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Chemical composition and size distribution of summertime $PM_{2.5}$ at a high altitude remote location in the northeast of the Qinghai–Xizang (Tibet) Plateau: insights into aerosol sources and processing in free troposphere

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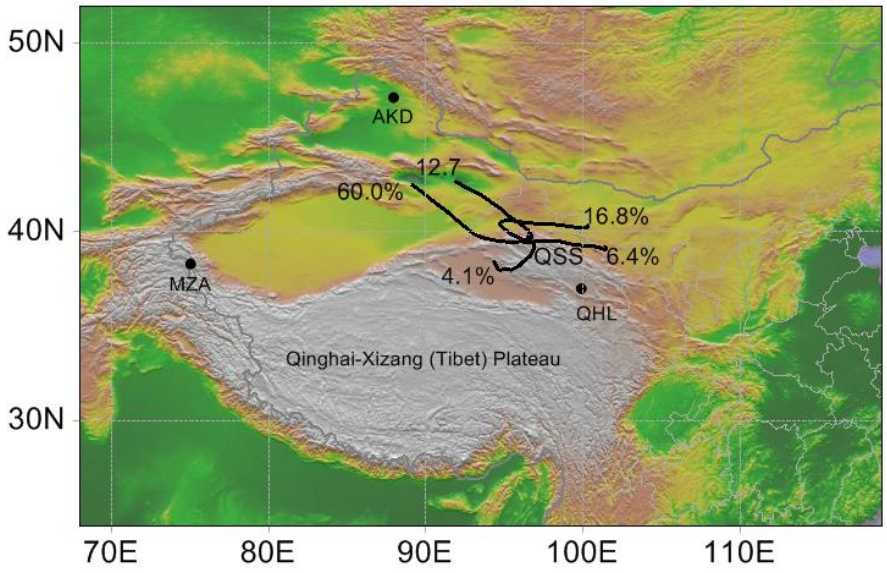

Fig. S1. Cluster analysis of the 3-day air mass back trajectories with starting height at 1200 m above ground level at QSS during the sampling periods (July 6 to September 6 2012) by using the HYSPLIT model of NOAA. The trajectories were run four times per day (00, 06, 12, 18), and five clusters were identified. The mean trajectory of each cluster and the percentage of time of each cluster are shown in plot. The dot markers of QHL (Qinghai Lake), MZA (Muztagh Ata), and AKD (Akedala) represent the sampling sites of mountain area in western China.

