

Investigation of Transpirational Water Loss from Forests along a Precipitation Transect

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PURPOSE OF STUDY

In many terrestrial ecosystems the majority of available precipitation is lost to evapotranspiration. The amount of water lost through transpiration must be evaluated over time in order to balance the hydrologic budget. The researchers will monitor transpiration of the dominant tree species within three ecosystem types located along a precipitation transect of low precipitation (juniper), moderate (ponderosa), and high precipitation (spruce), during the summer, fall, and winter. The two main goals for the project are (1) to determine the quantity of overstory transpiration in the hydrologic budget of these three ecosystems during the fall and winter of 2005 and (2) to compare data from the three sites over the summer, fall, and winter. Researchers will determine the role of climate on transpiration rates.

STUDY UNDERWAY

- This research will be conducted as an extension of a summer transpiration project funded by Nathan McDowell from Los Alamos National Laboratory (LANL).
- LANL set up sites in three ecosystems (pinon-juniper, ponderosa pine, and spruce). The student investigator will monitor all three sites during the summer, fall and into the winter as long as the sites are accessible.

BENEFITS

- Gaining knowledge about transpiration over time may allow the development of better water regulations and management techniques that would minimize water losses and optimize available surface and groundwater.



Sue White and Karen Brown (LANL) installing dendrometers at the Ponderosa Site.



Sue White working on data download and troubleshooting the system.

Inside view of the sap flow datalogger box.



Ted Hickey (LANL), helping with trenching the sap flow cables.



Power set up at the Spruce Site.

Spruce sap flow tree: Sensors are located on the North and South faces of the trees.



Granier sap flow sensor in a Ponderosa