

Supplement of Atmos. Chem. Phys., 15, 11999–12009, 2015
<http://www.atmos-chem-phys.net/15/11999/2015/>
doi:10.5194/acp-15-11999-2015-supplement
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Supplement of

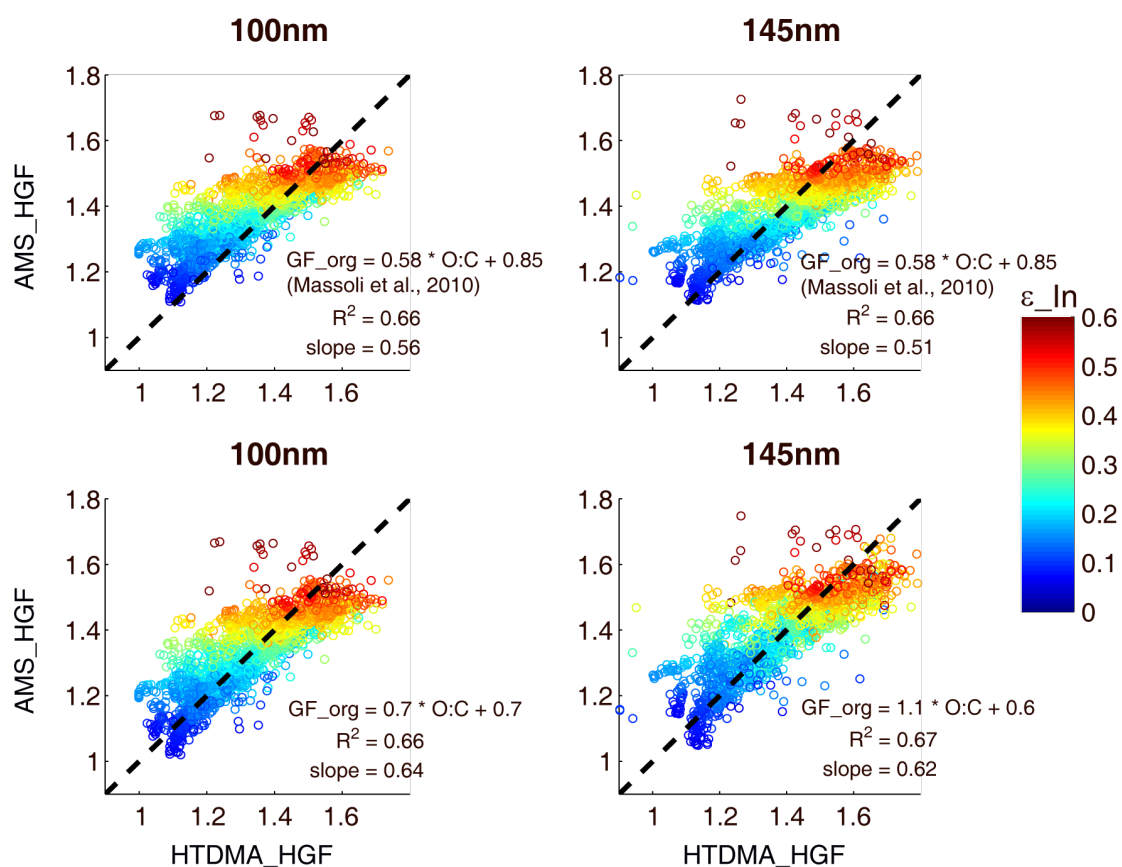
Relating the hygroscopic properties of submicron aerosol to both gas- and particle-phase chemical composition in a boreal forest environment

