



Factoring Wind Chill

—by Stephanie Bowen

You just checked the weather, and it's currently 30°F. When you step outside, the wind hits your face, and it feels a lot colder than 30°F. You just experienced wind chill. Wind chill is an important factor to consider during the winter months because it could quickly lead to frost bite.

The Oklahoma Mesonet uses the National Weather Service's equation for wind chill. The NWS model is based on a human face model to estimate the heat loss from your face caused by wind and temperature.

"It (wind chill) is important because the higher the wind speed, the faster heat is carried away from the skin," said Chris Fiebrich, Associate Director for the Oklahoma Mesonet. "Thus the faster your skin cools, the more prone you are to frost bite."

Wind chill is calculated when the temperature is below 50°F and winds are greater than 5 mph. Also, wind chill only

applies to people and animals and does not affect things like water pipes or road surfaces.

"So if it's 30°F outside, but the winds are less than 5 mph, there is no wind chill," Fiebrich said. "Also, if the wind chill is 25°F, but the air temperature isn't below 32°F, the roads aren't going to freeze."

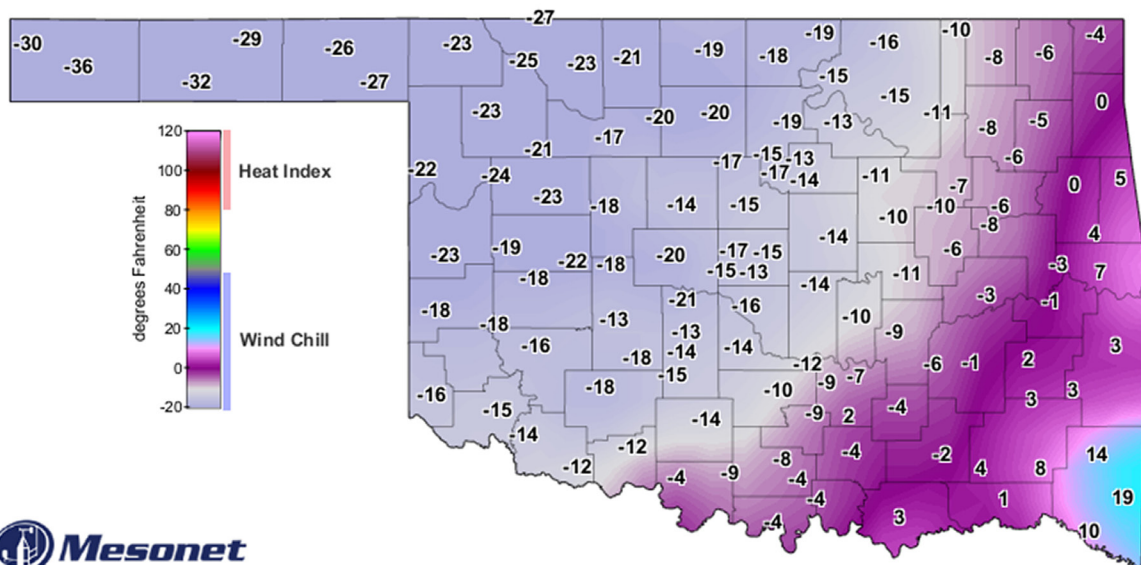
Wind chill maps are available on the Mesonet website. The maps are titled Wind Chill/Heat Index and display wind chill if it's cold and windy, heat index if it's hot and humid, or just air temperature if neither of those conditions apply.

To view these maps, visit www.mesonet.org, click on weather at the top of the page, and then click air temperature on the side of the page. Three wind chill/heat index maps are available. The first is wind chill/heat index. Also available are today's minimum and maximum wind chill/heat index maps. Be sure to read the "learn more" section below the map.

Warning signs of frost bite from the Center for Disease Control and Prevention: At the first signs of redness or pain in any skin area, get out of the cold or protect any exposed skin—frostbite may be beginning. Any of the following signs may indicate frostbite:

- a white or grayish-yellow skin area
- skin that feels unusually firm or waxy
- numbness

Note: A victim is often unaware of frostbite until someone else points it out because the frozen tissues are numb.



