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Comment

## ***Interactive comment on “Effect of atmospheric organic complexation on iron-bearing dust solubility” by R. Paris and K. V. Desboeufs***

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I read with interest this submitted manuscript, as I have done a fair amount of work regarding the chemical processing of atmospheric mineral dust particles. Using single-particle mass spectrometry we observed that a significant fraction of mineral dust particles were internally mixed with oxalic acid, and other diacids, during the ACE-Asia campaign. I had always wondered what effect the presence of oxalate in the mineral dust particles might have on the solubility and photochemical properties of dust components such as iron. I just wanted to bring to your attention this related work that provides field evidence to support your hypothesis. I think your manuscript raises some interesting and important questions.

Sullivan, R. C., and K. A. Prather (2007), Investigations of the diurnal cycle and mix-

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ing state of oxalic acid in individual particles in Asian aerosol outflow, *Environmental Science & Technology*, 41(23), 8062–8069.

We also published a related paper that explored how the mixing state of dust might impact the particle's hygroscopicity, and this included calcium oxalate: Sullivan, R. C., M. J. K. Moore, M. D. Petters, S. M. Kreidenweis, G. C. Roberts, and K. A. Prather (2009), Effect of chemical mixing state on the hygroscopicity and cloud nucleation properties of calcium mineral dust particles, *Atmospheric Chemistry and Physics*, 9, 3303–3316.

There are a few other reports of atmospheric mineral dust mixed with organic acids, including:

Falkovich, A. H., G. Schkolnik, E. Ganor, and Y. Rudich (2004), Adsorption of organic compounds pertinent to urban environments onto mineral dust particles, *Journal of Geophysical Research-Atmospheres*, 109(D2), D02208, doi:10.1029/2003JD003919.

Mochida, M., N. Umemoto, K. Kawamura, H. J. Lim, and B. J. Turpin (2007), Bi-modal size distributions of various organic acids and fatty acids in the marine atmosphere: Influence of anthropogenic aerosols, Asian dusts, and sea spray off the coast of East Asia, *Journal of Geophysical Research-Atmospheres*, 112(D15), D15209, doi:10.1029/2006jd007773.

Russell, L. M., S. F. Maria, and S. C. B. Myneni (2002), Mapping organic coatings on atmospheric particles, *Geophysical Research Letters*, 29(16), doi:10.1029/2002GL014874.

Hopefully these related papers will be helpful to you.

Ryan Sullivan

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 13, 3179, 2013.

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