

SUPPLEMENTARY INFORMATION

**Continuous measurement of ambient aerosol liquid water content in
Beijing**

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CONTENT

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9 figures

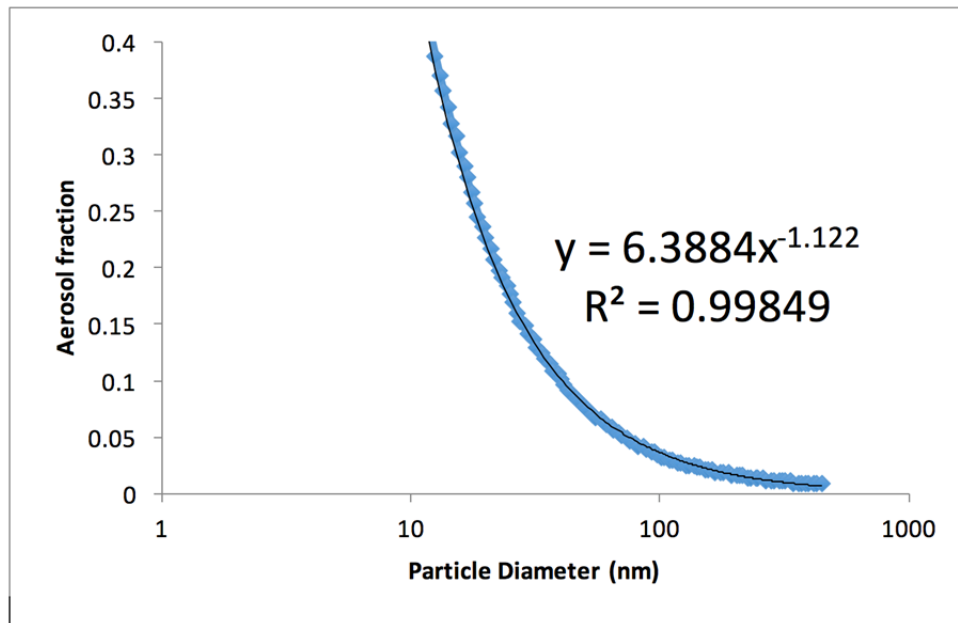


Figure S 1.. Estimation of particle losses along DAASS dry channel using empirical particle loss corrections from Kulkarni et al. (2011) and (Wang et al., 2002) and the equivalent pipe length method(Wiedensohler et al., 2012) for the Nafion tube

