



Status of Land Surface Temperature Product Development at NOAA/NESDIS/STAR for JPSS and GOES-R Missions

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Land surface temperature (LST) is of fundamental importance to many aspects of the geosciences, e.g., net radiation budget at the Earth surface, monitoring state of crops and vegetation, as well as an important indicator of both the greenhouse effect and the physics of land-surface processes at local through global scales. Satellite LST measurements provide unique data sources for regional and global coverage in fairly good temporal, spatial resolution and time span. Therefore, LST is one of baseline products in both JPSS and GOES-R satellite missions. The Center for SaTellite Applications and Research (STAR) of NOAA/NESDIS is responsible for developing high quality LST products for a variety of satellite missions including JPSS and GOES-R. The JPSS LST data, which is produced for each swath of observations, has reached its beta, provisional and validated stage 1 status in October 2013, May 2014, and December 2015, respectively. A routine validation and monitoring toolkit has been developed and its results are available through a public web site. Our validation results against the U.S. SURFRAD ground stations show that uncertainty of the VIIRS LST is less than 2.35K (vs. the JPSS mission requirement of 2.5K). Improvement of the JPSS LST product is on-going, which counts surface emissive variation explicitly in retrieval algorithm. Further, a gridded daily global LST product will be available by end of 2016. In terms of the GOES-R LST product, we have evaluated the retrieval algorithm using SEVIRI and AHI data as proxies. The evaluation results show that the accuracy of GOES-R LST is expected to be less than 2.30K (GOES-R mission requirement). The validation toolkit developed for JPSS mission will be extended and applicable for the GOES-R mission as well. A detailed Readiness, Implementation and Management Plan (RIMP) of GOES-R LST beta and provisional validation has been developed for the GOES-R launch that is scheduled in October 2016.