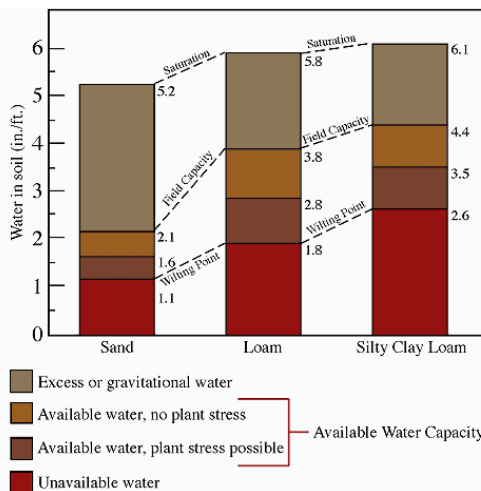
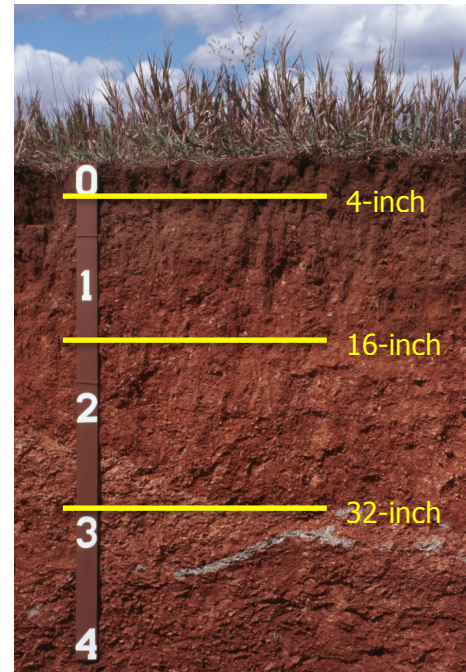


Mesonet Plant Available Water

<http://mesonet.org> / Weather / Soil Moisture & Temperature

Water in the soil is like money in the bank. Plant available water is the water stored in a column of soil that plants can use. Plant available water is one of three types of water found in soil. One type of water is short-lived, it is water that saturates a soil during a rain or irrigation event, but rapidly drains away, referred to as "gravitational water." When this water drains out, the soil is said to be at "field capacity." The third type of water is so tightly bound to soil particles that plants cannot remove it.

The **Mesonet Plant Available Water** is reported in inches of water in a soil column from the soil surface down to **4 inches** (10 cm), surface to **16 inches** (40 cm) and surface to **32 inches** (80 cm). These depths correspond to the root areas for seedlings, shallow rooted plants and deep-rooted plants. Plant available water maps are updated daily. Cellphone users can access these maps on the Mesonet Mobile website, m.mesonet.org. Mesonet soil moisture sensors are located at 2 inches (5 cm), 10 inches (25 cm) and 24 inches (60 cm). Not all Mesonet sites have reporting soil moisture sensors or sensors at all three depths. Sensors are under a mix of warm-season grasses and forbs.



The maximum amount of plant available water that a particular soil can hold is called "available water capacity." Available water capacity varies with soil type, soil structure and soil organic matter. Coarse sandy soils hold less plant available water. Clay soils hold more than sand, but less than loam soils. Higher levels of organic matter may increase plant available water. Soil compaction reduces plant available water by reducing soil pore space. The Mesonet Plant Available Water is based on soil properties from soil samples collected at each reporting Mesonet site and depth. Soil textures for each depth for each Mesonet site are listed under "Site Information" or by going to "About" in upper, blue header, then "Mesonet Sites." To determine your soil type, refer to www.cmg.colostate.edu/gardennotes/214.html; Chapter Eight of *Oklahoma Forage and Pasture Fertility Guide* OSU Extension publication (E-1021); or <http://soils.usda.gov/education/resources/lessons/texture>.

The inches of water for a site can be used directly or compared to the theoretical maximum shown on the maps on the following pages. A typical trigger for irrigation is when plant available water drops to 50% of the maximum plant available water.