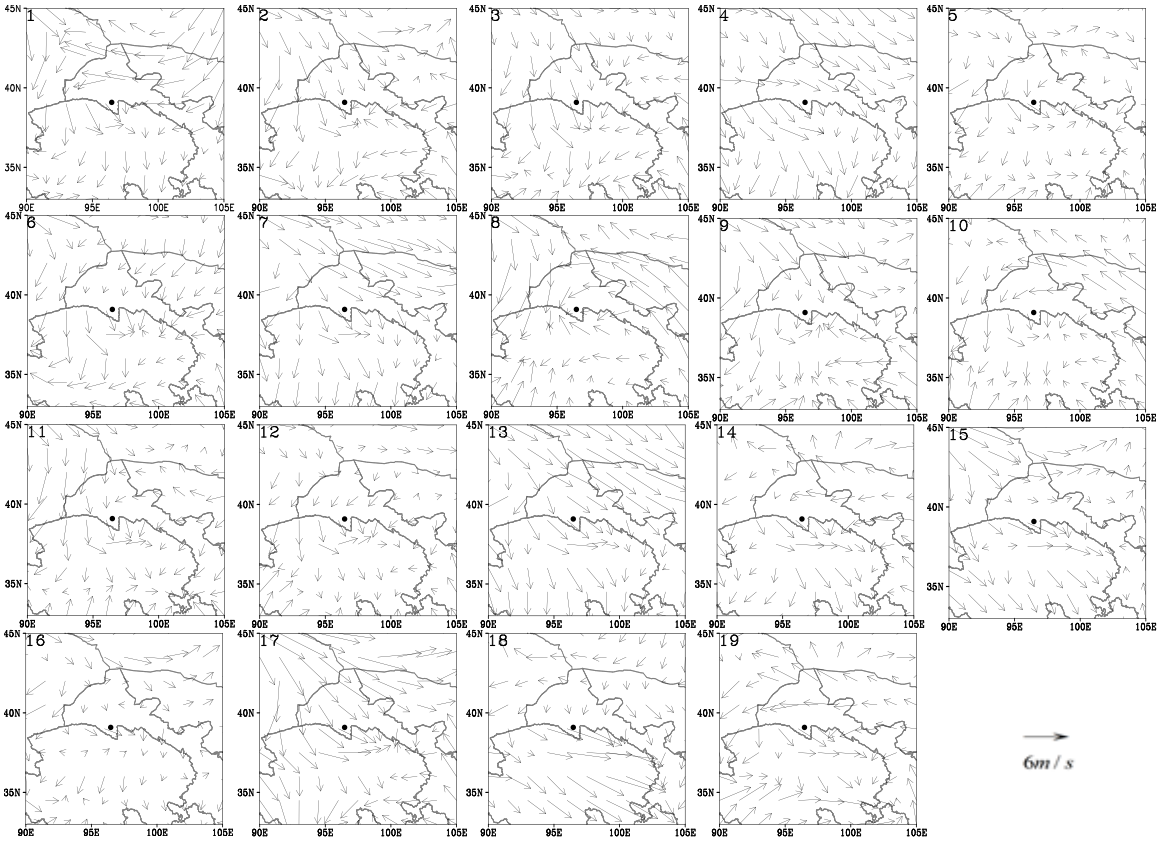

Fig. S2. Three-day average wind fields at 10 m height above of ground on 14:00 (BJT, UTC + 8:00) over the study area for the 2012 sampling period. The black dot marker in each plot indicates the location of QSS, and the number in each plot indicates the filter sample number.

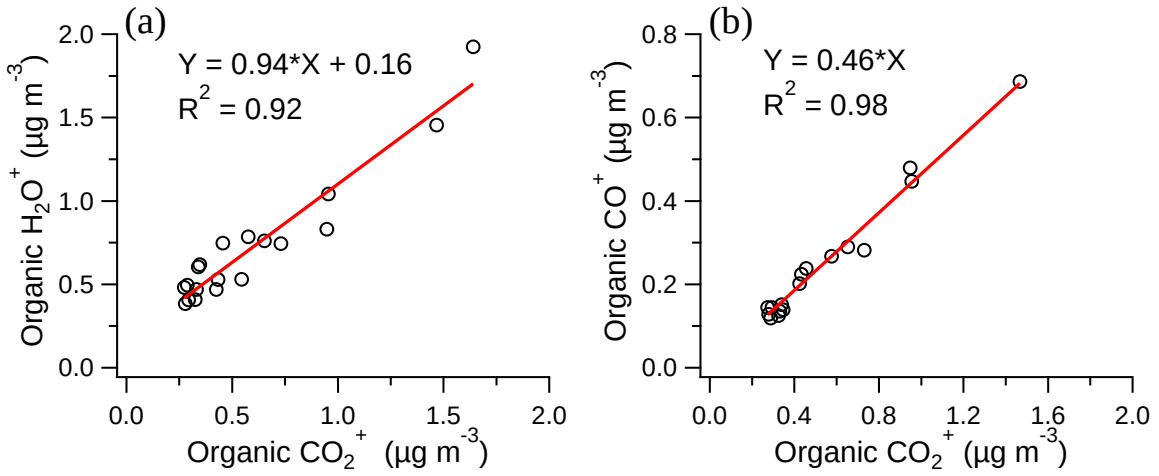

Fig. S3. Scatter plots of (a) organic H_2O^+ vs. CO_2^+ and (b) organic CO^+ vs. CO_2^+.

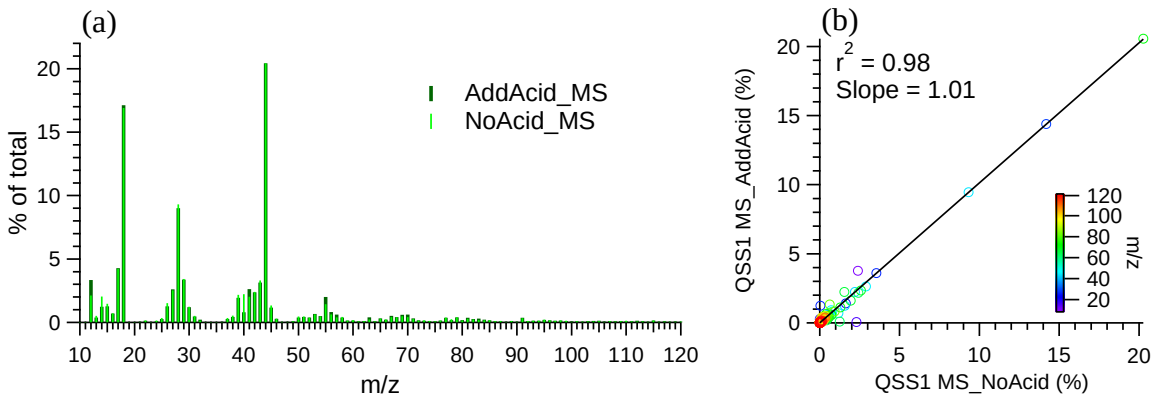

Fig. S4. (a) Comparisons of mass spectra of QSS1 between acidity and non-acidity and (b) scatter plot between these two mass spectra.

