

Supplement to Observations of Glyoxal and Formaldehyde as Metrics for the Anthropogenic Impact on Rural Photochemistry

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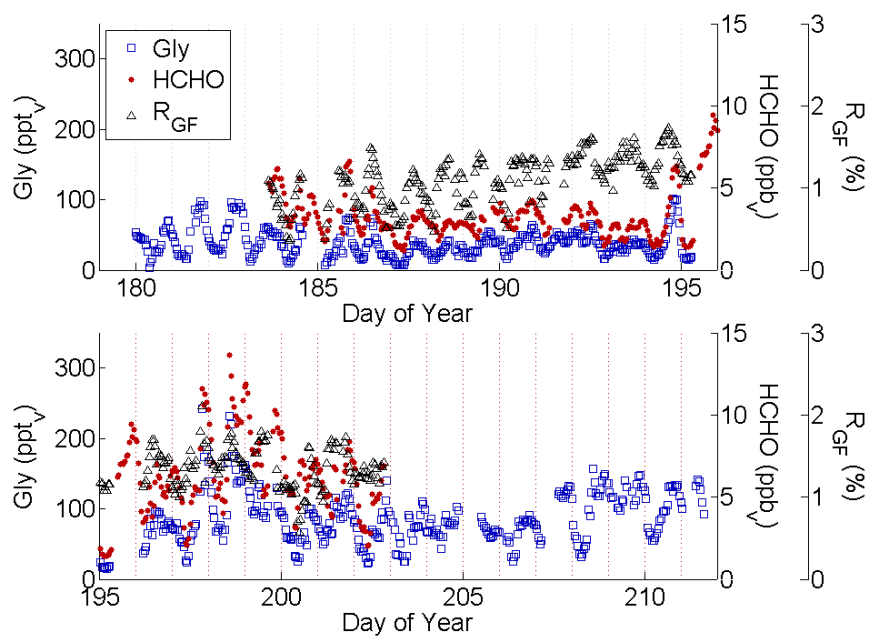


Fig. S1. One hour bin averaged Gly, HCHO, and R_{GF} during BEARPEX 2009.

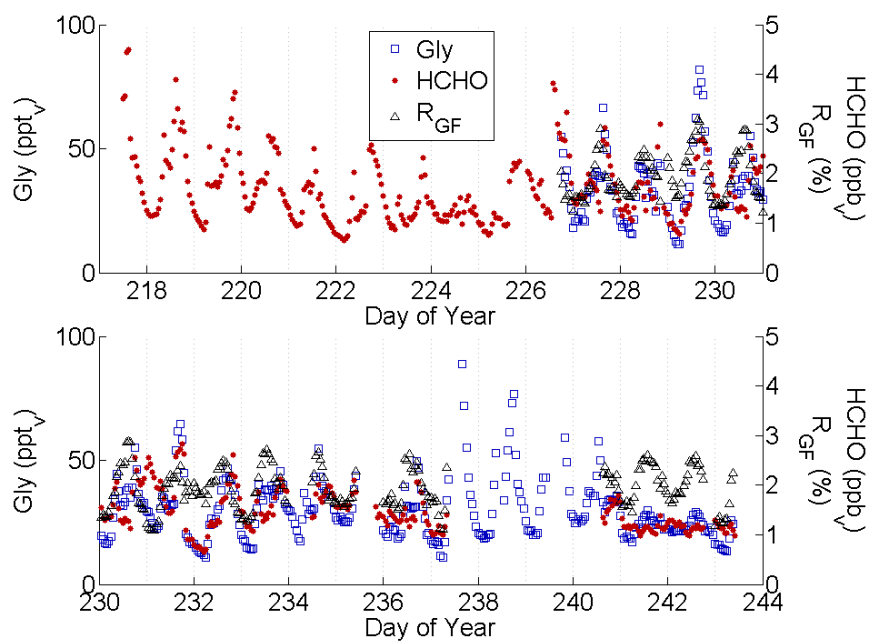


Fig. S2. One hour bin averaged Gly, HCHO, and R_{GF} during BEACHON-ROCS 2010.

