

Interactive comment on “An overview of meso-scale aerosol processes, comparison and validation studies from DRAGON networks” by Brent N. Holben et al.

Anonymous Referee #2

Received and published: 1 May 2017

The paper is a comprehensive summary of results that indicates the reader the references to follow. It is concise and well written. However I would expect a bit more insight in the methodologies that are needed for meaningful comparison between AERONET and in situ aerosol observations. For instance, many in situ observations are made using a 10micron cut-off inlet and reducing relative humidity to <30%. About aircraft observations, changes in atmospheric pressure require corrections for adequate interpretation (and vertical integration) of extensive properties. The volatile fraction gets lost in certain sampling methods. etc.

I think these precautions need to be mentioned, as well as the necessity of product-specific uncertainty estimates that allow for finding conclusions (agreements or dis-

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agreements, processes, etc.) with sufficient significance.

It would be highly desirable adding references to published papers and websites when available in Table 3. Other than that, I can only report some minor comments (see below). I recommend the paper can be published after minor revision.

Specific comments:

Page2, Line18: only is too optimistic point of view. Clouds, instrumental issues, etc. are not always easy to screen from automated data. Maybe the sentence can be slightly reformulated.

P2, L19: remove repetition of “such as”

P2, L21: maybe worth mentioning here the quality control procedures of version 2

P2, L31: does this assessment apply for version 2 inversions? That paper refers to the version 1 and the current algorithm was largely improved, especially with respect to mineral dust (spheroid model, etc.)

P2, L34: maybe you can give here an estimate of what extension (in km) is the portion of atmosphere examined by an almucantar let's say at SZA=60deg . This can be illustrative with respect to the spatial density of some of the DRAGON networks

P2, L35: do you mean right-left averaging in almucantars? Please clarify

Table 1: Maybe the references: Müller et al, JGR doi:10.1029/2009JD012520, 2010 and Müller D.et al, JGR doi:10.1029/2011JD016825, 2012 can be added here. They deal with comparison between in situ and remote sensing (including AERONET retrievals) for desert dust.

Table 1: What does + and - represent here?

P6, L20: Please note that no information is given in bold letters in table 1.

P5, L16: Do you mean that the radius for a particle is defined as the radius of the

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volume-equivalent sphere? (even for non-spherical aerosols). Please clarify.

P5, L26: episodic volcanic ash could be mentioned here to make the list more complete.

P7, L1: parenthesis missing in “Holben et al” reference

P12, L12: Lunar and hybrid scans retrievals are not yet even published as aeronet products. This could be indicated to avoid confusion.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1182, 2017.

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