

Interactive comment on “The AERONET Version 3 aerosol retrieval algorithm, associated uncertainties and comparisons to Version 2” by A. Sinyuk et al.

Anonymous Referee #1

Received and published: 10 February 2020

The manuscript describes the AERONET version 3 aerosol retrieval algorithm. The AERONET network, database and data retrieval constitute a unique source for world wide aerosol information. The version 3 algorithm provides new features and refinements that will increase the value of the data set. Specifically, the new hybrid measurement method is of great interest as it extends the set of solar zenith angles and possible atmospheric conditions for which measurements may be made.

The manuscript is well-organised and include detailed description of the new version aerosol retrieval algorithm and a thorough comparison with version 2 of the algorithm. The manuscript is acceptable for publication with only minor changes as suggested

C1

below.

Minor comments

- **Page 6, line 193-194:** Please describe how high performance multi-processor computing is utilized.
- **Page 8, line 251:** what is meant by 'the effect of high range of instrument sensor head temperature'?
- **Page 17, line 544:** Please justify why you make this the only choice as a proxy for the uncertainty.
- **Pages 23-26:** It might be of interest to mention which data will be reprocessed with the V3 algorithm and if there is a timeplan. Furthermore, are there any plans for further deployment of instruments that may use the HYB protocol?
- **Pages 52-80:** In all Figures with two or more plots there is no a), b) (or c)) labels on the plots. Please include.
- **Pages 56, Fig 6:** Please use same scale on y-axis on a) and b) to make comparison easier.
- **Pages 69-80, Figs 19-21. 23-30:** These plots may provide more information if the points are colored according to the density of points, compare the left and right plots in Fig. 1 below. They show the same data, but information content is higher when plotted as in the left plot.

Language corrections

C2

- **Page 4, line 109:** change 'used by aerosol' to 'used by the aerosol'.
- **Page 5, line 148:** change 'and an extend' to 'and extend'.
- **Page 6, line 185:** change 'of electromagnetic' to 'of the electromagnetic'.
- **Page 6, line 192:** change 'to potential' to 'to the potential'.
- **Page 6, line 196:** change 'in UV is possible by adding 380 nm channel to standard' to 'in the UV is possible by adding the 380 nm channel to the standard'.
- **Page 6, line 197:** change 'in UV' to 'in the UV'.
- **Page 6, line 201:** change 'in UV' to 'in the UV'.
- **Page 7, line 217:** change '1°' to '1.0°'.
- **Page 7, line 239:** change 'to Ross-Li' to 'to the Ross-Li'.
- **Page 8, line 243:** change 'by MODIS' to 'by the MODIS'.
- **Page 8, line 250:** change 'observations the V3' to 'observations V3'.
- **Page 8, line 271:** change 'increasing of wavelength' to 'increasing wavelength'.
- **Page 8, line 272:** change 'of BRDF' to 'of the BRDF'.
- **Page 9, line 275:** change 'of surface' to 'of the surface'.
- **Page 9, line 281:** change 'of SZA' to 'of the SZA'.
- **Page 9, line 282:** change 'when AOD at 440nm is 0.65 and Angstrom' to 'when the AOD at 440nm is 0.65 and the Angstrom'.
- **Page 9, line 283:** change 'increasing of SZA' to 'increasing SZA'.

