

USCRN Soil Moisture Products

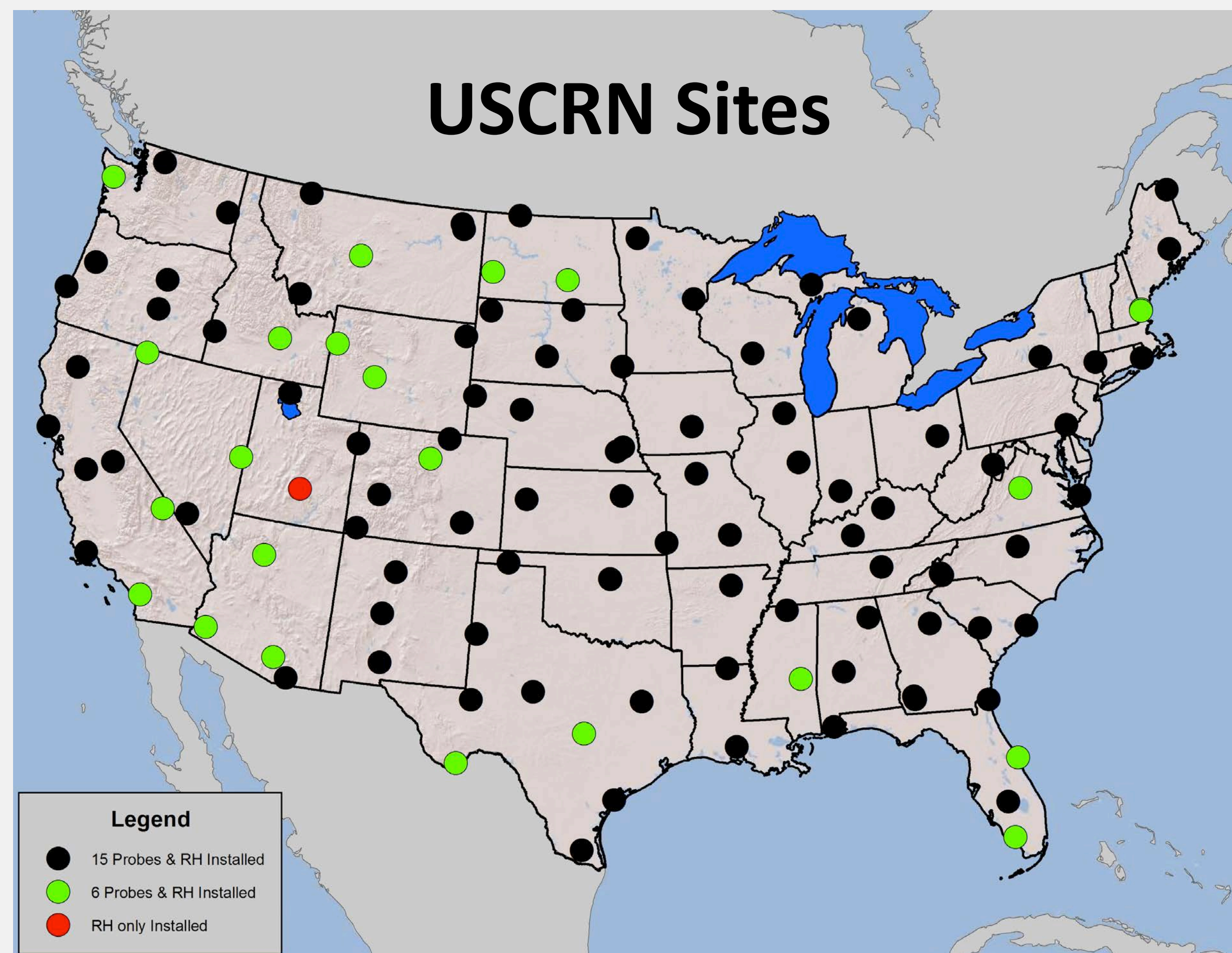
