# South Mountain Weather Station

The South Mountain Weather Station (SMWS) was installed to provide meteorological and soil moisture and temperature data as part of a watershed health and restoration program overseen by the Estancia Basin Watershed Health, Restoration and Monitoring Steering Committee (EBWHRMSC). The SMWS is within the Edgewood Soil and Water Conservation District, on the private property, near South Mountain, Santa Fe County, New Mexico, approximately 19 km (12 miles) north of the town of Edgewood. The purpose of this station is to help assess water infiltration through soil depths, relate that to meteorological variables, and then compare two measured locations to determine the effects of forest thinning projects on groundwater recharge. SWCA Environmental Consultants (SWCA) is responsible to the EBWHRMSC for the management of the SMWS and the maintenance, summation, and distribution of the data collected at this station. The following images and graphs were extracted from the report South Mountain Weather Station: History, Data Summaries, and Continued Operation, Prepared by SWCA® Environmental Consultants for the Estancia Basin Watershed Health, Restoration and Monitoring Steering Committee, July 25, 2008.

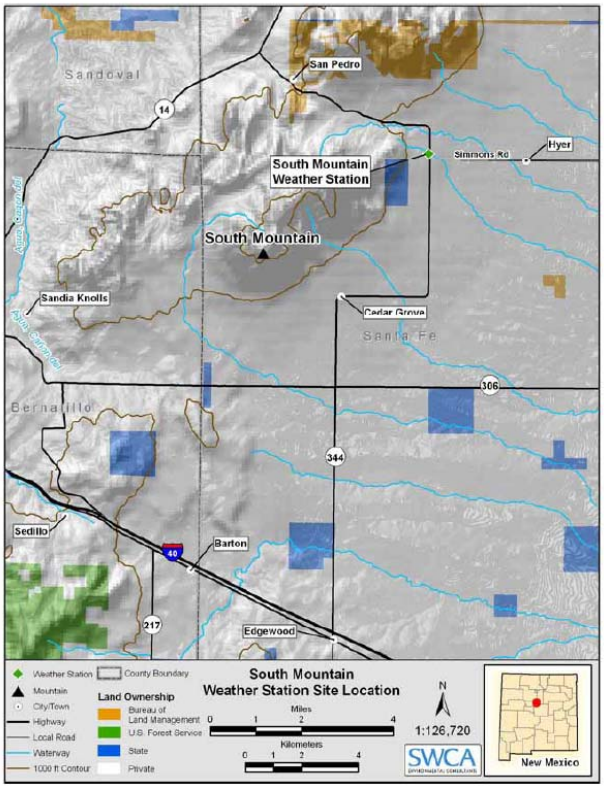


**Figure 4. Tree area.**

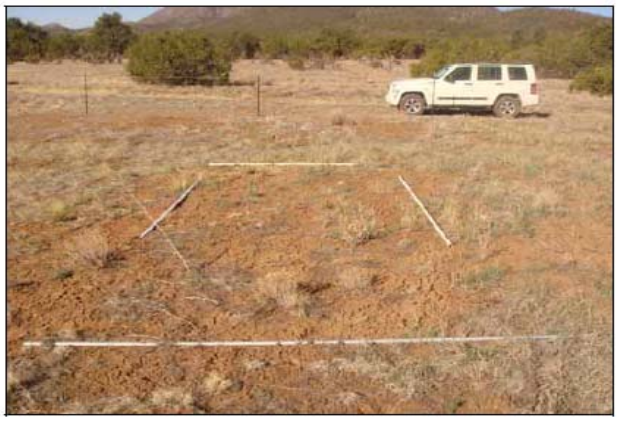

**Figure 5. Open, or Meadow area.**

The meteorological station measures precipitation, wind speed and direction, air temperature, humidity, and solar radiation. Soil moisture and temperature probes are situated at various depths at two locations with distinct vegetation structure types: one site within a piñon-juniper stand, and one site in an adjacent open area consisting of short-grasses. These locations are referred to as “Tree” and “Meadow,” respectively. The Tree location is situated approximately 30 m (98 feet) northeast of the SMWS within a grouping of one-seed juniper (*Juniperus monosperma*) and piñon pine (*Pinus edulis*) trees. The Meadow location is situated approximately 11 m (36 feet) northwest of the SMWS, in vegetation dominated by blue grama grass (*Bouteloua gracilis*) and broom snakeweed (*Gutierrezia sarothrae*). At each location, two distinct methods were implemented for placing the soil moisture and temperature probes: a trench and a borehole.

