

Improving the AVHRR LTDR BRDF correction

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The Advanced Very High Resolution Radiometer (AVHRR) sensors aboard the different NOAA satellites provide a unique global remote sensing dataset that ranges from the 1980s to the present. Using these data, the NASA funded Long Term Data Record (LTDR) project aims to develop a quality and consistent Climate Data Record (CDR) of AVHRR data with the use of the Moderate Resolution Imaging Spectrometer (MODIS) instrument as a reference. This product retrieves the BRDF corrected land surface reflectance using the VJB method (Vermote et al., 2009), which corrects the anisotropic effects by obtaining Volumetric (V) and Geometrical (R) parameters, defined in the Roujean model (Roujean et al., 1992), as a function of the Normalized Difference Vegetation Index (NDVI). Inaccuracies regarding the AVHRR atmospheric correction and calibration in the red band for the pre-MODIS era (1982-2000), propagate towards the surface reflectance's BRDF correction. However, with the use of the less noisy Near-Infrared (NIR) band we can reduce said errors by finding an empirical relationship between the red-NIR V and R parameters. This study aims to find said relationship using the MODIS sensor, which is an already established and accurate product (Justice et al., 2002; Liang et al., 2002), to then apply it to the noisy AVHRR data and reduce the BRDF errors in the red band.

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