

Interactive comment on “Validation of MODIS 3 km Land Aerosol Optical Depth from NASA’s EOS Terra and Aqua Missions” by Pawan Gupta et al.

Anonymous Referee #1

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Review of Gupta et al., “Validation of MODIS 3 km Land Aerosol Optical Depth from NASA’s EOS Terra and Aqua Missions”, submitted for publication in AMT

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 × 5 spatial window centered at the AERONET station and AERONET measurements were averaged for ± 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

C1

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.

Specific Comments

Page 1

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

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

Page 6

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

Page 16

L30: AOD is interpolated to 0.55 μm > AOD is interpolated to 0.55 μm using Ångström exponent ($\alpha_{440-675}$?).

Technical Corrections

Page 1

L16: dark target > Dark Target (DT)

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

L22: AERONET > AErosol RObotic NETwork (AERONET)

L23: MODIS Terra > MODIS-Terra

L24: 62..5% > 62.5%

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

Page 3

C2

L27: RObotoic > RObotic

Page 4

L7, 22: 10 km² > 10 km

L8: 0.5 km² > 0.5 km

L9, 14, 18, 22: 3 km² > 3 km, please correct everywhere in the manuscript.

L15: 3km > 3 km

Page 7:

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

L8: 3km > 3 km

L14: 50x50 km² > 50 × 50 km²

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

L17, 20, 26: ±30 > ± 30

L20: ± 30 minutes of overpass > ± 30 minutes satellite overpass

Page 9

L5: AEROENT values > AERONET values (Figure 2)

L7: Delete "Results are plotted in Figure 2".

L16: QAF=0 > QAF=0 (Table 1?)

Page 11

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

Page 12

L8: 75% > 70%?

C3

L8: Delete "there"

Page 13

L1: AOD (<0.1) > AOD (< 0.10)

L6: biases of >0.10 > biases of > 0.10

L16, 27: 5x5 > 5 × 5

Page 14

L23: MODIS – AERONET > MODIS-AERONET

Page 15

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

Page 16

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

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