Mesonet Contributes to Drought Monitor

–by Stephanie Bowen

THE U.S. DROUGHT MONITOR is the drought map that policymakers and media use in discussions of drought and in allocating drought relief. Data from the Oklahoma Mesonet contributes to the report, which is an assessment of current drought conditions on a week by week basis across the U.S.

The Drought Monitor is released every Thursday morning by NOAA, and it's based at the National Drought Mitigation Center at the University of Nebraska in Lincoln. The Monitor is produced by a rotating group of authors from the U.S. Department of Agriculture, the National Oceanic and Atmospheric Administration, and the National Drought Mitigation Center. It incorporates review from a group of 250 climatologists, extension agents, and others across the nation. Each week the author revises the previous map based on rain, snow and other events, observers' reports of how drought is affecting crops, wildlife and other indicators.

"There are seven people from Oklahoma that include input, including Gary McManus and ," said Mark Shafer, Associate State Climatologist. "Gary usually assembles all of the input from Oklahoma each week. The data to be included each week is cut off on Tuesday at 7 am so we have time to look over things and update."

Mesonet rainfall maps and the radar based maps are used to calculate current departures from normal, which can be done in real time. Evapotranspiration models (ET) help figure out if we are getting higher ET rates that would impact drought. The soil moisture maps are also very useful.

Shafer says a good example of ET effects was in summer 2011 when the ET rates really drove the heat, so it was a useful tool. By knowing what was happening in eastern Oklahoma, we were able to determine what was occurring in western Arkansas as well.

"The scale of detail we have and the sub county resolution allows for better accuracy for the Oklahoma drought monitor," Shafer said. "One of the things we can really use Mesonet data for is validating our decisions. When we recommend changes, we want to back it up with evidence. We don't want to recommend anything that we can't show data to prove it. That has been a big factor in the panhandle where the surrounding states weren't indicating the severity of the drought as we were. We were able to prove that and get ahead of the curve in some places. It helps us be confident in our recommendations."

The Drought Monitor is tied to agricultural assistance through USDA, NRCS and FSA programs that use the monitor as an assistance trigger. They have a certain amount of time in a D2 level drought, and then it automatically makes those counties eligible for assistance. So it is important to detect drought as it is emerging so those criteria can be met. Individual producers can make a case to USDA, but it is a lot easier if you can make it a blanket level with the county. The IRS also uses the drought monitor as a trigger for tax deferrals for livestock sales.

"This whole process works better than anything I have ever seen," Shafer said. "The willingness of authors to consider the local input, and the motivation they have. There is no direct funding source for the drought monitor. It is all done by the agencies cooperating, and they do it in a way that is a great model for others."

To learn more about drought in our area, watch weekly drought briefings from the Southern Climate Impacts Planning Program available on *youtube.com/SCIPP01*. A weekly five-minute briefing is posted updating on current conditions, including the drought monitor, outlooks, rainfall departures, and other updates on drought impacts like water resources and agricultural conditions. ∎
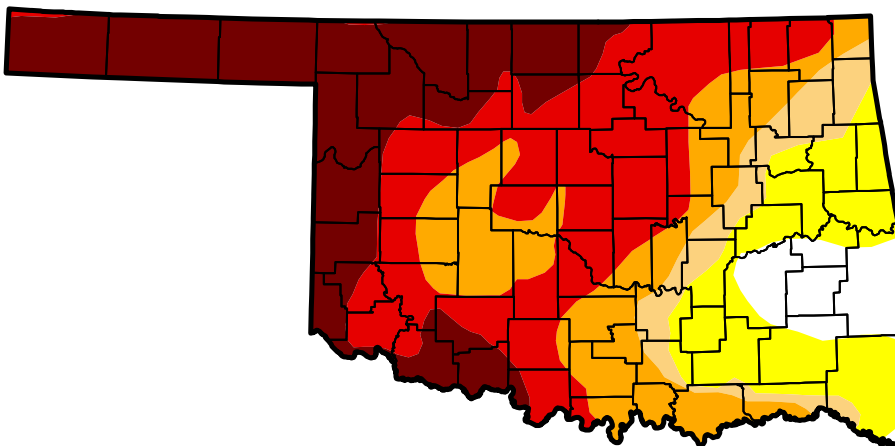
U.S. Drought Monitor - Oklahoma map

- The U.S. Drought Monitor is updated weekly to reflect current drought conditions across the U.S. Mesonet data contibutes directly to the Oklahoma map. To view this map, go to www.mesonet.org, and click on "Agriculture." Then click on "Drought" from the left side menu.

