

**Supplement to:**

**Photochemical processing of organic aerosol at nearby continental sites: Contrast between urban plumes and regional aerosol**

**J. G. Slowik<sup>1,3</sup>, J. Brook<sup>4</sup>, R. Y.-W. Chang<sup>1,3</sup>, G. J. Evans<sup>2,3</sup>, K. Hayden<sup>4</sup>, C.-H. Jeong<sup>4</sup>, S.-M. Li<sup>4</sup>, J. Liggio<sup>4</sup>, P. S. K. Liu<sup>4</sup>, M. McGuire<sup>2,3</sup>, C. Mihele<sup>4</sup>, S. Sjostedt<sup>1,3</sup>, A. Vlasenko<sup>1,3</sup>, and J. P. D. Abbatt<sup>1,3</sup>**

[1]{Department of Chemistry, University of Toronto, Toronto, Canada}

[2]{Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Canada}

[3]{Southern Ontario Centre for Atmospheric Aerosol Research, University of Toronto, Toronto, Canada}

[4]{Science and Technology Branch, Environment Canada, Toronto, Canada}

Correspondence to: J. P. D. Abbatt ([jabbatt@chem.utoronto.ca](mailto:jabbatt@chem.utoronto.ca))



Figure S1. Map of Harrow, Bear Creek, and surroundings.

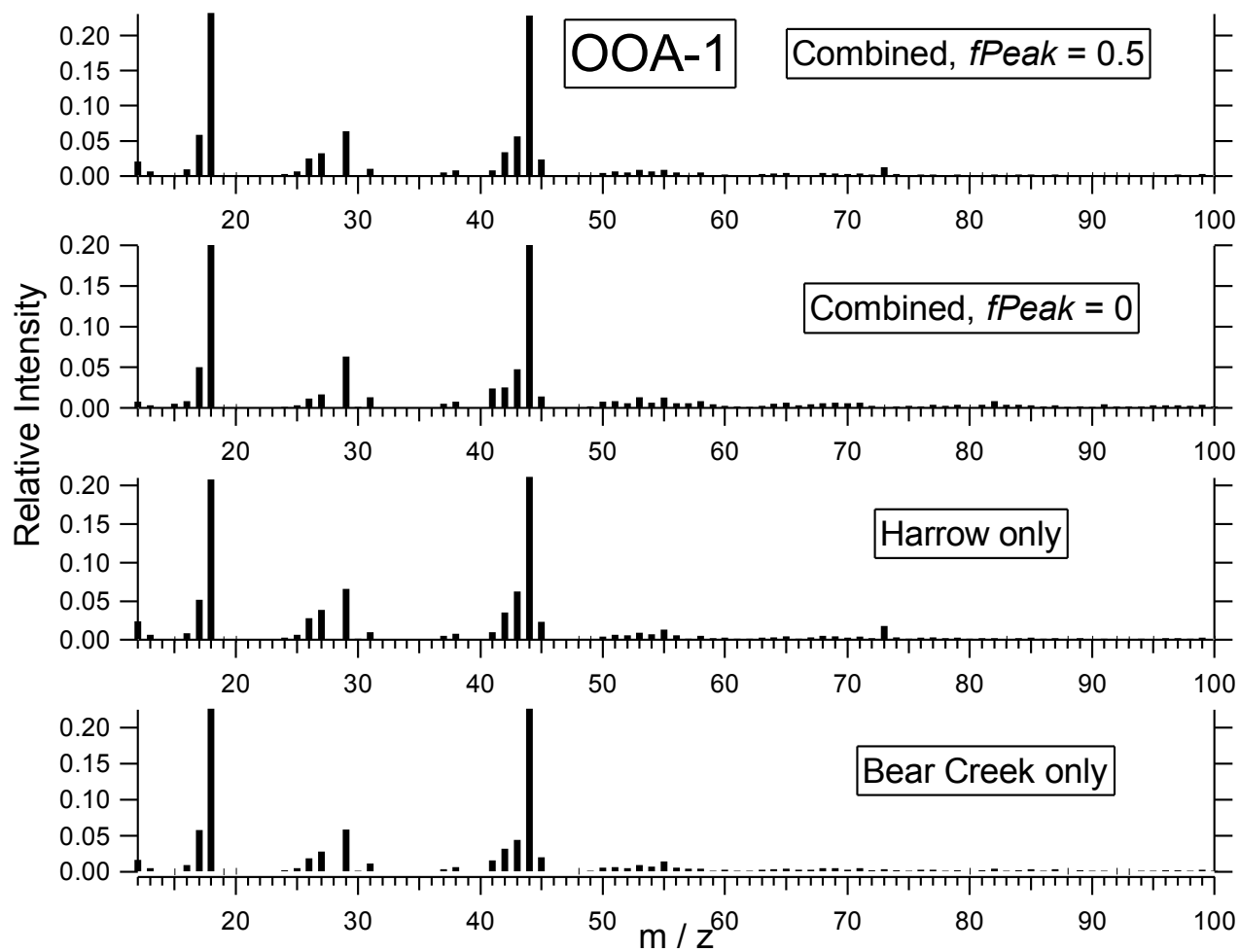


Figure S2. Comparison of OOA-1-like factor mass spectra for combined solutions at  $fPeak = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

