



# Rainfall Graph as Risk Management Tool

–by Al Sutherland - [agblog.mesonet.org](http://agblog.mesonet.org)

### WHAT VALUE DOES A GRAPH LINE REPRESENT?

How can a graph of weather data be a risk management tool? Will comparing rainfall to good and bad years help you make better crop decisions? The difference in Mesonet rainfall graph lines between 2012 and 2014 represented more than a 100 million bushel wheat crop loss for Oklahoma’s farmers. With the wheat price close to \$6 a bushel as this article was being written, that’s \$600 million dollars in lost grain production by Oklahoma wheat farmers between a good year and a bad year.

The graph of cumulative rainfall for Freedom for 2012 (green line) and 2014 (red line) shows the dramatic difference in spring rainfall between these years. The blue fill area is the 15-year average rainfall. The Oklahoma hard red winter wheat crop in 2012 came in at 155 million bushels. In 2014, it was a disastrous 51 million bushels of wheat, a difference of 100 million bushels.

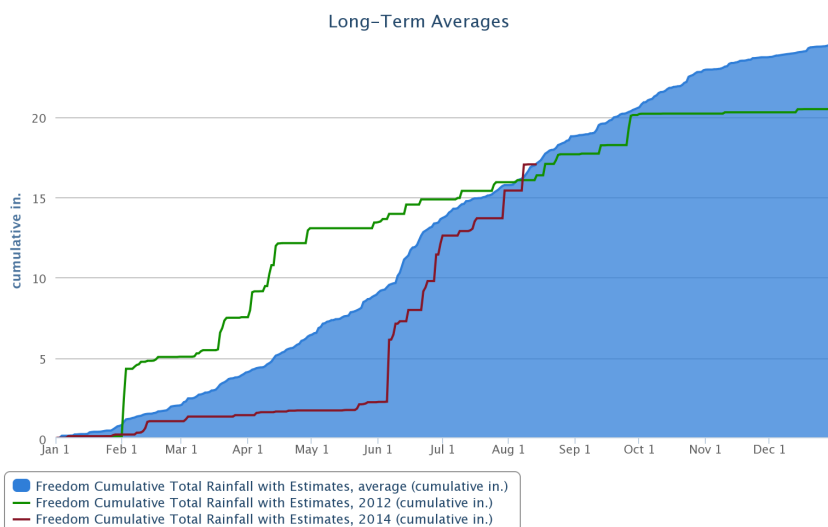
At Freedom, the difference between 2012 and 2014 was huge. In 2012, a heavy rain fell in early February, with another significant rain in mid-March. That provided early spring moisture that helped propel the crop to that 155 million bushel state wheat yield.

For much of Oklahoma “Wheat Country” in 2014, the spring rains never showed up. The graph line of 2014 rainfall for Freedom stayed relatively flat until June. The heavy rain in June came too late for wheat plants. What June rain did do was delay harvest and lower grain quality.

Mesonet has a Long-Term Averages – Graphs tool for creating custom graphs. I used the “Add customized data to graph” feature to compare the 15-year average rainfall to 2012 and 2014 rainfall for Freedom and two other Mesonet sites. While the early August cumulative rainfall for 2014 at these three sites had reached the early August 15-year cumulative

rainfall average, spring rainfall differed dramatically going from west to east.

At Spencer (see graph on next page) in central Oklahoma, 2012 varied little from the 15-year average up until June. In 2014, rain came sooner to Spencer than Freedom. Starting in March 2014, rain fell in small amounts through late April. After that, in May and June, heavier rain events really pushed up the Spencer rainfall. July saw the crossing of the 2012 and 2014 rainfall lines. By the early part of August, the 2014 cumulative rainfall was almost as much as the year end total for 2012.



*Freedom Cumulative Total Rainfall Graph*

Our third rainfall graph is for Talihina (on the next page). The differences between 2012, 2014 and the 15-year average are much narrower than the rainfall graphs for Freedom and Spencer. For Talihina, the first significant 2014 rain event came in January. After mid-March there was a steady climb in the rainfall total.

