A42H-08 Spatiotemporal Variability of the Summertime Formaldehyde to Nitrogen Dioxide Ratios during the Utah Summer Ozone Study (USOS) and the Salt Lake City — Summer Ozone Study (SLC-SOS)

New Orleans Theater A (NOLA CC)

Thursday, 18 December 2025 : 11:10 - 11:15

Hall EFG (Poster Hall) (NOLA CC)

Thursday, 18 December 2025 : 14:15 - 17:45

Poster Board

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Abstract

Surface ozone (O_3) concentrations in Salt Lake City (SLC), Utah, frequently exceed the National Ambient Air Quality Standards (NAAQS) during the summer, contributing to poor local air quality. However, the key drivers of summertime O_3 formation remain poorly understood. In this study, we utilize the ratio of formaldehyde (HCHO) to nitrogen dioxide (NO_2) as a proxy to characterize O_3 formation regimes during the Utah Summer Ozone Study (USOS) and the Salt Lake City – Summer Ozone Study (SLC-SOS), conducted from July 30 to August 18, 2024. Measurements of HCHO and NO_2 were obtained using instruments aboard the NOAA Chemical Sciences Laboratory (CSL) Mobile Laboratory. Preliminary results indicate that both the mean surface HCHO and NO_2 concentrations, as well as their ratios, exhibited substantial diurnal variability. Notably, HCHO/NO_2 ratios peaked during the local afternoon, diverging from the individual temporal trends of HCHO and NO_2. Our study has the potential to offer important insights into the mechanisms of summertime O_3 formation and support evidence-based strategies for reducing anthropogenic emissions to improve O_3 air quality in the SLC area.