

Remote Sensing Assessments of Full and Partial Irrigation Regimes to Estimate Conserved Consumptive Use of Agricultural Water in Western Slope of Colorado

Amandeep Vashisht, Jose Chavez and Perry Cabot
Department of Civil and Environmental Engineering, Colorado State University

Abstract. Irrigated agriculture in Colorado River Basin controls the highest percentage of water than any other sector, therefore, agricultural water is a likely supply for water conservation and sharing in such an environment. A more precise understanding of the quantities that can be conserved without jeopardizing the underlying agricultural and rural economies is required. A Colorado Western Slope Water Bank, under which agricultural water users could enter into voluntary, compensated short-term split-season leases to temporarily forego diversions by reducing irrigation, is one approach being evaluated to address water demand and supply issues. In order for the market underlying the water bank to develop, it is crucial to accurately assess the conserved consumptive use (CU) that maybe credited to agricultural water users. The conserved CU credit could serve as the fundamental basis for compensation for the foregone diversion. To assess conserved CU under a water bank, the “Potential CU” (PCU) must be estimated. The PCU is the amount of water historically put to beneficial use under the terms of the water right. The conserved CU is then the difference between PCU and the “Actual CU” (ACU), which is the amount of water being consumed beneficially under the terms of water bank. Remote sensing techniques have a potential in estimating both historic PCU, and current ACU. This potentially improved remote sensing assessment may help contend with specific situations like inaccurate or missing historic diversion records, water subbing due to shallow groundwater, and unaccounted return flows. Remote sensing evaluations on a split-season scale, and new crop water use information developed for the water resource inventory potentially available to a Colorado Western Slope Water Bank will be discussed.