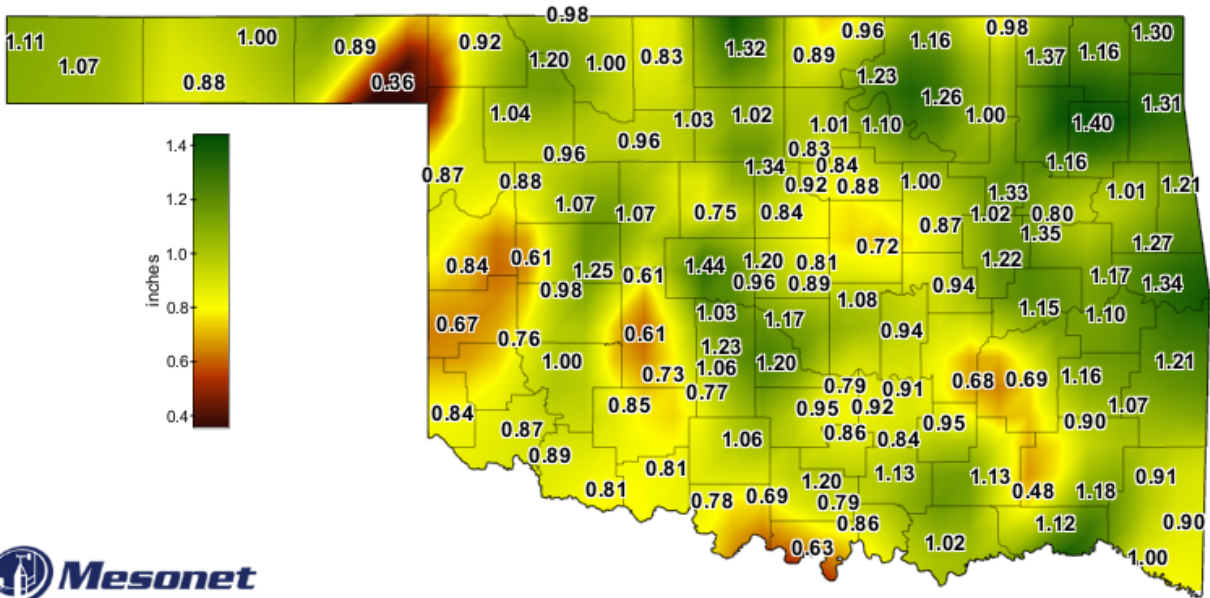
For longer Plant Available Water time scales, refer to "Long-Term Averages" maps and graphs on the Oklahoma Mesonet website in the "Weather" section and under the "Past Data & Files" group.

(edited Oct 28, 2013)

Team: Tyson Ochsner, Bethany Scott, Brad Illston, Nathan Bain, Chris Fiebrich, Jeff Basara, Albert Sutherland
 Ref: New soil property database improves Oklahoma Mesonet soil moisture estimates. Scott, B.L., Ochsner, T.E., Illston, B.G., Fiebrich, C.A., Basara, J.B., Sutherland, A.J. *Journal of Atmospheric and Oceanic Technology* (in-press)

Plant Available Water 4-inch (10 cm) Theoretical Maximum (surface to 4 inches)

	Mesonet Site	Plant Available Water	Soil Texture Class – 2 in (5 cm)
Lowest	Slapout	0.36"	Loamy Sand
Mid	Ada	0.91"	Sandy Loam
Highest	El Reno	1.44"	Silt Loam