Evapotranspiration Map

- The Evapotranspiration (ET) map is a combined measurement of water loss through evaporation from the soil surface and water use through plants by transpiration. To view this map, go to www.mesonet.org, and click on "Agriculture." Then click on "Evapotranspiration" from the left side menu to select and view the "Evapotranspiration Map".

U.S. Monthly Drought Outlook

- The U.S. Monthly Drought Outlook is produced by the National Weather Service's Climate Prediction Center. The outlook is updated every 2 weeks. To view this map, go to www.mesonet.org, and click on "Forecast." Then click on "Long Range" from the left side menu to select and view the "U.S. Monthly Drought Outlook" map.
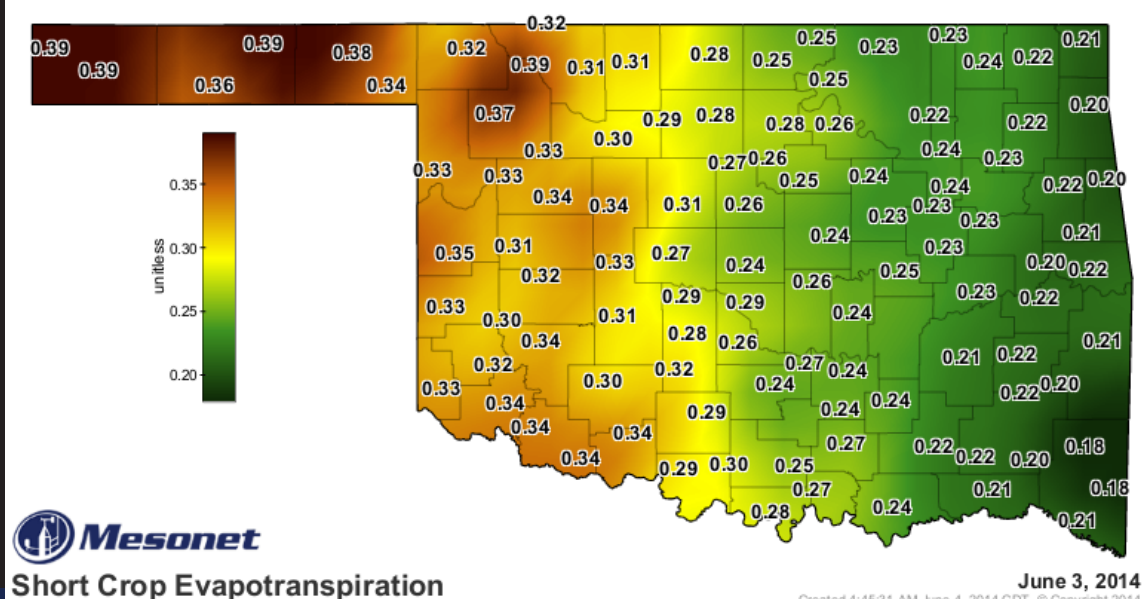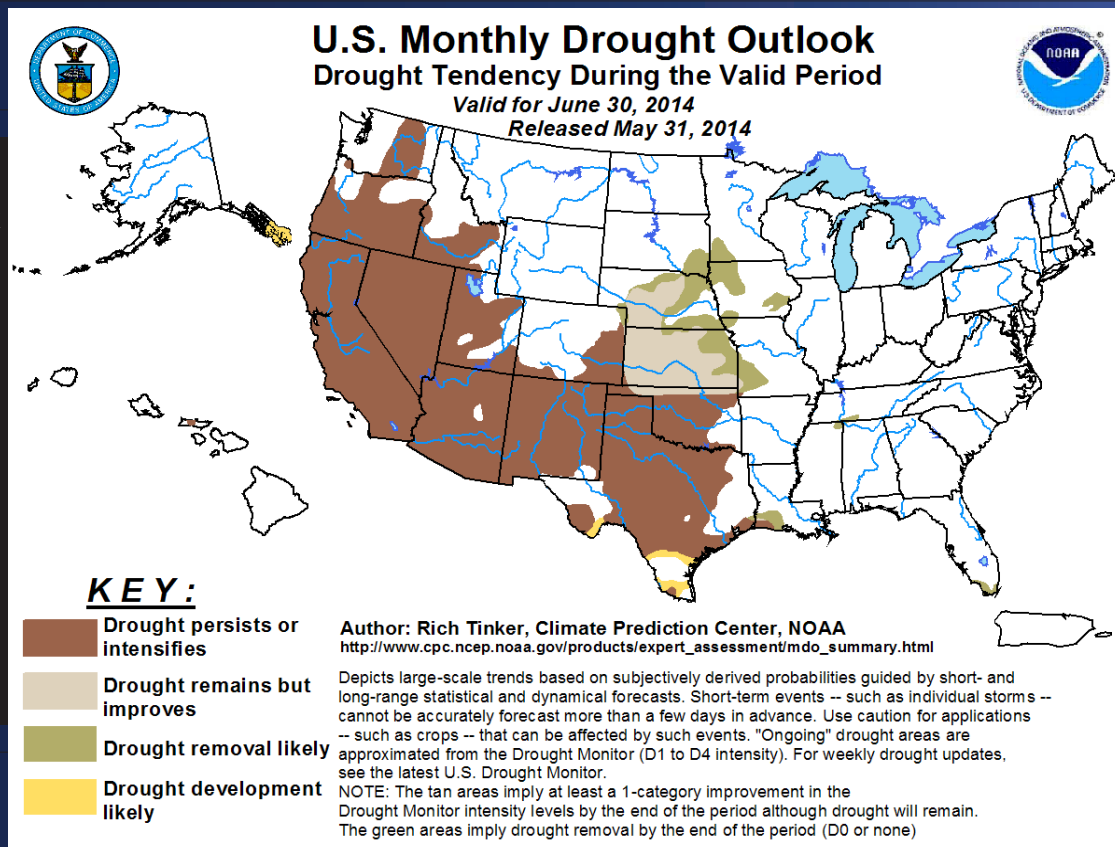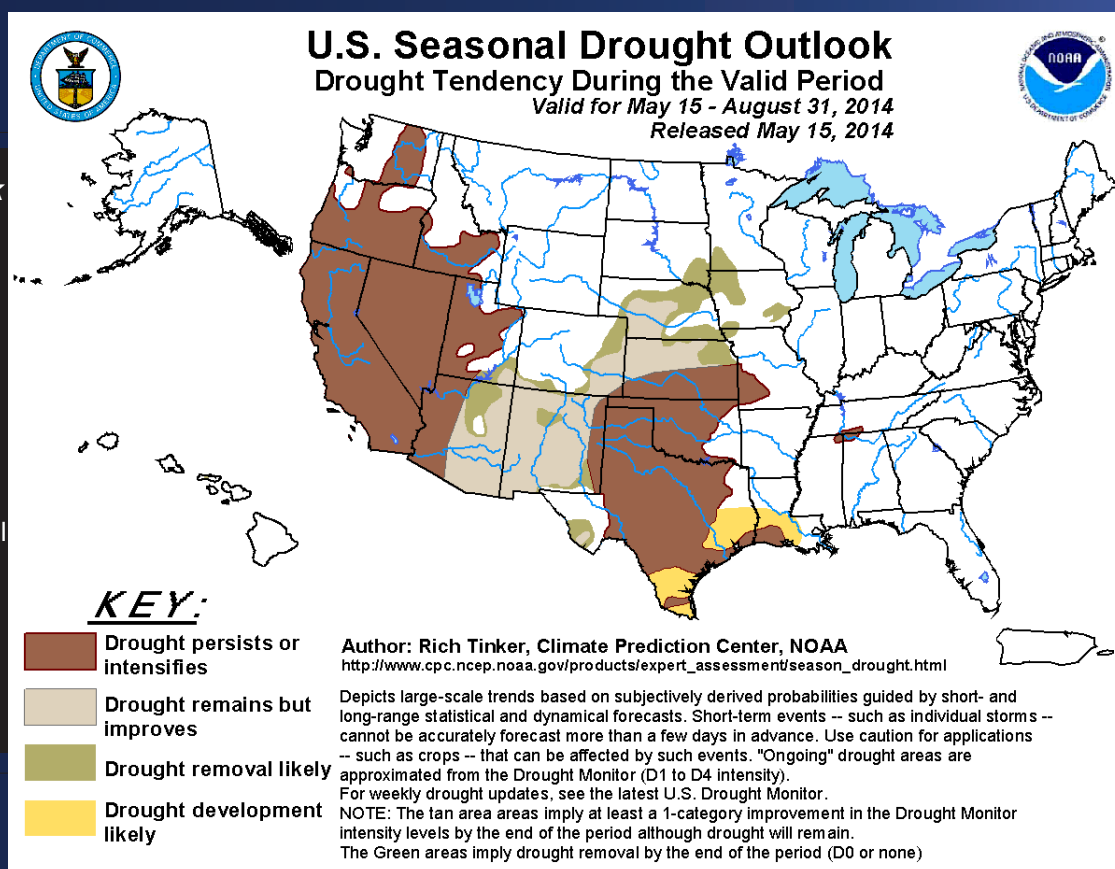
U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period
Valid for June 30, 2014
Released May 31, 2014

KEY:

- Drought persists or intensifies
- Drought remains but improves
- Drought removal likely
- Drought development likely

Author: Rich Tinker, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.html

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor.
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain. The green areas imply drought removal by the end of the period (D0 or none)

U.S. Seasonal Drought Outlook

- The U.S. Seasonal Drought Outlook is produced by the National Weather Service's Climate Prediction Center. The outlook is updated every 2 weeks. To view this map, go to www.mesonet.org, and click on "Forecast." Then click on "Long Range" from the left side menu to select and view the "U.S. Seasonal Drought Outlook" map.