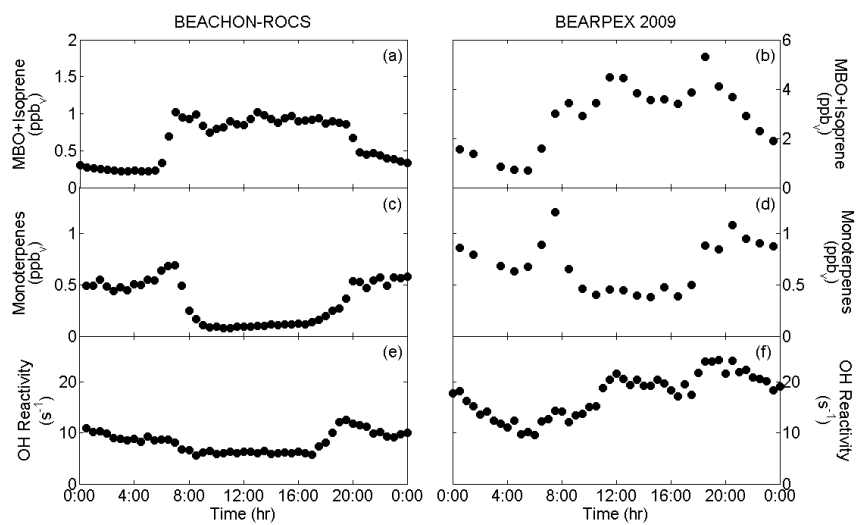


Fig. S3. Thirty minute binned median diurnal profiles of MBO+Isoprene, monoterpenes, and OH reactivity during BEACHON-ROCS and BEARPEX 2009.

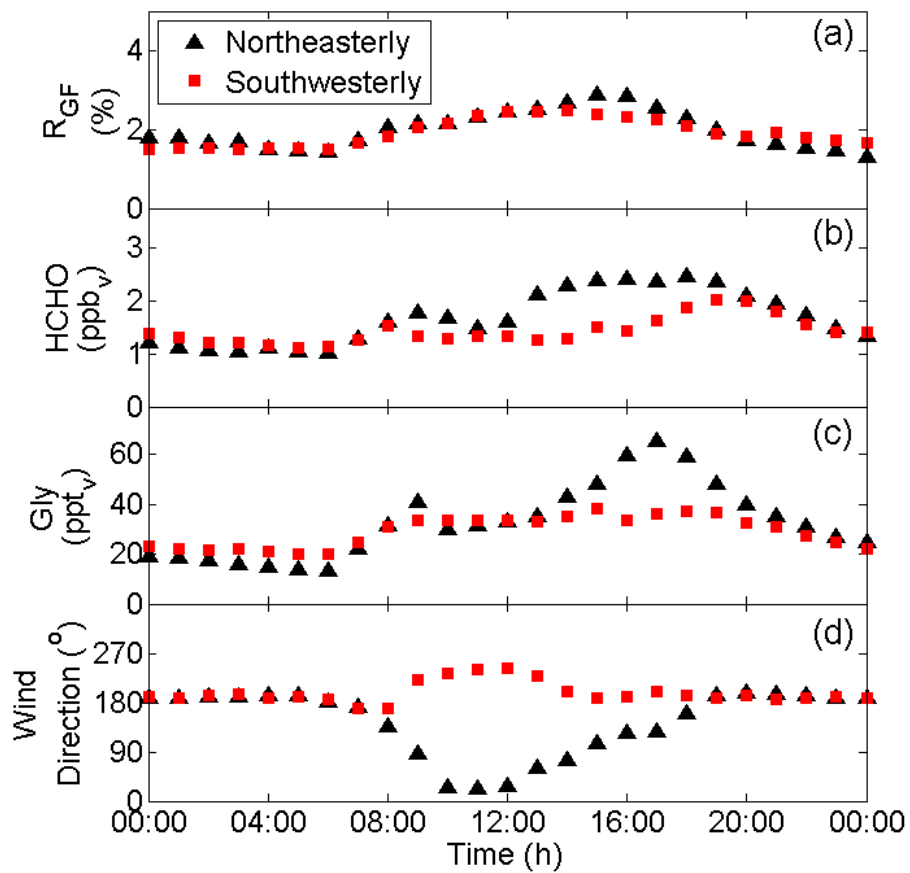


Fig. S4. Diurnal median profiles of R_{GF} , HCHO, Gly, and wind direction for the two different wind regimes during BEACHON-ROCS 2010.