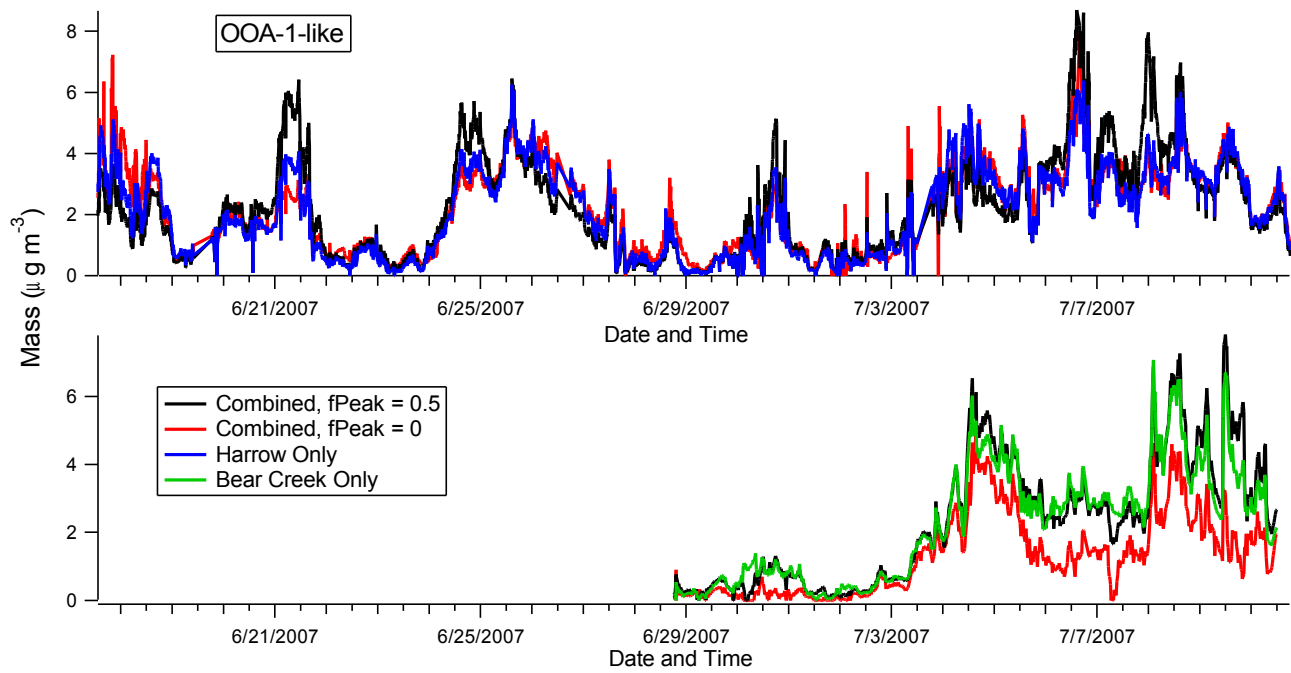


Figure S3. Comparison of OOA-1-like factor time series for combined solutions at  $f_{Peak} = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

