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*Supplement of*

## **Biomass burning emission disturbances of isoprene oxidation in a tropical forest**

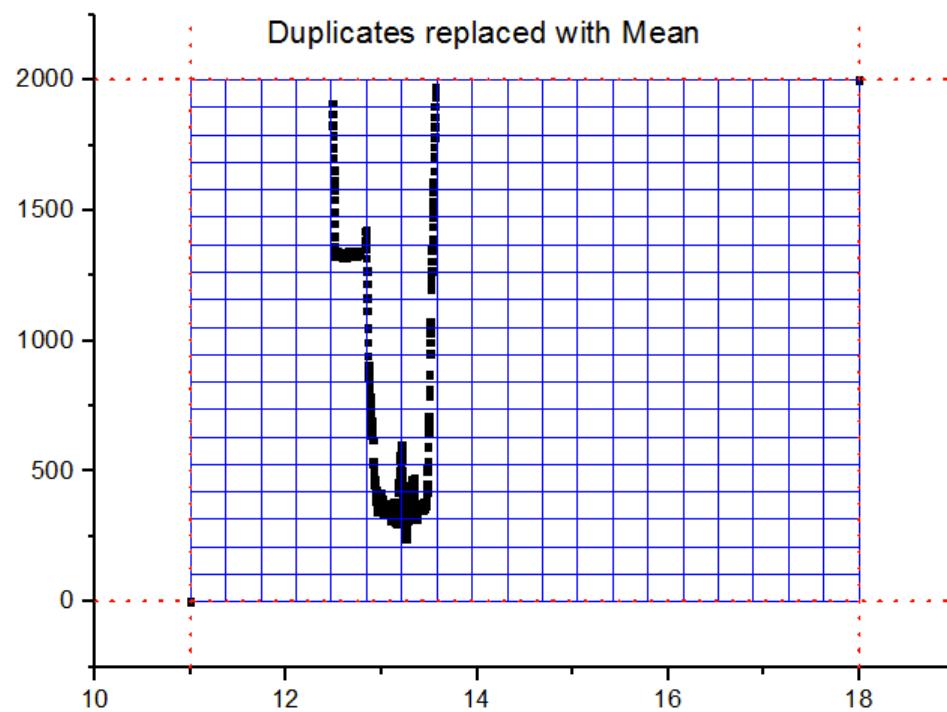
**Fernando Santos et al.**

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1    **S1.** Interpolation grid used in the Figures 3 and 5.

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4    Figure 1. Interpolation grid (0 - 2000m and 11 - 18h)

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12     **S2.** The kinetic rate constant measurements for OH + ISOOPOH (1,2- and 4,3- ISOOPOH), at 297 K, is  $7.5 \times 10^{-11} \text{ cm}^3$   
13     molecule $^{-1}$  s $^{-1}$  for (1,2)-ISOOPOH and  $1.18 \times 10^{-10} \text{ cm}^3$  molecule $^{-1}$  s $^{-1}$  for (4,3)-ISOOPOH (St Clair et al., 2015). The kinetic  
14     rate constant of MVK + OH =  $1.88 \times 10^{-11} \text{ cm}^3$  molecule $^{-1}$  s $^{-1}$  and MACR + OH =  $3.35 \times 10^{-11} \text{ cm}^3$  molecule $^{-1}$  s $^{-1}$  (Apel,  
15     2002).

16     K<sub>prod</sub> Average kinetic rate constant =  $6.1325 \times 10^{-11}$

17     K<sub>iso</sub> - K<sub>prod</sub> =  $(1.1 \times 10^{-10}) - (6.1325 \times 10^{-11}) = 4.8675 \times 10^{-11}$

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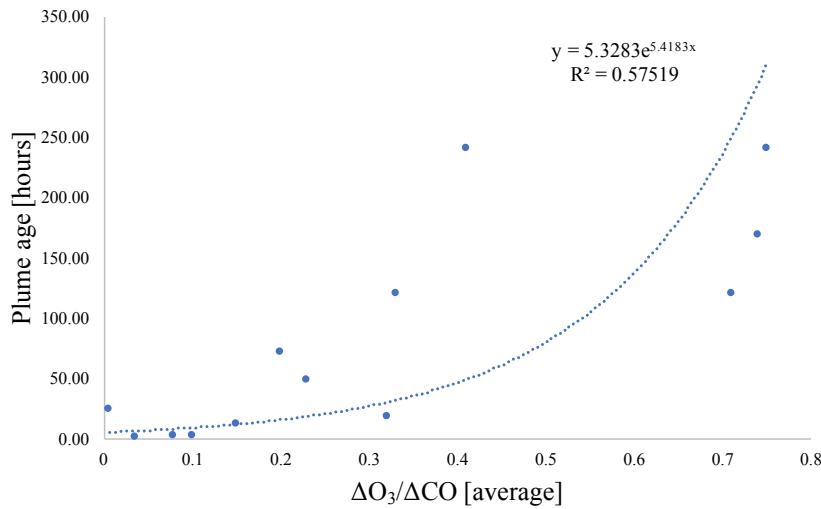
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35 S3.