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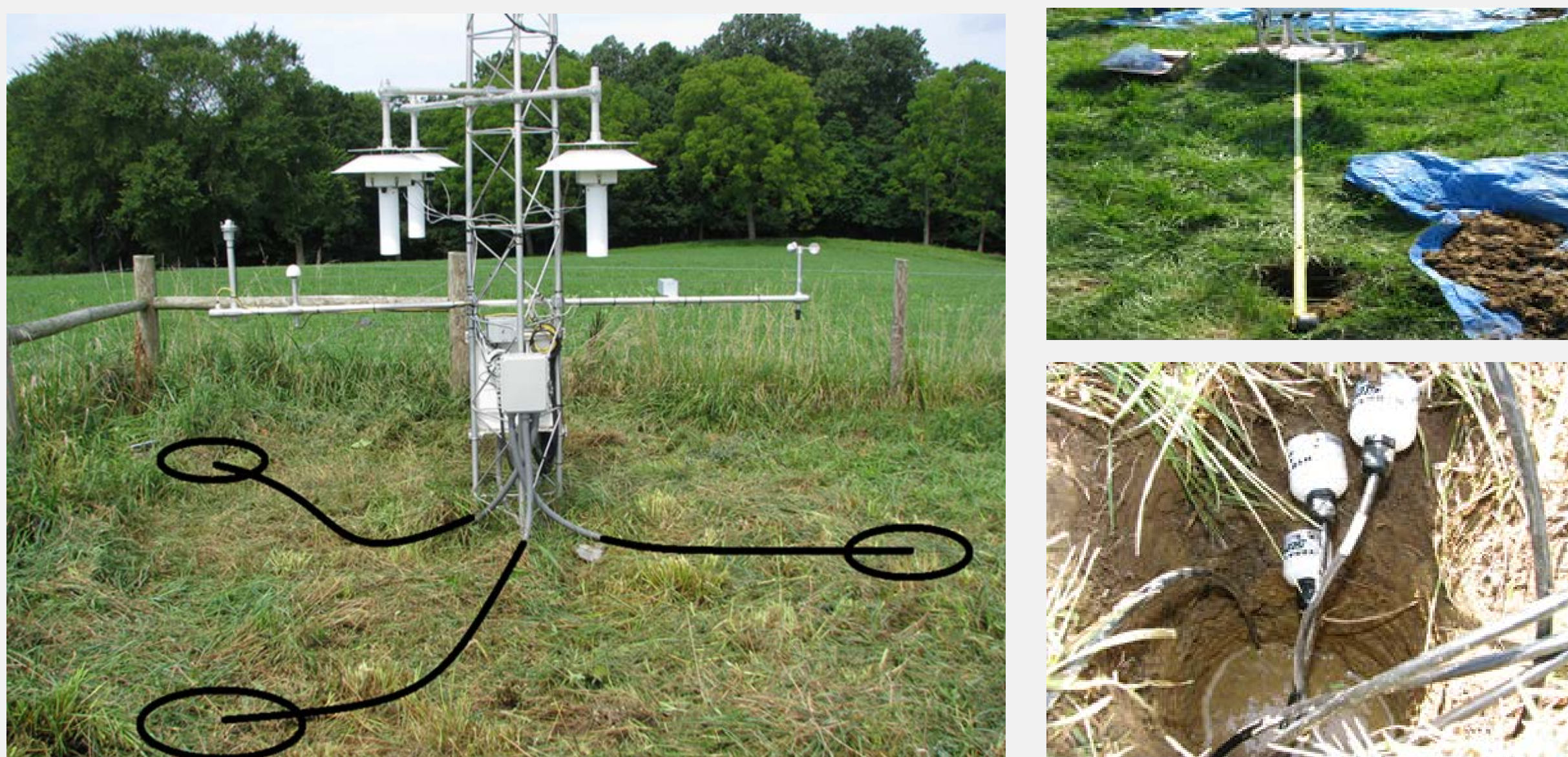
Introduction

