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Interactive comment on “Assessments of urban aerosol pollution in Moscow and its radiative effects” by N. Ye. Chubarova et al.

Anonymous Referee #3

Received and published: 30 December 2010

Based on a comparison between AERONET CIMEL photometer data acquired between 2006 and 2009 in the city of Moscow and a site at a distance of 55 km upwind of Moscow, the differences in the optical characteristics of atmospheric aerosols and their effects on the radiation regime are discussed to differentiate between urban pollution and natural aerosol. Disturbing cloud effects in aerosol optical depths were removed by using concurrent visual cloud observations. Satellite MODIS data are also analyzed in comparison with the ground-based measurements. The results are worth publishing, and the subject is appropriate for this Journal. A few editorial changes are recommended in the following paragraphs.

The discussion is focused on differences in aerosol parameters at the two sites. As

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an example, Table 1 shows many individual differences. I would expect that readers may be interested in the parameters themselves. I recommend to mention at least the values of AOT and the Angstrom exponent, and leave some other parameters in Table 1, for example mean absolute difference and confidence level, in order to keep the Table readable.

Page 5470, line 16: replace ‘in more’ by ‘in a higher’

Page 5471, line 15: replace ‘twice as higher’ by ‘twice as high’

Page 5473, line 22: If the observations at both sites have been paired, how can the difference between them have been underestimated by different numbers of observations?

Page 5473, line 26: Measured photometer data were flagged and not used, if more than half of the sky was cloud covered. The location of clouds is not given in conventional cloud observations, so they could have even blocked the sun. In those cases, the CIMEL cloud screening algorithm would have probably detected them, maybe except thin clouds. But with clouds covering up to half of the sky, is there not a chance that the photometer measurements may still have been affected?

Page 5475, line 2 and Fig. 3: The legend for the symbols is missing in the Figure. The lowest curve is probably the NO₂ absorption. It must be mentioned in the Figure caption what the three other curves mean.

Page 5476, line 16: replace Fig. 5 by Fig. 4

Page 5477, line 29: remove one ‘the’

Page 5478, line 3: ‘revealed’

Page 5478, line 14: ‘this is a quite typical situation’

Page 5479, line 11: ‘...if a possible lower single scattering albedo for Moscow is taken into account, ..’

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Page 5481, line 2 and 3: ‘.. we obtained an increase in the occurrence ...’

Page 5481, line 19: ‘3 times’

Page 5482, line 17: ‘long term’ should better be replaced by another wording, since you used less than 3 years of data

Page 5482, line 24: ‘3 times’

The English language of the text should be revised and corrected for misprints in addition to the ones mentioned above.

Interactive comment on *Atmos. Meas. Tech. Discuss.*, 3, 5469, 2010.

AMTD

3, C2359–C2361, 2010

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