

Hyperspectral Remote Sensing of Vegetation at Multiple Spatial Scales

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2010

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Remote sensing of peatlands is a fairly new area of research, and many techniques and indices developed for forestry applications have not yet been tested in peatlands. This study applied two such techniques to model biophysical characteristics of vegetation in Mer Bleue, an ombrotrophic peat bog near Ottawa, ON. Linear regression models relating measured leaf area index (LAI) and moss area to vascular leaf area ratio (MVR) were developed using spectral unmixing and spectral vegetation indices. Reflectance measurements collected in the field were used to construct ground-scale models that were scaled up and applied to aerial hyperspectral (CASI-2) imagery. Linear spectral unmixing using a reduced set of bands explained the most variation in measured MVR ($R^2 = 0.5089$, $p < 0.001$) of any single method. The photochemical reflectance index (PRI) had the strongest relationship with measured MVR of all indices ($R^2 = 0.4825$, $p < 0.001$).

Predicted MVR versus Measured MVR, Linear Unmixing