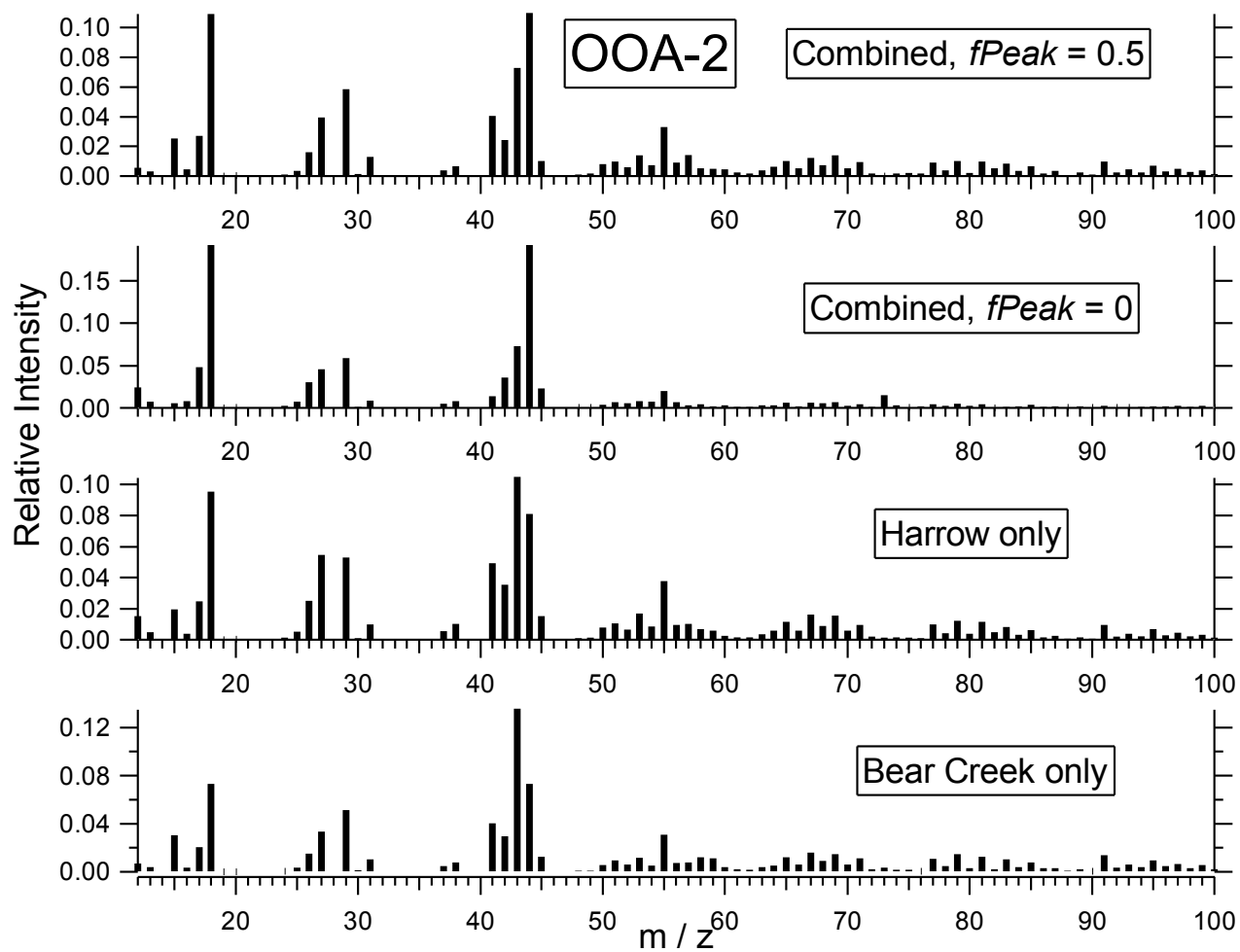


Figure S4. Comparison of OOA-2-like factor mass spectra for combined solutions at  $fPeak = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

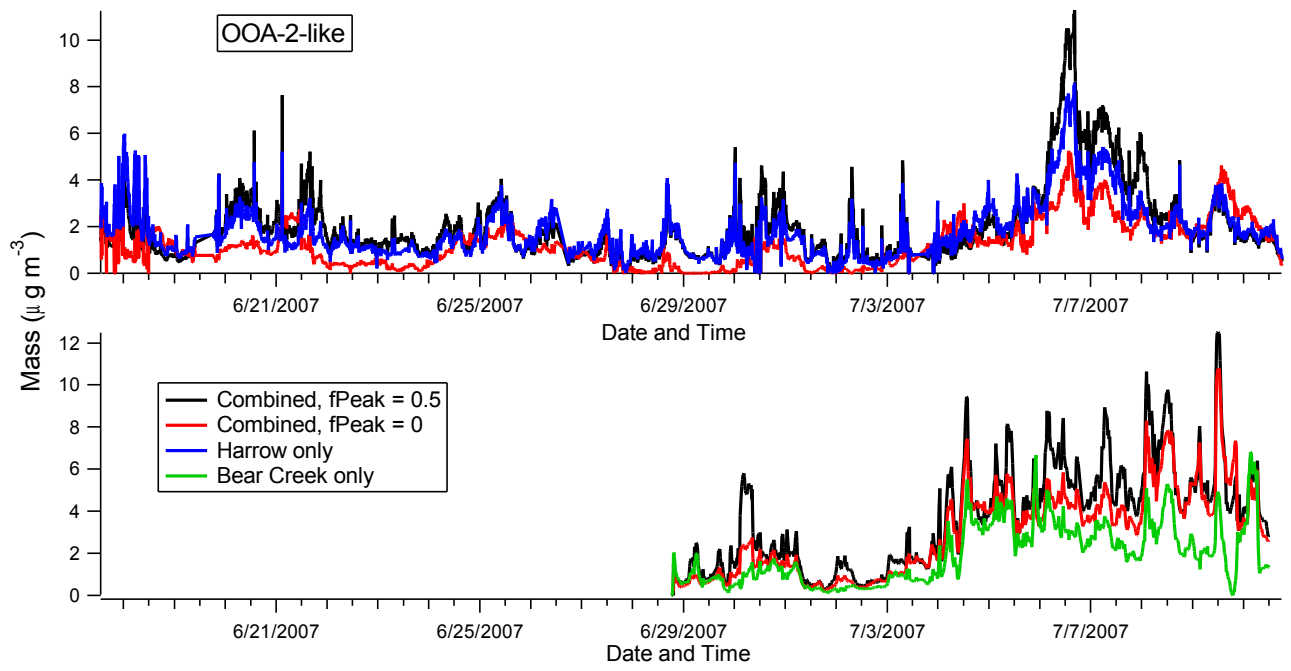


Figure S5. Comparison of OOA-2-like factor time series for combined solutions at  $f_{Peak} = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