The U.S. Climate Reference Network consists of 114 high quality climate observing systems in the contiguous U.S. monitoring temperature and precipitation with triplicate redundancy.

Starting in 2009, soil moisture/temperature probes were added as a primary observation, and three sets of observations are now taken at 5, 10, 20, 50, and 100 cm depths where feasible. High quality measurements now exist for more than seven years.



USCRN Station w/Soil Probe Locations



Quality Controlled Soil Moisture Data Sets

<https://www.ncdc.noaa.gov/crn/qcdatasets.html>

Daily and hourly layer-averaged soil moisture data are available in Daily01 and Hourly02 station-year files.

<https://www.ncdc.noaa.gov/crn/current-observations>

Near-real-time soil moisture can be seen in hourly tables of current observations

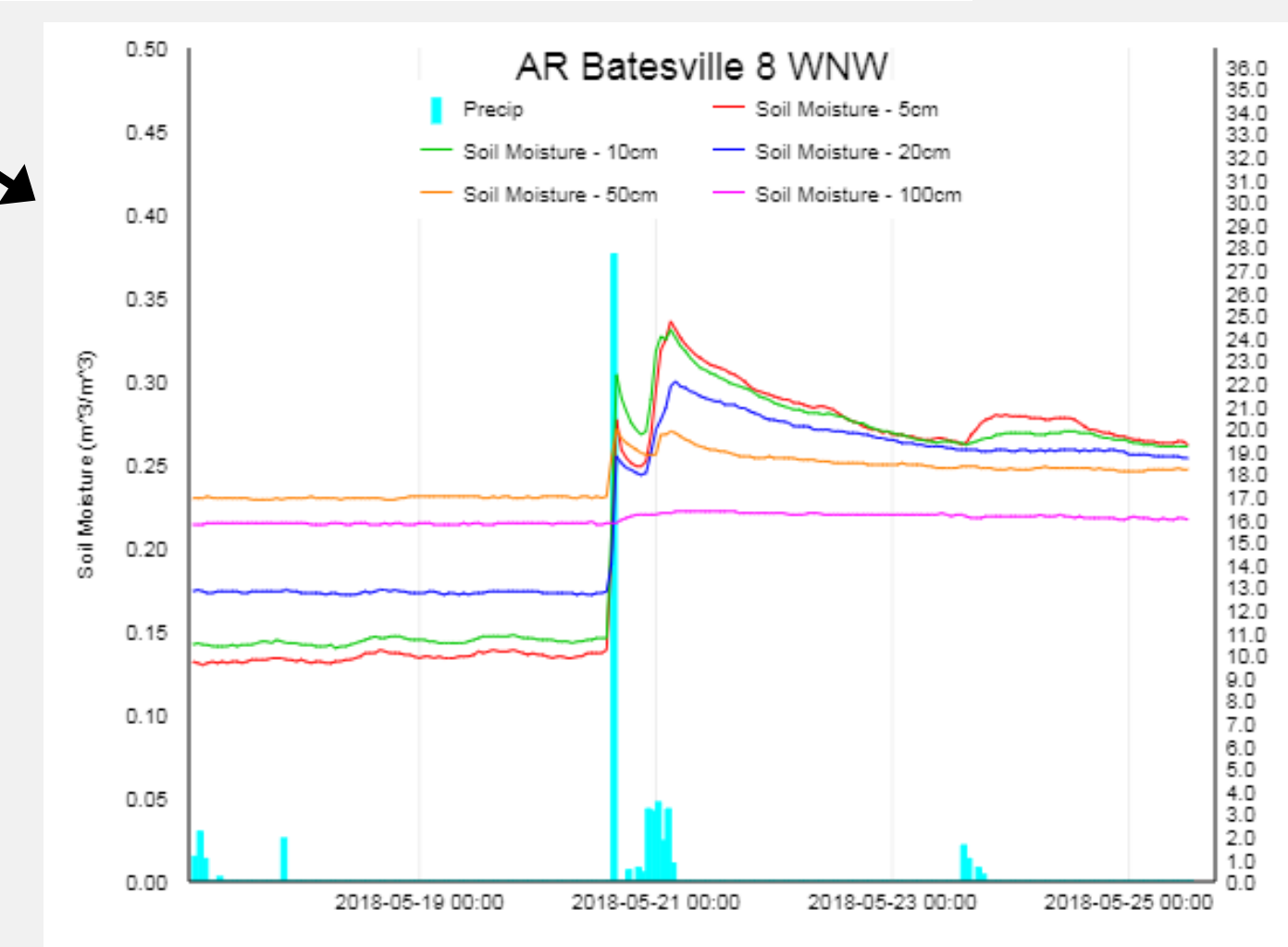
Soil Moisture / Soil Temperature (°C) ↕ ↗ ↘ ↙