These graphs show how rainfall patterns vary across Oklahoma. They emphasize how “drought”

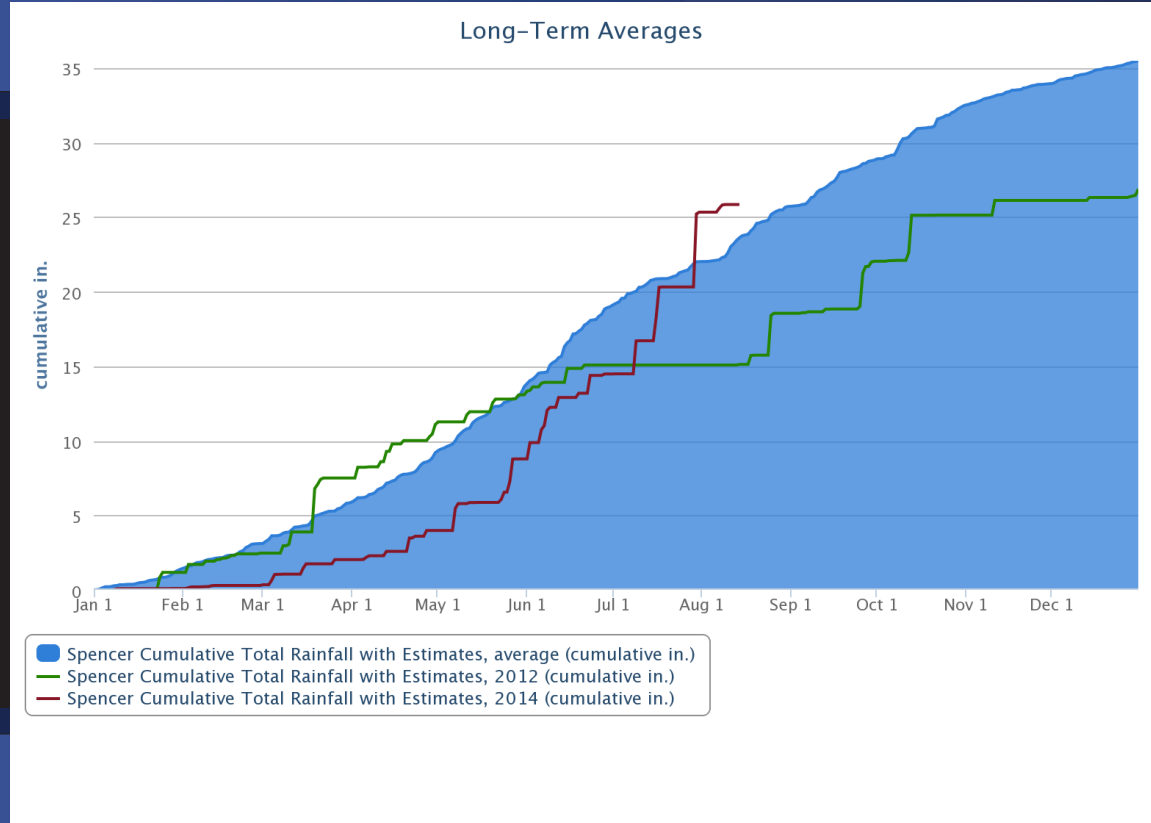
used in a broad sense misses local, important differences in drought impact. While these three sites were close to their average rainfall amounts in August, they varied significantly in the early part of the year.

The Mesonet Long-Term Averages – Graphs is a tool that can be used to compare sixty-three different Mesonet data sets with each other or between years. It allows you to graph daily data and learn so much more than monthly or annual averages can reveal. Producers can compare their best years to their worst years to see how weather contributed to crop yields and forage production. Comparing good and bad years to the current year provides a way to estimate crop yield based on weather drivers. That turns a simple rainfall graph into a powerful risk management tool. ■

