of the storm then enhanced wind gusts across the area. Around 9:00 p.m., several wind gusts were reported between 55 and 65 mph, including 56 mph at both Mount Pleasant and Davenport, Iowa. Separate wind gusts of 57, 61, and 66 mph occurred at Clinton, Iowa. With blizzard conditions in full force, these strong winds created crippling white out conditions.

At the same time the strong winds were occurring, thunder snow was reported across eastern Iowa and northwest Illinois. The thunder snow became more frequent as the blizzard approached Chicago.

By the end of the storm, three day snowfall totals ranged from around 10 inches in Buchanan County, to as much as 19 to 20 inches in parts of western Illinois and northeast Missouri, with significant drifts due to blowing snow.

Moline, Illinois observed 16.7 inches of snow from the evening of February 1st to the morning of February 2nd, which set a new 24 hour snowfall record, exceeding the previous record set on January 3, 1971 by 0.3 inches. The Moline, Illinois three day snow total of 18.4 inches also tied the record for a single storm set back in January 1979.

The Groundhog Day Blizzard of 2011 was one for the record books and will certainly be remembered by all those who experienced it.

What is CoCoRaHS?

Andy Ervin

Four inch diameter raingage used by CoCoRaHS observers.

What is CoCoRaHS?

CoCoRaHS is an acronym for the Community Collaborative Rain, Hail and Snow Network. CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow).

By using low-cost measurement tools (an official rain gauge), stressing training and education, and utilizing an interactive Website, the aim is to provide the highest quality data for natural resources, education, and research applications. CoCoRAHS is now in all fifty states.

What do volunteer observers do?

Each time a rain, hail or snow storm crosses the area, volunteers take measurements of precipitation. These precipitation reports are then recorded on the website www.cocorahs.org . The data are then displayed and organized for many users to analyze and apply to daily situations ranging from water resource analysis and severe storm warnings, to neighbors comparing how much rain fell in their backyards.

Rainfall reports are very accurate, using the official 4 inch diameter rain gauge available from vendors linked on the CoCoRaHS website. Observers can easily see exactly how much rain and snow have occurred at their observing site (usually home) over the course of months and years. This information is much more relative to users than how much rain fell at a local airport that you would normally hear on climate reports, unless you live very near one of those airports!

As all who follow the weather know, rainfall and snowfall are highly variable from place to place. We are always looking for more good information on rain and snow, and CoCoRaHS observers go a long way in helping fill in the pieces to this puzzle. Spotters are already a great resource of information, and any who want to take that extra step to report rain and snow through CoCoRaHS would be greatly appreciated.

www.cocorahs.org

Meet Thomas Olsen

Thomas Olsen is the newest member of the Quad Cities National Weather Service Team. Currently working as a Hydro Meteorological Technician, he learned the weather trade as a Forecaster in the United States Air Force. His first assignment was in Fairbanks, Alaska, where he met his wife, Holly. They have three wonderful children; Travis, who currently serves in the Army, Sara, who will be starting nursing school, and Emily, who attends North Scott High School.

After retiring from the military, he worked as a Supervisor of Aviation Weather Observers and Upper Air Supervisor in Fairbanks, Alaska.

His first assignment in the National Weather Service was Hilo, Hawaii where he learned an appreciation for the four seasons. Tom grew up in Wisconsin and is glad to get back to the Great Midwest.

NWS Quad Cities' newest staff member Tom Olsen shown surveying the flooded Mississippi river at Lock and Dam 16 in Muscatine this past April.

National Weather Service Quad Cities welcomes Thomas Olsen, who joined our staff in January.

How is a Hydrologic Outlook Different From a River Forecast?

Maren Stoflet

The National Weather Service provides a range of hydrologic information. Two types of routinely issued hydrologic information include probabilistic hydrologic outlooks and river forecasts.

Probabilistic hydrologic outlooks are a statistical look at the risk for flooding, as well as the risk of river levels falling below given levels, over the next three months. River forecasts show the expected river responses over the next week.

Hydrologic Outlook	River Forecast
Shows: Probabilities or range of risk for flooding and probabilities or range of risk of falling below specific levels	**Shows:** Expected river responses
Based on: Current conditions applied to past weather scenarios	**Based on:** Actual conditions and anticipated precipitation over the next 24 hours.
Issued: Routinely toward the end of each month throughout the year (typically updated every couple weeks from late January through March for the spring snowmelt season)	**Issued:** Twice daily (may be updated more often as needed)
Looks ahead: 3 months	**Looks ahead:** 7 days
Intended for: Longer-range planning	**Intended for:** Shorter-term decision making

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On the Web:

Charts similar to those found on page 4 can be found on our website via our Advanced Hydrological Prediction Service (AHPS) page.