J. Hong et al.

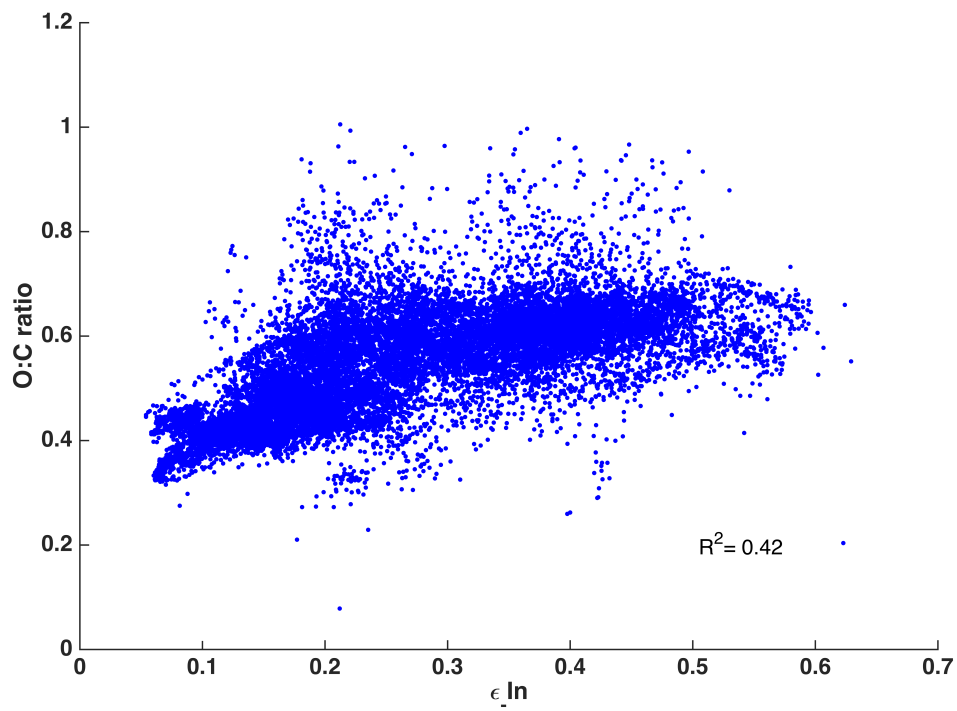
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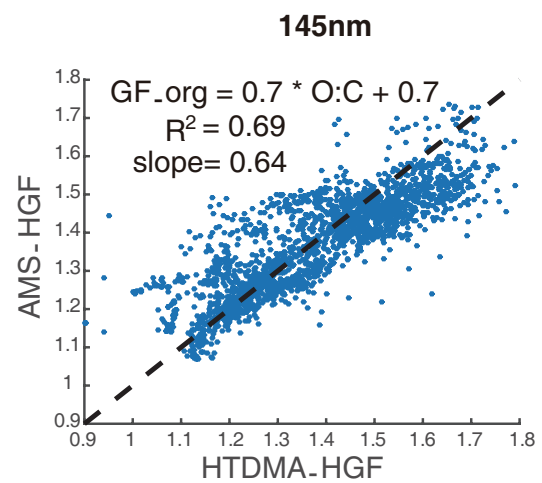
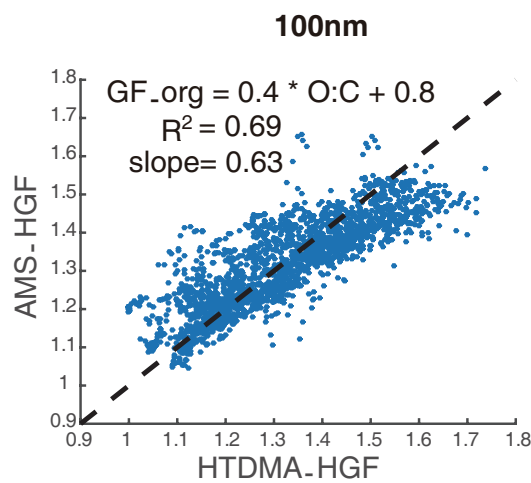
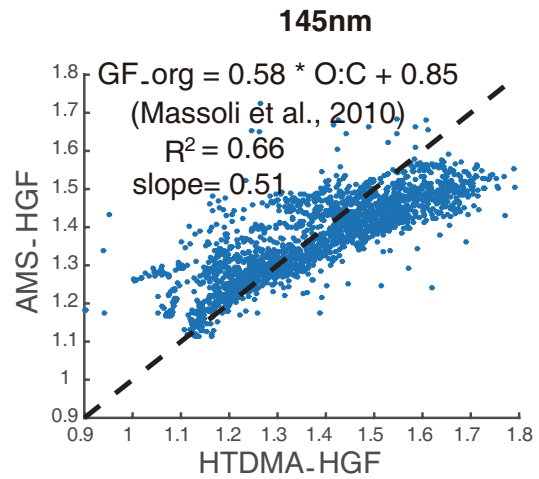
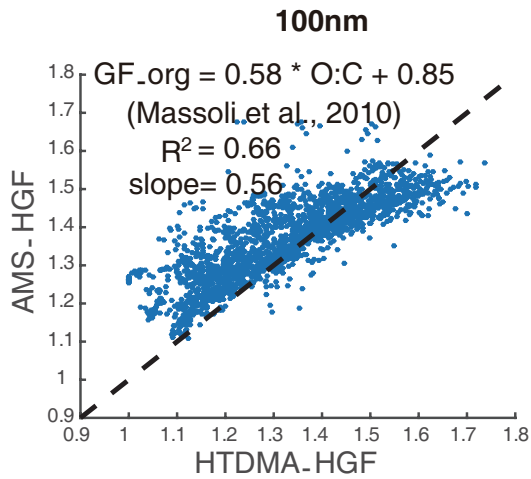
Supplementary material:



