

## ***Interactive comment on “Tropospheric OH and Cl levels deduced from non-methane hydrocarbon measurements in a marine site” by C. Arsene et al.***

**C. Arsene et al.**

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We want to thank Dr. Vione for his comments which helped to improve the paper.

1. The suggestion concerning improvement of Fig. 4 is answered in the revised version by new details as the referees were also concerned about. Figure 4 (in the revised version Figure 5) is better explained and the discussion is based on the kinetic rates of hydrocarbons removal by OH radical and Cl atom (*i*-butane,  $k_{OH}=2.19 \times 10^{-12}$ ,  $k_{Cl}=1.43 \times 10^{-10}$ ; *n*-butane,  $k_{OH}=2.36 \times 10^{-12}$ ,  $k_{Cl}=2.18 \times 10^{-10}$  and propane  $k_{OH}=1.01 \times 10^{-12}$ ,  $k_{Cl}=1.40 \times 10^{-10}$ ), in units of  $\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ , which suggest normally ratios of about 2:2:1 due to reaction with OH alone and approximately 1:2:1, respectively, due to reaction with Cl alone. The reaction rate constants are from Atkinson and Aschmann (1985), Atkinson and Arey (2003), Atkinson et al. (2006). Normally, due to the differences in the hydrocarbon reactivity toward OH radical and Cl atom, examination of the

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i-butane/n-butane vs. n-butane distribution may indicate at a first insight the dominant acting radical chemistry which in case of OH predominance would lead to a constant i-butane/n-butane ratio.

2.All technical suggestion raised under 2) - 10) points are now inserted in the revised version of the manuscript.

References Atkinson, R., and Arey, J.: Atmospheric degradation of volatile organic compounds, Chem. Rev., 103, 4605-4638, 2003. Atkinson, R., Baulch, D.L., Cox, R.A., Crowley, J.N., Hampson, R.F., Hynes, R.F., Hynes, R.G., Jenkin, M.E., Rossi, M.J., and Troe, J.: Evaluated kinetic and photochemical data for atmospheric chemistry: Volume II - gas phase reactions of organic species, Atmos. Chem. Phys., 6, 3625-4055, 2006, <http://www.atmos-chem-phys.net/6/3625/2006/>.

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