



*Supplement of*

## **Reassessing the ratio of glyoxal to formaldehyde as an indicator of hydrocarbon precursor speciation**

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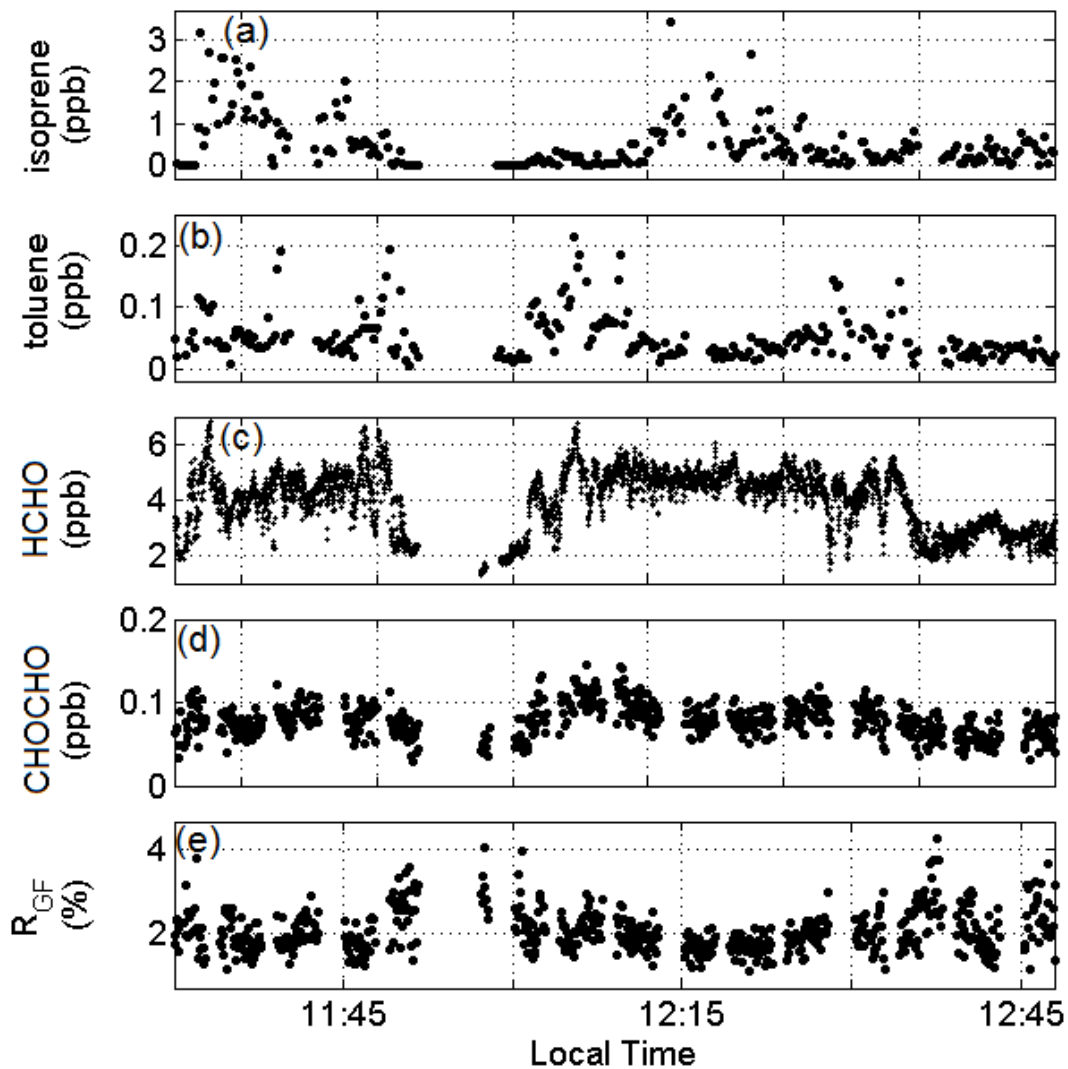
1 This supporting information provides average flight conditions (Table S1), an additional  
2 example in-and out of plume measurements of  $R_{GF}$  from the outflow of St. Louis (Fig. S1  
3 and Fig. S2), as well as the individual vertical profile locations and measurements (Fig.  
4 S3 and Fig. S4).  
5

