

Methane and Nonmethane Hydrocarbons in the Denver-Julesburg Basin of Colorado: from Source Signatures to Regional Impacts

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NOAA/ESRL and the University of Colorado Cooperative Institute for Research in Environmental Sciences (CIRES) have conducted a number of intensive measurement campaigns in Colorado's NE Front Range since 2008. The study region is centered on the most densely drilled region (> 24,000 active wells) of the Denver-Julesburg basin, which is also the home of large animal feeding operations. Here we report on the analysis of air samples collected in the area with a mobile sampling van, at the Boulder Atmospheric Observatory tall tower site and from aircraft flights between 2008 and 2014. All samples were analyzed in the ESRL/GMD laboratories for over 50 trace gas species. We compare the emission ratios observed close downwind of sources with the tower and airborne samples that have a larger spatial footprint. We also compare the observed atmospheric chemical signatures with raw natural gas composition data reported to the Colorado Oil and Gas Conservation Commission.



Figure 1. NOAA GMD Mobile Laboratory