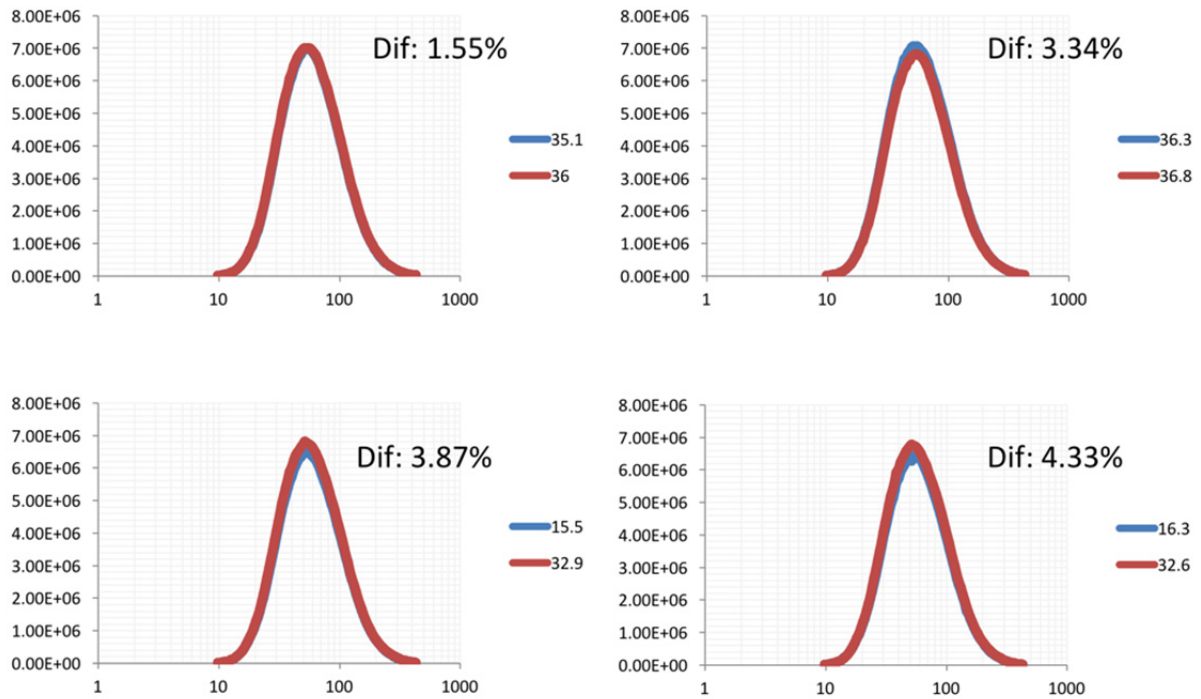


Figure S 2. Particle size distribution for DAASS channels (Red line: Ambient Channel, Blue line: Dried channel) after correction for particles losses along the channels. x axis is the diameter in nm and y axis is the number distribution function ($dN/d\log D_p$) in $\#/cm^3$.

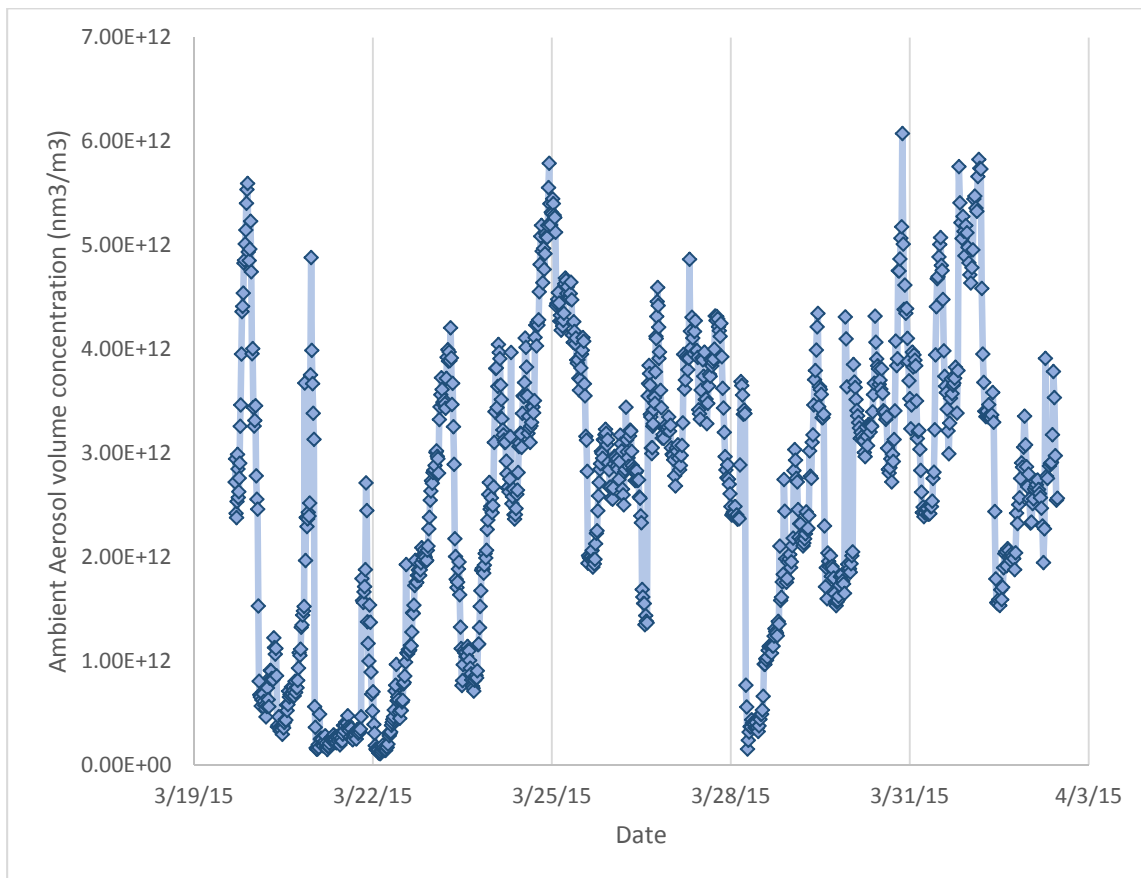


Figure S 3. Ambient aerosol volume concentration as calculated from DAASS data during the complete sampling campaign.

