Please note: AMT queries and remarks are written in black; author responses and requests are written in blue.

**Remarks from the language copy-editor**

CE1 In the future, if at all possible, please provide your comments in a marked-up pdf as this reduces the risk of missing or incorrectly inserting a comment and significantly reduces the time required for proofreading.

In addition to this Word document, we are also sending an annotated PDF file that (to the best of our abilities) contains all of the same comments and requests found here, albeit sometimes in abbreviated language. In case of conflicts, changes in the Word document take precedence.

CE2 Incorrect, unnecessary, and stylistic changes were not inserted.

As long as we can easily tell which requests were accepted and which were rejected, this is exactly as it should be.

CE3 It is our house standard to use numerals with all units of time. It is furthermore our standard not to begin sentences with numerals. Thus, these changes are necessary and will remain.

In this case, I believe that rigorously following the Copernicus style guide can lead to a wordy and unsightly construction that I’d prefer to avoid. So, how about this instead: on page 3, column 2, line 68: please change

“A total of 1 full year (2008) of the CALIOP 5 km layer product was used to develop and test the V3 PDFs.”

to

“We used 1 full year (2008) of the CALIOP 5 km layer product to develop and test the V3 PDFs.”

(Active voice and slightly shorter too…what’s not to like! ☺)

CE4 It is our house standard to use "data" in the plural. Thus, the plural pronoun "them" must be used here.

Yes, you are 100% correct. Thank you for catching my error. (twice now!)

CE5 Semitransparent is not hyphenated in American English (https://www.merriam-webster.com/dictionary/semitransparent), which was the English style selected by the authors.

Thank you for making the correction.

CE6 It is our house standard to only use quotations for a term at its first instance.

This is the first occurrence of the term “hot ice”, so I believe the quotations are correct. (As we said previously, “hot ice” is quoted here specifically to indicate its status as a *newly coined term or phrase*. This is the first and only occurrence of “hot ice” in the manuscript.)

CE7 Is this a ratio or do you mean "and" where there are slashes here? Please specify.

Yes, we mean "and" where the slashes are. So, on page 22, column 2, line 54: please change “HNO3/H2SO4/H2O” to “HNO3, H2SO4, and H2O”.

**Remarks from the typesetter**

TS1 In ranges and series, it is our house standard to retain only the final unit of measure. This is in line with the ACS Style Guide (p. 226). Since this is a typesetting correction, it is not displayed in the copy-editing track changes file.

I see…and I sure wish I had known this at the onset of this exercise! Future AMS authors would undoubtedly appreciate knowing this information in advance. Perhaps your web guru could add a notice about following the ACS Style Guide recommendations somewhere on your manuscript preparation web page (https://www.atmospheric-measurement-techniques.net/for\_authors/manuscript\_preparation.html)?

TS2 According to our standards, changes like this must first be approved by the editor, as data have already been reviewed, discussed and approved. Please provide a detailed explanation for those changes that can be forwarded to the editor. Please note that this entire process will be available online after publication. Upon approval, we will make the appropriate changes. Thank you for your understanding.

In amt-2018-190-typeset\_manuscript-version2.pdf, the sentence in question (which is the last sentence in the appendix) reads as follows…

“*As seen in Table A1, SIBYL’s detection of clouds and aerosols increased by 6.8 % at night and 0.4 % during the day.*”

We are asking that the 6.8% value be changed to 2.2%, as follows...

“*As seen in Table A1, SIBYL’s detection of clouds and aerosols increased by 2.2 % at night and 0.4 % during the day.*”

The reason for the change is that we made a dumb math error in the original text. At this point I don't have any idea where 6.8% and 2.2% came from...but the correct numbers, directly from Table A1 are

night: (17.79 - 16.71) + (8.27 - 7.20) = 2.15 ≈ 2.2

day: (12.06 - 12.23) + (4.60 - 4.02) = 0.41 ≈ 0.4

For reference, the version of Table A1 in amt-2018-190-typeset\_manuscript-version2.pdf looks like this…

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (a) Night | V3 Clear | V3 Cloud | V3 Aerosol | V3 Total |
| V4 Clear | 96.05 | 1.94 | 2.02 | 76.10 |
| V4 Cloud | 2.31 | 93.17 | 4.52 | 16.71 |
| V4 Aerosol | 6.58 | 10.35 | 83.07 | 7.20 |
| V4 Total | 73.95 | 17.79 | 8.27 | 94.63 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (b) Day | V3 Clear | V3 Cloud | V3 Aerosol | V3 Total |
| V4 Clear | 98.79 | 0.56 | 0.65 | 83.75 |
| V4 Cloud | 2.42 | 93.38 | 4.20 | 12.23 |
| V4 Aerosol | 7.55 | 4.22 | 88.23 | 4.02 |
| V4 Total | 83.34 | 12.06 | 4.60 | 97.70 |

If we treat the numeric portions of these two tables as 4 x 4 matrices, V4 totals for cloud and aerosol detection are given in the bottom rows of the two matrices, whereas V3 totals are given in the rightmost columns. Using generic matrix notation, the equations above would simply be (M[4,2] - M[2,4]) + (M[4,3] - M[3,4]) = detection differences.

