Effect of post-launch calibration of VIS channels on NDVI

Wei Guo(1,2), Dan Tarpley(1), Changyong Cao(1), Xiaongqian Wu(1), Le Jiang(1,2), Felix Kogan(1) and Jerry Sullivan(1)

1. NOAA/NESDIS/Center for Satellite Applications and Research, 5200 Auth Rd, MD, 20746
2. I.M. Systems Group Inc. 3401 Bexhill Place Kensington MD 20895

During the last two decades, Normalized Difference Vegetation Index (NDVI) and NDVI-based products, derived from the Advanced Very High Resolution Radiometer (AVHRR) on the NOAA polar-orbiting satellites, have proven to be useful for monitoring vegetation health, drought, fire risk, etc. The historical records of NDVI and related products dating back to 1981 are available at NOAA/NESDIS. In addition to the natural variation of vegetation, bias and variability related to instrument calibration, difference of spectral response functions of different AVHRR channels and changing local time of observation are all observed in this long-term dataset. This paper is a study of the sensitivity of NDVI to instrument calibration. It was found: 1) the NDVI range most affected by visible band calibration errors is low NDVI portion, 2) the ratio of degradation rates is important to NDVI stability. The relationship between NDVI and local time of observation was also investigated.