

Interactive comment on “Climatology of aerosol optical properties in Northern Norway and Svalbard” by Y.-C. Chen et al.

Anonymous Referee #2

Received and published: 17 December 2012

The topic of the work presented is in principle interesting, but the title is misleading, calling a 3 year comparative study ‘climatology’. Unfortunately no clear explanations for the observations presented are given, the manuscript is solely descriptive. Additional work on the datasets is needed and explanations need to be added. I would suggest that the manuscript should be re-submitted at a later stage.

It is unclear why the authors have chosen the years 2008-2010. Measurements at Andenes started in 2002 and Hornsund in 2004, building a much better base for a “climatological” analysis. Observations of the total column aerosol from Scandinavia, including the 2 sites, were published by Toledano et al, (2012), who gave an overview of sun photometer measurements of aerosol properties in Scandinavia and Svalbard.

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Aerosol characterization at the sub-Arctic site Andenes were analysed by Rodríguez et al. (2012). Agreements/disagreements with the already published results need to be better accounted for. The added value of this analysis compared to the already published results needs to be more clearly elaborated.

The motivation and relevance behind the comparison of AOD/AE between the two sites is not clearly enough outlined. 2010 seems to be an “anomaly” and it would be interesting to analyze the reasons for this in more detail. Are these differences related to a particular circulation pattern, related to individual long-range transport events governing the data or within the normal variations of temporally inhomogeneous sun-photometer observations ?

The introduction and methodology chapter need major revision, and in particular section 3.2.2 needs to be revised.

What are the uncertainties for the inversion products ? Can this have any effect of the results ?

A singular large value has been excluded – day 119 in 2008. What is the reason for the high AOD level and why is it justified to eliminate this value ?

Can the influence of stratospheric aerosol be included in the analysis – for example in 2008 ?

The figures, especially those showing daily averages, should be improved, including standard-deviations and number of observations per months.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 7619, 2012.

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