Geophysical Research Abstracts
Vol. 14, EGU2012-13390, 2012
EGU General Assembly 2012
© Author(s) 2012

Ten years of MODIS land surface phenology

K. Hufkens (1), T.F. Keenan (2), and M. Friedl (1)

(1) Boston University, Center for Remote Sensing, Department of Geography, Boston, United States (koen.hufkens@gmail.com), (2) Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, Massachusetts, USA

Green leaf phenology, the study of seasonal leaf development, senescence and abscission, is known to be an indicator of climate change. Most studies based upon remote sensing, field studies and atmospheric CO_2 measurements suggest a changing climate will lead to an earlier spring onset and longer growing season. These changes in phenology have important implications for ecosystem function and biosphere–atmosphere interactions. Phenological variability directly affects year-to-year variability in many aspects of land-atmosphere interactions, in particular carbon and water cycling, along with atmospheric boundary layer properties and dynamics.

Despite the direct impact of phenology on ecosystem function, recent studies have shown that terrestrial biosphere models are typically unable to adequately explain the observed interannual variability in deciduous canopy phenology and associated lagged effects. Given the synoptic overview of satellite remote sensing data across both across space and time, remote sensing data is instrumental to understanding phenology at both landscape and global scales. In the current presentation, we give an overview of ten years of land surface phenology anomalies for Northern America, using the Moderate Resolution Imaging Spectroradiometer (MODIS) phenology product. Focusing on anomalous phenological variability, we assess the ability of the MODIS phenology product to successfully capture differences in phenological regimes due to topography, or natural disturbances such as a late spring frost. We elucidate the driving forces behind these anomalies and examine possible implications in terms of carbon cycling and sequestration. The presented results therefore are prime candidates to further optimize and validate current day terrestrial biosphere models.