
Assessment of NDVI Composites Using Merged NOAA-14 and NOAA-15 AVHRR Data

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Abstract

The Advanced Very High Resolution Radiometer (AVHRR) data acquired by the National Oceanic and Atmospheric Administration's (NOAA) satellites provide daily observations of the Earth's surface. While NOAA-14 data from ascending orbits are operationally used for global vegetation monitoring; NOAA-15 data from descending orbits could provide additional daily coverage. The normalized difference vegetation index (NDVI), derived from the solar reflective data, is linked to vegetation condition and plant biomass production on land surfaces. Because a single AVHRR scene is seldom completely cloud-free, maximum value compositing (MVC) of multi-date NDVI data is widely used to minimize cloud contamination. While ten-day composites from NOAA-14 AVHRR data may not be cloud-free; critical short-term changes in vegetation condition may be lost in composites created over longer time periods. AVHRR data of Texas obtained from NOAA-15 (morning satellite) and NOAA-14 (afternoon satellite) were used in our study on the potential benefits of merged morning and afternoon NDVI data sets for crop monitoring. A strong correlation was observed between NOAA-14 and NOAA-15 NDVI data derived from top-of-atmosphere (TOA) reflectance.
