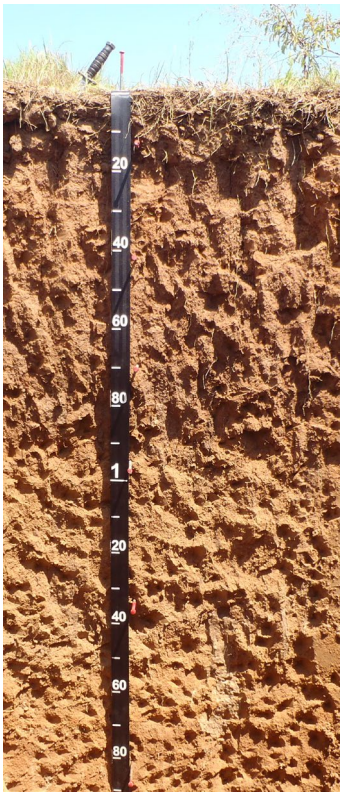
MLRA Soil Survey Office: 9-WOD

SCAN Station Installed on Tribal Land to Serve the Cheyenne and Arapaho Tribes in Oklahoma

In August of 2019, Soil Scientists from the Woodward MLRA Soil Survey Office assisted the Cheyenne and Arapaho Tribes and Oklahoma NRCS with the installation of a Soil Climate Analysis Network (SCAN) site on Tribal land in western Roger Mills County, Oklahoma. The SCAN station supports natural resource assessments and conservation activities through its network of automated climate monitoring and data collection sites. The climate monitoring network focuses on agricultural areas which are situated on Tribal lands in the United States.

The installation project began with direction from Mike Wilson (Senior Scientist–Climate Change, NSSC) who coordinated efforts between Carol Crouch (NRCS Oklahoma Tribal Liaison), Nathan Hart (Cheyenne and Arapaho Tribes), Ed McCaw (NRCS Colorado Tribal Liaison to the Southern Ute Tribe), Steven Alspach (NRCS Oklahoma State Soil Scientist), Clay Pope (USDA Southern Plains Climate Hub), and Steven McGowen (Woodward MLRA Soil Survey Office Leader). Several other Tribal members (Trent Holland, Cherokee Tribe; Emily Scroggins, Choctaw Tribe) and NRCS state staff (Clay Salisbury, Resource Soil Scientist; Brian Painter, Public Affairs Specialist) and field office staff (Rusty Norrie, District Conservationist; Makenna Paniel, Student Trainee) provided their expertise in crucial parts of the station installation, documentation, and trenching for the soil profile description.

Woodward MLRA Soil Survey staff (McGowen, Chris Hobbs, and Justin Morgan) provided a preliminary investigation to determine the best site for installation, assisted in installation and setup of the monitoring equipment, and completed a full pedon characterization sampling of the soil profile adjacent to the site. Over the course of two days, the full installation team battled 105-degree heat to pour concrete, install instruments, and describe and sample soils. In the few moments of downtime, many of the team also enjoyed picking fruit from the abundant crop of Chickasaw sand plums that surrounded the site.



Soil profile of the Ady series (Fine-loamy, mixed, superactive, thermic Aridic Haplustalfs) that was described and sampled adjacent to the Cheyenne and Arapaho SCAN site.

The western part of Roger Mills County, Oklahoma, lies within the central High Plains and is composed of sandy and loamy sediments eroded from the ancestral Rocky Mountains by streams and wind. The soil sampled for full laboratory characterization by the Kellogg Soil Survey Laboratory was the “Ady” series, which classifies as “Fine-loamy, mixed, superactive, thermic Aridic Haplustalfs.” This soil was formed in loamy eolian sediments derived from the upper parts of the Ogallala Formation in the Southern High Plains, Breaks (MLRA 77E). These soils are used for both livestock grazing and crop production and are common in the region.

The SCAN site monitors and records data for soil moisture, soil temperature, precipitation, air temperature, relative humidity, wind speed and direction, solar radiation, and leaf wetness. These parameters will be used to assist the Cheyenne and Arapaho Tribes in monitoring drought development, predicting long-term sustainability of cropping and grazing systems, and predicting regional shifts in irrigation water requirements on Tribal lands. The site has been actively collecting data since early August.

Direct access to the newly established site and associated climatic data is available at the following website: https://wcc.sc.egov.usda.gov/nwcc/site?sitenum=3060

Soil bulk density clods dipped in liquid saran dry in the heat of an August day in Western Oklahoma. Bags of bulk soil samples taken from each horizon of the pedon can be seen on the truck toolbox.

Mike Wilson (Senior Scientist–Climate Change, NSSC) testing the operation of the rainfall meter while Justin Morgan, Steven Alspach, and Ed McCaw observe.

Left to Right, Clay Salisbury (Oklahoma Resource Scientist—west zone), Makenna Paniel (Student Trainee), Steven McGowen (Woodward MLRA Soil Survey Office Leader), Justin Morgan (Woodward MLRA Soil Scientist), Chris Hobbs (Woodward MLRA Soil Scientist), Steven Alspach (Oklahoma State Soil Scientist), and Ed McCaw (Colorado NRCS Tribal Liaison to the Southern Ute Tribe) celebrate the launch of the new SCAN site on Cheyenne and Arapaho Tribal lands in Roger Mills County, Oklahoma. (Photo by Mike Wilson, Senior Scientist—Climate Change, NSSC).