Just go to www.weather.gov/dvn and click on the Rivers and Lakes link in the left margin, or enter the following into your web browser:

water.weather.gov/ahps2/

How is a Hydrologic Outlook Different From a River Forecast?

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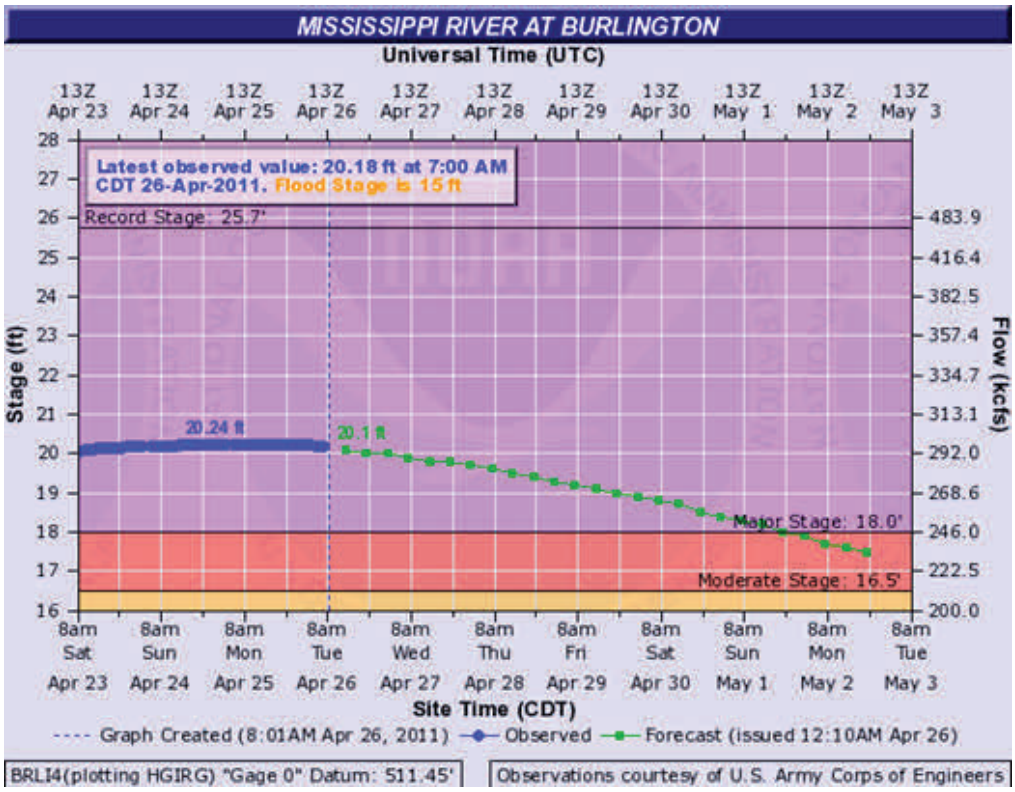
River Forecast:

This is an example of a river forecast or *hydrograph* for the Mississippi River at Burlington.

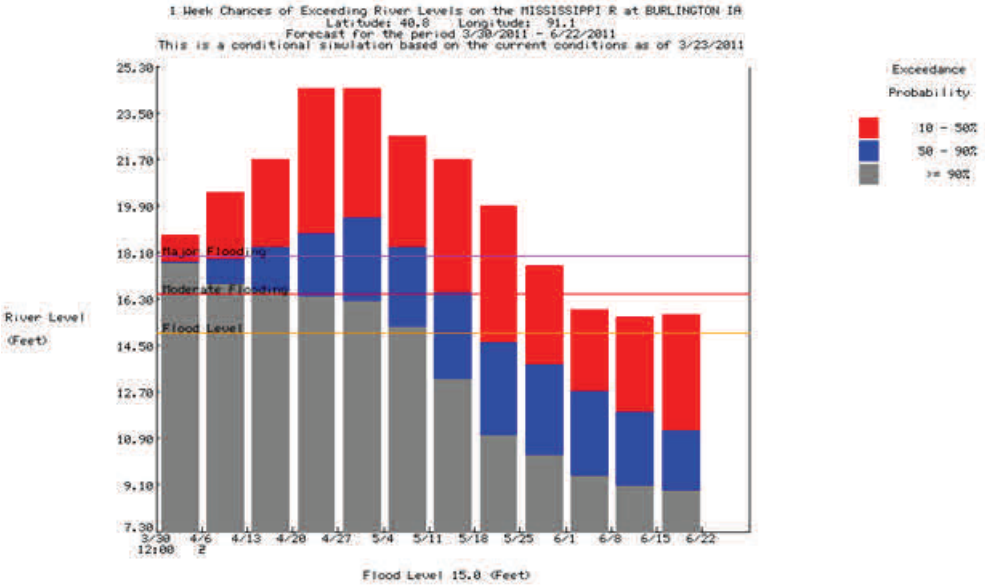
It shows expected river stages for seven days into the future. It is based on current river conditions and forecast precipitation for 24 hours beyond the time it was created.