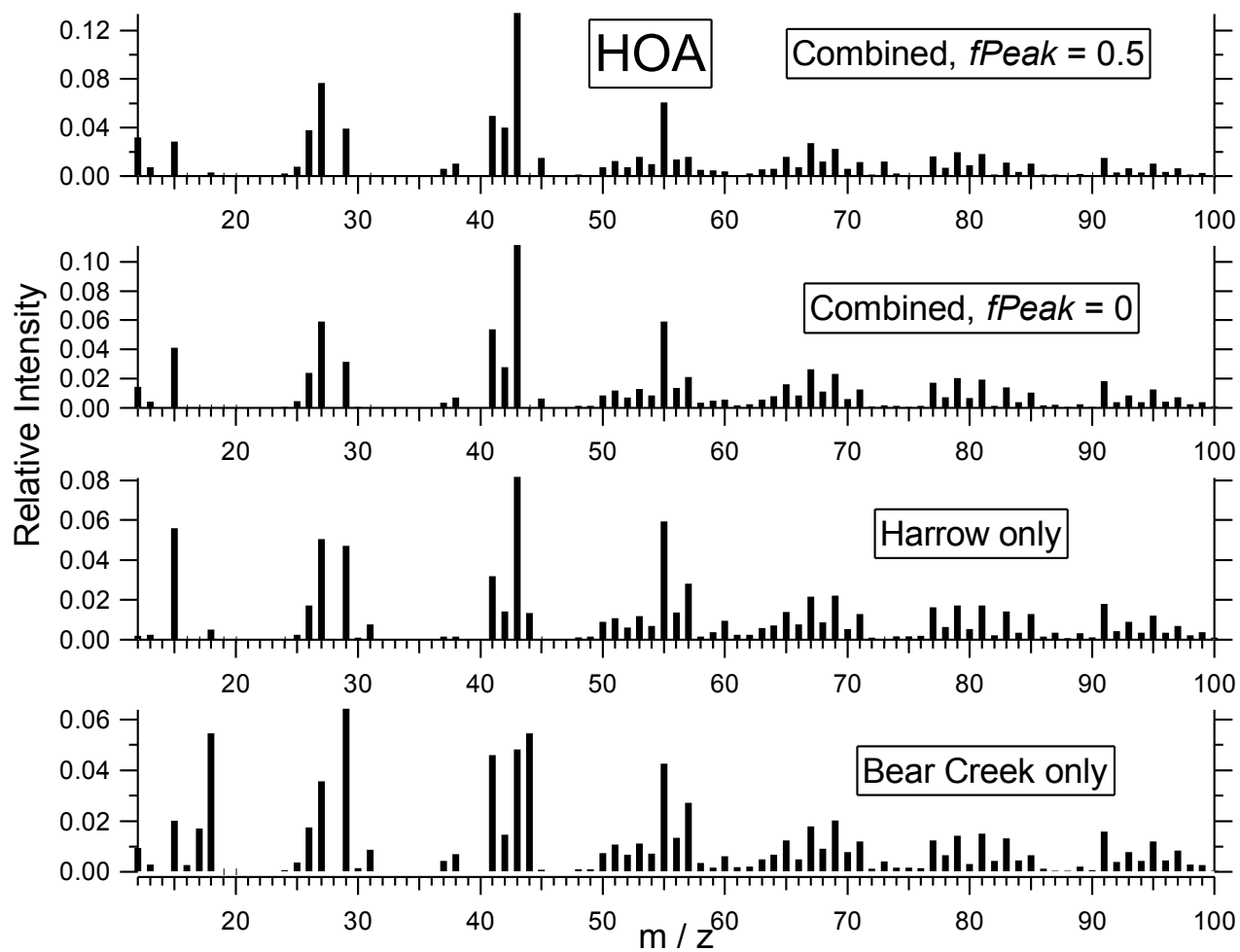


Figure S6. Comparison of HOA-like factor mass spectra for combined solutions at  $fPeak = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

