There is considerable interest in assessing the magnitude of carbon sources and sinks in terrestrial ecosystems using remote sensing techniques. We developed a novel technique to remotely assess carbon dioxide exchange in maize using reflectances ($\rho$) in two spectral channels either in the red edge near 700 nm or in the green around 550 nm and the NIR (beyond 750 nm). Differences of reciprocal reflectances $[(\rho_{\text{RedEdge}})^{-1} - (\rho_{\text{NIR}})^{-1}]$ and $[(\rho_{\text{Green}})^{-1} - (\rho_{\text{NIR}})^{-1}]$ accounted for more than 90 percent of the variability in mid-day carbon dioxide flux (canopy photosynthesis) of irrigated maize. The technique was validated by an independent data set.

Contact: Anatoly Gitelson (gitelson@calmit.unl.edu)