Regional Ozone Production

Fred C. Fehsenfeld
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

Ozone plays a key role in tropospheric chemistry and global climatology. In addition, ozone is a secondary pollutant, and elevated levels of ozone can damage forests and crops and may be harmful to human health. For these reasons, ozone represents an important component of air quality problems in urban areas, and an emerging air quality problem in rural areas. Most ozone is formed photochemically from ozone precursors, the oxides of nitrogen, NO_x, and non-methane hydrocarbons, NMHC. However, these reactions are exceedingly complex, many of the key processes poorly understood, and the rate of emission of the important precursor compounds into the atmosphere uncertain. For these reasons, understanding the process responsible for ozone production represents an important and challenging problem. Our present understanding of the processes that shape the regional ozone distribution will be briefly reviewed, and the sources of the key precursor compounds examined. The implication of recent field measurement campaigns to the understanding of these processes will be discussed.