

Interactive comment on “On inferring isoprene emission surface flux from atmospheric boundary layer concentration measurements” by J. Vilà-Guerau de Arellano et al.

J. Vilà-Guerau de Arellano et al.

Received and published: 17 April 2009

Both referees have coincided that this research provides a general framework to estimate the surface fluxes of atmospheric compounds using mean concentrations with a more balance approach between boundary layer dynamics and chemistry. The introduction has been therefore slightly modified to stress that the mixed-layer technique can also be applied to other compounds other than isoprene.

Closely connected to this point, and based on Alex Gunther’s incisive comment, we have clarified at section 3.1 (after introducing equation 5) that the mixed-layer method can not be applied to reactants characterized by chemical transformations with a faster time scale than the turbulent time scale.

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)



We agreed with Alex Gunther's main remark on the large uncertainties still associated to the different isoprene and hydroxyl measurements techniques. However, as figures 6-9 show, it is still fundamental to determine the main boundary layer evolution to obtain correct values and the diurnal evolution of the reactant emission surface flux. To include his comment and in order to have a less bias conclusion, we have included a paragraph at the end of the conclusion section.

Our research is inspired in typical situations observed at the Amazonian region, but we have on purpose kept a general character and therefore it is not addressed to represent any specific situation. By so doing, we are able to analyze processes and variables that normally are overlooked and not taken into account in experimental field campaigns. We hope that future campaigns will include this meteorological information. Therefore, the model results are not validate against any particular observational data set.

The other points raised by the referees have also been taken into account. More specifically a clarification on the isoprene reaction rate mentioned by referee 1 has been included and a short discussion on the role of boundary layer dynamics on the mixed-layer gradient/variance techniques (end section 3).

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 4159, 2009.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)