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38 Figure 2. Observations of the ratio  $\Delta\text{O}_3/\Delta\text{CO}$  as a function of plume age in tropical and  
39 subtropical sites.

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52 **S4.**

53 Simulated convective velocity and planetary boundary layer from WRF-Chem in the Forest Management Station ZF-2 ( $02^{\circ}$   
54  $36^{\prime}$ S and  $60^{\circ} 12^{\prime}$ W), 60 km north of Manaus (Dasa Gu, personal communication, June 2015).

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56 Table 1. Convective velocity and planetary boundary layer used to calculate OH density  
57 following Karl et al. (2007) approach.

Time interval (t) <i>h</i>	Convective velocity (W) $ms^{-1}$	PBL (Zi) <i>m</i>
11-12	0.58	267
12-13	1.01	462
13-14	1.32	777
14-15	1.40	1075
15-16	1.40	1237
16-17	1.43	1209
17-18	1.31	1124

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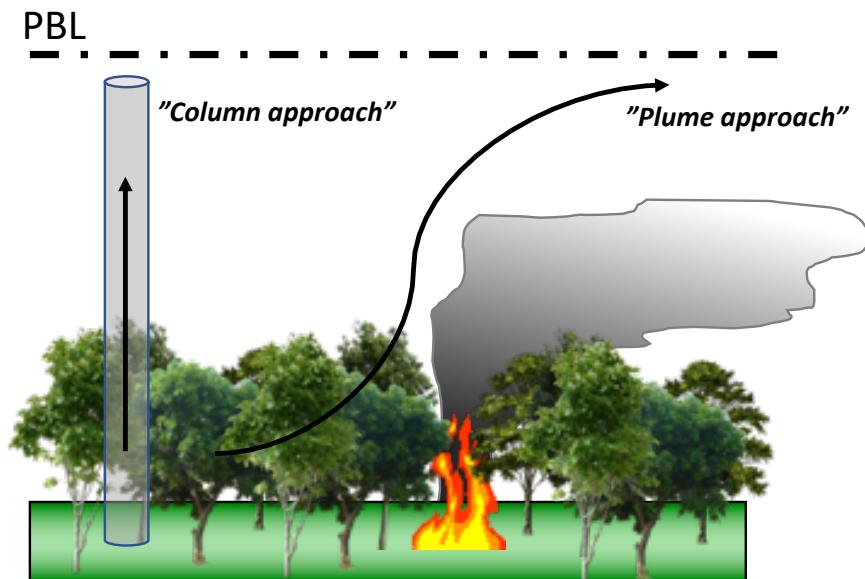
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Figure 3. Schematic approaches used in OH calculation based on the sequential reaction  
model: (1) Column approach and (2) Plume approach, which considers vertical and  
horizontal transport for both biomass burning regimes and background environment.