Soil Moisture

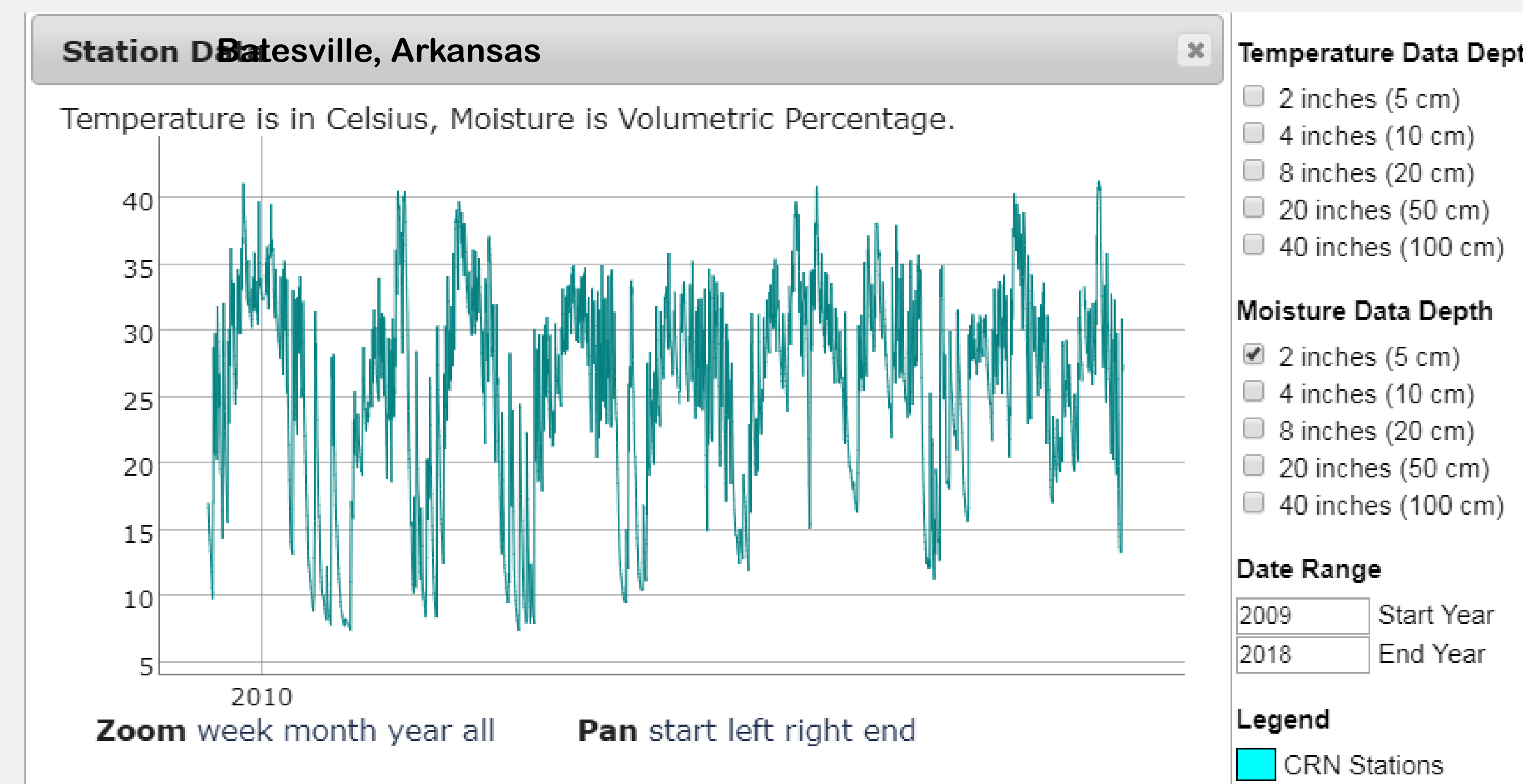
	SENSOR #1	SENSOR #2	SENSOR #3	LAYER AVERAGE
Soil Moisture Volumetric at 5 cm	0.254	0.261	0.272	0.262
Soil Moisture Volumetric at 10 cm	0.251	0.283	0.248	0.261
Soil Moisture Volumetric at 20 cm	0.228	0.26	0.274	0.254
Soil Moisture Volumetric at 50 cm	0.158	0.241	0.341	0.247
Soil Moisture Volumetric at 100 cm	0.101	0.292	0.259	0.217
Average Soil Moisture Dielectric at 5 cm	15.79	16.32	17.10	
Average Soil Moisture Dielectric at 10 cm	15.56	17.97	15.36	
Average Soil Moisture Dielectric at 20 cm	13.94	16.23	17.28	
Average Soil Moisture Dielectric at 50 cm	9.57	14.85	22.73	
Average Soil Moisture Dielectric at 100 cm	6.62	18.64	16.17	

☑ Volumetric Soil Moisture + Precipitation

Short time series can be visualized at the link below the table; longer series can be graphed on drought.gov's tool.