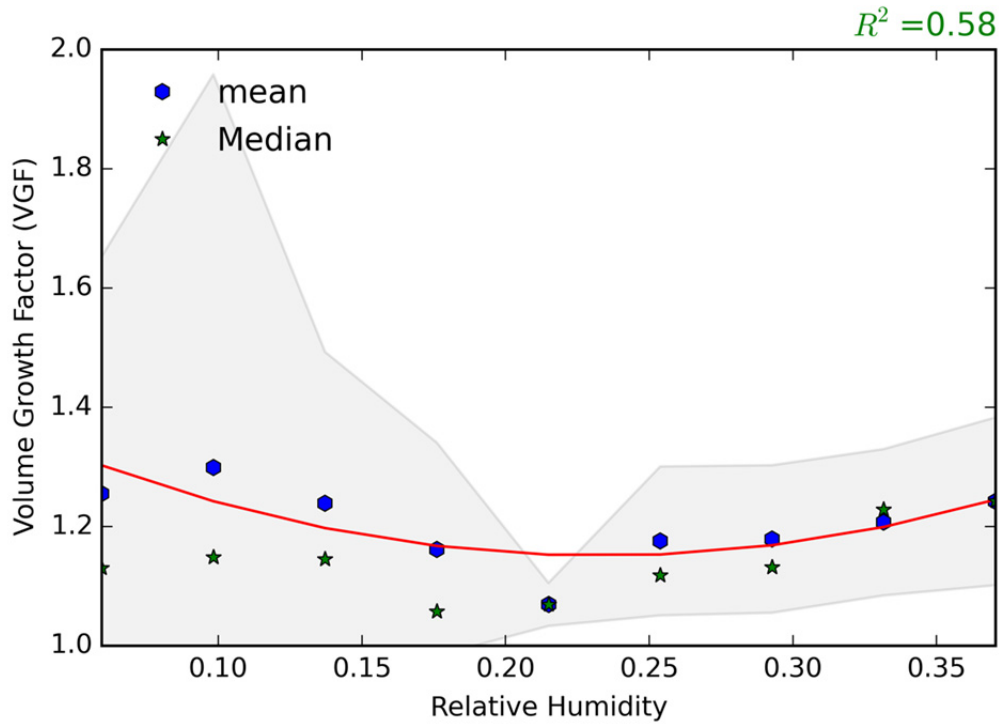


Figure S 4. Correlation of Volume Growth Factor with Ambient Relative Humidity for period P1. Blue hexagons are mean VGF values for the whole sampling period. Green stars are VGF median VGF values. Red line is a fitted trend-lines to the mean values. Shaded area represent VGF values within one standard deviation from the mean. Coefficient of determination (R^2) is reported on the top-right side of the plot.

Table S 1. Statistical information of Ambient relative humidity during Period 1 (P1)

