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Ground Based Reflectance Measurements of Arid Rangeland Vegetation Communities of the Southwestern United States

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In 1997 a research program began using an Analytical Spectral Device (ASD-FR) spectroradiometer to collect ground based in situ radiance/reflectance measurements from vegetation communities typical of semiarid/arid rangelands of southwestern United States. Measurements were made after the spring (April-May) and fall (September-October) rainy seasons each year. Measurements were made on a 30-m grid at 5-m intervals in vegetation ecosystems typical (grass, grass/shrub transition, shrub) of the region. The 49 measurements were averaged for each 30-m grid site. Reflectance was in general, shrub > grass/shrub transition > grass community, and was related to the total vegetation cover (LAI). Both seasonal and annual variations were measured during the 12 year study period. These variations have implications for the water and energy budgets in this region of the southwestern United States where shrub communities with low ground cover are invading and replacing grass communities. This research is part of a larger study where reflectance from ground (ASD), aircraft (MASTERS), and satellite (ASTER and Landsat) data are being compared. These data provide unique opportunities to study changing rangeland communities using remote sensing techniques.