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# Comparison of S-NPP VIIRS land surface temperature with SEVIRI

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Land surface temperature (LST) is one of the key parameters in the physics of land surface processes. LST can be globally measured from space by infrared radiometers, with a wide range of spatial and temporal resolutions depending on the sensor design and orbit.
The Visible Infrared Imaging Radiometer Suite (VIIRS) instrument is the primary sensor onboard the Suomi National Polar-orbiting Partnership (S-NPP) satellite, which was launched in recent years. VIIRS was designed to improve upon the capabilities of the operational AVHRR and provide observation continuity with MODIS. A Split Window approach has been applied to the VIIRS moderate resolution channels M15 and M16 centered at 10.76 $\mu$m and 12.01 $\mu$m, respectively. VIIRS has a swath of 3000 km and a spatial resolution of 745m (nadir) up to about 1600 m (limb view), leading to relatively high re-visiting frequency. LST is retrieved for a wide range of viewing angles along the VIIRS path, allowing the study of the variability of LST with viewing geometry for various land cover types.
Here we present a comparison of VIRS LST data with data provided by the Spinning Enhanced Visible and Infrared Imager (SEVIRI) on-board EUMETSAT's Meteosat Second Generation (MSG). SEVIRI-based LST is available every 15-minute, but at coarser spatial resolution (3-km at nadir) when compared to VIIRS LST. The analysis is performed over 6 areas over the SEVIRI disk characterized by different surface conditions. VIIRS has generally slightly warmer night-time LST compared with SEVIRI, with differences smaller than 2K. Larger differences are found during daytime, with VIIRS presenting overall lower LST values up to 5K. These differences are also analysed taking into account the surface type, view zenith angle (VZA) and topography. As seen in previous comparison studies, high VZA and elevation values are associated to higher discrepancies of the LST products.