Minimum Apparent Temperature Since Midnight (°F)

2011

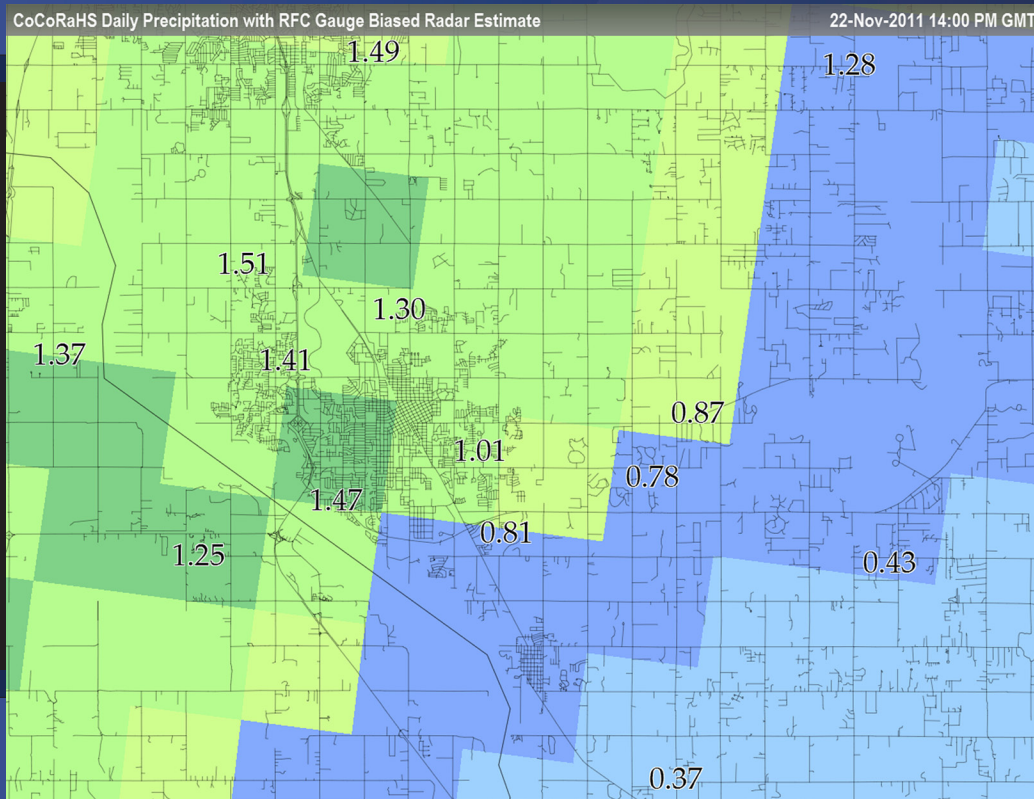
A Record Breaking Year

- ▶ **Minimum temperature - -31°F , Nowata - February 10, 2011**
- ▶ **Number of days with temperature 100°F or higher - 101 days, Grandfield**
- ▶ **Warmest summer (June-August) - 86.9°F , Statewide average - June 1, 2011-August 31, 2011**
- ▶ **24-hour snowfall - 27 inches, Spavinaw - 11 PM CST on February 8, 2011 to 11 PM CST on February 9, 2011**
- ▶ **Wind gust - 151 mph, El Reno - May 24, 2011**
- ▶ **Hail stone diameter - 6.0 inches, 2 miles north of Gotebo - May 23, 2011**
- ▶ **Lowest annual total precipitation - 6.2 inches, Hooker - 2011**

MESONET IN PICTURES

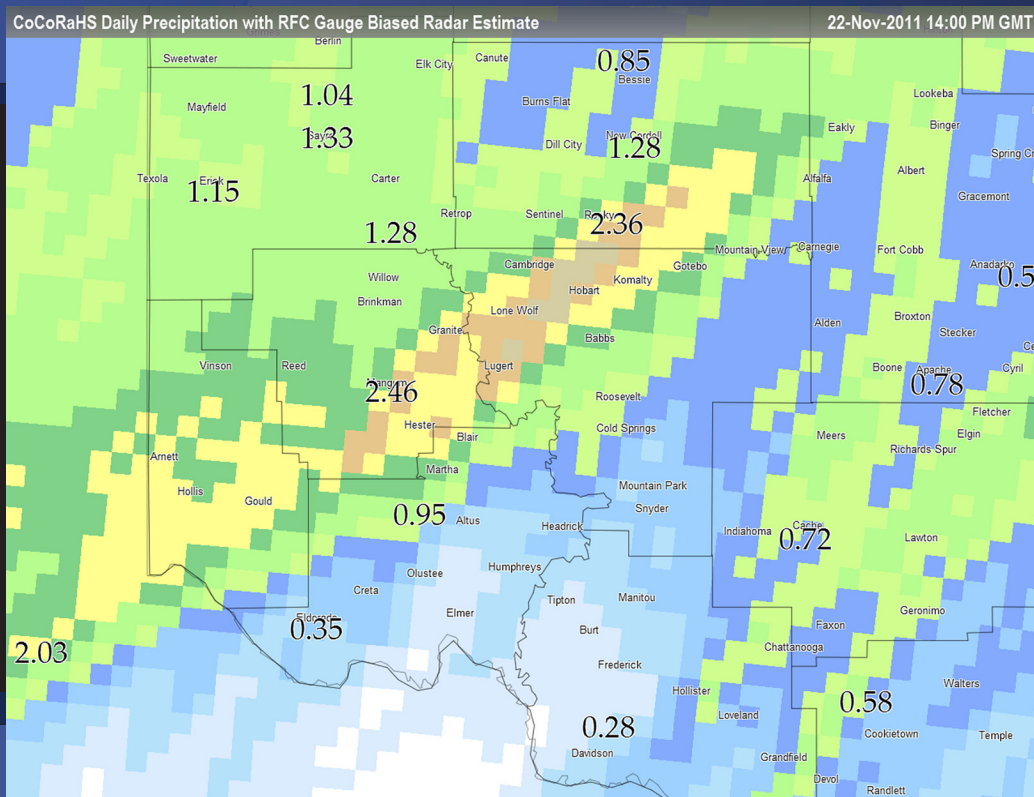
Norman rain on November 22, 2011 recorded by The Community Collaborative Rain, Hail & Snow Network (CoCoRaHS)