# MESONET IN PICTURES

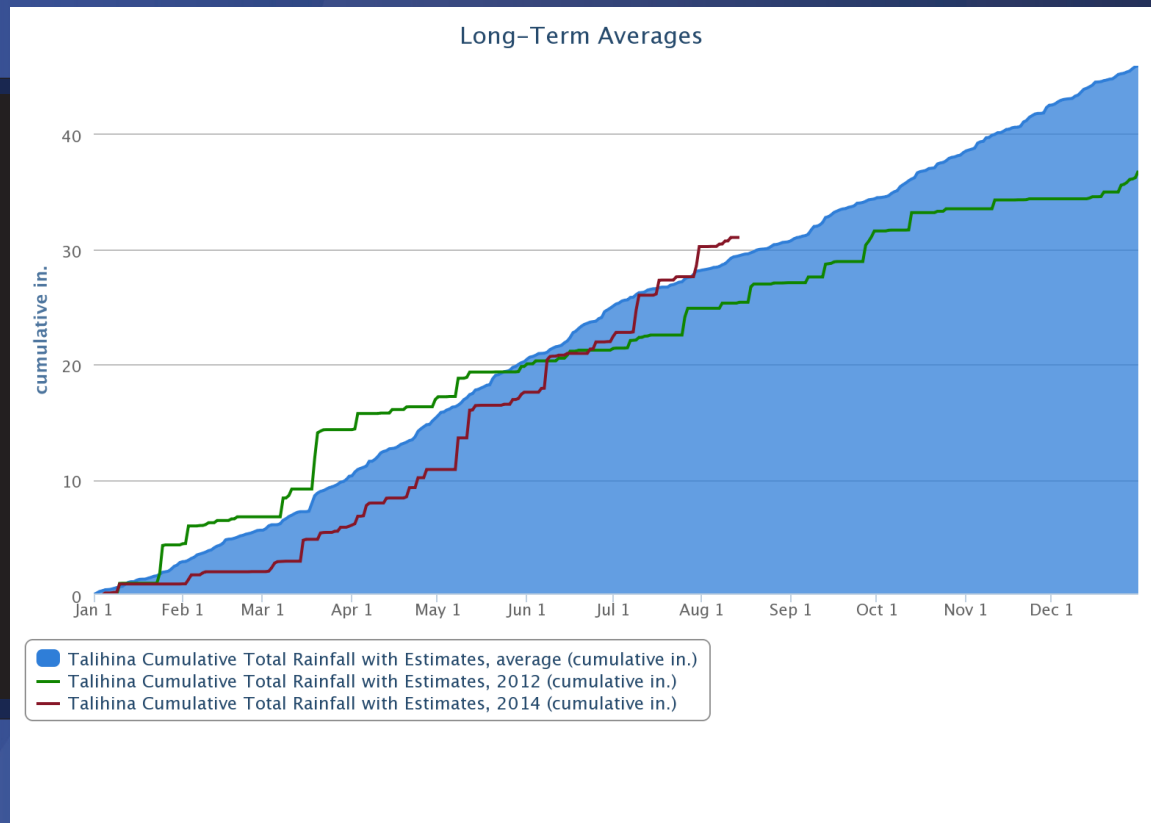
## Spencer Cumulative Total Rainfall Map

- At Spencer in central Oklahoma, 2012 (green line) varied little from the 15-year average (blue fill) up until June. In 2014 (red line), rain came sooner to Spencer than Freedom (graph on previous page). To view Long-Term Averages - Graphs, go to [www.mesonet.org](http://www.mesonet.org). Click on "Weather" and click on "Past Data & Files" in the side bar. Then select "Long-Term Averages - Graphs".



## Talihina Cumulative Total Rainfall Map

- At Talihina, the differences between 2012 (green line), 2014 (red line) and the 15-year average (blue fill) are much narrower than the rainfall graphs for Freedom and Spencer. To view Long-Term Averages - Graphs, go to [www.mesonet.org](http://www.mesonet.org). Click on "Weather" and click on "Past Data & Files" in the side bar. Then select "Long-Term Averages - Graphs".



