Supplemental Material for

New soil property database improves Oklahoma Mesonet soil moisture estimates

Bethany L. Scott, Plant and Soil Sciences, Oklahoma State University
Tyson E. Ochsner, Plant and Soil Sciences, Oklahoma State University
Bradley G. Illston, Oklahoma Climatological Survey, University of Oklahoma
Christopher A. Fiebrich, Oklahoma Climatological Survey, University of Oklahoma
Jeffery B. Basara, School of Meteorology, University of Oklahoma;
Albert J. Sutherland, Biosystems and Agricultural Engineering, Oklahoma State University

Journal of Atmospheric and Oceanic Technology

Introduction

This data set contains soil physical property data for the soils of the Oklahoma Mesonet stations. Sand, silt, and clay contents, bulk density, and volumetric water content at -33 and -1500 kPa were measured using duplicate samples from five depth layers at 117 Oklahoma Mesonet stations. These soil properties were used as inputs for the Rosetta pedotransfer function which predicted parameters describing the water retention curve and hydraulic conductivity function for each site and depth. The methods are described in further detail in the paper. The resulting database is called "Meso-Soil" and this is version 1.1. The contents of the 15 columns in the Meso-Soil database are described below.

Column	Label	Units	Description
1	Code		numeric identifier
2	Description		four character station identifier and two digit soil depth code
3	Sand	%	percent sand
4	Silt	%	percent silt
5	Clay	%	percent clay
6	BulkD	g/cm3	bulk density
7	Th33	cm3/cm3	volumetric water content at -33 kPa (measured)
8	Th1500	cm3/cm3	volumetric water content at -1500 kPa (measured)
9	Theta_r	cm3/cm3	residual water content
10	Theta_s	cm3/cm3	saturated water content
11	Alpha	1/kPa	fitting parameter for van Genuchten water retention curve
12	N	No units	fitting parameter for van Genuchten water retention curve
13	Ks	cm/day	saturated hydraulic conductivity
14	Ko	cm/day	matching point hydraulic conductivity
15	L	No units	exponent of van Genuchten-Mualem conductivity function