Ye Kuang et al. presented a field campaign results to characterize aerosol hygroscopicity with high time resolution at 80 % RH using humidified nephelometer. A high-resolution time-of-flight mass spectrometer was used to determine size-resolved aerosol chemical composition. Additionally, NO_x and O_3 concentrations were measured, which allowed tracing diurnal variations of organic constituents. Using measurements results of particle size distribution as inputs of Mie theory and κ-Köhler model the hygroscopcicty $\kappa_{f,80\%}$ was obtained. Based on ZSR rule the organic hygroscopicity parameter, κ_{OA} was retrieved and analysed. It was documented that κ_{OA} weakly correlate with oxidation level parameter O/C of the total organic. More detailed analysis shown that κ_{OA} negatively correlate with hydrophobic and night time formed OA fractions, while it positively correlate with aged biomass burning aerosol (aBBOA) (r = 0.35; O/C = 0.39) and more oxidized organic (MOOA) (r =0.64; O/C ~ 1). In contrast κ_{OA} negatively correlate with low oxidized organic (LOOA) (r = -0.25) having O/C ratio of ~0.79. It is suggested that the contrasting effect of LOOA and aBBOA on κ_{OA} is the result of a complex processes leading to SOA formation with different chemical composition, functional properties and microphysical structure, which are not captured by a single O/C parameter. The science in this paper is relevant to ACP's audience. The reviewer thinks that further clarification would be required prior to publication in ACP.

General points:

1. What is the aerosol resident time at 30 % and 80 % RH? Have you performed test measurements to make sure that the humidified residence time is sufficient to allow PM1 particles to grow to equilibrium? This is important, given that particles in the range of 200-800 nm make the main contribution to the scattering coefficient.

2. What is the accuracy in κ_{OA} calculation? Besides environmental factors that are a mainly source of random errors, inaccuracy associated with the calculation of $\kappa_{f,RH}$, volume fractions and aerosol composition measurements can lead to serious systematic error. Have you estimated their input to κ_{OA} when using Eq.(3)? If yes, please show it.

3. By default, it is assumed that at 80% humidity, the $\kappa_{f,RH}$, follows the ZSR rule and can be used to calculate κ_{OA}. Numerous studies have shown that at low RH, like 80% used in this study, the hygroscopic properties of multicomponent particles are not additive. Core-shell particle morphology, complex interaction between the components, limited solubility of sparingly soluble compounds, kinetic limitation caused by semi-solid state are the main factors, which lead to non-additive water uptake. These factors may provide significant uncertainty in κ_{OA} . The CCN-retrieved κ_{CCN} and κ_{OA} may help to estimate the effect of low humidity on the uncertainty in scattering-derived κ_{OA}. Are the results of CCN measurements available for this field campaign?

   In my opinion, the κ_{OA} and its uncertainty are poorly defined and additional efforts are needed to specify them. Otherwise, the conclusion about a weak relationship between kappa and O/C ratio and reasoning about the contrasting effects look unconvincing.

Technical points.

Line 232. Figure S2 have no panels 2a and 2b

Lines 257, 266 hydrophilic ?

Line 263. Fig.S4?

Line 282. NR-PM1 this abbreviation is not determined.

Line 335. 0.053± 0.006 ? may be 0.53 ± 0.06

Line 346. There are no references to Fig. 4a-4f in the text, although all panels are labeled as (a)-(f).

Figure 5. Blue line – NOOA. This abbreviation is not determined. Why do need both panels?

Line 356. Fig. 3c? May be Fig.5c.

Line 364. Figure S4. Please check this figure. There is no nitrate concentration.

Figure 7. Red line –NOOA. This abbreviation is not determined.

Supplement Fig.S4 . I did not find a text where this figure was discussed.