mean	0.14
std	0.09
min	0.04
25%	0.07
50%	0.09
75%	0.15
max	0.38

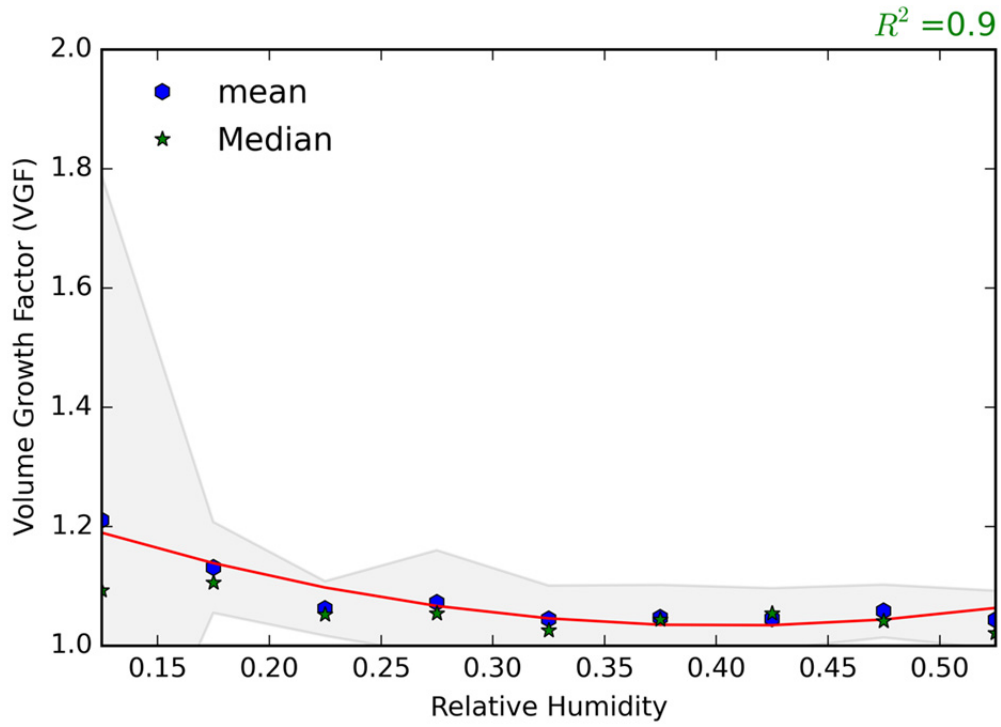


Figure S5.. Correlation of Volume Growth Factor with Ambient Relative Humidity for period P2. Same color and shape convention as in Fig. S4.

Table S 2.Statistical information of Ambient relative humidity during Period 2 (P2)

mean	0.31
std	0.12
min	0.11
25%	0.20
50%	0.31
75%	0.41
max	0.55

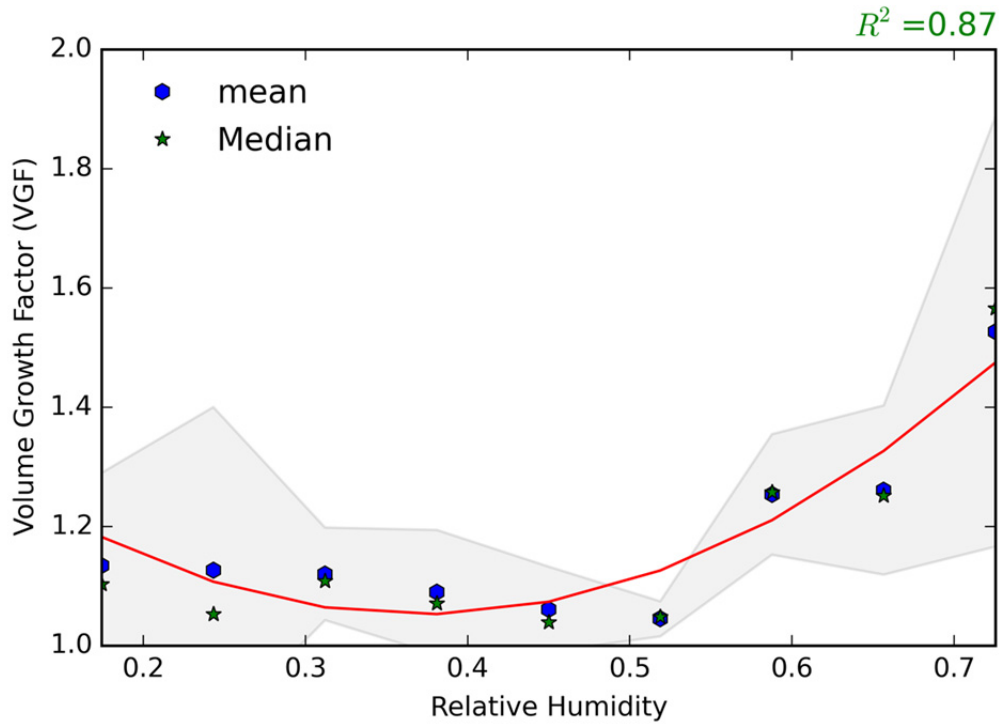


Figure S 6. Correlation of Volume Growth Factor with Ambient Relative Humidity for period P3. Same color and shape convention as in Fig. S4.

