Supporting Information

Aerosol liquid water driven by anthropogenic nitrate: implications for lifetimes of water-soluble organic gases and potential for secondary organic aerosol formation

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Table of Contents

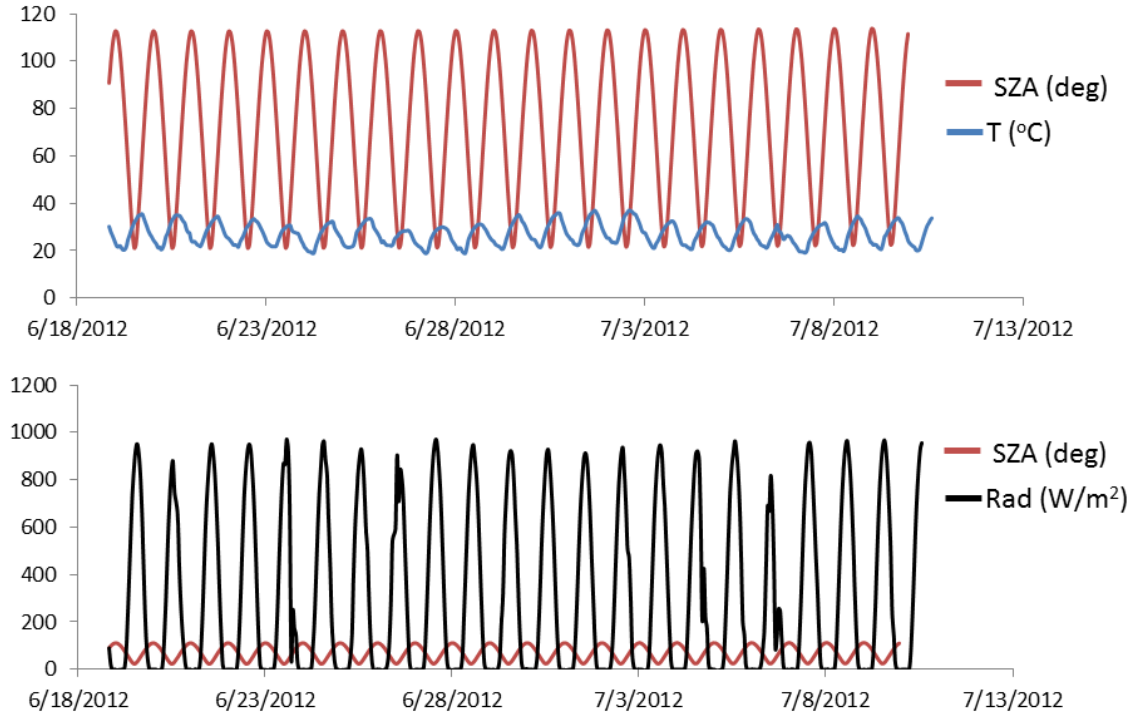

Figure S1. Time series of solar zenith angle (SZA) calculated with the National Oceanic and Atmospheric Administration Earth Systems Research Laboratory Solar Position Calculator (http://www.esrl.noaa.gov/gmd/grad/solcalc/calcdetails.html) and temperature (T) and solar radiation (Rad) measured at the San Pietro Capofiume sampling site. Solar zenith angle was used in the main analysis as a surrogate for both temperature and photochemistry. As expected, temperature peaks each day just after the minimum in solar zenith angle and solar radiation is at a maximum when solar zenith angle is at a minimum.