Summary graphs were created based on 10-minute data intervals for maximum temperature or average temperature, maximum and average wind speed, average relative humidity, and precipitation. Monthly graphs were created for total monthly precipitation and for the minimum, maximum, and mean air temperature.

**Monthly precipitation and temperature averages, September 2006 – January 2008:**

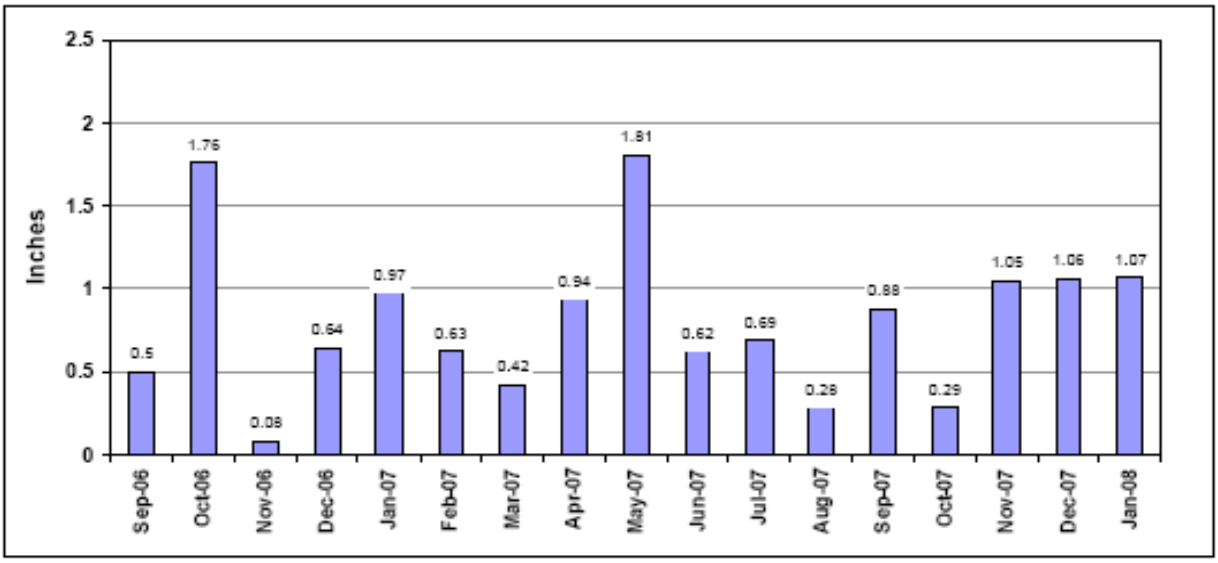