1 Table S1. Summary of meteorological conditions for flights used in the analysis of  $R_{GF}$ .

<b>Flight date</b>	<b>Focal region</b>	<b>Time range (local)*</b>	<b>Average temperature (°C)</b>
10 June 2014	Haynesville shale	11:21-15:08	25.2±1.3
11 June 2014	Birmingham	13:15-17:29	26.3±1.4
12 June 2014	Atlanta	09:51-15:26	25.8±1.3
16 June 2014	Atlanta	10:47-16:14	22.9±1.0
22 June 2014	Atlanta/Birmingham	10:37-16:39	22.3±1.4
23 June 2014	Indianapolis	10:50-13:20	22.9±0.8
25 June 2014	Haynesville shale	11:41-16:03	25.7±1.5
26 June 2014	Fayetteville shale/Ozarks	10:42-14:42	24.7±1.2
29 June 2014	Birmingham	12:21-16:55	24.2±1.0
05 July 2014	St. Louis/Ozarks	10:44-15:23	21.2±1.2
06 July 2014	Marcellus shale	11:11-14:09	21.4±0.7
08 July 2014	Fayetteville shale	10:59-16:07	25.4±1.9
10 July 2014	Hog farms	10:12-13:16	23.8±0.9

2 \*Transit to and from region of flight's focus not included

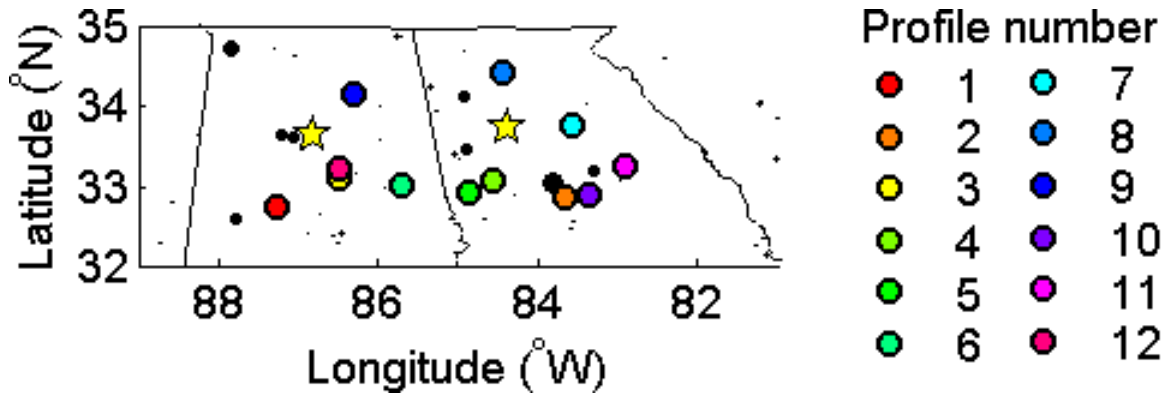