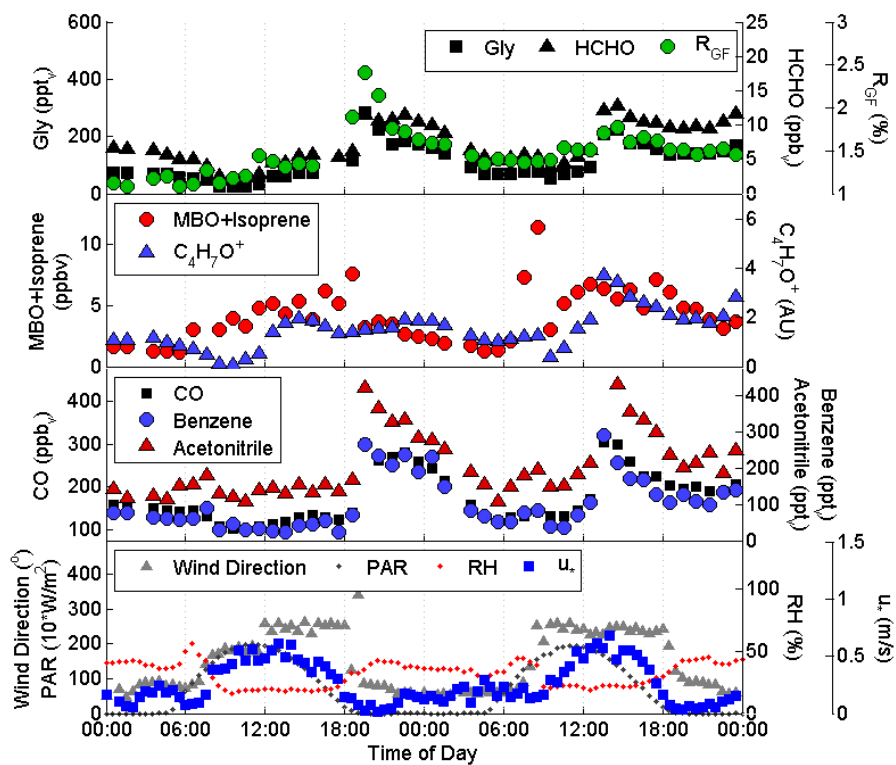


Fig. S5. Comparison of Gly and HCHO (17.8 m inlet only) with other species and meteorological parameters for the MFI on 17 July during BEARPEX 2009. Gly, HCHO, and R_{GF} are shown as 30 min binned averages (± 15 min each half hour), whereas other species are shown at full resolution.