**Figure 7. Total monthly precipitation (inches), September 2006–January 2008.**

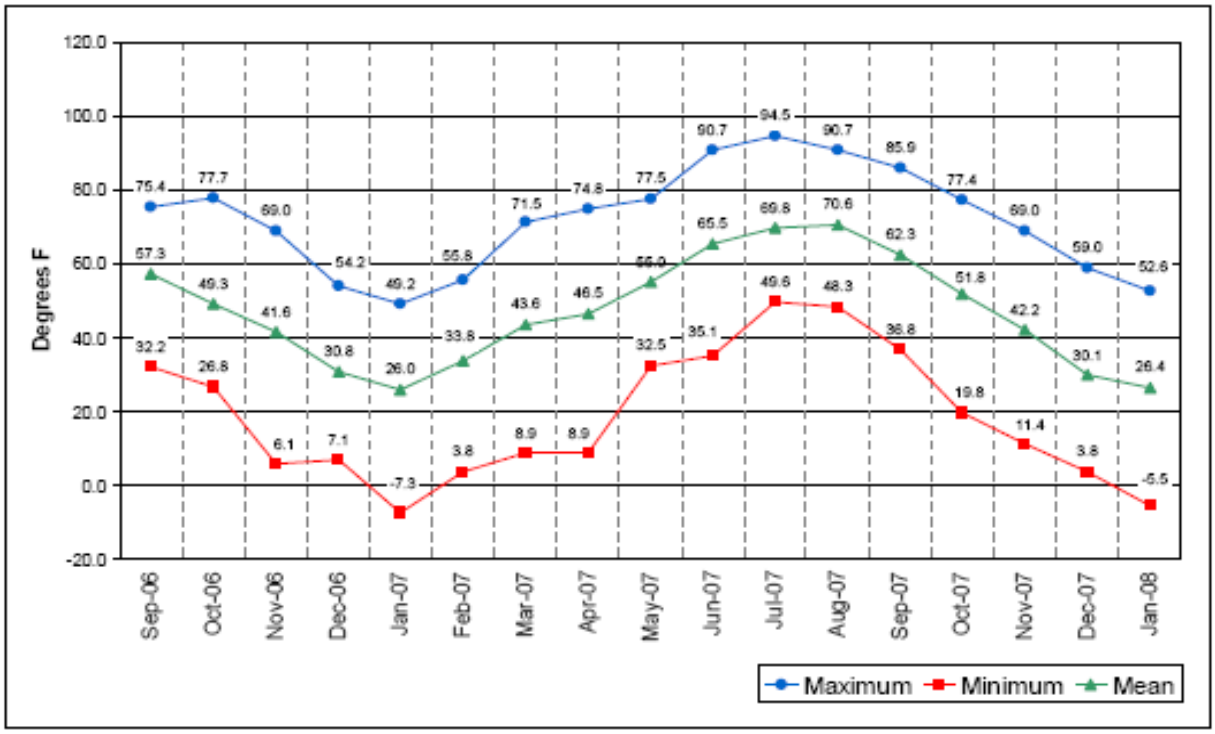


**Figure 8. Monthly average temperatures, September 2006–January 2008.**

**Selected 2007 site summary data:**

2007 WEATHER AND SOIL MOISTURE DATA

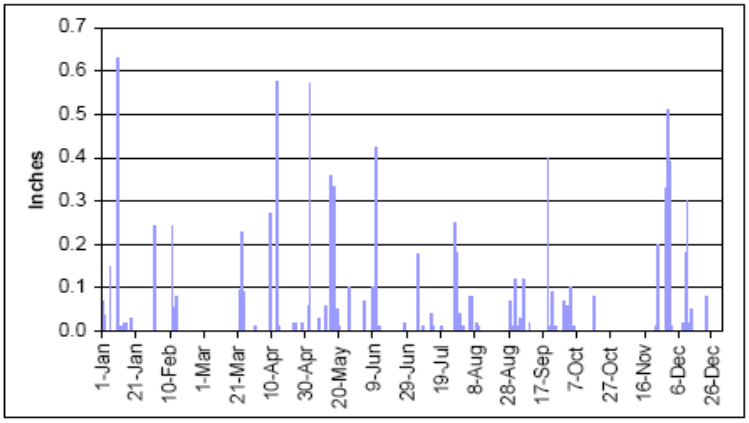


**Figure 11. Daily precipitation totals, January–December 2007.**

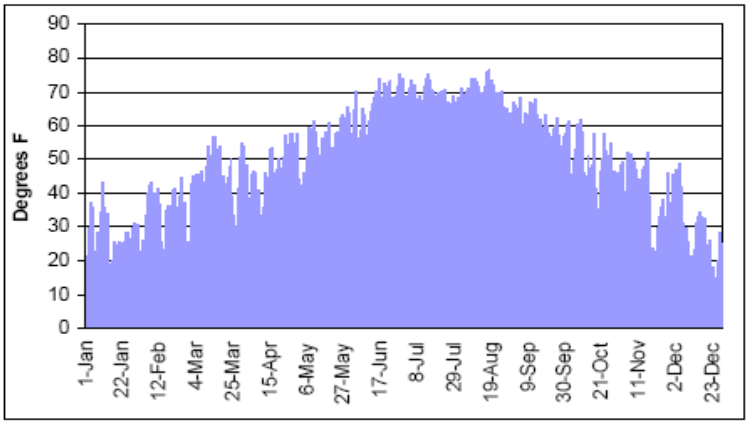


