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ABSTRACT

The timing of vegetation development, or phenology, is primarily influenced by temperature and is one of the most clearly observed responses to increasing temperatures associated with climate change. Ground level and remotely sensed climate studies indicate that warming trends have extended the growing season with an earlier spring and later autumn throughout the northeastern United States. Previous studies utilizing remote sensing satellite data have monitored timing of foliage appearance and senescence with coarse spatial or temporal resolution, focused on agriculture, or did not correlate to field measured reports, resulting in the need for further research on forest phenology.

Hemispherical photography will provide field derived dates of spring and fall phenology to compare hemispherical photo canopy metrics (canopy openness vs. leaf area index), a suite of vegetation indices, and different phenological markers on the vegetation greenness curve. With this refined methodology spring and fall phenology events will be quantified by interpolating vegetation greenness curves on a pixel by pixel basis for a single Landsat TM 5 scene (path 14, row 29) from 1982-2010. This will be followed with investigation of both inter-annual decadal changes and regional microclimate patterns in phenology for portions of Vermont and New York.