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A new method to improve the analyzed meteorological observations with the use of high-resolution remote sensing data

Antonio Daniel Sanchis-Dufau

University of Vienna, Institute of Meteorology and Geophysics, General Meteorology and Climatology, Vienna, Austria (antonio.sanchis-dufau@univie.ac.at)

A new method to improve the analyzed meteorological observations data, by means of the use of high-resolution satellite images is presented in this study. The satellite images have been provided by NASA MODIS, with the MYD11A1 land surface temperature product at 1km spatial resolution. On the other hand, in-situ observations have been obtained from the Vienna Enhanced Resolution Analysis objective method, also known as VERA, developed by the Institute of Meteorology and Geophysics of the University of Vienna. This objective method analyzes diverse meteorological observations from worldwide irregularly distributed stations through the use of the known fingerprint technique, which takes a pattern and adds it to the analysis once it is recognized by the observed values. In this case, the fingerprint has been built with the high-resolution satellite surface temperature data above mentioned and has been integrated into the analysis with the aim to find a good correlation with the temperature observations data obtained from VERA, and mainly to get improvements over complex terrain. Finally, the results and impact of this method used has been exhaustively studied and other solutions to improve them will be proposed as well.