**Figure 12. Daily average air temperature (degrees Fahrenheit), January–December 2007.**

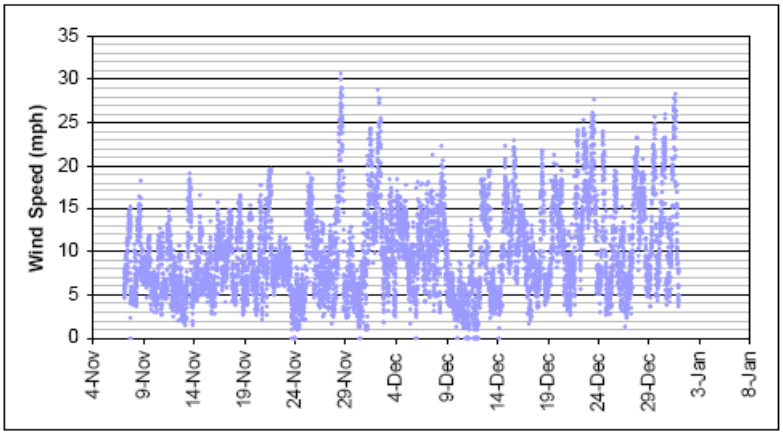


**Figure 20. Maximum wind speed, 2007.**

## 2007 Soil moisture data:

## Monthly averages:  Meadow and Tree sites

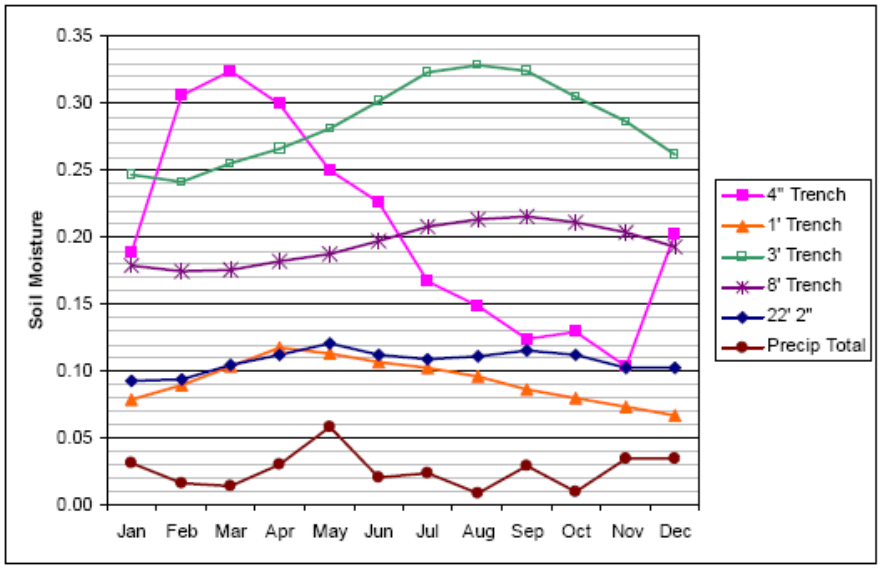


**Figure 26.** **Monthly mean soil moisture for Meadow site, January–December 2007.**

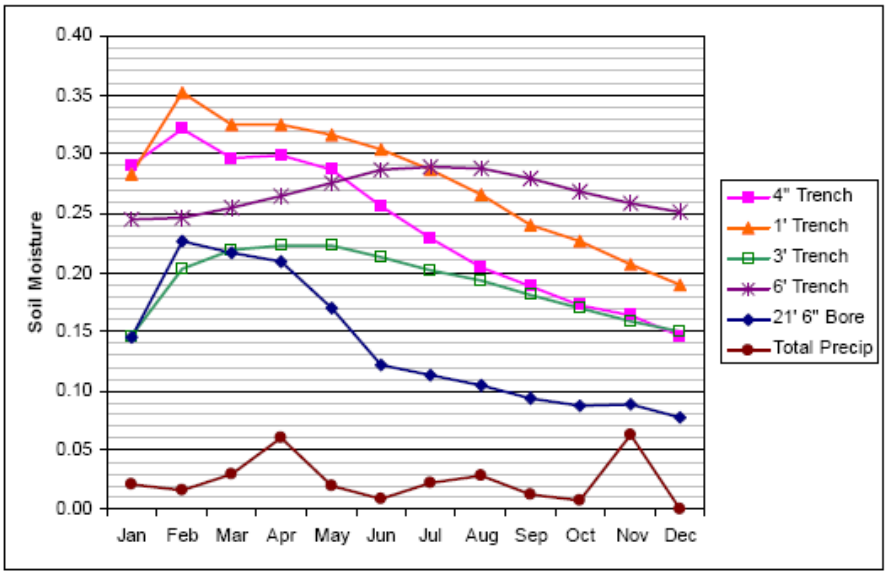