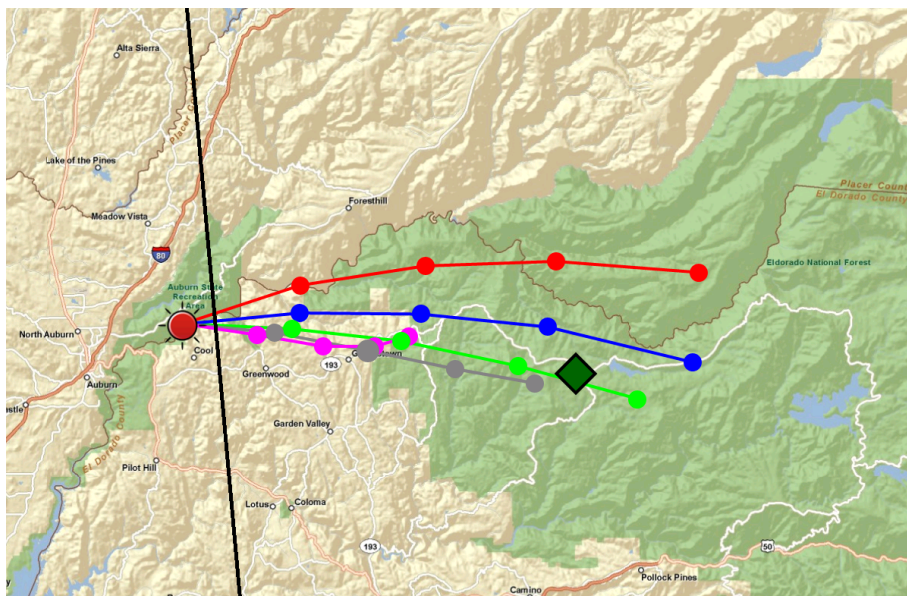


Fig. S6. Four hour forward HYSPLIT trajectories for 16 July, 2009 originating at the MFI site (red symbol) at 50 m above ground level. Lines denote initial times of 14:00 (red), 15:00 (blue), 16:00 (green), 17:00 (grey), and 18:00 (purple). Filled circles denote plume position after each hour of travel time. The BEARPEX site is denoted by the green diamond, and the solid black line denotes the rough end line of the upwind isoprene emission region based on Dreyfus et al. (2002).

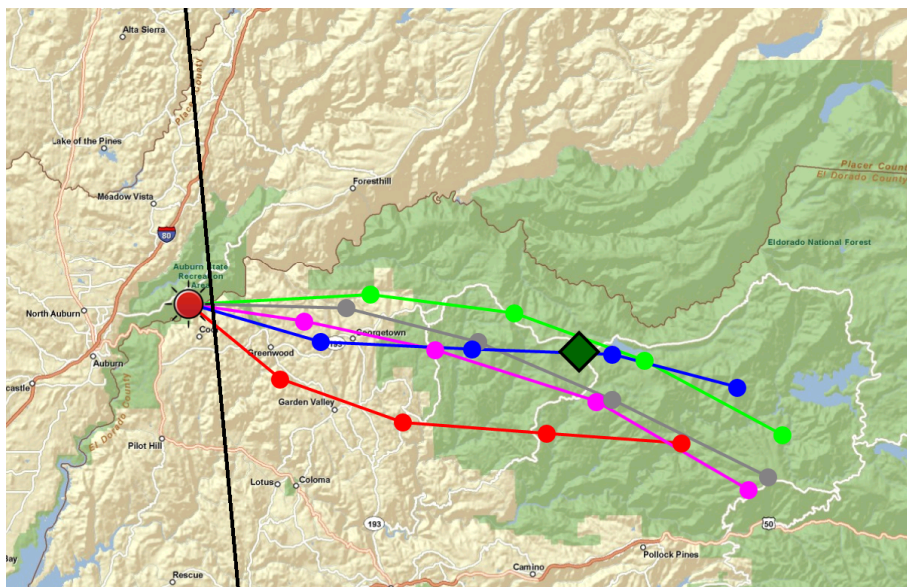


Fig. S7. Four hour forward HYSPLIT trajectories for 17 July, 2009 originating at the MFI site (red symbol) at 50 m above ground level. Lines denote initial times of 10:00 (red), 11:00 (blue), 13:00 (green), 14:00 (grey), and 16:00 (purple). Filled circles denote plume position after each hour of travel time. The BEARPEX site is denoted by the green diamond, and the solid black line denotes the rough end line of the upwind isoprene emission region based on Dreyfus et al. (2002).

