# Four New Maps in OK-FIRE

Four new statewide maps have been added to the new OK-FIRE, three dealing with new relative humidity (RH) variables – the most important fire weather variable – and one dealing with soil moisture. The first three (RH variables) were added as a result of requests from our users and the fourth (soil moisture) as the result of years of research. These maps appear in the "Current Maps" section. Current values for two of these variables for individual Mesonet sites can be found in the home page data tables (for up to two stations) and for all four variables in the Current Station Conditions section for any Mesonet site.

New Relative Humidity Maps

The first RH map (and variable) has to do with **how much RH has changed over the past ONE hour**. This is important for wildland fire, whether one is fighting a wildfire or conducting a prescribed burn. In the map example below, for example, one sees great decreases in RH (red colors) over the past 1 hour in a band across northern Oklahoma. If a wildfire were raging in these areas, one would know conditions are getting worse.



1-hour Relative Humidity Change (%)
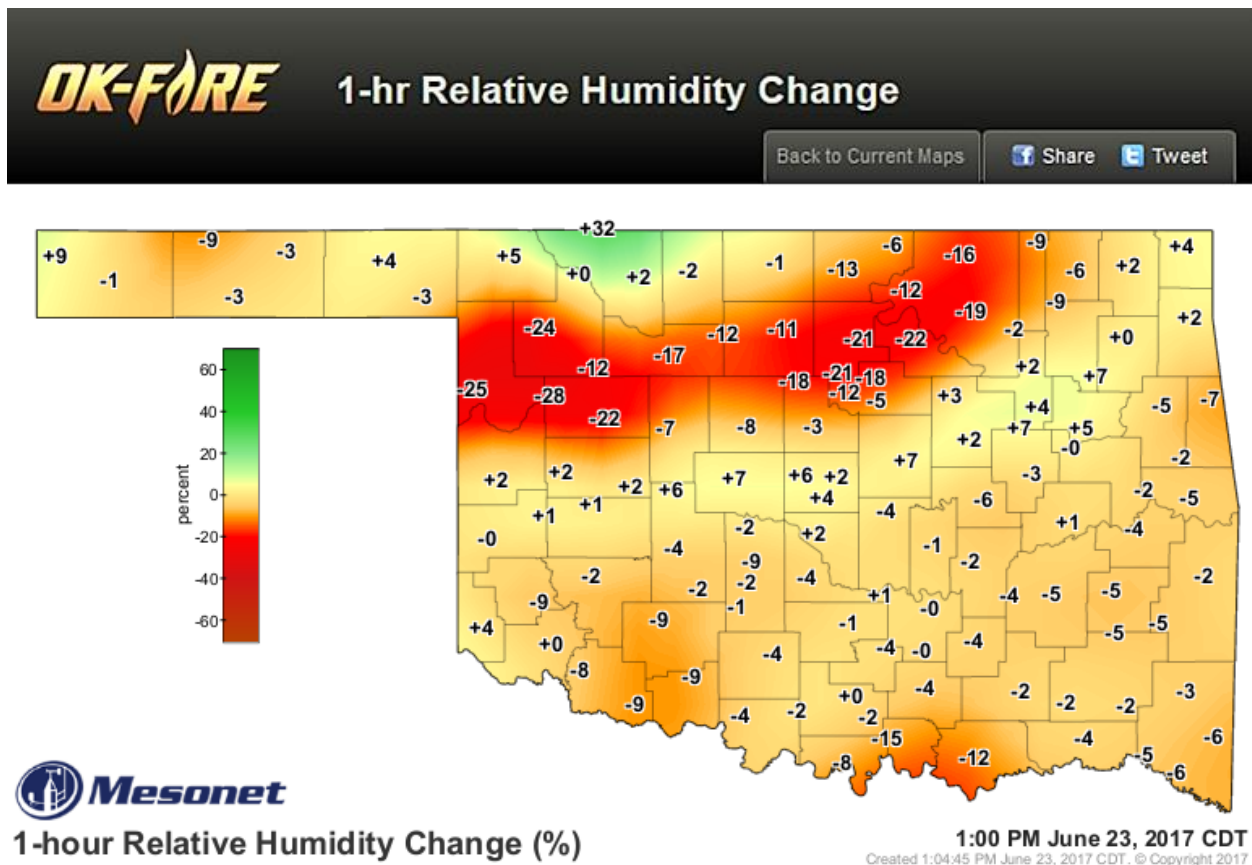
The second RH map (and variable) has to do with **how much RH has changed over the past THREE hours**. This is a longer period than the one hour of the previous map but still gives important information to the wildland fire manager. The map below is from two hours later and shows tremendous decreases in RH (up to 41%) over the past 3 hours.