- CoCoRaHS reports show how much rain can vary across a community. Here, we see southeast Norman received rainfall amounts as low as 0.37" while northwest Norman reported amounts up to 1.51"



Southwest Oklahoma rain on November 22, 2011 recorded by The Community Collaborative Rain, Hail & Snow Network (CoCoRaHS)

- CoCoRaHS reports show how much rain can vary across an area. Here, we see varying rainfall amounts reported for southwest Oklahoma.



Measuring Snowfall

—by Stephanie Bowen



DURING WINTER STORMS, you won't be able to check the Oklahoma Mesonet station data to see the amount of snowfall in an area, but the rain gauges will show the liquid snow water equivalent after the snow melts. We must depend on people to measure snowfall. There is a nationwide network of volunteers that measure snow, rain and hail. The Community Collaborative Rain, Hail & 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," according to their website.

"The Mesonet does use CoCoRaHS to verify our automated gauges are working correctly," said Cindy Luttrell, the Oklahoma Coordinator for CoCoRaHS and Lead Mesonet Operator for the Oklahoma Climatological Survey. "The Mesonet uses the CoCoRaHS snowfall measurements to compare with the melted snow in the Mesonet rain gauges."

CoCoRaHS volunteers measure snowfall using the outer cylinder of the rain gauge tube. They take two different measurements. They use a ruler to take new and total snow depth, and they use the rain gauge to get the liquid snow water equivalent. It's the amount of water in the snow. To get that measurement, they put the rain gauge upside down in the snow to take a core sample. Then they melt it to measure the snow's water equivalent.

CoCoRaHS volunteers don't just measure snowfall. The nationwide network also measures rain and hail.

"One thing we like about CoCoRaHS' measurements is they provide supplemental points in between our automated points because precipitation can vary greatly across a town or area," Luttrell said. "This helps fill in those gaps in regards to how much precipitation falls in an area."

CoCoRaHS is free to anyone in the United States to participate. The only cost associated with participating is purchasing their rain gauge. If you are interested, sign up on the website at www.cocorahs.org or email Cindy Luttrell at cocorahs@mesonet.org or 405-310-9137. ■





A Year of Extremes: Oklahoma's 2011 Weather in Review

By Gary McManus, Associate State Climatologist

DECEMBER WRAP-UP

Extreme weather grabbed headlines across the globe during 2011 and nowhere more so than right here in Oklahoma. Damages due to weather-related disasters in Oklahoma rose into the billions of dollars. Agricultural damage alone from the drought and related heat has been estimated as high as \$2 billion. As if weather-related disasters were not enough, trouble was also brewing below the earth's surface. A series of relatively strong earthquakes shook the state during November, including a 5.6 intensity quake near Sparks on Nov. 5 – the strongest ever recorded in Oklahoma.

Here are the highlights – or lowlights – of Oklahoma's tumultuous year in weather.

- **Snowstorms** – Two significant winter storms struck the state in late January and early February 2011. The first dumped up to 21 inches of snow in northeast Oklahoma with widespread reports of 6-12 inches over much of the state. Winds of up to 60 mph contributed to massive drifts of over 5 feet. During a second storm several days later, the state record for 24-hour snowfall was broken when 27 inches of snow fell in Spavinaw over Feb. 8-9.