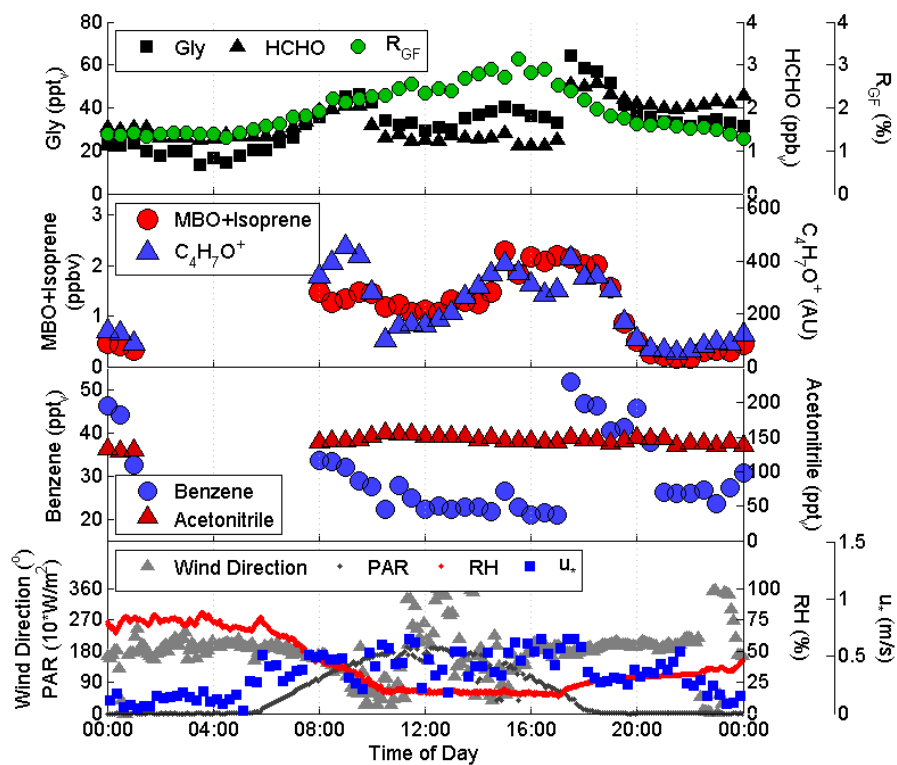


Fig. S8. Gly, HCHO, R_{GF} , other tracer species, and meteorological data during day BN1. Gly, HCHO, and R_{GF} are shown as 30 min binned averages (± 15 min each half hour), whereas other species are shown at full resolution. Data for MBO+Isoprene, $C_4H_7O^+$, benzene, and acetonitrile were measured via PTR-TOF-MS.

