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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Day- and night-time aerosol optical depth implementation in CÆLIS" *by* Ramiro González et al.

Anonymous Referee #3

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Very interesting work on a new algorithm for processing aerosol Data.

A general comment

1 It is not clear what exactly is the purpose of this paper. Is it a comparison of the existing AERONET (NASA based) algorithm with CAELIS ? If this is the case the authors would have to demonstrate what is the added value of using CAELIS versus AERONET/NASA for AOD and Angstrom exponent.

Is it that CAELIS is somehow more accurate ?

Is it that it is an open source code and AERONET / NASA is not ?

When a CIMEL user purchase an instrument what kind of software does CIMEL pro-

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vides ?

What algorithm someone has to use in order to be part of the AERONET network ?

So the authors should state more clearly the main reason for introducing CAELIS. The "things" CAELIS could provide in addition to AERONET/NASA and/or the improvements compared to the later.

2 Comparing the two algorithms it is clear that aeronet and caelis use a number of similar inputs, formulas datasets and assumptions. It would be informative to mention in a table or paragraph which are common and which differ.

For example Calibration values, temperature correction functions, filter response use seem common. Pressure, Ozone and NO2 data series are different but these differences are not affecting so much the difference on the datasets. (here we do not know if they differ from reality).

Cloud detection seem to have some similar aspects but also some new.

So it would be informative for a future Caelis user to know the similarities and differences of the two algorithms

Minor comments

In general this is a comparison of two AOD and Angstrom exponent (AE) processing algorithms: Caelis and the AERONET/NASA algorithm V3 described by Gilles et al.

So in general this have to be more clear in the document. Now you are referring to this NASA algorithm as "AERONET" . You can just write AERONET/NASA algorithm (e.g. ANA) and go through the manuscript with this abbreviation.

Pressure

I think a comparison of caelis and aeronet pressure data could be compared with real pressure data for any sites available in order to have a more pragmatic comparison

and to show the impact of the use of these two databases. If this has been already performed in another publication you can just cite it and mention the main result.

Temperature correction.

Why only for wavelengths above 400nm ? What happens to lower wavelengths ?

A linear interpolation on two consecutive calibrations.

Are there any test to understand if a possible change among two consequtive calibration is gradual or a step change ?

You mention “(whichever is greater) for 675, 870, and 1020 nm channels, simultaneously.”

I guess due to the decrease of AOD with wavelength if this is a fact for 1020 nm will be for sure a fact also for 675 and 870nm ?

Cloud flagging

Going back to the second comment. It could be informative to state the differences of the two algorithms. The fact that results agree in 99.8% level point to the direction to ask if this can be considered as an improvement or if that the two algorithms agree so it can be just that the main assumptions of the two algorithms are the same.

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