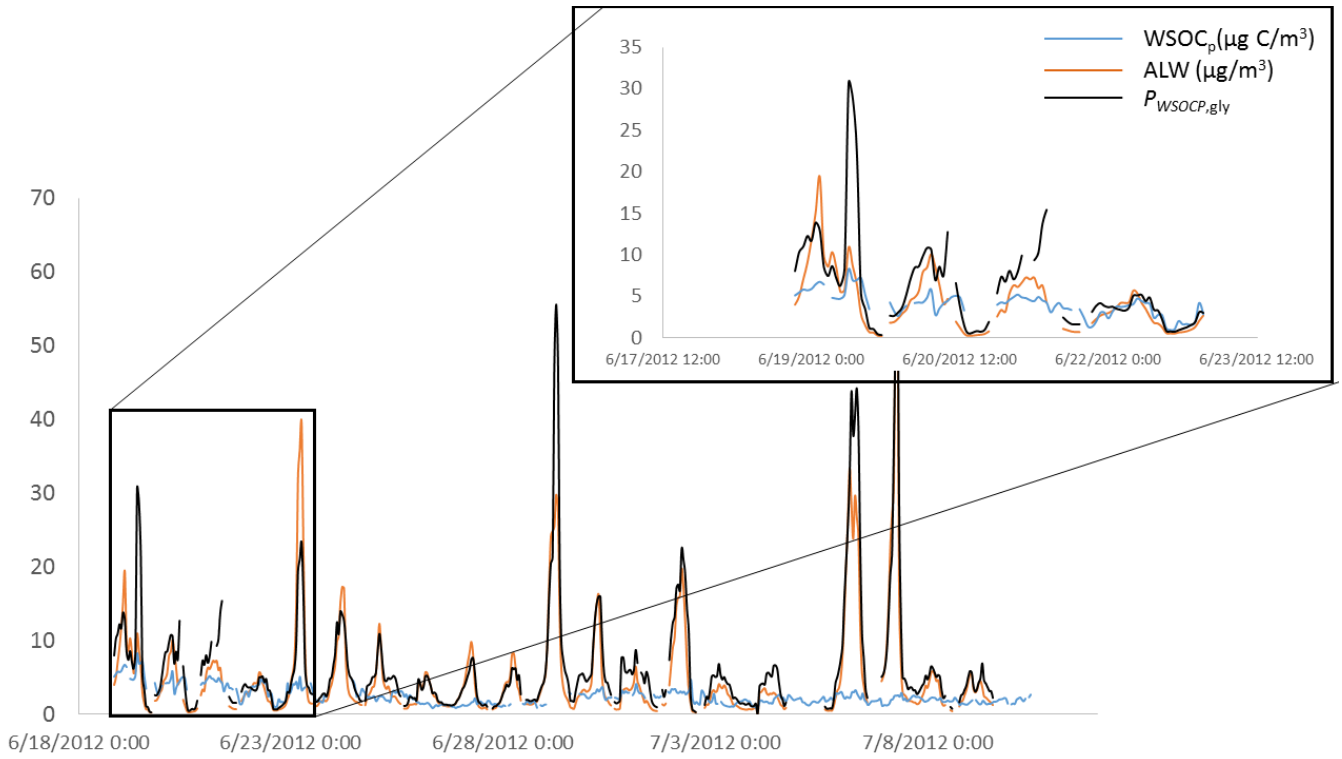

Figure S2. Time series of particle-phase WSOC concentrations ($WSOC_p$), aerosol liquid water concentrations (ALW), and glyoxal partitioning potential ($P_{WSOC,gly}$) during the case period explored in the main text. The inset shows the case period which can be characterized as the end of a stagnation event during which $WSOC_p$ concentrations were double that compared to the remainder of the campaign.