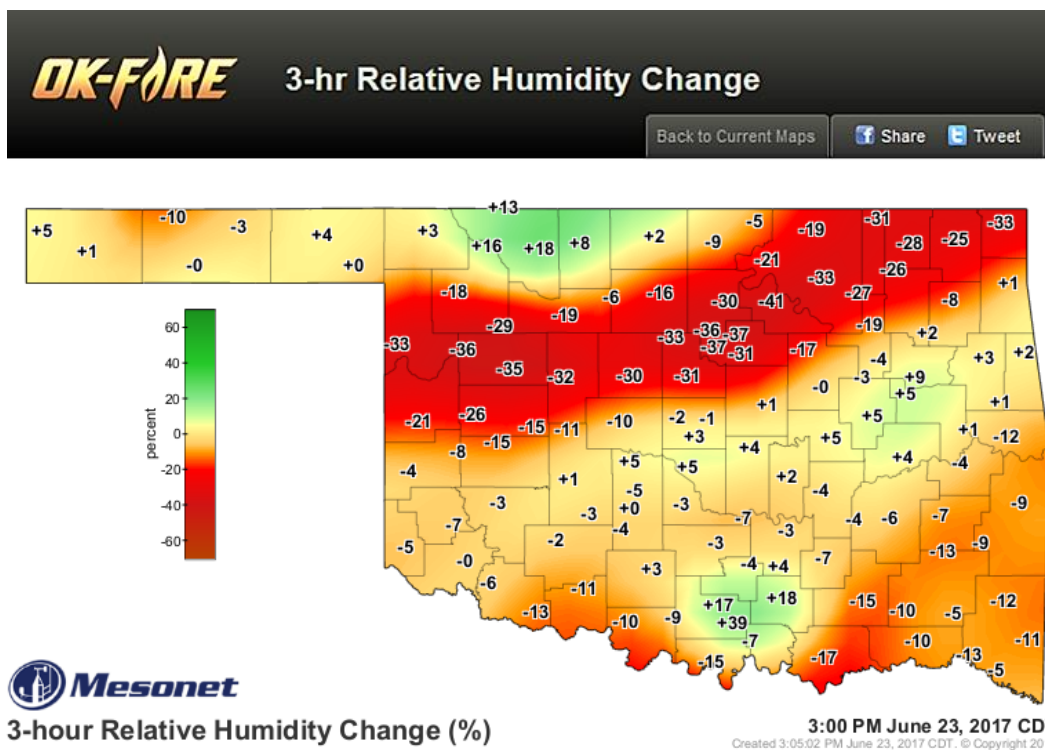
The third RH map (and variable) shows the **maximum RH reached since midnight**. This information is useful to see if fuel recovery for 1- and 10-hour dead fuels has had a chance to occur in the overnight hours before sunrise.
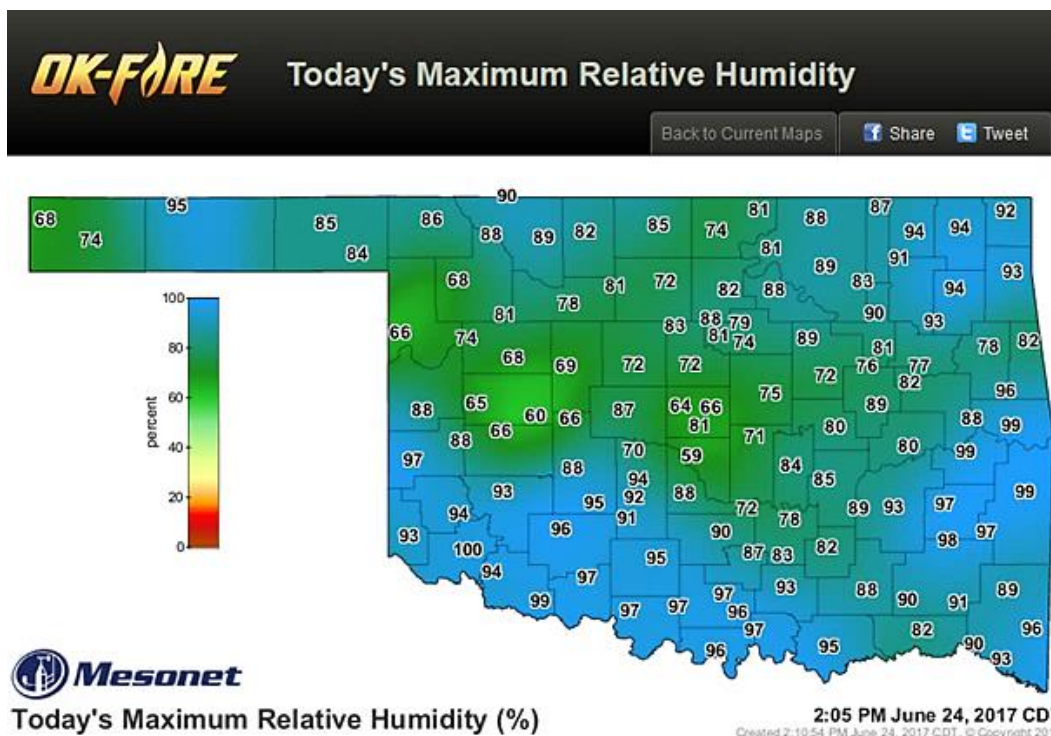
The fourth new map has to do with **soil moisture**, a very important variable which helps determine the transition from live to dead fuel as well as control the level of live fuel moisture. Over the past four years OSU fire researchers have shown that a particular soil moisture variable – the percent of plant available water in the top 16" of soil – is strongly related to large (>= 1000 acres) wildfires during the growing season (May – October). A new map relevant to the growing season was developed to put this research into practical use on OK-FIRE.
