

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

Anonymous Referee #3

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The topic of the manuscript under discussion is important, and not only for climatology problems but particularly for the remote sensing of ice and snow using data of satellite spectral sensors. It is not a simple problem to retrieve spectral AOT in polar regions (over high-reflective surfaces) using data of currently operating satellite spectral sensors. It is why the possibility of a priori estimation of AOT and Angstrom exponent may be very useful in many cases. From this point of view the results proving relative stability and comparatively low level of aerosol load in the sub-Arctic and Arctic areas (unfortunately only two sites are considered in this manuscript) look very useful. But this is true only if these conclusions are firmly grounded. Emphasize that in even in 2010, when there were great fires in central Russia and powerful transfer of smoke in the north-west directions, no increase of optical thickness was observed at the sites

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under observation. With this in view the unexpected low value of AOT registered by authors in 2010 should be examined in more detail and the reasons of this phenomenon should be shown. Of course, the analysis of the longer series of AOT measurements and including data for more sites are very advisable. The paper is written distinctly, the presented data and their analysis look reliable. I think the title of the paper needs revision. There is no “Climatology of aerosol optical properties. . .” in the manuscript, because only a very short period (3 years) is considered, but of course obtained results could be used in climatology as well. The paper can be published after inclusion of an analysis of the origin of the detected comparatively large deviation of the AOT value in 2010 from the mean value on area and some correction of the title. Additional analysis of AOT (consideration data for a more long period and comparison with the AOT data from various sites in sub-Arctic areas) is strongly welcomed, but let rely on the decision of the authors in the case.

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