Carbon Dioxide Flux, Biomass, and Radiometric Reflectance Relationships for Northern Semiarid Grasslands. (A03-frank102416-Oral)

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Abstract:

Native grasslands are a sink for atmospheric carbon dioxide sequestration, but ways for extending site specific carbon dioxide flux measurements to a regional scale are needed. Objectives were to evaluate the relationship between the normalized difference vegetation index (NDVI) calculated from spectral reflectance data obtained with hand held radiometers and carbon dioxide flux calculated from carbon dioxide Bowen ratio/energy balance measurements for assessing fluxes of grassland ecosystem. Carbon dioxide fluxes were measured over a nongrazed prairie, grazed prairie, and a shrub dominated prairie site near Mandan, ND. Biomass, LAI, and ET were also measured. NDVI was evaluated to determine the utility of using canopy radiometric reflectance for estimating carbon dioxide fluxes. Correlation coefficients over sites and years of NDVI with biomass and LAI exceeded 0.84 in 1999, 0.74 in 2000, and 0.91 in 2001; with carbon dioxide fluxes correlations exceeded 0.51 in 1999, 0.65 in 2000, and 0.67 in 2001; with ET correlations exceeded 0.69 in 1999, 0.76 in 2000, and 0.70 in 2001.

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