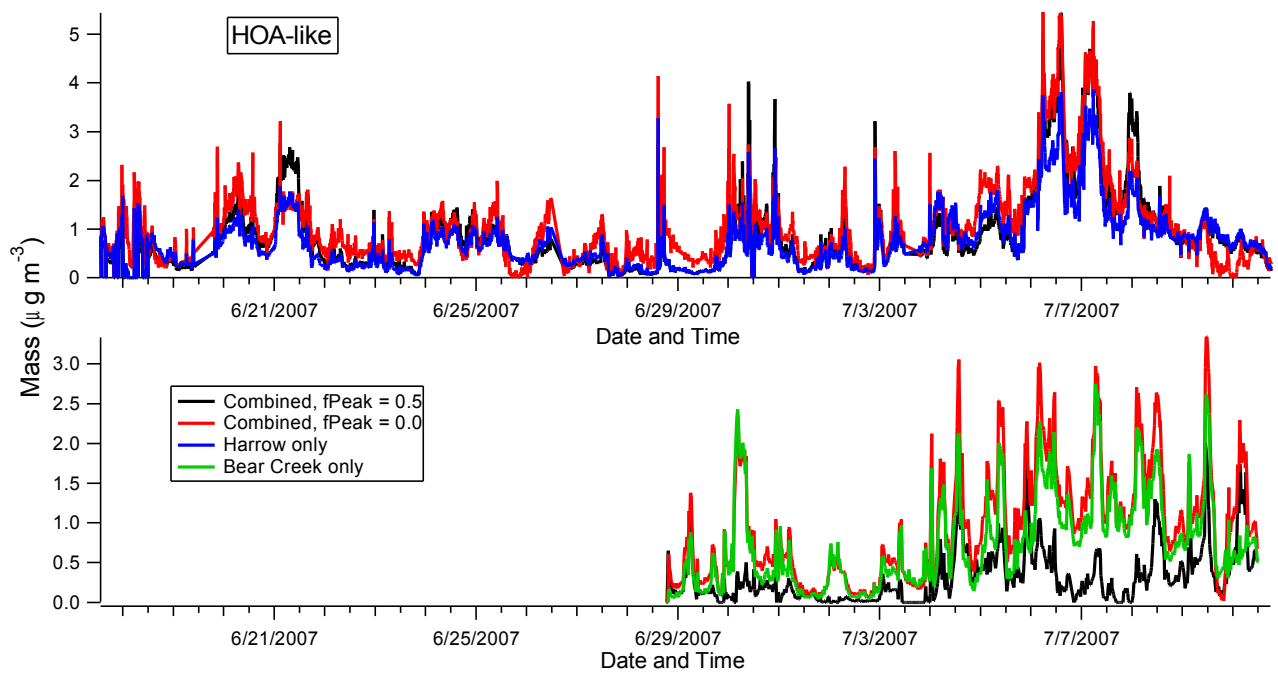


Figure S7. Comparison of HOA-like factor time series for combined solutions at  $f_{\text{Peak}} = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

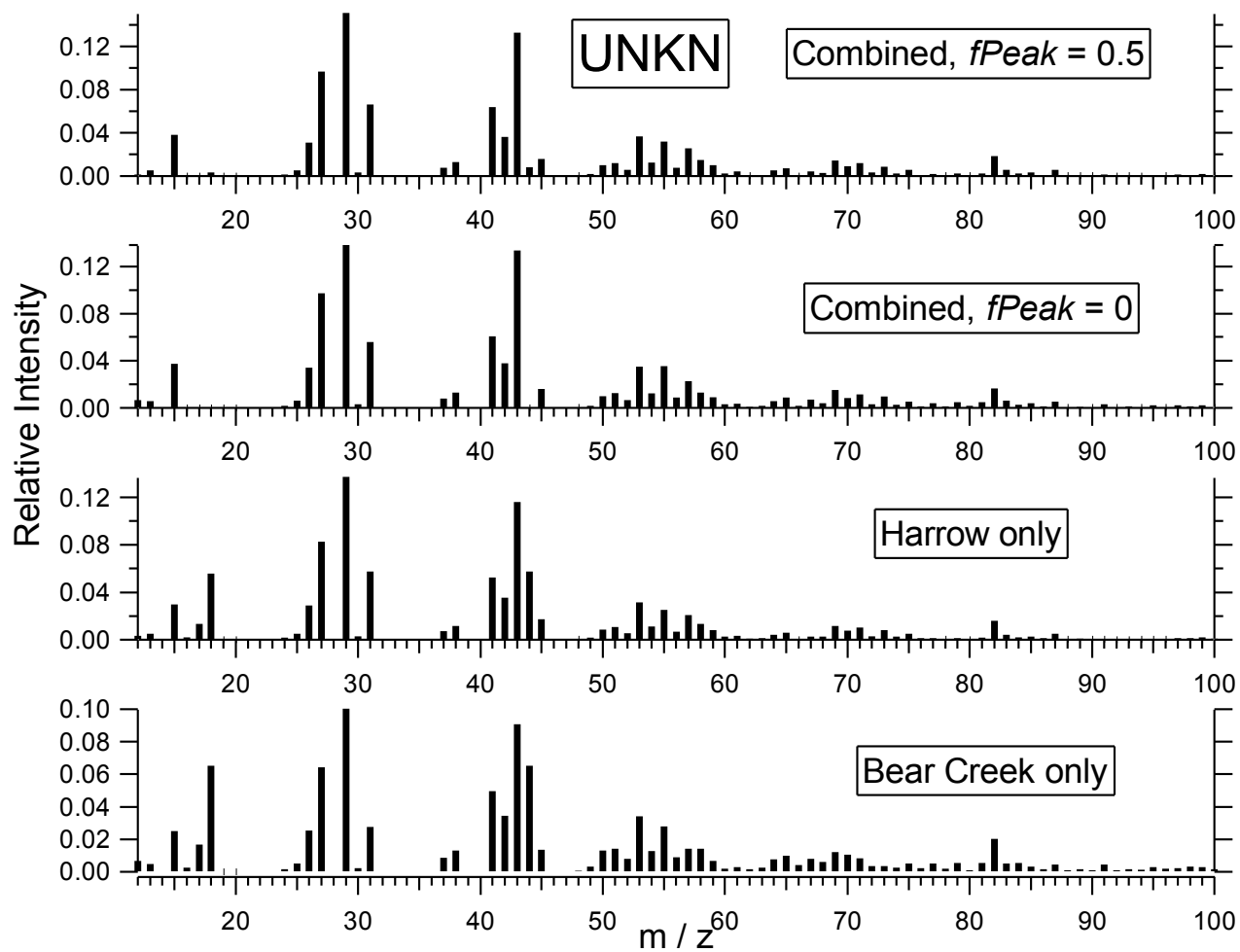


Figure S8. Comparison of UNKN-like factor mass spectra for combined solutions at  $fPeak = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