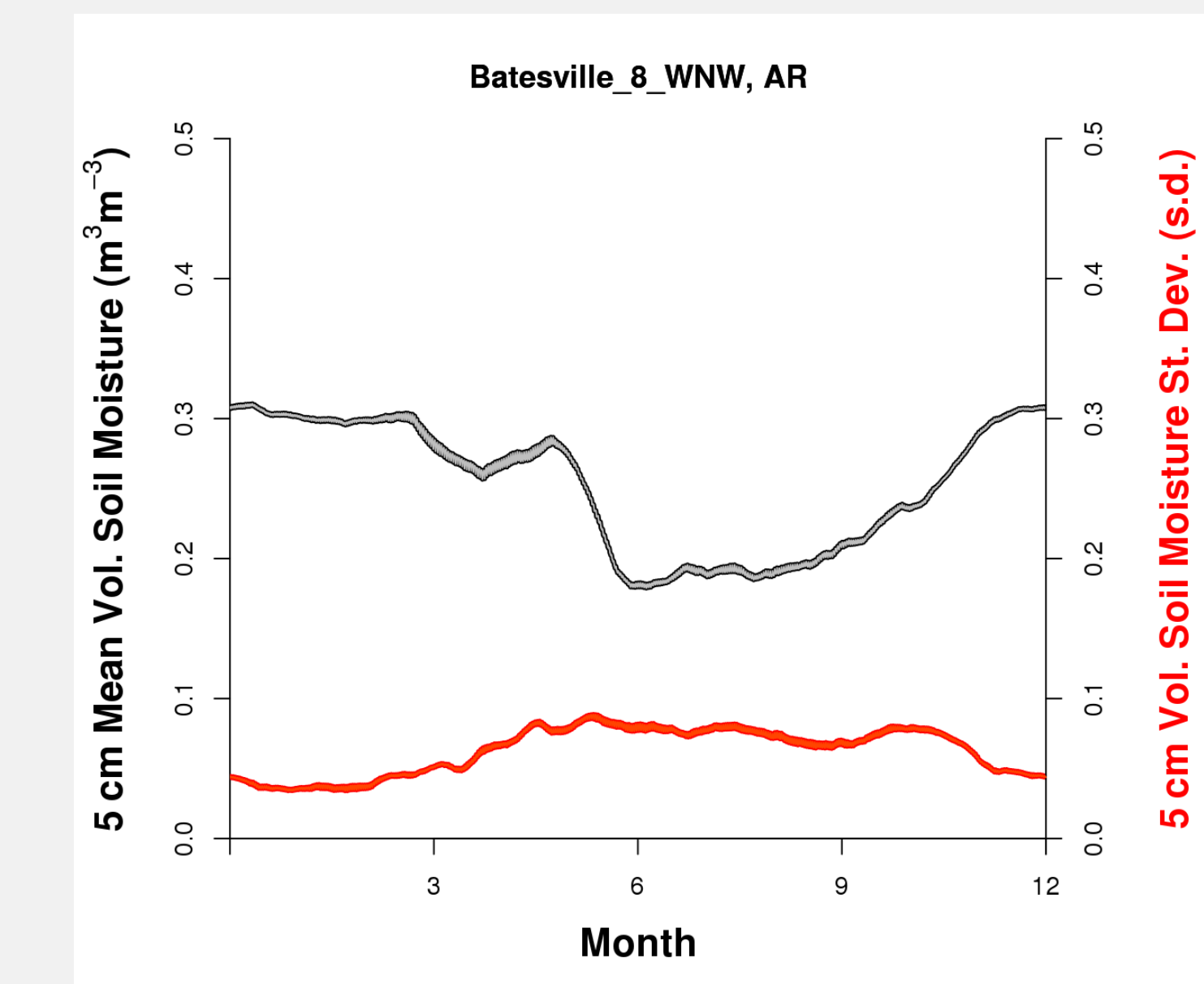
<https://www.drought.gov/drought/soil-moisture-map>



