

**General Comments**

MODIS Terra and Aqua Aerosol Optical Depth (AOD) retrievals from Dark Target (DT) land algorithm were globally validated. For this, AEORNET V2 L2.0 and MODIS AOD at 550 nm were used. MODIS AOD retrievals were averaged for 5 x 5 spatial window centered at the AERONET station and AERONET measurements were averaged for  $\pm 30$  minutes of satellite overpass time. Total 90,162 and 71,248 high-quality collections were collected for Terra and Aqua, respectively. The quality of collocations was evaluated using correlation coefficient, regression slope, Mean Bias (MB), Root Mean Square Error (RMSE), Expected Error (EE) is defined by Remer et al. (2013), and Error Ratio (ER). Overall, MODIS Terra and Aqua AOD retrievals are highly correlated with AERONET AOD, and 62.5% and 68.4% of AOD retrieved fall within the EE, respectively. The manuscript is well written and has a merit for publication in AMT, but some proofreading is required for small technical errors.

**We thank the reviewer for the review and presenting his/her stylistic suggestions. We have considered each one carefully. All our responses are in BOLD.**

**Specific Comments**

Page 1 L14-20: These lines are more suitable in the introduction section than here.

**We have revised the abstract and removed these lines.**

L20: It is recommended to avoid the use of the first pronoun in scientific writings.

**There are many writing guidelines that encourage the use of active voice in a scientific publication, which at times requires the use of a first person pronoun. These guidelines include the journal Nature:**

**Nature journals prefer authors to write in the active voice ("we performed the experiment...")**

**[https://www.nature.com/authors/author\\_resources/how\\_write.html](https://www.nature.com/authors/author_resources/how_write.html)**

**the journal Science:**

**Use active voice when suitable, particularly when necessary for correct syntax (e.g., "To address this possibility, we constructed a  $\lambda$ Zap library . . .," not "To address this possibility, a  $\lambda$ Zap library was constructed . . .").**

**<http://www.sciencemag.org/site/feature/contribinfo/prep/res/style.xhtml>**

and others. For *Atmospheric Measurements and Techniques* there are no similar guidelines towards active versus passive voice. Under English guidelines and house standards, AMT only states, “We accept all standard varieties of English in order to retain the author’s voice.” That statement is made mostly to address variants in spellings of specific words. However, there is obviously enough leeway in the journal’s style guideline and enough variation across scientific fields to accommodate the active voice and first person pronouns in AMT publications. As readers we much prefer the crisp style of active voice in scientific writing, and as writers, we respectfully choose to continue to write in this style.

Page 6 L28-29: Please mention Ångström exponent value ( $\alpha_{440-675}$ ?).

The reviewer may be mistaken. We have not used Angstrom exponent in our interpolation but used actual AOD values in multiple channels using method described by Eck et al., 1999. Angstrom exponent assumes linearity of the AOD vs. wavelength relationship in log-log space. Eck et al., 1999 showed that there is often curvature in the relationship, and therefore a more accurate interpolation between wavelengths takes into account this curvature. There are a great many papers that cite Eck et al., 1999 (over 1000 on Google Scholar) that have bypassed Angstrom exponent and gone to the non-linear interpolation, and therefore we do not see a need to explain our reasons for making this bypass.

Page 16 L30: AOD is interpolated to  $0.55 \mu\text{m}$  > AOD is interpolated to  $0.55 \mu\text{m}$  using Ångström exponent ( $\alpha_{440-675}$ ?).

**See above comment.**

Technical Corrections

**Page 1:**

L16: dark target > Dark Target (DT)

**REVISED**

L17: aerosol optical depth > Aerosol Optical Depth (AOD)

**REVISED**

L22: AERONET > AErosol RObotic NETwork (AERONET)

**REVISED**

L23: MODIS Terra > MODIS-Terra

**REVISED**

L24: 62..5% > 62.5%

**REVISED**

L26:  $(0.05+0.2 \times \text{AOD}) > (0.05 + 0.2 \times \text{AOD})$

**REVISED**

Page 3 L27: RObotoic > Robotic

**REVISED**

Page 4 L7, 22: 10 km<sup>2</sup> > 10 km

**REVISED**

L8: 0.5 km<sup>2</sup> > 0.5 km

**REVISED**

L9, 14, 18, 22:  $3 \text{ km}^2 > 3 \text{ km}$ , please correct everywhere in the manuscript.

**REVISED Everywhere**

L15:  $3 \text{ km} > 3 \text{ km}$

**REVISED**

**Page 7:**

L1: level 2.0, version 2.0 > Version 2 Level 2.0

**REVISED**

L8:  $3 \text{ km} > 3 \text{ km}$

**REVISED**

L14:  $50 \times 50 \text{ km}^2 > 50 \times 50 \text{ km}^2$

**REVISED**

L14:  $x > x$ , please correct everywhere in the manuscript.

**REVISED**

L17, 20, 26:  $\pm 30 > \pm 30$

**REVISED**

L20:  $\pm 30$  minutes of overpass >  $\pm 30$  minutes satellite overpass

**REVISED**

**Page 9:**

L5: AEROENT values > AERONET values (Figure 2)

L7: Delete “Results are plotted in Figure 2”.

**REVISED**

L16:  $\text{QAF}=0 > \text{QAF}=0$  (Table 1?)

**REVISED**

**Page 11:**

L30:  $R \geq 0.78 > R \geq 0.78$

**REVISED**

**Page 12:**

L8:  $75\% > 70\%$ ?

**REVISED**

L8: Delete “there”

**REVISED**

**Page 13:**

L1:  $\text{AOD} (< 0.1) > \text{AOD} (< 0.10)$

**REVISED**

L6: biases of  $> 0.10 > \text{biases of } > 0.10$

**REVISED**

L16, 27:  $5 \times 5 > 5 \times 5$

**REVISED**

**Page 14:**

L23: MODIS – AERONET > MODIS-AERONET  
**REVISED**

**Page 15:**

L10:  $-1 \leq ER \leq 1$  >  $-1 \leq ER \leq 1$   
**REVISED**

**Page 16:**

L29: Only Level 2, quality assured > Version 2 Level 2.0, cloud screened and quality Assured  
**REVISED**