

Spectral Vegetation Index Data Continuity from MODIS to VIIRS: Product Inter-Comparison

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Spectral vegetation index (VI) time series data from moderate resolution sensors, such as Earth Observing System Moderate Resolution Imaging Spectroradiometer (MODIS), have widely been used to identify “hot spot” areas of vegetation changes and to scale-up in situ flux measurements at regional to global scales, to name a few. The Visible Infrared Imaging Radiometer Suite (VIIRS) sensor series of the Joint Polar Satellite System program is slated to continue the highly calibrated data stream initiated with MODIS. In this study, we inter-compared the capabilities of MODIS and VIIRS VI time series data on capturing vegetation dynamics in the Asia-Pacific region using their overlapped period of observations (2013-2017). Three VIs, the “top-of-canopy (TOC)” normalized difference vegetation index (NDVI), TOC enhanced vegetation index (EVI), and TOC two-band enhanced vegetation index (EVI2), were investigated. For all the three VIs, MODIS and VIIRS VIs were subject to systematic differences in which VIIRS VIs were higher than the MODIS counterparts. However, both VIIRS and MODIS VIs showed the comparable spatial patterns in their temporal variations. Results of this study suggest the suitability of VIIRS data to extend the MODIS VI record for vegetation dynamics studies.

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