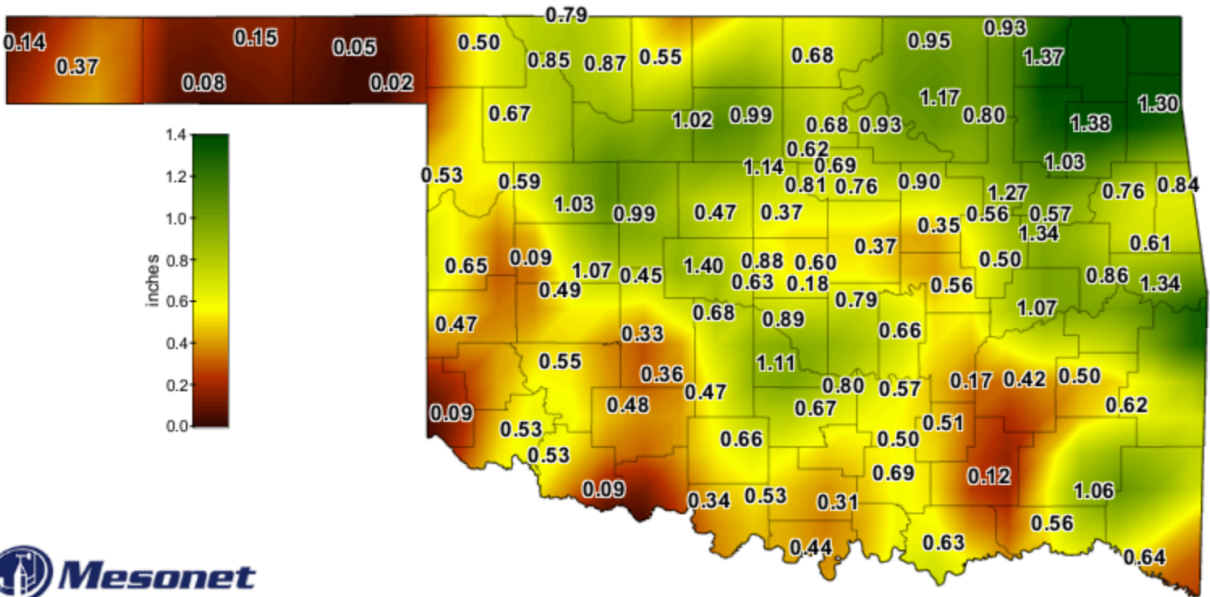


Maximum 10cm Plant Available Water

Theoretical

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EXAMPLE of Current Surface to 4 inches Plant Available Water Map



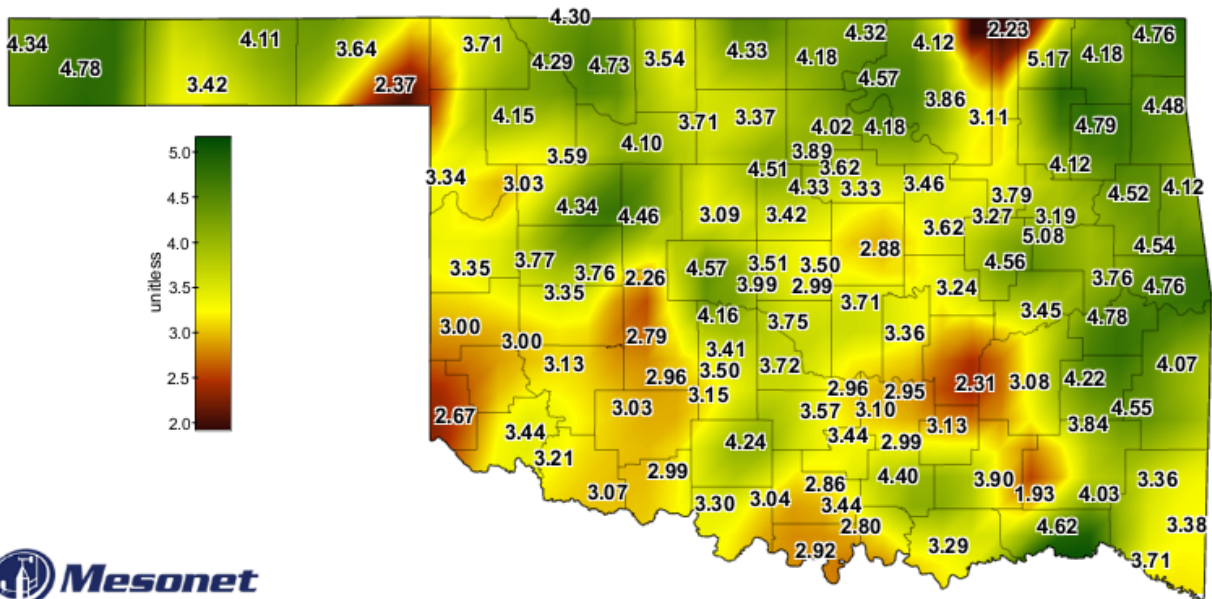
4-inch Plant Available Water

August 5, 2013

Created 7:30:12 AM August 6, 2013 CDT. © Copyright 2013

Plant Available Water 16-inch (40 cm) Theoretical Maximum (surface to 16 inches)

