Sources and Characteristics of Summertime Organic Aerosol in the Colorado Front Range: Perspective from Measurements and WRF-Chem Modeling

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Supplemental Information

<table>
<thead>
<tr>
<th>VOC specie</th>
<th>Mean (ppbv)</th>
<th>R coefficient CH$_4$ regress</th>
<th>R coefficient C$_2$H$_6$ regress</th>
<th>R coefficient C$_3$H$_8$ regress</th>
<th>Oil/Gas CH$_4$ emission ratio</th>
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<td>CH$_4$</td>
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<td>NOx</td>
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<td>0.68</td>
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<td>C$_2$H$_6$</td>
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<td>0.0905</td>
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<td>N-Butane</td>
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<td>0.41</td>
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<td>Iso-Butane</td>
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<td>Hexane</td>
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<td>Octane</td>
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<td>113tm-Cyclohexane</td>
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<td>0.637</td>
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<td>0.783</td>
<td>7.92e-05</td>
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<td>Benzene</td>
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<td>Toluene</td>
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<td>m+p Xylenes</td>
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<td>0.722</td>
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<td>o Xylene</td>
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<td>ipropyl-Benzene</td>
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<td>135tm-Benzene</td>
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<td>C$_2$H$_4$</td>
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<td>0.687</td>
<td>0.346</td>
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</table>

Table S1. Statistical summary of VOC and NO$_x$ measurements at the BAO tower during the 2012 SONNE study. Shown are means from ~780 samples, r-coefficients from linear regressions relative to CH$_4$, acetylene and propane, and the derived emission ratios relative to CH$_4$ specifically from oil/gas activities (ppbv/ppbv).
Figure S1. Terrain height (above sea level, in m) in the WRF-Chem model domain, 4 km resolution
Figure S2. Correlation plots of PMF-derived OOA vs. CO (a) and odd oxygen, $O_x$ defined as $O_3 + NO_2$ (b) in aged plumes.
Figure S3. Flight tracks of C130 in the Front Range BL, color coded with ethane values from measurements (a) and BC-tlOG scenario (b). Locations of the O&G wells are shown with yellow dots.