## Long-Term Averages - Graphs

- The Mesonet long-term averages utilize daily data (e.g. daily average, daily maximum/minimum, or daily total) for every current and past Oklahoma Mesonet station. For a station's data to be used in one of the maps or graphs, at least 90% of the data must be valid during the respective period. Data from relocated Mesonet stations (e.g. "Norman - retired 2002" and "Norman") are not combined into a single station record. Each season consists of a three month period of data. Spring contains the months of March, April, and May; Summer has June, July, and August; Fall has September, October, and November; and Winter has December, January, and February. For Winter, the year corresponds to the end of the season (e.g. Winter 2010 has December 2009, January 2010, and February 2010).



Mesonet

Home About Research Programs Contact Help Oklahoma Climatological Survey

Weather Climate Forecast K-12 Education Agriculture Public Safety Fire Management Search

- Local Weather >
- Current Conditions >
- Radar >
- Air Temperature >
- Rainfall >
- Wind >
- Dewpoint & Humidity >
- Pressure >
- Solar Radiation & Satellite >
- Soil Temperature >
- Soil Moisture >
- Ground Water >
- Station Meteograms >
- Past Data & Files >
- Advisories >
- Upper Air >

### Mesonet Long-Term Averages - Graphs

Show Detail Overlay

Back to Past Data & Files

Share Tweet

Select a Site: Freedom

Select a Preset Graph: Rainfall

Load

Add customized data to graph

Select a Site: Freedom

Select a Product: Cumulative Total Rainfall with Estimates

Select a Year: 2014

Departure from 1999-2013 Avg

Formatting options:

Smoothed

Line/Fill Color

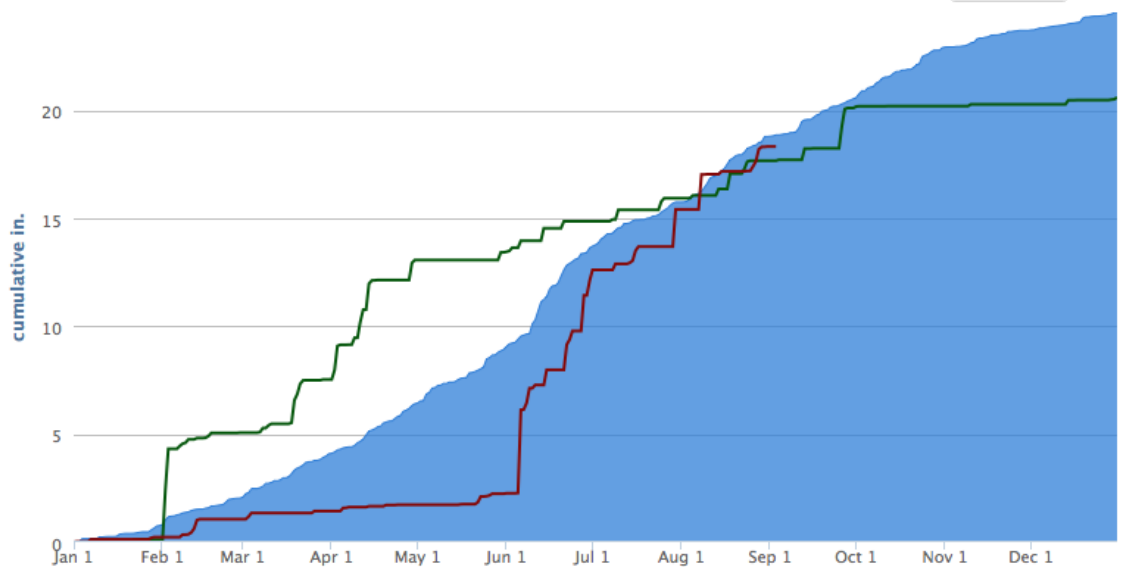
Fill Line

Bold Line

Add to Graph

### Long-Term Averages

Clear Graph



Freedom Cumulative Total Rainfall with Estimates, average (cumulative in.)  
Freedom Cumulative Total Rainfall with Estimates, 2012 (cumulative in.)  
Freedom Cumulative Total Rainfall with Estimates, 2014 (cumulative in.)



