Riparian Evapotranspiration Estimates on the Middle Rio Grande Using Remote Sensing

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PURPOSE OF STUDY

Riparian evapotranspiration (ET) along the Rio Grande has become a major hydrological issue in New Mexico. Many studies have focused on measuring ET of individual riparian vegetation, mainly saltcedar and native cottonwood. Riparian evapotranspiration is important to balancing the water budget, but is difficult to measure accurately due to the high cost and complexity of current methods. Remote sensing of evapotranspiration combines regional satellite data with localized ET measurements to calculate the regional ET. The proposed research will use a Regional ET Estimation Model (REEM) to calculate evapotranspiration for various crops, regardless of the type, density, soil moisture content, and other growth factors. The researchers will develop regional maps of ET for the Middle Rio Grande region to evaluate the hydrologic impact of saltcedar eradication as well as improving the water budget for the Middle Rio Grande region.

STUDY UNDERWAY

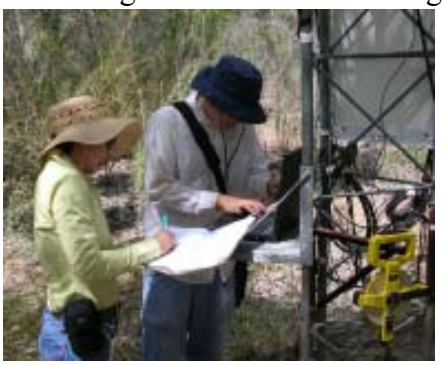
Researchers are currently collecting ET data and processing satellite images for ET prediction. Below are photos of field operation demonstrating the direct measurement of ET in saltcedar in Bosque del Apache National Wildlife Reserve. The research is scheduled for completion on July 31, 2006.

BENEFITS

Accurately quantifying riparian evapotranspiration will lead to better management of the water budget for the Middle Rio Grande.

Data logger at the tower (Bosque del Apache) collecting ET and climate data at 30-minute intervals.

Maritza Macias-Corral, a doctoral student, checks a rain gauge at Bosque del Apache.



Downloading ET and climate data from data logger into laptop and taking notes related to the status of the system.

One Propeller Eddy Covariance (OPEC) system installed at Bosque del Apache to measure evapotranspiration (ET).

WRRI New Mexico Water Resources Research Institute, NMSU, http://wrri.nmsu.edu