Hydrologic Outlook:

This is an example of a hydrologic outlook in chart form for the Mississippi River at Burlington.

It shows the probabilities of the river reaching flood stage or other specific levels for a three month period.



Winter 2010-2011 in Review

John Haase

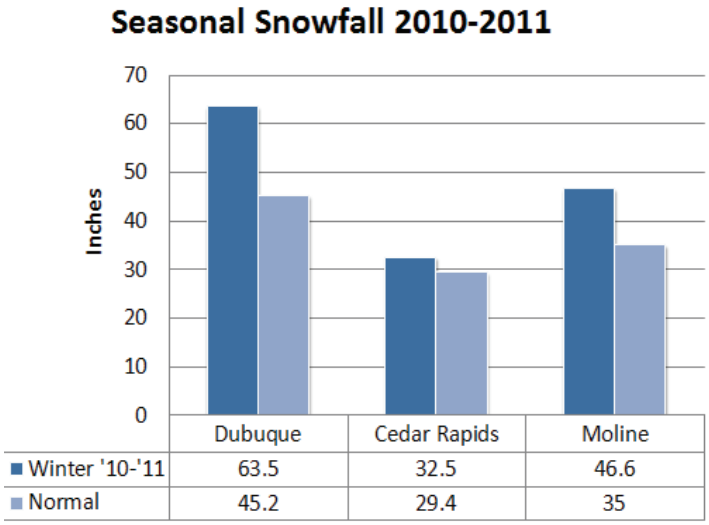
One of the strongest La Niña events on record produced a snowy and cold winter across the Midwest. During La Niña events, colder than normal water exists over the central and eastern portions of the Pacific Ocean. This reduces the temperature difference of the ocean in that region which makes the likelihood of a persistent jet stream over the eastern portion of the Pacific Ocean less likely.

High pressure then typically builds over the Gulf of Alaska. This sends the jet stream well north into Alaska and then southward into the central United States. This allows for frequent arctic air intrusions, and with the jet stream across the Midwest, a higher potential for snow storms. (For more detailed information see the Fall/Winter 2010 issue of the Weather Home Companion).

Snowfall for the winter totaled 35 to 65 inches across the region, which is about 10 to 20 inches above normal. The following are descriptions of the most significant snow events this past winter, highlighted by a tremendous blizzard on February 1-2, 2011.

December 3-4, 2010

The first winter storm of the season arrived on December 3. Low pressure was located in Nebraska with a warm front lifting out of the plains. Temperatures ranged from the 20s in eastern Iowa to the 60s in the southern and central Plains. A 40 knot low level jet was pointed into the region with strong warm air advection producing bands of heavy snow. Snowfall amounts of at least 6 inches were noted in portions of eastern Iowa and northwest Illinois. As much as 9.4 inches of snow was measured at Thomson, Illinois, and 9.2 inches near Elizabeth, Illinois. Nine inches of snow was reported at both Princeton, Illinois and near Dubuque, Iowa. The storm resulted in numerous traffic accidents and many cars were reported in the ditches.



December 11-12, 2010

A blizzard struck portions of eastern Iowa and western Illinois on December 11. A strong upper level disturbance and powerful jet stream dove out of the northern Rockies, while low pressure formed across the northern Plains and tracked into western Iowa. The resulting cyclone then intensified considerably as it pushed into northern Illinois, spreading snow across the region.

Even though snowfall was only in the 1 to 4 inch range, strong winds gusting to 40 to 50 mph generated blizzard conditions in some locations.

