

## ***Interactive comment on “Water-soluble atmospheric HULIS in urban environments” by C. Baduel et al.***

**Anonymous Referee #1**

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The authors investigate the contributions of water-soluble humic-like substances (HULIS\_ws) at six different locations. Authors report contributions of HULIS\_ws to the total organic carbon and water-soluble organic carbon fraction. The measured absorbance and hence, composition of HULIS\_ws is found to correlate with seasonal changes.

The material is within the scope of this journal and is of significance to the scientific community. The measurements are unique and will add to the existing body of work on water-soluble HULIS. The following major and minor concerns address issues that once resolved will strengthen the importance and quality of the paper.

MAJOR COMMENTS:

C8110

There are several significant findings mentioned in the conclusions that are not highlighted in the abstract (e.g., HULIS\_ws comprise up to 43% of WSOC). If added to the abstract, future works are more likely to cite the relevant findings of this paper.

The authors suggest that the trends are seasonal and not necessarily a function of location (P21571 L18). Yet only one city (Grenoble) supports this. The reviewer is concerned that data set is too limited for this conclusion. For a statistically sound argument, more data points (sites) are required to show minimal effects of location/source on the composition of HULIS\_ws. Figure 1 and text suggest that the measured absorbance is influenced by the contributions from different sources (e.g., biomass burning and vehicle emissions). Do some French cities have larger ambient anthropogenic sources or biomass burning? If so, do the grouping of cities in Figure 1 and 2 reflect this?

P21564. Are inorganics present in samples? Will they not also affect the absorbance at 250nm? The contribution of inorganic may affect solution pH and HULISws samples (Shapiro et al., 2009). This issue is not addressed.

MINOR COMMENTS:

P21562. HULIS\_ws is not defined in the abstract.

P21562 L22. Asa-Awuku et al, 2008 also investigate the properties of WSOC HULIS from biomass burning sources.

P21566 L18. “. . .aromatic structures show strong absorption at this [250 nm] wavelength.” Please cite reference.

P21566 L22. What is resp.? respectively? Response? Not clear.

P21566 L11. DOC? Dissolved organic carbon? Or is this TOC? Total organic carbon. Abbreviation is not defined in text.

P21570 L18. Remove “kind of.”

P21571 L11. What is meant by “has been realised?”

C8111

Fig 1. Replace “are not mix with” with “are not mixed with”

#### REFERENCES

Shapiro, E. L., Szprengiel, J., Sareen, N., Jen, C. N., Giordano, M. R., and McNeill, V. F.: Light-absorbing secondary organic material formed by glyoxal in aqueous aerosol mimics, *Atmos. Chem. Phys.*, 9, 2289-2300,2009

Asa-Awuku, A., Sullivan, A. P., Hennigan, C. J., Weber, R. J., and Nenes, A.: Investigation of molar volume and surfactant characteristics of water-soluble organic compounds in biomass burning aerosol, *Atmos. Chem. Phys.*, 8, 799-812,2008

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 9, 21561, 2009.