- **Record cold** – On the morning of Feb. 10, the Oklahoma Mesonet site at Nowata reached a low of 31 degrees below zero, shattering the state's previous low temperature record of 27 degrees below zero. Much of northern Oklahoma saw temperatures of 20 degrees below zero or lower. Nowata's high temperature on Feb. 17 was 79 degrees, a remarkable 110-degree temperature swing within a week's time.

- **Drought** – Fed by La Nina, the drought that began in October 2010 intensified through spring in the western half of the state before exploding statewide during summer. Crops withered and a beleaguered cattle industry saw widespread sell-offs due to lack of forage and water. Widespread relief arrived during the fall with the 12th wettest November statewide since 1895. The year ended as the 11th driest on record statewide but for much of western Oklahoma, it ranked in the top three driest years. The Oklahoma Mesonet site at Hooker recorded 6.2 inches of precipitation for the year, the lowest total for an individual location ever recorded in Oklahoma. The previous record of 6.5 inches was held by the fellow Panhandle town of Regnier in 1956.

- **Summer heat** – Oklahoma experienced the hottest summer of any state since records began in 1895 with a statewide average of 86.9 degrees. July's average temperature was 89.3 degrees, becoming the hottest month for any state on record. The state also experienced its second hottest June and hottest August on record. The Oklahoma Mesonet site at Grandfield recorded 101 days above 100 degrees, breaking the previous state record of 86 days from Hollis in 1956. Oklahoma City's 63 100-degree days shattered its previous mark of 50 from 1980.

- **Tornadoes** – Oklahoma's preliminary 2011 tornado count stands at 118. April's 50 tornadoes were the most on record for that month. The most serious tornado was the EF-5 twister that traveled from near Hinton to Guthrie on May 24, killing nine people. The El Reno Mesonet site recorded a maximum wind gust of 151 mph, setting the record for strongest surface wind ever measured (non-radar) in Oklahoma. The preliminary count of 10 tornadoes during November was the second highest on record for that month. A violent EF-4 brute tore through southwestern Oklahoma on Nov. 7, becoming the most powerful November tornado on record for the state.

- **Hail** – Amidst the tornadoes and large hail reports of April and May, a supercell near Gotebo on May 23 dropped a monster 6-inch diameter hailstone, establishing a new record in that particular category for the state.

As the state enters 2012, the attention turns once again to dry weather with much of western Oklahoma still covered by severe-exceptional drought. And while another extreme weather year like 2011 should not be expected, veterans of Oklahoma's wild weather certainly understand it should never be discounted.

CALENDAR

JANUARY

- ▶ 6-7th: Oklahoma Horticulture Industry Show exhibit, Tulsa
- ▶ 12th: Drift Risk and Weather, Turf and Landscape Workshop, Davis
- ▶ 13-14th: 16th Annual KNID Agrifest, Enid
- ▶ 16-17th: Oklahoma Aerial Applicators Association Exhibit, OKC
- ▶ 17th: OK-FIRE Prescribed Fire Seminar, OSU OCES Conference, Stillwater
- ▶ 18th: Mesonet Rain and Drought Tools, OSU OCES Conference, Stillwater
- ▶ 19th: EarthStorm Pre-Collegiate GATE, Norman 24th: EarthStorm Pre-Collegiate GATE, Norman

FEBRUARY

- ▶ 2nd: EarthStorm Job Shadow Day
- ▶ 4th: Weather and Climate, OK Native Plant Society, OKC
- ▶ 7th: Weather Update, Grady County Marketing Meeting, Chickasha
- ▶ 10th: EarthStorm, Judge at Bethel Science Fair
- ▶ 17-18th: American Farmers & Ranchers Annual Convention, Norman
- ▶ 20th: Mesonet Steering Committee Meeting, Stillwater
- ▶ 21st: OK-First Re-certification class, Ada
- ▶ 23rd: OK-First Re-certification class, Newcastle
- ▶ 25th: Ardmore Severe Weather Day
- ▶ 28th: OK-First Re-certification class, Muskogee

CONTACTS

Accessing recent (within the past 7 days)
Mesonet data

Contact: [Mesonet Operator](#)

Instrumentation, telecommunications, or
other technical specifications

Contact: [Chris Fiebrich](#)

Mesonet agricultural data and products

Contact: [Al Sutherland](#)

Mesonet meteorological data

Contact: [OCS Data Requests](#)

K-12 educational outreach

Contact: [Andrea Melvin](#)

OK-First

Contact: [James Hocker](#)

OK-FIRE

Contact: [J.D. Carlson](#)

Not sure?

Contact: 405-325-2541 or [Chris Fiebrich](#).

FORECAST FOR JANUARY

[Click here to view the original maps from the Climate Prediction Center.](#)

