

Preliminary Conceptual Model - Causes of Haze in Tallgrass Prairie (TALL1)

Due to the reason that a whole year of aerosol data is not available, no analysis about the 20% worst haze days can be done. Based on the data available from 9/2002-8/2003, sulfate transported from the east in the warm season, and regional nitrate in the cool season are believed to be the important causes of haze. Organics may also have a significant contribution to haze in the spring due to fire events.

In Tallgrass Prairie, the average $PM_{2.5}$ mass concentration during 9/2002-8/2003 is $9.6 \mu\text{g}/\text{m}^3$, and the average total light extinction coefficient (B_{ext}) is 78 Mm^{-1} (Visual Range $\sim 50 \text{ Km}$; Deciview ~ 21). Sulfate and nitrate are two of the largest contributors to haze, with an average contribution of 36% and 26%, respectively. Figure 2 indicates that sulfate in the summer and nitrate in the winter are the major causes of haze. Large organic contribution is found in April 2003. This may due to fire events happened at the site area.

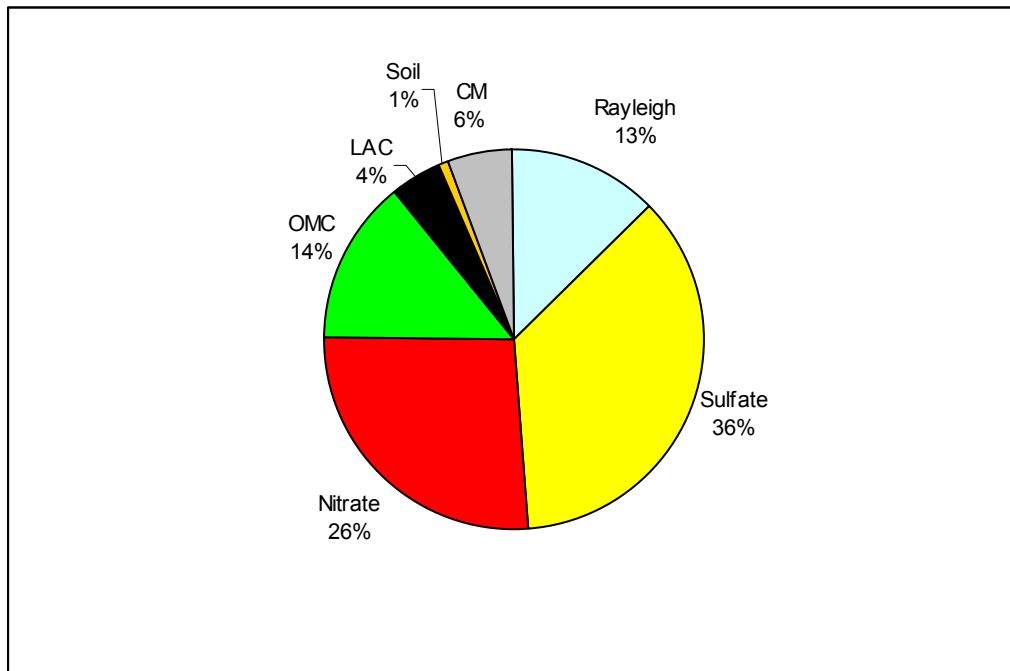


Figure 1. Average contributions of major aerosol chemical components to light extinction

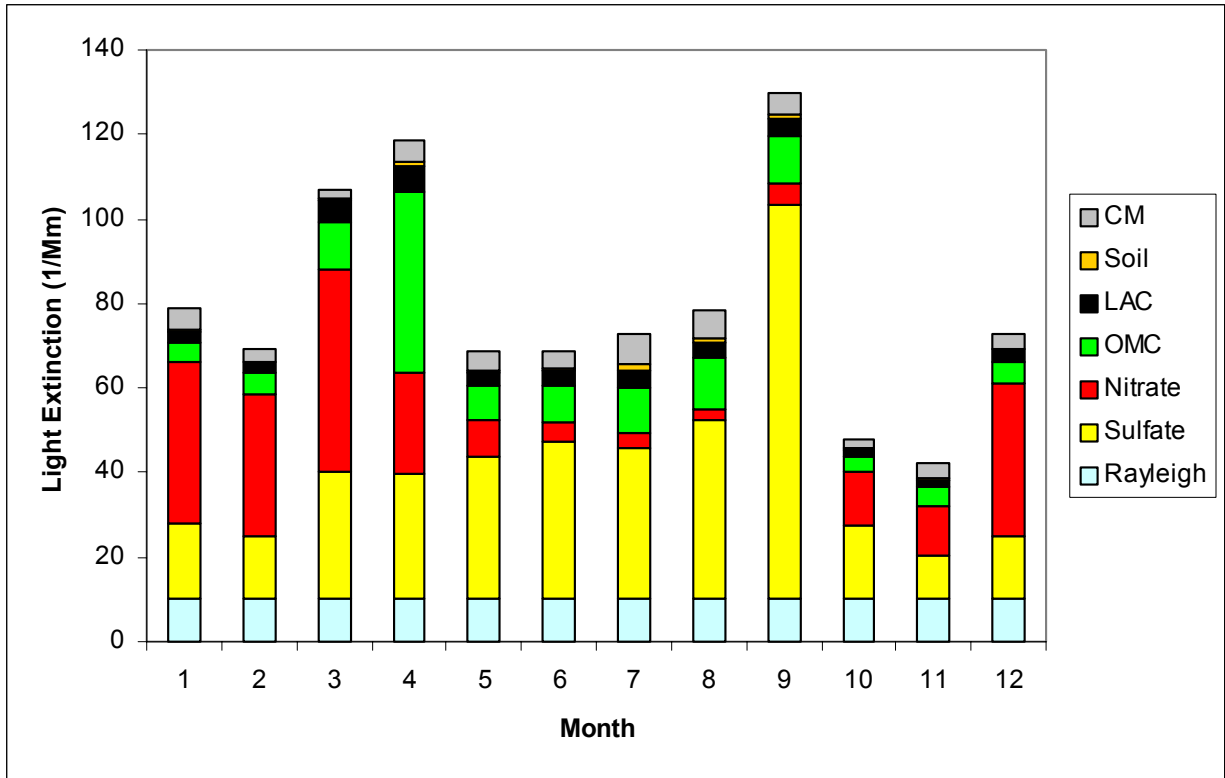


Figure 2. Average contributions of major aerosol chemical components to light extinction in each month