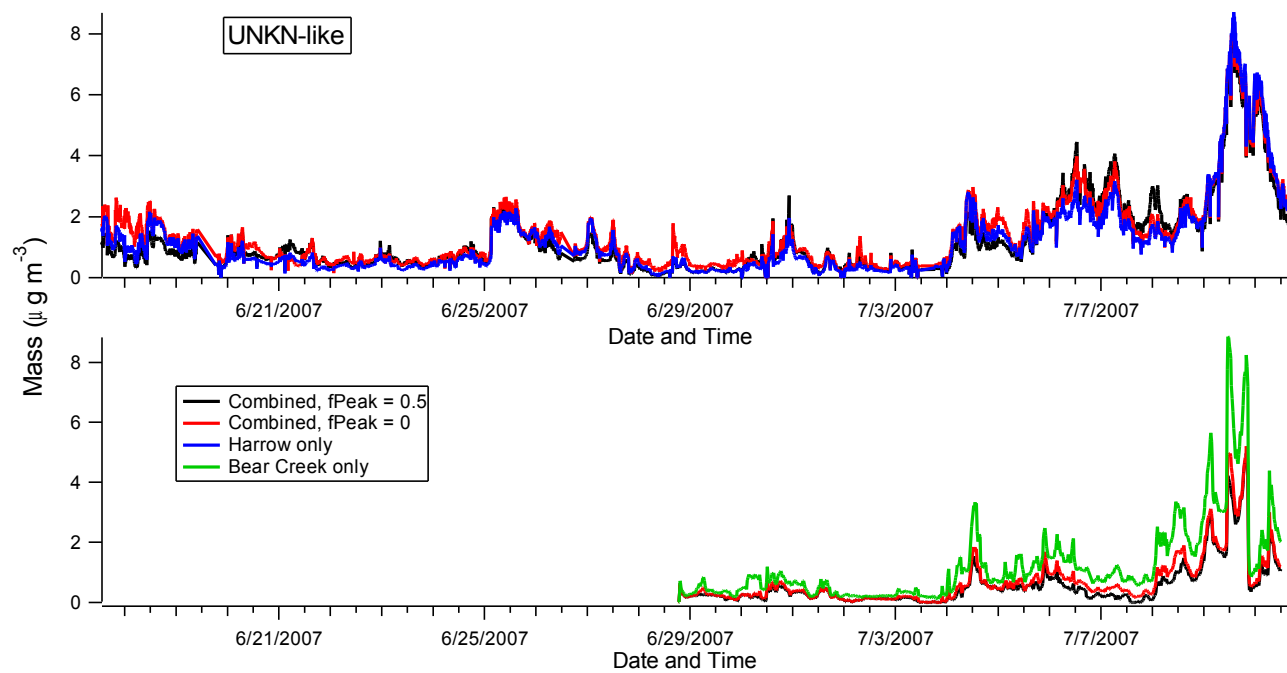


Figure S9. Comparison of UNKN-like factor time series for combined solutions at  $fPeak = 0.5$  and  $0.0$ , along with the Harrow-only and Bear Creek-only solutions.

