

Interactive comment on “Aerosol seasonal variations over urban sites in Ukraine and Belarus according to AERONET and POLDER measurements” by G. Milinevsky et al.

Anonymous Referee #1

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General comments

Presented experimental data are promising and should be published, especially because there is a lack of such data from this region in the literature. However, presentation of this data is not sufficient. Authors describes data form Ukraine and Belarus, which is suggested by title. They are concentrated rather on Kyiv data and related other data to them. I can understand that because main authors come from Kyiv. Title suggests rather analysis of data form whole region instead of comparison to Kyiv. The paper in general looks like description of figures. I would like to see rather story of aerosol illustrated by figures.

C3989

I suggest revision of the paper in that way to obtain: introduction, description of instrumentation and measurements sites/region, results, discussion and conclusions. I suggest to group results rather by product then by sites. That means description of seasonal variability of AOT at selected sites/region, variability of aerosol voalume concentration (like Figure 5), seasonal variability of SSA and seasonal variability of fine and coarse aerosol. Then discuss differences between sites and regions and conclude them.

It seams that discussion of obtained results is weak part of the paper. Sentences like “parameter varies form year to year or month to month” are insufficient. Why it varies. Make some analysis, even case studies. In general presented pattern of seasonal variability of AOT in Central and eastern Europe is known, see cited data form Belsk and Minsk as well as data presented by Zawadzka et al. (2013) in Atmos. Env. 69, figure 4 in cited work of Israelevich and data form Kasprowy Wierch (Uscka-Kowalkowska, 2013, Atmos. Res. 137, pp 175-185). Authors should find aerosol types or aerosol sources responsible for such pattern. What kind of aerosol dominate in each part of the year? Please analyze spectral dependence of presented parameter to find potential types of aerosol or make simple cluster analysis of AOT and Angstrom exponent to find aerosol types.

Minor comments

Change title or rearrange text so that title should match the text. (see general comments) Abstract seams to be to long.

Please include general decryption of the region and potential sources in Introduction and remove from chapter 2 (lines 7 to 17 p. 10735).

AERONET products are quite known and should not be defined like Angstrom exponent (end of p. 10735). Pleas distinguish parameters downloaded form AERONET site from that calculated by authors. Please list used parameters, they errors and level of used data. Do not repeat it in the text. Presented description is a little bit it to long.

C3990

Description of relation of Angstrom exponent to size distribution is a little bit too long and unclear. Please get some literature data to prove that small Angstrom is related to large particles and large Angstrom to fine mode particles. On the other hand, the author can deduce that from Junge size distribution.

Presented figures are unreadable. Fig. 1 has too many lines. Please add colors or change figure to present only mean with standard deviation. In general, I suggest to present median value in case of log-normally distributed values (AOT) instead of mean. In case of presentation of median percentiles should be also presented (10, 25, 75 and 90%). Presentation of median should also reduce influence of outliers on seasonal pattern.

Comparison of both Kyiv sites should be done at the end of the paper as a separate subchapter in discussion as well as comparison between other sites and regions. Make Fig. 2 more readable, why there is presented linear fit? Make text more clear and easier to read.

Seasonal variability of size distribution is in my opinion wrongly presented and unreadable. It seems that authors want to present variability of fine and coarse mode. So do that. Please present seasonal variability of volume concentration of fine and coarse mode separately as it was done in case of Minsk and Kyiv for all aerosol sizes. From such analysis, authors can deduce when fine or coarse aerosol dominates in the atmosphere and deduce why.

Regarding comparison between Minsk and Kyiv. What is conclusion regarding that in Kyiv is performed more measurements? I can see that in case of Kyiv, volume concentration does not have two peaks whilst AOT has two peaks. In case of Minsk, two peaks at AOT and volume concentrations are visible, why?

Presentation of AERONET data from Lugansk makes no sense. In my opinion, it is too short a period of measurements for this paper. I suggest to use satellite data when ground-based data are unavailable.

C3991

Conclusions and discussion will be better when authors include some analysis of trajectories, model results or something like that. Even in some case studies.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 10731, 2013.

C3992