

## **RELATIVE IMPACT OF MOBILE SOURCE EMISSIONS ON A SEMI-ARID COASTAL URBAN AIRSHED**

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### **ABSTRACT**

A regional photochemical modeling was performed for a high ozone episode of September 1999 to evaluate the effectiveness of ozone control strategies in four near non-attainment areas (NNAs) of Texas. The Comprehensive Air quality Model with extensions (CAMx) was used as the photochemical model in this study. The Fifth-Generation NCAR/Penn State Mesoscale Model (MM5) was used for prognostic meteorological inputs, the Emissions Preprocessing System (EPS 2.0) was used for emission inputs, and MOBILE6.2 for mobile source emission inputs to the photochemical model. The NONROAD model was used for developing the non-road source emissions inputs to the EPS, while the marine vessel emissions were computed using EPA-approved methodology developed by Environ, Inc. A thorough analysis of the non-road source category revealed significant dock-side emissions from the hotelling of large ships and marine vessels at the Port of Corpus Christi. This study presents various sensitivity analyses using the photochemical model with respect to mobile source emissions. First, the sensitivity of modeled ozone to various emission sources was evaluated for the Corpus Christi urban airshed by zeroing out on-road and non-road mobile sources to assess mobile source impact on ozone formation as compared to other emission source categories. Mobile source emissions including on-road and non-road had the most impact on the ozone air quality within the Corpus Christi urban airshed. Additional sensitivity analysis related to on-road mobile source emissions were performed for various Reid Vapor Pressures (RVPs) and vehicle travel miles (VMTs) using MOBILE 6.2 coupled with the photochemical model. This study also evaluated the impact of spatial reallocation of on-road and non-road mobile sources. The analyses conducted in this study will allow local air quality planners to identify and develop innovative emissions control strategies for the region.

**Keywords:** Ozone, photochemical model, mobile emissions, MOBILE6.2, NONROAD, semi-arid, coastal urban airshed