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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Insights into the chemical composition of summertime $PM_{2.5}$ at the northeast of the Qinghai-Xizang (Tibet) Plateau" *by* J. Xu et al.

Anonymous Referee #1

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Review comments on Xu et al. (2014)

This paper by Xu et al. entitled 'Insights into the chemical composition of summertime PM 2.5 at the northeast of the Qinghai-Xizang (Tibet) Plateau' presents a comprehensive data set on aerosol particles sampled at the Tibetan plateau. Chemical composition of the aerosol samples were investigated using a suite of analysis technique, including HR-ToF-AMS measurements of water soluble organic materials (WSOM). This data set allows comparing chemical characteristics of aerosol particles with other high mountain sites. For example, the authors have already compared their data with Lee et al. (2012). The data quality looks good. The reviewer believes that this paper

provides an important knowledge to investigate aerosol chemistry in Tibetan Plateau and in the free troposphere. The reviewer suggests publication of this manuscript after addressing the following comments.

Comments P1317L20 'on. An OM/OC ratio (α) of 1.4 was used for the primary aerosol based on high resolution mass spectrometry at urban site of north China (1.2-.6) (e.g., Xu et al., 2014b; Zhang, J. K. et al., 2014).'

Would it be possible to discuss the reason why the value derived from at an urban site of north China can be used to analyze the data of the Tibetan Plateau?

P1320L7 ' No larger coarse mode (> 3 μm) aerosols were observed, suggesting that there was relatively little influence from locally produced soil particles.'

Figure 3 shows that particles larger than 3 um were detected. Please clarify it.

P1321L20 'The WSOC and OC concentrations in the QSS were strongly positively correlated (r2= 0.99) with the slope of 0.79.'

Figure 5 indicates r2=0.97 for WSOC-OC correlation. Which value is accurate?

P1323L24 'The highly oxidized MS is very similar to that in study of Lee et al. (2012) (r2= 0.87, Fig. S5), which oxidized the field filter samples collected in a mountain site in the laboratory in a photochemical reactor.'

Although those two mass spectra look similar and correlate well, there seem to be two branches in the correlation plot. Would you be able to add possible explanations for this difference? Especially, signals at mz12, 15,30, 39,40, 46, 60,64, and 73 look different.

Figure7

Is it possible to compare the data with TD measurement data for pure ammonium sulfate and ammonium nitrate? That comparison helps readers to interpret the data, and it will make comparison with other literature easier.

Technical minor comments

P1316L7 ‘Some of the organic carbon way pyrolyzed’

Some of the organic carbon was pyrolyzed

P1316L17 ’IMPROCE ’

IMPROVE?

Figure 2

The figure should look better with higher resolution.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 1307, 2015.