Mesonet

# Using the Mesonet to Encourage Responsible Outdoor Water Use

—by Malarie Gotcher

**IN 2013, THE OKLAHOMA CITY UTILITIES DEPARTMENT** partnered with the Oklahoma State University Cooperative Extension Service and the Department of Horticulture and Landscape Architecture to promote outdoor water conservation through teaching, research, and extension. The OKC Utilities Department saw a need to educate the public on proper water use in the midst of persistent drought conditions across the state.

“Oklahoma City sought a partnership with OSU to begin an educational outreach program for the public,” said Dr. Justin Moss, OSU Associate professor and the principle investigator on the project.

The project includes workshops, demonstration garden areas, a public awareness campaign and public perception assessment. The project team, which includes Malarie Gotcher, extension associate, and Morgan Hopkins, graduate research assistant, has focused on educating homeowners, landscape installation companies, and golf course and sports field managers through publications, workshops, and demonstration garden areas. Two of five planned water conservation demonstration gardens have been completed and are located at the Myriad Botanical Gardens and OSU-OKC. The other gardens in progress will be located at Bluff Creek Park, Woodson Park, and the OKC Zoo. Each garden has a signage program so the public can take a self-guided tour.

The water conservation program was designed to facilitate conversations with OKC residents about how they can prevent water waste in the landscape. The OSU team

encourages OKC residents to utilize the Oklahoma Mesonet products to make informed decisions before turning on irrigation systems. The City of Oklahoma City’s water conservation website, SqueezeEveryDrop.com and OSU’s ThinkWater.okstate.edu website link to the Mesonet’s Simple Irrigation Plan website. Gotcher said the SIP website is an easy, powerful tool for homeowners to use.

“Many homeowners are unsure about how much water their plants require, by using the SIP website, they are able to make watering decisions based on plant water need, which reduces water wasted in the landscape,” Gotcher said.

The OSU team has integrated the Mesonet into the utilities department’s efforts by including SIP.mesonet.org website in the city-wide newsletter that is distributed with each water bill and linking the Mesonet.org website on the SqueezeEveryDrop.com homepage under ‘weather forecast’. The team regularly talks with homeowner associations and local organizations, and includes information about the Mesonet and how to use the SIP website. The SIP website also appears on leaflets and factsheets distributed at both the Home and Garden Shows and the Home and Outdoor Living Shows. The leaflets are also available at the Oklahoma County Extension Office.

“The SIP website and the Oklahoma Mesonet are remarkable tools that are valuable for Oklahomans,” Gotcher said. “The information available on the websites provides straightforward instruction so the public can responsibly irrigate their landscapes.” ■

*Seasonal Tips provided by ThinkWater.okstate.edu*

## Get ready for fall

- **Adjust your irrigation system.** In the fall, plants are transpiring less and need less water. Make sure you are not overwatering your lawn and plants.
- **Prepare your system for winter.** Turn off the water, drain the valves and blow out the excess water in the lines with compressed air.
- **Disconnect your garden hoses.** To reduce wear on your garden hoses, drain, roll them up, and store them.
- **Check out your water consumption history.** By tracking your water usage you’ll be able to spot unusual changes that may signal a leak or other water wasting problems.



# Summer Returns During August

By Gary McManus, State Climatologist

## AUGUST WRAP-UP

August made a valiant effort to continue the unusually cool and remarkably wet conditions of June and July and place a final exclamation point on one of the more enjoyable Oklahoma summers in recent memory. Unfortunately, that message was lost during the month's final two weeks as the heat and dry weather of a normal Oklahoma summer found their way back to the state. According to preliminary data from the Oklahoma Mesonet, the mild first half and summery second half of the month combined to produce a statewide average temperature of 80.6 degrees, two-tenths of a degree above normal and the 57th coolest August since records began in 1895. Even that statistic was somewhat misleading, however, as the abundant moisture across eastern Oklahoma produced heat indices well into the triple-digits at times. The highest actual air temperature measured by the Mesonet was 105 degrees at several locations, certainly nothing out of the ordinary for August in Oklahoma. But the heat index often topped that mark, with Lane recording a state-leading 112 degrees on August 8. The Mesonet recorded heat index values greater than 105 degrees 57 times during August. The climatological summer ended as the 26th coolest on record with a June-August average temperature of 78.7 degrees, nearly a degree below normal. The summer's highest temperature, 107 degrees, was recorded at several Mesonet locations during June and July.

