



## Glyoxal and Formaldehyde as a Metric for Airmass Characterization

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A number of studies have suggested that observations of glyoxal, formaldehyde, and the ratio between the two ( $R_{GF}$ ) can help define the composition of an airmass in terms of volatile organic compound (VOC),  $HO_x$ , and  $NO_x$ . The exact relationships, and therefore potential usefulness of the ratio, remain unclear due to limited in-situ measurements. Glyoxal and formaldehyde were measured at the Centreville, AL site as part of the 2013 Southern Oxidant and Aerosol Study (SOAS). At this biogenically influenced site glyoxal correlated well with formaldehyde ( $R^2=0.71$ ) with an  $R_{GF}$  value of 1.4% despite stronger variation in glyoxal and formaldehyde concentrations. Further sensitivity testing shows that changes in  $R_{GF}$  based on VOC composition are more strongly affected by how much formaldehyde changes than by how much glyoxal changes and confirms a trend of higher  $R_{GF}$  values associated with anthropogenic VOCs. However, unlike isoprene, monoterpenes have an affect on  $R_{GF}$  similar to that of some anthropogenic VOCs. Sensitivity testing also confirms previously seen relationships of  $R_{GF}$  with OH, NO, and  $NO_2$ .