**Investigations of Impacts of VOC Emissions from Produced-water Disposal Facilities on Winter Ozone Pollution in the Uintah Basin Using Modeling Source Apportionment Techniques**

Huy Tran, Trang Tran, Marc Mansfield, Seth Lyman

Recent studies on volatile organic compounds (VOCs) emissions from the produced-water disposal facilities in the Uintah Basin, Utah suggest significant amount in comparison with total VOC emissions from all other oil and gas activities in the Basin. Our earlier studies using extensive flux chamber and inverse modeling measurements estimate that these facilities emit about 2,000 ton yr-1 non-methane hydrocarbon and 5,000 ton yr-1 alcohols (mostly methanol). Higher emissions were estimated by other researchers using mass-balance approach. In this study, we will apply photochemical model source-apportionment techniques to investigate contribution of emissions from produced-water disposal facilities to high ozone episodes in winter 2013, and how their contributions compare to contributions from other oil and gas activities. Knowledge of impacts of each oil and gas source categories on the winter ozone pollutions in the Basin is critical for developing effective control strategies.