Only a late-month storm system saved Oklahoma from one of its top-five driest Augusts on record. There were a few locations that recorded generous moisture amounts. The Mesonet site at Porter led the state with 4.1 inches and several other stations across northern Oklahoma reported more than 3 inches, but 50 Mesonet stations recorded less than an inch for the entire month. Okemah and Putnam brought up the rear with a tenth of an inch in each of their gauges during August. The statewide average precipitation total of 1.4 inches was half of the normal total for August and the 12th driest since records began in 1895. West central Oklahoma suffered through its third driest August on record with an average of 0.3 inches. The summer as a whole was still wetter than normal, however, with a statewide average of 11.4 inches, 1.6 inches above normal to rank as the 34th wettest on record. North central Oklahoma had a near miraculous recovery from a disastrous first five months of the year with its 11th wettest June-August on record, 4.5 inches above normal.

The drought relief that was so prevalent from late May through July dwindled along with the rains during August. The month's final U.S. Drought Monitor actually saw a slight increase in drought from the previous week as a result of the extended period of hot, dry weather. That final map portrayed approximately 49 percent of the state in at least severe drought, with 16 percent of that amount in the extreme-to-exceptional drought categories. The Drought Monitor's intensity scale slides from moderate-severe-extreme-exceptional, with exceptional being the worst classification. The worst of the drought remained from southwestern through northwestern Oklahoma. Roughly 29 percent of the state, mostly across southeastern Oklahoma, was considered to be free of any abnormally dry conditions.

# 12th DRIEST

August since records began in 1895

# 1.4"

average statewide precipitation  
for August

# 80.6°F

average statewide temperature  
for August

# 49

# PERCENT

of the state in at least severe drought  
according to the U.S. Drought Monitor  
on August 26

## CALENDAR

### SEPTEMBER

- ▶ 3rd-4th: OK-First Assistant Certification Class, Norman
- ▶ 8th-11th: OK-First Certification Class, Norman
- ▶ 12th: OK-FIRE Workshop, Norman
- ▶ 16th-17th: OK-First Assistant Certification, Tulsa
- ▶ 18th: OK-First Re-certification Class, Tulsa
- ▶ 20th: OSU OGBA Gardenfest exhibit, Stillwater
- ▶ 23rd: OK-First Re-certification Class, Altus
- ▶ 25th: OK-First Re-certification Class, Muldrow
- ▶ 25th: Rogers County Master Gardener Training, Claremore
- ▶ 26th-28th: Oklahoma Outdoor Exhibit, Guthrie
- ▶ 26th-28th: Climate Teacher Workshop at OU Biological Station, Lake Texhoma
- ▶ 30th: OK-First Re-certification Class, Woodward

### OCTOBER

- ▶ 2nd: OK-First Re-certification Class, Ardmore
- ▶ 13th-19th: OK-First Online Re-certification Class
- ▶ 14th: OK-FIRE Workshop, Ardmore
- ▶ 22nd-23rd: OK Governor's Water Conference & Institute, OKC
- ▶ 22nd: Cleveland County Master Gardener Training, Norman
- ▶ 28th: A Sooner and Cowboy Success Story: The Oklahoma Mesonet for OU's Osher Lifelong Learning Institute
- ▶ 30th: OK-First Advisory Committee Meeting, Norman

## 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](#)

Earthstorm - K-12 educational outreach

Contact: [Andrea Melvin](#)

OK-First - Public safety outreach

Contact: [James Hocker](#)

OK-FIRE - Fire management outreach

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

Not sure?

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

### ***Tweet of the Month***

*@WesternOkChaser - Aug 21 - Just passed the @okmesonet truck at Cheyenne. One of my favorite apps!!*

Find us on



## FORECAST FOR SEPTEMBER

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