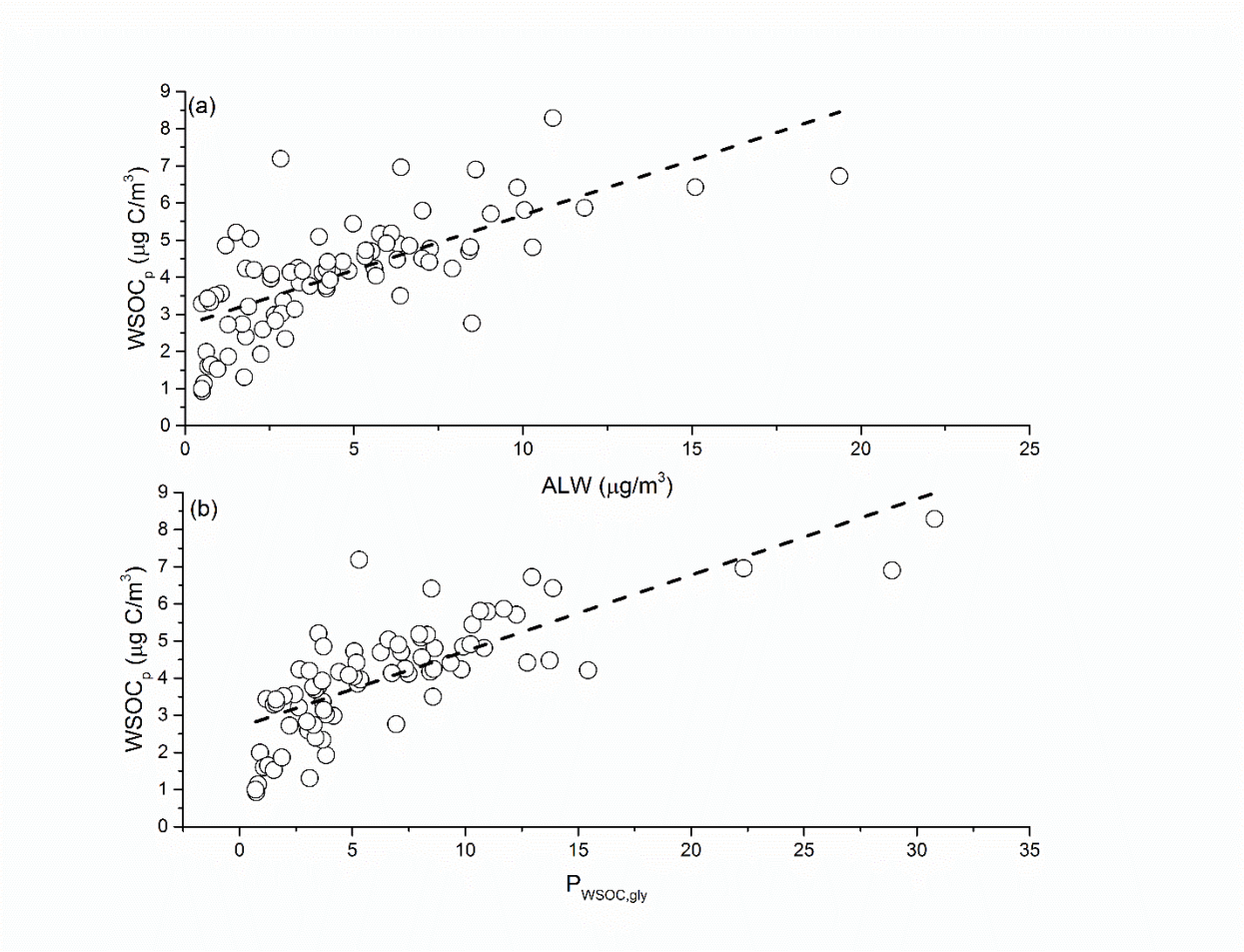

Figure S3. Particle-phase water-soluble organic carbon concentrations ($WSOC_p$) and aerosol liquid water concentrations (ALW; panel a) and glyoxal partitioning potential ($P_{WSOC,gly}$; panel b). As discussed in the main text, during a period of elevated $WSOC_p$ concentrations, both ALW and $P_{WSOC,gly}$ were correlated with $WSOC_p$ concentrations, suggesting an influence from local aqueous SOA production. The dashed line indicates the regression line with R-square values of 0.49 and 0.57 for ALW and $P_{WSOC,gly}$, respectively.