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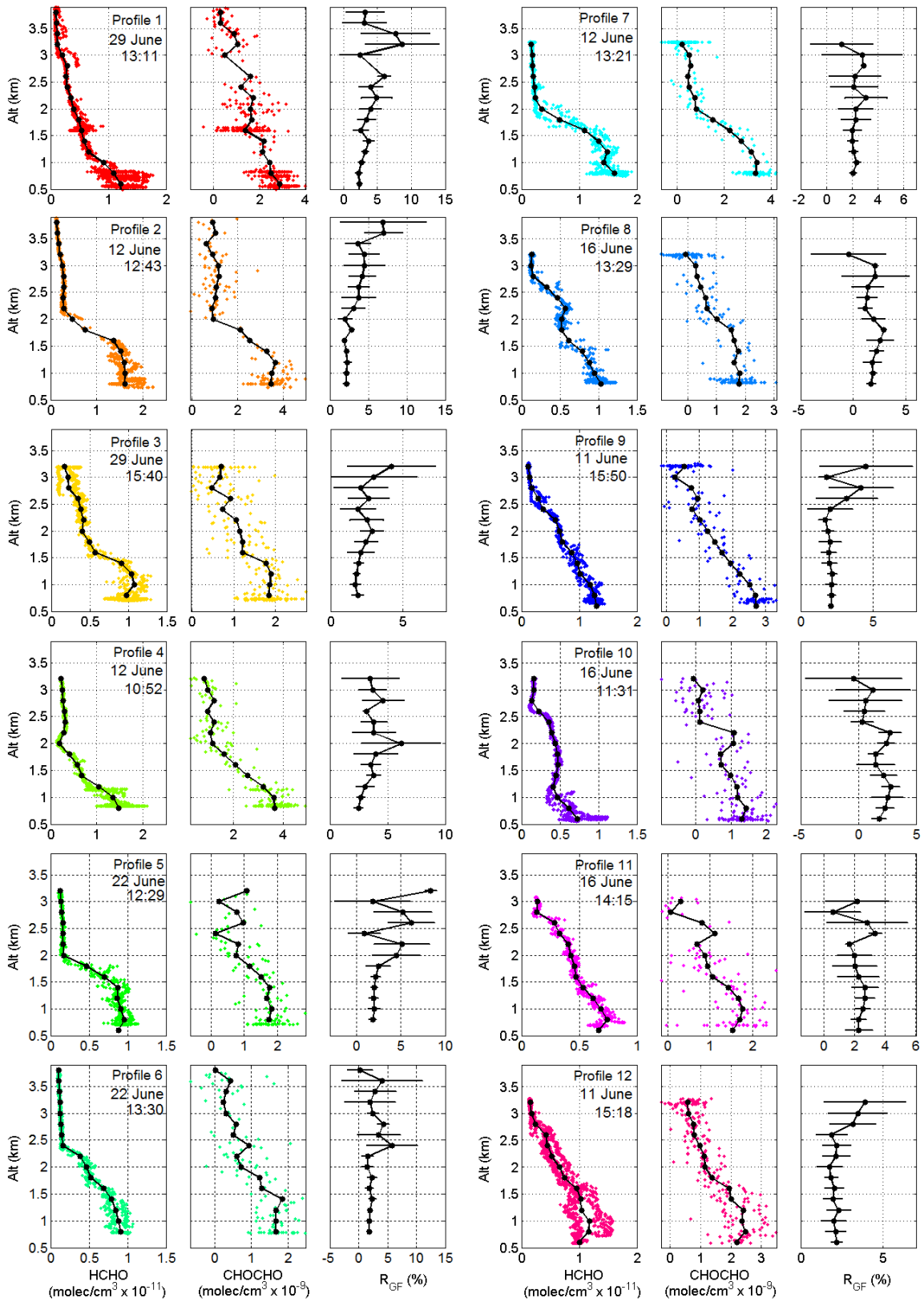
2 Figure S2. Measurements acquired on the July 5<sup>th</sup> flight corresponding to the boxed in  
 3 region in Fig. S1. As in the June 12<sup>th</sup> flight near Atlanta, VOC speciation has little  
 4 relationship with observed  $R_{GF}$ .

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2 Figure S3. Locations of vertical profile measurements extending >3 km. Power plants  
 3 markers are scaled by NO<sub>x</sub> emissions.



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1 Figure S4. Vertical profiles of HCHO and CHOCHO concentrations and  $R_{GF}$  at locations  
2 shown in Fig. S3. Small markers indicate measurements, black circles represent the  
3 average value in a 200 m altitude bin, and in the  $R_{GF}$  panels, error bars represent the  
4 standard deviation of  $R_{GF}$  as calculated from the standard deviation of glyoxal and HCHO  
5 in that altitude bin.