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for May 15 - August 31, 2014
Released May 15, 2014

KEY:

- Drought persists or intensifies
- Drought remains but improves
- Drought removal likely
- Drought development likely

Author: Rich Tinker, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.html

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity).
For weekly drought updates, see the latest U.S. Drought Monitor.
NOTE: The tan area areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain. The Green areas imply drought removal by the end of the period (D0 or none)

New Mesonet Steering Committee Member

–by Stephanie Bowen

PAM HEINSELMAN SERVES AS THE NEWEST MEMBER ON THE MESONET STEERING COMMITTEE. PAM IS A RESEARCH METEOROLOGIST WITH THE NOAA NATIONAL SEVERE STORMS LABORATORY (NSSL) AND AN ADJUNCT ASSISTANT PROFESSOR WITHIN THE SCHOOL OF METEOROLOGY. OUTSIDE OF THE OFFICE, PAM ENJOYS BEING ACTIVE. HER FAVORITE ACTIVITIES INCLUDE ZUMBA, TAKING WALKS WITH HER HUSBAND AND DOG, AND HIKING, ESPECIALLY IN ROCKY MOUNTAIN NATIONAL PARK.

Q: TELL ME A LITTLE ABOUT YOUR BACKGROUND AND YOUR INVOLVEMENT ON THE MESONET STEERING COMMITTEE.

A: My career in meteorology began in Norman, Oklahoma in 1995, as a Research Associate with the University of Oklahoma Cooperative Institute for Mesoscale Meteorological Studies. I graduated from the University of Oklahoma in 2004 with a PhD in meteorology, and shortly thereafter became an adjunct assistant professor within the School of Meteorology. In 2009, I became a federal research scientist with NOAA NSSL and am currently the Team Lead of phased array radar weather research. The research I conduct focuses on the development and testing of weather radar applications and the analysis of severe storms. An important aspect of this research is involving users in the development of new radar capabilities, such as adaptive scanning of severe storms. My understanding and appreciation of the significant benefits of weather observing systems to decision makers and our society as a whole led to this opportunity to serve on the Mesonet Steering Committee.

Q: HOW WILL YOUR WORK AT THE NSSL AND AS AN ASSISTANT PROFESSOR IN THE SCHOOL OF METEOROLOGY IMPACT YOUR ROLE AS A LEADER OF THE MESONET?

A: Being a Research Scientist and Team Lead at NSSL, and an advisor of graduate students within the OU School of Meteorology, I have experience developing research plans, conducting experiments with cutting-edge technology, building partnerships, and helping others grow in their careers. My goal is to use this experience to help the Oklahoma Mesonet continue to perform its state-of-the-art services to Oklahoma and further enhance its relevance to our state.

Q: HOW HAS THE MESONET IMPACTED YOUR RESEARCH WITH NSSL?

A: The Mesonet has been important to my radar research in several ways. Each spring my team runs experiments with the phased array research radar at the National Weather Radar Testbed in Norman, Oklahoma. With a focus on collecting data on severe storms, the Mesonet is used to forecast when and where storms will form. Once storms have developed, Mesonet data keep us informed about the effects of the storms on the environment, such as the development of cold pools, wind shifts, and significant wind gusts. These data also aid in assessing future storm evolution, such as the potential for tornadogenesis. My team documents this information in real time and it is used later in storm analyses. ■

"Tame May" sees Drought Relief, Few Tornadoes

By Gary McManus, State Climatologist

MAY WRAP-UP

Drought made significant advances across Oklahoma through the first three weeks of May. The prolonged drought preempted the normal spring green-up of vegetation and extended the wildfire season well into May. Fire danger rose to extreme levels prompting a state of emergency declaration by the Governor as well as a burn ban for 36 counties across central and western Oklahoma. More than 30,000 acres were burned in wildfires in just a few days during the month's second week, including a fire in Noble County that killed one person and destroyed or damaged 60 properties. Relief finally arrived in the form of a slow-moving upper-level low pressure system camped over the Desert Southwest. The spinning storm system allowed for ample moisture return into the Southern Plains from the Gulf of Mexico. The event's first impacts were felt on the 21st with a few showers in the Panhandle and continued through the end of the month as the storm moved slowly east and meandered about the Ark-La-Tex region. Rain fell somewhere in Oklahoma on each of May's final 11 days.