The worst blizzard conditions were observed west of Interstate 380/Highway 218 in eastern Iowa, and also in portions of western Illinois. Drifts were reported to be several feet high, which resulted in impassable roads and stranded motorists. The strong winds also toppled a tree onto a house in Marion, Iowa and flipped a metal shed off its cement foundation in Cedar Rapids.

December 24-25, 2010

A timely snowstorm brought picture perfect conditions to much of the Midwest for Christmas Eve into Christmas Day. A strong warm front was located from western Iowa to western Kentucky. Strong warm air advection produced several bands of moderate to heavy snowfall during this period. Snow accumulations were at least 5 inches in many locations, but ranged from 3 to 4 inches in extreme northeast Missouri to nearly a foot of snow in portions of northeast Iowa. The greatest amount reported was 12 inches at Coggon, Iowa . Other amounts included 11 inches near Marion, Iowa, 10.2 inches at Quasqueton, Iowa, and 9.4 inches

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Just how cold was it?

Burlington:

Average temperature 23.6

3.1 degrees below normal

Cedar Rapids:

Average temperature 18.8

3.0 degrees below normal

Dubuque:

Average temperature 17.4

3.8 degrees below normal

Moline:

Average temperature 18.8

3.0 degrees below normal

Unofficial average temperatures for the winter 2010-11 months of December, January and February.

Winter 2010-2011 in Review

(Continued from page 5)

at Lowden, Iowa. Even in northwest Illinois amounts were impressive with 9.6 inches measured by a spotter near Coal Valley, just outside of the Quad Cities.

February 1-2, 2011

A tremendous blizzard, one of the worst in memory, impacted much of the region during the first two days of February 2011, as deep low pressure tracked from Texas to southern Indiana.

Snowfall totals ranged from 10 to 20 inches with drifts as high as 7 feet. Blizzard conditions were widespread with visibilities near zero in heavy snow and winds gusting to over 50 to 60 mph. Temperatures were in the teens, which added to the misery and the fluffy snow was easily blown around.

Actual snow accumulations were difficult to measure due to the very high winds. Most roads, including interstates, were closed with numerous vehicles stuck in drifts or sliding into ditches, but no major accidents were reported. Many people became stranded but were eventually rescued. Many schools and events were cancelled or closed for a couple of days, as it took crews a while to open up rural roads and side streets. Even the University of Iowa at Iowa City was closed for a day.

Photo taken at the National Weather Service office at the Davenport Municipal Airport, in the afternoon of February 1, 2011, shortly after the onset of blizzard conditions. Visibilities were near zero at times and a wind gust of 56 mph was recorded later that evening. The two day snowfall total amounted to 13.5 inches.

...At the height of the blizzard, snow fell at the rate of 1 to 3 inches per hour…

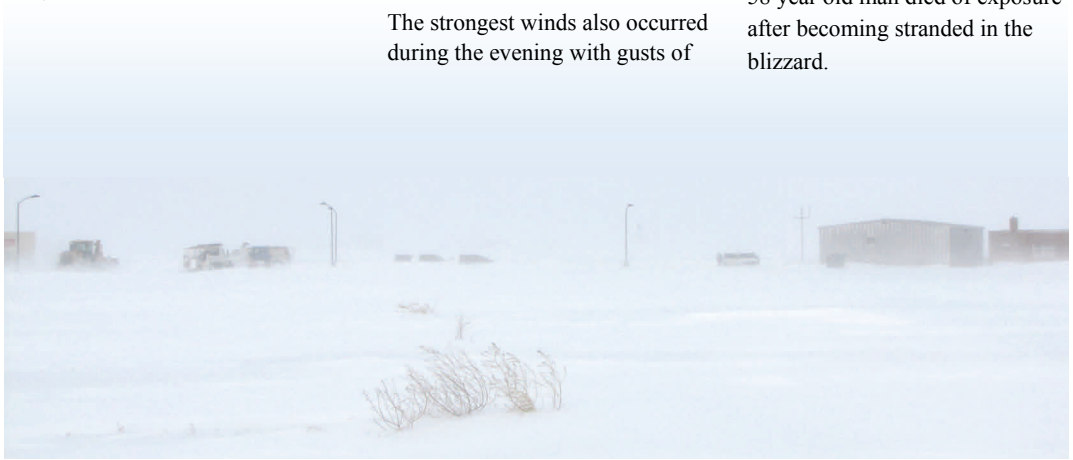
Much of eastern Iowa and northwest Illinois received 10 to 15 inches of snow, with western Illinois and extreme northeast Missouri reporting 15 to 20 inches. The highest total was a whopping 20 inches at Monmouth, Illinois.