C3

- **Page 9, line 296:** change 'from the Fig.' to 'from Fig.'.
- **Page 9, line 297:** change 'which the' to 'which is the'.
- **Page 9, line 298:** change 'is a latest' to 'is the latest'.
- **Page 10, line 306:** change 'of above' to 'of the above'.
- **Page 10, line 306:** change 'illustrated on a' to 'illustrated by a'.
- **Page 10, line 307:** change 'during UAE' to 'during the UAE'.
- **Page 10, line 311:** change 'of temperature' to 'of the temperature'.
- **Page 10, line 313:** change 'afternoon. On Fig' to 'afternoon. In Fig'.
- **Page 10, line 314:** change 'Figure6a' to 'Figure 6a'.
- **Page 10, line 316:** change 'to temperature' to 'to the temperature'.
- **Page 10, line 339:** change 'by AERONET' to 'by the AERONET'.
- **Page 11, line 347:** change 'with decreasing of the range of the' to 'with decreasing range of the'.
- **Page 11, line 350:** change 'where fit' to 'where the fit'.
- **Page 11, line 353:** change 'shows diurnal' to 'shows the diurnal'.
- **Page 11, line 359:** change 'of total' to 'of the total'.
- **Page 11, line 365:** change 'for Hamim' to 'for the Hamim'.
- **Page 11, line 368:** change 'results shown at Fig' to 'results in Fig'.

C4

- **Page 11, line 371:** change 'shown at Fig. 10a' to 'shown in Fig. 10a'.
- **Page 11, line 372:** change 'shown at Fig. 10b' to 'shown in Fig. 10b'.
- **Page 12, line 390:** change 'refractive index' to 'the refractive index'.
- **Page 12, line 398:** change 'part of refractive' to 'part of the refractive'.
- **Page 12, line 407:** change 'which explained' to 'which is explained'.
- **Page 13, line 409:** change 'make dependence' to 'make the dependence'.
- **Page 13, line 415:** change 'by inversion' to 'by the inversion'.
- **Page 13, line 428:** change 'in retrieved' to 'in the retrieved'.
- **Page 13, line 429:** change 'increasing of wavelength' to 'increasing wavelength'.
- **Page 14, line 442:** change 'is the function of SZA' to 'is a function of the SZA'.
- **Page 15, line 477:** change 'from another hand' to 'on the other hand'.
- **Page 15, lines 479-480:** This sentence may be written as: 'This is illustrated in Fig. 13b which shows that for Mongu Inn, the SSA does not exhibit any significant SZA dependence'.
- **Page 15, line 486:** change 'by changing in' to 'by changes in'.
- **Page 15, line 487:** change 'at 1020 nm, 30° SZA bin' to 'at 1020 nm, the 30° SZA bin'.
- **Page 15, line 498:** change 'decreasing of the difference' to 'decreasing differences'.
- **Page 16, line 516:** change 'participating in' to 'participating in the'.

C5

- **Page 16, line 538:** change 'In Ross-Li' to 'In the Ross-Li'.
- **Page 21, line 673:** change 'uncertainty estimating does' to 'uncertainty estimation does'.
- **Page 21, line 683:** change 'hit 1.6' to 'hit the 1.6'.
- **Page 21, line 698:** change 'though' to 'through'.
- **Page 21, line 704:** change 'in GSFC' to 'in the GSFC'.
- **Page 23, line 745:** change 'Fig.29' to 'Fig. 29'.
- **Page 23, line 749:** change 'Fig.30' to 'Fig. 30'.
- **Page 24, line 777:** change 'At 1020 nm' to 'For the 1020 nm'.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-474, 2020.

C6

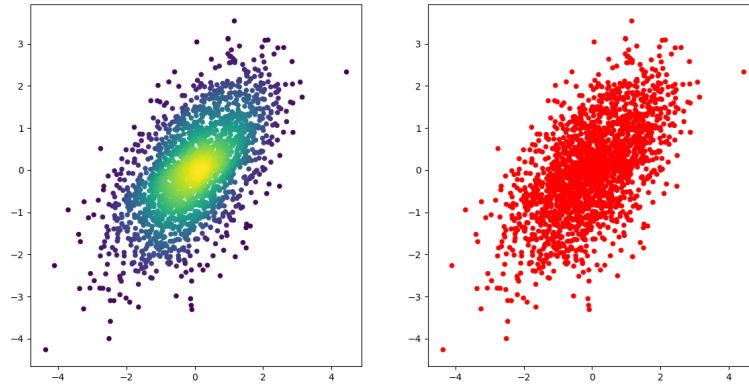


Fig. 1. Example of data points colored according to density (left) and not (right).