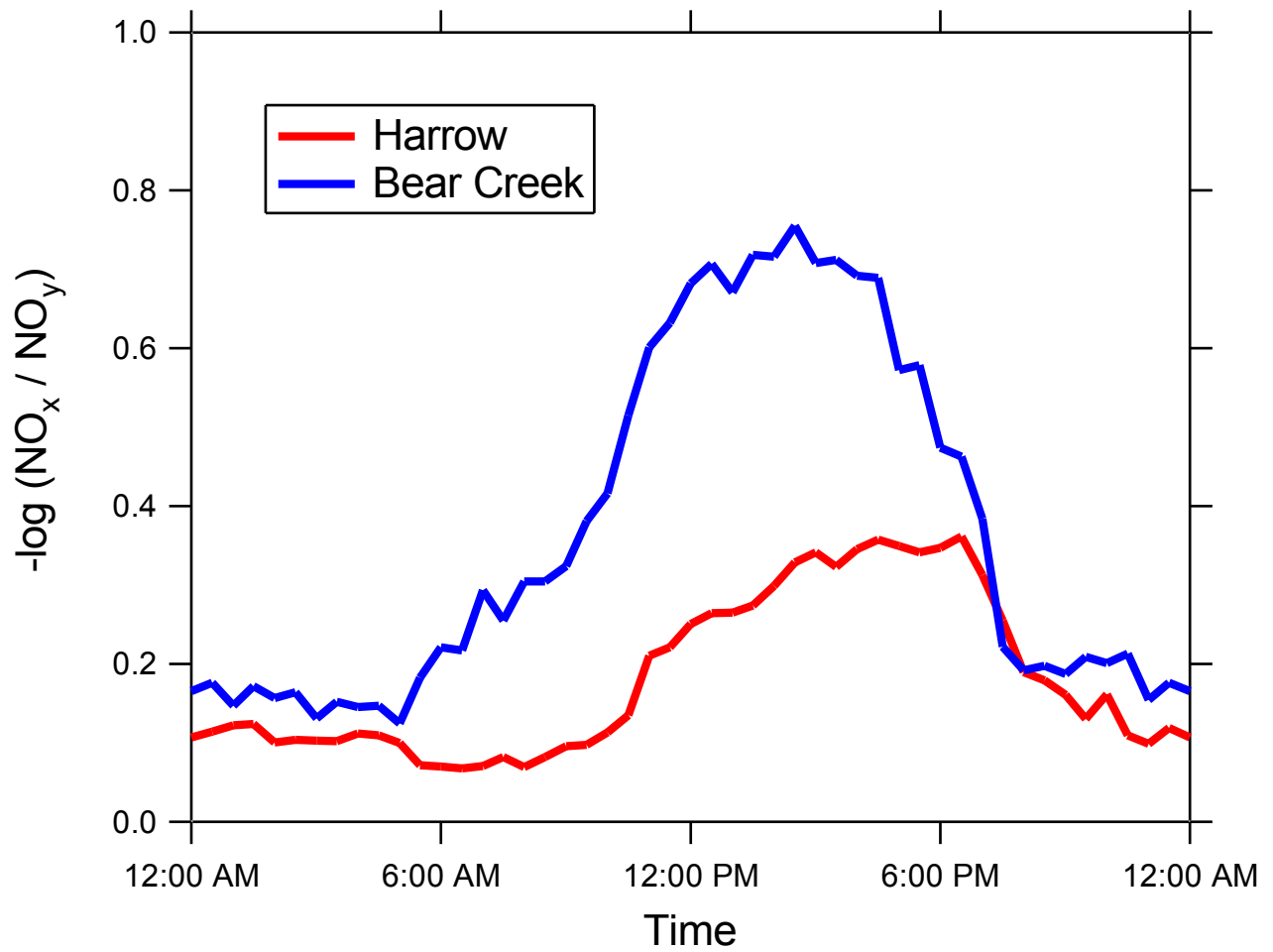


Figure S10. Diurnal patterns for  $-\log(\text{NO}_x/\text{NO}_y)$  at Harrow and Bear Creek.

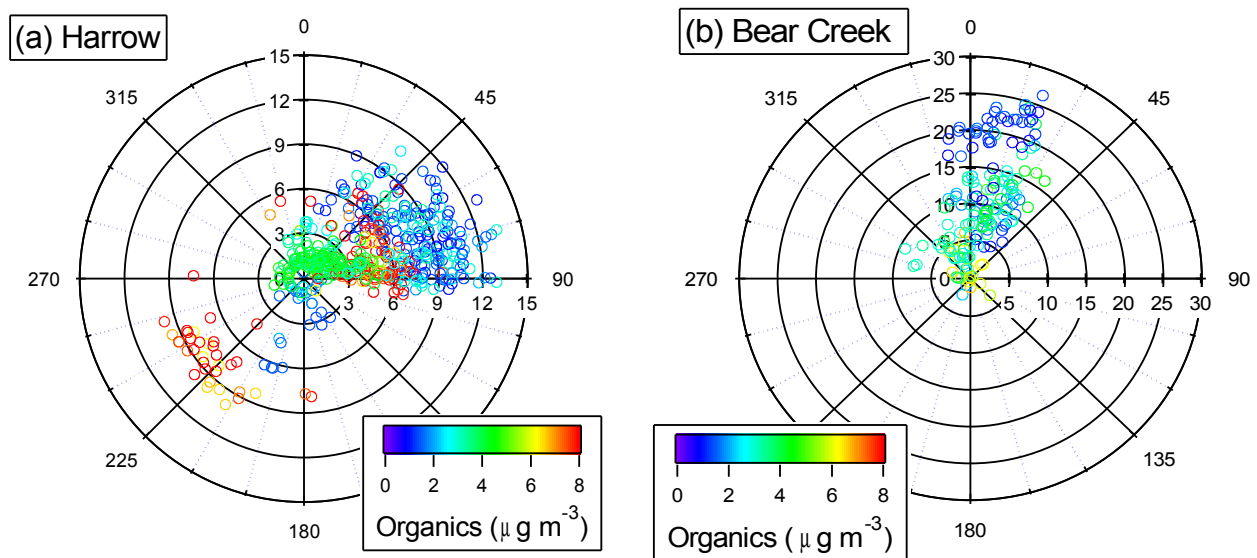


Figure S11. Wind rose plots during the Bear Creek-to-Harrow period (see Figs. 3 (green period) and 4). The figures show wind speed (radius, km/hr) as a function of wind direction (angle), with data points are colored by the organic aerosol mass concentration. Data is shown for both the Harrow (a) and Bear Creek (b) sites.

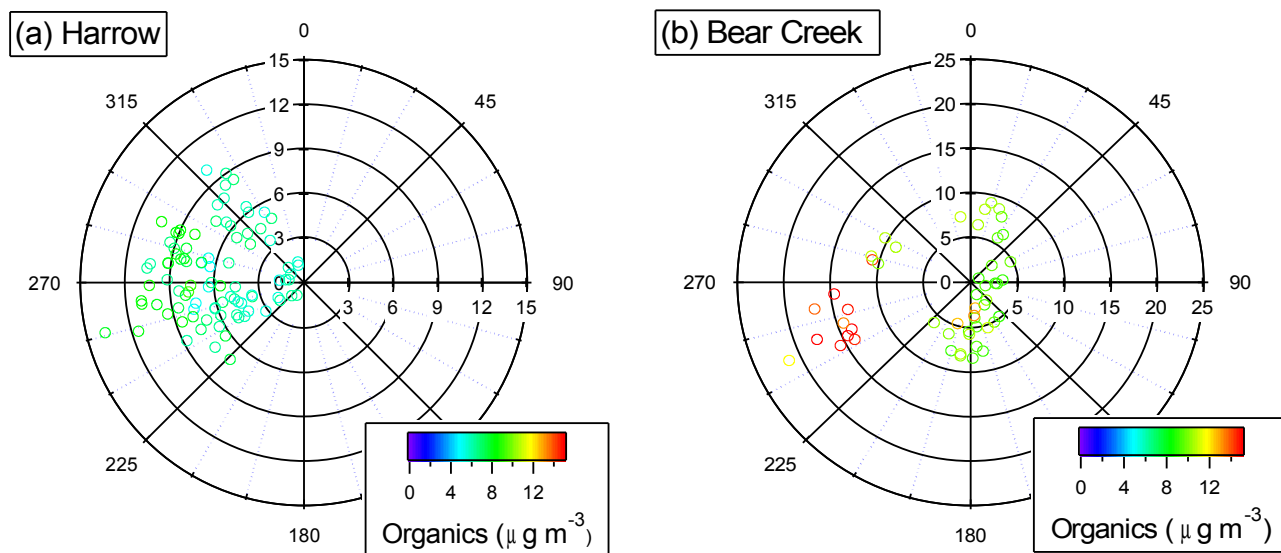


Figure S12. Wind rose plots during the Harrow-to-Bear Creek period (see Figs. 3 (red period) and 5). The figures show wind speed (radius, km/hr) as a function of wind direction (angle), with data points are colored by the organic aerosol mass concentration. Data is shown for both the Harrow (a) and Bear Creek (b) sites.

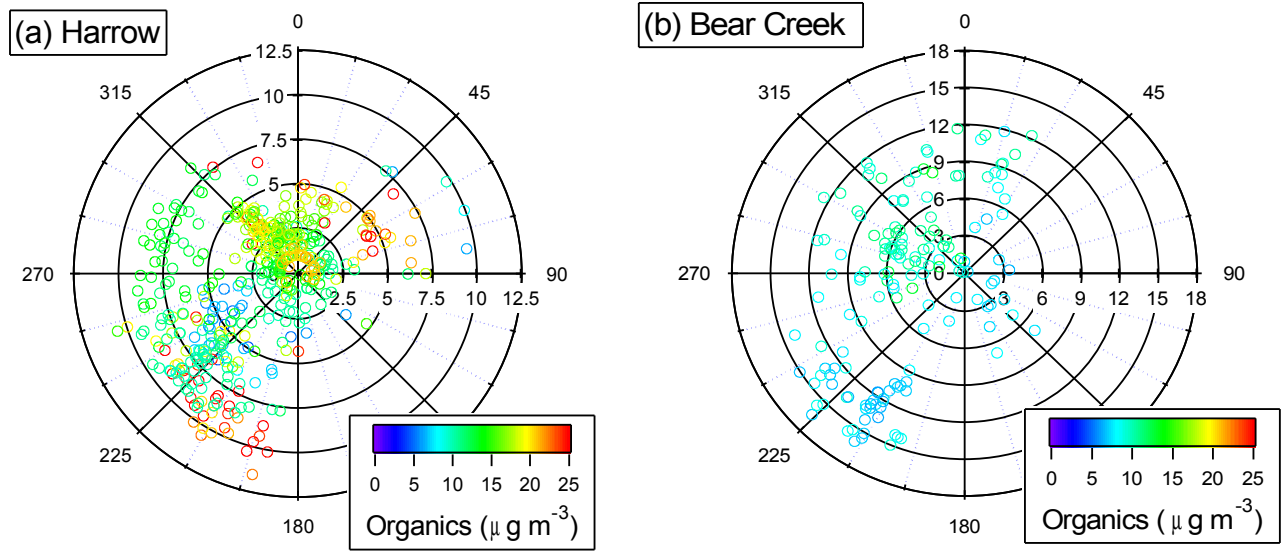


Figure S13. Wind rose plots during the Detroit/Windsor outflow period (see Figs. 3 (blue period) and 6). The figures show wind speed (radius, km/hr) as a function of wind direction (angle), with data points are colored by the organic aerosol mass concentration. Data is shown for both the Harrow (a) and Bear Creek (b) sites.