

Interactive comment on “ Understanding the aerosol information content in multi-spectral reflectance measurements using a synergetic retrieval algorithm” by D. Martynenko et al.

Anonymous Referee #2

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Comments from Anonymous Reviewer #2

General Comments:

In general, the manuscript “Understanding the aerosol information content in multi-spectral reflectance measurements using a synergetic retrieval algorithm” by Martynenko et al, is written in an appropriate style, is relevant to the AMT community and is worth publishing. However, the text should be improved for clarity. This can be achieved by 1) removing repetitive sentences (especially in the abstract and conclu-

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sions), 2) including a more explicit presentation of the motivation and goals of this paper, 3) expanding the discussion of the assumptions made, and 4) expanding discussion of how the results and the conclusions drawn from the results differ from previous work mentioned in the paper.

Specific Comments:

p. 2580 Lines 1-25: Abstract should be a bit more compact and explicit in stating the goals and findings of the paper. This work is built upon earlier work by Holzer-Popp. Please explain how this works differs from and/or builds upon this work.

p. 2583 Lines 16-21: please expand the discussion of the key assumptions made for this paper: 1) that the aerosol models cover the natural variability of tropospheric aerosol and 2) that the surface albedo is accurately known and the presence of clouds can be completely excluded or corrected. Especially for the second assumption, it would be nice to have more discussion about whether this is feasible and what the associated error is for these assumptions.

Technical Comments:

p. 2580 Line 24: consider replacing “is able to provide for 2 to 4 degrees...” with “is able to provide 2-4 degrees...”

p. 2581 Lines 2-3: Second sentence paragraph 1 of introduction is awkward:

p. 2581 Line 20: remove “or”

p. 2581 Line 21: consider replacing “or derived quantities...”, with “or provide derived quantities...”

p. 2582 Line 8: usage of word “partly” is unclear, consider removing it

p. 2582 Line 23: usage of word “following” is unclear, consider removing it

p. 2583 Line 11: consider replacing “allows to derive” with “allows one to derive” or

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“allows the derivation of”

p. 2585 Line 3: Veihelmann et al (2007) is cited but not included in the reference list, this should be corrected

p. 2587 Line 20: “Further to the earlier study” is awkward, consider re-wording “In addition to previous findings, or Building on earlier work. . .”

p. 2588 Line 3: usage of word “tends” is ambiguous

p. 2588 Lines 10-11: correct “distribution of histograms are” to “distributions of histograms are” or “distribution of histograms is”

p. 2589 Line 20: consider replacing “But” with “However”

p. 2591 Lines 1-3, Lines 9-10: Sentences are nearly identical, please reword or remove to avoid repetition.

p. 2597 Figure 4 could be improved by included a legend in the figure. Also, consider revising the colours and/or line types as the blue and black lines are difficult to distinguish from one another.

p. 2598 Figure 5a caption, last line should be corrected “are quite good distinguishable” should be changed to “are distinguishable from one another”

p. 2602 Figure 6c title “WIES” is unclear and should be changed to “MEADOW”

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 2579, 2010.