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Atmospheric Measurement Techniques Discussions

Interactive comment on "Year-round stratospheric aerosol backscatter ratios calculated from lidar measurements above Northern Norway" *by* Arvid Brand et al.

Anonymous Referee #3

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The paper is appropriate for AMT, but not in a good shape. Major revisions are needed.

The paper is much too long. Basic lidar stuff is unnecessarily presented in large detail. A compact version is needed.

Introduction:

The importance of the SSA is presented in large detail! Why? One paragraph would be sufficient! On the other hand, one has to read the entire paper to get an idea: What is new here? What is the motivation to write this paper? Figures 9 and 10 tell the reader finally what the step forward is.

Please provide the motivation right in the beginning (second paragraph of the introduction): precise and compact. The shorter the introduction the better.

Good points to be mentioned in the Intro are: observations at high latitudes are rare. . ., now new capability for day time observations. . .

Maybe mention also that CALIOP observations are available to monitor SSA as well, but the disadvantage is. . ..

Section 2: . . .is much too long. One paragraph and good references would be fine. Section 2 could be even left out..., could be the introductory part of Section 3 (Method).

There are many sentences that must be simply improved: The detection system is capable to detect wavelengths? Simply bad wording. . . The lidar detects backscatter signals at different wavelengths. There so many, many more examples throughout the paper. . .. , e.g., P5, L5:We use an inelastic counter for the denominator of Eq 2. . . unbelievable wording. So bad! So low quality of precise thinking! Did any of the co-authors (including the director . . .) read the manuscript?

Section 3

Again, the section is too long, and contains many trivial parts. Make it compact, give proper references.

P5, L5: The reference is Raman, 1928! I could not believe what I read! Please provide a proper Raman LIDAR (!) reference here. The same for Rayleigh, 1871, 1899. Please provide a proper Rayleigh lidar reference.

Eq.(3), Eq(4): Please note! Quantities in equations are presented as ONE letter (a, b, c, T , p, that's why we use so often alpha, beta, gamma, ... and lambda, and then with index. . . if needed). So, please improve Eqs. 3 and 4 accordingly.

P5, L29: . . .data is reduced to altitudes above the tropopause. . . another example of bad wording. . .

Section 4:

I give up. . .! . . .. only a few remarks : purple drawn profile . . . or drawn as a red shade. . .. Please avoid ‘drawn’!... In many cases, you can leave it simply out, sometimes one may use: . . . is shown as purple curve, or given as red profile etc. . .

Section 5

To show the performance of the new procedure. . ...

So, this new procedure should be already briefly explained in the Intro section.

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