New standardized hourly soil moisture products

(Fall 2018 beta release)

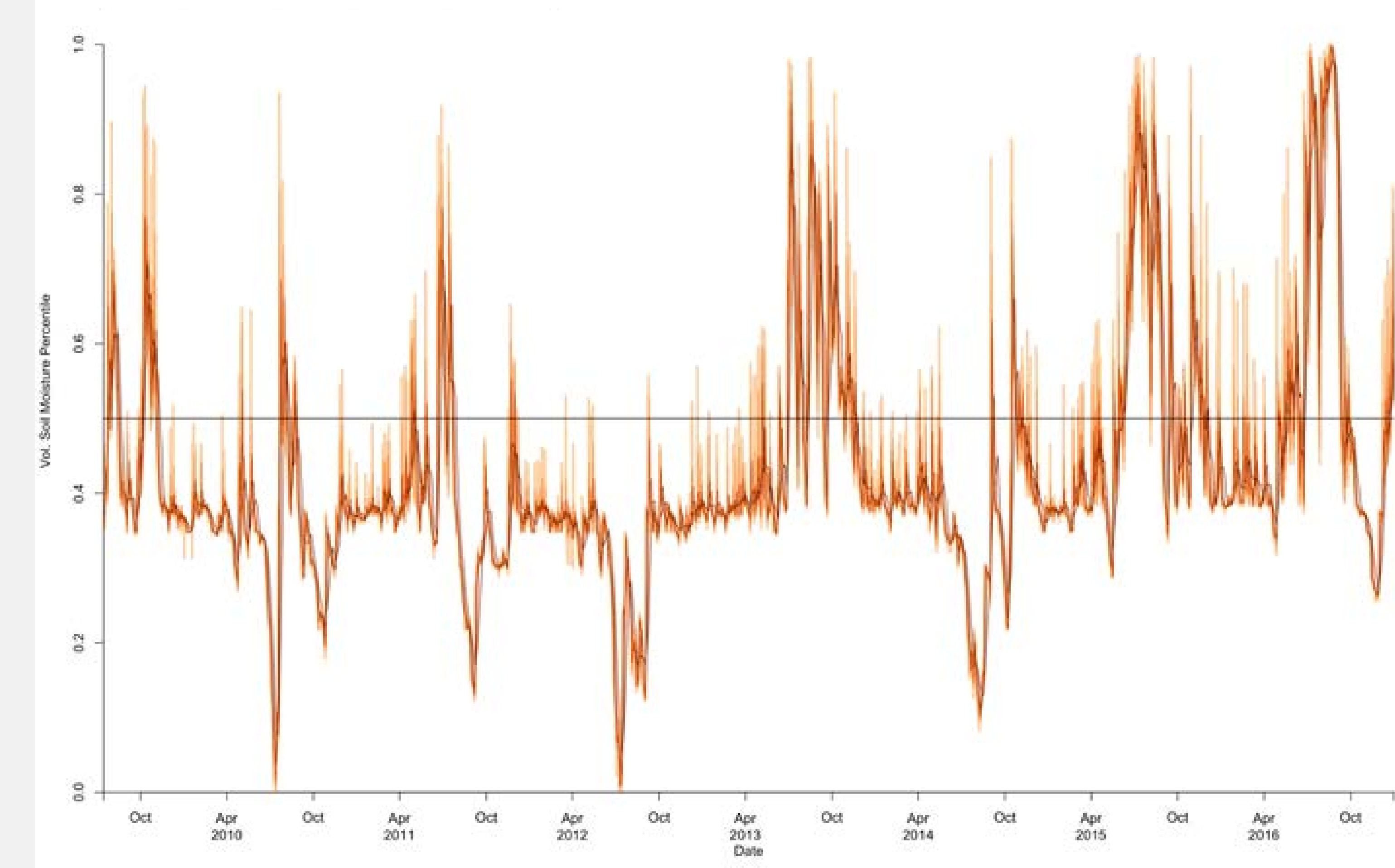
Soil Moisture Climatology



Mean and standard deviation for every hour of the year with 60% available data are calculated by sampling the same hour during surrounding days, 15 days to each side.

Standardized Soil Moisture Percentiles

Percentile Time Series, 20 cm, Bowling Green, KY



Standardized soil moisture product will include both volumetric and percentile hourly anomalies, accumulations, and threshold exceedance class.