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**EVAPOTRANSPIRATION ESTIMATION THROUGH SATELLITE IMAGERY AND GROUND
MEASUREMENTS IN THE GREEN RIVER BASIN, WYOMING**

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ABSTRACT: Remote sensing methods are increasingly employed in combination with modeling for evapotranspiration estimation because they can provide multi-temporal, spatially-distributed estimates of key variables based on spatially distributed measurements. Ground-based meteorological stations, eddy-covariance and large-aperture scintillometers were set up in Pinedale, Wyoming to conduct an estimation of the evapotranspiration or consumptive use associated with irrigated agriculture in the Green River Basin of Wyoming. The Green River is the main headwater tributary of the Colorado River. METRIC was used to develop evapotranspiration and soil moisture estimates from satellite imagery of Landsat 5 (30-120 m resolution). Fine resolution Landsat imagery was available at 16 day intervals. Depending on the cloudiness, this interval can significantly increase. Thus, we analyzed the utility of NDVI from more frequently available MODIS imagery. In this study, relations between evapotranspiration factor (ET_rF) and NDVI is derived at different ranges of NDVI. NDVI from MODIS imagery was scaled down from approximately 1 km to the LANDSAT pixel resolution of 30m and the ET_rF and NDVI relation is used to estimate the actual evapotranspiration. Results are presented as a validation on the applicability of this actual evapotranspiration derived from coarse resolution NDVI.

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