	Mesonet Site	Plant Available Water	Soil Texture Class – 2 in (5 cm)	Soil Texture Class – 10 in (25 cm)
Lowest	Antlers	1.93"	Loamy Sand	Loamy Sand
Mid	Pauls Valley	3.57"	Silt Loam	Silt Loam
Highest	Nowata	5.17"	Silt Loam	Silt Loam

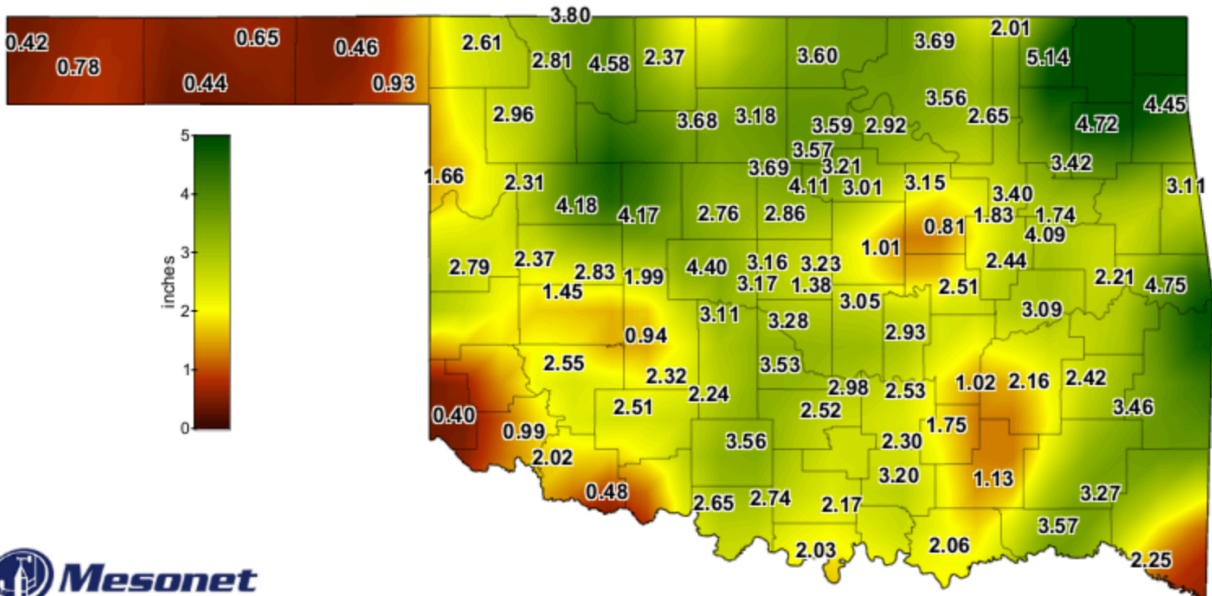


Maximum 40cm Plant Available Water

Theoretical

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EXAMPLE of Current Surface to 16 inches Plant Available Water Map