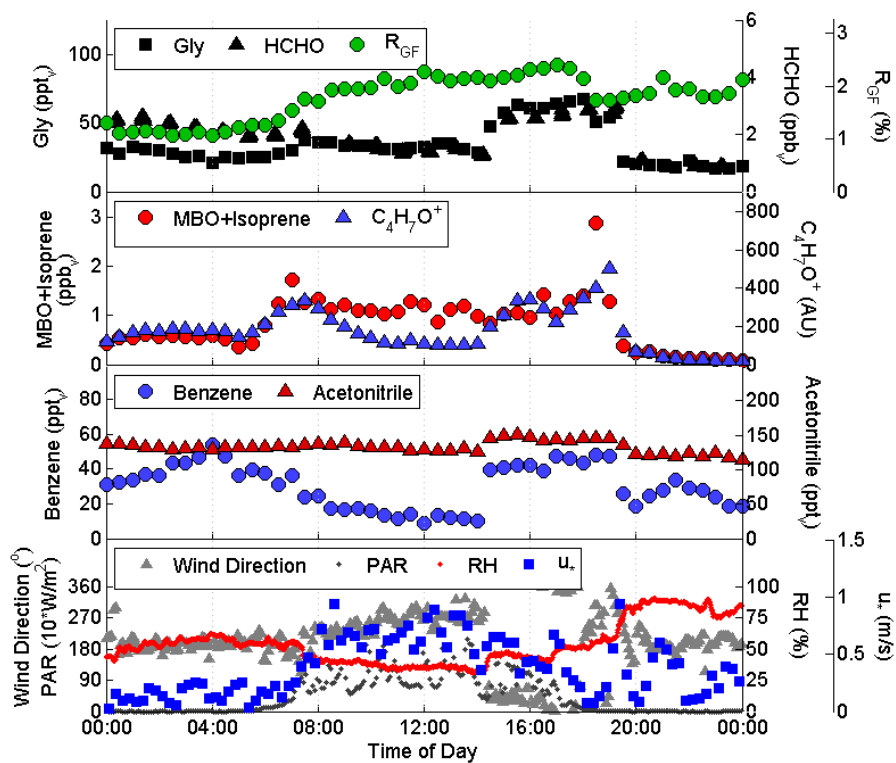


Fig. S9. Gly, HCHO, R_{GF} , other tracer species, and meteorological data during day BN2. Gly, HCHO, and R_{GF} are shown as 30 min binned averages (± 15 min each half hour), whereas other species are shown at full resolution. Data for MBO+Isoprene, $C_4H_7O^+$, benzene, and acetonitrile were measured via PTR-TOF-MS.

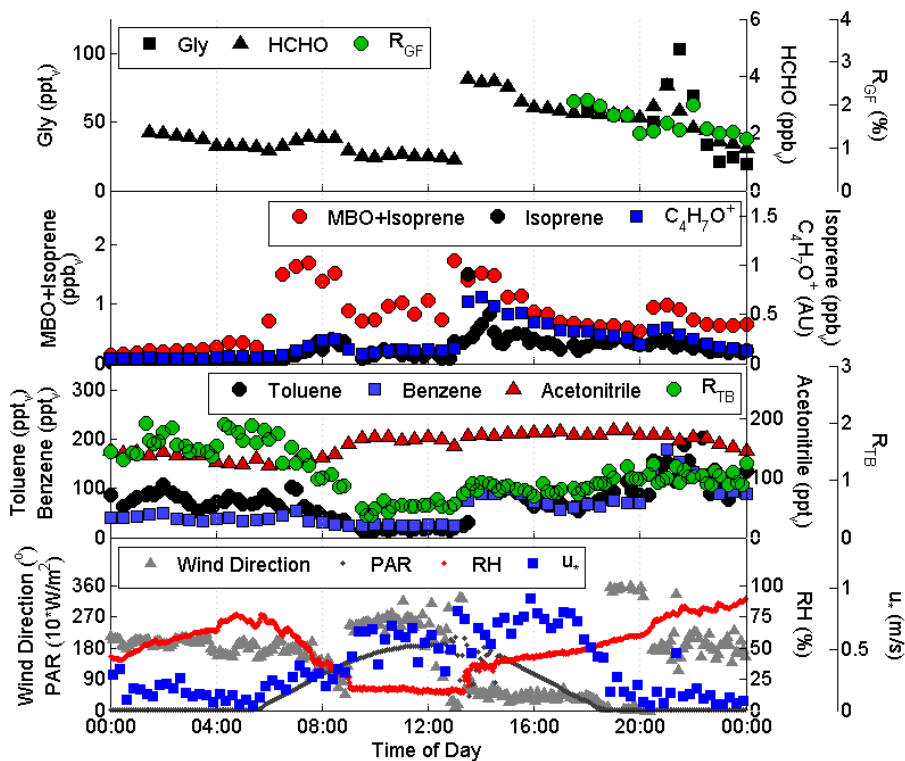


Fig. S10. Gly, HCHO, R_{GF} , other tracer species, and meteorological data during day BN3. Gly, HCHO, and R_{GF} are shown as binned averages, whereas other species are shown at full resolution. Data for MBO+Isoprene, $C_4H_7O^+$, benzene, and acetonitrile were measured via PTR-TOF-MS. Data shown for toluene was measured via TOGA, and R_{TB} is based on TOGA measurements of benzene and toluene.

