Atmos. Chem. Phys. Discuss., 14, C12615–C12616, 2015
www.atmos-chem-phys-discuss.net/14/C12615/2015/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "On the link between hygroscopicity, volatility, and oxidation state of ambient and water-soluble aerosol in the Southeastern United States" *by* K. M. Cerully et al.

Anonymous Referee #2

Received and published: 13 March 2015

The paper presents results from a field study in which the link between measured hygroscopicity, volatility and oxidation state

As a paper presenting analysis from a field campaign it is clear and concise. I do not have any major issues with the results presented but there are a few scientific debates that need to be included before publication.

There seems to be no mention of the potential effect of kinetic mass transfer limitations on ambient consequences. Whilst the CCNc would not, should not (?), experience effects due to this phenomena, it might have consequences for ambient water uptake

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below super saturated humid conditions. Or do the authors not agree?

Section 4.1 The result on the relatively low change in hygroscopicity of denuded aerosol is interesting. Is there any evidence that a significant increase in temperature might change the properties of organics in the complex matrix? Or, is there evidence to suggest this isn't the case?

There is no discussion of any potential artifacts from semi-volatile re-condensation after the thermodenuder. Could this effect the measured, and relatively insensitive, change in hygroscopicity?

Have the authors any existing, or future plans, to study proxy mixtures in the lab sing the same instruments? For example, for a mixture of inorganic:organic with known composition it might be quite telling to observe the same behaviour for a system that should be well characterised in terms of pure component and mixture properties.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 30835, 2014.