S5-03

Evolution, validation and application of Land Surface Temperature product on FY-3 Polar orbit Meteorological Satellite

Lixin Dong [1, 2,] Na Xu[1, 2,] Lin Chen[1, 2,]

1 Key Laboratory of Radiometric Calibration and Validation for Environmental Satellites

2 National Satellite Meteorological Center (National Center for Space Weather), China Meteorological Administration

Land surface temperature (LST) is a very important physical variables characterizing land surface change process and the driving factors of land - atmosphere energy exchange. It is widely used in the fields of surface energy balance, climate change, resource and environment monitoring. In this paper, the development and evolution of Fengyun 3 (FY-3) LST algorithm are firstly introduced. Some candidates split window LST algorithms are compared to evaluate their applicability for the Medium Resolution Spectral Imager (MERSI) onboard the FY-3 satellite using simulated data by the MODTRAN radiative transfer model. And then the enterprise algorithm of FY-3 LST is determined and the operational products are produced in clear sky condition. Secondly, the MERSI LST products is validated by using the in-situ data and Moderate Resolution Imaging Spectroradiometer (MODIS) LST product. The validation results indicate that the preferred LST algorithm meets the required accuracy (2.5 K) of the FY-3 mission. Finally, some application of LST products in the field of high-temperature process monitoring and the study of island LST change before and after volcanic eruption is introduced. The results shows that the temporary and spatial resolution of FY-3 MERSI meters the need for monitoring in many fields.