All-weather LST extension and VIIRS LST downscaling

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Objectives

- Extend the all-weather land surface temperature (LST) fusion method from the CONUS area to a global scale.
- Investigate the downscaling technique for generating high spatial resolution LST based on VIIRS LST.

Results

(as 2-3 short bullets)

- Acquired global VIIRS and MIRS LST datasets.
- Developed Python script for data preprocessing and data fusion
- Outlined the LST downscaling approach and scaling factors.

Figure and Table

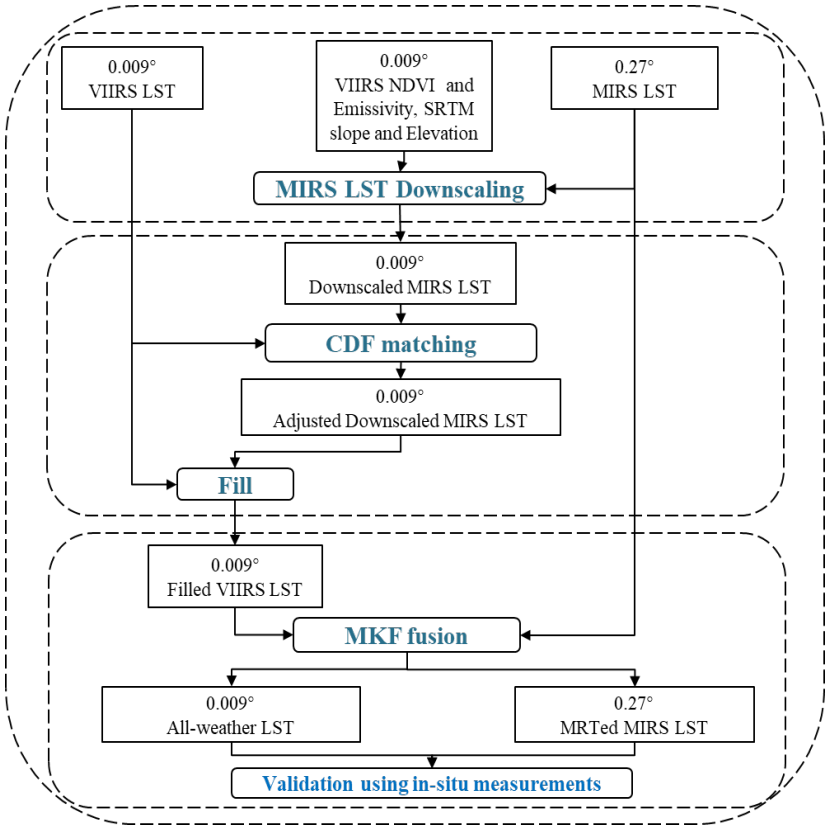

Figure 1. The comprehensive flowchart illustrating the LST fusion technique utilizing cumulative distribution function (CDF) alignment and multiresolution Kalman filtering (MKF).

Table 1. The commonly used scaling factors and a subset of available satellite products.

Scaling factors	Products: spatial resolution < 900 m
NDVI	Sentinel-3 OLCI PROBA-V ASTER GED Calculate from Landsat bands VIIRS NDVI
fractional vegetation cover (FVC)	Modis_GLASS
emissivity	ASTER GED
land cover type	FROM_GLC10 based on Sentinel -2 FROM_GLC30 based on Sentinel -2 Esri_Land_Cover_2020_10m ESA_WorldCover10 based on Sentinel-1 and Sentinel 2
digital elevation model (DEM)	SRTM ASTER GED
SAVI, NMDI, NDWI, NDBI	Calculate from Landsat bands