The answers to the comments of the second reviewer:

1/ The authors describe the Moscow site as the one affected by the city pollution and the ZSS site as the clean one because it is located upwind of the Moscow city. Hence, they attribute the difference in the aerosol loading to the impact of the city pollution only. I think that this conclusion should be revised. In summer (also in part in spring and in fall), the ZSS site can also have some additional aerosols such biogenic aerosols (primary and secondary) from the boreal forest surrounded the site, and mineral aerosols from the soil (the soil is covered by asphalt in Moscow), and some traffic-related aerosols which is smaller than that in Moscow, but it also exists. May be the additional aerosols at the ZSS site is the cause of the small difference between the AOD values at the two sites as well as the cause of the smaller difference in summer conditions than in winter conditions?

In the paper there is the analysis of the spatial AOT distribution according to the MODIS data, which clearly shows that Zvenigorod is not fully unpolluted site. The cleanest area is located at the distance of more than 150 km to the west and the south from Moscow, that is 3 times farther than the Zvenigorod location. At the same time high correlation between the different aerosol parameters obtained in Moscow and Zvenigorod confirms the similar origin of the aerosol. Aerosol content at the ZSS location is determined by combined effects of different factors and process both local and regional. There are no significant local anthropogenic sources of the aerosol near ZSS location and it can be regarded as a local background for Moscow. As to soil produced aerosol, it should be noted that in some seasons mean concentration of the coarse fraction is even greater in Moscow than in Zvenigorod.

2/ Are the aerosols in Moscow of the sulphate, mineral and traffic-related types? The analysis of the aerosol types presented at these two sites can not be performed using sun photometer measurements. Only direct measurements of the aerosols could help to clear this issue. But the discussion about the possible aerosol types presented at the two sites and about the main processes of the aerosol formation should be given in the manuscript.

This is not the main aim of our paper and unfortunately no direct measurements on chemical composition are available on a long-term base. We can assume that the Moscow aerosol has a very complicated nature and consists of different types. In addition, aerosol likely varies with seasons (indirectly it can be proved by seasonal variation of Angstrom exponent). In summer we can have some additional secondary biogenic aerosol as well as fire-smoke aerosol. Some additional soot aerosol can present in Moscow, However, it is hard to estimate its role to the radiative properties of aerosol.
There is some information on aerosol composition at ZSS in L. M. Shukurova and A. N. Gruzdev. Temporal Variability of the Chemical Composition of Surface Aerosol in the Moscow Region in 1999–2005 from the Results of Infrared Spectroscopy of Aerosol Samples. Izvestiya, Atmospheric and Oceanic Physics, 2010. 46, No. 3. P. 304–318. They studied aerosol samples collected through the cascade impactor in three size ranges. It was found that aerosol particles contain sulfates in the size range of 0.7–1.3 μm and nitrates in the micrometer fraction 1–1.3, soot particles, and organic compounds. Coarser particles (~2 μm) are often of mineral origin.
But these particles are gathered near surface and the column aerosol properties can differ from these characteristics.
After consultations we decided not to include this discussion in the text due to the lack of the information and since this is not the main aim of the paper.

3/ Another question: What is the definition of Aerosol Radiative Forcing?
Daily mean?

Below there is a revised part of the text with the definition and some clarifications:

Aerosol radiative forcing (ARF) at the top of the atmosphere (TOA) is used for characterizing the impact of aerosol on the temperature regime. Since the standard AERONET radiation products include the calculation of *ARF* (Garcia et al., 2008), we used this characteristic to estimate the influence of the large city on its changes. The AERONET aerosol radiative forcing is defined as the difference between the global solar irradiance with and without aerosol at the top and at the bottom of the atmosphere.

$$ARF_{TOA} = -(F^{\uparrow a}_{TOA} - F^{\uparrow o}_{TOA}) \quad (4)$$

$$ARF_{BOA} = (F^{\downarrow a}_{BOA} - F^{\downarrow o}_{BOA}), \quad (5)$$

where F^a and F^o are the broadband fluxes at the top (TOA) and at the bottom (BOA) of the atmosphere with and without aerosols. However, when we speak about the ARF difference at the top of the atmosphere between the two sites, the resulting value will be the same as if considering the net fluxes, which are usually used in the ARF analysis (see, for example, Yu et al., 2006). According to the statistics shown in Table 2, mean *ARF* at the top of the atmosphere is about -0.9±0.6 W/m^2.

In the AERONET algorithm the instant ARF values are calculated. So we have characterized the urban aerosol on the base of 92 values obtained in different conditions at similar zenith angles for the pairs of Moscow-Zvenigorod measurements. However, the statistical test has revealed its significance.

We thank the reviewer for the important comments.