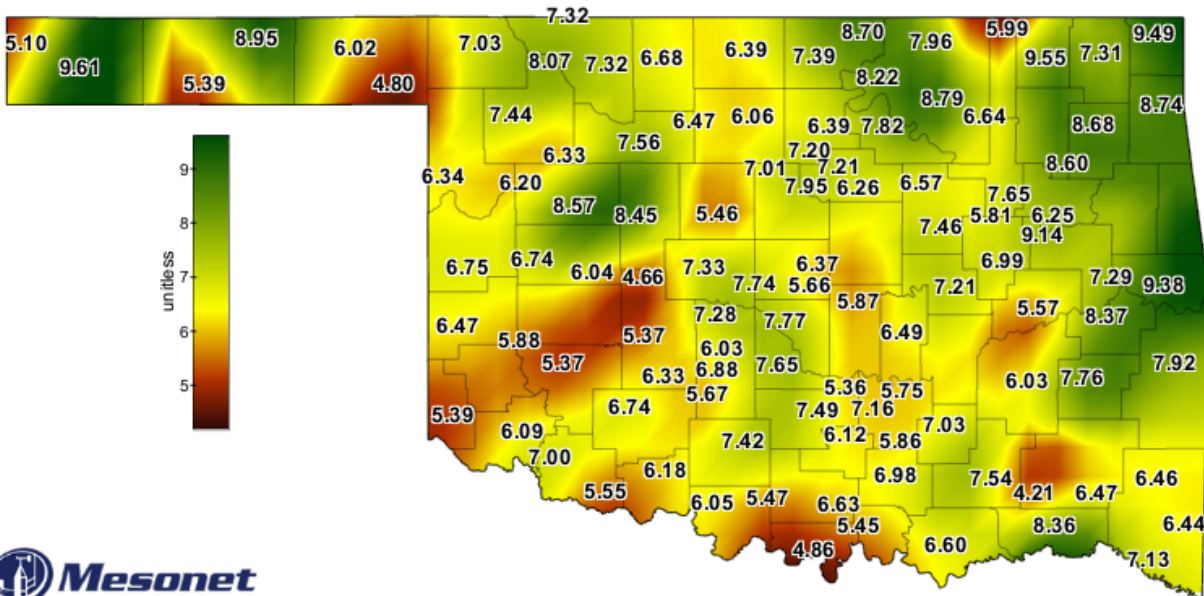
16-inch Plant Available Water

August 5, 2013

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Plant Available Water 32-inch (80 cm) Theoretical Maximum (surface to 32 inches)

	Mesonet Site	Plant Available Water	Soil Texture Class – 2 in (5 cm)	Soil Texture Class – 10 in (25 cm)	Soil Texture Class – 24 in (60 cm)
Lowest	Antlers	4.21"	Loamy Sand	Loamy Sand	Sandy Loam
Mid	Ninnekah	6.88"	Loam	Loam	Clay Loam
Highest	Nowata	9.55"	Silt Loam	Silt Loam	Silty Clay Loam

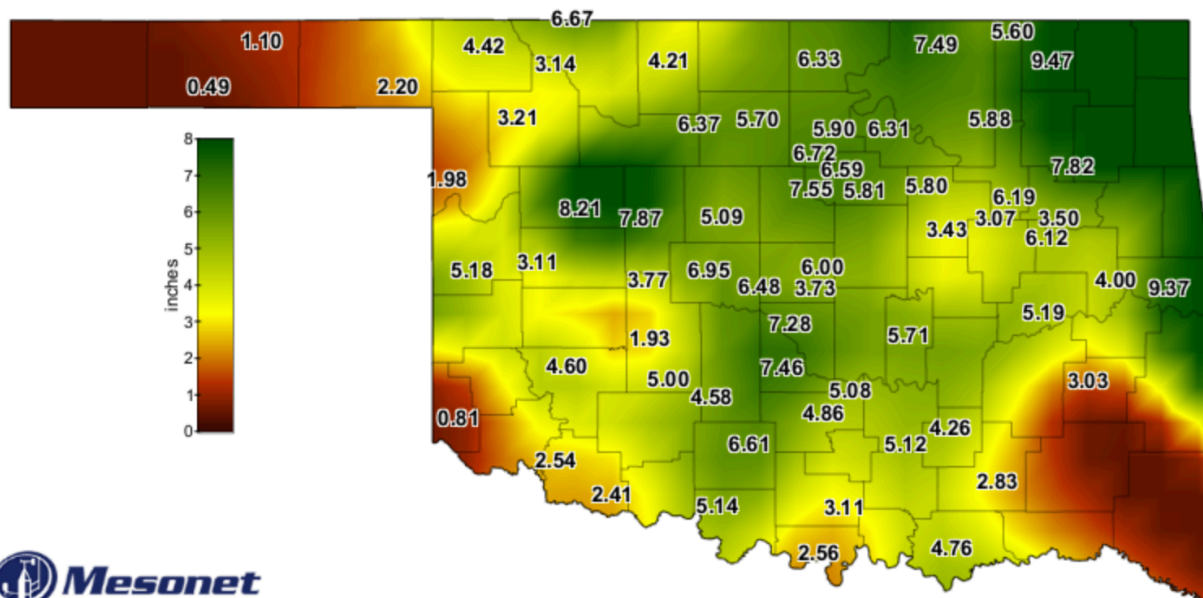


Maximum 80cm Plant Available Water

Theoretical

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EXAMPLE of Current Surface to 32 inches Plant Available Water Map



32-inch Plant Available Water

August 5, 2013

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