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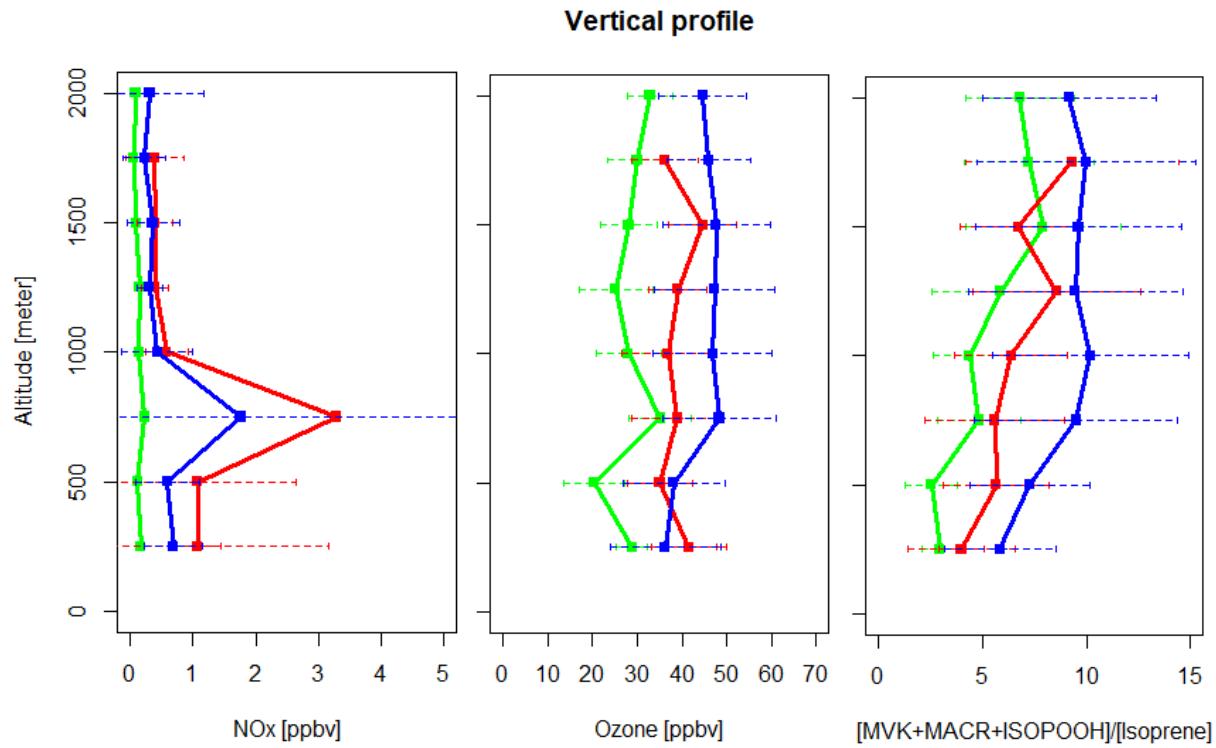
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88 Figure 4. Vertical profile for the ratio  $[\text{MVK}+\text{MACR}+\text{ISOPPOOH}]/[\text{Isoprene}]$ , NOx and Ozone mixing ratios  
89 during SAMBBA campaign: background (green), fresh smoke plume (red) and aged smoke plume (blue).

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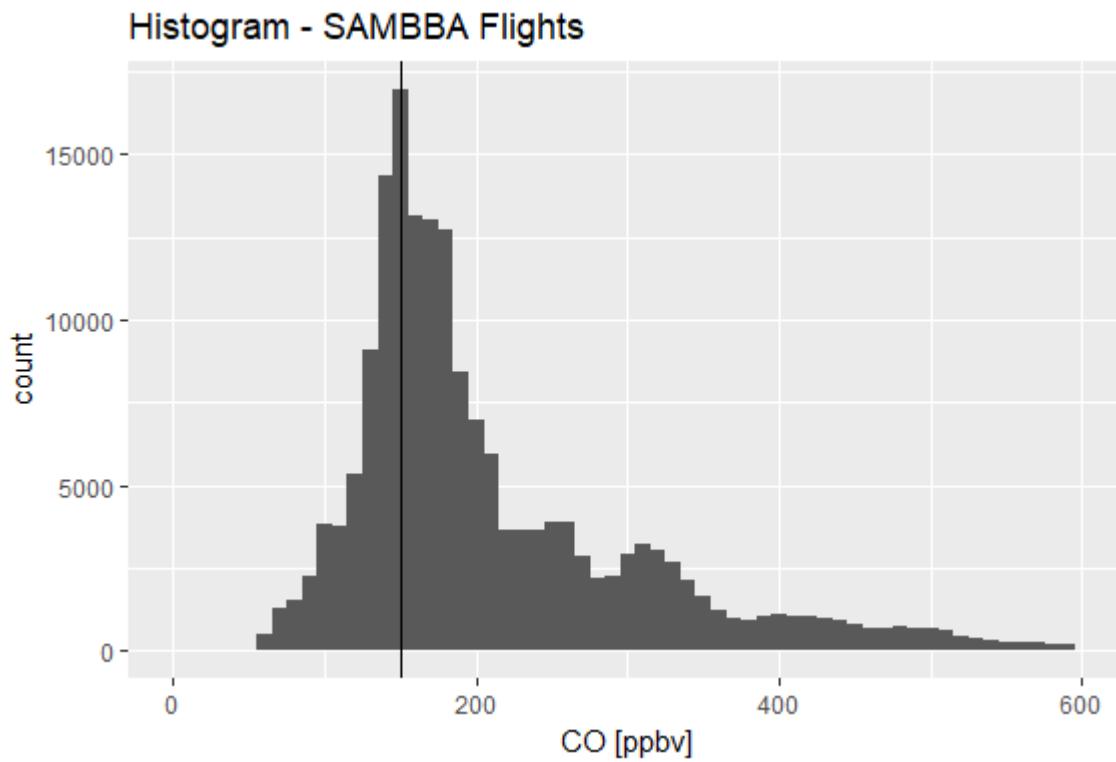
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100 Figure 5. Histogram that present the frequency distribution of CO [ppbv] for all SAMBBA flights in  
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112    **References**

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