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## Declining Vegetation Growth Rates in the Eastern United States from 2000 to 2010

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### ABSTRACT

Negative trends in the monthly MODerate resolution Imaging Spectroradiometer (MODIS) Enhanced Vegetation Index (EVI) time-series were found to be widespread in natural (non-cropland) ecosystems of the eastern United States from 2000 to 2010. Four sub-regions were detected with significant declines in summed growing season (May-September) EVI, namely the Upper Great Lakes, the Southern Appalachian, the Mid-Atlantic, and the southeastern Coastal Plain forests ecosystems. More than 20% of the undeveloped ecosystem areas in the four sub-regions with significant negative EVI growing season trends were classified as forested land cover over the entire study period. We detected relationships between annual temperature and precipitation patterns and negative forest EVI trends across these regions. Change patterns in both the climate moisture index (CMI) and growing degree days (GDD) were associated with declining forest EVI growing season trends. We conclude that temperature warming-induced change and variability of precipitation at local and regional scales may have altered the growth trends of large forested areas of the eastern United States over the past decade.

### KEYWORDS

MODIS EVI; Forest; Growth; Climate Change; United States

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