

International Filter Radiometer Comparison Results

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In conjunction with the Eleventh International Pyrheliometer Comparison held in Davos, Switzerland, from September 27 to October 15, 2010, the Physikalisch-Meteorologisches Observatorium Davos/World Radiation Center (WRC) also conducted the 3rd Filter Radiometer Comparison (FRC III). Two refurbished Atmospheric Radiation Measurement (ARM) multifilter rotating shadowband radiometers (MFRSRs) were included in the comparison, along with a new version of the MFRSR that uses a thermopile sensor for broadband solar measurements replacing the silicon photodiode that is used in the earlier (and all of ARM's) MFRSRs. The unprecedented temperature stability, required to successfully operate the thermopile, also improves the narrowband filter measurements significantly. All the participating instruments were compared to a group of precision filter radiometers that are owned and operated by the WRC. Initial results show that the MFRSRs compare favorably to the reference group, and are, in fact, within the limits for direct sun-pointing instruments set by the FRC II working group in the previous comparison, i.e., $\pm 0.005 + 0.01/\text{air mass}$.

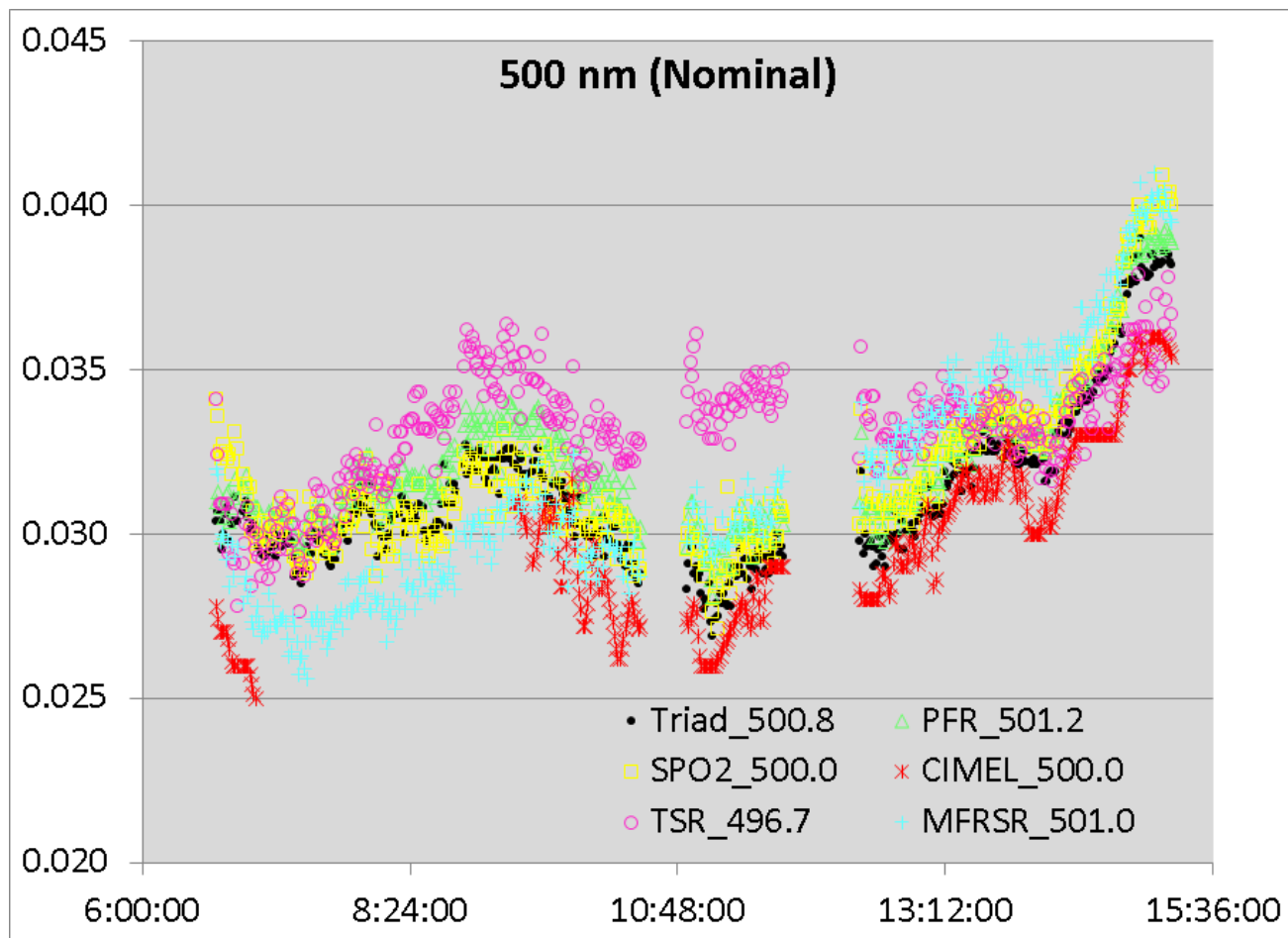


Figure 1. Time series of Aerosol Optical Depth at (nominally) 500 nm as measured during the FRC in Davos, Switzerland on 12 Oct, 2010. The reference triad is shown as filled black dots. NOAA GMD operated the Thermopile Spectral Radiometer (magenta open circles) and the MFRSR (blue plus signs).