Atmospheric
Chemistry
and Physics
Discussions

Open Access

Interactive
Comment

Interactive comment on "Characterization of forest fire smoke event near Washington, DC in Summer 2013 with multi-wavelength lidar" *by* I. Veselovskii et al.

I. Veselovskii et al.

igorv@pic.troitsk.ru

Received and published: 7 January 2015

Dear Referee #1, many thanks for careful reading of our manuscript and useful suggestions. Answers to your comments are reported below.

1. Mixing with local aerosols during transportation is explained as the reason for LR532 exceeds LR355 in 3000-3750 m layer at 23:20-01:20 UTC period. But, we cannot find that how the smoke is mixed with local aerosols. More explanation is needed.

Actually, situation when LR532> LR355 is quite typical for aged smoke and observed by many researches. It is usually attributed to the particle coagulation. In our mea-

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

surements we observed it only in the center of the smoke layer during relatively short period, when concentration of the smoke particles was the highest. After 01:20 the residual of the plume could be partly mixed with boundary layer aerosol leading to LR532< LR355. Reviewer is right that on a base of our measurements we can't clearly evaluate the process of particle mixing, so the manuscript was modified and phrase about mixing with local aerosols was removed.

2. How the contribution of smoke layer to the total AOD was calculated? The wavelength of AERONET and lidar data is different.

Lidar measured extinction at 355 nm was extrapolated to 340 nm via Angstrom exponent. Corresponding comment was added to the text. "Extrapolating lidar measured AOD to 340 nm via EAE, we can conclude. . ."

3. This is same question with 1. How the smoke plume was significantly diluted by local aerosols during the transport? When we consider the pathway of airmass in the backtrajectories, that cannot be the reason.

We have responded it in comment 1.

4. (26859, 13) butis !but is

Corrected

5. Figure 7. The data for 3:20-5:20 is missing in the figure.

Corrected

6. Figure 8. Please use the same legend at (a) and (b).

Corrected

7. Figure 9. The data for 3:20-5:20 is missing in the figure.

Corrected

8. Figure 13. The data for 3:20-5:20 is missing in the figure. Corrected

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 26857, 2014.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper