Dear AERONET users, colleagues and friends,   12-Feb-19

I'm very pleased to announce two new components of the AERONET program: 1) Uncertainty estimates for selected inversion retrievals and 2) A provisional lunar AOD. Both elements are available on the AERONET webpage (https://aeronet.gsfc.nasa.gov) through the download tools and web service.

We are using a proxy for uncertainty estimates based on look-up tables of the standard deviation generated from one sigma variability of possible input parameters for computed inversions encountered in the entire V3 Level 2 database for almucantars and hybrids. The method is described in some detail on a link through the 'Publication' menu on the AERONET webpage (https://aeronet.gsfc.nasa.gov/new_web/Documents/U27_summary_final.pdf) and temporarily on AERONET's announcements homepage. A more detailed description will be available in a paper in preparation by Alexander Sinyuk. Note that this product is only provided for selected Version 3 Level 2 data products: spectral SSA, spectral imaginary index of refraction, spectral asymmetry parameter, volume mean radius (fine and coarse) of the particle size distribution, and width (sigma) of the particle size distribution. Other product uncertainties will be added as they are analyzed and vetted by the AERONET team.

A 'provisional' lunar AOD product is now available from the AERONET website both through the download tool and through web service for all CE-318T instruments registered in AERONET with the lunar option enabled (180 sites since 2015). This level 1.5-like product results are not final owing to provisional irradiance and evolving processing algorithms. Thus, it should be used with great caution. The approach demonstrated by Berkoff et al., (2011), Barreto, A. et al., (2016) and Li, Z.et al. (2016) papers demonstrated the feasibility of the Cimel sun photometer system for lunar observations to retrieve AOD. The AERONET approach follows Li, Z. et al. calibration description.   The lunar irradiance model is the USGS ROLO model (Kieffer, H. H. and Stone, T. C., \2005). The quality assurance algorithms used follow Giles et al. (2019; https://www.atmos-meas-tech.net/12/169/2019/) without additional modifications for lunar. The description of the exact calibration technique and processing algorithms by Ilya Slutsker is described and posted as a draft to the AERONET website under 'Publications'. This Lunar description will be updated further in March.

Lunar AOD data largely appear reasonable; however, anomalies abound in the data. These lunar AOD data, like all level 1.5 data, should not be considered a final product nor does the AERONET team recommend them for publication. Further effort is required and is on-going to refine the algorithms for development of a level 2 lunar AOD product.

Please send development comments, examples (including the site, date, time, instrument number, and potential issue), and related observations to David Giles (david.m.giles@nasa.gov) with the subject line: Provisional Lunar AOD Development. Note that further inquiries should be sent to Brent Holben.

References

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