



Atmospheric profiles measured by polar orbiting satellites

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Since 2002 the Faculty of Science at the Eötvös Loránd University (Budapest, Hungary) operates a satellite receiving facility. This station currently receives Earth observation data from the NOAA and Terra/Aqua polar orbiting environmental satellites. Using the AAPP (ATOVS and AVHRR Processing Package) and IAPP (International ATOVS Processing Package) software packages we are able to derive atmospheric profiles of temperature, water vapor mixing ratio, etc. from the data of the Advanced TIROS Operational Vertical Sounder (ATOVS) instrument onboard the NOAA satellites. Using the International MODIS/AIRS processing package (IMAPP) software we are able to transform the Terra and Aqua based Moderate Resolution Imaging Spectroradiometer (MODIS) Level 1A raw data into Level 2 science products, such as the MOD07 product containing atmospheric profiles of the same parameters. One of our aims is to compare the atmospheric profiles measured by the different instruments for selected days, also using radiosonde data for validation. While sounding products retrieved from MODIS data have higher horizontal resolution, the number of vertical levels is less than for the profiles based on ATOVS data. Thus there is a well recognized trade-off between horizontal and vertical resolution of the profiles, which should be considered for any application using the derived profiles.

By using instrumental data provided by different satellites, the frequency of satellite overpasses makes it possible to analyze the profiles and the changes in the atmospheric parameters during different synoptic conditions.