TS3 According to our standards, changes like this must first be approved by the editor, as data have already been reviewed, discussed and approved. Please provide a detailed explanation for those changes that can be forwarded to the editor. Please note that this entire process will be available online after publication. Upon approval, we will make the appropriate changes. Thank you for your understanding.

Table A1 (shown above) is a confusion matrix in which all numeric entries are percentages. What we asked to do is to reduce the precision of the numbers by a single digit – e.g., from 98.79 to 98.8. The revised tables would look like this…

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (a) Night | V3 Clear | V3 Cloud | V3 Aerosol | V3 Total |
| V4 Clear | 96.1 | 1.9 | 2.0 | 76.1 |
| V4 Cloud | 2.3 | 93.2 | 4.5 | 16.7 |
| V4 Aerosol | 6.6 | 10.4 | 83.1 | 7.2 |
| V4 Total | 74.0 | 17.8 | 8.3 | 94.6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (b) Day | V3 Clear | V3 Cloud | V3 Aerosol | V3 Total |
| V4 Clear | 98.8 | 0.6 | 0.7 | 83.8 |
| V4 Cloud | 2.4 | 93.4 | 4.2 | 12.2 |
| V4 Aerosol | 7.6 | 4.2 | 88.2 | 4.0 |
| V4 Total | 83.3 | 12.1 | 4.6 | 97.7 |

While this is a “nice to have” change (because the precision given in the table would then be identical to the precision given in the last sentence of the appendix) it’s certainly not critical, and had we known it was going to raise a red flag with the typesetter and/or copy editor, we never would have suggested it. So, there appear to be two options to reconcile the precision in the table and in the text:

1. make both changes for TS2 and TS3 as requested above; or
2. in addition to the modifications specified in TS2, further change the last sentence in Appendix A as follows

“*As seen in Table A1, SIBYL’s detection of clouds and aerosols increased by 2.15 % at night and 0.41 % during the day.*”

(note the increase in numerical precision), and make no changes at all to Table A1 (i.e., ignore the TS3 request).

While we have a slight preference for option 1, either choice is acceptable.

TS4 Please provide initials.

The reference below is copied directly from amt-12-51-2019, with the editor’s initials being shown in orange.

Vaughan, M., Liu, Z., Hu, Y.-X., Powell, K., Omar, A., Rodier, S., Hunt, W., Kar, J., Tackett, J., Getzewich, B., and Lee, K.-P.: Cloud-Aerosol Interactions: Retrieving Aerosol Ångström Exponents from CALIPSO Measurements of Opaque Water Clouds, Proceedings of the 27th International Laser Radar Conference (ILRC 27), edited by: Gross, B., Moshary, F., and Arend, M., EPJ Web of Conferences, 119, 11001, https://doi.org/10.1051/epjconf/201611911001, 2015.

TS5 Please provide date and venue of the conference.

5-10 July 2015, New York, New York, USA

**Other Corrections**

1. Please see page 5, column 1, lines 12–13. Regarding the text here, CE03 in amt-2018-190-typeset\_manuscript-version2.pdf asked, ‘Should "a", "i", and "w" be italicized?’. While our answer was ‘yes’, the change was not made. So please add the italics by changing

“where *s* = a, i, or w, where a indicates aerosol, i indicates ice clouds, and w indicates water clouds”

to

“where *s* = *a*, *i*, or *w*, where *a* indicates aerosol, *i* indicates ice clouds, and *w* indicates water clouds”

1. Page 5, column 1, line 18: please change  to .
2. Page 5, column 1, line 21: please change  to and  to . (And please accept my apologies for failing identify this required change the first time around!)
3. Page 7, at the end of the next-to-last sentence in the caption for Figure 3: please change “occur at very infrequently” to “occur very infrequently”.
4. Page 11, column 1, line 50: please change “in which” to “for which”.
5. Page 13, column 2, line 18: please change “machine-learning” back to “machine learning” (e.g., as used consistently in the following: <https://www.coursera.org/learn/machine-learning>, <https://www.ml.cmu.edu/>, <https://en.wikipedia.org/wiki/Machine_learning>, etc.)
6. Page 15, caption for Figure 11: please change “The 532 nm attenuated backscatter” to “V4 532 nm attenuated backscatter”.
7. Page 17, caption for Figure 13; please change “The (a) 532 nm attenuated backscatter” to “(a) V4 532 nm attenuated backscatter”.
8. Page 18, column 2, lines 10–12: please change

“The first two rows represent the V3 clouds and aerosols and the first two columns indicate the V4 clouds and aerosols.”

to

“The first two rows indicate, respectively, V3 clouds and V3 aerosols while the first two columns indicate V4 clouds and V4 aerosols.”

1. Page 21, column 2, lines 26–27: please change “CAD scores approaching ~ -100” to “CAD scores approaching -100”.
2. Page 28, column 2, caption for Table A1; please change

“The numbers in the diagonal elements are the fraction of each category for which the classification remained unchanged from V3 to V4. The numbers in the non-diagonal elements are the fractional changes from one category to the other”

to

“The numbers in the diagonal elements are the percentage of each category for which the classification remained unchanged from V3 to V4. The numbers in the non-diagonal elements are the percentage changes from one category to another”

1. Page 31, column 1, line 57: is the reference for Vaughan et al., 2015 out of order? Shouldn’t it be positioned between Vaughan et al., 2010 and Vaughan et al., 2018?