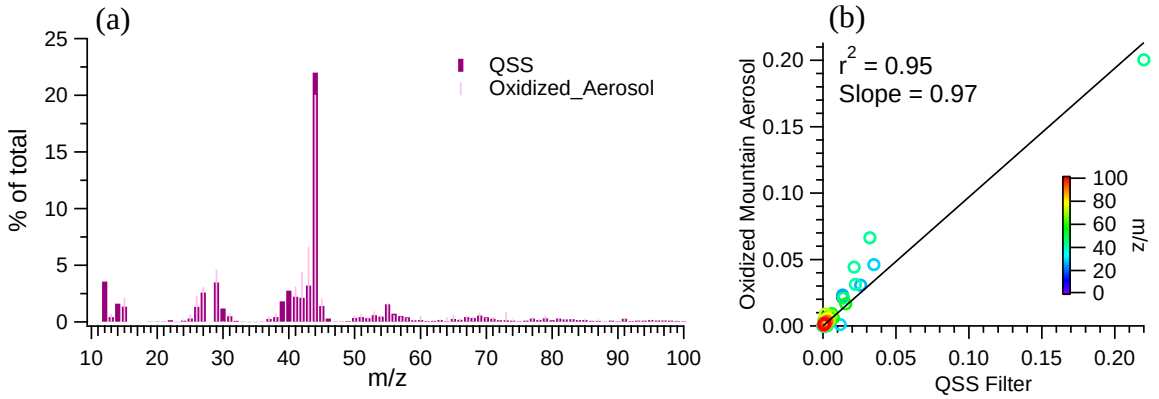

Fig. S5. (a) Comparisons of mass spectra between QSS filter and oxidized mountain aerosol sampled by Lee et al. (2012) and (b) scatter plot between these two mass spectra. Note that ions at m/z 16, 17, 18, and 28 are excluded due to the different methods of estimation on these ions.

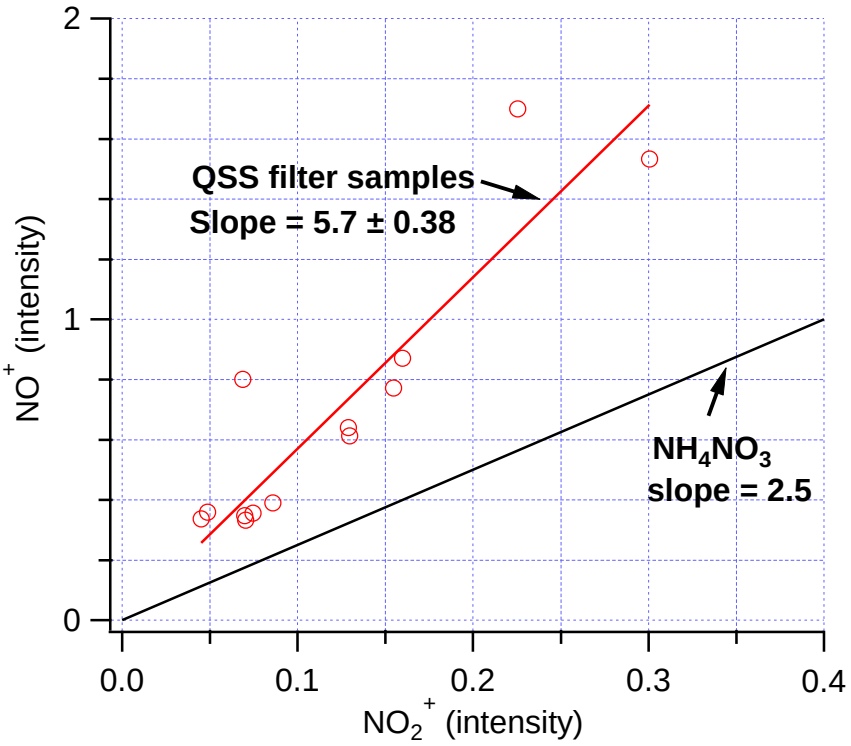

Fig. S6. The scatter plot for NO^+ vs NO_2^+ of QSS filter samples in the high-resolution mass spectra. The ratio for ammonium nitrate is also shown in the plot.

References

Lee, A.K.Y., Hayden, K.L., Herckes, P., Leaitch, W.R., Liggio, J., Macdonald, A.M., Abbatt, J.P.D., 2012. Characterization of Aerosol and Cloud Water at a Mountain Site During Wacs 2010: Secondary Organic Aerosol Formation through Oxidative Cloud Processing. Atmos. Chem. Phys. 12, 7103-7116.