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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Intercomparison of aerosol optical depth from Brewer ozone spectrophotometers and CIMEL sunphotometers measurements" *by* A. Cheymol et al.

Anonymous Referee #1

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Intercomparison of aerosol optical depth from Brewer ozone spectrophotometers and CIMEL sunphotometers measurements Author(s): A. Cheymol, H. De Backer, K.S. Lam, J. Kim, V. Fioletov, A.-M. Siani, and J.-M. Vilaplana

This type of paper has limited value to the reader. The paper discusses intercomparison between several Brewer spectroemters and co-located or nearby CIMEL sunphotometers. Since there is no discussion of instrument calibration, instrument problems (if any), or the methods used to obtain the aerosol optical depth. The authors mention the Langley method, but make no attempt to evaluate the calibration accuracy at each site or the quality of the data. Because of this, there is no way for the reader

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or reviewer to evaluate the meaning of the intercomparison. Of course, the statement that the instruments must be co-located to obtain a high correlation is both true and obvious, since aerosol plumes have high spatial variability.

While the CIMEL 340 nm channel is almost free of an ozone effect, the 320 nm Brewer channel has a small O3 absorption effect. How big is this effect?

The one time series shown seems to have good correlation, but a number of values that disagree between the two instruments. Why?

Is there an effect from differences in aerosol absorption bewween 320 and 340 nm? What types of aerosols were being measured?

Do the single Brewers have a scattered or stray light problem at 320 nm. If so, what is the magnitude of the error and its effect on AOD.

How good were the Langley calibrations? Was there any deviation from straight-line behavior? If so, what was the effect?

Are there differences in the field of view of the Brewers and CIMELS? What is the effect?

While K&Z specifiy 0.2 degrees pointing accuracy, experience indicates that this may or may not be correct unless some effort is made to find the centroid of the sun. Was this done? A small pointing error can have a significant effect on AOD that will differ from one Brewer to the next. The CIMELs use a centroiding algorithm to avoid this very problem.

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