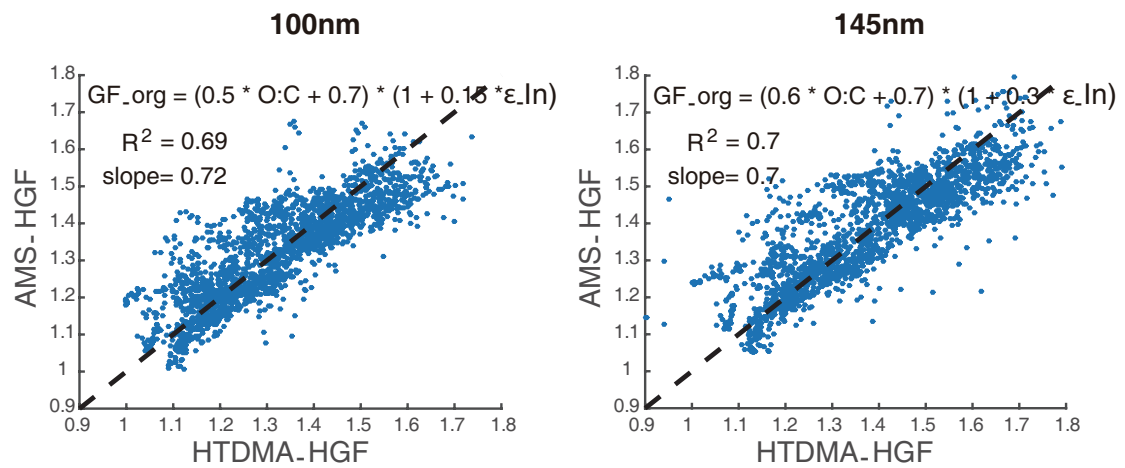
S1: Comparison between AMS derived HGF with measured HGF when taking into account of the influence of the oxidation level of the organics on the GF, with color code indicating the inorganic volume fraction.



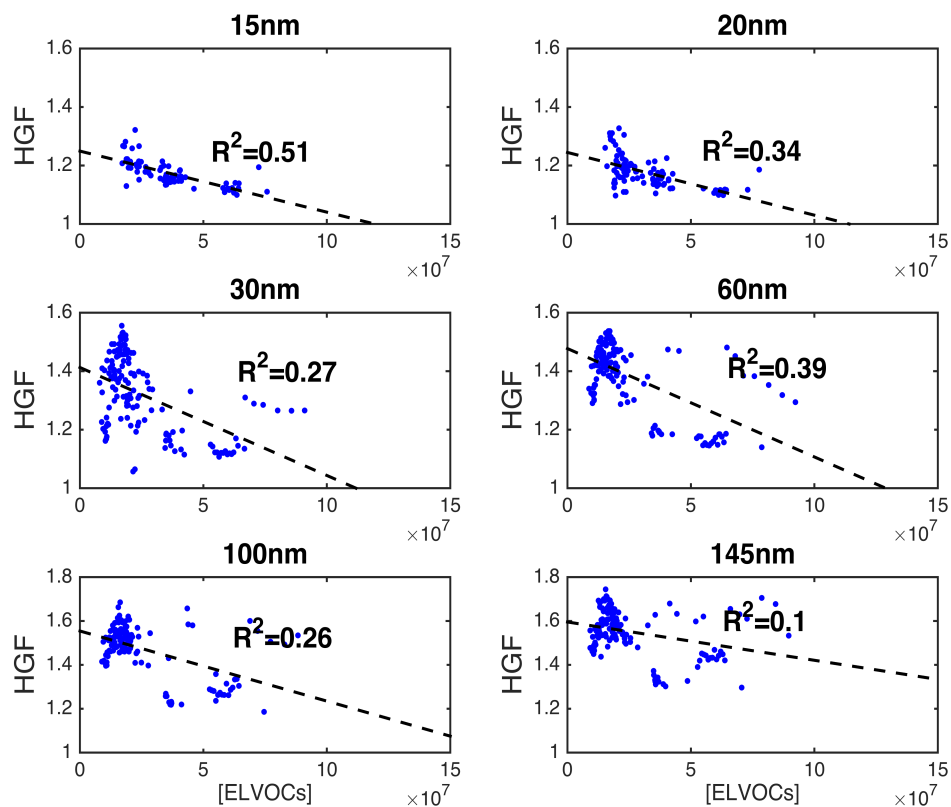
S2: O:C ratio of organics as a function of the inorganic volume fraction from the bulk composition data obtained from HR-AMS, with R^2 shown.



S3: Comparison between AMS derived HGF with measured HGF when taking into account the influence of oxidation level of the organics on GF, with upper panels using the relation determined by Massoli et al. (2010), and lower panels by fitting the equation $GF = a \cdot O : C + b$ into our data. The O:C ratio from the lower panels were obtained from the 'Improved-Ambient' method. The dashed lines are 1:1 lines.



S4: Comparison between AMS derived HGF with measured HGF when taking into account of both oxidation level and inorganic volume fraction on GF of the organics. O:C ratio were obtained from the 'Improved-Ambient' method. The dashed lines indicate the 1:1 lines.



S5: HGF of 15, 20, 30 and 60 nm particles with ELVOCs concentration in gas phase during the time of NPF at ozone concentration higher than 45 ppb ($[O_3] > 45$ ppb). The dashed line is the linear fit to these data, with R^2 shown.