**Figure 27.** **Monthly mean soil moisture for Tree site, January–December 2007.**

## Daily data: Meadow and Tree sites

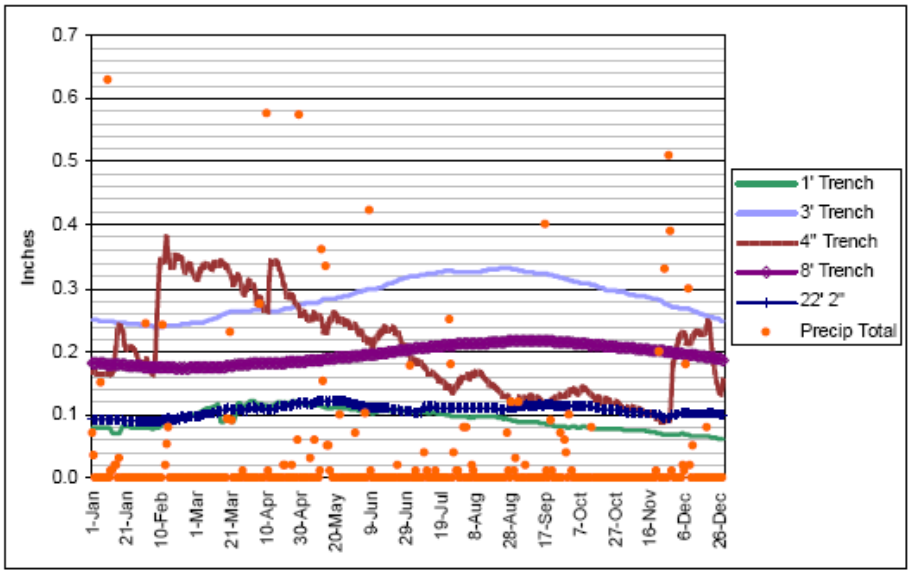


**Figure 33. Meadow site daily soil moisture levels and precipitation, 2007.**

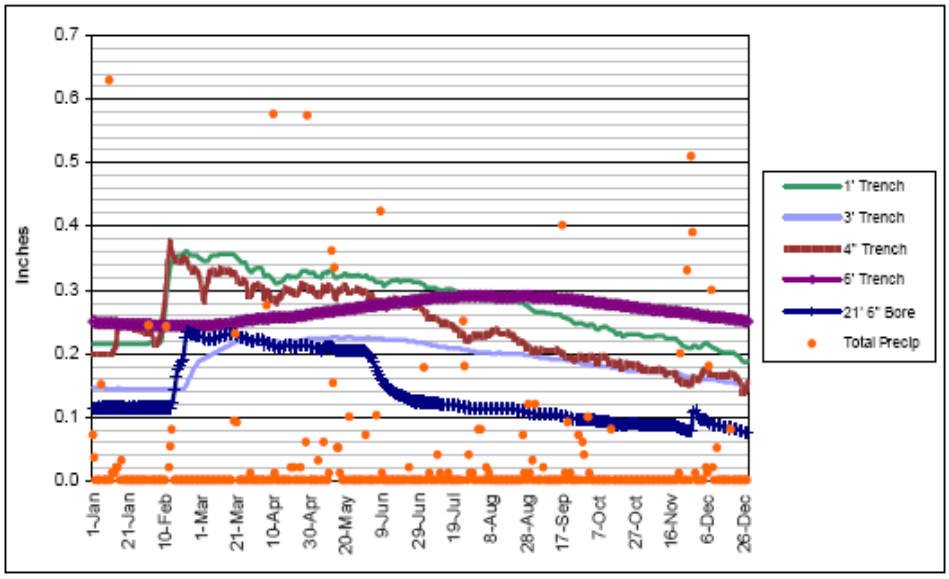


**Figure 32. Tree site daily soil moisture levels and precipitation, 2007.**