Table S 3. Statistical information of Ambient relative humidity during Period 3 (P3)

mean	0.43
std	0.17
min	0.14
25%	0.28
50%	0.41
75%	0.59
max	0.75

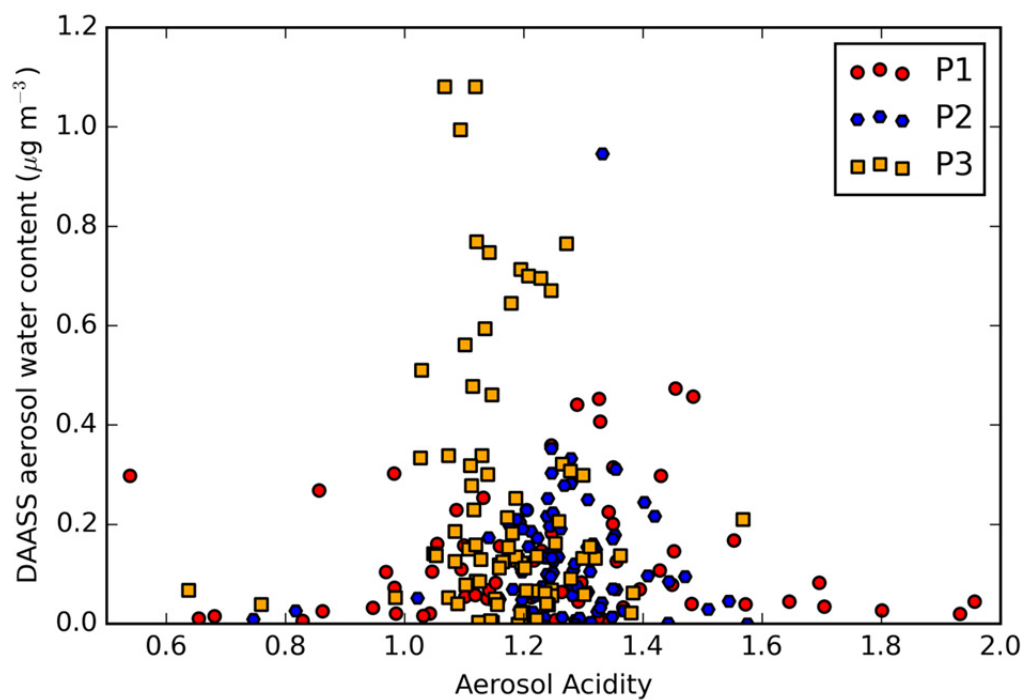


Figure S 7. Hourly average aerosol water content versus aerosol acidity segregated for the three studied periods (P1 (red dots), P2 (blue hexagons) and P3 (orange squares)). From period P1 to period P3, aerosol moves towards more acidic conditions (left side of the figure) and simultaneous increases in water content occur.