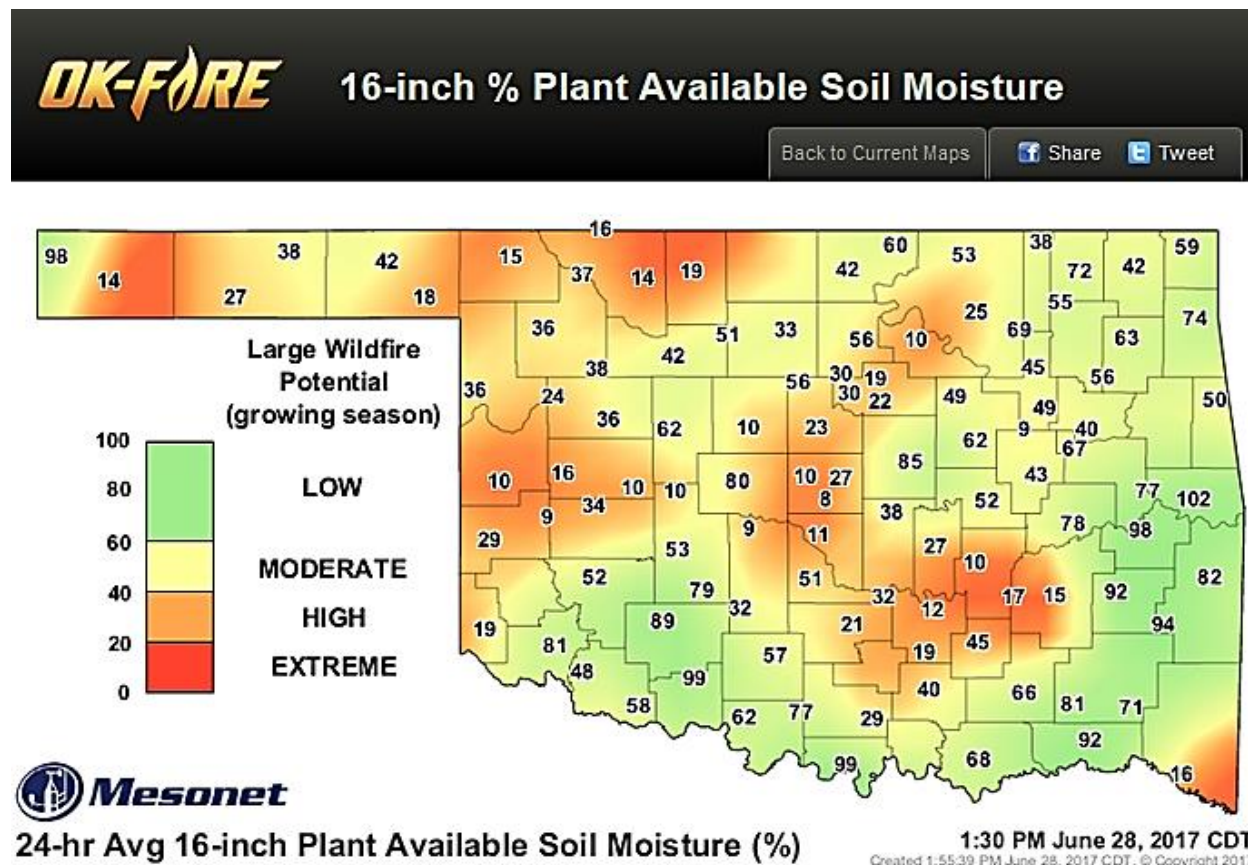
Research has shown that, given suitable fire weather, when this soil moisture value gets to 20% or lower, a high probability of large growing-season wildfires exists. The research was conducted using Mesonet soil moisture and weather data over a 13-year period (2000-2012) in conjunction with an Oklahoma wildfire database we developed. This variable was also shown to outperform KBDI (Keetch-Byram Drought Index) as a predictor of large wildfire activity during the growing season.