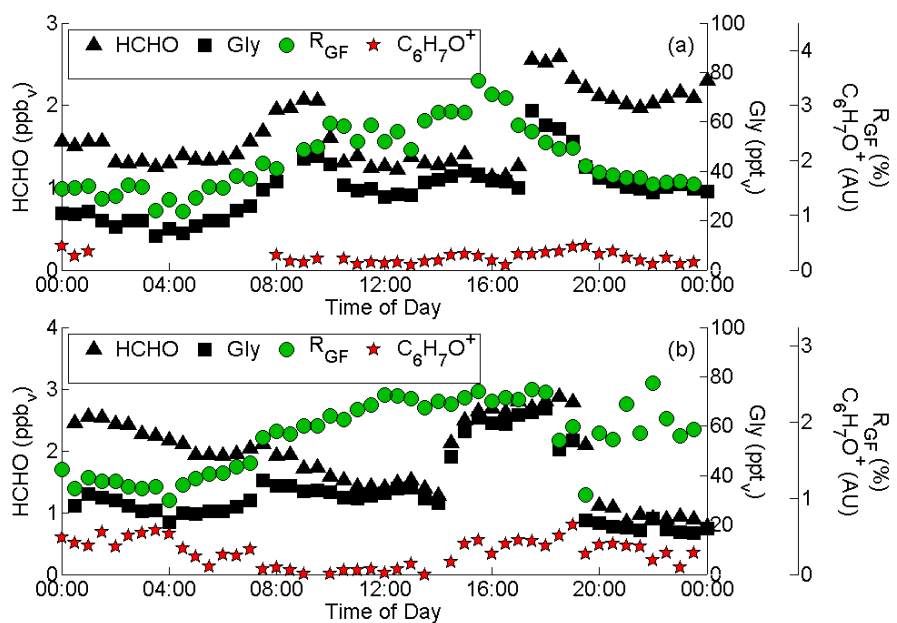


Fig. S11. Comparison of $C_6H_7O^+$ with Gly, HCHO, and R_{GF} during days (a) BN1 and (b) BN2. Note the lack of change in $C_6H_7O^+$ during the fast rises/falls in Gly and HCHO.

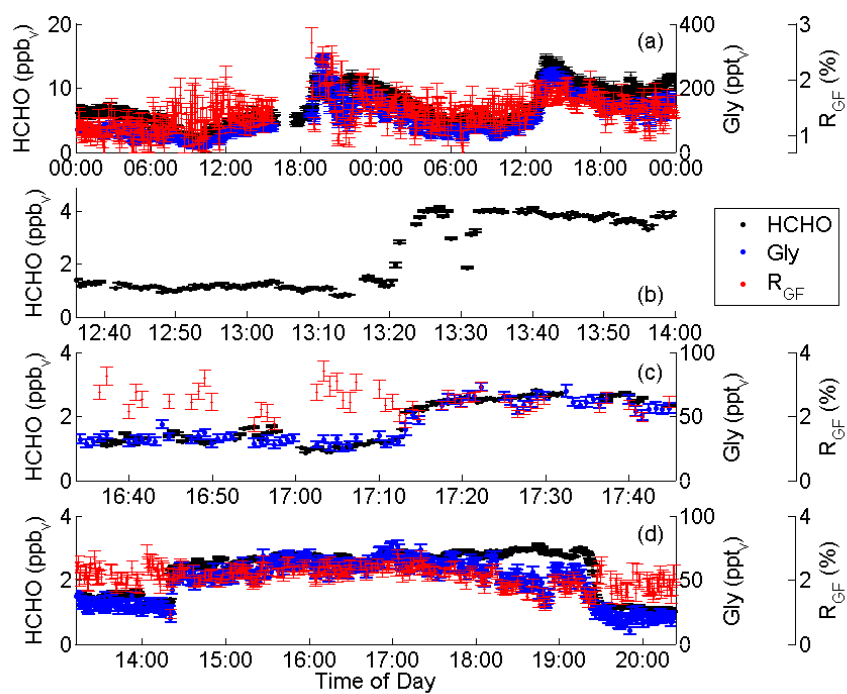


Fig. S12. High time resolution data for HCHO (30 s), Gly (60 s), and R_{GF} (60 s) shown for the significant features of (a) MFI, (b) BN1, (c) BN2, and (d) BN3 events. Error bars denote the 1σ precision.

References

Dreyfus, G. B., Schade, G. W., and Goldstein, A. H.: Observational constraints on the contribution of isoprene oxidation to ozone production on the western slope of the Sierra Nevada, California, *Journal of Geophysical Research-Atmospheres*, 107, Artn 4365, 2002.