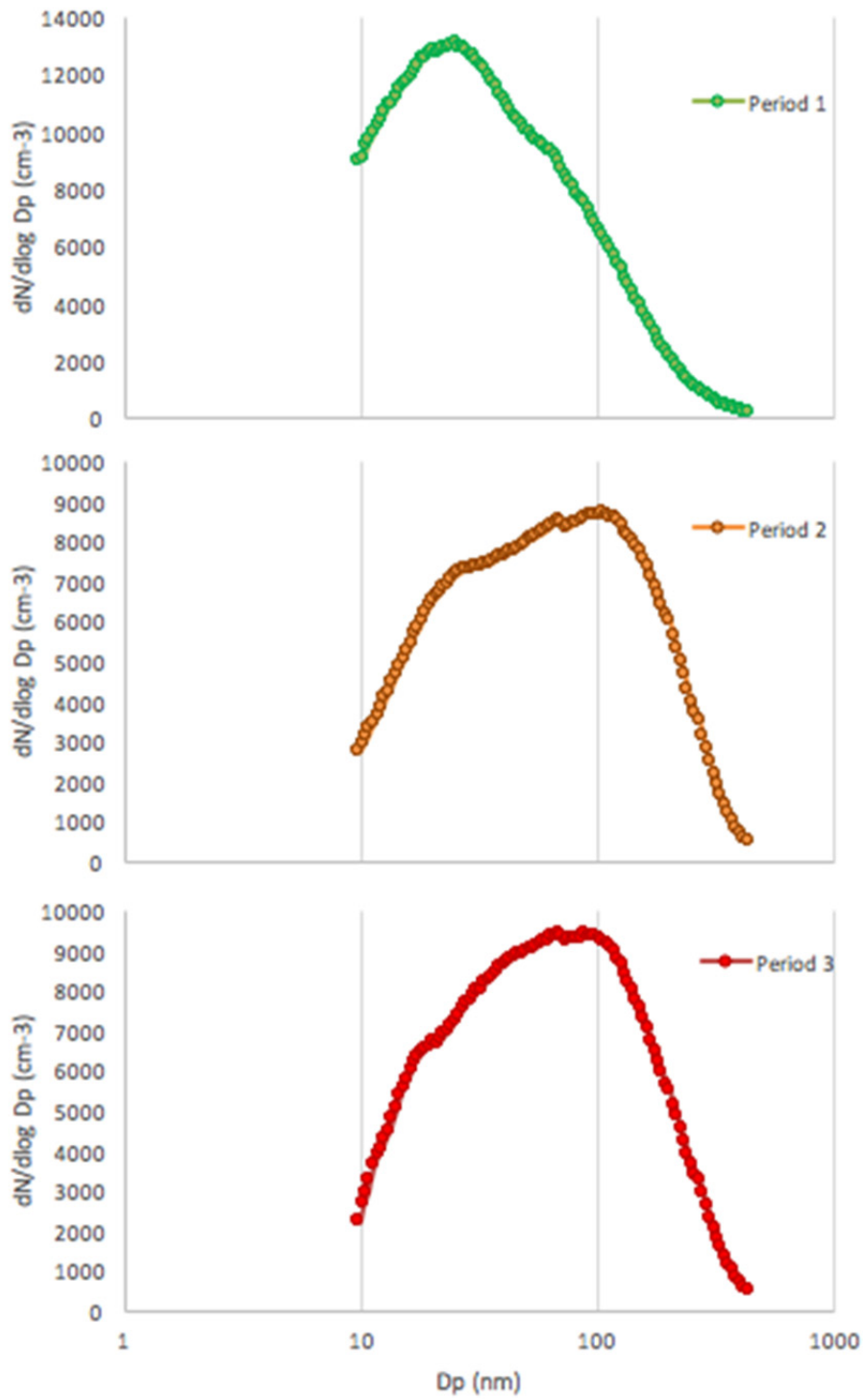


Figure S 8. Averaged ambient particle size distributions for each of the three studied periods during the sampling campaign.

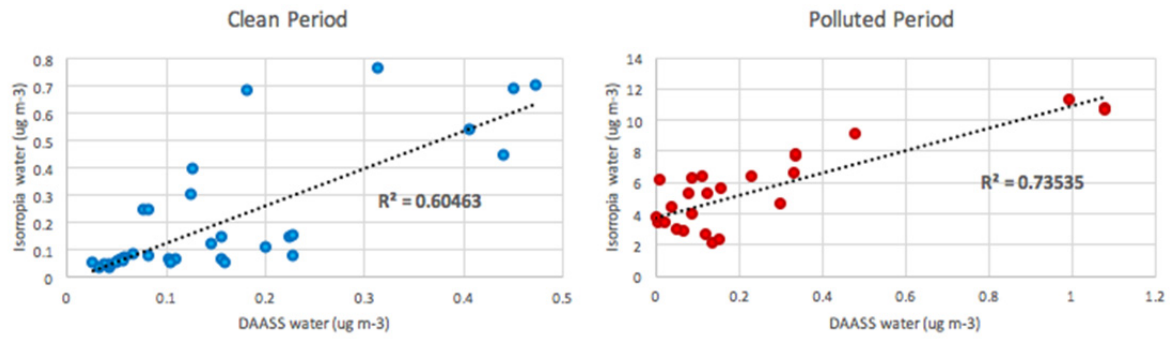


Figure S 9. Correlation between modelled aerosol water content from Isorropia and measured water content by DAASS for both clean and polluted periods. A higher coefficient of determination was found for the polluted period ($R^2 = 0.73$) than the clean period ($R^2 = 0.60$).