The highest monthly rain totals occurred in far southeastern Oklahoma with Mt. Herman leading all Oklahoma Mesonet sites at 7.65 inches. Southwestern Oklahoma, an area plagued by drought for well over three years, also saw widespread 4-5 inch amounts. Even the central Oklahoma Panhandle received more than three inches, which is about an inch above normal for that area. Unfortunately, outside of those and a few other isolated regions, Oklahoma's wettest month still came up short. According to preliminary data from the Mesonet, the statewide average rainfall total for May was 3.06 inches, 2.15 inches below normal and the 28th driest since records began in 1895. Central and south central Oklahoma were particularly dry at more than 3 inches below normal, the 19th driest and 13th driest May on record for those areas, respectively. The lowest May total, 0.51 inches, was recorded at the Freedom Mesonet site. Oklahoma's climatological spring (March-May) ended as the 10th driest on record with a statewide average of 6.50 inches, 5.18 inches below normal. The January-May ranking was worse with an average of 7.32 inches, 7.57 inches below normal and the third driest such period on record. The first five months of the year were the sixth driest for Tulsa with a total of 8.45 inches, approximately 8 inches below normal. Oklahoma City shared a similar fate with 7.13 inches, a deficit of about 6.5 inches to rank as the ninth driest such period on record.

Owing to the extreme drought-fueled heat of the first half of the month, May finished 1.2 degrees above normal with a statewide average of 69.1 degrees. That ranked the month as the 39th warmest May on record, and also the first month to end warmer than normal since September 2013. The highest May temperature recorded by the Mesonet was 105 degrees at Altus and Cherokee on May 5 and 6, respectively. The lowest temperature of 26 degrees was recorded at Kenton on May 2, although it did freeze in the western Panhandle as late as May 14. Climatological spring was quite cool with a statewide average temperature of 58.2 degrees, 0.9 degrees below normal to rank as the 38th coolest on record. The January-May statewide average of 49.5 degrees was 1.6 degrees below normal and the 23rd coolest such period on record.

May ended with 80 percent of the state in drought according to the U.S. Drought Monitor. Extreme-to-exceptional drought reached as high as 61 percent before the rains began late in the month and finished at 55 percent. Over 26 percent of the state remained in exceptional drought by the month's end. The Drought Monitor's intensity scale slides from moderate-severe-extreme-exceptional, with exceptional being the worst classification.

10th DRIEST
March-May since records began in 1895

3.06"
average statewide precipitation for May

69.1°F
average statewide temperature for May

80 PERCENT
of the state in drought according to the U.S. Drought Monitor on May 29

CALENDAR

JUNE
- **3rd-5th:** Oklahoma Mesonet at Inter-tribal Emergency Management Coalition Annual Summit, Shawnee
- **4th:** Soil Moisture and Wildfires presentation, MOISST 2014 Workshop, Stillwater
- **5th:** Farm Foundation NWC Tour, Norman
- **20th:** OSU STEM Teacher Institute
- **22nd-27th:** Oklahoma Mesonet Weather Camp

JULY
- **9th-11th:** Oklahoma Association of Extension Agricultural Agents Conference, Midwest City
- **13th-18th:** Oklahoma Mesonet Weather Camp
- **16th-17th:** AFRI Grazing CAP Grant Extension Team Mtg, Wichita, KS
- **21st:** Cattle Comfort presentation, National Association of County Agricultural Agent Annual Mtg, Mobile, AL
- **23rd:** State 4-H Roundup, Stillwater
- **24th:** Climate Trends Tool presentation, National Association of County Agricultural Agent Annual Mtg, Mobile, AL
- **24th-26th:** Oklahoma Cattlemen's Association Convention, Midwest City

Tweet of the Month

@ThinkWaterOK - May 27 - Give your sprinklers a break and enjoy the much needed rainfall! @okmesonet

Find us on

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.

FORECAST FOR JUNE   *Click here to view the original maps from the Climate Prediction Center.*

DISCUSSION: Equal chances for above normal temperatures across western and central Oklahoma. Chance for above-normal precipitation in far northeast Oklahoma.

Equal chances for above normal temperatures across western and central Oklahoma. Chance for above-normal precipitation in far northeast Oklahoma.