Atmos. Meas. Tech. Discuss.,
doi:10.5194/amt-2018-103-RC2, 2018

Atmospheric Measurement Techniques Discussions

Interactive comment on "Description and applications of a mobile system performing on-road aerosol remote sensing and in situ measurements" *by* Ioana Elisabeta Popovici et al.

Z. Li (Referee)

lizq@irsa.ac.cn

Received and published: 5 June 2018

The authors describe a mobile system equipped with a micropulse lidar, a sun photometer and an aerosol spectrometer, and its abilities for performing on-road measurements to derive aerosol properties including aerosol optical depth, volume size distribution, extinction coefficient profiles, extinction-to-backscatter ratio, particle number, and mass concentration. This intensive platform integrated with both remote sensing and in situ instruments shows useful in comprehensive study of aerosols, as well as validations of satellite products and model forecasts. The manuscript is globally well-written. But I advise the authors to compress the paper. Moreover, I still expect to see

some results with joint application of the active and passive remote sensing, and in-situ instruments. Such as, comprehensive analysis of multi-instrument observations, or the possibilities of constrain and joint inversion by different instruments. I hence recommend to consider these aspects before publication.

A few more detailed comments:

1. Line 2, page 10: The GRASP algorithm and software was used to retrieve the volume size distribution from the PLASMA sun photometer measurements. Why don't you use the GRASP to do joint retrieval of aerosol properties from the PLASMA sun photometer and Lidar?

2. Line 19, page 12: Is there any influence of the fluctuations of platform on the uncertainty of AOD from PLASMA sun photometer?

3. Line 25, page 14, The difference between PLASMA and MODIS AOD results is obvious, especially in high aerosol loading areas around Lille (see Figure 5). It should be discussed.

4. Line 15-17, page 19: Please give more detail on the uncertainty estimation.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-103, 2018.