At the height of the blizzard during the late afternoon and evening hours on February 1, snow fell at the rate of 1 to 3 inches per hour. These rates were enhanced by thunder-snows that developed in the evening across eastern Iowa and northwest Illinois.

The strongest winds also occurred during the evening with gusts of 66 mph reported at Clinton, Iowa; 56 mph at Mount Pleasant and Davenport, Iowa; and 52 mph at Lowden, Iowa.

A 24-hour record snowfall of 16.7 inches was set at Moline, Illinois which broke the old record of 16.4 inches set on January 3, 1971. A record storm total snowfall of 18.4 inches was tied at Moline, which was first set on January 11-13, 1979.

Unfortunately, there was at least one reported storm-related fatality. Near Mount Pleasant, Iowa, a 58 year old man died of exposure after becoming stranded in the blizzard.



Heat Waves: Silent Killers

In spite of the more widespread use of air conditioning, heat remains one of the top weather-related killers. In the disastrous heat wave of 1980, more than 1,250 people died. In the heat wave of 1995 more than 700 deaths in the Chicago area were attributed to heat. In August 2003, a record heat wave in Europe claimed an estimated 50,000 lives. A heat wave (prolonged period of unusually warm temperatures, often accompanied by high humidity) can last for a few days to a few weeks. The effects of the heat build over time and become more dangerous the longer the heat wave lasts.

Heat Index

The Heat Index (sometimes referred to as the apparent temperature) is a measure of how hot it feels in the shade when the effects of humidity are factored with the actual air temperature. Since heat index values were developed for shady, light wind conditions, ***exposure to full sunshine can add up to 15°F to the heat index.***

Effects of Heat

When the heat index exceeds 105°F, the human body begins to lose the ability to cool itself. Children and seniors are often affected at lower heat index values. Some medications and health conditions may also adversely affect the body's ability to handle heat.

Under prolonged exposure to high heat, heat disorders such as heat exhaustion and heat stroke may develop. When the body heats too quickly, or when too much fluid or salt is lost, the body temperature rises and heat-related illness may develop. Heat disorders share one common feature: the individual has been in the heat too long for his or her age and/or physical condition.

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution · Extreme Caution · Danger · Extreme Danger

Heat Safety

- ***Plan ahead.*** Reduce, eliminate or reschedule strenuous activities until the coolest time of the day.
- ***Keep cool.*** During excess heat, spend more time in air-conditioned places. Air conditioning in homes and other buildings markedly reduces danger from the heat. If you do not have an air conditioner, go to a library, store or other location with air conditioning for part of the day.
- ***Dress for summer.*** Wear lightweight, light-colored clothing to reflect heat and sunlight.
- ***Eat less.*** Foods such as meat and other proteins increase metabolic heat production and water loss.
- ***Stay hydrated.*** Drink plenty of water or other non-alcoholic and decaffeinated fluids.
- ***Avoid the sun.*** Sunburn reduces your body's ability to dissipate heat. To prevent sunburn, use sunscreen.
- ***Vehicles are deathtraps.*** Never leave children or pets unattended in a vehicle, even with the windows down.
- ***Prevent scalding.*** Make sure safety seats and belt buckles aren't too hot before securing a child, especially when the car has been parked in the sun.

More Information Available on the Web:

Heat: A Major Killer

www.weather.gov/om/heat

Red Cross Preparedness

www.redcross.org

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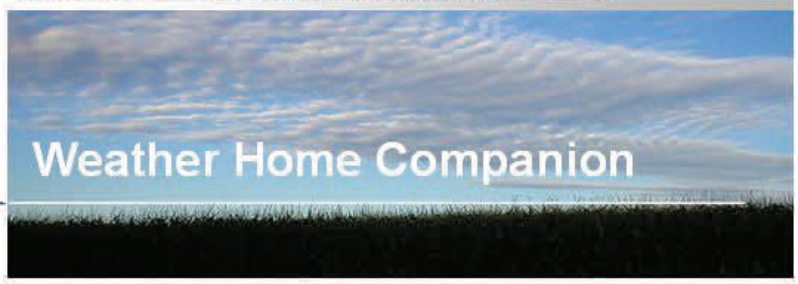

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